

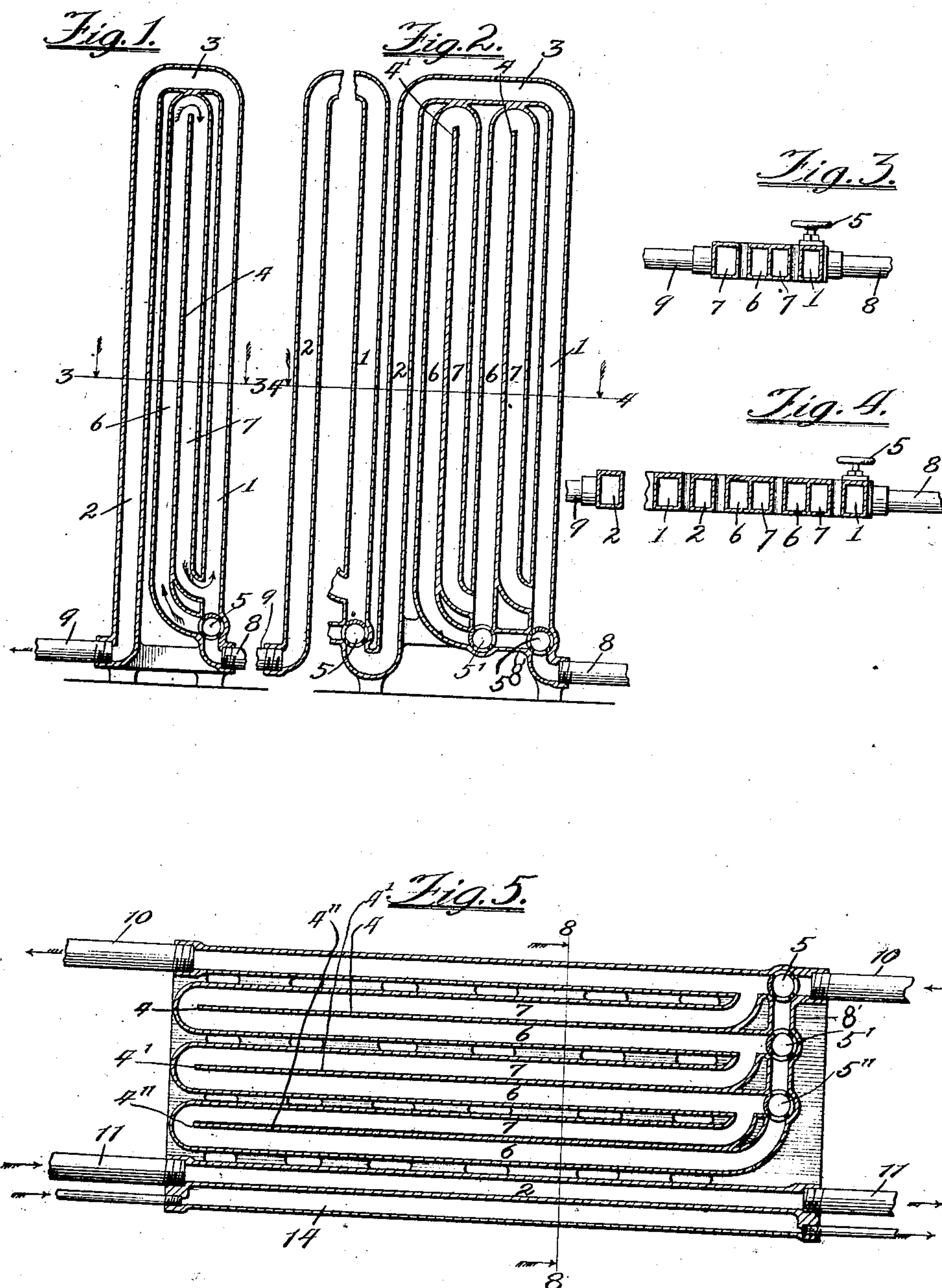
No. 877,011.

J. A. STROM.
RADIATOR.

PATENTED JAN. 21, 1908.

APPLICATION FILED AUG. 7, 1905.

3 SHEETS—SHEET 1.



Witnesses:

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3 SHEETS—SHEET 2.

Fig. 6.

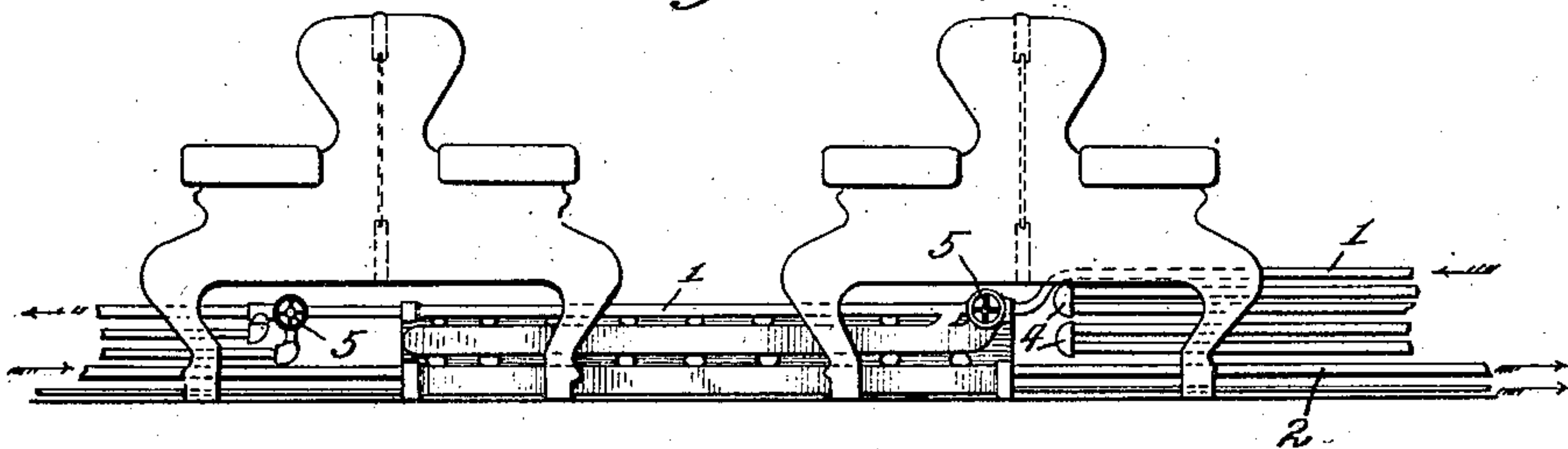


Fig. 7.



Fig. 8.

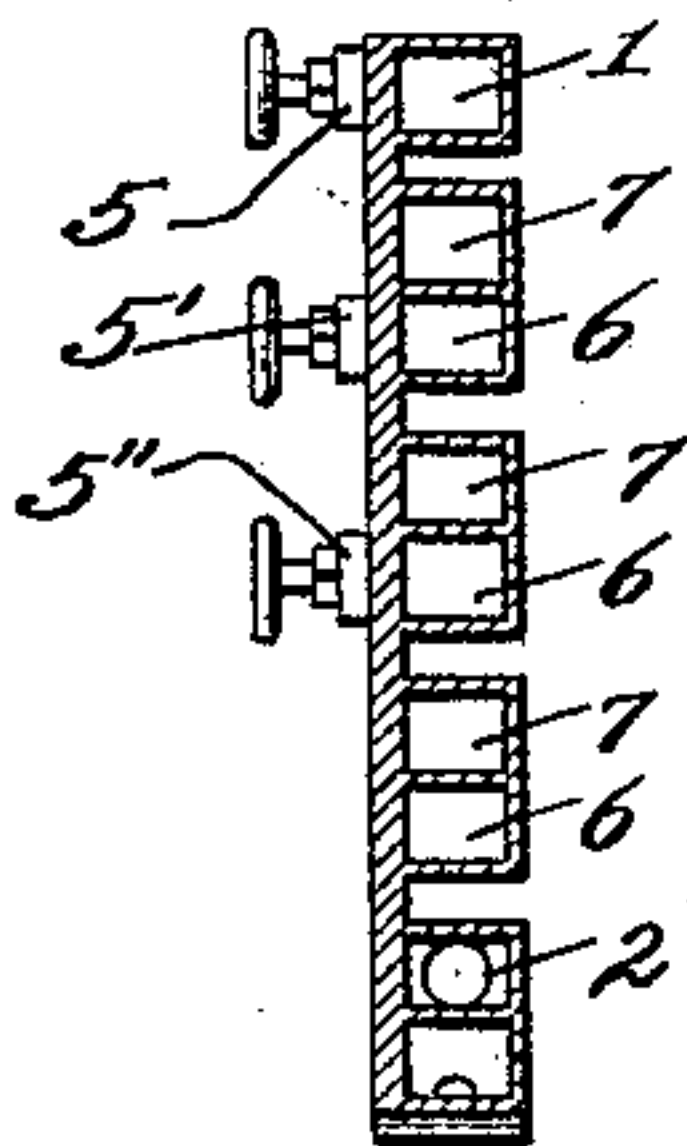


Fig. 9.

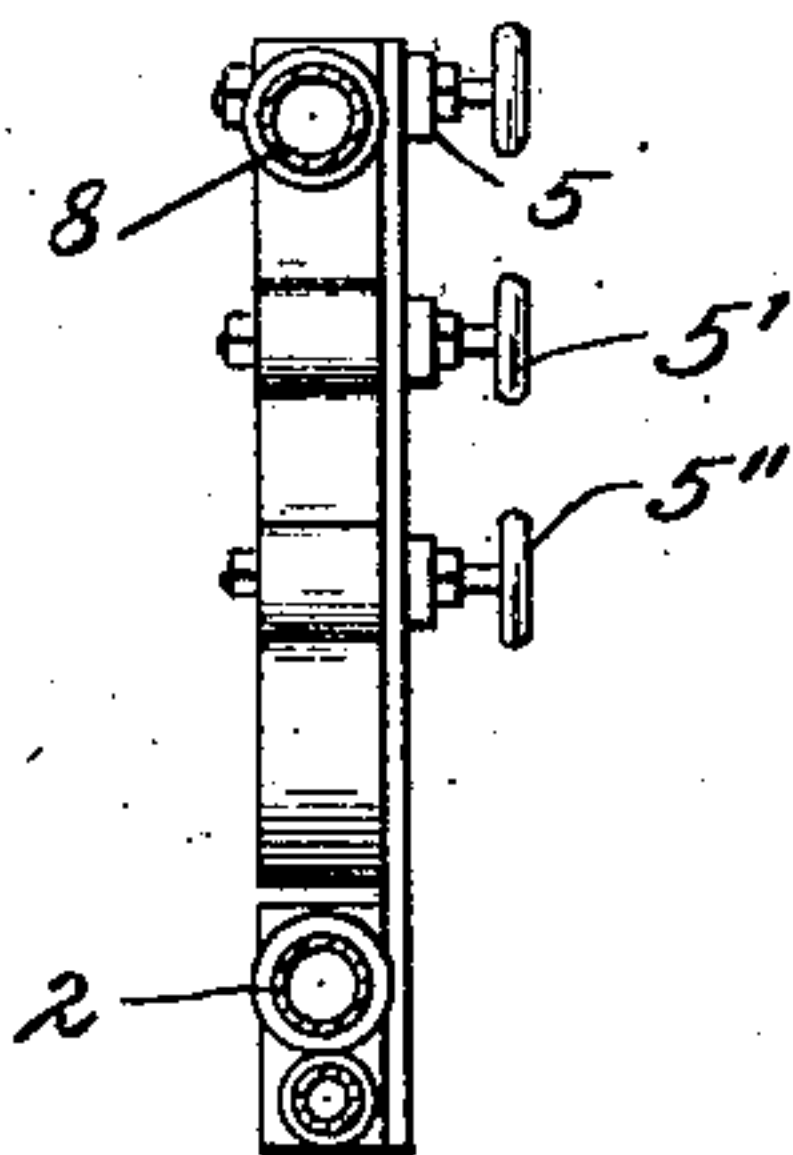
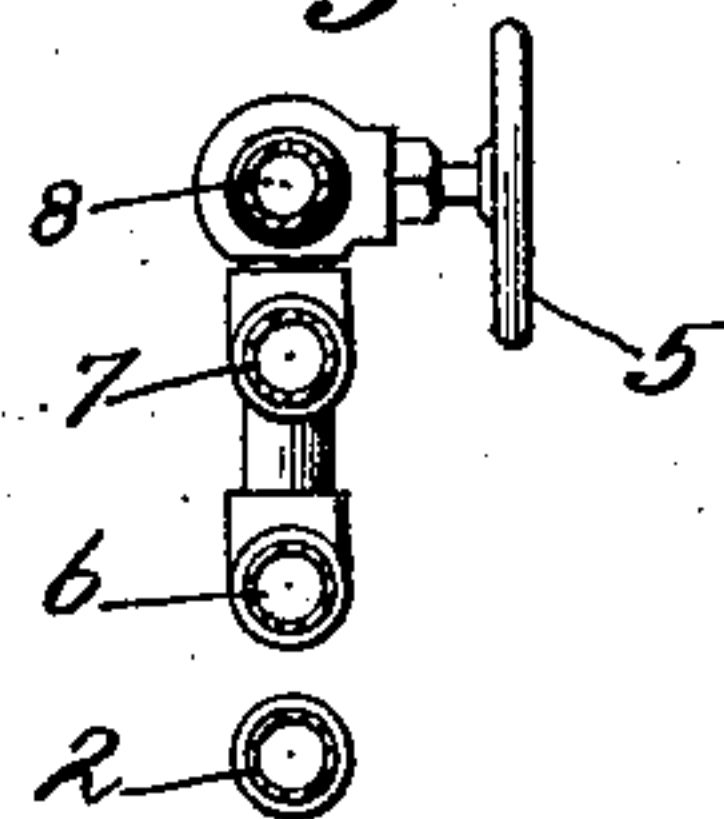


Fig. 10.



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3 SHEETS—SHEET 3.

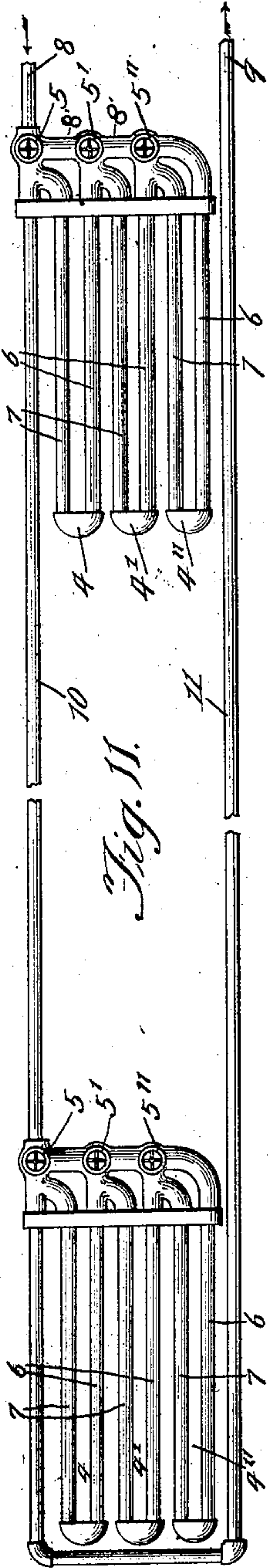


Fig. 11.

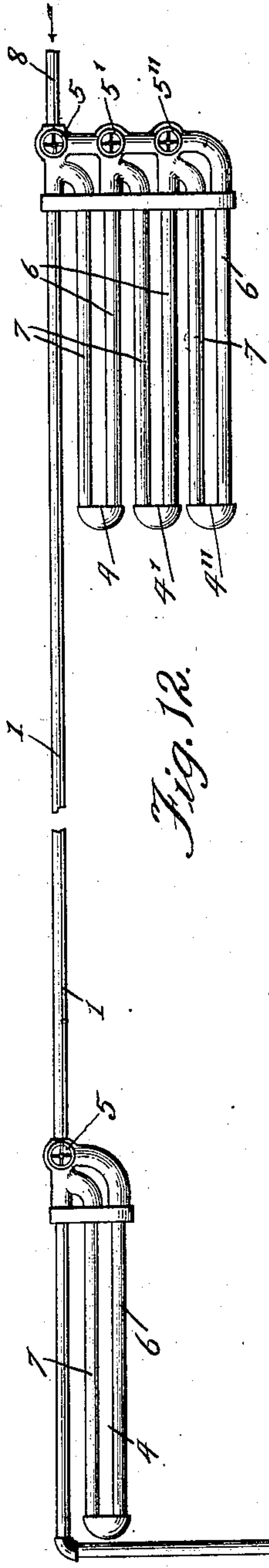
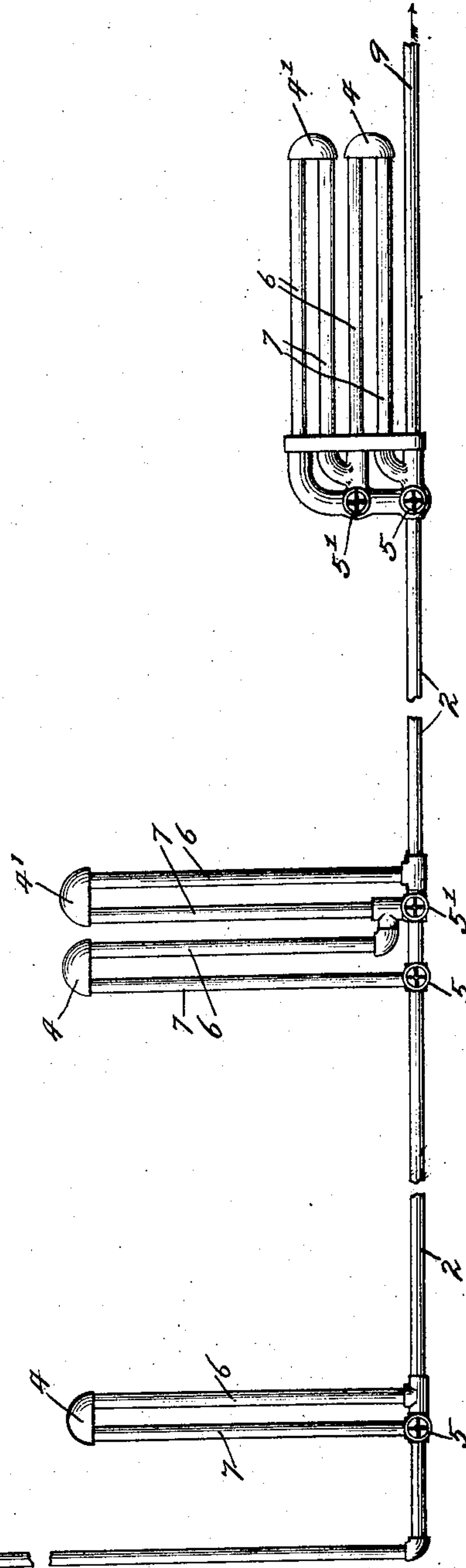


Fig. 12.



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UNITED STATES PATENT OFFICE.

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RADIATOR.

No. 877,011.

Specification of Letters Patent.

Patented Jan. 21, 1908.

Application filed August 7, 1905. Serial No. 273,014.

To all whom it may concern:

Be it known that I, JOHN A. STROM, a citizen of the United States, residing at Pullman, county of Cook and State of Illinois, have invented certain new and useful Improvements in Radiators, of which the following is a description.

My invention relates to that class of devices employed to regulate the temperature of a room or other space by the circulation of a heating or a cooling fluid.

The object of my invention is to provide a device of the kind described whereby such portions of the system in each room or space as desired may be made active by the circulating fluid without in any manner interfering with the circulation of the fluid in any other portion of the entire system.

To this end my invention consists in the novel construction, arrangement, and combination of parts, herein shown and described and more particularly pointed out in the claims.

In the accompanying drawings wherein like or similar reference characters indicate like or corresponding parts:—Figure 1 is a longitudinal vertical section of a small radiator. Fig. 2 is a similar section of a larger radiator. Fig. 3 is a section taken substantially on line 3—3 of Fig. 1. Fig. 4 is a section taken substantially on line 4—4 of Fig. 2. Fig. 5 is a longitudinal vertical section of a wall coil or radiator with a water heater upon the return pipe. Fig. 6 is an elevation of the preferred arrangement of my radiators in a railway car. Fig. 7 is an elevation of a slightly modified form of my device. Fig. 8 is a section taken substantially on line 8—8 of Fig. 5. Fig. 9 is an end elevation of the form shown in Fig. 5. Fig. 10 is a section taken substantially on line 10—10 of Fig. 7. Fig. 11 is an elevation of a modified form of my device, and Fig. 12 is an elevation of a system showing a modified arrangement of the several parts of my device.

In the form of my device shown in the drawings, each radiator consists of one or more practically independent units connected as preferred, each unit in the preferred form consisting of a substantially similar arrangement of pipes viz., a main loop comprising a receiving pipe 1, a discharge pipe 2, a connecting pipe 3, between pipes 1 and 2 which may in some cases be common to several units, and one or more auxiliary loops 4

each preferably provided with a valve, cock, or other controlling device 5.

It should be understood that the above terms in so far as they tend to indicate the direction of travel of the fluid through the units are merely relative and only indicate the preferred direction, as the fluid may travel in the opposite direction with equally as satisfactory results.

The auxiliary loops 4 each consist of two pipes 6 and 7 which may be termed flow and return pipes connected at one end, and at their opposite end connected to adjacent pipes of the unit so that the pipe 6 may be directly opened to the pipe 1 as shown, the connection being controlled by the valve or cock 5 so arranged at the junction of the pipes 1 and 6 that the pipe 1 may be closed forcing all the passing fluid first into the pipe 6, or if preferred, the entrance to the pipe 6 may be closed confining all the passing fluid to the pipe 1.

In units having only a single auxiliary loop 4 (Figs. 1 and 7) the pipe 7 of the loop 4 also opens directly into the pipe 1 near the valve 5 so that fluid entering the pipe 6 after passing the loop is again discharged into the pipe 1 beyond the valve 5.

Where more than one auxiliary loop 4 is provided, a conduit 8 communicates at one end with the main pipe and also with the flow portion of each loop, the return portion of one of the loops being in communication with the main pipe and the return portion of each succeeding loop being in communication with the flow portion of the preceding loop, a plurality of valves 5 being provided which are adapted and arranged to permit the flow of the heating medium through the main pipe only or to direct the flow through one or more of said loops in succession at will. See Figs. 2, 5, 11, and 12. It will be seen that with the valve 5 in the pipe 1 open to the first loop and the succeeding valves 5' and 5'' open to the last loop 4'', that fluid entering the pipe 1 will flow successively through the auxiliary loops 4'' 4' and 4 and thence into the pipe 1 again and that by operating the valves 5, 5' and 5'', the loops may be successively shut off until the fluid flows directly along the pipe 1 thus cutting out the radiating surface of the auxiliary loops if desired.

The units may be arranged in any desired manner in a heating or cooling system.

Single units may be employed, each provided with any desired number of auxiliary loops 4 and connected into the system by means of an inlet pipe 8 preferably attached at the end of the pipe 1 and an outlet pipe 9 attached to the end of the pipe 2, as shown in Figs. 1 and 7. In some cases it is more desirable to connect a series of units into what may be called a single radiator. In Fig. 2 a series of vertical units are thus connected and the pipes 8 and 9 connected to the first and last unit of the series.

In Fig. 5 the pipes 1 and 2 are extended at each end 10—10 and 11—11 for the attachment of any desired number of similar units as shown in Figs. 6 and 11 connection 3 in this case being common to the entire series. It should be noted that in this form also as shown in Figs. 6 and 11 the pipes 1 and 2 are continuous, and thus are, like the pipe 3, common to the several units. In this form therefore, each auxiliary loop or series of loops may be considered as a unit and the extended main loop as common to them all.

Obviously it is not essential that the pipe 2 should be positioned in the vicinity of the auxiliary loops at all, but may if preferred be placed at the opposite side of a building or upon another floor as shown in Fig. 12 and may have another series of auxiliary loops attached thereto if found convenient.

The main loop of each unit may be considered as merely a portion of the main conducting pipe of the system formed to suit the particular conditions under which the system is to be operated.

In the form shown in Fig. 6 a series of horizontal units are shown in a railway coach or sleeping car. By this arrangement the passengers of the section can control the temperature of that particular section to suit themselves without interfering in any manner with the passengers in the adjoining section and if desired the operating handle 12 of the valve 5 may be so placed that the porter or other attendant may operate the same without disturbing the occupants of the section.

In the form shown in Fig. 5 an additional pipe or chamber 14 is shown lying parallel with and in contact with pipe 2, obviously if the chamber 14 be filled with water it will tend to attain the temperature of the fluid passing in the pipe 2. Thus when the units form part of a heating system the heating fluid in returning after passing through the radiators may be employed for heating water.

In the form shown in Figs. 1, 2, and 5, and their sections, each unit is formed of one or more castings, while in the remaining figures the entire system is composed of pipes connected by suitable fittings.

In Fig. 7 the connections at the ends of the auxiliary loop 4 are formed by suitably uniting an ordinary three way cock or valve and suitable pipe fittings as ordinarily construct-

ed. In Figs. 6, 11, and 12, however the connections between the several auxiliary loops and the main loop is formed by employing a fitting 15 especially constructed for this purpose and provided with the necessary cocks 5, and means for attaching the same to the members of the main loop and the several auxiliary loops as shown.

The operation of my device is believed to be fully set forth in the foregoing description and further explanation is deemed unnecessary.

In the foregoing specification only the preferred form of my device is shown and described and it is obvious that various immaterial modifications may be made in my device without departing from the spirit of my invention, hence I do not wish to be understood as limiting myself to the exact form and construction shown.

What I claim as new, and desire to secure by Letters Patent is:—

1. In a radiating device, a single piece structure comprising a main loop consisting of a receiving portion 1, a discharge portion 2, the communicating conduit 3, of an auxiliary loop consisting of a flow portion 6 and return portion 7, the flow and return portions being in communication at one of their ends, and being offset at their opposite ends, the off set part of the flow portion communicating with the receiving pipe of the main loop, and the off set part of the return portion also communicating with the receiving pipe of the main loop, and a valve 5 in the said receiving pipe adapted and arranged to permit the flow of the heating medium through the main loop only or to direct the flow through the auxiliary loop and then through the main loop.

2. In an apparatus of the character described, the combination of a main loop comprising a receiving pipe a discharge pipe, and a connecting pipe, of an auxiliary loop arranged within the main loop comprising a flow portion and a return portion, a conduit communicating at one end with the receiving pipe of said main loop, and also communicating with the flow portion of the auxiliary loop, the return portion of the auxiliary loop being in communication with the main pipe, and a valve arranged and adapted to permit the flow of the heating medium through the main loop only, or to direct the flow through the auxiliary loop and thence through the main loop.

3. In an apparatus of the character described, oppositely disposed flow and return pipes connected to one another at one of their ends to form an auxiliary loop, the other end of the return pipe being offset and opening directly into the main loop including an elongated pipe extending parallel to the pipe of the auxiliary loop, the said main loop, and the free end of the flow pipe communicating with a transversely arranged conduit in com-

munication with the main loop, and controlling means in the main loop arranged and adapted to permit the heating medium to flow directly through the main loop only, or
5 through said auxiliary loop.

4. In an apparatus of the character described, the combination of an elongated receiving pipe, a plurality of loops each comprising flow and return portions connected at
10 one end, a conduit communicating with the other end of the receiving pipe and extending transversely of the respective loops and having communication with the flow portion of each loop, valves in said conduit, one for
15 each loop, and a communicating passageway between the return portion of one of said loops and the flow portion of the adjacent loop and between the return portion of the loop immediately adjacent the receiving pipe
20 and said receiving pipe.

5. In a radiating device the combination

of a main pipe, a plurality of loops each comprising a flow portion and a return portion, a conduit communicating with said main pipe and also communicating with the flow portion of each loop, the return portion of one of
25 said loops being in communication with the main pipe and the return portion of each succeeding loop being in communication with the flow portion of the preceding loop, and a
30 plurality of valves adapted and arranged to permit the flow of the heating medium through the main pipe only or to direct the flow through one or more of said loops in succession at will.

In testimony whereof, I have hereunto
35 signed my name in the presence of two subscribing witnesses.

JOHN A. STROM.

Witnesses:

BURTON U. HILLS,
CHARLES I. COBB.