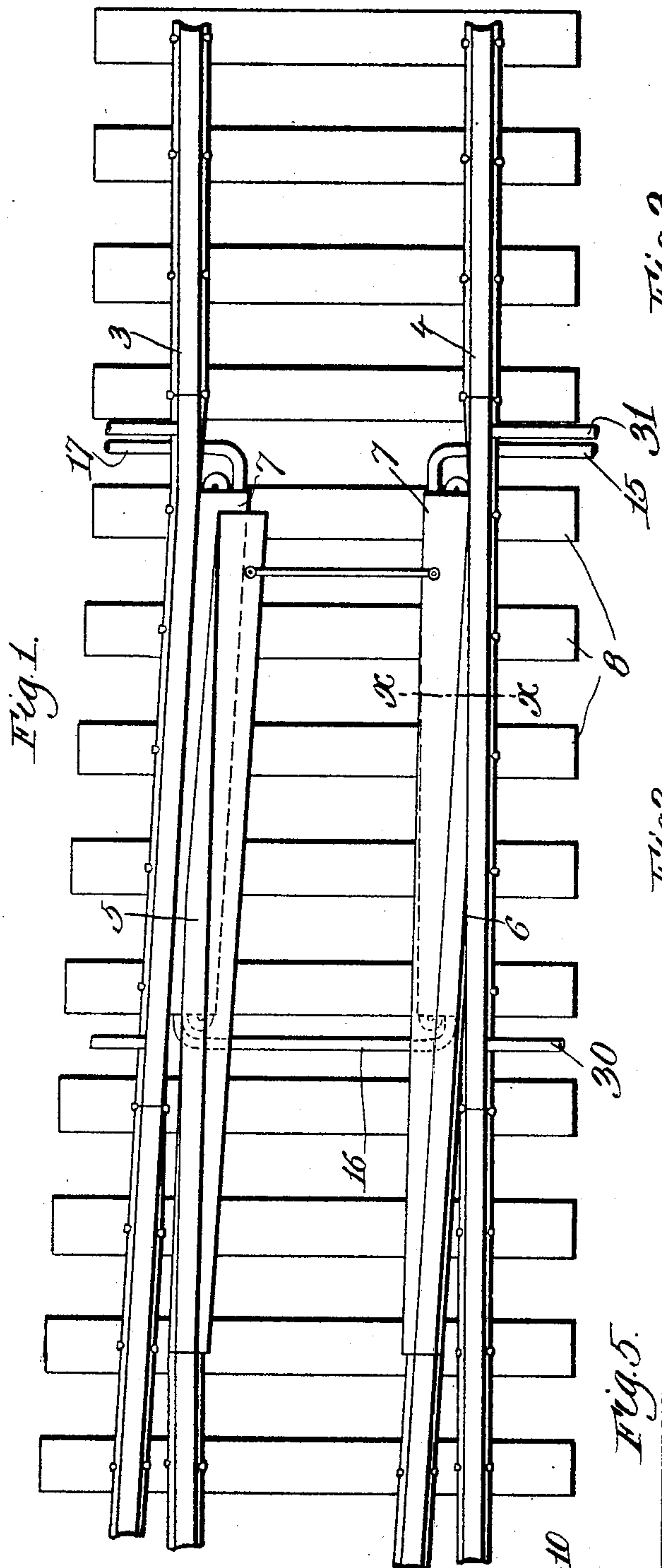


F. L. YOUNG.
RAILWAY SWITCH.
APPLICATION FILED MAY 17, 1905.

2 SHEETS—SHEET 1.



Witnesses.
W. C. Lumsford,
S. W. Lutton.

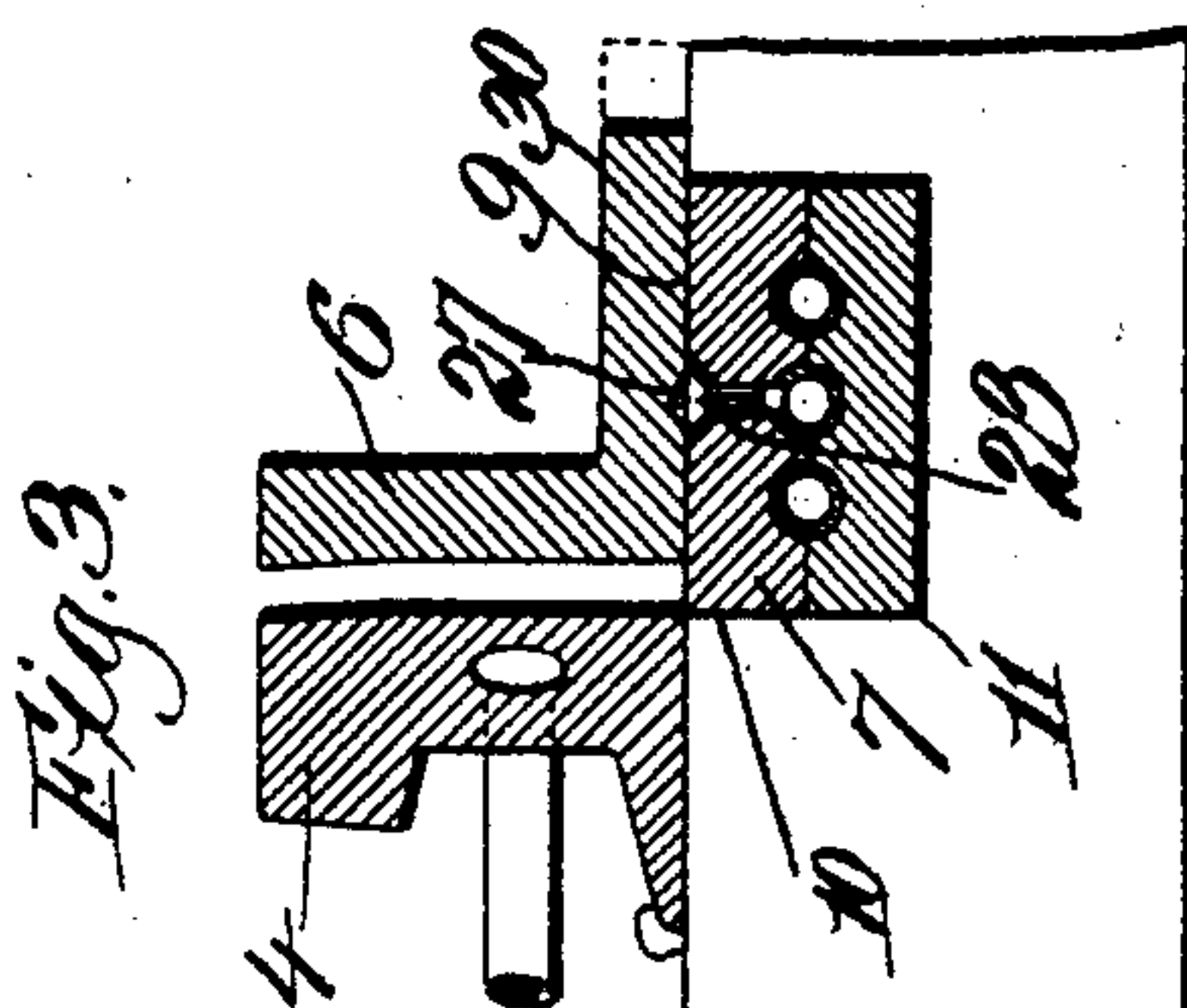
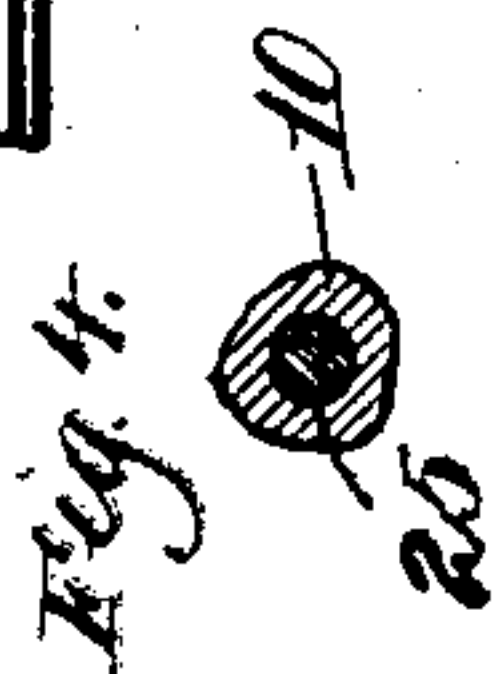


Fig. 3.

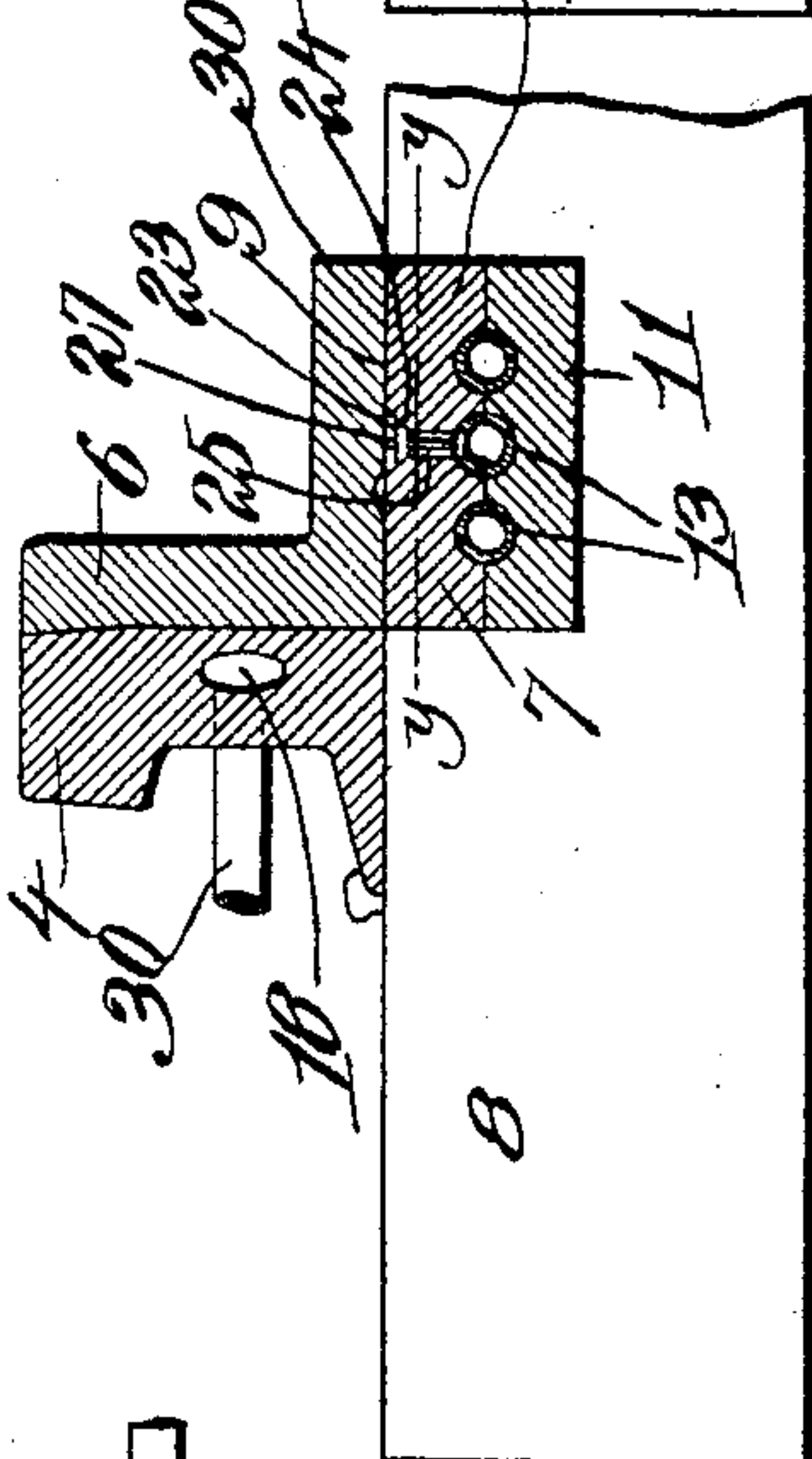


Fig. 2.

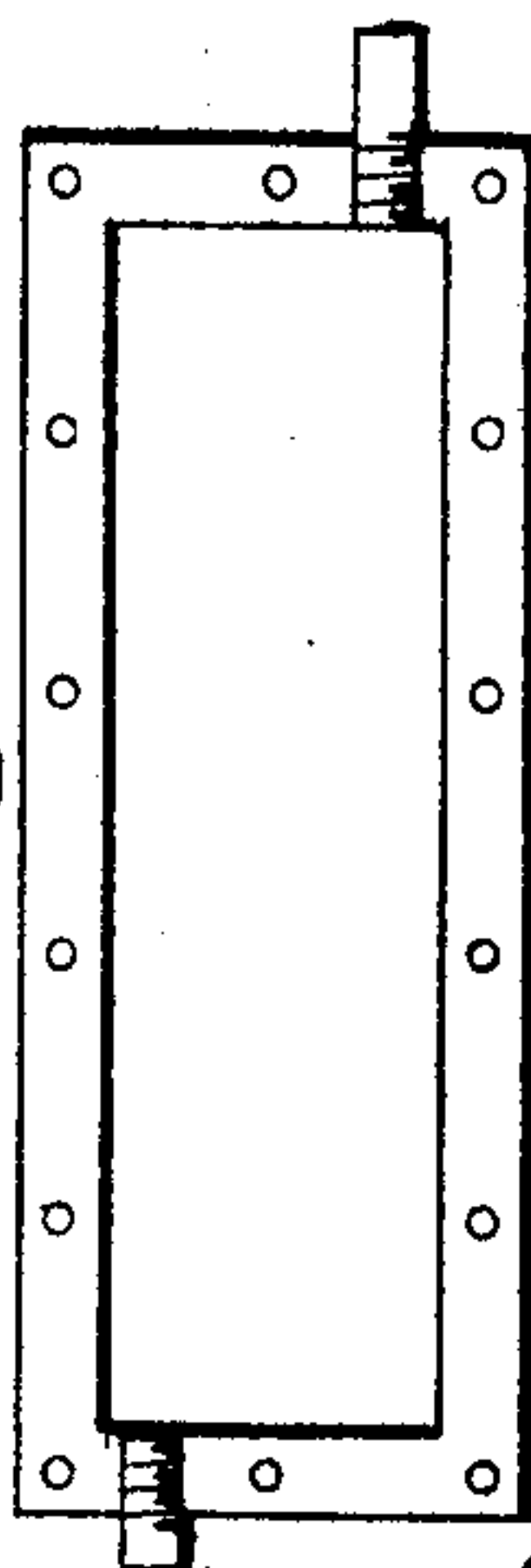


Fig. 5.

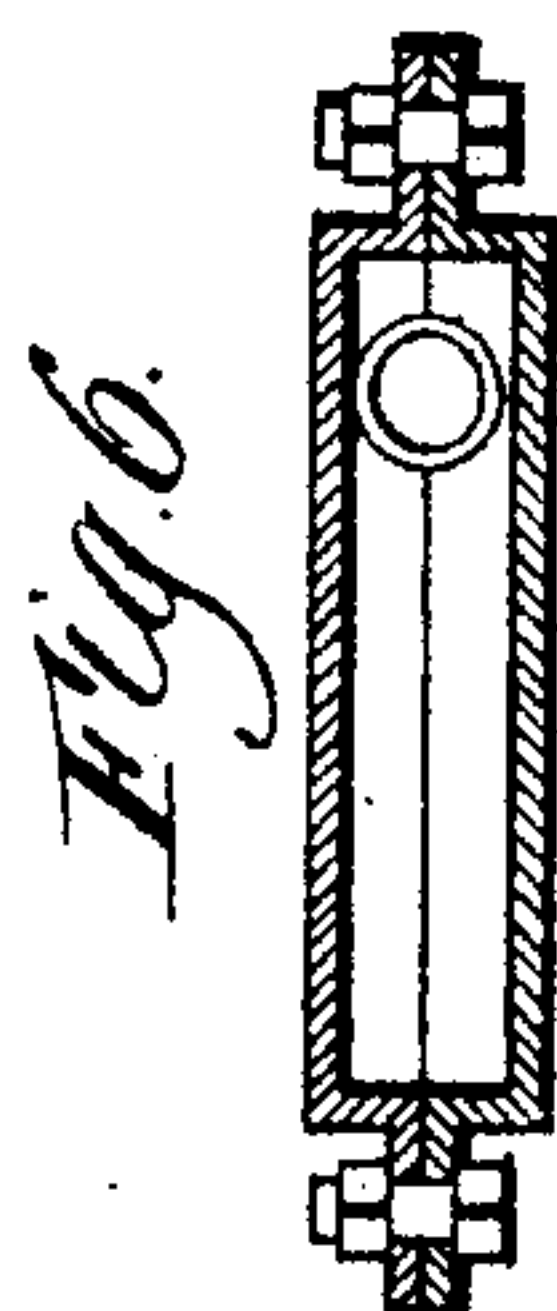


Fig. 6.

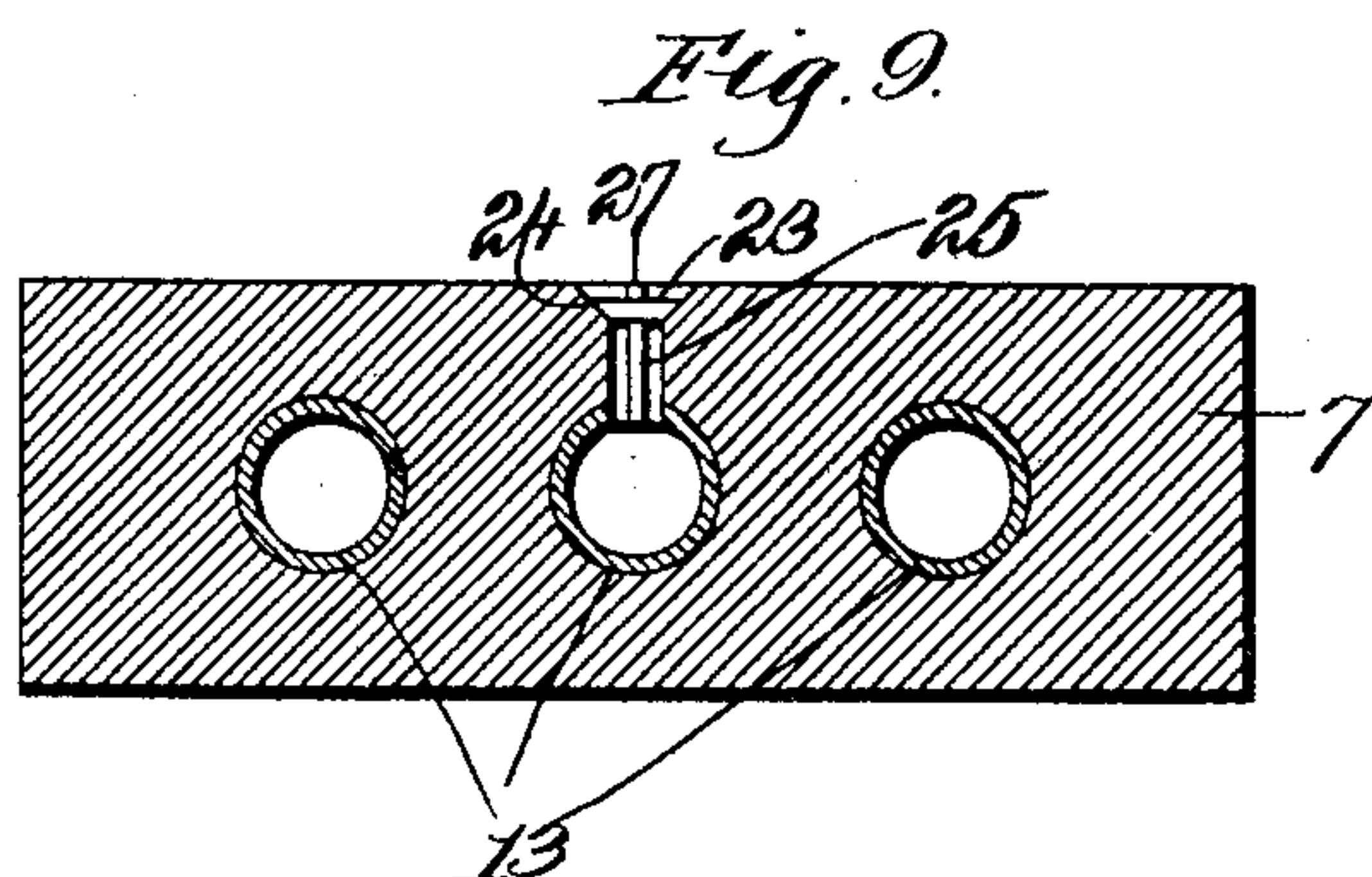
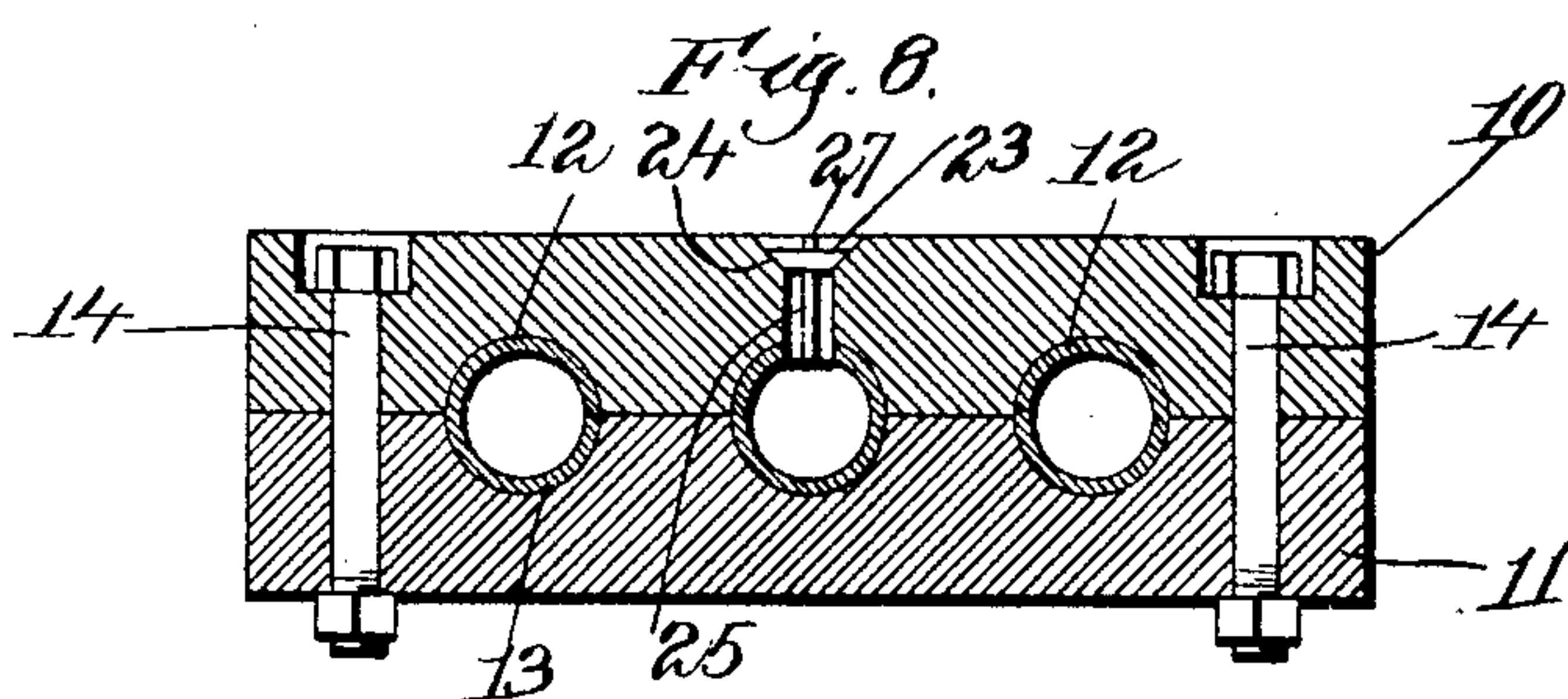
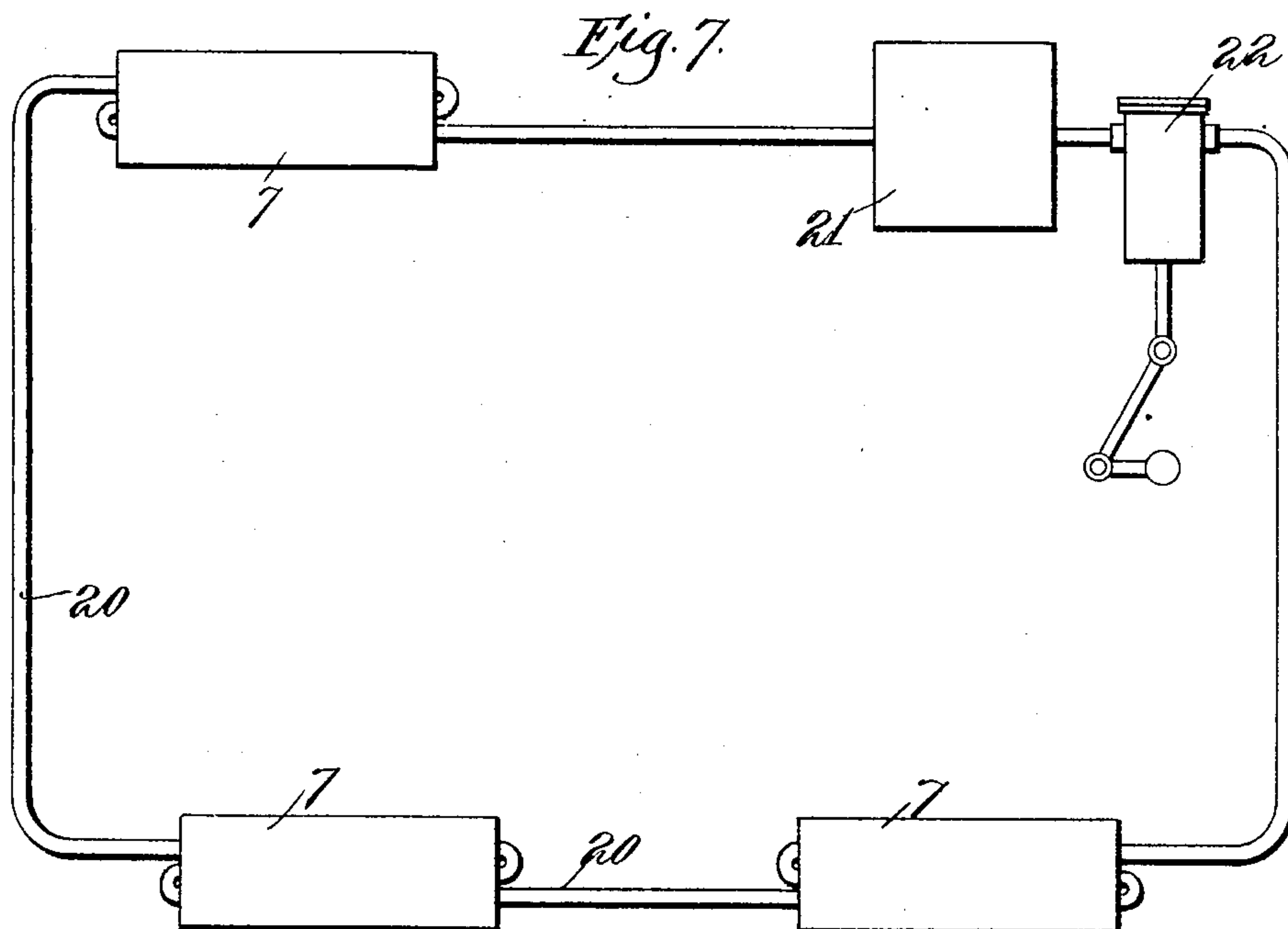
Inventor:
Frank L. Young,
by *Barby, Gregory & Co.* attys.

No. 803,516.

PATENTED OCT. 31, 1905.

F. L. YOUNG.
RAILWAY SWITCH.
APPLICATION FILED MAY 17, 1905.

2 SHEETS—SHEET 2.



Witnesses.
W. C. Linsford
S. W. Lutton.

Inventor.
Frank L. Young,
by Henry Ferguson
attys.

UNITED STATES PATENT OFFICE.

FRANK L. YOUNG, OF BOSTON, MASSACHUSETTS.

RAILWAY-SWITCH.

No. 803,516.

Specification of Letters Patent.

Patented Oct. 31, 1905.

Application filed May 17, 1905. Serial No. 260,740.

To all whom it may concern:

Be it known that I, FRANK L. YOUNG, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Railway-Switches, of which the following description, in connection with the accompanying drawings, is a specification, like figures on the drawings representing like parts.

10 This invention relates to railway-switches, and has for its object to provide a novel means for preventing the moving parts of the switch from becoming frozen or clogged with ice and snow.

15 According to my invention I arrange the moving parts of the switch to move over a bed-piece which has provisions for being heated in some suitable way, the heat which radiates from the bed-piece operating to keep
20 the parts of the switch sufficiently warm so as to prevent their being frozen or clogged with snow. In one form of my invention this bed-piece is chambered and is constructed so that a heating fluid may be pumped there-
25 through, and in another form of the invention the bed-piece is arranged to have coils pass therethrough, through which coils the heating medium may be forced.

30 My invention also comprises a novel means for automatically oiling the moving parts of the switch.

Referring to the drawings, Figure 1 is a plan view of a so-called "split switch" embodying my invention. Fig. 2 is a section on the line *x x*, Fig. 1. Fig. 3 is a view similar
35 to Fig. 2, showing the switch-rail opened away from the main rail. Fig. 4 is a section on the line *y y*, Fig. 2. Fig. 5 shows a modified form of my invention. Fig. 6 is a cross-section through the bed-piece shown in Fig.
40 5. Fig. 7 is a diagrammatic view showing a complete system embodying my invention. Figs. 8 and 9 are transverse sections through different forms of bed-pieces.

45 Referring now to the figures, 1, 3, and 4 designate fixed continuous rails, and 5 and 6 designate pivoted switch-rails, which are tapered or pointed and which can be moved toward and from the continuous rails to open and
50 close the switch, all as usual.

I have not herein shown any particular mechanism for operating the switch-rails, as such mechanism forms no part of my present invention.

55 In accordance with my invention I place beneath each of the moving switch-rails a mem-

ber which I have designated a "bed-piece" and provide means for heating the bed-piece.

In Figs. 1, 2, and 3 the bed-piece is designated by 7 and is shown as being set into the
60 ties or sleepers 8 and as having its top surface 9 substantially flush with the top of the sleepers. This construction, however, is not essential, and my invention would not be departed from if the bed-piece 7 rested directly on the
65 sleepers instead of being set into them. In such event, however, it would be necessary to make the switch-rail of such a height that the combined height of switch-rail and bed-piece would equal the height of the main rail. The
70 top surface 9 of the bed-piece forms the surface on which the pivoted switch-rail rests and over which it moves.

The bed-piece 7 is constructed so that it can be heated, and thereby prevent the switch
75 from being clogged with snow or ice. According to my present invention I propose to heat this bed-piece by circulating there-through some suitable heating fluid, and for this purpose the bed-piece is either made hol-
80 low, as shown in Figs. 5 and 6, or is provided with chambers through which the heating medium may be circulated, as shown in Figs. 2, 3, 8, and 9. Any suitable heating medium may be employed; but I prefer a non-freezing
85 liquid—such, for instance, as an oil.

The bed-piece may be made in various ways without departing from the invention. In Figs. 2, 3, and 8 I have shown it as formed of
90 two sections 10 and 11, each of which is provided with one or more half-grooves 12, so arranged that when the two parts are brought together, as shown in Fig. 8, the half-grooves meet each other and form a chamber or pas-
95 sage to receive either a pipe 13 for conveying the oil or the oil itself.

The two halves 10 and 11 of the bed-piece may be secured together in any suitable way, as by means of bolts 14.

It will be understood that if the pipes 13
100 are laid in the grooves the ends of the pipes will be connected with each other, so that the various pipes 13 form part of a continuous conduit or circulating system.

The bed-piece (shown in Fig. 9) is made by
105 casting the metal of the bed-piece around connected pipes 13, which form part of the circulating system.

In Figs. 5 and 6 the bed-piece is in the form of a hollow box which may be made in two
110 sections, if desired. The pipes containing the oil may be taken into the box and placed

in the coils therein or may simply open into the box, so that the interior of the box forms part of the conduit for conveying the oil.

I propose to use a bed-piece of some suitable form, such as above described, under each of the pivoted switch-rails, and preferably the pipes leading to and from each bed-piece will be connected to pipes leading to and from the next adjacent bed-piece, so that several bed-pieces will be connected in the same circuit or system. For instance, as shown in Fig. 1, 15 designates a pipe leading into one bed-piece 7 for the pivoted switch-rail 6, 16 a pipe leading therefrom and into the bed-piece for the pivoted rail 5, and 17 the pipe leading from the latter bed-piece and leading to one of the bed-pieces for an adjacent switch.

In order to attain the object of my invention, it is necessary to provide some suitable means for heating the oil or other heating medium and for causing a circulation thereof when desired.

In Fig. 7 I have illustrated a complete system in which 7 designates three bed-pieces having within them chambers or pipes to receive oil and connected with each other by other pipes 20, and 21 illustrates diagrammatically some suitable heater for heating the oil while in circuit. The oil may be caused to circulate either by gravity or by some suitable forcing mechanism—such, for instance, as a pump 22. With the system thus arranged it will be seen that the oil is forced into the heating apparatus 21, where it becomes heated and is then forced through the various bed-pieces in succession, said heated oil passing through the bed-pieces and heating the latter sufficiently so as to prevent any snow or ice accumulating thereon. The pipes connecting the bed-pieces may be provided with suitable heat-insulating material, so as to prevent the cooling of the oil by radiation. By causing the oil to circulate more or less rapidly the amount of heat which is delivered to the different bed-pieces can be regulated, and thus the required amount of heat to keep the switch clear may be furnished under all circumstances.

I may, if desired, provide the portions of the fixed rails 4 and 5, with which the pivoted rails contact, with a chamber 18 and provide inlet and outlet pipes 30 and 31, which communicate with each chamber, so that a heating medium may be forced through said chamber of each fixed rail, thereby to assist in keeping the parts sufficiently warm to prevent their being frozen.

Another feature of my invention relates to the automatic lubrication of the moving parts of the switch. I accomplish this by providing the conduit in which the oil is circulating with an automatically-operated valve which allows a small quantity of oil to escape and lubricate the contacting parts of the pivoted switch-rail as the switch is opened and closed. In Figs.

2 and 3 this valve is designated by 23, and it closes against a valve-seat 24, formed in the bed-piece 7. The valve has, preferably, a winged stem 25, so that when the valve is lifted from its seat the oil can escape. The valve is normally held to its seat by the switch-rail 6, said valve being shown as having a boss or projection 27, which is engaged by the pivoted switch-rail. Said switch-rail is recessed at 28 in such a way that as it is moved away from the main rail, as shown in Fig. 3, the recess passes over the valve, and when this occurs the pressure of oil in the bed-piece will lift the valve, as shown in Fig. 3, thereby allowing a small quantity to escape. As the switch-rail closes against the main rail the valve is closed again and held closed and the oil which has escaped finds its way between the contacting surfaces of the bed-piece and the switch-rail, and thus lubricates them. One or more of these valves may be used for each switch-rail, as circumstances require.

The movable switch-rails may have their usual shape. I prefer, however, to make them with the widened base-flange 30, as shown in Figs. 2 and 3, so that when each switch-blade is closed against the adjacent main rail the flange just covers the bed-piece 7.

While I have herein illustrated my invention as applied to a so-called "split switch," yet it will be obvious that with sufficient modifications it can be applied to a "stub-switch" or any other type of switch now in use.

From the above it will be seen that the important feature of my invention is providing a bed-piece beneath each moving switch-rail and also providing means whereby said bed-piece may be heated, if necessary, to prevent the switch from becoming frozen or clogged by ice or snow.

While I have illustrated three different forms of bed-piece and three different ways of heating it, yet my invention is not confined to these three ways, and therefore various changes in the construction may be made without departing from the invention.

While it is within my invention to use any suitable heating medium, yet I prefer to use a non-freezing liquid—such, for instance, as a heavy oil. I prefer to use this character of liquid, because it will be necessary to heat the switch only during storms, and in clear cold weather when there is no danger of the switch becoming clogged with snow it will not be necessary to heat it.

A non-freezing fluid has the advantage that under such circumstances it will not become frozen or congealed at ordinary low temperatures. Such an oil is well-known and can be readily obtained in the market.

Some advantages of using oil for the heating medium is that it serves the double function of heating and lubricating, that it does not corrode the conduit, that it can be heated to a very high temperature without vaporiz-

ing, and that a larger number of heat units can be stored up in a given quantity of oil than in the same quantity of many other fluids.

I may, if desired, cover the bottom and sides of the bed-piece with some suitable covering of non-heat-conducting material, so as to prevent the heat from being wasted by radiation, and I may also similarly cover the pipes connecting the bed-pieces 7.

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

1. In a switch, a movable switch-rail, a bed-piece on which said switch-rail rests, said bed-piece 15 having means for the circulation of heated oil therethrough, and means for automatically lubricating said switch-rail.

2. In a switch, a movable switch-rail, a bed-piece on which said rail rests, said bed-piece 20 having provision for the circulation of oil therethrough, and a valve controlled by the movement of the switch-rail, said valve controlling the flow of oil to the parts to be lubricated.

25 3. A pivoted switch-rail, a bed-piece beneath said rail, said bed-piece having provision for

the circulation of a heating fluid therethrough, means to heat the said fluid, and means to force the heated fluid through the bed-piece.

4. A plurality of pivoted switch-rails, a bed-piece 30 beneath each switch-rail, each bed-piece having connected passages therethrough, pipes connecting the bed-pieces, means to heat a fluid, and means connected with the heating means and bed-pieces whereby the fluid is 35 forced through the heater and bed-pieces in succession.

5. A plurality of movable switch-rails, a chambered bed-piece beneath each switch-rail, a conduit connecting said bed-pieces and communicating with the chamber or chambers of 40 each whereby said chambers form part of the conduit, oil filling the conduit and chambers, means to heat the oil, and means to cause the oil to circulate through the conduit. 45

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK L. YOUNG.

Witnesses:

LOUIS C. SMITH,
MARGARET A. DUNN.