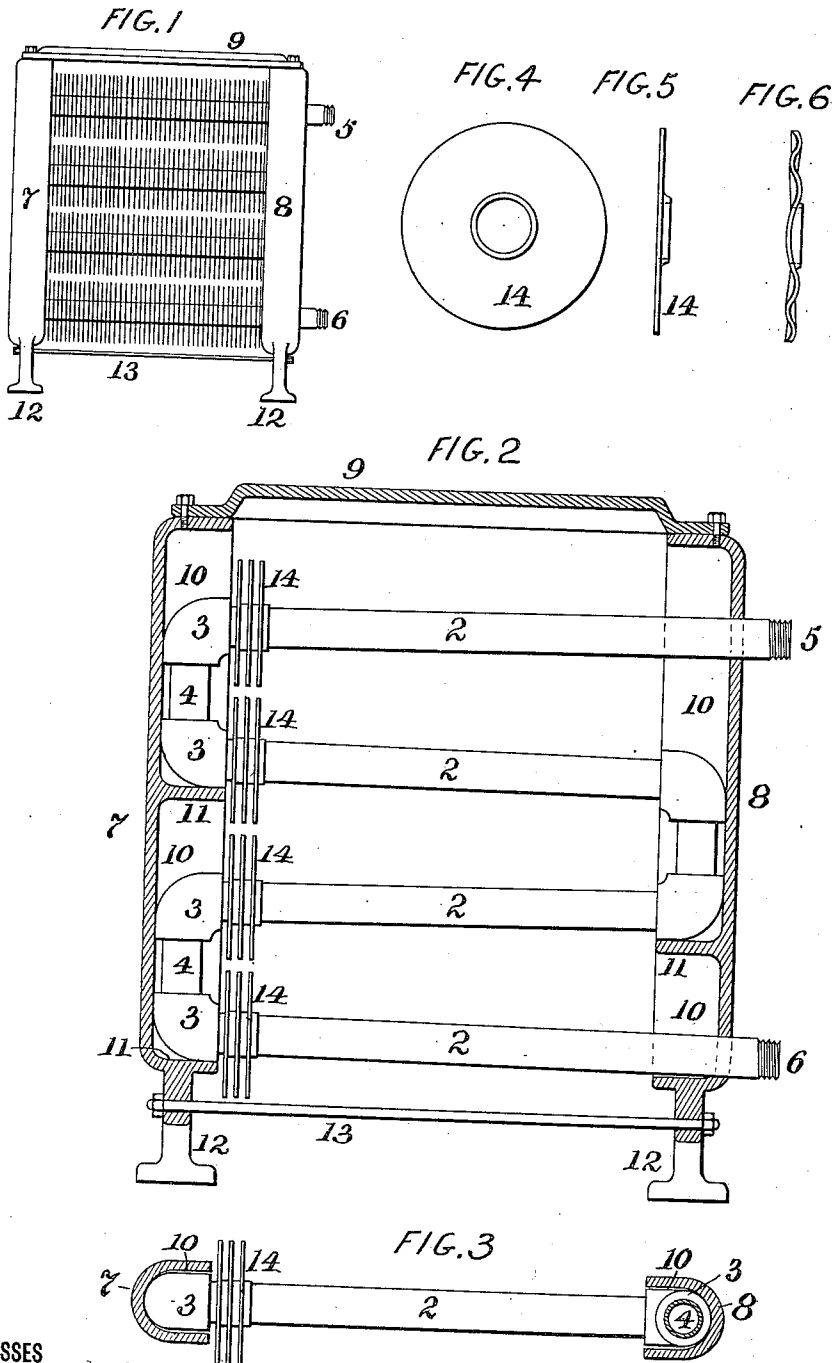


954,971.

J. KANE.
RADIATOR.
APPLICATION FILED OCT. 27, 1909.

Patented Apr. 12, 1910.



WITNESSES

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JOHN KANE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THOMAS H. RHODES
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AS RHODES BROS.

RADIATOR.

954,971.

Specification of Letters Patent.

Patented Apr. 12, 1910.

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To all whom it may concern:

Be it known that I, JOHN KANE, a citizen of the United States, and resident of the city and county of Philadelphia, State of Pennsylvania, have invented an Improvement in Radiators, of which the following is a specification.

My invention has reference to radiators, and consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

The object of my invention is to provide a construction of radiator in which the circulating tubular portions are formed of ordinary pipe and elbows combined with other castings and stampings which, when assembled, form a radiator of conventional shape and which shall embody lightness, cheapness, and efficiency.

My invention consists of certain features of construction which are fully set out in the following specification, and more particularly defined in the claims; and my improvements will be better understood by reference to the drawings in which:

Figure 1 is an elevation of a radiator embodying my invention; Fig. 2 is a sectional elevation of the same with part of the radiating disks removed; Fig. 3 is a sectional plan view of the same; Fig. 4 is a front view of one of the radiating disks removed; Fig. 5 is an edge view of the same; and Fig. 6 is an edge view of a modified form of radiating disk.

2 are a series of horizontal pipes arranged one above the other and these pipes are connected in series by looped portions formed by elbows 3 and connecting nipples 4. There may be as many of the parts 2 as desired, but where the ends 5 and 6 of the coils so formed are required to be at the same side of the radiator there will be required an even number of the pipes 2, but where the ends 5 and 6 are required to come out at opposite sides of the radiator, then there will be an odd number of said pipes 2, the particular number of said pipes being immaterial to the invention. At opposite sides of the radiator there are upright frames 7 and 8 which differ somewhat in shape, but in general configuration they are the same. These frames are U-shaped in cross section so as to provide recessed portions 10 to receive the elbows 3 and nipples

4, and while shielding them also prevents them being turned with respect to the horizontal tubes 2. The opposite frames 7 and 8 are connected at the top by a cap plate 9, and are connected at the bottom by a bolt 13. The lower portions of the frames 7 and 8 are provided with feet 12. The ends 5 and 6 of the pipes 2 extend through the walls of the frame 8 and are thereby supported. The bends formed by the elbows 3 are supported by shelves 11 within the frames 7 and 8, and these are so disposed that the pipes 2 are arranged on a slight incline alternately in opposite directions so as to properly drain the radiator when desired. The positive incline to the pipes 2 alternately in opposite directions to insure the draining of the pipes is secured through the manufacture of the coils in the following manner. It is recognized that nipples, such as 4, when threaded on an ordinary screw-cutting machine for putting threads on pipes are invariably provided with threads which are not absolutely at right angles to the axis of the nipples. This is due to the fact that the nipple cannot be rigidly held against some displacement in the screw cutting machine, and the thread being started at one point in the circumference, crowds the pipe slightly oblique so that the axis of the screw thread is not actually coincident with the axis of the pipe. This fact is well known to all steam fitters, and is a source of considerable trouble in general pipe fitting, but in the present invention advantage is taken of this peculiarity, and by reason of it the employment of the short nipples 4 between the elbows 3 enables the pipes 2 to be swung about the axis of the nipples 4 until the proper position is found in which their distant ends from the nipple will be found to diverge. This condition of adjustment can be accomplished with every joint in actual practice, and the applicant has taken special advantage of this condition and so introduced it into the make-up of his radiator that he is enabled to produce the inclination required in the pipes 2 without straining them by springing them into unnatural positions and without making any special pipe structures or fittings. As far as he is aware, no one has ever before utilized this manner of coupling and adjusting the elbows and nipples between two parallel horizontal pipes to give to them a

slight opposite drainage inclination. When the pipes are once screwed up and adjusted, the inclinations will be as shown in Fig. 2. The shelves 11 in one of the frames 7 are therefore staggered with respect to the shelves 11 in the other frame.

In view of the above construction, it is evident that the shelves 11 in the opposite side frames 7 and 8 have their upper surfaces in horizontal planes at a greater distance apart than the vertical distance between the two substantially horizontal pipe sections 2 adjacent to the nipples and elbows which are supported by said shelves through the elbows.

The radiator may be used in the form above described, but in practice I prefer to cover the horizontal pipes 2 between the upright frames 7 and 8 with radiating disks 14. These radiating disks 14 are preferably stamped from sheet metal and may be flat, as indicated in Figs. 4 and 5, or corrugated, as indicated in Fig. 6. They are threaded upon the pipes 2 before being secured to the elbows, and when the radiator is complete, these radiating disks will substantially fill the space between the frames 7 and 8, the top frame 8 and the bolt 13, as indicated in Fig. 1. This disk 14 also practically covers the open sides of the frames 7 and 8, so that their hollow construction is not readily apparent. While I have shown these disks 14 as circular, it is evident that they may be of any shape desired, but by making them circular, no special care is required as to their circumferential positions when placed upon the tubes. When these radiating disks are employed they are sleeved upon the pipes 2 before said pipes are placed in the frames 7 and 8. To improve the radiating effect of the radiator, I prefer to galvanize the radiating disks firmly upon the pipes 2 so that said disks become a rigid part of the piping, and in strong metallic connection therewith.

While I prefer to make the coils formed by the parts 2, 3 and 4 of straight pipes connected by elbows, it is evident that if so desired these coils may be of one continuous pipe bent into shape and the looped portions shielded and held in proper position by the inclosing side frames, but for simplicity of construction and economy, I prefer to form the said coils in the manner shown.

My improved radiator may be employed both for steam and hot water heating and I therefore do not restrict its use. I have shown the construction of radiator in the form which I have found it well adapted to commercial practice, and therefore while I prefer the construction as illustrated, I do not confine myself to the details, as these may be varied without departing from the spirit of the invention.

By the construction of my improved ra-

diator I have all of the radiating portions found in the piping and radiating disks formed of sheet metal and consequently adapted to produce the greatest possible radiation in a given time. Furthermore, the construction is inexpensive. As the looped portions formed by the part 4, 3 are firmly received within the recesses 10 of the side frames 7 and 8, it is evident that there is no possibility for the piping becoming unscrewed or twisted from hard usage, or during shipment, but on the other hand, are held in the most rigid manner so that the said frames 7 and 8 not only shield and protect the elbows and nipples from view, but also provide support for the pipe to cause it to incline sufficiently for draining purposes and to secure it against relative distortion.

Having now described my invention what I claim as new and desire to secure by Letters Patent, is:

1. In a radiator, the combination of a coil of pipe consisting of substantially horizontal sections connected by looped portions formed by elbows and vertical nipples screwed together, side frames having recessed portions directed toward each other for completely receiving and positively holding the elbows and nipples in vertical alinement and against relative displacement and also having direct integral supports for the looped portions to hold them in such positions that the connecting pipe sections between the side frames will be held slightly inclined, and means for holding the said side frames in position consisting of a cap plate connecting the frames at the top and a horizontal tension bolt connecting the frames at the bottom and for drawing them toward each other upon the coils.

2. In a radiator, the combination of a coil of pipe consisting of substantially horizontal sections connected by looped portions formed by elbows and vertical nipples screwed together, side frames having recessed portions directed toward each other for completely receiving and positively holding the elbows and nipples against relative displacement and also having transverse integral supports for the looped portions and the free ends of the pipes to hold them in such positions that the substantially horizontal connecting pipe sections between the side frames will be supported in slightly inclined position without strain, radiating plates sleeved upon the substantially horizontal pipes and shielding the recessed portions of the side frame and elbows and nipples from view, and means for holding the said side frames together at the bottom and for drawing them upon the coils.

3. In a radiator, the combination of a coil of pipe consisting of substantially horizontal sections connected by looped portions

formed by elbows and connecting nipples, radiating plates arranged upon the substantially horizontal pipe sections, side frames having recessed portions for completely receiving and holding the elbows and nipples against relative displacement and in which the open sides of the recesses and elbows and nipples therein are shielded from view by the radiating plates, and means for holding the said side frames in position upon the coil of pipe.

4. In a radiator, the combination of a coil of pipe consisting of substantially horizontal sections connected by looped portions formed by elbows and vertical nipples screwed together and permanently adjusted so that the substantially horizontal pipe sections are alternately slightly inclined in opposite directions, side frames having recessed portions directed toward each other

for completely receiving and holding the elbows and nipples and shielding them from view and also having transverse integral supports for the lower elbows of each looped portion of the coil of pipe, the upper supporting surfaces of the supports in the respective side frames being in horizontal planes separated a greater vertical distance apart than the distance apart of the ends of the substantially horizontal pipes adjacent to the elbows and nipples which they support, and connecting means for holding the side frames in position with respect to each other and the coils which they support.

In testimony of which invention, I hereunto set my hand.

JOHN KANE.

Witnesses:

R. M. HUNTER,
R. M. KELLY.