(No Model.)

3 Sheets—Sheet 1.

S. C. FAY & H. WILLIS.

MAGAZINE CAMERA.

No. 479,587.

Patented July 26, 1892.

FIG. 1.

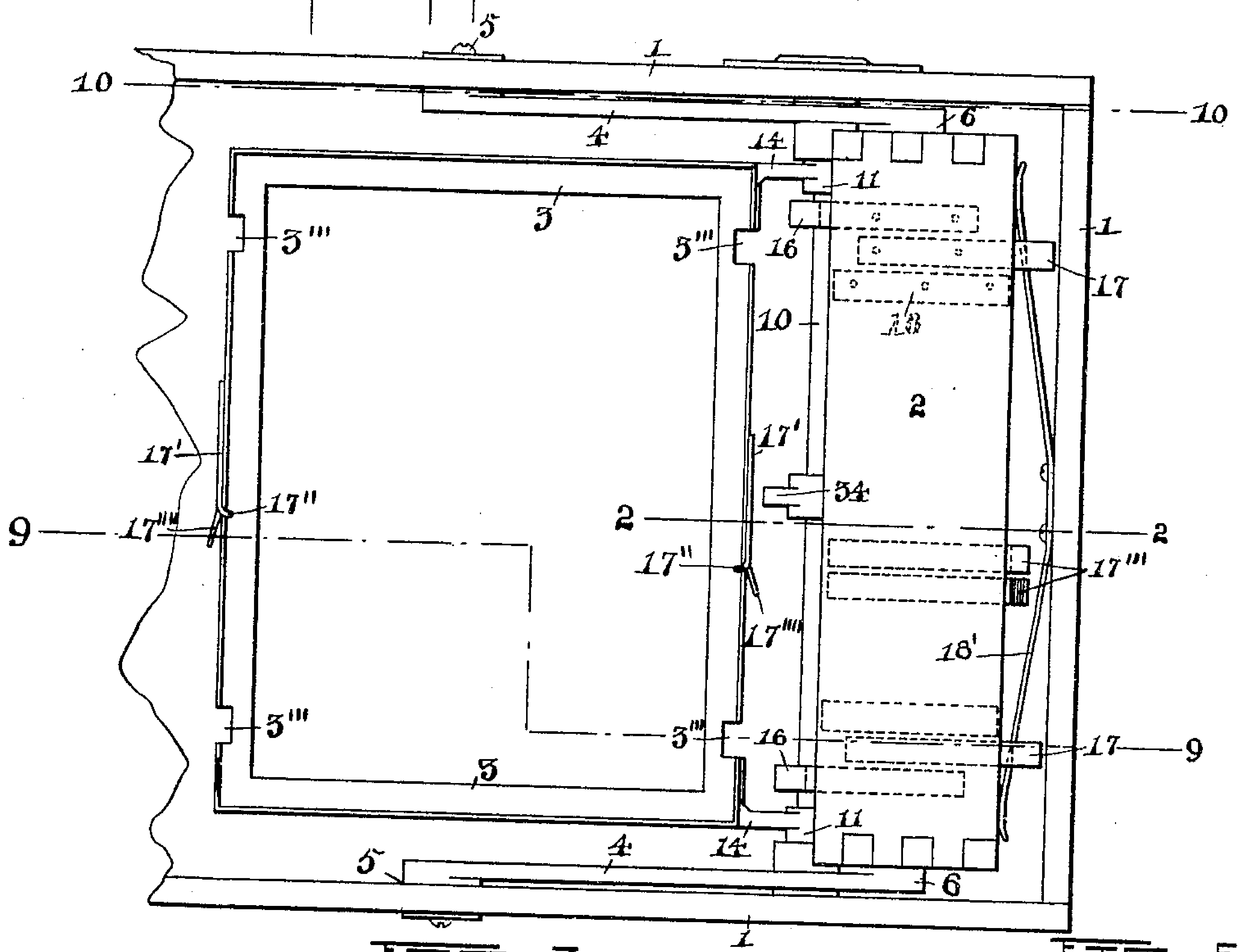


FIG. 3.

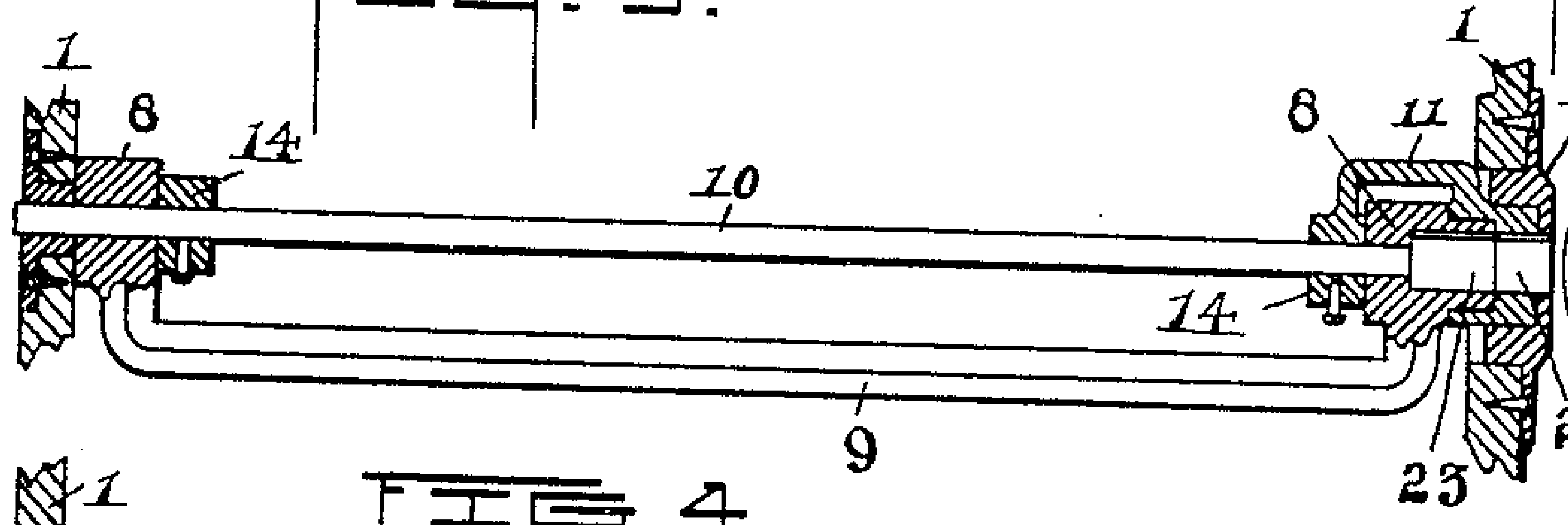


FIG. 5.

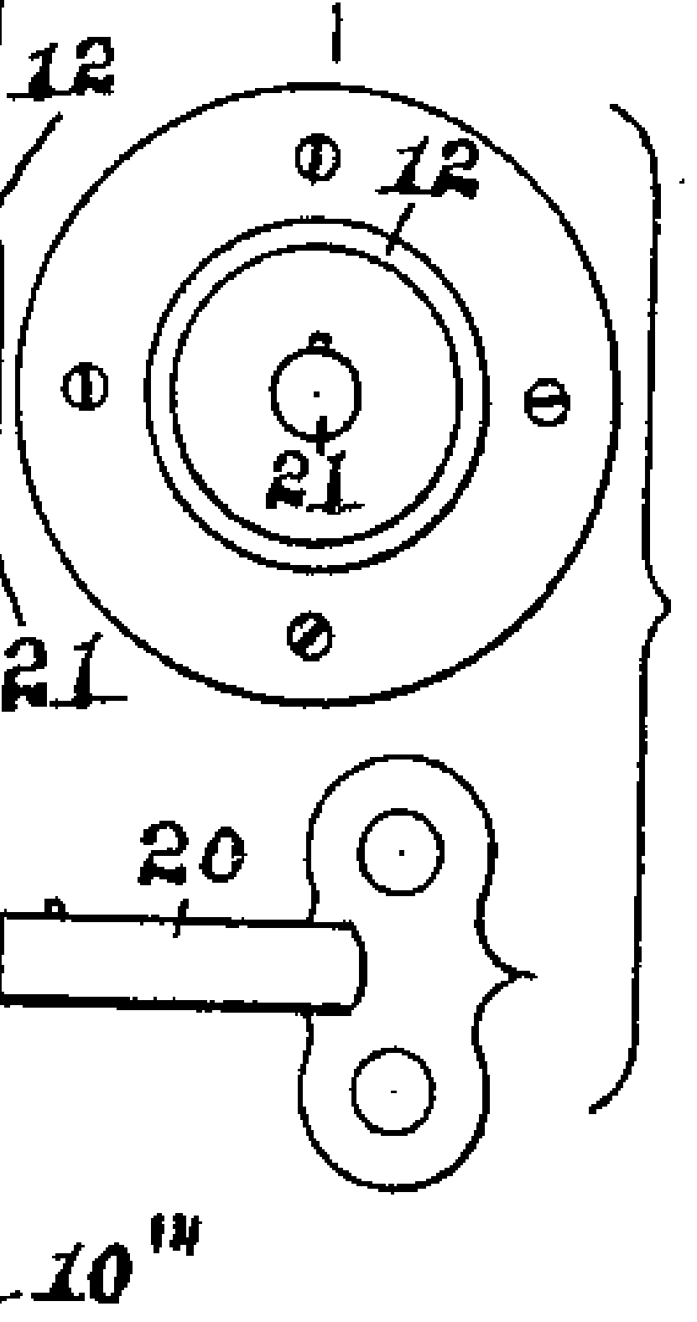
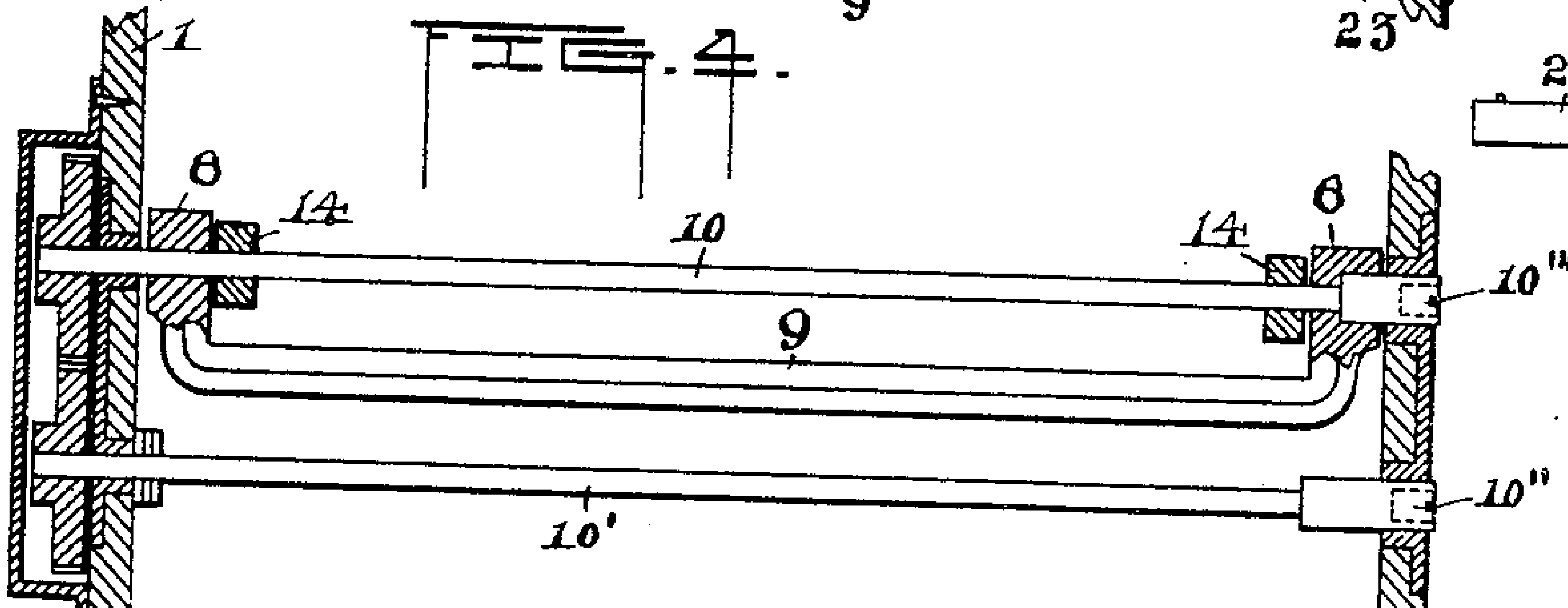


FIG. 4.



WITNESSES

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FIG. 6.

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(No Model.)

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FIG. 2.

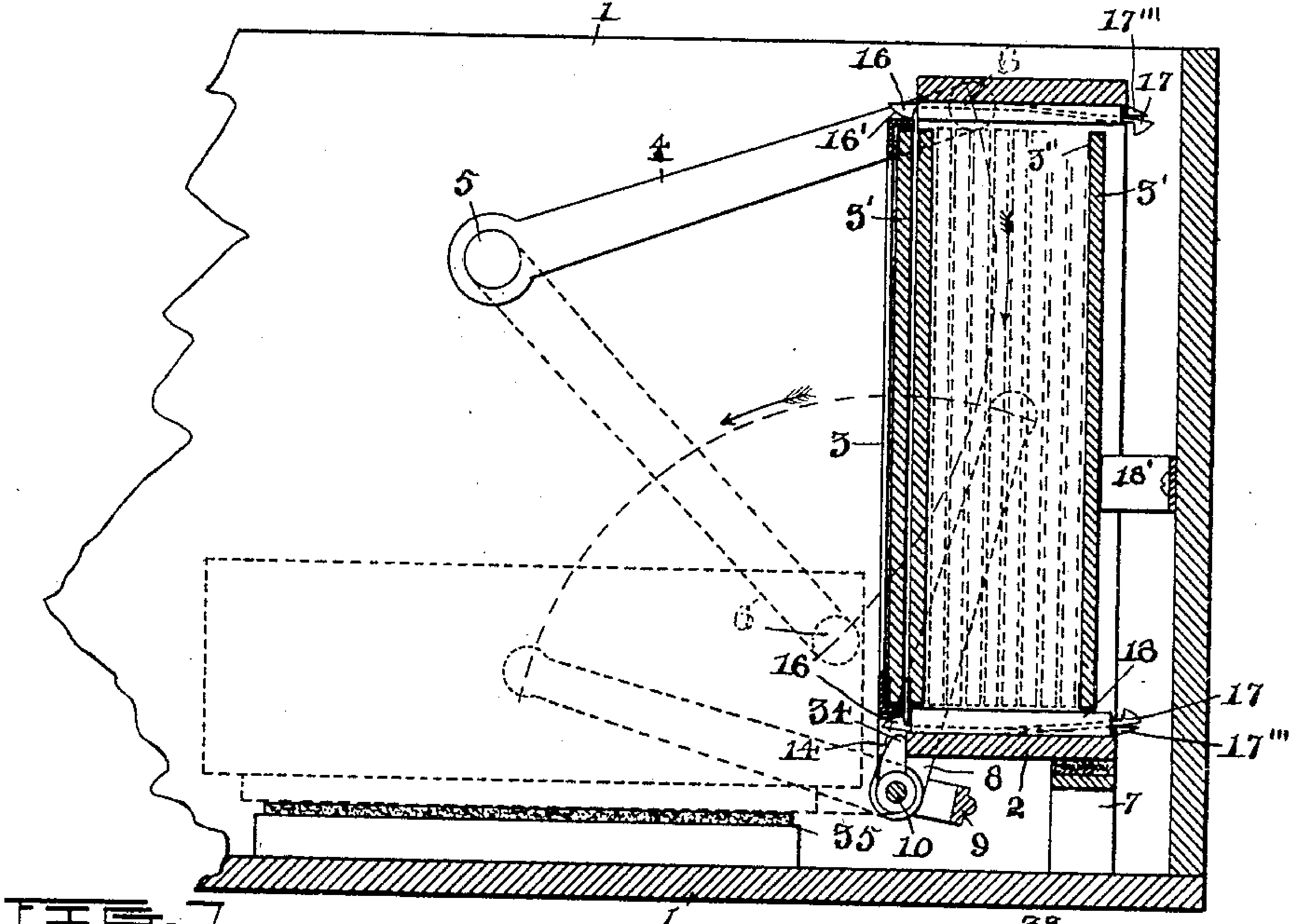

FIG. 7.

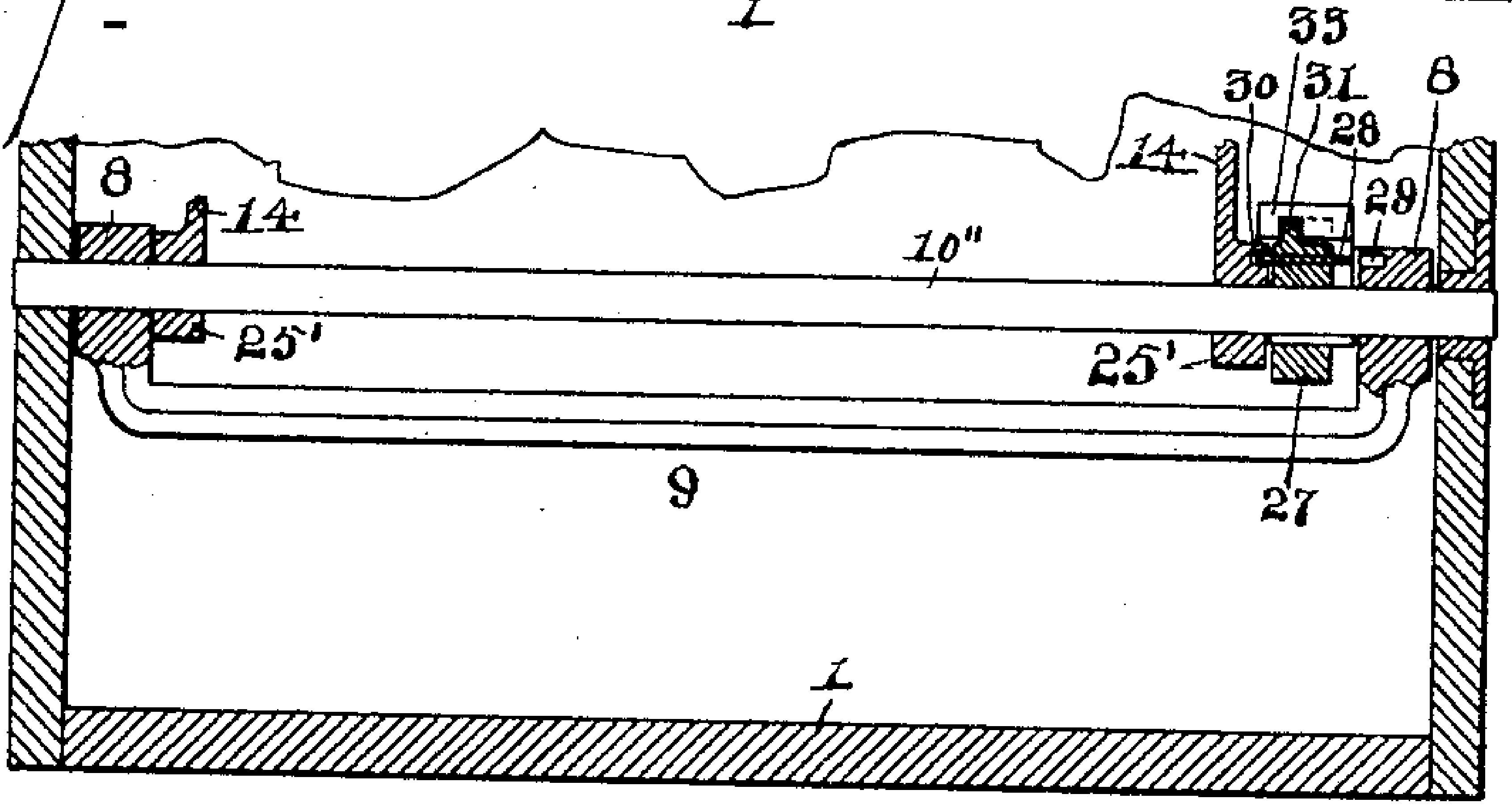

FIG. 8.

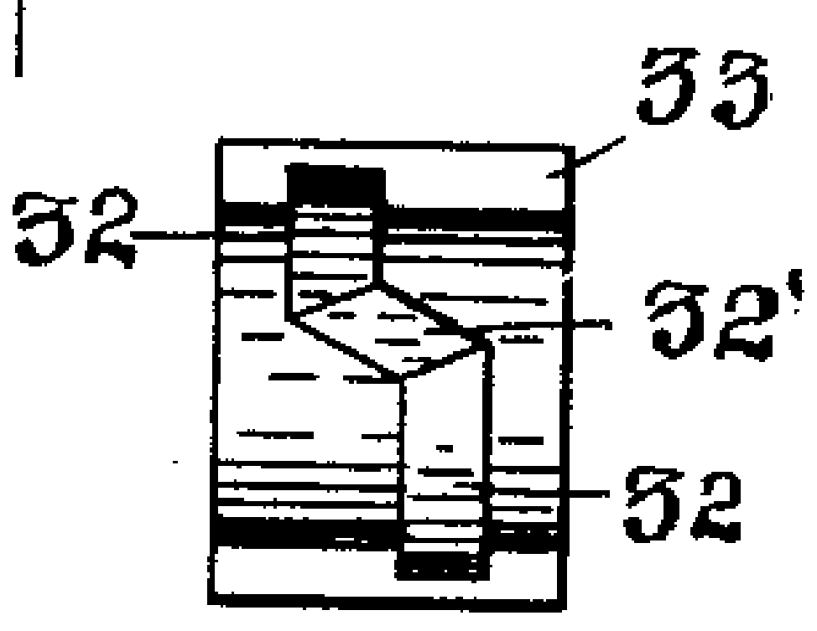

FIG. 12.

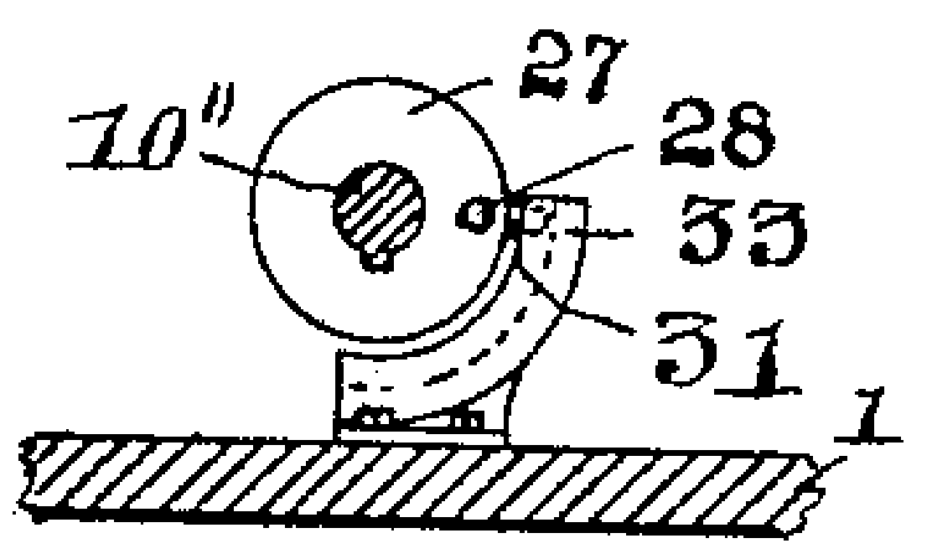

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FIG. 9.

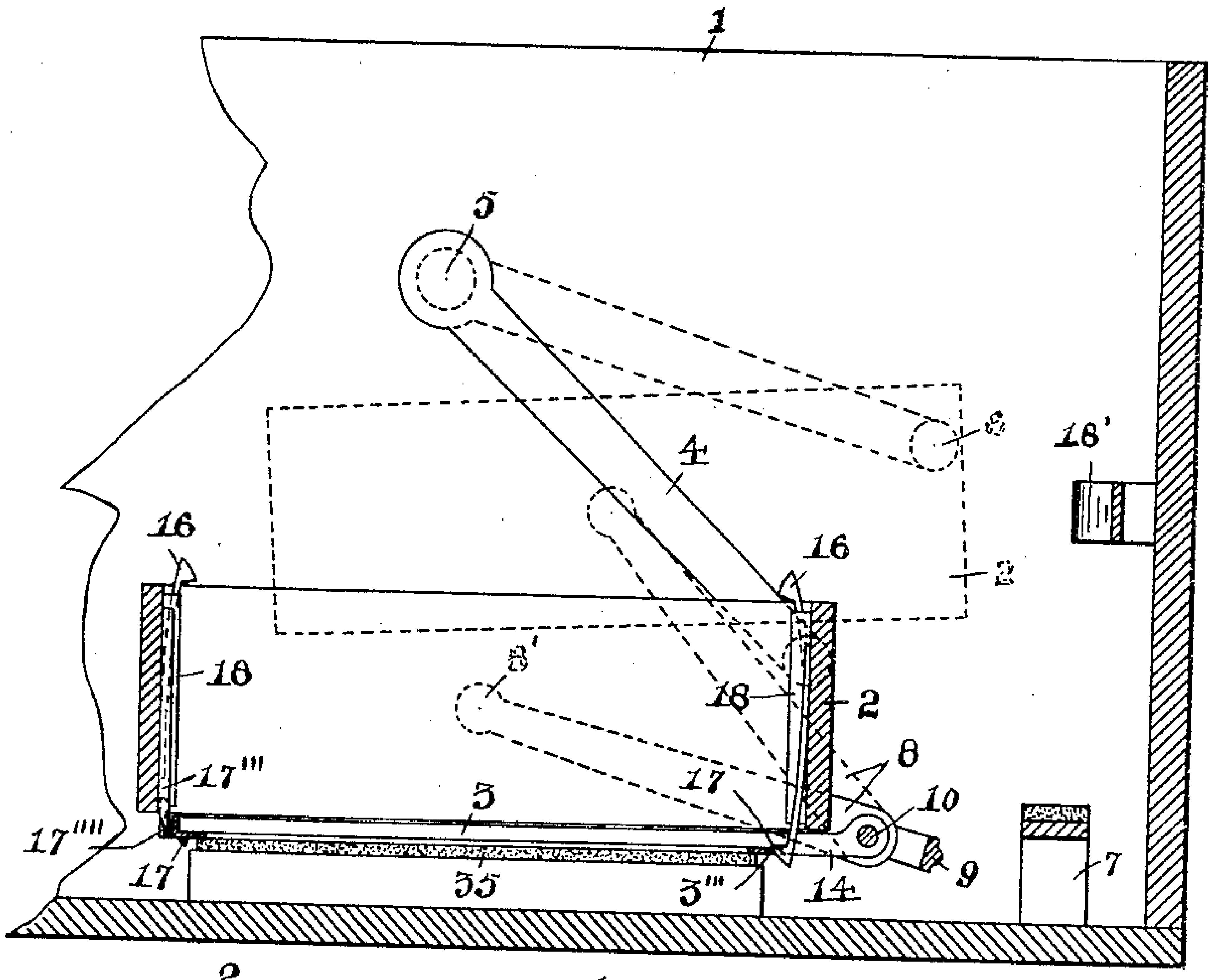


FIG. 10.

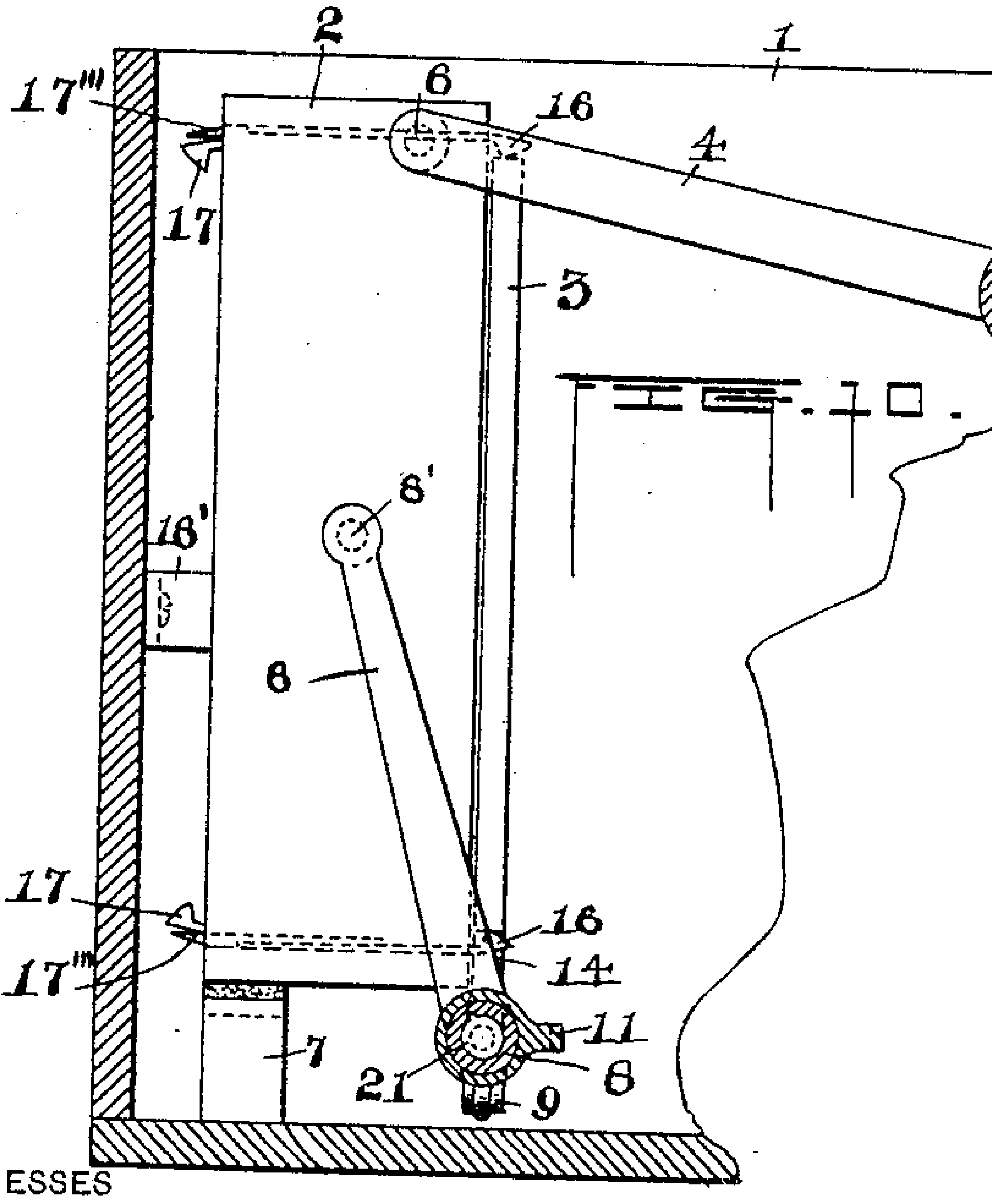
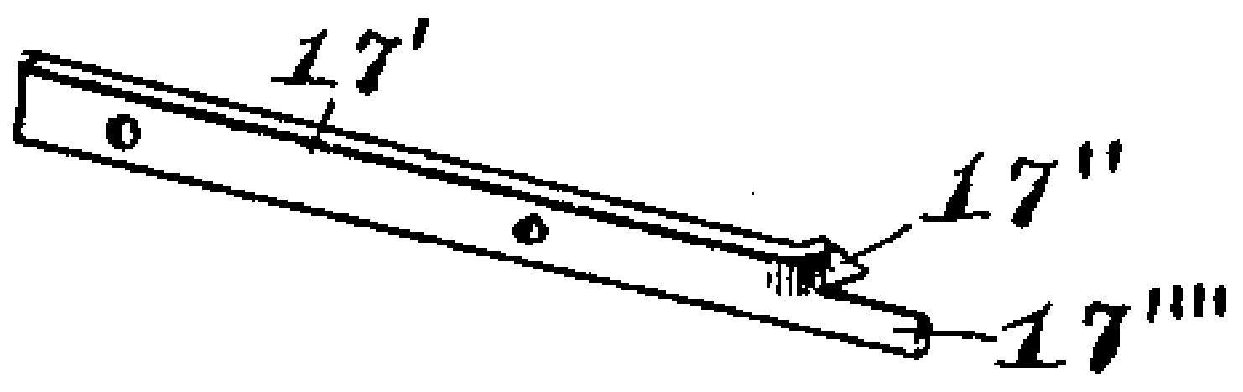


FIG. 11.



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UNITED STATES PATENT OFFICE.

STEPHEN C. FAY AND HENRY WILLIS, OF ROCHESTER, NEW YORK.

MAGAZINE-CAMERA.

SPECIFICATION forming part of Letters Patent No. 479,587, dated July 26, 1892.

Application filed January 16, 1892. Serial No. 418,286. (No model.)

To all whom it may concern:

Be it known that we, STEPHEN C. FAY and HENRY WILLIS, residents of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Magazine-Cameras; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

The invention relates to photographic cameras provided with magazine plate-holders and to devices for holding and moving the plates; and it consists in the construction hereinafter described and pointed out.

In the accompanying drawings, Figure 1 is a partial plan. Fig. 2 is a partial section on line 2 2 of Fig. 1. Fig. 3 is a sectional detail. Fig. 4 is a similar view of a modification. Figs. 5 and 6 are views of escutcheons and keys, the former being shown in section in Figs. 3 and 4, respectively. Fig. 7 is a sectional detail, other forms of the device being shown in Figs. 3 and 4. Fig. 8 is a plan of a cam. Fig. 9 is a partial section on line 9 9 of Fig. 1. Fig. 10 is a partial section on line 10 10 of Fig. 1. Fig. 11 is a detail; and Fig. 12 is an end view of a clutch-shifting device, the shaft and box-bottom being in section.

Numeral 1 denotes a box or case, 2 a magazine plate-holder, and 3 a plate-transferring frame.

3′ denotes a plate, and 3″ a plate-carrier. The holder is adapted to be partially supported and carried by arms 4, pivoted at 5 in the sides of the box on its interior. Pivotal connections of the arms and holder are indicated by 6. The holder normally rests on a post 7, provided with an elastic cushion to obviate a jarring concussion. It is further adapted to be supported and carried by arms 8, having tubular journals (see Fig. 3) turning freely on a shaft 10. One of these journals is provided with a keyhole 23, and said journals have arms pivotally connected to the magazine 2 at 8′ and rock together on shaft 10. They may, if desired, be more rigidly connected by the bent bar 9, as shown.

11 is a socket adapted to rock in a bearing in the escutcheon or cap 12 and provided with a keyhole 21, continuous with hole 23 in the tubular part of arm 8. The plate-transferring frame 3 is supported on shaft 10 by arms 14, rigidly secured thereto.

16 denotes spring-catches for retaining the plates in the magazine or holder, and 18 are metal strips on the bottom of the holder, along which the edges of the plates may be slid with little friction.

18′ is a spring-follower arranged to bear on the rear plate in the holder.

In Fig. 2 several plates are indicated in dotted lines, only the front and rear plates being shown in full lines. The pressure of spring 18′ will hold the rear plate 3′ away from the spring-catches 17, which therefore do not normally act to retain the plates; but said catches 17 are adapted to pick up a plate when the holder is dropped or placed upon it, as hereinafter set forth, the transfer-frame being suitably notched at 3‴ to allow said catches to pass beyond the frame and over the edge of the plate when the holder and frame are in the position indicated in Fig. 9.

The devices above described operate as follows: The holder being filled with plates in the position shown in Fig. 1 and the plate-transfer frame moved against its front, spring-catches 16 are thereby disengaged from the front plate by the spreading action of the transferer, which bears against the inclines 16′ (see Fig. 2) on said spring-catches. The plates are thereupon pushed forward a distance equal to the thickness of a plate by a follower 18′ and the front plate is pushed into the transferring-frame. The key 20 is then inserted in keyhole 21 a short distance, so as to turn the shaft 10, but not inserted sufficiently far to turn the journals of arms 8, which carry the magazine or holder. The key being then suitably turned rocks the shaft 10 and moves the frame and contained plate to the position indicated in dotted lines in Fig. 2 and in full lines in Fig. 9. Thereupon the key is pushed into keyhole 23 of the journal of arm 8 and further turned, and the holder-arms 8 are thereby moved about shaft 10, carrying the magazine or plate-holder toward the frame, said holder being turned on pivots 6 and carried and guided by the swinging arms 4, so that its rear side is carried forward and down upon the transferring-frame, as indicated in dotted lines in Fig. 1, the parts moving as shown by the arrows in Fig. 2. The support 7 is placed in a vertical plane at the sides of the pivots 8′, so that at the beginning of the movement of the arms 8 the holder is lifted upwardly off from the elastic cushion on post 7. This entire movement causes the spring-catches 17 to embrace the plate supported on the frame in its lowered position on cushion 35, as shown in Fig. 9, the frame being notched at 3‴ to permit the inclined part of the springs to pass, as above stated. By reversing the two movements of the key and in reverse order the holder and frame are carried back to their original positions, a plate having by the whole operation been transferred from the front of the holder to its rear and a second plate inserted in the frame. This second plate, either with or without the taking of a picture thereon, can be transferred in like manner, and so with all the plates in the holder.

17′ denotes spring-catches adapted to retain a plate in the transfer-frame by means of their beveled projections 17″. The above-described movement of the frame against the holder spreads these springs, the parts being thereby placed as indicated in Fig. 9 by the pressure of the plate against their beveled projections 17″, which forces them back and permits the plate to pass behind said projections 17″. Preparatory to picking up a plate when the holder is subsequently lowered upon it, as before described, these catches are spread and their projections 17″ disengaged from the plate by the studs 17‴, fixed on the holder and having suitably-inclined faces. These studs in this operation pass within the projections 17‴ of said spring-catches and force them apart, so that the inclines 17″ are pushed away from over the plate, the shoulders of the catches 16 at such time being introduced under the plate in readiness to lift it as soon as the holder is operated, as stated.

In Fig. 4 is illustrated a modification in which the shaft 10 that carries the transfer-frame is adapted to be turned by means of a parallel shaft 10′, having a suitable keyhole 10″, the two shafts being geared together, as indicated. By means of the keyhole 10‴ in shaft 10 the holder may, if desired, be moved independently of said shaft 10′.

The foregoing description illustrates the main principles of operation and construction. In Fig. 7 are shown equivalent devices, which in some respects are deemed preferable. The object of this form of the invention is to move both the holder and the transfer-frame by a single movement of shaft 10″.

14 are arms for supporting the transfer-frame, and 25′ denotes sleeves rigidly connected thereto and loosely fitted on shaft 10″. A clutch fitted with a feather to turn with shaft 10″ and sliding lengthwise on said shaft is indicated by 27.

28 denotes clutch-pins adapted to engage a recess 29 in arm 8 or recess 30 in the sleeve 25′, according as the clutch is moved.

31 denotes a cam-finger fixed on the clutch and arranged to move in a cam-groove (see Figs. 7 and 8) formed in a bracket or post 33, having a curved face and secured to the bottom of the box. The groove comprises parallel portions 32 and an intermediate portion 32′, inclined to said parallel parts. During the first fourth of the revolution of shaft 10″ the finger 31 holds the clutch in engagement with a sleeve 25′, forming part of arm 14 of the transfer-frame. In said movement of shaft 10″ the sleeve 25′ and its arm 14 are correspondingly moved together with the plate-transfer frame 3, with the effect to carry a plate near cushion 35, which is the picture-taking position. (Indicated by dotted lines in Fig. 2 and shown in full lines in Fig. 9.) When the inclined part of the groove is reached by the cam-finger, the clutch is thereby shifted longitudinally on the shaft, so as to engage the arm 8 of the plate-holder, by which said arm becomes fixed upon the shaft. This shaft being turned another fourth of a revolution, the holder is moved as before set forth and picks up the plate from the transfer-frame. A reverse movement of the shaft carries the holder back to its initial position and raises the transfer-frame and inserts in it another plate.

35 denotes a cushion to receive the transfer-frame. 34 is a stop on the shaft, adapted to arrest the movement of the holder when returned to its first position.

The operation of the magazine plate-holder is not dependent upon the use of the particular transfer-frame or of any similar frame or like devices, as it would operate were the plates placed on the cushion 35 or on any equivalent support by other means—as, for example, by simply transferring them directly by the hand from the picture-taking position.

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a camera, of the case, the plate-transferring frame, the magazine-holder, the shaft secured in the case, both the frame and the holder being pivotally supported by arms on the shaft and adapted to be rocked by said shaft in the same direction, with mechanism for independently turning said holder on its arm-pivots, whereby opposite sides of the holder can be successively brought in contact with the frame, substantially as set forth.

2. The combination, in a camera, of the case, the plate-transferring frame, the magazine-holder, the shaft secured in the case, both the frame and holder being pivotally supported by arms on the shaft and adapted to be rocked by said shaft in the same direction, with mechanism for independently turning said holder on its arm-pivots, whereby opposite sides of the holder can be successively brought in contact with the frame and support 7, substantially as set forth.

3. The combination, in a camera, of the pivoted plate-transferring frame, the magazine-

holder pivotally supported in swinging arms, said arms, devices for turning the holder on its pivotal supports in the arms, spring-catches secured in the holder to engage the edges of the front and rear plates, and a spring-follower to push the plates through the magazine-holder, substantially as set forth.

4. In a camera, the combination of a case, a magazine-holder provided with arms pivotally connected thereto near its top and to the case of the camera, and a rocking shaft provided with arms pivotally connected to said holder near the center of its sides, whereby said holder can be simultaneously lowered and turned on a longitudinal axis, substantially as set forth.

5. In a camera, the combination of a case, a magazine-holder provided with arms pivotally connected thereto near its top and to the case of the camera, and a rocking shaft provided with arms pivotally connected to said holder near the center of its sides, whereby said holder can be simultaneously lowered and turned on a longitudinal axis, said holder having plate-engaging spring-catches 17, substantially as set forth.

6. In a camera, the combination of the case, a magazine-holder provided with arms pivotally connected thereto near its top and to the case of the camera, and a rocking shaft provided with arms pivotally connected to said holder near the center of its sides, whereby said holder can be simultaneously lowered and turned on a longitudinal axis, said holder having plate-engaging spring-catches 16 to retain the plates at the rear of the holder, substantially as set forth.

7. In combination, the camera box or case, a shaft supported therein, the transfer-frame loosely connected with said shaft, the magazine or holder loosely supported on said shaft, the clutch for alternately fixing the said frame and holder on the shaft, and devices for turning the shaft, substantially as set forth.

8. The camera-box provided with a cushion 35, in combination with the pivoted plate-transferring frame, the pivoted magazine-holder provided with spring-catches, and mechanism for moving the holder to cause the catches to engage a plate in the transferring-frame at rest upon the cushion, substantially as set forth.

9. The transfer-frame provided with spring-catches, each having an inclined projection 17'' and extension 17'''', in combination with the magazine-holder having studs 17''' on its rear arranged to engage said extensions and move the spring-catches when the holder is placed upon the frame, and devices for bringing the frame and said holder together successively on opposite sides of the latter, whereby said spring-catches are first made to engage a plate in front of the holder and whereby said studs subsequently release the catches, substantially as set forth.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

STEPHEN C. FAY.
HENRY WILLIS.

Witnesses:
JOSIAH SULLIVAN,
LOUIS H. JACK.