

No. 896,864.

PATENTED AUG. 25, 1908.

R. F. SPAMER.
VALVE ALARM ATTACHMENT.

APPLICATION FILED MAY 7, 1906.

3 SHEETS—SHEET 1.

Fig. 1.

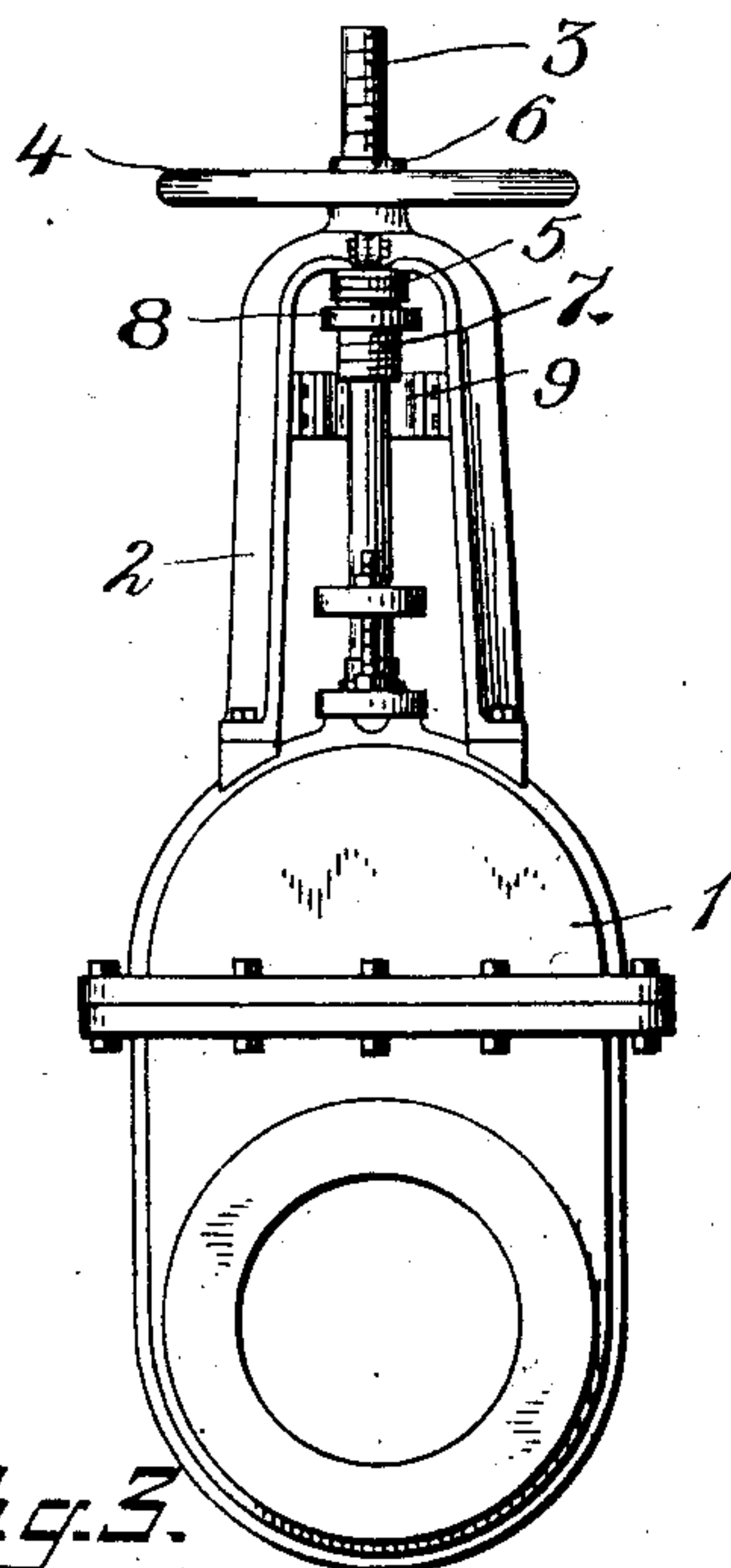


Fig. 2.

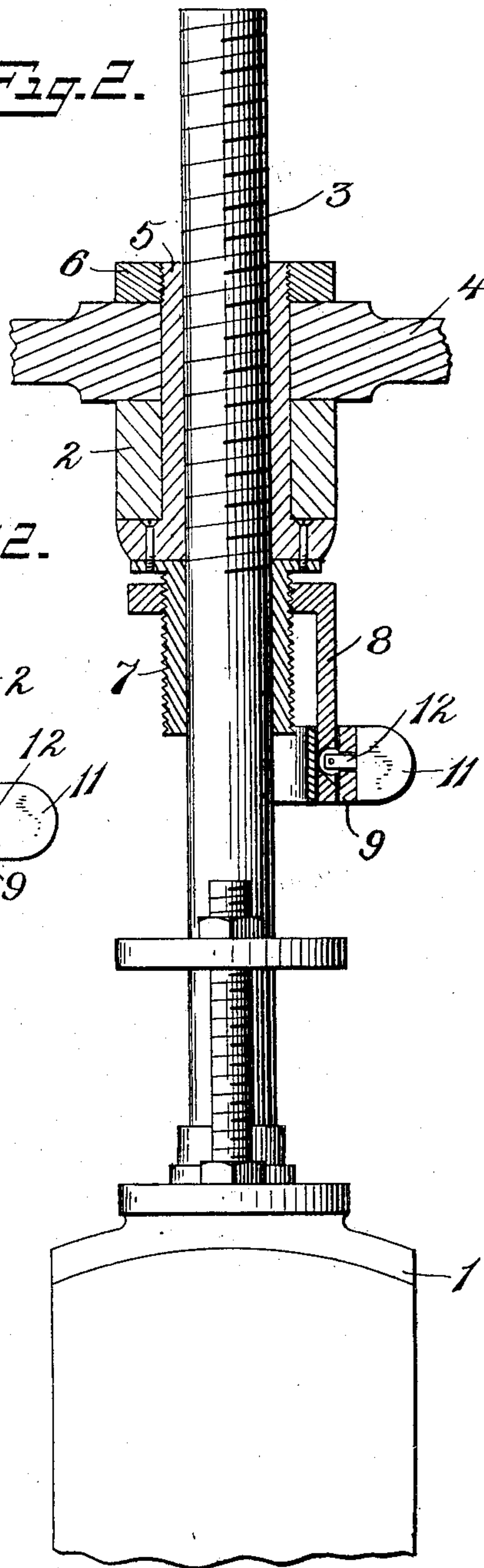


Fig. 12.

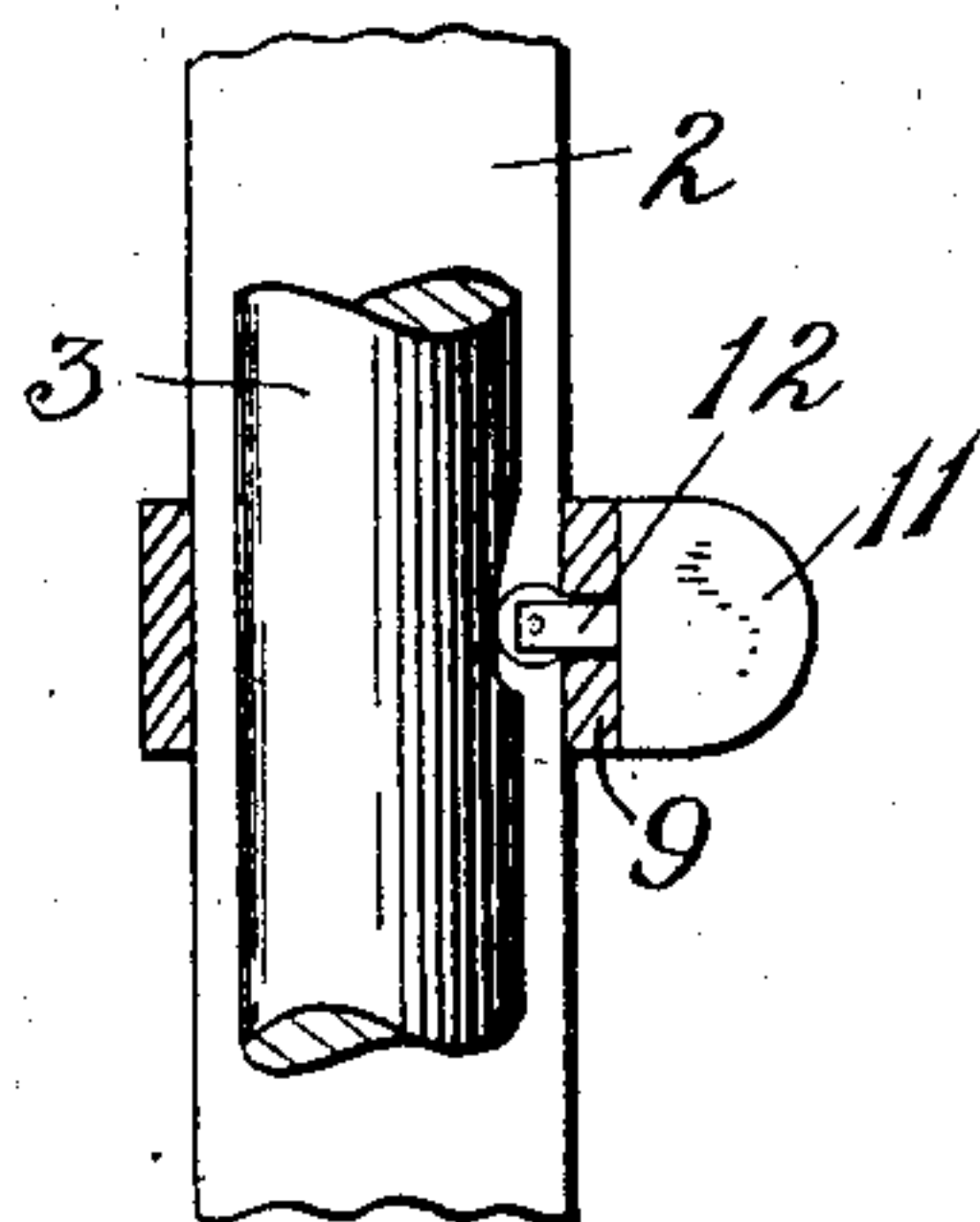
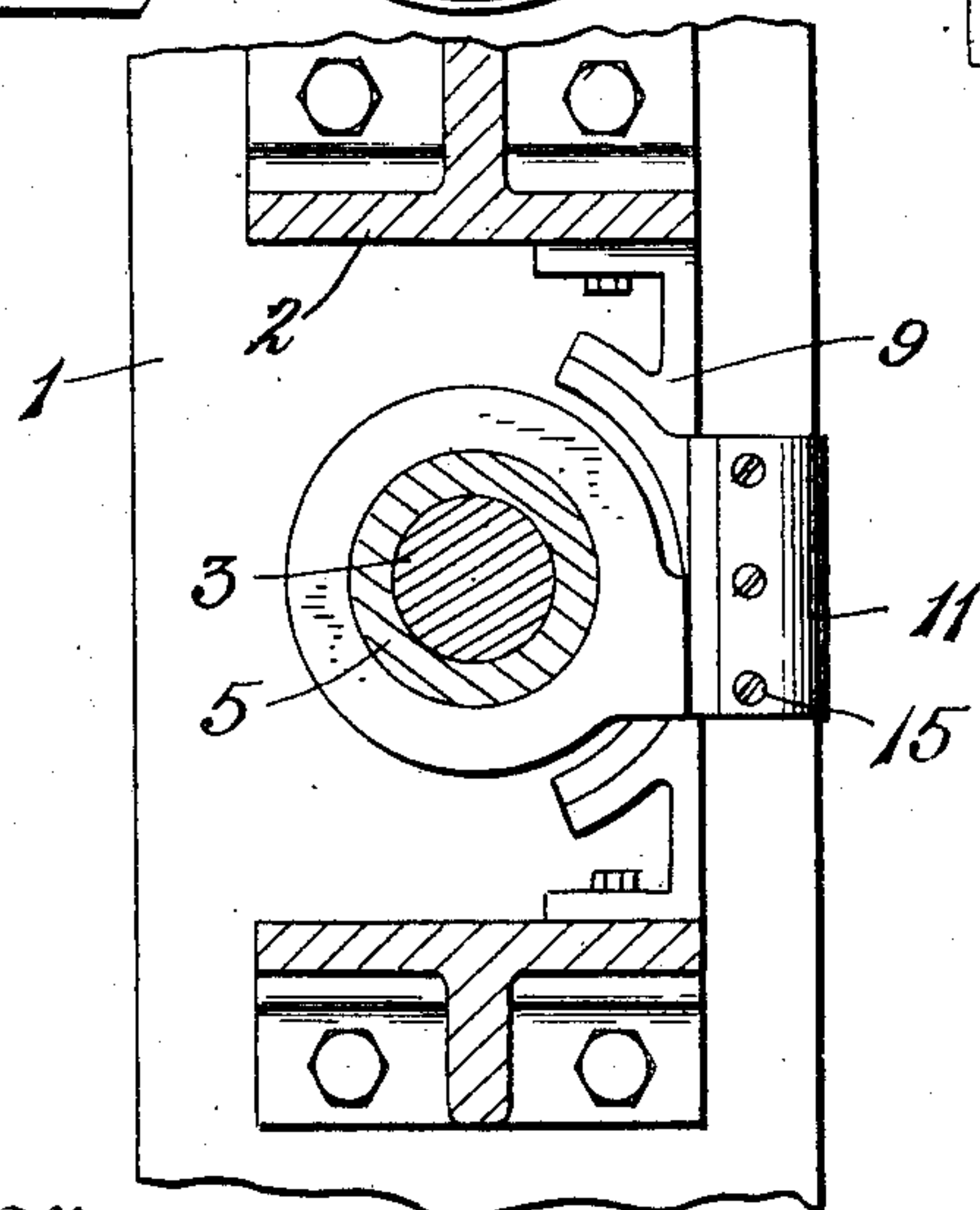


Fig. 3.



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3 SHEETS—SHEET 2.

Fig. 4.

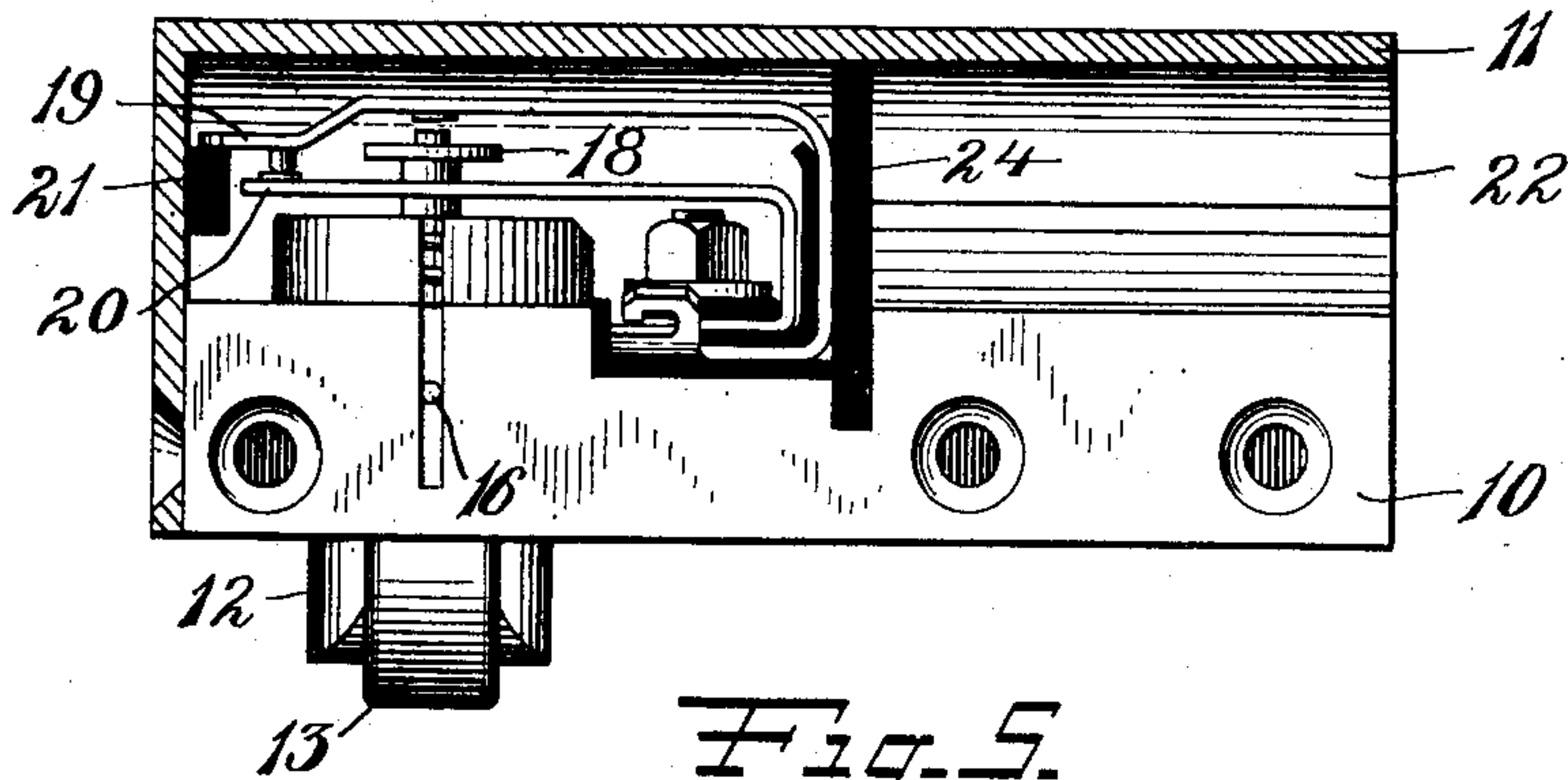


Fig. 5.

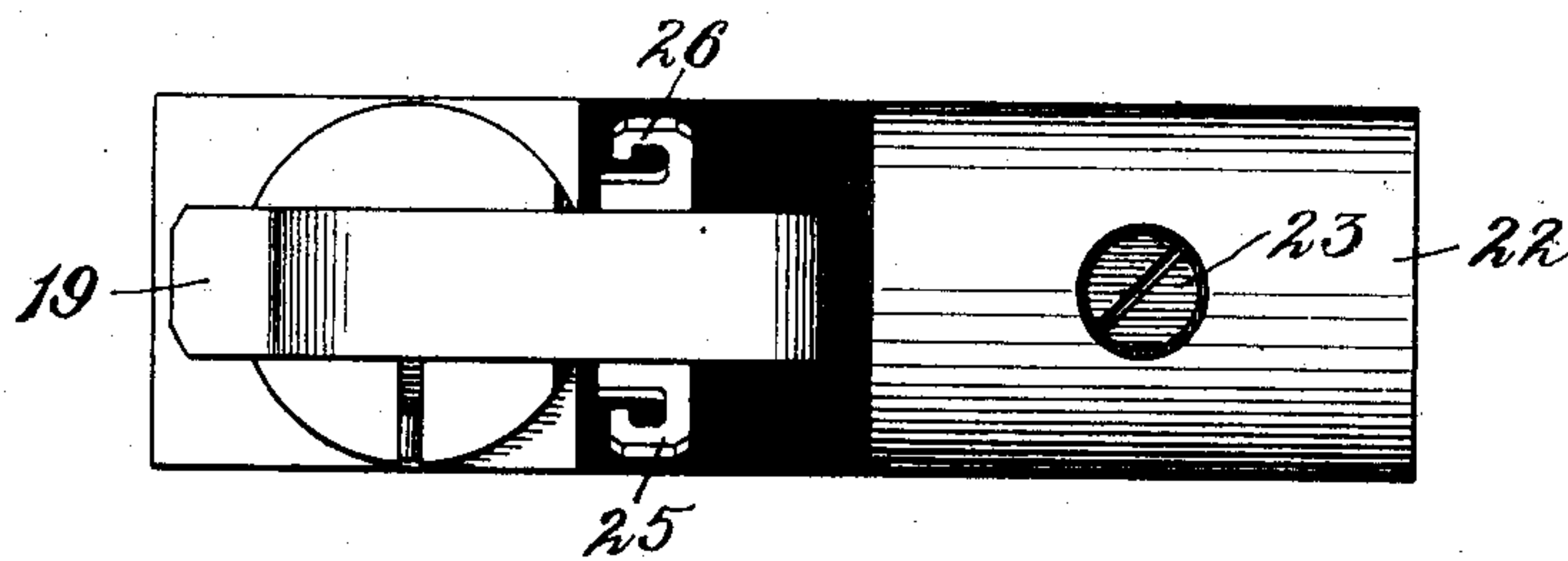


Fig. 6.

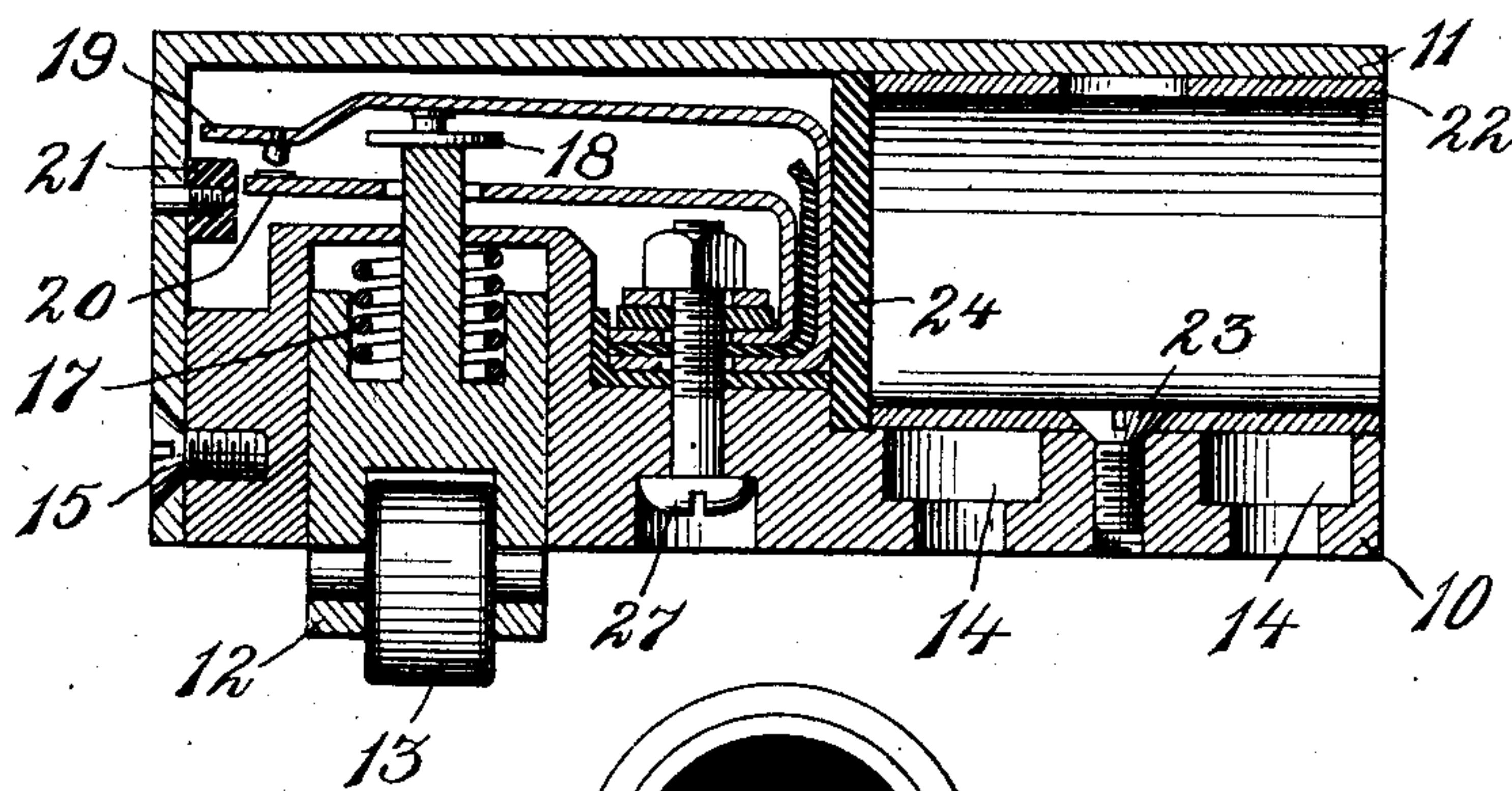
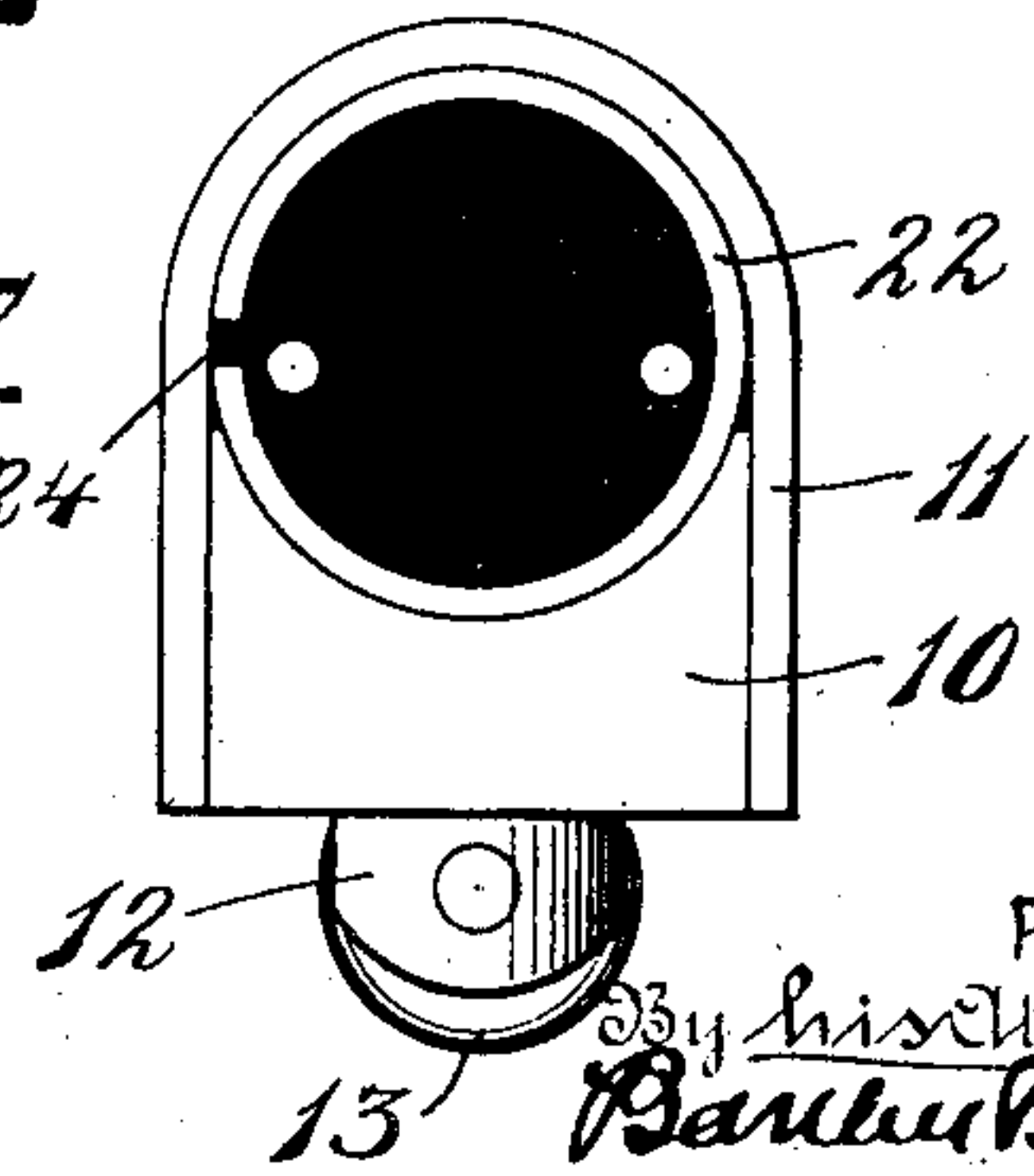


Fig. 7.



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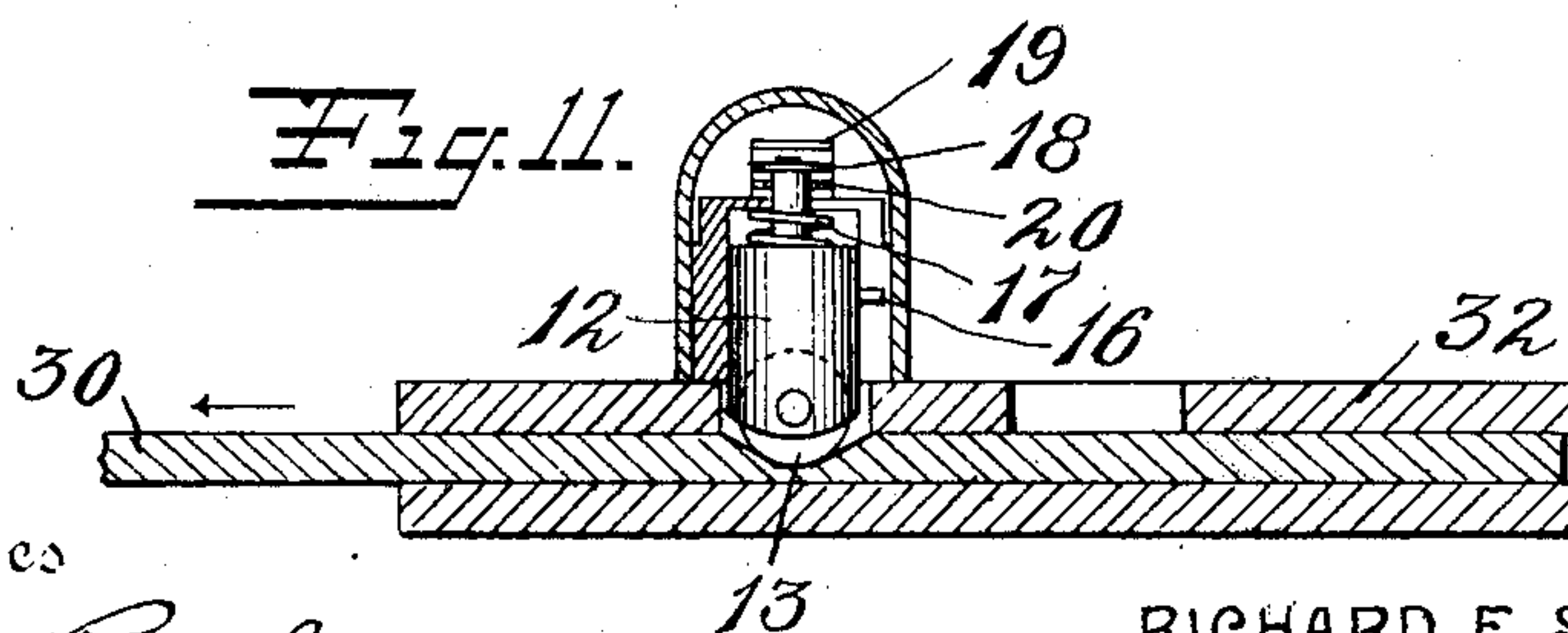
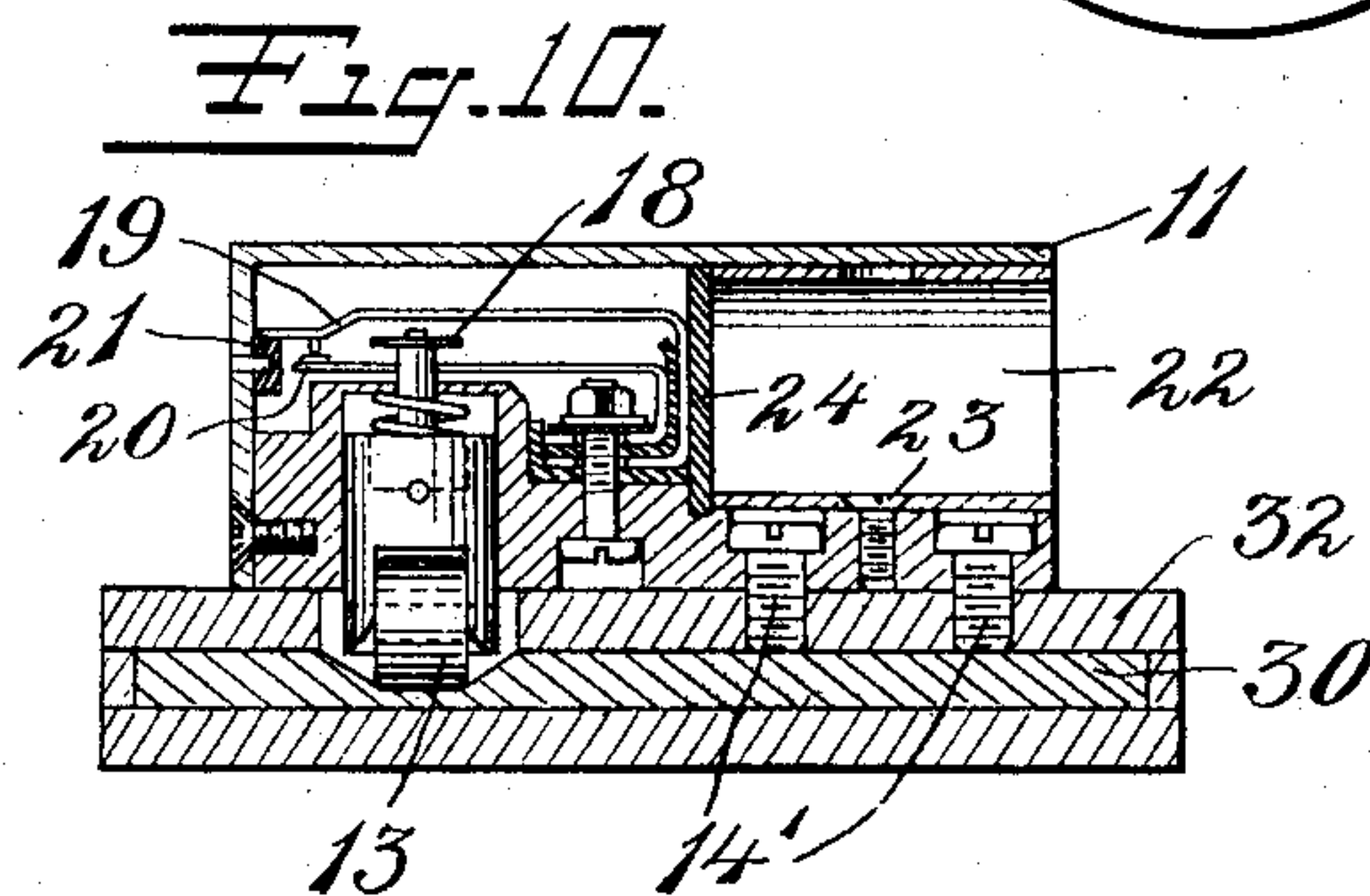
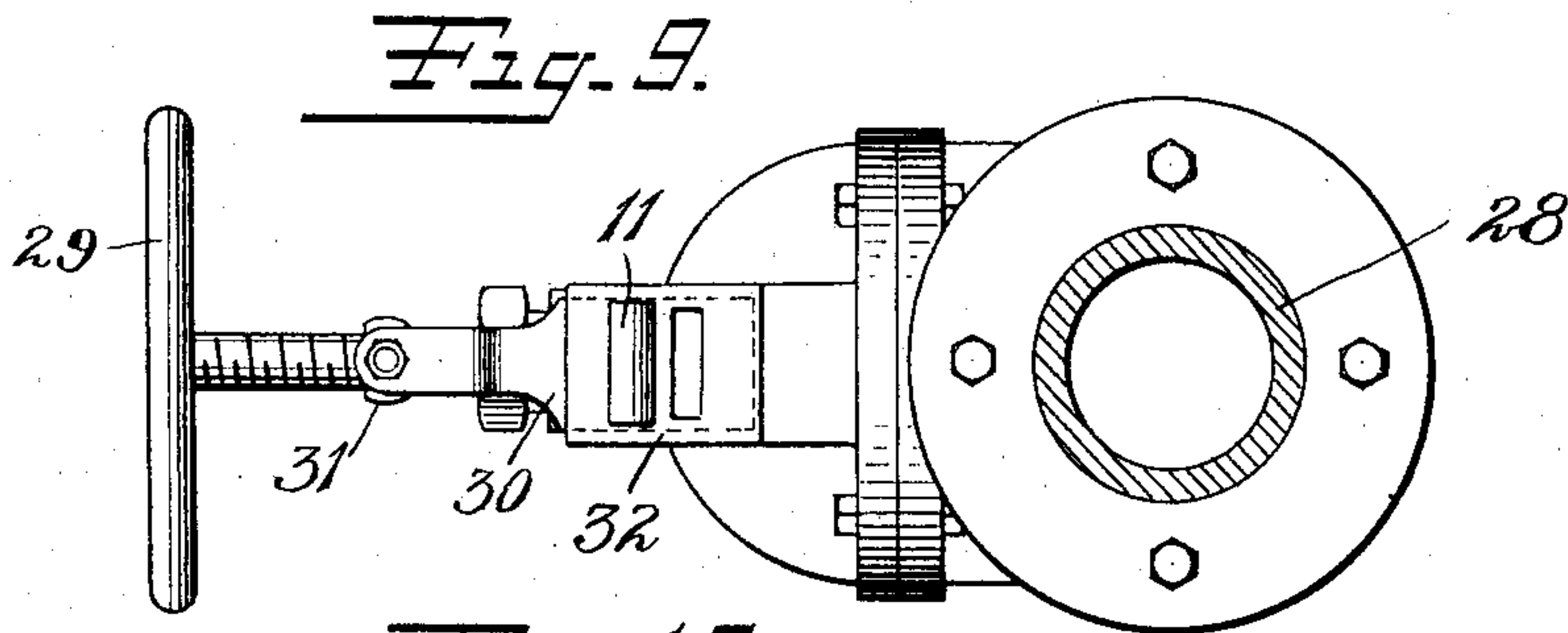
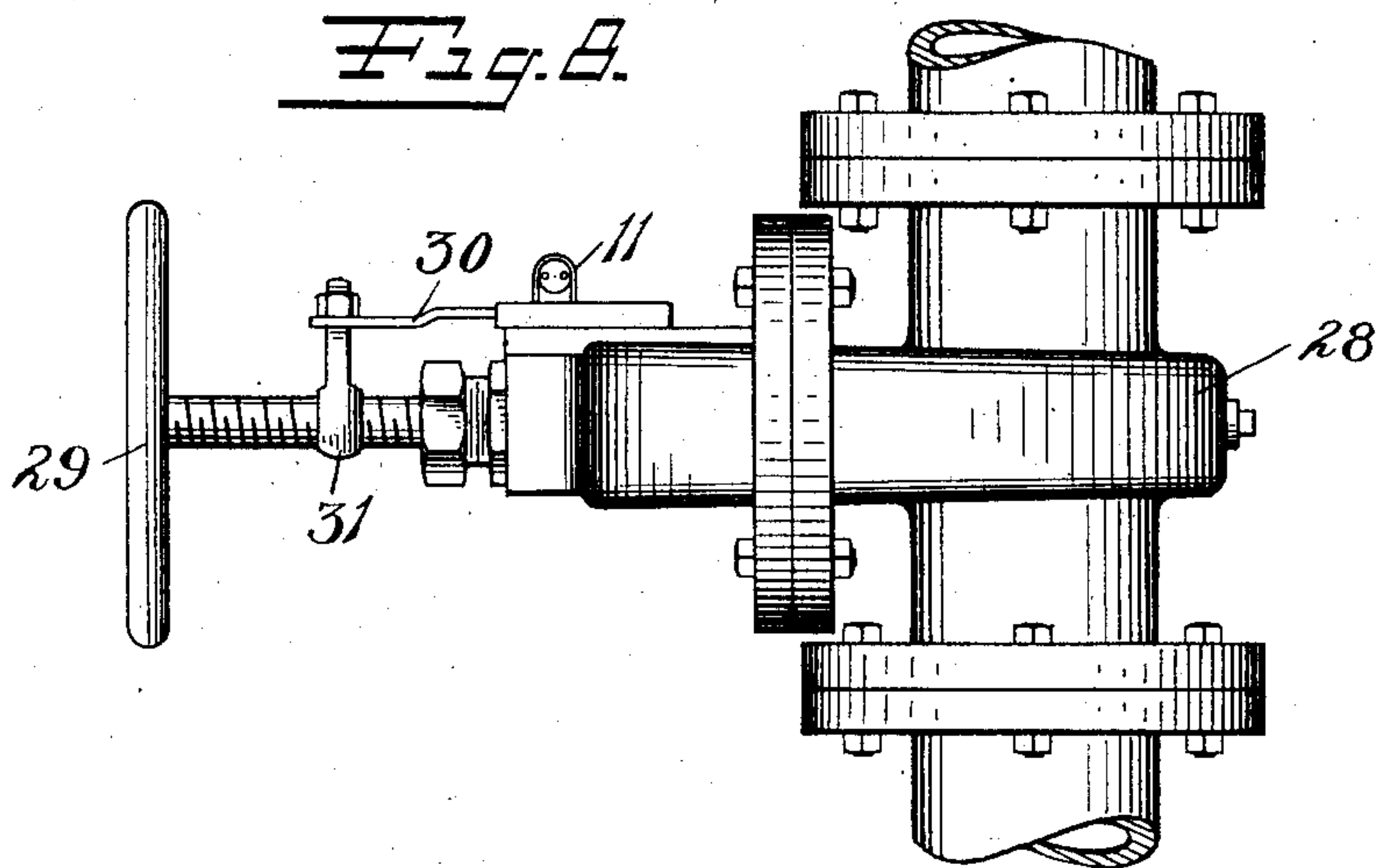
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

RICHARD FULLER SPAMER, OF CHICAGO, ILLINOIS, ASSIGNOR TO CONSOLIDATED FIRE ALARM COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

VALVE ALARM ATTACHMENT.

No. 896,864.

Specification of Letters Patent.

Patented Aug. 25, 1908.

Application filed May 7, 1906. Serial No. 315,568.

To all whom it may concern:

Be it known that I, RICHARD F. SPAMER, a citizen of the United States, residing at Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Valve Alarm Attachments, of which the following is a full, clear, and exact description.

My invention relates to mechanism for automatically giving an alarm when a valve in a water supply pipe is interfered with.

The invention is particularly directed to attachments for shut-off valves in sprinkler systems.

The object of the invention is to provide improved mechanism of the type shown in my application No. 282,396, and means for mounting the same.

The invention consists in improvements, the principles of which are illustrated in the accompanying three sheets of drawings.

Figure 1 shows a valve in elevation with mechanism of my invention associated therewith. This valve is of the rising stem type. Fig. 2 is an enlarged fragmentary sectional view showing the method of mounting the alarm attachment. Fig. 3 is a fragmentary horizontal section and plan of the same. Fig. 4 is a side view of the contact mechanism with its casing in section, the contacts being in their normal position. Fig. 5 is a plan view of the contact mechanism, the casing being removed. Fig. 6 is a longitudinal sectional view of the complete mechanism and its casing, the contacts being in the position which they would occupy after disturbance of the valve. Fig. 7 is an end elevation of the same, taken from the end in which the circuit wires are to be attached. Fig. 8 is a side view of what is termed a rotating stem valve with an attachment of my invention. Fig. 9 is a plan view of the same. Fig. 10 is a longitudinal sectional view of the attachment shown in Figs. 8 and 9, the contacts being in their normal position. Fig. 11 is a transverse sectional view of the same. Fig. 12 shows direct engagement with the rising stem.

The body of the valve 1 has the customary yoke 2, threaded rising stem 3, and rotating hand wheel 4.

5 is an interiorly threaded bushing secured to the hand wheel 4, and the rotation of which causes the reciprocation of the valve stem.

6 is a washer threaded upon the upper end of the bushing 5.

7 is an exteriorly threaded sleeve secured to and rotatable with bushing 5. The ratio between the pitch of the threads on the valve stem and the thread on the sleeve 7 may be one to five, for suitable operation.

8 is a member having a collar portion threaded on the sleeve 7 and an arm extending substantially parallel to the valve stem.

9 is a bracket supported by the yoke 2 and on which is mounted the alarm circuit contact device.

10 is the base, in the preferred form of brass or other suitable metal.

11 is a casing.

12 is a plunger member supported by the base and movable therein, preferably carrying a roller 13 at its lower end. This roller normally rests at the bottom of a groove in the arm 8, which is inclined on both sides. Screws are inserted in the pockets 14—14 for securing the base of the contact device to the bracket 9. The casing 11 is secured to the base in a suitable manner, as by a series of screws 15—15.

16 is a pin projecting laterally from the plunger 12 into a slot in the base to prevent the plungers rotating.

17 is a spring normally tending to push the plunger down so that its roller will contact with the arm 8. The plunger 12 has a shank of reduced diameter terminating in a head 18, which performs the function of one contact member, which is grounded. The spring arms 19 and 20 constitute two movable contacts in the normally closed local alarm circuit. The plunger shank passes freely through a large opening in contact arm 20, so that the plunger is normally electrically disconnected from the local alarm circuit.

21 is an insulating projection carried by the casing 11 upon which the contact arm 19 rests, being pressed downward by reason of the tension of the metal of which it is made. The arm 20 is also a spring arm, but normally tending to move upward into the position shown in Fig. 6. The upward movement of the arm 20 is, however, prevented by reason of the superior force of the spring arm 19.

22 is a split tube secured to the base 10 by a screw 23. The ends of the circuit wires are preferably formed into a cable, the end of

which is secured inside the split tube 22. The ends of the wires pass through openings in the insulating plate 24, and are connected to the lugs 25 and 26 of the contact arms 19 and 20 respectively. The contact arms 19 and 20 are insulated from each other in a suitable manner. They are also insulated from but secured to the base 10 by means of a bolt 27.

As before mentioned, the parts are normally in the position shown in Fig. 4. Whenever the hand wheel 4 is rotated so as to affect the position of the valve, the arm 8 is moved longitudinally so as to affect the position of the plunger 12. As soon as the plunger moves a short distance, its contact head 18 engages one or the other of the spring arms 19 and 20, so as to immediately ground the local circuit and send in a "trouble" alarm. Continued movement of the valve stem causes the contact head 18 to separate the spring arms 19 and 20, as shown in Fig. 6, and break the local circuit, sending in a complete alarm. A similar effect is produced by an attempt to tamper with the device by removing the cover 11. Such removal would result in the release of the spring arm 19 from its support on lug 21, so that arm 19 would engage with contact head 18 and ground the circuit, sending in immediately a "trouble" alarm. The device is thus fully tamper proof.

On Sheet 3, the mechanism is shown attached to a valve 28, having a rotating hand wheel 29 and stem which do not move longitudinally in operating the valve. 30 is a target or indicator carried by the traveling collar 31 on the valve stem. 32 is a shield or box carried by the valve body and having an opening through which the indication of the position of the valve may be read. The plunger or plug of the contact device rests in a groove in the slide 30 and is operated when the slide moves in or out in a manner similar to the operation described as to the apparatus of Fig. 2. In this form the screws 14' are shown as securing the contact device to the shield 32. It will be obvious that it is immaterial whether the contact device is mounted on a stationary shield and is operated by a moving slide, or whether the shield moves and the slide is stationary. For convenient and reliable dimensions, the parts may be so proportioned that it requires three turns of the hand wheel of the valve stem to cause the plunger or plug 12 to press the contact springs apart. In every case, either 32 or 30 is detachable. Attempt to remove either would result in spring 17 forcing plunger 12 downward, thereby causing a separation of springs 19—20 and grounding the latter.

In the construction shown in Fig. 12, an alarm is started as soon as the valve stem is moved. In each case any attempt to re-

move the contact attachment will ground the line and then break it.

What I claim is:

1. A device of the character described, comprising the combination of a rising stem valve, a yoke therefor, a rotatable bushing mounted in the yoke, a threaded sleeve carried thereby, a collar mounted on said sleeve and longitudinally movable by the rotation thereof, and a plurality of contact arms connected in an electrical circuit and controlled by the movement of said collar.

2. A device of the character described, comprising the combination of a rising stem valve, a yoke therefor, a rotatable bushing mounted in the yoke, a threaded sleeve carried thereby, a collar mounted on said sleeve and longitudinally movable by the rotation thereof, and a contact device for an electrical circuit including a member operated by the movement of said collar.

3. A valve alarm contact device, including a base, a plunger reciprocable therein, and a pair of spring contact arms substantially at right angles thereto and normally engaging each other and adapted to be separated by the action of said plunger, and a movable member having means for actuating said plunger in the same direction when said member is moved in either direction.

4. An alarm attachment for valves, comprising a base, two line contacts supported thereon and normally engaging each other, a ground contact mounted between said line contacts and carried by a movable member or plug and operating to separate said two line contacts, and an actuating member having two cam surfaces for actuating said ground contact.

5. An alarm attachment for valves comprising, a base, a removable casing, a pair of spring contact arms normally in engagement with one another, one of said arms being normally supported by said casing, and a ground contact adapted to be engaged by said arm upon the removal of the casing.

6. An alarm attachment for valves comprising a base, a pair of line contacts normally in engagement with one another, and a spring pressed member having a projection between said contacts and adapted to separate them when said member is moved in either direction in combination with a valve and valve operating means controlling the position of said spring-pressed member.

7. An alarm attachment for valves comprising a base, a removable casing and an insulating lug on the interior thereof, a pair of line contacts, one of said contacts normally resting on said lug, and a ground contact normally disconnected from said line contacts but adapted to be engaged by one of said line contacts when said casing is removed.

8. In combination, a valve, a cam mem-

ber, means for giving said valve and said cam member synchronous longitudinal movement, a spring pressed plunger engaging the cam face of said cam member and a circuit
5 having contacts controlled by said plunger.

9. In combination, a valve, a cam member, means for giving said valve and said cam member synchronous longitudinal movement, a grounded spring pressed plunger engaging the cam surface of said cam member,
10 and a circuit having normally engaging contacts adapted to be both electrically and mechanically engaged by said grounded plunger and controlled thereby.

15 10. In an alarm system, the combination of a circuit, a contact connected thereto, a

grounded contact and a removable case engaging one of said contacts and holding it out of engagement with the other.

11. In an alarm system, the combination 20 of a circuit, a contact connected thereto, a grounded contact, both of said contacts being mounted on a common base and tending to engage one another, a cover movable relatively to said base and a projection within 25 said cover holding said contacts out of engagement.

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Witnesses:

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