



SUN

RADIATORS AND HEATERS



U. S. RADIATOR AND BOILER CO.

PITTSBURG, PA.

WORKS AT
WEST NEWTON, PA.

WORKS AT
CORRY, PA.

UNITED STATES
RADIATOR AND
BOILER COMPANY



PITTSBURG PENNSYLVANIA U S A

WORKS :: WEST NEWTON PA :: CORRY PA

INTRODUCTION

OUR experience in the manufacture of heating apparatus covers a long period of years and we believe entitles us to the confidence of the heating trade.

In presenting this Catalogue and Price List of our Sun Heaters and Radiators we beg to call attention to the fact—that in the production of the Sun Heaters and Radiators—we have aimed, regardless of expense, to produce goods embodying the essential and vital requisites, to wit:

Efficiency of the heating surface, the largest practical fire surface within the combustion, proper ratio of grate surface to boiler surface, perfect combustion, proper temperature of gases in flues, vertical water and steam circulation, ease of access for cleaning boiler surface, ease of management and superiority in the mechanical construction.

U. S. RADIATOR & BOILER CO.
PITTSBURG, PA., U. S. A.

CONSTRUCTION OF SUN HEATERS

AFTER long experience in the manufacture of Heaters we have constructed the SUN Heater, and have made use of this experience to get up a simple Heater that can be managed by any domestic with perfect safety and ease. They are easy to clean, having very large flues, and large clean-out doors. They have large water-ways, making a good circulation and steady water line. They have a large fire door, making it easy to operate; large ash-pit and large ash-pit door; simple shaking and dumping grate; smoke box with damper, having simple and effective device for checking draft.

The doors and grates are very heavy, which prevent warping, etc., which makes the requirement for repairs very low. Each Heater is furnished with a wire flue brush, poker and hoe.

They have large deep fire boxes, in order that a large quantity of fuel can be put on at once and run considerable time without attention.

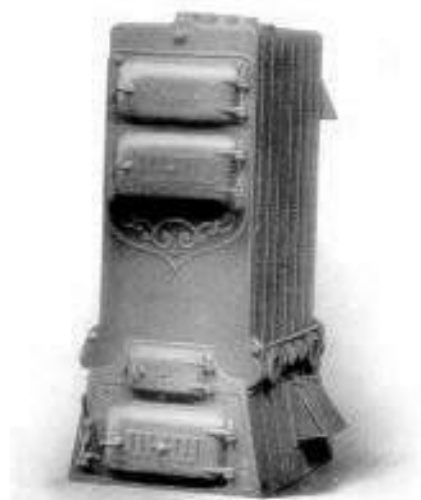
HOW SUN HEATERS AND RADIATORS ARE MADE

THESE Heaters and Radiators are constructed from the very highest grade of gray cast iron, and tested to eighty (80) lbs. pressure on boilers, and one hundred (100) lbs. on radiators. They are made by competent mechanics — by the best and most improved modern machinery, in a large and commodious plant, where from long experience and continuous study, it has enabled us to take advantage of every improvement. These goods are followed closely by experienced men from the time the iron is put into the cupola until the goods are finished and loaded in the cars.

Our plant is located on the railroad and all goods are loaded by us direct into the cars by men who have learned to load them the best way to insure safe carriage, thus saving loading into wagons and handling, and also reduces the chance of breakage to a minimum.

Sun Water Boiler

12-INCH GRATE

**PRICE LIST AND SIZES**

No.	Size of Fire Pot	Size of Smoke Pipe	Flue Space including Smoke Box	Tappings Flue and Return	Direct Water Radiation	Price for Water	Code Word
412	12x11	7 in.	22x24	2-2 in.	250	\$ 60.00	Rebate
512	12x14	7 in.	22x28	2-2 in.	350	95.00	Kalish
612	12x17	7 in.	22x32	2-2 in.	450	125.00	Rancor
712	12x20	8 in.	22x36	3-2 in.	575	150.00	Ramble

Height of boiler 47 inches.

See notes on pages 34 and 35.

All boilers tapped in rear for domestic coil or water back.

This series is erected complete in two parts before leaving the works—base and grate in one, sections in the other, making it easy to erect.

Sun Steam Heater

12-INCH GRATE

**PRICE LIST AND SIZES**

No.	Size of Fire Pot	Size of Smoke Pipe	Flue Space including Smoke Box	Tappings Flue and Return	Direct Steam Radiation	Price for Steam	Code Word
124	12x11	7 in.	22x24	2-2 in.	125	\$ 60.00	Rag
125	12x14	7 in.	22x28	2-2 in.	200	95.00	Kalish
126	12x17	7 in.	22x32	2-2 in.	275	125.00	Rancor
127	12x20	8 in.	22x36	3-2 in.	350	150.00	Ramble

Height of boiler, 47 inches; height of steam water line, 39 inches.

See notes on pages 34 and 35.

All boilers tapped in rear for domestic coil or water back.

This series is erected complete in two parts before leaving the works—base and grate in one, sections in the other, making it easy to erect.

Sun Water Heater

16-INCH GRATE



PRICE LIST AND SIZES

No.	Total Height	Size of Smoke Pipe	Size of Fire Pot	Floor Space	Tapping Floor and Return	Direct Water Radiation	Price Complete	Code Word
507	58 in.	8 in.	10x16	26x20	2-2 1/2 in.	350	\$140.00	Rape
616	58 in.	8 in.	16x20	26x24	2-2 1/2 in.	200	170.00	Rase
719	58 in.	8 in.	16x24	26x28	2-2 1/2 in.	875	200.00	Ratch
816	58 in.	8 in.	16x28	26x32	2-2 1/2 in.	1050	240.00	Ravage

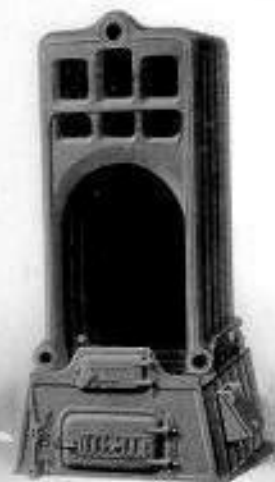
See notes on pages 34 and 35.

All boilers tapped in rear for domestic hot or water back.

This series is erected complete in two parts before leaving the works—base and grate in one, sections in the other, making it easy to erect.

Sun Steam Heater

16-INCH GRATE



PRICE LIST AND SIZES

No.	Size of Smoke Pipe	Height of Water Line	Size of Fire Pot	Floor Space including Smoke Box	Tapping Floor and Return	Total Height	Direct Steam Rad.	Price Complete with Trim	Code Word
165	8 in.	51 in.	10x16	26x20	2-2 1/2 in.	58 in.	325	\$155.00	Rax
166	8 in.	51 in.	16x20	26x24	2-2 1/2 in.	58 in.	425	185.00	Ready
167	8 in.	51 in.	16x24	26x28	2-2 1/2 in.	58 in.	525	215.00	Relax
168	8 in.	51 in.	16x28	26x32	2-2 1/2 in.	58 in.	625	250.00	Reconf

See notes on pages 34 and 35.

All boilers tapped in rear for domestic hot or water back.

This series is erected complete in two parts before leaving the works—base and grate in one, sections in the other, making it easy to erect.

Sun Water Heater

SERIES A



PRICE LIST AND SIZES

Number	Number of Sections	Size of Grate	Depth of Fire-Box	Shape of Smoke Pipe	Color Space including Sounding Box	Height of Heaters	Size and No. of Chimney Pipes	Size and No. of Radiator Connections	Capacity for Direct Radiation	Coal Price	Unit Weight
624A	5	24x18	18 in.	9 in.	30x30	58 in.	1-4 in.	1-4 in.	1100	\$300.00	Wagon
624B	9	24x23	18 in.	9 in.	30x41	58 in.	1-4 in.	1-4 in.	1400	300.00	Wagon
724A	7	24x27	18 in.	10 in.	30x46	58 in.	2-4 in.	1-2 in.	1700	440.00	Wagon
824A	8	24x31	18 in.	10 in.	30x51	58 in.	2-4 in.	1-2 in.	2000	500.00	Wagon
924A	9	24x35	18 in.	10 in.	30x56	58 in.	2-4 in.	1-2 in.	2300	575.00	Wagon

See notes on pages 34 and 35.

All boilers tipped in rear for domestic and hot water back.

SUN WATER HEATER

THE method of construction that has been adopted in this series of Water Heater is entirely new, which makes it the most attractive Heater to handle from the steamfitter's point of view, and equally as attractive to the customer who uses it.

WBV—This Heater is made up of divided sections, which enables the manufacturer to put the boiler together and test it before it leaves the works, thus relieving the labor of putting together the sections and removing all doubts from his mind as to whether he is going to get it up right, besides saving all the labor entailed in erecting.

The Heater as shipped is composed of three parts: the base, which contains the grate, and the two halves which compose the Heater.

Dividing the heater in two parts makes it just as convenient to ship as a Radiator and just as convenient to handle.

The heater is connected together by two small headers on the top which are clearly shown in illustration, and a corresponding header on the rear, and when the Heater is shipped illustrations are given with a direction card showing the methods of quickly setting in place so that any mechanic can set them up.

SLOW COMBUSTION

The first principle to be considered in a heating apparatus is its efficiency; the next is economy. Both these results can be obtained by getting all the heat out of the fuel and this can best be obtained in house heating by slow combustion. A deep fire box produces the most perfect combustion of the fuel for the reason that two-thirds of the value of the fuel is converted into gas and this gas

can best be consumed by working its way up through the hot mass of fuel, which will be contained in a deep fire pot.

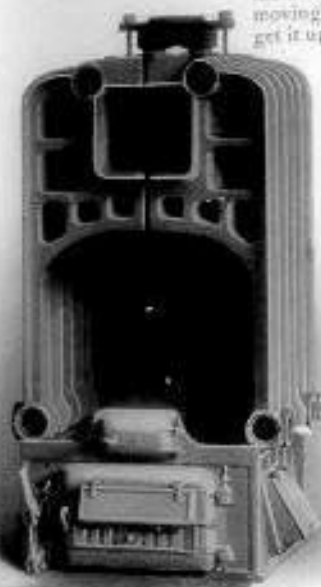
The gas then being thoroughly consumed and the heat liberated therefrom, there is then ample flue surface in the Heater to absorb the gases before they pass to the chimney. We can thus get a maximum economy from this construction, a point which is very attractive to the owner who is to pay the coal bill.

It will be noticed also that this Heater has a very large clinker door by which the fire can be cleaned without shaking if it is desired.

ANTI-CLINKER GRATES

It will be seen that the grates in this Heater have a circular motion and are arranged with teeth, which will grind up the clinkers into fine particles.

This principle of grate enables the grinding and removal of clinkers without opening wide spaces between the grate bars, which frequently allows large lumps of coal to fall through.



Sun Water Heater

20-INCH GRATE



PRICE LIST AND SIZES

No.	Size of Smoke Pipe	Height of Heater	Size of Grate	Floor Space	Radiation Supplied	Weight	Price	Code Word
143	8 in.	52 in.	20x18	30x24	700	155 in.	\$217.50	Revolv
150	8 in.	52 in.	20x24	30x30	900	233 in.	252.00	Revolv
152	9 in.	52 in.	20x30	30x36	1100	273 in.	292.50	Revolv
154	10 in.	52 in.	20x36	30x42	1325	333 in.	330.00	Revolv
156	10 in.	52 in.	20x42	30x48	1525	373 in.	368.00	Revolv

See notes on pages 34 and 35.

All boilers tapped in rear for domestic coil or water back.

Sun Steam Boiler

20-INCH GRATE



PRICE LIST AND SIZES

No.	Size of Smoke Pipe	Height of Heater	Size of Grate	Water Line	Floor Space	Rad Sup plied	Weight	Price	Code Word
204	8 in.	52 in.	20x18	41 in.	30x24	425	135 in.	\$227.50	Revolv
205	8 in.	52 in.	20x24	41 in.	30x30	550	233 in.	265.00	Revolv
206	9 in.	52 in.	20x30	41 in.	30x36	675	233 in.	302.50	Revolv
207	10 in.	52 in.	20x36	41 in.	30x42	800	333 in.	340.00	Revolv
208	10 in.	52 in.	20x42	41 in.	30x48	925	333 in.	378.00	Revolv

See notes on pages 34 and 35.

All boilers tapped in back for domestic coil or water back.

Sun Water Heater

25-INCH GRATE



PRICE LIST AND SIZES

Size	Size of Smoke Pipe	Height of Heater	Size of Grate	Floor Space	Rad. Sup. (Btu)	Tappings	Price	Code Word
924	10 in.	60 in.	25x24	35x32	1300	2-3 in.	\$330.00	Rough
925	12 in.	60 in.	25x30	37x38	1650	3-3 in.	390.00	Right
926	12 in.	60 in.	25x36	37x44	2000	3-3 in.	450.00	Right
927	12 in.	60 in.	25x42	37x50	2400	3-3 in.	520.00	Right
928	12 in.	60 in.	25x48	37x56	2750	3-3 in.	590.00	Rough

See notes on pages 34 and 35.

All boilers tapped in rear for domestic coil or water back.

Sun Steam Boiler

25-INCH GRATE



PRICE LIST AND SIZES

Size	Size of Smoke Pipe	Height of Heater	Size of Grate	Water Line	Floor Space	Rad. Sup. (Btu)	Tappings	Price	Code Word
255	10 in.	60 in.	25x24	48 in.	37x32	800	2-3 in.	\$240.00	Roche
256	12 in.	60 in.	25x30	48 in.	37x38	950	2-3 in.	378.00	Roof
257	12 in.	60 in.	25x36	48 in.	37x44	1150	2-3 in.	440.00	Roof
258	12 in.	60 in.	25x42	48 in.	37x50	1350	2-3 in.	514.00	Roof
259	12 in.	60 in.	25x48	48 in.	37x56	1550	2-3 in.	564.00	Rough

See notes on pages 34 and 35.

All boilers tapped in rear for domestic coil or water back.

Sun Heater

20 AND 25 INCH GRATE



Section showing back and nipple connections with smoke box attached.



Section of 25-inch Grate Boilers with front removed.

Sun Steam and Water Heater

20-INCH AND 25-INCH GRATE



The above illustration shows the smoke travel and combustion chamber and large water ways.

DESCRIPTION

THIS Heater has been constructed with a view to getting a small steam boiler with a low water line that will be steady when in operation, and to have a double return flue for the smoke and gas travel; this has been accomplished in this Heater as will be noticed the smoke goes backward and enters the flues at side then forward and returns back through large flue in center; for burning soft coal there is no equal; the flues are very large which help combustion, the grates shake and dump; the waterways are large, insuring a steady water line; it is put together with three malleable iron push nipples and has given entire satisfaction for the past six years.

Sun Water Heater

24-INCH GRATE



PRICE LIST AND SIZES

Size	Size of Smoke Pipe	Height of Heater	Size of Grate	Floor Space	Rad. Surface	Tappings	Price	Code Word
424	10 in.	60 in.	24x18	37x26	1000	2-3 in.	\$274.00	Rabbe
524	10 in.	60 in.	24x24	37x32	1350	2-3 in.	335.00	Rack
624	10 in.	60 in.	24x30	37x38	1650	2-3 in.	390.00	Radia
724	12 in.	60 in.	24x36	37x44	2000	3-3 in.	400.00	Raid
824	12 in.	60 in.	24x42	37x50	2470	3-3 in.	543.00	Rasp
924	12 in.	60 in.	24x48	37x56	2875	3-3 in.	611.00	Rally

See notes on pages 34 and 35.

All boilers tapped in rear for domestic coal or water back.

Sun Steam Heater

24-INCH GRATE



PRICE LIST AND SIZES

Size	Size of Smoke Pipe	Height of Heater	Size of Grate	Floor Space	Radiation Surface	Tappings	Price Steam with Trimmings	Code Word
244	10 in.	60 in.	24x18	37x26	600	2-3 in.	\$286.00	Rand
245	10 in.	60 in.	24x24	37x32	800	2-3 in.	340.00	Ranny
246	10 in.	60 in.	24x30	37x38	1000	2-3 in.	400.00	Rapid
247	12 in.	60 in.	24x36	37x44	1200	3-3 in.	400.00	Rash
248	12 in.	60 in.	24x42	37x50	1400	3-3 in.	538.75	Ratify
249	12 in.	60 in.	24x48	37x56	1600	3-3 in.	580.00	Rave

See notes on pages 34 and 35.

All boilers tapped in rear for domestic coal and water back.

Sun Water Heater

32-INCH GRATE



PRICE LIST AND SIZES

Size	Size of Smoke Pipe	Height of Heater	Size of Grate	Floor Space	Radiation Supplied	Dimensions	Price	Code Word
532	12 in.	63 in.	32x30	46x38	2300	2-4 in.	\$512.00	Reach
532	12 in.	63 in.	32x30	46x44	2800	2-4 in.	595.00	Reach
822	12 in.	63 in.	32x42	46x50	3400	2-4 in.	700.00	Reach
1032	14 in.	63 in.	32x48	46x50	3900	3-4 in.	772.00	Remove
1032	14 in.	63 in.	32x54	46x62	4300	3-4 in.	825.00	Remove
1132	14 in.	63 in.	32x54	46x68	4900	3-4 in.	857.00	Remove
1232	16 in.	63 in.	32x54	46x74	4900	4-4 in.	902.00	Remove

See notes on pages 34 and 35.

All boilers tapped in rear for domestic coil or water back.

Sun Steam Boiler

32-INCH GRATE



PRICE LIST AND SIZES

Size	Size of Smoke Pipe	Height of Heater	Size of Grate	Water Line	Floor Space	Rad. Supplied	Tappings	Price	Code Word
320	12 in.	63 in.	32x30	51 in.	46x38	1500	2-4 in.	\$372.00	Refined
327	12 in.	63 in.	32x36	51 in.	46x44	1800	2-4 in.	640.00	Refined
328	12 in.	63 in.	32x42	51 in.	46x50	2100	2-4 in.	725.00	Refined
329	14 in.	63 in.	32x48	51 in.	46x56	2400	3-4 in.	805.00	Remove
3210	14 in.	63 in.	32x54	51 in.	46x62	2700	3-4 in.	882.00	Remove
3211	16 in.	63 in.	32x54	51 in.	46x68	3000	3-4 in.	944.00	Remove
3212	16 in.	63 in.	32x54	51 in.	46x74	3250	4-4 in.	994.00	Remove

See notes on pages 34 and 35.

All boilers tapped in rear for domestic coil or water back.

Illustrating Arrangement of Flues

24-INCH AND 32-INCH GRATE



Showing smoke box, check damper and nipple connections.



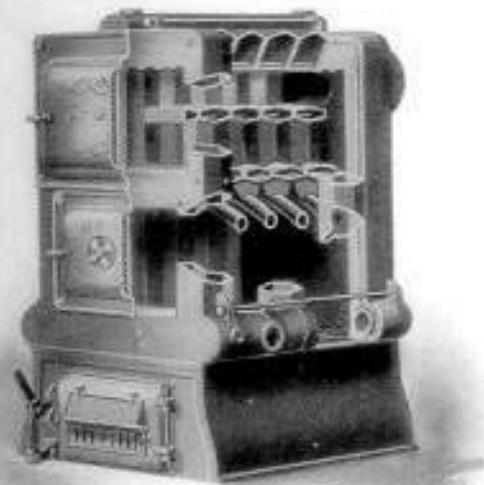
Internal view with front removed



Grate and base

Illustrating Arrangement of Flues

24-INCH AND 32-INCH GRATE



DESCRIPTION

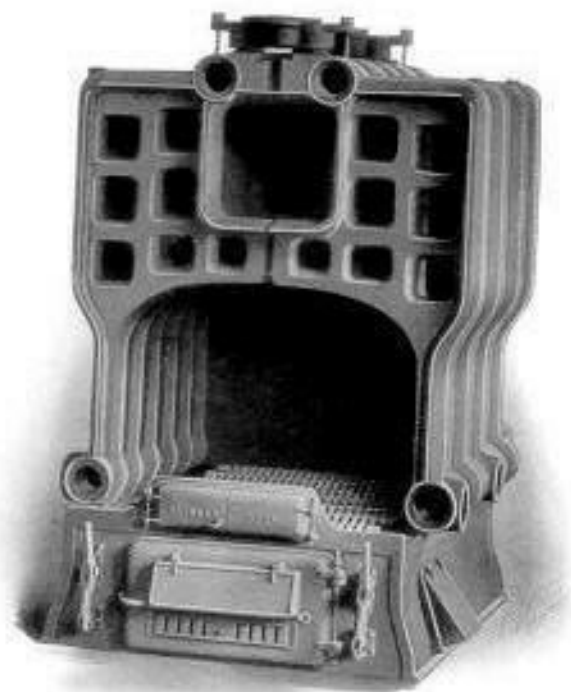
THE sections of these Boilers are put together with malleable push nipples, and the bolts that hold the sections together are all outside; therefore, they cannot be affected by expansion and contraction. The grates used in this series of Boilers are of a very simple and durable pattern, being made to rest on the independent base so that the sections are not in any way affected by the shaking of the grates. Any bar can be taken out and replaced by another without disturbing the remaining bars, or in any way changing the Heater. Though the dimensions of grates are given in the list, it is not absolutely necessary to use them full length of the Boilers, as listed. In many cases a direct advantage is gained by shortening up the fire-box.

The water passages in the sections of this series are very large and afford quick circulation for the liberation of steam, which is necessary to maintain a steady water line in a steam boiler. The fire-box and the upper part of the flues are corrugated, thus giving an additional amount of self-cleaning surface over the hottest part of the fire and heated gases.

All parts of the sections in these Boilers are heating surfaces of the most effective kind, and we guarantee its heating capacity equal to any sectional Boiler on the market, of the same size fire-box and section. The ash pits in these Boilers are large and deep enough to prevent the grates burning out, as so often happens in house heating Boilers. This is in every sense a return flue safety sectional Boiler, and one that any engineer can use with confidence that it will do all the work needed for any possible want.

Sun Heater

36-INCH GRATE



Showing arrangement of flues, front section removed

DESCRIPTION

THIS series is made similar to series A. Each section is in halves which are connected together with header on top. This header runs the full length of Heater and forms a Steam Drum, which helps the efficiency of the boiler and assures a steady water-line. The grate surface is well proportioned to the fire and the surface. The flues are large, making them easy to clean, large water ways; large clinker floor; rocking and crushing grate; deep fire pot, sections are small and easy to handle. An illustrated card is sent with each Heater giving instructions how to set it up.

NON-CORROSIVE PUSH NIPPLE JOINTS

THIS method of connecting the sections of a Boiler or Radiator is the best to use, no matter how the question is considered. We further make the statement that this joint is now more universally used for high pressure steam work than either the flange or screw joint. All locomotive, marine and factory steam boilers are put together with a joint that is practically a PUSH NIPPLE JOINT. All boiler flues are expanded into the heads, and a joint is made by pressing both surfaces close together. This joint has been passed upon by the most skillful engineers, as a perfect joint. The only difference between the Expanded Joint and the Push Nipple Joint is that one is pressed out while the other is squeezed in. The fact that nearly all power boilers in use are now run at high pressure, from 150 to 250 pounds, settles the question as to the durability of such joints. All nipples are malleable iron.

Our Heater Ratings are conservative, as a close examination of our lists will easily demonstrate. All sizes of fire box, heating surface and floor space are clearly given, so that the engineer can use his own judgment in selecting the size boiler he requires.

We do not make plans for heating plants, as we have confidence in the ability of the heating trade to do this work for themselves, and as we are relieved of this burden, we can put these goods into the hands of the trade at the lowest price consistent with good work.

Taking this as a criterion, we have the unqualified endorsement of the largest houses in the country; in fact, we may justly say the products of THE UNITED STATES RADIATOR AND BOILER COMPANY are ubiquitous.

Sun Water Heater

46-INCH GRATE



PRICE LIST AND SIZES

No.	Size of Grate	Size of Smoke Pipe	Height of Heater	Flour Steam	Tapping Point and Return	Direct Water Radiation	Price for Water	Code Word
896	46x42	14 in.	75 in.	5x 5 1/2	2-5 in.	4450	\$ 362.00	Reactor
940	46x42	16 in.	75 in.	5x 6	2-5 in.	5200	354.00	Reactor
1046	46x42	16 in.	75 in.	5x 6 1/2	2-5 in.	5850	1044.00	Radiator
1146	46x48	18 in.	75 in.	5x 7 1/2	3-5 in.	6700	1134.00	Radiator
1246	46x48	18 in.	75 in.	5x 8	3-5 in.	7425	1224.00	Radiator
1346	46x48	20 in.	75 in.	5x 8 1/2	3-5 in.	8175	1314.00	Radiator
1446	46x54	20 in.	75 in.	5x 9 1/2	3-5 in.	8925	1404.00	Radiator
1546	46x54	22 in.	75 in.	5x 10 1/2	4-5 in.	9725	1494.00	Radiator
1646	46x54	22 in.	75 in.	5x 11	4-5 in.	10400	1584.00	Radiator
1746	46x60	24 in.	75 in.	5x 11 1/2	4-5 in.	11125	1674.00	Radiator
1846	46x67	24 in.	75 in.	5x 12 1/2	5-5 in.	11875	1764.00	Radiator
1946	46x67	24 in.	75 in.	5x 13	5-5 in.	12625	1854.00	Radiator

See notes on pages 34 and 35.

All boilers tapped in rear for domestic coil or water back.

Sun Steam Boiler

46-INCH GRATE



PRICE LIST AND SIZES

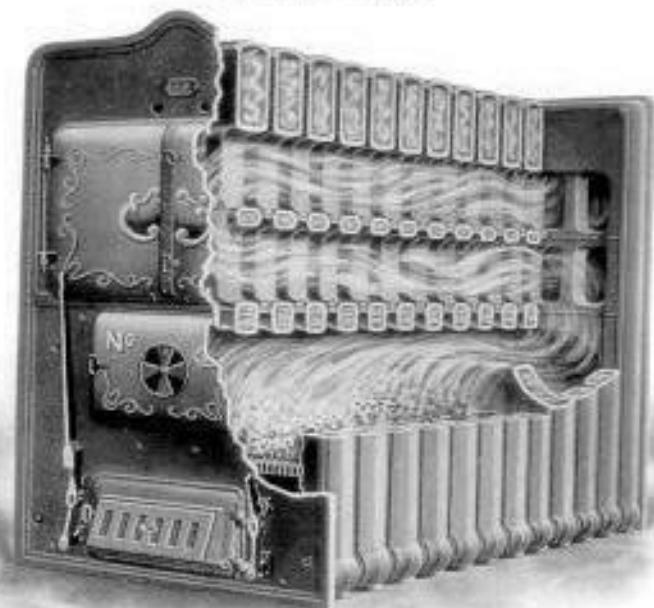
No.	Size of Grate	Size of Smoke Pipe	Height of Heaters	Height of Water Line	Floor Space in Feet	Tapping Point and Return	Direct Steam Rad.	Price for Steam with Trimmings	Code Word
468	46x42	14 in.	75 in.	54 in.	5x 5 1/2	2-5 in.	2700	\$ 882.00	Reactor
469	46x42	16 in.	75 in.	54 in.	5x 6	2-5 in.	3150	974.00	Reactor
4610	46x42	16 in.	75 in.	54 in.	5x 6 1/2	2-5 in.	3600	1064.00	Reactor
4611	46x48	18 in.	75 in.	54 in.	5x 7 1/2	3-5 in.	4050	1154.00	Reactor
4612	46x48	18 in.	75 in.	54 in.	5x 8	3-5 in.	4500	1244.00	Reactor
4613	46x48	20 in.	75 in.	54 in.	5x 8 1/2	3-5 in.	4950	1334.00	Reactor
4614	46x54	20 in.	75 in.	54 in.	5x 9 1/2	3-5 in.	5400	1424.00	Reactor
4615	46x54	22 in.	75 in.	54 in.	5x 10 1/2	4-5 in.	5850	1514.00	Reactor
4616	46x54	22 in.	75 in.	54 in.	5x 11	4-5 in.	6300	1604.00	Reactor
4617	46x60	24 in.	75 in.	54 in.	5x 11 1/2	4-5 in.	6750	1694.00	Reactor
4618	46x67	24 in.	75 in.	54 in.	5x 12 1/2	5-5 in.	7200	1784.00	Reactor
4619	46x67	24 in.	75 in.	54 in.	5x 13	5-5 in.	7650	1874.00	Reactor

See notes on pages 34 and 35.

All boilers tapped in rear for domestic coil or water back.

Showing Sectional View

ILLUSTRATING ARRANGEMENT OF FLUES
46-INCH GRATE



DESCRIPTION

THESSE Sectional Steam Boilers are composed of sections made in two pieces. Being so made they are easily handled, the largest piece weighing about 350 pounds. They can be taken into a building through any ordinary door or window. The two pieces are connected at the top by one push nipple, and the same bolts that hold the Boiler together, hold in place the flues of the section. The upper push nipples are 5 inches in diameter, and as one inch is used to each half section, there is a continuous 5-inch header running the entire length of the Boiler on the inside. The bolts used to hold the sections together, pass through cored openings, which keeps them away from fire and water, thus avoiding the danger of leaky joints due to expansion.

The grates used in these Boilers are very heavy, and are held in sockets fastened between the sections. Each bar is independent of all others, and can be removed with ease and replaced without disturbing the rest of the grate. The height of the ash-pit is 17 inches, which insures cool grates and perfect combustion, as well as room for working tools in cleaning out the ashes.

This Boiler, when used with the movable flue plates, is a return flue tube Boiler, and will be found as economical as any return flue Boiler in use. When used without the flue plates, it is a water tube Boiler, having all the advantages of the well known safety and economical type.

POINTS ABOUT SETTING SUN HEATERS

WITH each Heater sent out a card is furnished giving full directions for setting, but below we give a few of the salient points to be observed.

STEAM BOILERS

See that the center of the water gauge is set the height given in list for the Boiler being set up.

See that the draft in the chimney is good and that the size is as large (round or square) as that given in our list for the size Boiler being set up. Without a good strong draft, no Steam Boiler or Water Heater will work. If the draft is poor, a Heater of larger size will be necessary.

See that the grates are in good condition, and if complaint is made that the fire box is too long, it can be shortened and fire brick placed in the back of the fire box if desired.

In those Boilers supplied with movable flue plates, be sure that such plates are set properly, and as shown in the cut; it is also wise to cement these to make them tight when placed.

If the draft of the chimney is poor, the Heater will work better with the lower row of plates removed.

In preparing the foundation for the Boiler, set it as low as possible; the more space there is between the water line of the Boiler and the end of the main, the better it will work. In setting indirect radiation, this point needs careful attention. There should be not less than 18 inches, and 30 inches is better, between the bottom of stack and water line.

In putting the sections together, see that the push nipples are entered true. Wood blocks to go over the bolts, to act as washers, are sent with each Boiler, so each section can be drawn up right, or nearly so, before the next one is added. The wood blocks or washers can be sawed off the thickness of a section to add the next one and so on. Should a nipple be loose and leak after the sections are up, wrap a little fine, hard-thread around the nipple and draw up again.

All Boilers should be drawn up at the push nipples, each section should touch the adjacent one; neglect of this will leave too much space between the grate bars, or in Boilers with a separate base; if not drawn, the base will not be a good fit.

When the Boiler is all set up and tested, the space between the sections should be filled in with Boiler cement.

NOTES: Sun Boiler Ratings

STEAM BOILERS and Water Heaters are rated for actual radiation they will carry, including all flow pipes and risers.

All ratings are based on a standard of two pounds pressure at the boiler in Steam Boilers and standard temperature of 170° at the boiler in Water Heaters.

All ratings are based on the assumption that hard coal, stove size or larger, is used as fuel; if bituminous coal is used, it is better to use a Boiler one size larger to do the work.

In estimating the size of Boiler, a liberal allowance should be made for the radiation from the flow and return pipes and fittings; good practice puts this at from 20 to 25 per cent.

All ratings are for direct radiation. If direct-indirect is used, the Boiler should be 40 per cent. larger; and if indirect is used, 50 per cent. larger than that for direct radiation.

If the main flow and return pipes are not covered, the loss of heat per square foot is much greater than is given off by the radiators, and provision should be made accordingly.

Our Boiler ratings are absolutely guaranteed if the radiation in the building is figured properly and the piping between the boiler and radiators is properly proportioned and erected in accordance with good practice.

All Boilers must be attached to a chimney of sufficient size with a good draft, and must not be less (round or square) than given in the list for the Boiler specified; they must be of ample height above the highest part of the building, and such chimney must be used only for the Boiler, otherwise our guarantee is void.

Our Boilers are guaranteed only to the extent of furnishing new castings for any found defective in manufacture. We do not guarantee safe delivery in any case.

The listed ratings are conservatively made and in accordance with accepted standards, but on account of the varying conditions surrounding the installation of Boilers, great care is necessary on the part of the engineer to see that all conditions are properly provided for.

When a pipe coil is introduced in the fire box of a boiler, or a steam coil is placed in a tank for the purpose of heating water for domestic use, additional capacity must be provided when determining the size of Boiler required, as follows: Two square feet of radiation for hot water and 1½ square feet of radiation for steam for each gallon of water heated 50° per hour.

TANK CAPACITIES

The tank capacities of our Water Heaters represent the size of tanks which experience has shown that the Heaters will supply for ordinary family use. For any special requirements, proper capacities should be provided.

In all Water Heaters the tank capacity in gallons can be ascertained by adding 25 per cent. to the hot water radiating capacity.

ASBESTOS BOILER COVERING

Enough Asbestos Boiler Covering is sent with each Heater to stop up all joints between all sections and to make Boiler fire and smoke tight, but not to cover the Boiler. One bag will be supplied for six sections of the 20 and 24-inch Grate Boilers, one bag for four sections of the 32 and 36-inch Grate Boilers, and one bag for three sections of 48-inch Grate Boilers. If it is desired to cover the Boiler 1½ inches thick, three times this quantity will be necessary. Price of covering, \$3.50 per sack, subject to same discount as Boilers. Covering weighs one hundred pounds per sack.

VALUES OF FUEL

Hard coal, stove, egg and furnace sizes, is the standard on which our capacities are based. If other fuels are used, careful calculation is necessary to get the same results.

Soft coal requires a larger grate surface for the reason that it cakes together and the draft cannot get through it easily. It also requires more boiler surface for the reason that the soot of coal is harder to get off than the dust from hard coal, and soot prevents to some extent the passage of the heat to the water.

Pea coal or soft coal slack experiments on Power Boilers have shown that 50 per cent. more power can be developed with the same boiler when using anthracite furnace coal as against anthracite pea coal. This does not mean that furnace coal is more economical, but that with pea coal to get the same results a Boiler one-half larger is necessary. This is due to the fact that the pea and smaller sizes of coal burn slower and yield their heat less readily than the larger sizes of hard coal.

If the conditions are properly considered, however, there is no reason why one ton of pea coal should not give up as much heat as furnace sizes. A larger expanse in boiler power is all that is necessary to allow pea coal to be used.

Be careful to examine the chimney in a building you propose to attach the heater to; if it is not as large as the catalogue calls for as necessary for the Boiler needed, **DO NOT TAKE CHANCES—IT WILL NOT PAY.** It is well to remember that what is good draft for a stove or furnace may be a very poor draft for a Heater that may have to do the work of twenty stoves or six furnaces.

Every pound of coal requires a definite amount of air to burn it. It therefore requires ten times as much air to burn properly one hundred pounds of coal as it does to burn ten, and so on. Don't try to do what is impossible; a boy may sometimes be made to do a man's work, but a small chimney cannot possibly do the work of a large one.

WOOD BURNING

Several of our Boilers are well adapted for burning wood; hence parties in wood burning districts are requested to state their requirements and we will recommend the best type and size Heater to do the work.

Tank Heaters

ROUND FLAT TOP



No.	Diameter of Fire Pot	Tapping	Hot Water Supplied	Radiation Supplied	Height	Smoke Pipe	Price	Code Word
10-10A	10 in.	1 1/2 in.	75	50	22 in.	5 in.	\$31.75	Radi
10-12A	10 in.	1 1/2 in.	100	75	25 in.	5 in.	35.50	Revis
10-14A	10 in.	1 1/2 in.	125	100	28 in.	5 in.	39.25	Revis

OVAL FLAT TOP AND LAUNDRY STOVE



No.	Diameter of Fire Pot	Tapping	Hot Water Supplied	Radiation Supplied	Height	Smoke Pipe	Price	Code Word
10-10-B	10 in.	1 1/2 in.	75	50	31 in.	5 in.	\$29.75	Radi
10-12-B	10 in.	1 1/2 in.	100	75	34 in.	5 in.	33.50	Revis
10-14-B	10 in.	1 1/2 in.	125	100	37 in.	5 in.	37.25	Radi

The above has two 8-inch holes especially adapted for wash boiler.

Tank Heaters

SQUARE FLAT-TOP LAUNDRY STOVE



No.	Diameter of Fire Pot	Tapping	Hot Water Supplied	Radiation Supplied	Height	Smoke Pipe	Price	Code Word
10-10C	10 in.	1 1/2 in.	75	50	22 in.	5 in.	\$40.75	Revis
10-12C	10 in.	1 1/2 in.	100	75	25 in.	5 in.	44.50	Revis

ROUND FLAT TOP



No.	Diameter of Fire Pot	Tapping	Hot Water Supplied	Radiation Supplied	Height	Smoke Pipe	Price	Code Word
13-11D	13 in.	1 1/2 in.	150	120	31 in.	6 in.	\$43.00	Radi
13-15D	13 in.	1 1/2 in.	200	160	34 in.	6 in.	49.50	Radi
13-19	13 in.	1 1/2 in.	250	100	37 in.	8 in.	57.00	Radi

Tank Heaters

SQUARE FLAT-TOP LAUNDRY STOVE



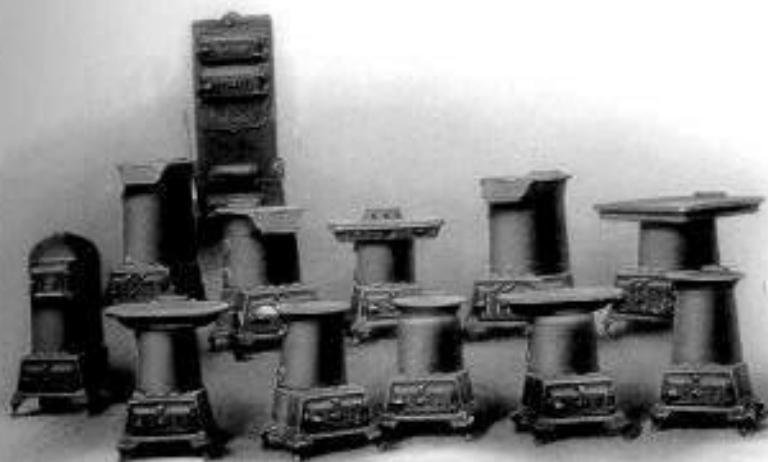
No.	Diameter of Fire Pot	Tapping	Hot Water Supplied	Radiation Supplied	Height	Smoke Pipe	Price	Cool. W.
13-11E	13 in.	1½ in.	150	120	31 in.	6 in.	\$52.00	Round
13-13E	13 in.	1½ in.	200	160	34 in.	6 in.	58.50	Round

ROUND WATER TOP



No.	Diameter of Fire Pot	Tapping	Hot Water Supplied	Radiation Supplied	Height	Smoke Pipe	Price	Cool. W.
10-9F	10 in.	2 in.	100	75	40 in.	8 in.	\$35.00	Round
10-11F	10 in.	2 in.	125	100	46 in.	8 in.	38.00	Round
10-13F	10 in.	2 in.	150	120	49 in.	8 in.	40.00	Round

Sun Tank Heaters



RADIATORS

OUR Radiators are designed on lines that cannot fail to be acceptable to architects and owners. The character of the ornamentation is such that it will harmonize better than any other with any character of interior decoration. We can furnish a Radiator to suit any requirements.

The Radiators are made in Single Column, Two Column and Three Column, also in Low Window or Seat Radiators, for either Steam or Hot Water. This feature is of great value to the architect or owner of a house, for it is possible to get a Radiator to suit any position whatever. No other makers of Radiators have so complete a line in this respect.

Our Radiators are constructed to hold about a pint of water to one foot of surface. This enables us to have a wider space between the sections for the circulation of air, and enables the Radiator to do more effective work in giving off heat, both by radiation and by contact of air. Our Valves, Tanks and other Heating Appliances are made of the best quality of materials, and our prices are as low as those of any other maker of equal merit. They are put together with malleable pipe nipples for steam or water, and malleable screw nipples for steam when called for.

SHIPMENTS

All Radiators are sold F. O. B. Works, with a carload rate of freight allowed when the rate of freight does not exceed fifteen cents per one hundred pounds. No freight allowance will be made on Radiators shipped from New York, Chicago or St. Louis.

Unless special instructions are given with orders, we will ship by the quickest and cheapest route known to us.

When we get a receipt from the Railroad Company or Carrier, our responsibility is at an end, and the purchaser must look to the Carrier for any damage to goods in transit.

All claims for deductions or corrections must be made within ten days after receipt of goods.

We will not accept returned goods unless our consent has first been obtained to the return of same, and then only on a discount of ten per cent from the purchase price, and the payment of all return charges. This is made necessary for the reason that when Radiators are returned the freight allowed on them, when first shipped, is lost, and must be deducted from their value; and in addition to this the sizes have to be changed to suit our new orders, which means re-assembling and re-testing before they can be shipped out again; hence the deduction of ten per cent.

ORDERS

In ordering goods by letter be sure that your wants are clearly stated, and each item carefully checked before order is sent. When ordering from a traveling salesman, the order should be written on a regular order form, and after all items are checked and found correct, it should be signed by the purchaser. The person signing such order should always retain a copy of it. Mistakes in ordering are costly to rectify after shipment is made.

We have a telegraph code for ordering goods by wire, which will be found in each boiler list, and one for Radiators and sentences, at the end of this book. All such orders will receive prompt attention.

Sincerely yours,

U. S. RADIATOR & BOILER CO.

Sun Single Column Radiator

FOR STEAM OR WATER



The above design is well adapted for small halls or bath rooms and flat buildings.
We can furnish this without legs, to be set on concealed brackets
like a wall radiator. See pages 60-61.

Sun Single Column Radiator

FOR STEAM OR WATER

No. of Sections	Length in Inches	HEATING SURFACE—SQUARE FEET		
		36 in. High 4 Sq. Ft. Per Section	36 in. High 2½ Sq. Ft. Per Section	36 in. High 2 Sq. Ft. Per Section
2	4	6	5	4
3	6	9	7½	6
4	8	12	10	8
5	10	15	12½	10
6	12	18	15	12
7	14	21	17½	14
8	16	24	20	16
9	18	27	22½	18
10	20	30	25	20
11	22	33	27½	22
12	24	36	30	24
13	26	39	32½	26
14	28	42	35	28
15	30	45	37½	30
16	32	48	40	32
17	34	51	42½	34
18	36	54	45	36
19	38	57	47½	38
20	40	60	50	40
21	42	63	52½	42
22	44	66	55	44
23	46	69	57½	46
24	48	72	60	48
25	50	75	62½	50
26	52	78	65	52
27	54	81	67½	54
28	56	84	70	56
29	58	87	72½	58
30	60	90	75	60

TAPPINGS

All Radiators containing 26 feet or under	1 in.
All Radiators containing above 26 feet, but not exceeding 60 feet	1½ in.
All Radiators containing above 60 feet, but not exceeding 112 feet	1¾ in.
All Radiators containing above 112 feet	2 in.

Width of Section, 5¼ inches; width across Feet 3¼ inches

Height from floor to bottom of hole, 1½ inch Tapping	4¾ in.
Height from floor to bottom of hole, 1¼ inch Tapping	4½ in.
Height from floor to bottom of hole, 1 inch Tapping	4¼ in.

If desired, the Sun Single Column Radiator can be made in the following patterns: Column or Curved Corner and Wall Radiator. For additional charges on specials, see page 77.

Sun 2-Column Radiator

FOR STEAM OR WATER



Sun 2-Column Radiator

LIST OF SIZES

No. of Sections	Length in. Per Sec.	HEATING SURFACE—SQUARE FEET							
		4 in. High 6 Sq. Ft. Per Sec.	6 in. High 9 Sq. Ft. Per Sec.	8 in. High 12 Sq. Ft. Per Sec.	10 in. High 15 Sq. Ft. Per Sec.	12 in. High 18 Sq. Ft. Per Sec.	14 in. High 21 Sq. Ft. Per Sec.	16 in. High 24 Sq. Ft. Per Sec.	18 in. High 27 Sq. Ft. Per Sec.
2	5	10	15	20	25	30	35	40	45
3	7½	15	22½	30	37½	45	52½	60	67½
4	10	20	30	40	50	60	70	80	90
5	12½	25	37½	50	62½	75	87½	100	112½
6	15	30	45	60	75	90	105	120	135
7	17½	35	52½	70	87½	105	122½	140	157½
8	20	40	60	80	100	120	140	160	180
9	22½	45	67½	90	112½	135	157½	180	202½
10	25	50	75	100	125	150	175	200	225
11	27½	55	82½	110	137½	165	192½	220	247½
12	30	60	90	120	150	180	210	240	270
13	32½	65	97½	130	162½	195	222½	250	282½
14	35	70	105	140	175	210	235	260	295
15	37½	75	112½	150	187½	225	247½	270	307½
16	40	80	120	160	200	240	260	280	320
17	42½	85	127½	170	212½	255	272½	290	332½
18	45	90	135	180	225	270	285	300	345
19	47½	95	142½	190	237½	285	297½	310	357½
20	50	100	150	200	250	300	310	320	370
21	52½	105	157½	210	262½	315	322½	330	382½
22	55	110	165	220	275	330	335	340	395
23	57½	115	172½	230	287½	345	347½	350	407½
24	60	120	180	240	300	360	355	360	420
25	62½	125	187½	250	312½	375	367½	370	432½
26	65	130	195	260	325	390	375	380	445
27	67½	135	202½	270	337½	405	387½	390	457½
28	70	140	210	280	350	420	395	400	470
29	72½	145	217½	290	362½	435	407½	410	482½
30	75	150	225	300	375	450	415	420	495
31	77½	155	232½	310	387½	465	427½	430	507½
32	80	160	240	320	400	480	435	440	520

TAPPINGS

ONE PIPE STEAM

Twenty-five square feet and under	1 in.
Above 25, but not exceeding 50 square feet	1½ in.
Above 50, but not exceeding 100 square feet	2 in.
Above 100 square feet	3 in.

TWO PIPE STEAM

Fifty square feet and under	1 in.
Above 50, but not exceeding 10 square feet	1½ in.
Above 10 square feet	2 in.

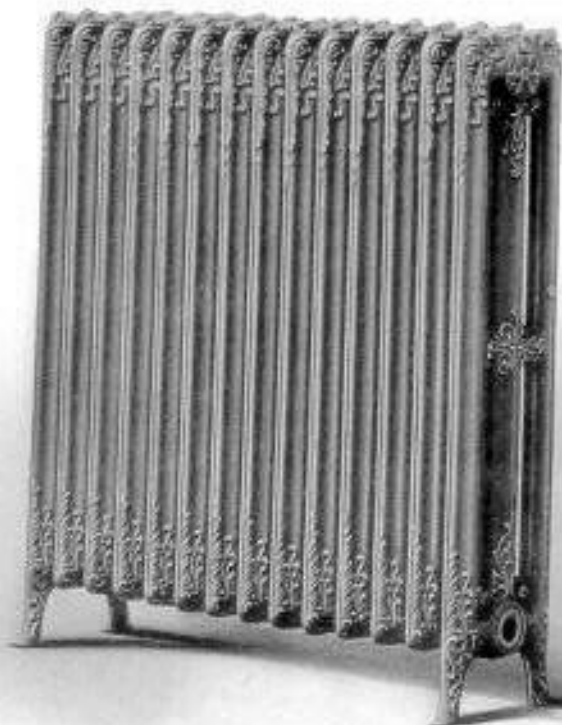
WATER

Fifty square feet and under	1 in.
Above 50, but not exceeding 10 square feet	1½ in.
Above 10 square feet	2 in.

Each section is 18 inches wide over all.
Height from bottom of opening to top is 18 inches.

Sun 3-Column Radiator

FOR STEAM OR WATER



Sun 3-Column Radiator

LIST OF SIZES

No. of Sections	Length	HEATING SURFACE—SQUARE FEET							
		46 in. High 6 Sq. Ft. Per Sec.	48 in. High 8 Sq. Ft. Per Sec.	50 in. High 10 Sq. Ft. Per Sec.	52 in. High 12 Sq. Ft. Per Sec.	54 in. High 14 Sq. Ft. Per Sec.	56 in. High 16 Sq. Ft. Per Sec.	58 in. High 18 Sq. Ft. Per Sec.	60 in. High 20 Sq. Ft. Per Sec.
2	6	12	16	20	24	28	32	36	40
3	7½	18	24	30	36	42	48	54	60
4	10	24	32	40	48	56	64	72	80
5	12½	30	40	50	60	70	80	90	100
6	15	36	48	60	72	84	96	108	120
7	17½	42	56	70	84	98	112	126	140
8	20	48	64	80	96	112	128	144	160
9	22½	54	72	90	108	126	144	162	180
10	25	60	80	100	120	140	160	180	200
11	27½	66	88	110	132	154	176	198	220
12	30	72	96	120	144	168	192	216	240
13	32½	78	104	130	156	182	208	234	260
14	35	84	112	140	168	196	224	252	280
15	37½	90	120	150	180	210	240	270	300
16	40	96	128	160	192	222	252	284	320
17	42½	102	136	170	204	234	264	296	340
18	45	108	144	180	216	246	276	308	360
19	47½	114	152	190	228	258	288	320	380
20	50	120	160	200	240	270	300	332	400
21	52½	126	168	210	252	282	312	344	420
22	55	132	176	220	264	294	324	356	440
23	57½	138	184	230	276	306	336	368	460
24	60	144	192	240	288	318	348	380	480
25	62½	150	200	250	300	330	360	392	500
26	65	156	208	260	312	342	372	404	520
27	67½	162	216	270	324	354	384	416	540
28	70	168	224	280	336	366	396	428	560
29	72½	174	232	290	348	378	408	440	580
30	75	180	240	300	360	390	420	452	600
31	77½	186	248	310	372	402	432	464	620
32	80	192	256	320	384	414	444	476	640

TAPPINGS

ONE PIPE STEAM

25 square feet and under	1" x 1/2"
Above 25, but not exceeding 60 square feet	1 1/2" x 1/2"
Above 60, but not exceeding 100 square feet	2" x 1/2"
Above 100 square feet	2 1/2" x 1/2"

TWO PIPE STEAM

25 square feet and under	1" x 3/4"
Above 25, but not exceeding 65 square feet	1 1/2" x 3/4"
Above 65 square feet	1 3/4" x 3/4"

WATER

20 square feet and under	1" x 1/2"
Above 20, but not exceeding 75 square feet	1 1/2" x 1/2"
Above 75 square feet	1 3/4" x 1/2"

Each section is 4 1/2 inches wide over all.
Height from center of opening to floor is 4 1/2 inches.

Star Radiator

FOR STEAM OR WATER



Star Radiator

LIST OF SIZES

No. of Sections	Length 2 1/2 in. Per Section	HEATING SURFACE—SQUARE FEET			
		28 in. High 7 Sq. Ft. Per Section	30 in. High 8 5/8 Sq. Ft. Per Section	30 in. High 4 Sq. Ft. Per Section	30 in. High 7 Sq. Ft. Per Section
3	5	14	10	8	6
4	7 1/2	21	15	12	9
5	10	28	20	16	12
6	12 1/2	35	25	20	15
7	15	42	30	24	18
8	17 1/2	49	35	28	21
9	20	56	40	32	24
10	22 1/2	63	45	36	27
11	25	70	50	40	30
12	27 1/2	77	55	44	33
13	30	84	60	48	36
14	32 1/2	91	65	52	39
15	35	98	70	56	42
16	37 1/2	105	75	60	45
17	40	112	80	64	48
18	42 1/2	119	85	68	51
19	45	126	90	72	54
20	47 1/2	133	95	76	57
21	50	140	100	80	60
22	52 1/2	147	105	84	63
23	55	154	110	88	66
24	57 1/2	161	115	92	69
25	60	168	120	96	72
26	62 1/2	175	125	100	75
27	65	182	130	104	78
28	67 1/2	189	135	108	81
29	70	196	140	112	84
30	72 1/2	203	145	116	87
31	75	210	150	120	90
32	77 1/2	217	155	124	93
33	80	224	160	128	96

TAPPINGS

ONE PIPE STEAM

Twenty five square feet and under	2	30
Above 25 but not exceeding 50 square feet	1 1/2	30
Above 50 but not exceeding 100 square feet	1 1/2	30
Above 100 square feet	2	30

TWO PIPE STEAM

Fifty square feet and under	1	3/4	30
Above 50 but not exceeding 75 square feet	1 1/2	30	30
Above 75 square feet	1 1/2	30	30

WATER

Fifty square feet and under	1	3/4	30
Above 50 but not exceeding 75 square feet	1 1/2	30	30
Above 75 square feet	1 1/2	30	30

Each section is 12 inches wide over all.

Weights from center of opening to floor is 35 inches on 32 and 30 inches high, and 5 inches on 28 and 26 inches high.

Solar Radiator

FOR STEAM OR WATER



Solar Radiator

LIST OF SIZES

No. of Sections	Length in. Per Section	HEATING SURFACE - SQUARE FEET			
		4 in. High 5 1/2 in. Ft. Per Section	20 in. High 4 5/8 in. Ft. Per Section	22 in. High 3 3/8 in. Ft. Per Section	20 in. High 2 3/8 in. Ft. Per Section
2	5	10	8	6 1/2	5 1/2
3	7 1/2	15	12	10	8
4	10	20	16	13 1/2	10 1/2
5	12 1/2	25	20	16 1/2	13 1/2
6	15	30	24	20	16
7	17 1/2	35	28	23 1/2	18 1/2
8	20	40	32	26 1/2	21 1/2
9	22 1/2	45	36	30	24
10	25	50	40	33 1/2	26 1/2
11	27 1/2	55	44	36 1/2	29 1/2
12	30	60	48	40	32
13	32 1/2	65	52	43 1/2	34 1/2
14	35	70	56	46 1/2	37 1/2
15	37 1/2	75	60	50	40
16	40	80	64	53 1/2	42 1/2
17	42 1/2	85	68	56 1/2	45 1/2
18	45	90	72	60	48
19	47 1/2	95	76	63 1/2	50 1/2
20	50	100	80	66 1/2	53 1/2
21	52 1/2	105	84	70	56
22	55	110	88	73 1/2	58 1/2
23	57 1/2	115	92	76 1/2	61 1/2
24	60	120	96	80	64
25	62 1/2	125	100	83 1/2	66 1/2
26	65	130	104	86 1/2	69 1/2
27	67 1/2	135	108	90	72
28	70	140	112	93 1/2	74 1/2
29	72 1/2	145	116	96 1/2	77 1/2
30	75	150	120	100	80
31	77 1/2	155	124	103 1/2	82 1/2
32	80	160	128	106 1/2	85 1/2

TAPPINGS

ONE PIPE STEAM

Twenty-Five square feet and under	1 in.
Above 25, but not exceeding 60 square feet	1 1/4 in.
Above 60, but not exceeding 100 square feet	1 1/2 in.
Above 100 square feet	2 in.

TWO PIPE STEAM

Fifty square feet and under	1 1/2 in.
Above 50, but not exceeding 90 square feet	1 3/4 in.
Above 90 square feet	1 3/8 in.

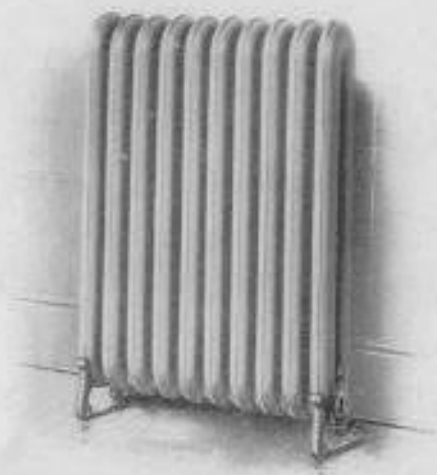
WATER

Fifty square feet and under	1 in.
Above 50, but not exceeding 75 square feet	1 1/4 in.
Above 75 square feet	1 1/2 in.

Each section is 8 1/2 inches wide over all.
Height from center of opening to floor is 4 1/2 inches.

Plain Solar Radiator

FOR STEAM OR WATER



This style is extensively used in public and office buildings
or where plain finish is preferred

Plain Solar Radiator

LIST OF SIZES

No. of sections	Length 2½ in. Per Section	HEATING SURFACE—SQUARE FEET			
		4 in. High 0.75 Sq. Ft. Per Section	28 in. High 4.50 Sq. Ft. Per Section	38 in. High 5.75 Sq. Ft. Per Section	28 in. High 2.50 Sq. Ft. Per Section
2	5	15	9	11½	5
3	7½	22½	13½	17½	7½
4	10	30	18	23½	10
5	12½	37½	22½	29½	12½
6	15	45	27	35½	15
7	17½	52½	31½	41½	17½
8	20	60	36	47½	20
9	22½	67½	40½	53½	22½
10	25	75	45	59½	25
11	27½	82½	49½	65½	27½
12	30	90	54	71½	30
13	32½	97½	58½	77½	32½
14	35	105	63	83½	35
15	37½	112½	67½	89½	37½
16	40	120	72	95½	40
17	42½	127½	76½	101½	42½
18	45	135	81	107½	45
19	47½	142½	85½	113½	47½
20	50	150	90	119½	50
21	52½	157½	94½	125½	52½
22	55	165	99	131½	55
23	57½	172½	103½	137½	57½
24	60	180	108	143½	60
25	62½	187½	112½	149½	62½
26	65	195	117	155½	65
27	67½	202½	121½	161½	67½
28	70	210	126	167½	70
29	72½	217½	130½	173½	72½
30	75	225	135	179½	75
31	77½	232½	139½	185½	77½
32	80	240	144	191½	80

TAPPINGS

ONE PIPE STEAM

Twenty five square feet and under	1 in.
Above 25, but not exceeding 50 square feet	1½ in.
Above 50, but not exceeding 100 square feet	2 in.
Above 100 square feet	3 in.

TWO PIPE STEAM

Fifty square feet and under	1 x ½ in.
Above 50, but not exceeding 100 square feet	1½ x 1 in.
Above 100 square feet	2 x 1½ in.

WATER

Fifty square feet and under	1 x 1 in.
Above 50, but not exceeding 75 square feet	1½ x 1½ in.
Above 75 square feet	2 x 2 in.

Each section is 6½ inches wide over all.
Height from center of opening to floor is 4½ inches.

Imperial Radiator

FOR STEAM OR WATER



The most effective Radiator of its class.

Imperial Radiator

PRICE LIST AND SIZES

Feet	Length in Inches	HEATING SURFACE—SQUARE FEET				
		16 in. High 7 Sq. Ft. Per Section	22 in. High 8 Sq. Ft. Per Section	28 in. High 9 Sq. Ft. Per Section	34 in. High 10 Sq. Ft. Per Section	40 in. High 12 Sq. Ft. Per Section
5 1/2	14	14	18	20	24	28
6 1/2	18	18	24	26	30	36
7 1/2	22	22	28	30	36	42
8 1/2	26	26	32	34	40	48
9 1/2	30	30	36	38	44	52
10 1/2	34	34	40	42	48	56
11 1/2	38	38	44	46	52	60
12 1/2	42	42	48	50	56	64
13 1/2	46	46	52	54	60	68
14 1/2	50	50	56	58	64	72
15 1/2	54	54	60	62	68	76
16 1/2	58	58	64	66	72	80
17 1/2	62	62	68	70	76	84
18 1/2	66	66	72	74	80	88
19 1/2	70	70	76	78	84	92
20 1/2	74	74	80	82	88	96
21 1/2	78	78	84	86	92	100
22 1/2	82	82	88	90	96	104
23 1/2	86	86	92	94	100	108
24 1/2	90	90	96	98	104	112
25 1/2	94	94	100	102	108	116
26 1/2	98	98	104	106	112	120
27 1/2	102	102	108	110	116	124
28 1/2	106	106	112	114	120	128
29 1/2	110	110	116	118	124	132
30 1/2	114	114	120	122	128	136
31 1/2	118	118	124	126	132	140
32 1/2	122	122	128	130	136	144
33 1/2	126	126	132	134	140	148
34 1/2	130	130	136	138	144	152
35 1/2	134	134	140	142	148	156
36 1/2	138	138	144	146	152	160
37 1/2	142	142	148	150	156	164
38 1/2	146	146	152	154	160	168
39 1/2	150	150	156	158	164	172
40 1/2	154	154	160	162	168	176
41 1/2	158	158	164	166	172	180
42 1/2	162	162	168	170	176	184
43 1/2	166	166	172	174	180	188
44 1/2	170	170	176	178	184	192
45 1/2	174	174	180	182	188	196
46 1/2	178	178	184	186	192	200
47 1/2	182	182	188	190	196	204
48 1/2	186	186	192	194	200	208
49 1/2	190	190	196	198	204	212
50 1/2	194	194	200	202	208	216
51 1/2	198	198	204	206	212	220
52 1/2	202	202	208	210	216	224
53 1/2	206	206	212	214	220	228
54 1/2	210	210	216	218	224	232
55 1/2	214	214	220	222	228	236
56 1/2	218	218	224	226	232	240
57 1/2	222	222	228	230	236	244
58 1/2	226	226	232	234	240	248
59 1/2	230	230	236	238	244	252
60 1/2	234	234	240	242	248	256
61 1/2	238	238	244	246	252	260
62 1/2	242	242	248	250	256	264
63 1/2	246	246	252	254	260	268
64 1/2	250	250	256	258	264	272
65 1/2	254	254	260	262	268	276
66 1/2	258	258	264	266	272	280
67 1/2	262	262	268	270	276	284
68 1/2	266	266	272	274	280	288
69 1/2	270	270	276	278	284	292
70 1/2	274	274	280	282	288	296
71 1/2	278	278	284	286	292	300
72 1/2	282	282	288	290	296	304
73 1/2	286	286	292	294	300	308
74 1/2	290	290	296	298	304	312
75 1/2	294	294	300	302	308	316
76 1/2	298	298	304	306	312	320
77 1/2	302	302	308	310	316	324
78 1/2	306	306	312	314	320	328
79 1/2	310	310	316	318	324	332
80 1/2	314	314	320	322	328	336
81 1/2	318	318	324	326	332	340
82 1/2	322	322	328	330	336	344
83 1/2	326	326	332	334	340	348
84 1/2	330	330	336	338	344	352
85 1/2	334	334	340	342	348	356
86 1/2	338	338	344	346	352	360
87 1/2	342	342	348	350	356	364
88 1/2	346	346	352	354	360	368
89 1/2	350	350	356	358	364	372
90 1/2	354	354	360	362	368	376
91 1/2	358	358	364	366	372	380
92 1/2	362	362	368	370	376	384
93 1/2	366	366	372	374	380	388
94 1/2	370	370	376	378	384	392
95 1/2	374	374	380	382	388	396
96 1/2	378	378	384	386	392	400
97 1/2	382	382	388	390	396	404
98 1/2	386	386	392	394	400	408
99 1/2	390	390	396	398	404	412
100 1/2	394	394	400	402	408	416
101 1/2	398	398	404	406	412	420
102 1/2	402	402	408	410	416	424
103 1/2	406	406	412	414	420	428
104 1/2	410	410	416	418	424	432
105 1/2	414	414	420	422	428	436
106 1/2	418	418	424	426	432	440
107 1/2	422	422	428	430	436	444
108 1/2	426	426	432	434	440	448
109 1/2	430	430	436	438	444	452
110 1/2	434	434	440	442	448	456
111 1/2	438	438	444	446	452	460
112 1/2	442	442	448	450	456	464
113 1/2	446	446	452	454	460	468
114 1/2	450	450	456	458	464	472
115 1/2	454	454	460	462	468	476
116 1/2	458	458	464	466	472	480
117 1/2	462	462	468	470	476	484
118 1/2	466	466	472	474	480	488
119 1/2	470	470	476	478	484	492
120 1/2	474	474	480	482	488	496
121 1/2	478	478	484	486	492	500
122 1/2	482	482	488	490	496	504
123 1/2	486	486	492	494	500	508
124 1/2	490	490	496	498	504	512
125 1/2	494	494	500	502	508	516
126 1/2	498	498	504	506	512	520
127 1/2	502	502	508	510	516	524
128 1/2	506	506	512	514	520	528
129 1/2	510	510	516	518	524	532
130 1/2	514	514	520	522	528	536
131 1/2	518	518	524	526	532	540
132 1/2	522	522	528	530	536	544
133 1/2	526	526	532	534	540	548
134 1/2	530	530	536	538	544	552
135 1/2	534	534	540	542	548	556
136 1/2	538	538	544	546	552	560
137 1/2	542	542	548	550	556	564
138 1/2	546	546	552	554	560	568
139 1/2	550	550	556	558	564	572
140 1/2	554	554	560	562	568	576
141 1/2	558	558	564	566	572	580
142 1/2	562	562	568	570	576	584
143 1/2	566	566	572	574	580	588
144 1/2	570	570	576	578	584	592
145 1/2	574	574	580	582	588	596
146 1/2	578	578	584	586	592	600
147 1/2	582	582	588	590	596	604
148 1/2	586	586	592	594	600	608
149 1/2	590	590	596	598	604	612
150 1/2	594	594	600	602	608	616
151 1/2	598	598	604	606	612	620
152 1/2	602	602	608	610	616	624
153 1/2	606	606	612	614	620	628
154 1/2	610	610	616	618	624	632
155 1/2	614	614	620	622	628	636
156 1/2	618	618	624	626	632	640
157 1/2	622	622	628	630	636	644
158 1/2	626	626	632	634	640	648
159 1/2	630	630	636	638	644	652
160 1/2	634	634	640	642	648	656
161 1/2	638	638	644	646	652	660
162 1/2	642	642	648	650	656	664
163 1/2	646	646	652	654	660	668
164 1/2	650	650	656	658	664	672
165 1/2	654	654	660	662	668	676
166 1/2	658	658	664	666	672	680
167 1/2	662	662	668	670	676	684
168 1/2	666	666	672	674	680	688
169 1/2	670	670	676	678	684	692
170 1/2	674	674	680	682	688	696
171 1/2	678	678	684	686	692	700
172 1/2	682	682	688	690	696	704
173 1/2	686	686	692	694	700	708
174 1/2	690	690	696	698	704	712
175 1/2	694	694	700	702	708	716
176 1/2	698	698	704	706	712	720
177 1/2	702	702	708	710	716	724
178 1/2	706	706	712	714	720	728
179 1/2	710	710	716	718	724	732
180 1/2	714	714	720	722	728	736
181 1/2	718	718	724	726	732	740
182 1/2	722	722	728	730	736	744
183 1/2	726	726	732	734	740	748
184 1/2	730	730	736	738	744	752
185 1/2	734	734	740	742	748	756
186 1/2	738	738	744	746	752	760
187 1/2	742	742	748	750	756	764
188 1/2	746	746	752	754	760	76

Sun Window Radiator



For price of specials see page 77.

Sun Dining Room Radiator



PRICE LIST AND SIZES

Number	Length in Inches	Heating Surface	Price for Water	Price for Steam
1	30	42½	\$50.00	\$46.00
2	35	52½	55.00	50.00
3	40	62½	60.00	54.00
4	45	72½	65.00	58.00
5	50	82½	70.00	62.00
6	55	92½	75.00	66.00
7	60	102½	80.00	70.00
8	65	112½	85.00	74.00
9	70	117½	90.00	78.00
10	75	114½	95.00	82.00

A useful device for warming plates, etc., and heating the room at the same time.
Ovens are all the same size, 24x11x16. Height 38½ in.
Made in Sun Three-Column Pattern only.

Aurora Flue Radiator

STEAM OR WATER



No. of Sections	Length of Radiator Inches	SQUARE FEET OF HEATING SURFACE						
		44% Inches High	37% Inches High	31% Inches High	28 Inches High	25% Inches High	21 Inches High	18% Inches High
2	5% 19%	10	13	11% 10	8% 7			
3	7 29	15	17% 15	12% 10%				
4	10% 38%	20	23 20	17 14				
5	14 48%	25	28% 25	21% 17%				
6	17% 58	30	34% 30	25% 21				
7	21 67%	35	40% 35	29% 24%				
8	24% 77%	40	46 40	34 28				
9	28 87	45	51% 45	38% 31%				
10	31% 96%	50	57% 50	42% 35				
11	35 106%	55	63% 55	46% 38%				
12	38% 116	60	69 60	51 42				
13	42 125%	65	74% 65	55% 45%				
14	45% 135%	70	80% 70	59% 49				

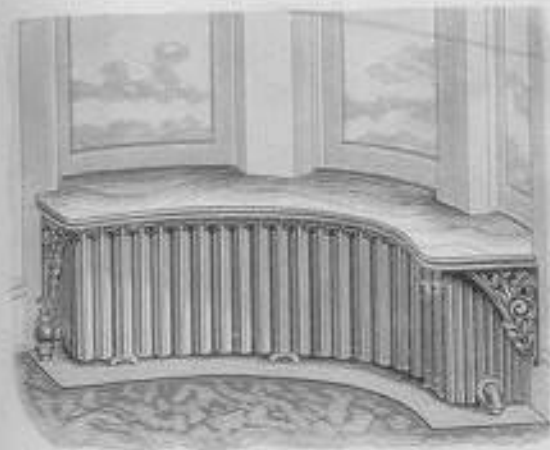
The length of Radiators given in the above table is from out to out of bushings.

Width of sections, 8% inches. Width at feet, 9% inches.

The above pattern is also made on 3-inch centers. 38 inches, 7 feet per section; all other heights in proportion.

Window Radiator

STEAM OR WATER



MADE TO FIT ANY CURVE

No. of Sections	Length of Radiator Inches	SQUARE FEET OF HEATING SURFACE						
		11 Inches Wide				8 Inches Wide		
		20% Inches High	18% Inches High	16% Inches High	12% Inches High	20% Inches High	18% Inches High	15% Inches High
2	4% 10	9 7% 6	7% 6% 5%					
3	7% 15	13% 11 9	11% 10 8%					
4	10% 20	18% 14% 12	15% 13% 11					
5	13% 25	22% 18% 15	18% 16% 13%					
6	15% 30	27% 22% 18	22% 20% 16%					
7	18% 35	31% 25% 21	26% 23% 19%					
8	21% 40	36% 29% 24	30% 27% 22					
9	24% 45	40% 33 27	35% 30 24%					
10	26% 50	45% 36% 30	37% 33% 27%					
11	29% 55	49% 40% 33	41% 36% 30%					
12	32% 60	54% 44 36	45 40 33					
13	35% 65	58% 47% 39	48% 43% 35%					
14	37% 70	63% 51% 42	52% 46% 38%					

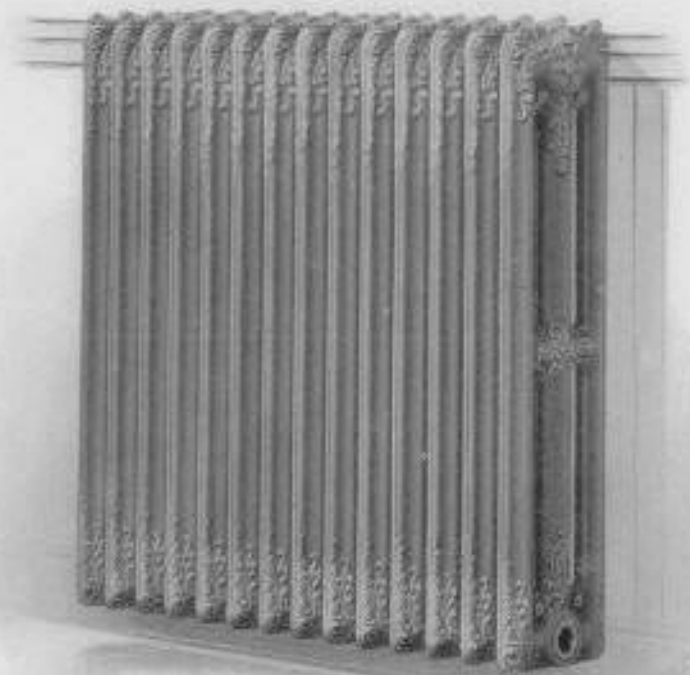
The length of Radiators given in above table is from out to out of bosses of straight Radiators, where tapped for feed and return.

We make Radiators of any length required. Add 2% inches for each additional section.

The heights given in above table are for Radiators without tops but with feet 1% inches high. These heights can be varied by using feet of different height. We always send 1% inch feet, unless otherwise ordered.

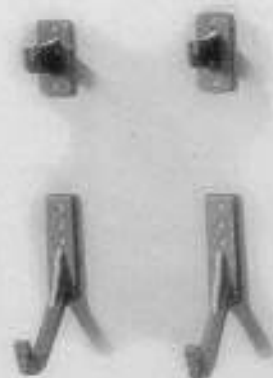
Sun 3-Column Radiator

SET ON WALL BRACKETS



We can furnish all Brackets with any style Radiator we make and all heights
See cut on page 61

System of Concealed Brackets for Wall Radiators



ADVANTAGES

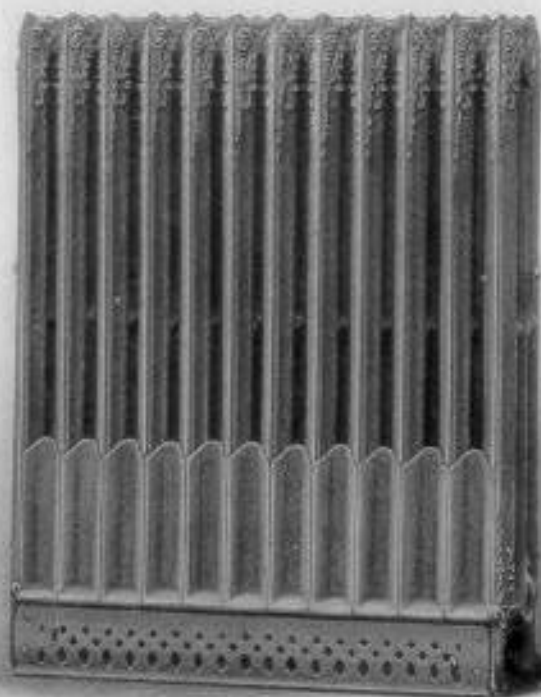
WE herewith present our system of Concealed Brackets for Wall Radiators, the advantages of which are easily apparent. By this method the engineer can place our Radiators in any position on the wall, thereby securing harmony and effect. This mode also does away with one of the greatest objections a house-keeper has to Radiators—that they cannot be swept under, and the carpets have to be cut to fit under them, etc.

As the above illustration denotes, these Wall Brackets come in sets, each containing four parts—two upper and two lower. Brackets are made for the Sun Three Column, Sun Two Column, Sun Single Column, Solar Two Column, and Plain Solar.

A few of the following pages will show how this principle applies. In order to ascertain the cost of Wall Radiation, first refer to the pattern desired; then turn to page 77, which will give additional cost of Brackets.

Sun Direct-Indirect Radiator

STEAM AND WATER



The above illustration shows our Direct-Indirect Box Base. We can furnish this on both 2 and 3-Column Sun—also 26 inch and 38 inch Star, or plain 2-Column. For price, see list on page 77.

Sun Direct-Indirect Radiator

BASE DETACHED



PRICE LIST AND SIZES

Size of Radiator	Outside of Flange around Back Air Inlet for attaching Sheet Iron Duct to	Size of Radiator	Outside of Flange around Back Air Inlet for attaching Sheet Iron Duct to	Size of Radiator	Outside of Flange around Back Air Inlet for attaching Sheet Iron Duct to
5 Secs.	8 1/2 x 3 1/4	10 Secs.	17 1/2 x 3 1/4	14 Secs.	21 1/4 x 3 1/4
6 Secs.	8 1/2 x 3 1/4	11 Secs.	17 1/2 x 3 1/4	15 Secs.	21 1/4 x 3 1/4
7 Secs.	12 1/2 x 3 1/4	12 Secs.	21 1/4 x 3 1/4	16 Secs.	21 1/4 x 3 1/4
8 Secs.	12 1/2 x 3 1/4	13 Secs.	21 1/4 x 3 1/4	17 Secs.	21 1/4 x 3 1/4
9 Secs.	17 1/2 x 3 1/4				

PRICE OF THESE BASES, 50 CENTS PER SECTION

All Radiators of 18 or more sections may be fitted with two bases, one on either side of middle leg section; or a small base may be placed under center of Radiator, using two intermediate leg sections, one at either end of base. This applies to floor dampers also. In ordering, it should always be clearly stated which construction is wanted.

A small box can also be used in a long Radiator, and a full length front panel may be used to give the Radiator a presentable appearance. Care should be taken in writing an order for these goods.

Wall Box for Direct-Indirect Radiator



PRICE LIST AND SIZES

For Direct-Indirect Bases	From 5 to 6 Sections inclusive	From 7 to 8 Sections inclusive	From 9 to 11 Sections inclusive	From 11 to 12 Sections inclusive
Size for opening in brick work	8 1/2 x 5	12 1/2 x 5	17 1/2 x 5	21 1/2 x 5
Size of collar for galvanized iron . . .	8 1/2 x 3 1/4	12 1/2 x 3 1/4	17 1/2 x 3 1/4	21 1/2 x 3 1/4
List price, each, cast iron	\$2.00	\$2.50	\$3.00	\$3.50
List price, each, galvanized	3.00	3.50	4.00	4.50
List price, each, bronze face	4.00	5.50	7.00	8.50

The openings in Wall Boxes are uniform in size with those in bases.
A perfect device for letting in fresh air and keeping out snow or rain.

Radiator Floor Damper

For Direct-Indirect Fresh Air Openings Entering Under Floor



PRICE LIST AND SIZES

Sizes of Radiator Floor Damper	8 1/2x13 1/2	8 1/2x16	8 1/2x19	5 1/2x22 1/2	8 1/2x26	8 1/2x30	8 1/2x34
Area of fresh air opening, sq. in. . . .	18	20	34	45	65	85	100
Prices of floor damper	\$1.50	\$1.75	\$2.00	\$2.25	\$2.50	\$2.75	\$3.00

When ordering, be sure to specify proper size damper to correspond with Direct-Indirect Base wanted.

Aurora Flue Direct-Indirect



SIZES OF BOX BASE FOR DIRECT-INDIRECT

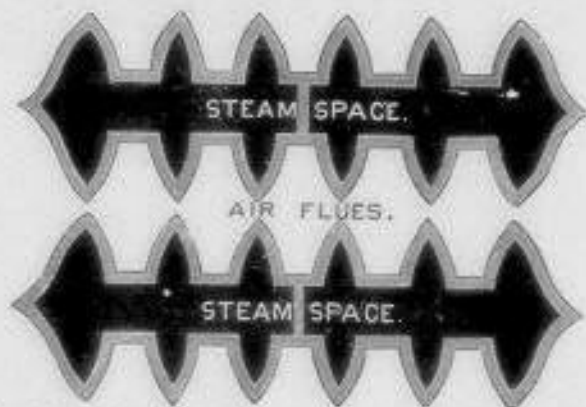
	Sq. In. of Cold Air Inlet
2-Section Base for 4-Section Radiator has	19
3-Section Base for 5-Section Radiator has	29
4-Section Base for 6-Section Radiator has	40
5-Section Base for 7-Section Radiator has	50
6-Section Base for 8-Section Radiator has	60
7-Section Base for 9-Section Radiator has	70
8-Section Base for 10-Section Radiator has	80
9-Section Base for 11-Section Radiator has	90
10-Section Base for 12-Section Radiator has	100

Aurora Flue Direct-Indirect



Base Box for Direct-Indirect or Ventilating Radiator

Showing air taken in through the wall. We also make this box base to take the air from below through the floor. In ordering please state which kind you wish.



Cross-sectional view of two sections of our Aurora Flue Radiator, showing air flues.

Sun Corner Radiator

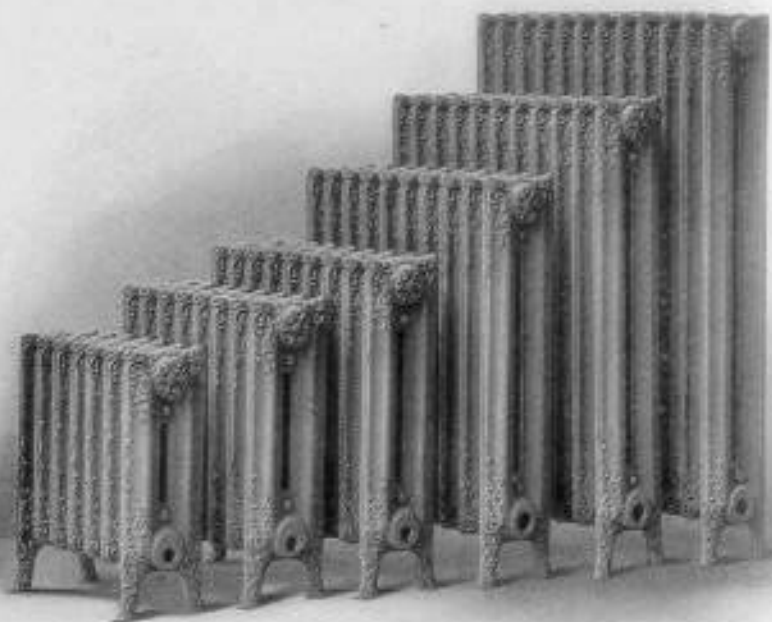
TWO OR THREE-COLUMN, STEAM OR WATER



DESCRIPTION

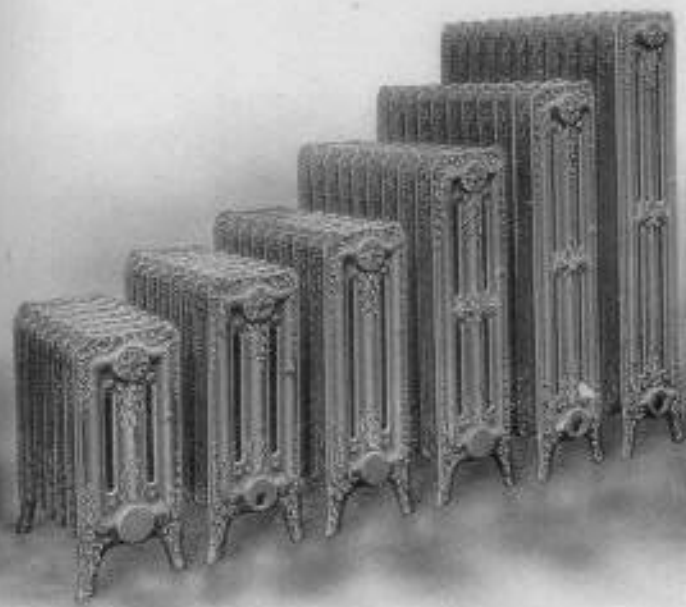
FOUR sections are needed to turn a corner, and as many regular sections may be added as required. This is one of our special patterns. In order to ascertain the list price, first refer to page 77. Made also in regular heights in Single Column, Sun Two and Three-Column, Solar Two-Column, Star, Imperial and plain Solar Radiator. Space occupied by the four corner sections each way from the corner of the room: 12 inches for Sun Two-Column Radiator; 16 1/2 inches for Sun Single-Column Radiator; 18 1/2 inches for Sun Three-Column Radiator; 12 inches for Solar Two-Column Radiator; 12 1/2 inches for Star Radiator; and 12 inches for Plain Two-Column Radiator. Space occupied by the six corner sections each way from the corner of the room: 20 1/2 inches for the Imperial Pattern. In ordering Curved or Corner Radiators, always state which is the feed end as you face the Radiator when in position.

Sun 2-Column Radiators

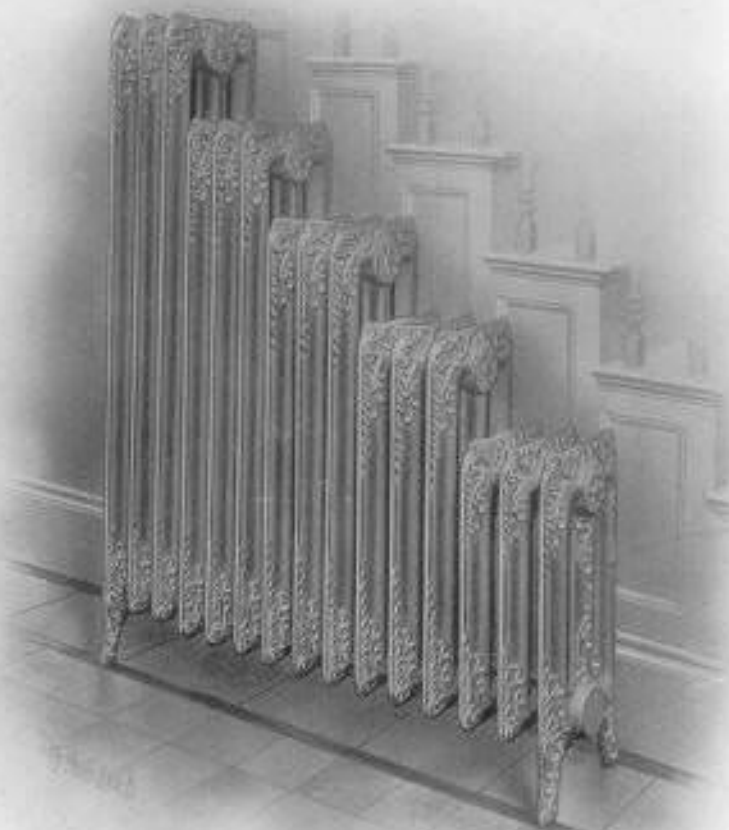


Sun 3-Column Radiators

FOR STEAM OR WATER



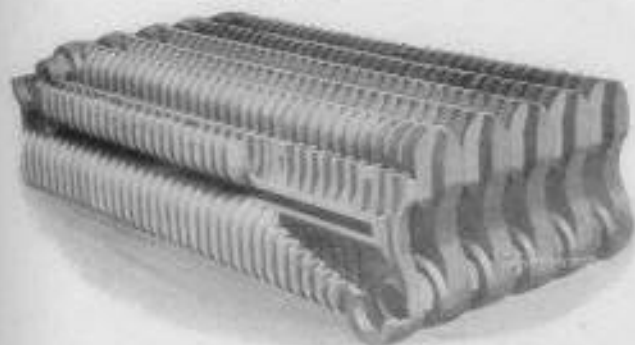
Sun Stairway Radiator



Note—We can make any of our styles in curves, corners, circles, angles or columns to specification and drawing. The smallest circle we can furnish is 16 sections. For price see page 77.

Champion Prime Surface

STEAM OR WATER



Length of section, 30 1/2 inches. Height of section, 9 1/2 inches. Height at bosses, 10 1/4 inches. Each section occupies 3 inches in stack and contains 10 feet of actual heating surface. This radiator is connected by 2-inch R. and L. threaded nipples with hex. centers.

Corry Indirect

STEAM OR WATER



Steam has nipples at one end only. Connected with 2-inch R. and L. hex. nipples. The above cut shows the radiator as connected. Length of section, 36 inches. Height of section, 9 inches. Height at bosses, 10 inches. Each section occupies 3 1/4 inches in stack and contains 15 feet of surface.

Aerial Indirect

FOR STEAM ONLY

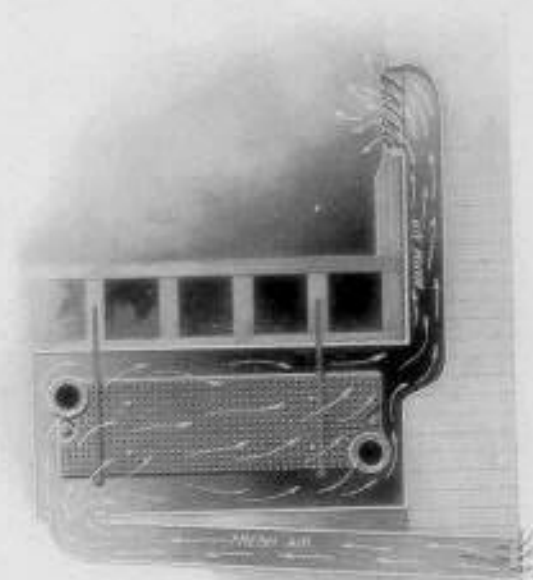


Connected with 3-inch R. and L. hex. nipples. Particularly adapted to heating schools, churches and other large buildings by the fan system. Height of section, 37 1/4 inches. Width of section, 9 inches. Each section occupies 3 1/4 inches in stack and contains 15 feet of surface.

All indirects are shipped in sections, unless ordered built in stacks, when an additional charge of one cent per foot will be made to cover the cost of assembling.

Indirect Radiator

ILLUSTRATING METHOD OF INSTALLATION

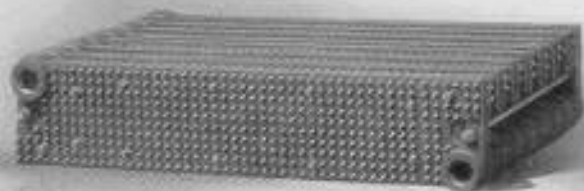


How the Pure Air is Heated

The above cut shows how the fresh air, from out doors, is taken in and heated before it passes into the room. Our Radiators are built on scientific principles.

Indirect Radiator

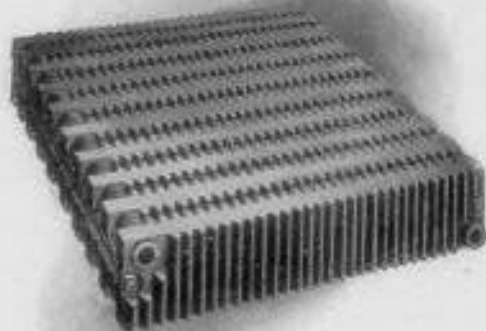
STEAM OR WATER



Made in 10, 15 and 20 ft. Sections
See list on page 77

Prime Surface Indirect Radiator

STEAM OR WATER



All surface is backed by water or steam. Twelve square feet to Section
See list on page 77

Floor and Ceiling Plates



BLACKMORE'S
PATENT



Size	Price Plain	Price Nickel	Size	Price Plain	Price Nickel
1/2 inch	\$0.14	\$0.25	1 1/4 inch	\$.20	\$.32
3/4 inch	.14	.25	1 1/2 inch	.24	.35
1 inch	.18	.28	2 inch	.28	.38

We can furnish, when desired, "Model" or "Beaton" Plates of same list

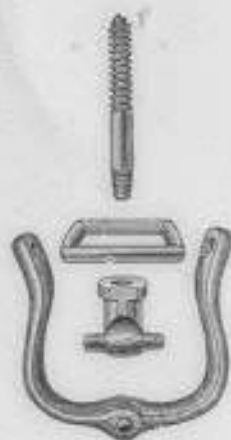
Pipe Hanger

BLACKMORE'S PATENT

SIMPLEST, STRONGEST, BEST. ONCE USED ALWAYS USED

PRICE LIST

Size	Price
1/2 in.	\$0.20
3/4 in.	.22
1 in.	.25
1 1/4 in.	.30
1 1/2 in.	.38
2 in.	.44
2 1/4 in.	.55
3 in.	.65
3 1/2 in.	.80
4 in.	1.15
5 in.	1.50
6 in.	2.05
7 in.	3.00
8 in.	3.90



The above hangers furnished with 4-inch lag screws. Longer lags can be furnished if wanted.

We can furnish when desired the "Imperial" Strap Hangers or common "Expansion" Pipe Hangers.

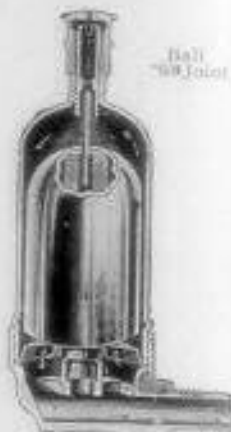
Ball Joint Royal Float Automatic Air Valve



WITH OR WITHOUT
LOCK AND SHIELD

NOISELESS IN
OPERATION

Best Material
Best Construction
Best Results



AT LAST A PERFECT VALVE

As shown	prices each \$1.00
With Lock Shield	" " 1.25
Extra Keys	" " .06



Straight and Angle Thermometers

SEPARABLE MERCURY BATH THERMOMETER

FOR Hot Water Heating. Unsurpassed for accuracy, sensitiveness, durability and practical construction. Will admit of quick repairs without any inconvenience and stopping and emptying of Heater or System.

This Thermometer will accurately indicate the temperature of the water in the hot water apparatus.

The parts are interchangeable, and the socket being in one piece, there can be no leaks. Each instrument has a mercury bath and is not filled with oil, which is injurious to the glass bulb. The exposed parts being of copper, they cannot rust or corrode.

Price, each \$3.00



ANGLE HOT WATER THERMOMETERS

For use on risers or circulating pipes

Price, each \$3.00

Altitude and Steam Gauges



This gauge will indicate accurately at the Heater the amount of water in the system, and is a convenient attachment which avoids the necessity of consulting the gauge glass in the tank.

Price, each \$4.00

Galvanized Expansion Tanks



Expansion Pipe

GALVANIZED STEEL—Tested at one hundred pounds pressure. Made of refined steel, riveted and caulked.

TAPPING—These Tanks are tapped top and bottom for one-inch overflow and expansion pipe, and on side for feed pipe.

PRICE LIST AND SIZES

Number	Size Inches	Capacity Gallons	Square Feet of Radiation	Price of Tank	Price of Gauge
0	10x20	8	250	\$ 7.50	\$1.50
1	12x20	10	300	8.00	1.50
2	12x30	15	500	9.00	1.50
3	14x30	20	700	12.50	1.50
4	16x30	26	950	14.00	1.50
5	16x36	32	1300	15.00	1.75
6	16x48	42	2000	16.50	1.75
7	18x60	66	3000	31.00	1.75
8	20x60	82	5000	37.00	1.75
9	22x60	100	6000	51.00	1.75

Asbestos Moulded Covering

For Low and High Pressure Steam Pipes



Wool-Felt Covering

3/8-X-Inch Thick—For Hot-Water Pipes



PRICE LIST AND SIZES

Inside Diameter of Pipe	Covering Per Foot	Elbows Each	Tees Each	Valves Each
3/8 in.	\$.15	\$.10	\$.20	\$.30
1/2 in.	.16	.20	.24	.36
1 in.	.18	.20	.24	.36
1 1/4 in.	.20	.20	.24	.36
1 1/2 in.	.22	.20	.24	.36
2 in.	.24	.24	.28	.40
2 1/2 in.	.27	.28	.32	.52
3 in.	.30	.32	.36	.64
3 1/2 in.	.34	.36	.40	.80
4 in.	.38	.40	.48	1.00
4 1/2 in.	.42	.48	.60	1.20
5 in.	.46	.60	.80	1.40
6 in.	.50	.80	1.00	1.68
7 in.	.55	1.00	1.20	2.00
8 in.	.60	1.32	1.60	2.40
9 in.	.65	1.68	2.00	...
10 in.	.75	2.00	2.40	...
12 in.	1.00
14 in.	1.20
18 in.	1.30

Use Asbestos Cement Felt for Fittings larger than 12 in. for all Flanged Fittings

Hot Water Radiator Valves

QUICK OPENING

With Union and By-Pass



WOOD WHEEL

WITH UNION

Rough body, plated all over

Size	3/4 in.	1 in.	1 1/4 in.	1 1/2 in.	2 in.
Price	\$2.85	\$3.65	\$5.05	\$7.10	\$10.85

WITHOUT UNION

Size	3/4 in.	1 in.	1 1/4 in.	1 1/2 in.	2 in.
Price	\$1.95	\$2.65	\$3.70	\$5.00	\$7.75



UNION ELBOWS

Size	3/4 in.	1 in.	1 1/4 in.	1 1/2 in.	2 in.
Price	\$2.00	\$2.50	\$3.20	\$4.00	\$6.00

Radiator Valves

JENKINS' DISC

Full Openings. Wood Wheel. With Union.
Rough body, nickel plated all over

WITH UNION

Size	3/4 in.	1 in.	1 1/4 in.	1 1/2 in.	2 in.
Price	\$3.80	\$4.75	\$6.40	\$8.10	\$13.10

WITHOUT UNION

Size	3/4 in.	1 in.	1 1/4 in.	1 1/2 in.	2 in.
Price	\$2.85	\$3.65	\$4.90	\$6.75	\$11.00



Corner Radiator Valves

LEFT-HAND VALVE

Size	3/4 in.	1 in.	1 1/4 in.	1 1/2 in.	2 in.
Price, right or left, Rough Body, Plated all over	\$4.20	\$5.25	\$7.05	\$8.95	\$14.45



Brass Double Gate Valves, Brass Globe and Angle Valves



DOUBLE GATE VALVES

Size	3/4 in.	1 in.	1 1/4 in.	1 1/2 in.	2 in.	2 1/2 in.
Price, rough body, plain, each	\$1.30	\$1.75	\$2.50	\$3.50	\$5.00	\$7.00

BRASS DISC GLOBE AND ANGLE VALVES

Size	3/4 in.	1 in.	1 1/4 in.	1 1/2 in.	2 in.	2 1/2 in.
Price, rough body	\$1.00	\$1.20	\$1.80	\$2.50	\$3.50	\$5.00

JENKINS' DISC GLOBE AND ANGLE VALVES

Size	3/4 in.	1 in.	1 1/4 in.	1 1/2 in.	2 in.	2 1/2 in.
Price, rough body	\$1.60	\$2.20	\$2.80	\$4.00	\$5.50	\$8.75

Specifications for Steam Heating Apparatus

The following Specification for the construction of a first class Low Pressure Gravity Return Steam Heating Apparatus is for

Boiler—Furnish and place in the most convenient position in cellar or basement number _____ **SUN SECTIONAL STEAM BOILER**, having a heating capacity equal to _____ feet of radiation, the same to be furnished with fire tools, cleaning brush and a suitable smoke pipe connection to chimney.

Boiler Fittings—The Boiler will be furnished with the following attachments: One brass bound steam gauge with shut-off cock and siphon, one safety valve, one water column with two gauge cocks, one glass water gauge with brass valves, brass air cock and guard rods, one automatic damper regulator and one blow-off cock, together with all pipes and fittings necessary to connect the same to Boiler.

Foundation and Smoke Flue—The owner of the building will furnish a suitable brick or concrete foundation for Boiler, also a chimney of sufficient capacity with a good draft.

Main Pipes and Risers—The main steam pipe is to be of ample size to carry all the Risers and Radiators attached to the system, and it is to be so graded that all water of condensation will flow freely back to the Boiler without noise. From the top of this main the various branches are to be taken to Radiators and Risers, the connections for which are to be so made that no traps are formed, and when horizontal runs occur they are to have a relief pipe to carry off all water of condensation.

Fittings and Pipe Hangers—All fittings used throughout the work are to be of heavy pattern cast iron, no union couplings are to be used. All pipes passing through floors and ceilings are to be finished with suitable floor or ceiling plates, all horizontal pipes in cellar or basement are to be supported on strong adjustable hangers of the Blackmore Pattern.

Radiators—Radiators are to be placed in the various rooms, as hereinafter specified. They are to be of Sun _____ Pattern and capable of heating the rooms in the coldest weather.

Floor	Rooms	No. and Height of Radiators	Square Feet of Radiation	Temp.

Indirect Radiation—The rooms for which indirect radiation is provided are to be heated from stacks placed in cellar or basement, enclosed in galvanized-iron chambers with proper joint for fresh air and a corresponding outlet for warm air, to be connected by galvanized pipes to the register in the room which the stack is intended to heat.

The Registers are to be of ample size, not less than specified, to have floor borders, and are to be set in register boxes. The pipes connecting the stacks and registers are to be so arranged that all fresh air coming in will be properly heated and conveyed without loss to its destination. In arranging indirect boxes, care is to be exercised in getting ample space for cold air under the stack, and a corresponding space for warm air over the stack; unless otherwise specified, this space is not to be less than twelve inches above and ten inches below the stack.

Radiator Valves—All Radiators are to be supplied with Composition Seat Radiator Valves, to be nickel-plated all over and to have polished wood wheels. They are also to have a nickel-plated air valve of approved design, with proper drip caps or tips.

Covering of Boiler and Pipes—Boiler is to be covered with special Wood Plastic Cement three-quarters of an inch thick, and all sides are to be smooth and so finished as to present an acceptable appearance. All exposed pipes in cellar or basement are to be covered with asbestos paper, hair felt and canvas, or with a good sectional covering of equal merit.

Painting and Bronzing—All Radiators and exposed pipes in rooms or halls are to be neatly painted or bronzed in desired colors.

Carpenter and Mason Work—All carpenter and mason work necessary for the placing of the apparatus is to be done by the owner of the building, except that which is provided for in the specifications of other contractors.

Workmanship and Materials—All work is to be done in a neat and substantial manner, and all materials are to be the best of their respective kinds. The apparatus is to be complete in all its parts, water is to be turned into the system, and a fire is to be kept in the Heater five hours, to see that all parts of the apparatus circulate properly and are free from leaks, before the owner is called upon to accept the work.

Finally—This Specification is intended to furnish a complete working apparatus, and the heating contractor is to see that every item is properly figured, as no extras will be allowed for anything that may be necessary to complete the work, even though it may not have been specially called for in this Specification.

Specification for Hot Water Heating Apparatus

The following Specification for the construction of a first class Water Heating Apparatus is for

Heater—Furnish and place in the most convenient position in cellar or basement number _____ **SUN WATER HEATER**, having a heating capacity equal to _____ square feet of radiation, the same is to be furnished with fire tools, cleaning brush and a suitable smoke pipe connection to chimney.

Foundation and Smoke Flue—The owner of the building will furnish a suitable brick or concrete foundation for Heater, also smoke flue of sufficient capacity with a good draft.

Water Supply and Blow-Off—A connection from water supply of the house is to be made to Heater through a suitable pipe with a stop-valve placed in a convenient position for operation. The blow-off cock is to be placed at the lowest part of the Boiler or piping, so as to drain out the system, and it is to be supplied with a hose nipple.

Heater Fittings—Heater will be supplied with one Altitude Gauge and one Thermoneter, to be placed in a prominent position on Heater for making observations.

Radiators—All Radiators are to be placed in the various rooms, as hereinafter specified. They are to be of Sun _____ Pattern, and capable of heating the rooms in the coldest weather.

Floor	Rooms	No. and Height of Radiators	Square Feet of Radiation	Temp.

Fittings—All fittings used throughout the work are to be of heavy pattern cast iron, no union couplings are to be allowed. All pipes passing through floors and ceilings are to be finished with suitable floor or ceiling plates, all horizontal pipes in cellar or basement are to be supported on strong adjustable hangers of the Blackmore Pattern.

Radiator Valves—All Radiators are to be supplied with Quick Opening Radiator Valve, to be nickel-plated all over and to have polished wood wheels. They are also to have a nickel-plated air valve of approved design, with proper key to operate the same.

Expansion Tank—Furnish and place in most convenient position above highest Radiator, one _____ gallon galvanized Expansion Tank, to have gauge glass, brass fixtures and guard rods. It is also to have an overflow pipe taken to roof or sink, as may be most convenient.

Painting and Bronzing—All Radiators and exposed pipes in rooms or halls are to be neatly painted or bronzed in desired colors. Heater and mains in cellar or basement are to have a coat of black Japan varnish.

Carpenter and Mason Work—All carpenter and mason work necessary for the placing of the apparatus is to be done by the owner, except as provided for in the specifications of other contractors.

Workmanship and Materials—All work is to be done in a neat and substantial manner, and all materials are to be the best of their respective kinds. The apparatus is to be completed in all its parts, water is to be turned into the system, and a fire is to be kept in the Heater five hours, to see that all parts of the apparatus circulate properly and are free from leaks, before the owner is called upon to accept the work.

Finally—This specification is intended to furnish a complete working apparatus, and the heating contractor is to see that every item is properly figured, as no extras will be allowed for anything that may be necessary to complete the work, even though it may not have been specially called for in this Specification.

For Indirect Radiation see this clause in the Steam Specification.