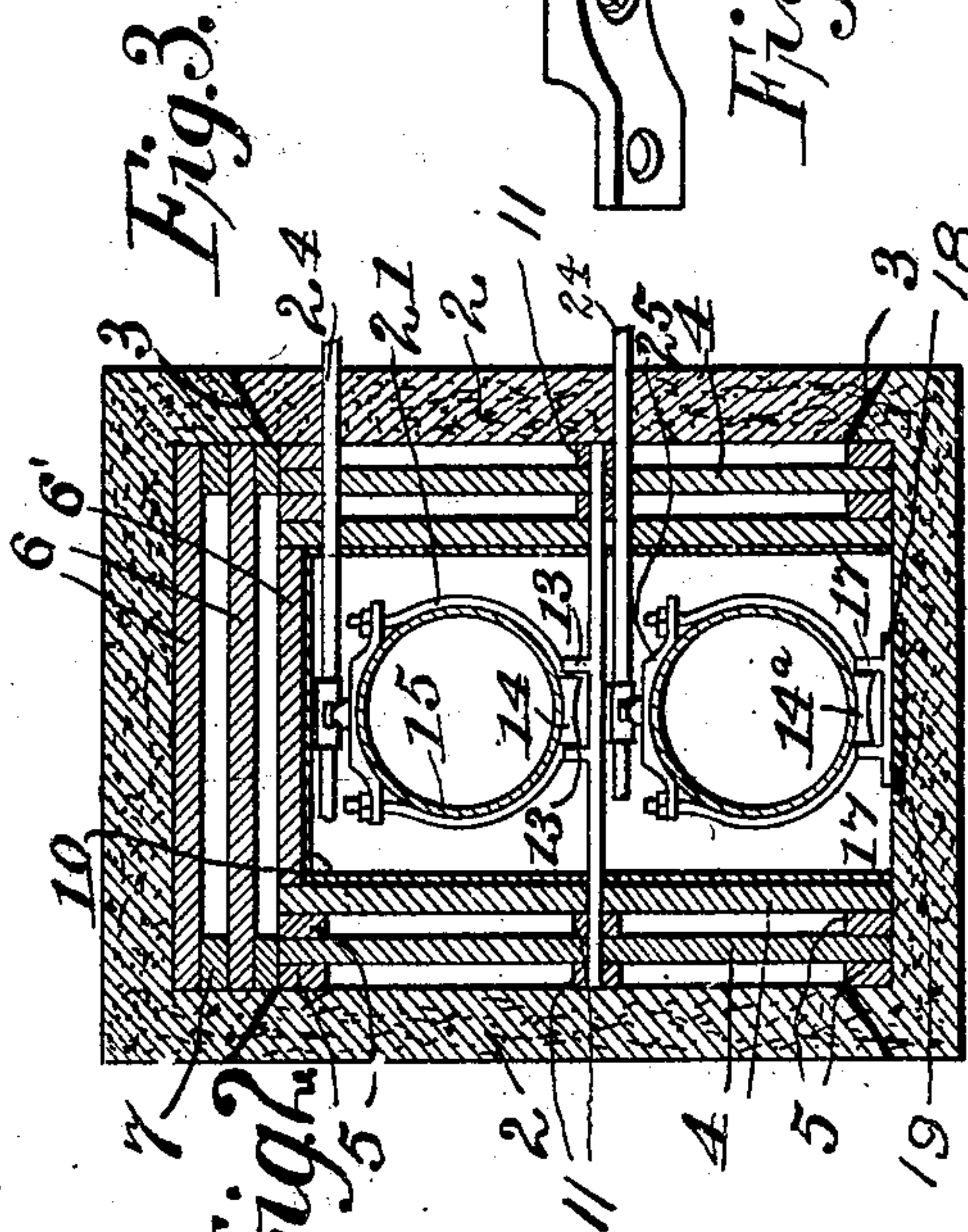
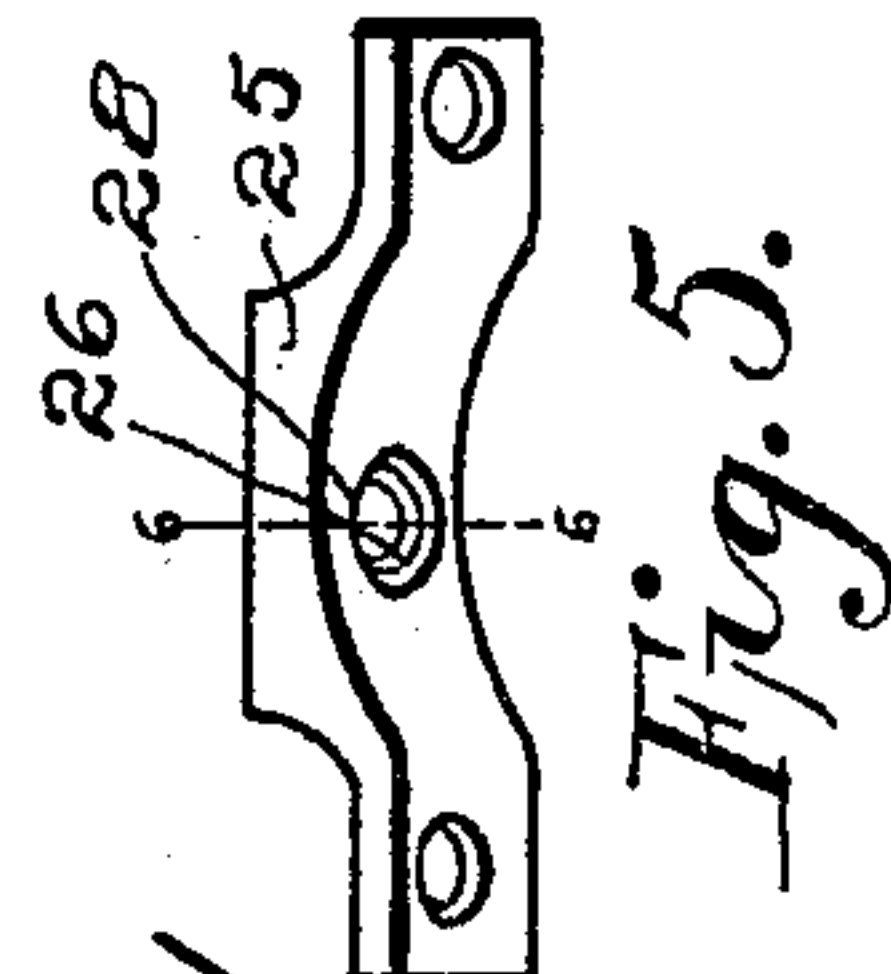
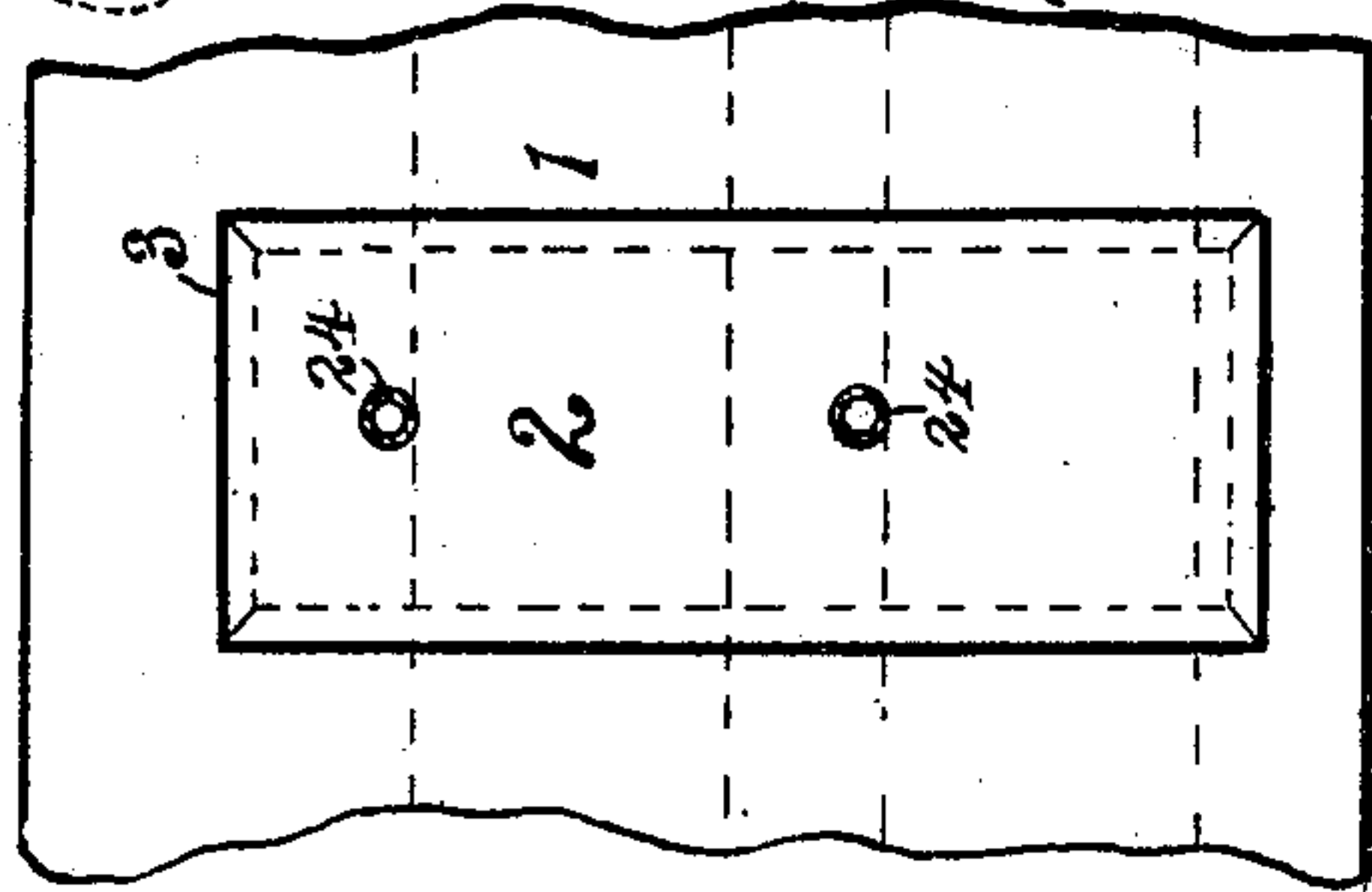
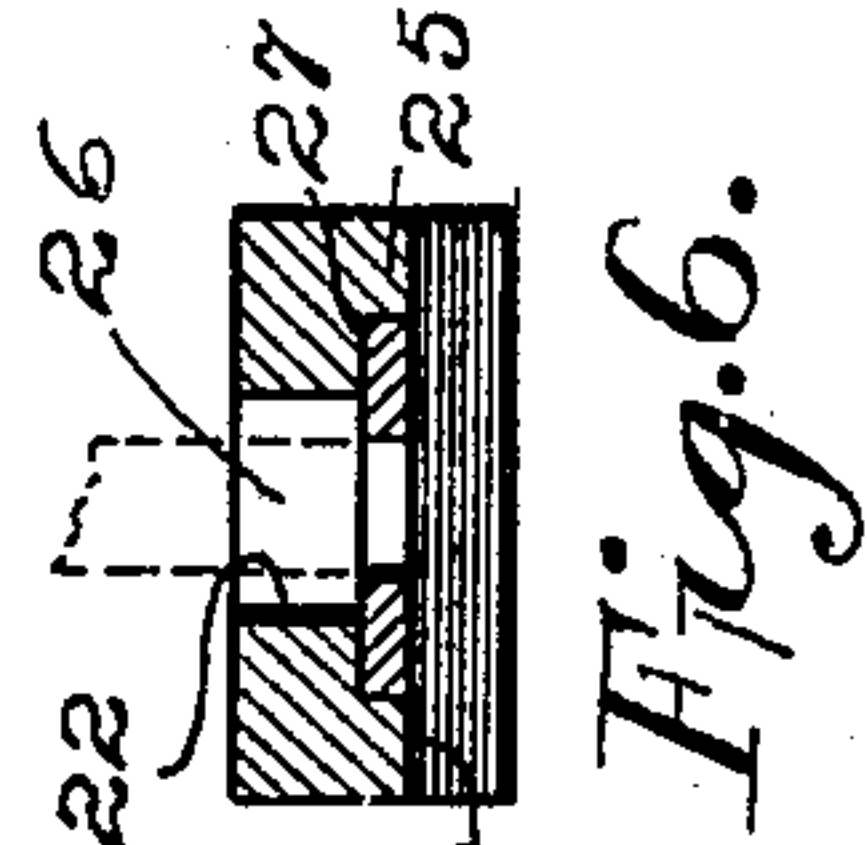
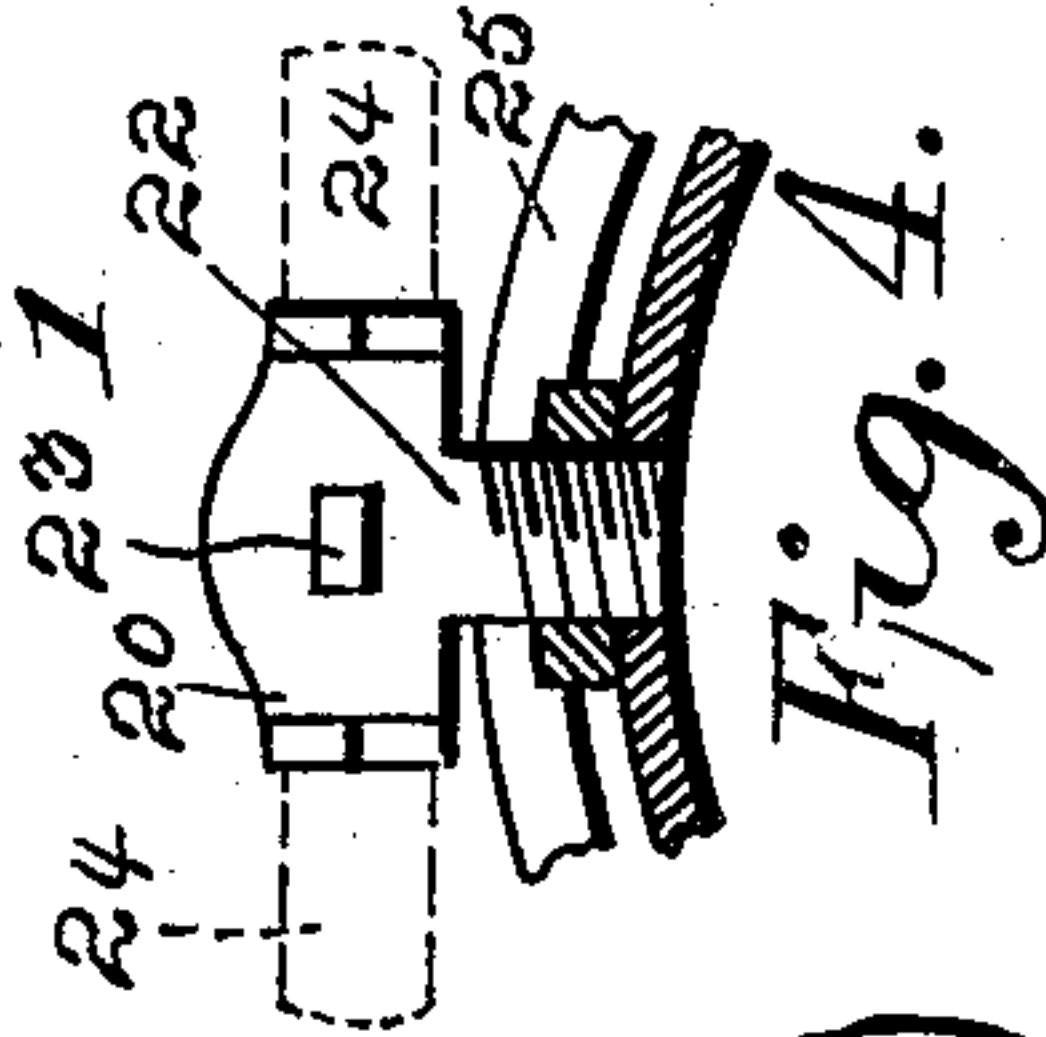
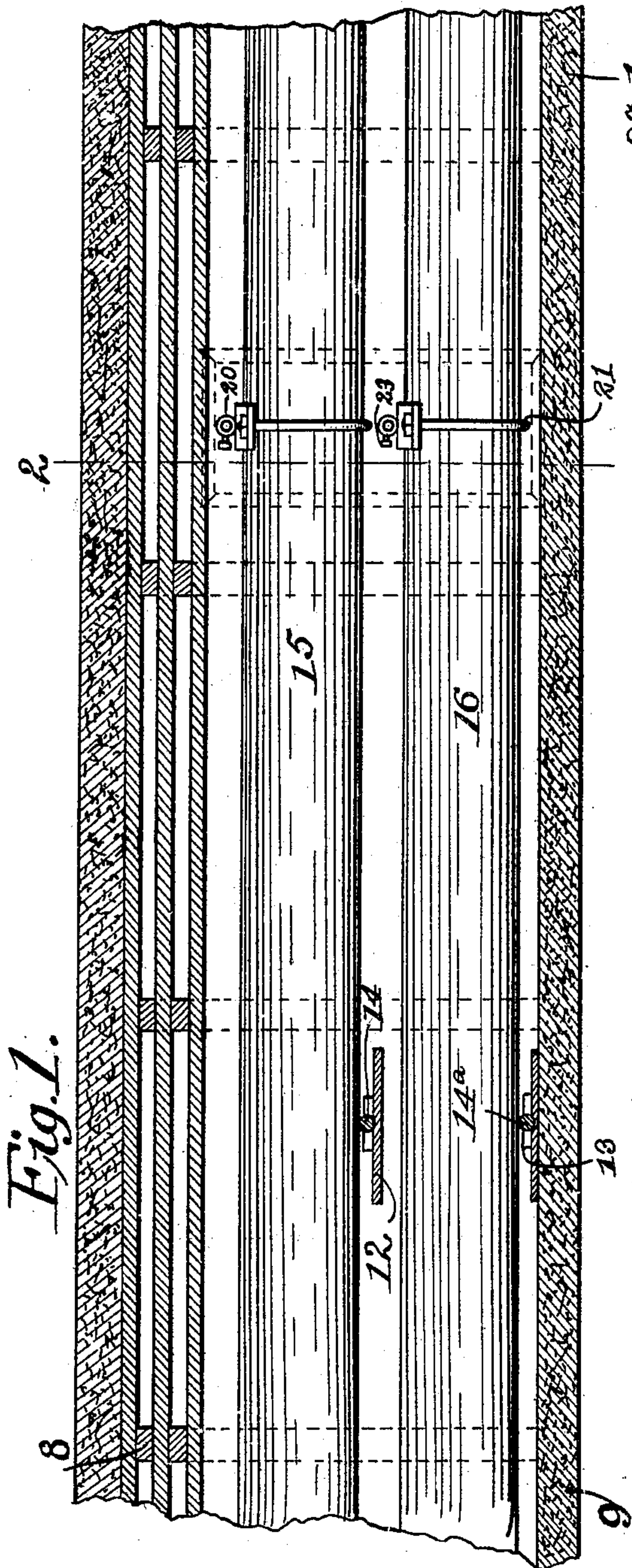


917,521.

Patented Apr. 6, 1909.



Witnesses
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UNITED STATES PATENT OFFICE.

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HEATING SYSTEM.

No. 917,521.

Specification of Letters Patent.

Patented April 6, 1909.

Application filed May 23, 1908. Serial No. 434,620.

To all whom it may concern:

Be it known that I, FRANK E. BAKER, a citizen of the United States, residing at Oskaloosa, in the county of Mahaska and State of Iowa, have invented certain new and useful Improvements in Heating Systems, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in heating systems or plants, and has for its object the provision of means for economizing fuel and saving heat, by the peculiar construction of the conduits or compartments containing the circulating pipes or tubes.

Another object of the invention is the peculiar construction of a conduit or compartment, which is adapted to receive the primary or main circulating pipes, preferably, an outgoing and a return pipe, and also involves the construction of a conduit, whereby the main or supply pipes can be easily tapped and new auxiliary or secondary pipes can be attached to supply additional patrons.

With these and other objects in view, the invention consists of certain novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

In the drawings: Figure 1 is a longitudinal sectional view of a conduit constructed in accordance with the present invention. Fig. 2 is a transverse, sectional view taken on line 2, 2, Fig. 1. Fig. 3 is a fragmentary side view of the conduit and showing particularly one of the sealing blocks or doors. Fig. 4 is an enlarged detail view of one of the cocks, and showing in section a portion of one of the supply pipes. Fig. 5 is a perspective view of a portion of one of the sections of the clamp. Fig. 6 is a sectional view taken on line 6, 6, Fig. 5.

Referring to the drawings, it is to be understood that my system relates to heating means for a number of buildings or dwellings, which are heated through the medium of, preferably, hot water, supplied from a central station, and which system involves the placing of the outgoing or supply pipe below the return pipe, for the purpose of minimizing the amount of heat lost during the outflow or passage of the hot liquid or steam to the subscribers or patrons from the main or central station, and my system involves the peculiar construction of a number of parts or devices of the system or apparatus, and the peculiar arrangement of these novel devices

in an operative position, as will be hereinafter fully explained.

Referring to the drawings by numerals, 1 designates the outer shell or casing or conduit, which may be formed of cement, or any other plastic material that will produce a substantial non-porous rock-like covering, and this conduit is provided with one or more detachable blocks or doors 2, closing openings which are made in the conduit, at predetermined points, for facilitating the connection of new dwellings or buildings to the primary or main supply pipes or tubes. The detachable blocks 2 are, preferably, so positioned as to permit the cocks for attaching the new supply pipes to be placed in front of these blocks, as for instance, as shown in Figs. 1 and 2. Each block 2 is beveled upon its edges for forming a tight joint, and to further facilitate the prevention of moisture from entering the conduit or escape of heat therefrom, I line the beveled edges of the block, as at 3, Fig. 2, with, preferably, tar-paper.

Within the outer cement shell 1 is placed a plurality of parallel boards 4, which boards are spaced apart at their upper and lower ends by filling strips or members 5. The upper horizontal boards 6 are spaced apart by horizontal spacing strips or members 7, and the lower strips rest upon the top of the inner, vertical boards 4 and the upper edge of the inner top spacing-strip or block 5; the inner strip 6' is placed between the upper edges of the inner, vertical boards 4. At a plurality of places throughout the length of the conduit, there are positioned horizontal transverse strips 8 and vertical transverse strips 9, which divides the spaces between the vertical boards 4 and the horizontal boards 6 and 6' into a number of closed cells which form air spaces that greatly increases the efficiency of the conduit for preventing heat from escaping as the "dead" or closed air cells form an efficient non-conductor. Furthermore, it is to be noted that the boards may be lined with any suitable non-conducting sheets, as at 10, Fig. 2, which sheets or lining may be formed of tar paper or asbestos, and, consequently, it is within the scope of this invention to provide boards or spaced shells or casings lined with a non-conducting covering, and each casing or shell is spaced apart from the other shells constituting the conduit.

The intermediate, horizontal strips 11 are

positioned, preferably, near the center of the vertical boards 4 and the cement outer shell, and extending into these strips 11, and through these vertical boards or inner spaced shells 4, are horizontal strips 12. Each supporting strip 12 is provided with a pair of brackets or vertical lugs 13. In each of the lugs or brackets 13 is journaled a spool-shaped roller or rotatable member 14, which is adapted to receive the return tube or pipe 15, thereby permitting the pipe to slightly expand and contract upon the roller 14 without injuring the same, which roller constitutes the support, together with the horizontal plates or members 12, for supporting the return-pipe 15. It is to be noted that the ends of the horizontal supporting-member 12 is entirely carried by the non-conducting inner shells constituted by the boards 4, and, therefore, the return pipe 15 is insulated from the outer shell or concrete covering of the conduit, and, consequently, even if the supporting members 12 are formed of metal, and the outer shell 1 becomes moist or very cold the temperature of the pipes will not be affected by being chilled through the contact of the supporting member with said plastic outer shell or covering 1.

Intermediate the length of the outgoing or supply pipe 16, there are placed a number of rollers 14^a similarly constructed to roller 14, which rollers are in direct engagement with the bottom of the supply pipe 16. Each roller 14^a is journaled upon lugs or parallel extensions 17, and each two contiguous lugs 17, are integral with a base 18; the base 18 being placed upon the bottom of the cement outer shell or covering of the conduit and the bracket, is, preferably, formed of or engages non-conducting material for further insulating the outgoing pipe from the outer shell, for in Fig. 2, I have shown a non-conducting piece of material 19, as for instance, wood, upon which the roller-supporting bracket rests.

From actual experience, it has been found that the pipes or tubes 15 and 16 travel back and forth as a result of expansion or contraction, due to the heating and cooling thereof, which, under ordinary conditions, loosens the cocks, causing serious leakage. I have overcome this undesirable feature, by attaching and constructing my cocks 20 in the following manner; I employ, in connecting each cock, a clamp 21, which holds the cocks securely in position, in addition to each cock being screwed into the supply pipe or tube, as for instance, as shown in an enlarged view in Fig. 4. The screwing of the cock 20 is permitted by means of the depending hollow extension 22, and it is to be noted that the cock is provided with a valve stem 23 for actuating the valve therein. The auxiliary laterally-extending supply pipes 24 are easily threaded into cock or valve

casing 20, when desired, for the beveled blocks or doors 2 permit this quick attachment, as the workmen can easily open the conduit, and by cutting a hole in the block or in the conduit contiguous to the block, the attachment can be quickly made.

The clamp 21 comprises a substantially U-shaped surrounding band, which has its ends threaded and extended through the horizontal lugs of the upper detachable clamp-member 25. The clamp-member 25 is provided with a body portion having the apertured lugs, through which the upper threaded ends of the surrounding band extend, which threaded ends carry the locking ends for holding the clamp-member 25 in a clamped position upon the pipe or tube. The clamping-member is provided, at its center, with a vertical aperture 26, which aperture terminates at its lower end in an enlarged recess 27; within the recess 27 is, preferably, positioned an annular flexible packing 28 that overhangs the walls of the aperture or opening 26, so that when the clamp-member is forced down upon the tube or pipe (15 or 16) the packing will snugly engage the threaded extension 22 of the cock or valve casing at the connection between the pipe and said cock or valve casing, and thereby not only prevent leakage, but also materially strengthen the connection and, of course, increase the efficiency of the device. It is to be noted that the packing or ring 28 acts as a brace for the reduced threaded extension of the valve casing or cock and, therefore, facilitates the fastening of the casing to the pipe at the opening for the auxiliary tubes.

What I claim is:

1. In an apparatus of the class described, the combination of a plastic, outer shell, a plurality of vertical boards positioned in said outer shell, spacing members between said boards and outer shell, a plurality of horizontal boards within said outer shell, a plurality of horizontal spacing members between said horizontal boards, some of said spacing members resting upon some of the vertical boards and some of the spacing members between said vertical boards and the outer shell, and said vertical and horizontal boards forming inner wooden shells and the spacing members producing closed air cells.

2. A conduit of the class described, comprising a plurality of shells, one inclosing the other, spacing means between each two contiguous shells, and pipe-supporting means extending across the inner shell and into the spacing means between the contiguous shells.

3. An apparatus of the class described, comprising a plastic outer shell or casing, an inner shell or casing within said outer shell, a vertical partition spaced therefrom and positioned between the inner and outer

shells, and a horizontal partition spaced therefrom and positioned above the inner shell and within the outer shell, and the inner and outer shells being closed against communication and providing closed or "dead" air cells for increasing the non-conducting capacity of the conduit.

4. In an apparatus of the class described, the combination of a conduit formed from plastic material and provided with a vertical side, a pipe provided with valve means, and said conduit provided with a detachable portion formed in the vertical side and parallel with the valve means of the pipe.

5. In a conduit of the class described, the combination of a plastic shell, provided with an opening having inclined or beveled edges, and a detachable block for closing said opening, said block provided with beveled edges and said edges covered by moisture non-conducting material.

6. A conduit of the class described, comprising a plastic outer shell, a pair of vertical, non-conducting boards within said plastic shell and near each side, spacing members positioned at the ends of said boards and between each two contiguous boards and the outer board and the plastic shell, a pair of horizontal boards positioned near the top of said shell and one of the boards engages said plastic shell, a plurality of spacing members positioned between the horizontal boards, and some of the members resting upon the spacing members between the plastic shell and some of the vertical boards, a horizontal board positioned between the innermost vertical boards, moisture non-conducting material covering the innermost vertical and horizontal boards, and a block provided with beveled edges, in one side of the plastic shell.

7. In an apparatus of the class described, the combination of a conduit provided with spacing blocks secured near its center, a horizontal supporting-member provided with lugs, extending at its ends into said spacing blocks, a roller journaled upon said lugs, and a pipe or tube supported upon said roller.

8. In an apparatus of the class described, the combination of a composite conduit provided above its floor with a plurality of horizontal moisture non-conducting spacing strips, a supporting-bracket insulated from the floor of said conduit and a supporting-bracket mounted at its ends in the spacing strips, said supporting-bracket and supporting-member being similarly constructed and

provided with vertical lugs, rollers journaled upon each two contiguous lugs, and liquid conveying means supported by each roller.

9. In an apparatus of the class described, the combination of a conduit formed of plastic material and provided with moisture insulating means resting upon its lower portion, roller-supporting means positioned upon said moisture insulating means, a roller journaled upon said roller-supporting means, and a pipe resting upon said roller.

10. A conduit of the class described, comprising a plastic body, provided with a side opening, said opening provided with inclined walls, a block provided with inclined edges, tar-paper covering said edges and adapted to form a tight-joint between the walls of said opening and of the block when said block is placed in said opening, means for conducting liquid through said conduit, said conducting means provided with valve means opposite to said block, and a branch-pipe positioned contiguous to and entering the conduit at the side opening and communicating with the valve means of the conducting means.

11. In a conduit of the class described, the combination of a plastic outer shell, a plurality of vertical partitions positioned in said outer shell, spacing means between said vertical partition and said outer shell, a plurality of horizontal partitions within said outer shell, a plurality of spacing means between said horizontal partitions, and some of said spacing means resting upon some of the vertical partitions and some of the spacing means between said vertical partitions and the outer shell.

12. In an apparatus of the class described, the combination of a plastic outer shell, of a vertical partition positioned contiguous to each side of the shell, horizontal spacing-means interposed between the partitions and the sides of the shell and placed near the top of the partitions, a horizontal partition positioned in said shell and resting upon the upper ends of the vertical partitions and upon the upper faces of the spacing means and positioned between the sides of the shell, and means positioned between the horizontal and vertical partitions and the sides and top of the shell for forming dead air-cells.

In testimony whereof I hereto affix my signature in presence of two witnesses.

FRANK E. BAKER.

Witnesses:

C. H. SCHRODER,

H. O. RUNDORFF.