

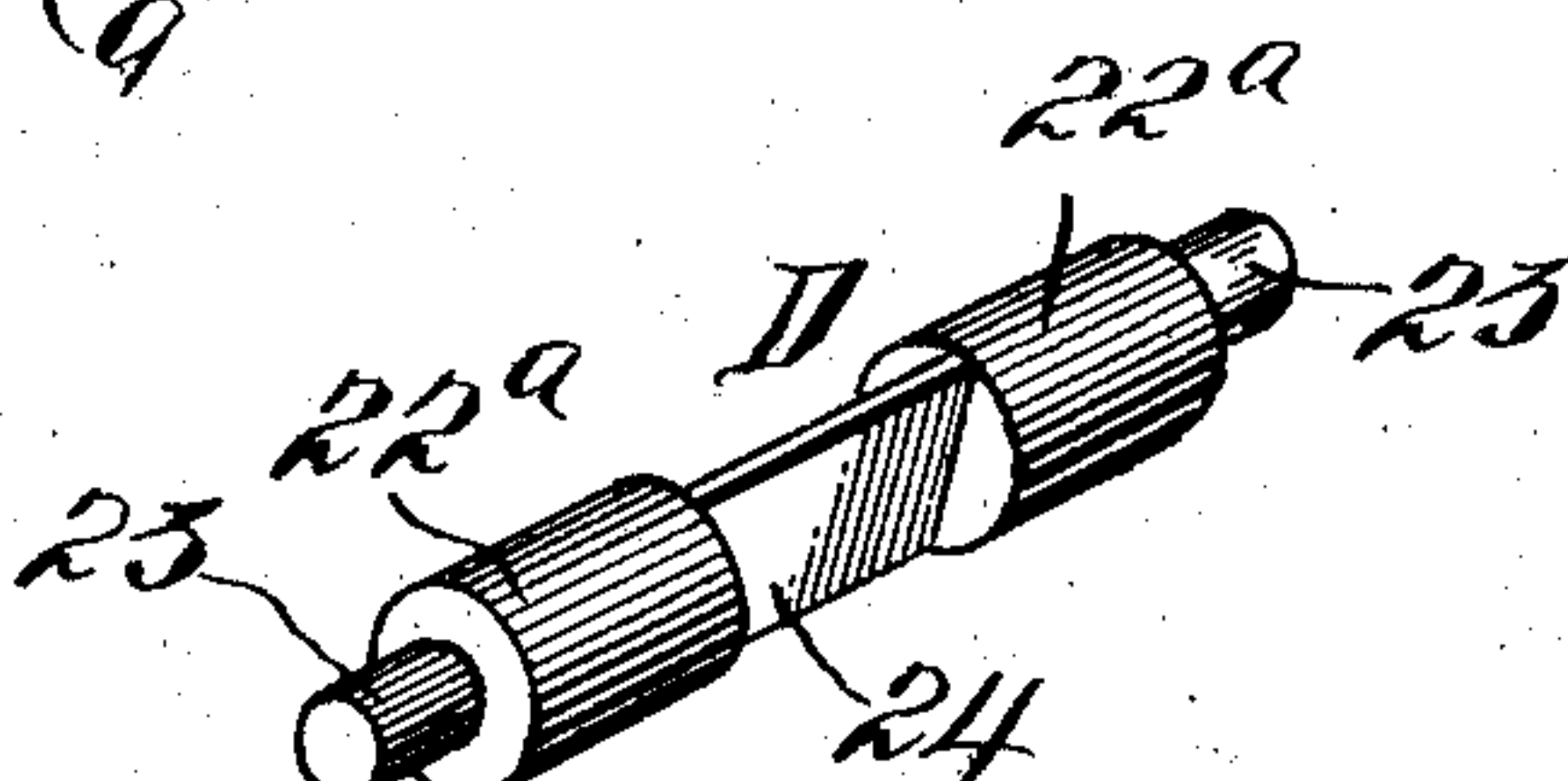
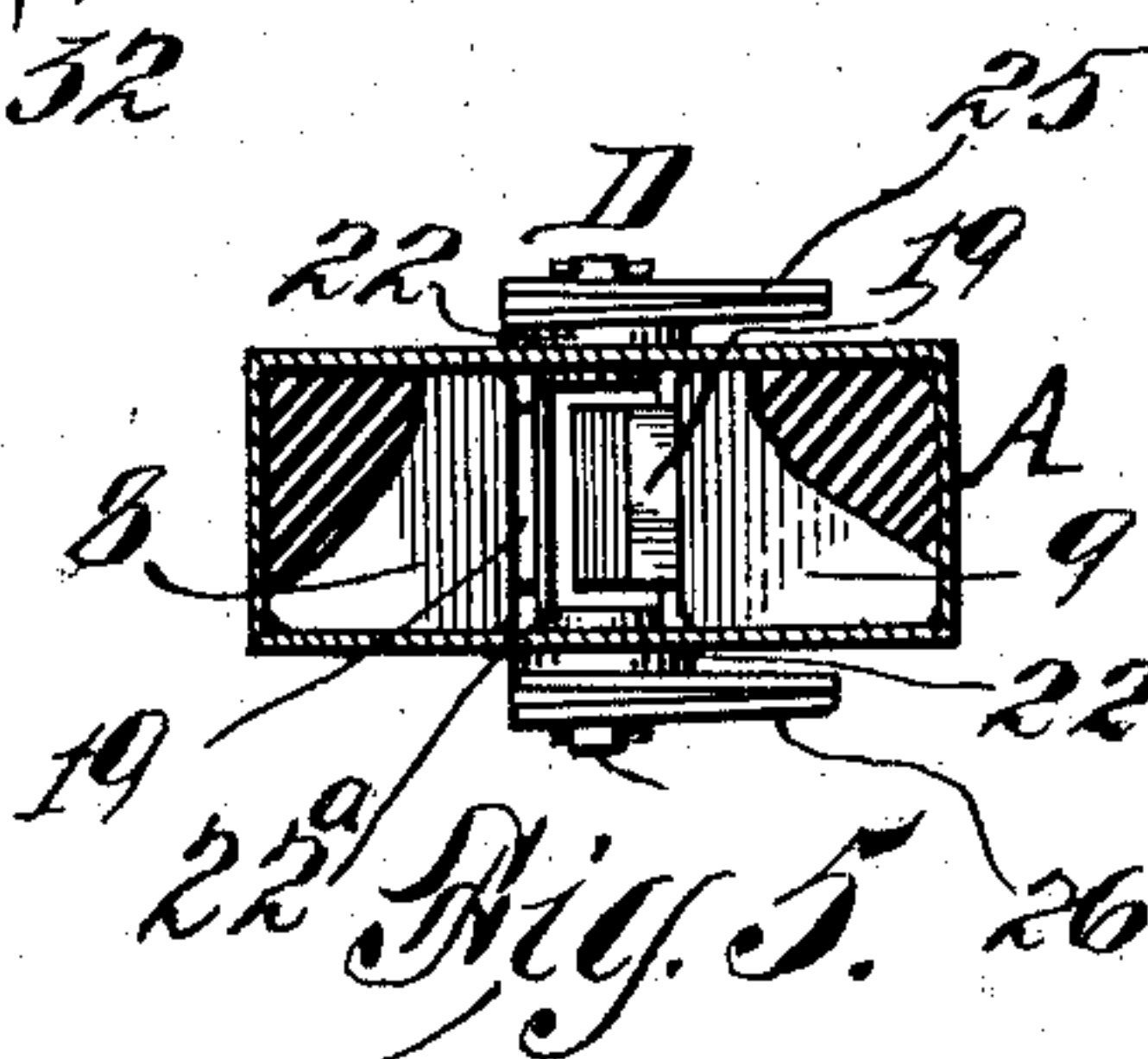
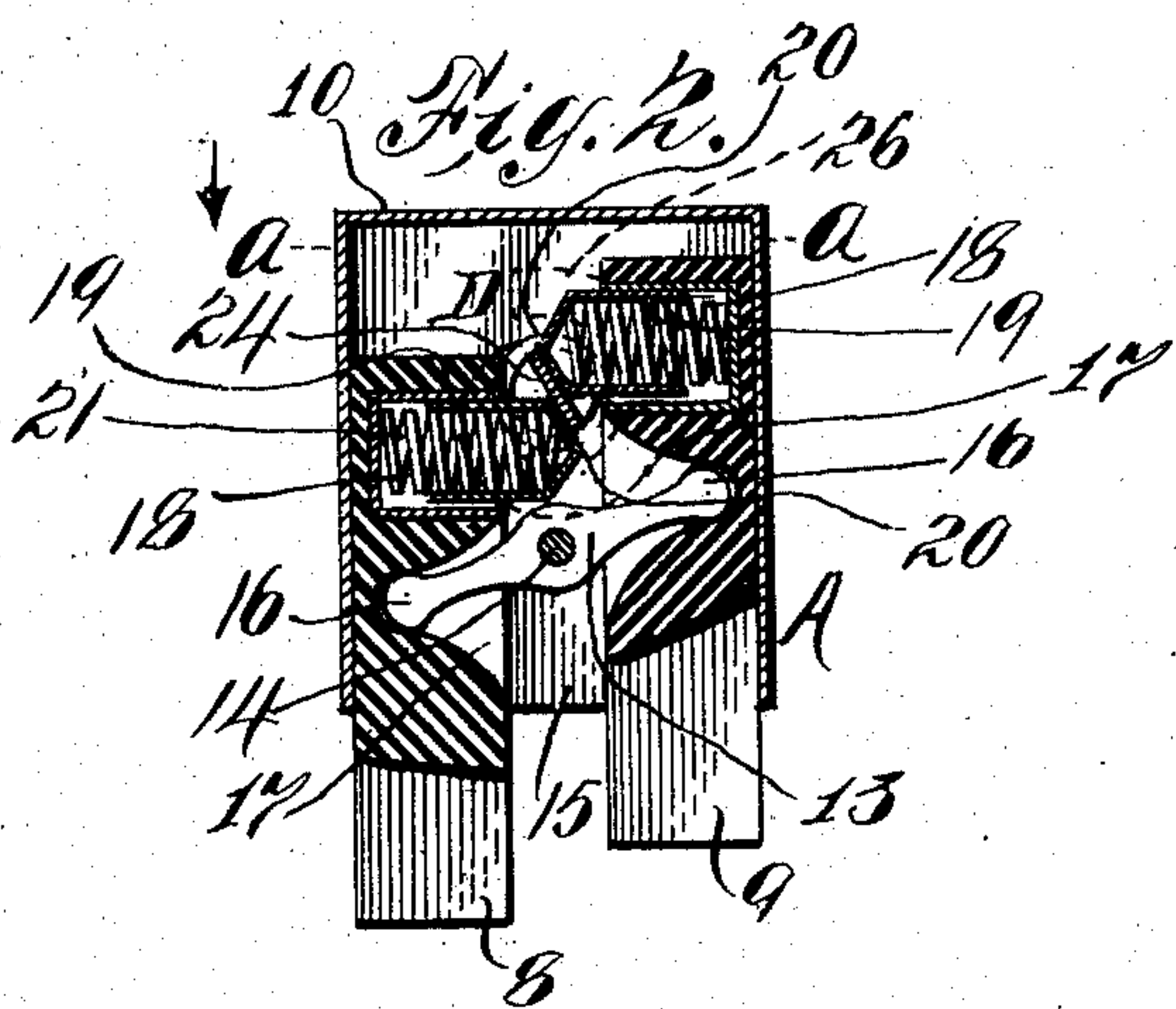
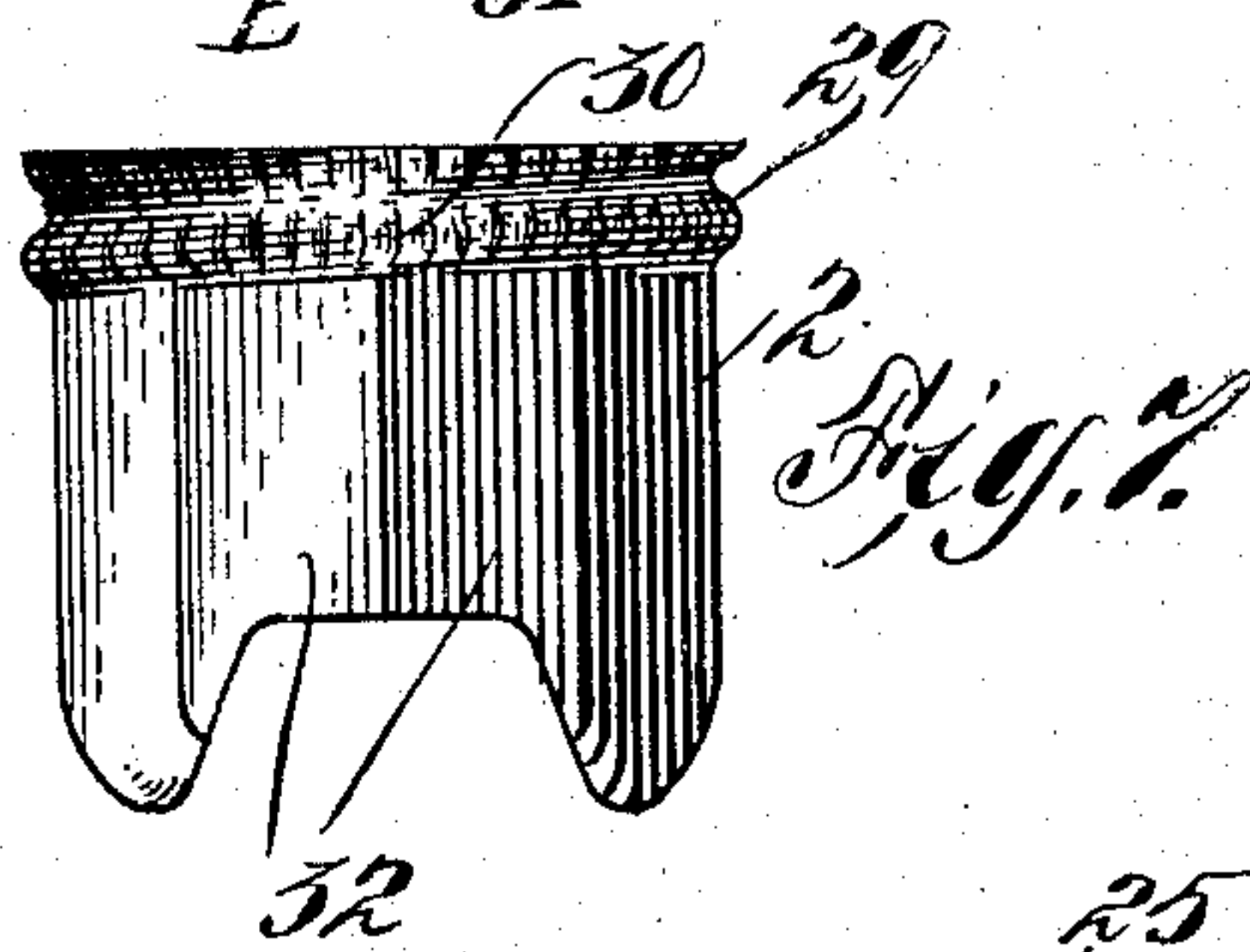
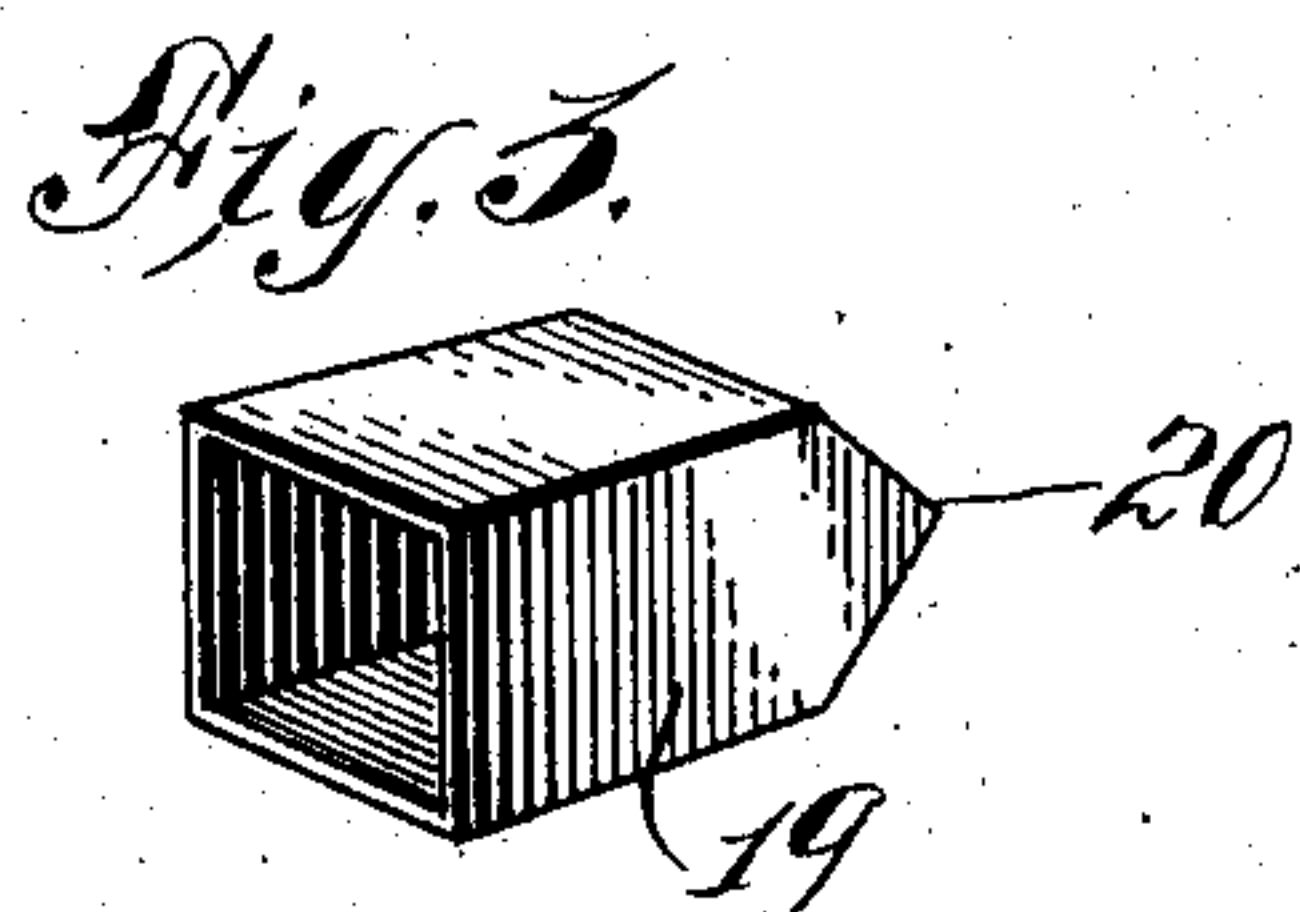
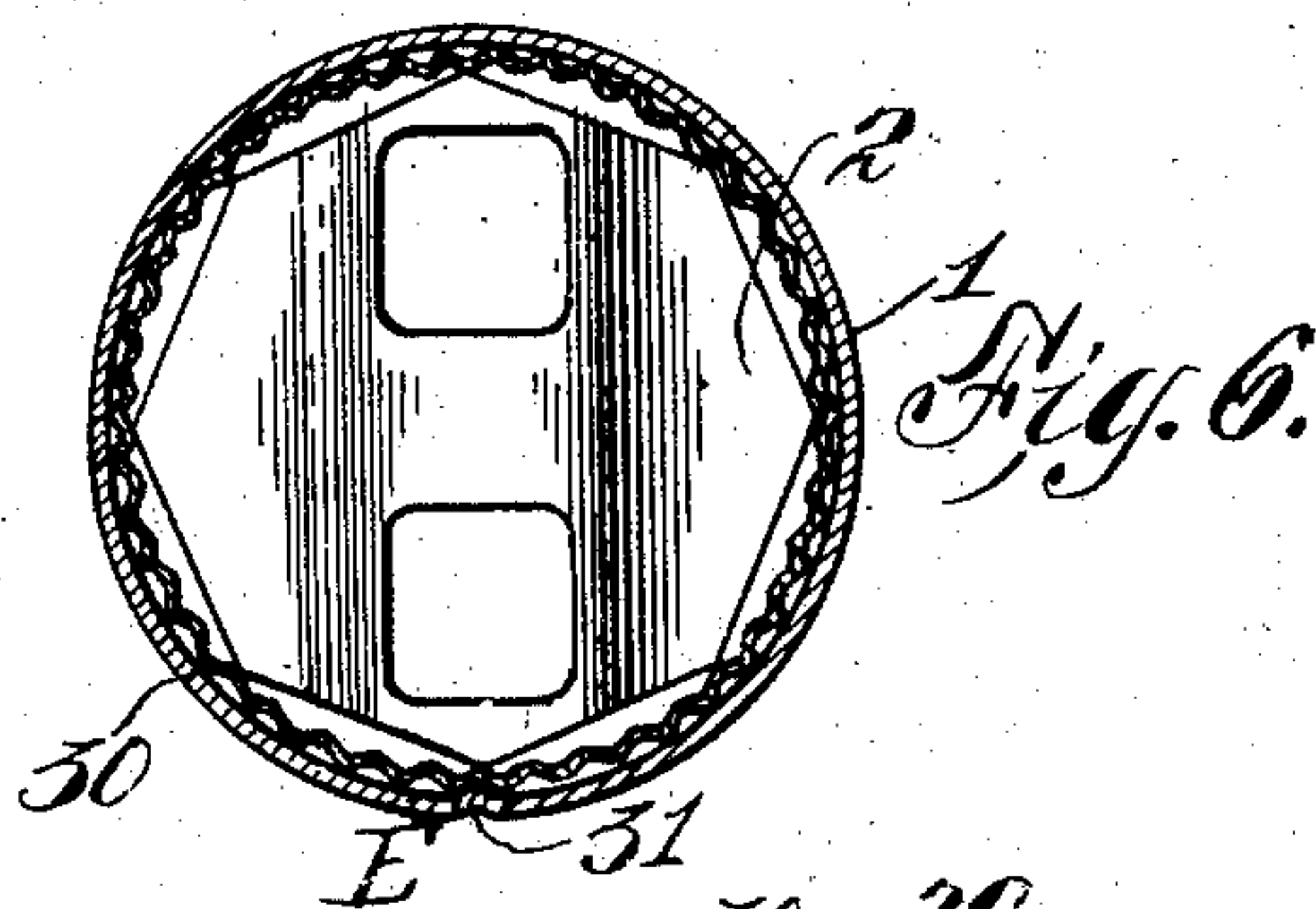
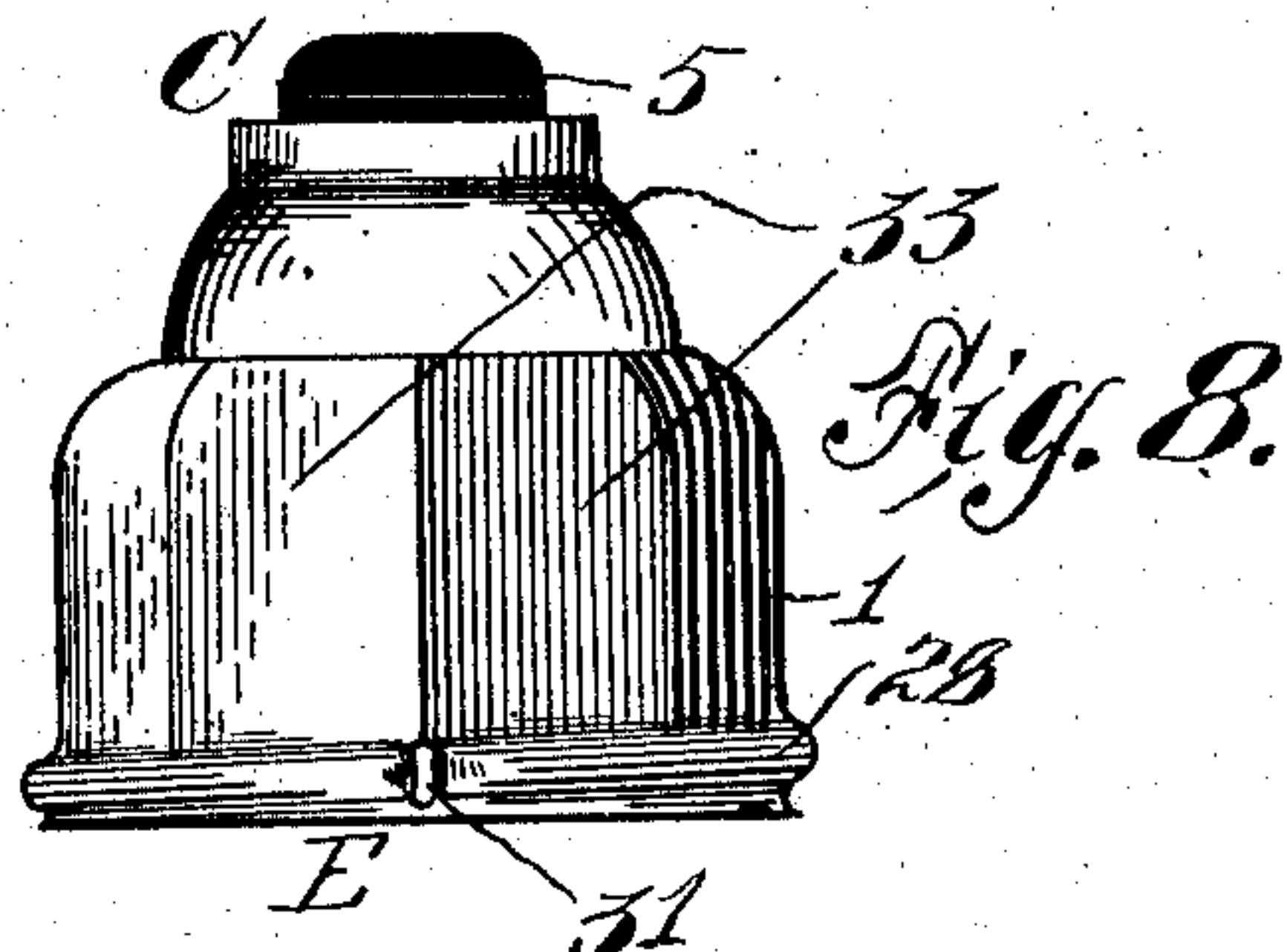
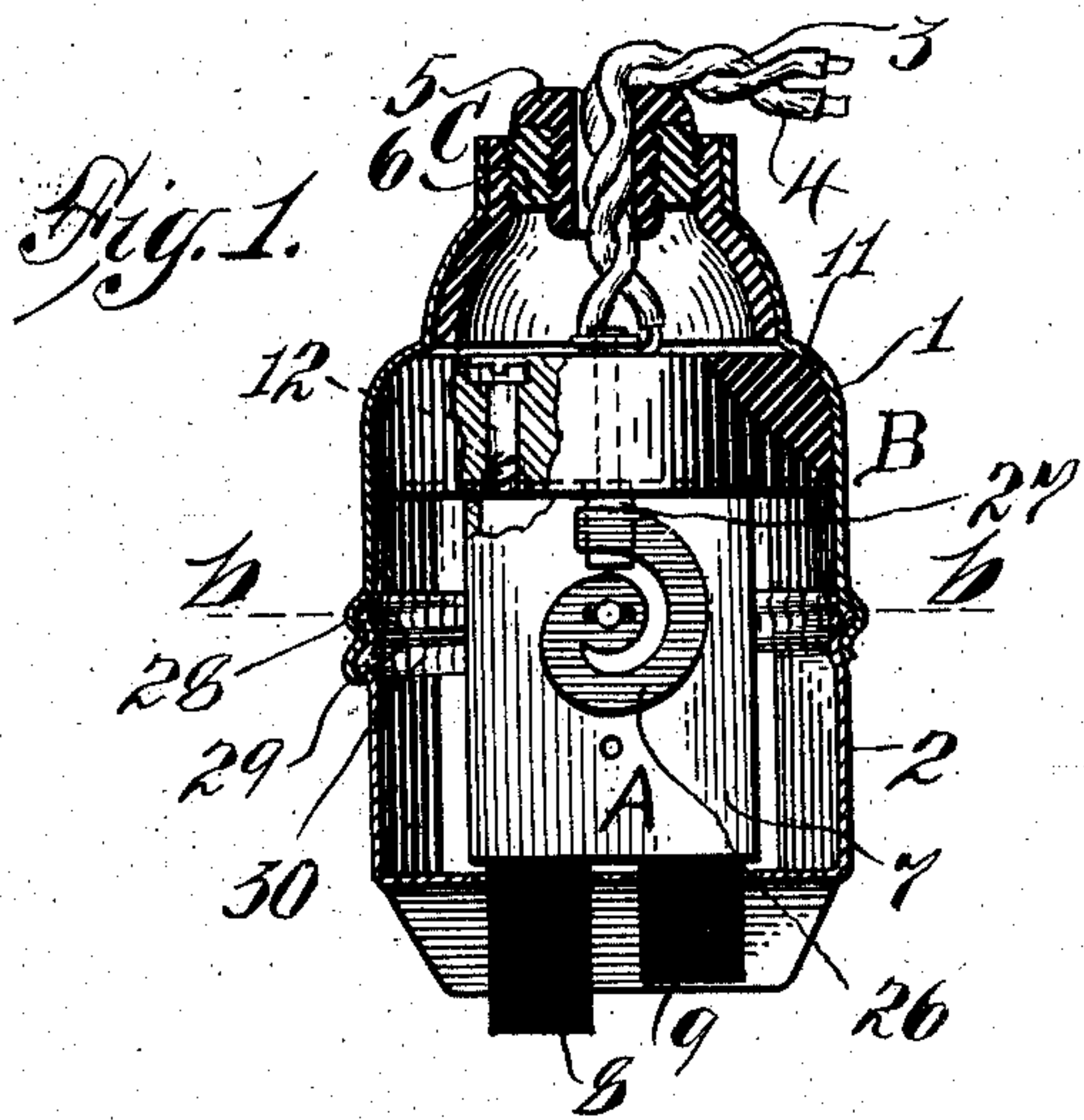
No. 844,455.

PATENTED FEB. 19, 1907.

C. J. KLEIN.

MEANS FOR CONVERTING MOTION AND HOUSING THEREFOR.

APPLICATION FILED SEPT. 25, 1905.



Witnesses
C. A. Jarvis.
Ink Matter

Fig. 4. Charles J. Klein, Inventor,
By his Attorney
R. M. S. S. S. S.

UNITED STATES PATENT OFFICE.

CHARLES J. KLEIN, OF NEW YORK, N. Y., ASSIGNOR TO RALPH A. SCHOENBERG, OF NEW YORK, N. Y.

MEANS FOR CONVERTING MOTION AND HOUSING THEREFOR.

No. 844,455.

Specification of Letters Patent.

Patented Feb. 19, 1907.

Application filed September 25, 1905. Serial No. 279,945.

To all whom it may concern:

Be it known that I, CHARLES J. KLEIN, a citizen of the United States, residing in the borough of Manhattan, county of New York, city and State of New York, have invented certain new and useful improvements in Means for Converting Motion and Housings Therefor, of which the following is a specification.

This invention relates to means for converting motion and housings therefor; and it has for its object to provide improved mechanism of this character which will be positive in action and relatively simple and inexpensive in construction.

Among its particular objects the invention pertains to the provision of means of the character described particularly adapted for making and breaking electrical circuits, and, furthermore, pertains to inclosing structure for the same constructed to positively and unfailingly maintain the connection of its parts and accommodate wiring elements of varying dimensions.

In the drawings, Figure 1 is a longitudinal sectional view of a pendent electrical switch embodying the invention, the parts being shown in full lines. Fig. 2 is a similar view showing the working parts of the mechanism. Fig. 3 is a perspective view of a detail element of the construction. Fig. 4 is a similar view of another element of the construction. Fig. 5 is a detail transverse sectional view taken upon the line *a a*, Fig. 2, and looking in the direction of the appended arrow. Fig. 6 is a detail transverse sectional view of the housing of the mechanism, taken upon the line *b b*, Fig. 1. Fig. 7 is a view in elevation of the male member of the housing, and Fig. 8 is a similar view of the female member of the housing.

Corresponding parts in all the figures are denoted by the same reference characters.

Referring with particularity to the drawings, A designates the improved means for converting motion, which is illustrated as included within a housing B, consisting of two members—a female member 1 and a male member 2. The housing B is provided at one end with a bushing device C, through which circuit-wires 3 and 4, respectively, may be passed, and the bushing device C comprises a plurality of members 5 and 6, re-

spectively, the member 5 being arranged interiorly of the member 6. The means A are included initially within a cartridge or casing 7, which is slipped into the housing B and secured therein.

In the preferred form of construction and operative connection of parts and members the cartridge or shell 7 is box-shaped in form and provided with a centrally-disposed partition 15, at either side of which the push-buttons 8 and 9 are arranged to be capable of longitudinal play. The inner end 10 of the cartridge 7 fits against an insulating-partition 11, which extends across the interior of the member 1 of the housing B and is connected with said partition 11, as by the screw. (Indicated in dotted lines at 12 in Fig. 1.) The push-buttons 8 and 9 are loosely connected by a centrally-pivoted lever 13, supported by a pin 14, passed through the partition 15; the ends 16 of said lever fitting within chambers 17 in the push-buttons 8 and 9. Each of the push-buttons 8 and 9 is provided with a chamber 18 at its inner end portion, and within each of said chambers 18 is loosely mounted a slidable casing 19, (shown in detail in Fig. 3,) each capable of lateral movement in either direction of motion of its respective push-button, said casings being arranged to project toward each other as the push-buttons 8 and 9 are moved oppositely within the cartridge 7. Each of the casings 19 is provided with a wedge-shaped pointed nose 20, and said noses 20 play upon an oscillating element D, which is disposed between the push-buttons 8 and 9 and which has opposite unobstructed and preferably plane surface portions to receive said noses 20, said casings being forced into engagement with said oscillating element D by coiled springs 21, one of which is mounted in each of the chambers 18 and its respective open-ended casing 19.

The oscillating element D is mounted to turn on its axis when the casings 19 engage with the same at opposite sides of the element D and also at the opposite sides of said axis. To this end the element D is formed upon, included within, or connected with a shaft 22, having end bearings 23, mounted in the cartridge 7, the element D being arranged between enlargements 22^a of the shaft 22, which enlargements are arranged interme-

diate of the end bearings 23 and the element D.

The element D preferably consists of a relatively thin flat plate 24, preferably constructed of stamped sheet metal or cast metal, its thickness being so proportioned as to permit of its quick actuation upon relative passage of the casings 19 in engagement with opposite sides or faces thereof. In theory and carried out as far as possible in practice the plate 24 should be as thin as possible permitting of the requisite stability and rigidity, so that its actuation by the casings 19 will not prevent the maintenance of its operative form and condition. The portions of said element D which the noses 20 at any time are traversing are of corresponding formation, causing smooth and positive action of the device.

The element D carries fixed upon or rigidly connected with itself contact elements or terminals 25 and 26, respectively, which are arranged to contact and coact with other fixed terminals, of which one, 27, is illustrated in Fig. 1. The provision of contact points or terminals may be varied as desired to produce the required circuit making and breaking results, such results being operatively obtained in the oscillation of the element D under actuation of the reciprocating push-buttons 8 and 9 and the casings 19, tensionally carried thereby.

The housing B, which incloses the cartridge 7 and the improved means A, consists of the two members 1 and 2, which are hollow in formation, preferably of spun metal, and are connected together by a female thread 28 upon the member 1 and a male thread 29 upon the member 2. Said members include within the thread formation locking means E, which, while permitting ready attachment and detachment, positively temporarily connect the two members together, so as to prevent accidental disconnection. The preferred construction consists of a continuous or extended mutilation of the male thread 29, as at 30, and a local mutilation of the inner turn of the thread 28, as at 31. When the thread 29 is screwed into the thread 28, the mutilations 30 of the former coact with the mutilation 31 of the latter, so as to temporarily bind the two members 1 and 2 together in locking engagement. The member 2 is broken up in practice into a number of lateral faces 32, and the member 1 is similarly broken up into a number of lateral faces 33, which may be brought into coincidence with the faces 32 by relatively turning the two members 1 and 2 and locking the same in such coincidence by the locking means E.

The bushing device C, comprising the two members 5 and 6, admits the circuit-wires 3 and 4 and provides for circuit-wires of varying dimensions by provision of the two members 5 and 6 of varying diameters. With the

use of circuit-wires of relatively small dimension the inner member 5 is retained within the outer member 6, with which it has screw connection; but in the use of circuit-wires of larger dimension the inner member 5 is removed by unscrewing and the outer member 6 alone is used. But two of the members 5 and 6 are illustrated in the drawings; but it is within the province of the invention to provide as many of such members as may be desired to accommodate in snug and tight fit the range of circuit-wires met with in practice of the invention.

The operation, method of use, and advantages of the invention will be readily understood by reference to the foregoing description, taken in connection with the drawings. Pressure alternately applied to the push-buttons 8 and 9 causes opposite reciprocation of the same and resultant actuation of the element D by the casings 19, carried by said push-buttons. This actuation causes oscillation of said element D and movement of the contact-terminals 25 and 26 to make and break the electrical circuit in the well-known manner. The loose mounting of the casings 19 in the chambers 18 causes the quick action of the casings 19 in their traverse of the thin plate 24 of the element D and upon opposite sides of the same, inasmuch as the noses 20 of said casings 19, having passed the phase of coincidence at opposite sides of said plate 24 and of the axis of the same, there is an instantaneous actuation of said plate 24 in either the circuit-making or circuit-breaking operation, in conjunction with the limited lateral movement of said casings in opposite directions.

The provision of the multiple-membered bushing device C is of utility, which will be readily understood.

The provision of the locking means E, combined with the thread construction comprising the mutilated threads 28 and 29, permits of a temporary positive interlocking relation, which is a desideratum in a wide range of mechanisms and devices similar to that specifically illustrated and described.

The entire mechanism is composite and essentially self-contained and is positive in action.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. Improved means of the character described, comprising two actuating devices mounted for opposite movement, and an interposed member mounted for movement under the actuation of said actuating devices bearing upon said interposed member at opposite sides of the latter; said opposite sides of said interposed member being plane surfaces.

2. Improved means of the character described, comprising two actuating devices

mounted for opposite movement, and an interposed member mounted for movement under the actuation of said actuating devices in the relative passage of the latter bearing upon said interposed member at opposite sides of the latter; said opposite sides of said interposed member being plane surfaces.

3. Improved means of the character described, comprising two actuating devices, means for giving them opposite primary movement, and an interposed member mounted for movement under the actuation of said actuating devices bearing upon said interposed member at opposite sides of the latter; said actuating devices being capable of lateral movement independent of their primary movement.

4. Improved means of the character described, comprising two push-buttons mounted for opposite movement and each provided with a separate actuating device mounted for lateral movement independent of the movement of the respective push-button; and an interposed member mounted for movement and actuated by said actuating

devices bearing upon said interposed member at opposite sides of the latter.

5. Improved means of the character described, comprising a member mounted for movement, two movably-mounted push-buttons, an actuating device carried by each of said push-buttons and capable of lateral movement independent of the movement of the respective push-button, and tensional means for each of said actuating devices forcing the same into contact with said member at opposite sides of the latter.

6. In means of the character described, a two-membered housing provided with interlocking threads, one of said threads being provided with an extended mutilation, and the other of said threads being provided with a local mutilation.

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

CHARLES J. KLEIN.

Witnesses:

BENJAMIN B. HOFFMAN,
PERCY ELIAS.