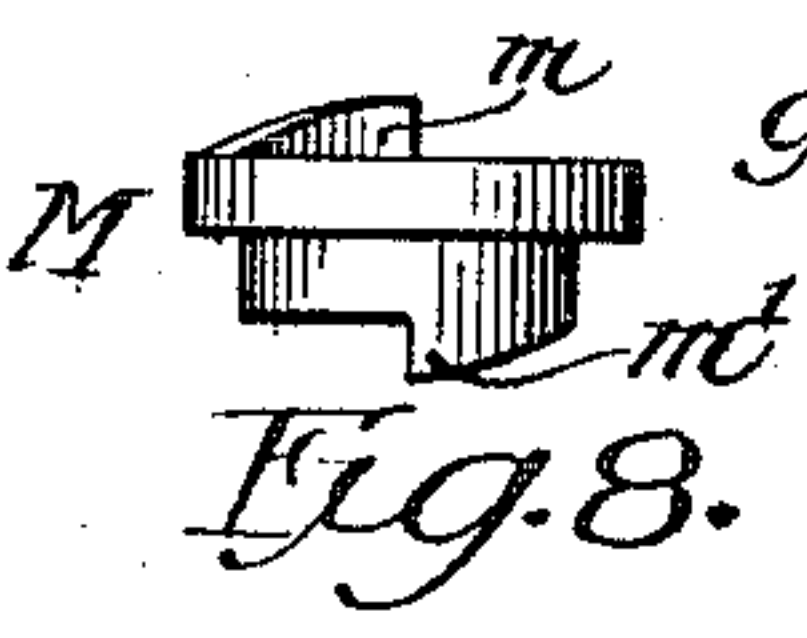
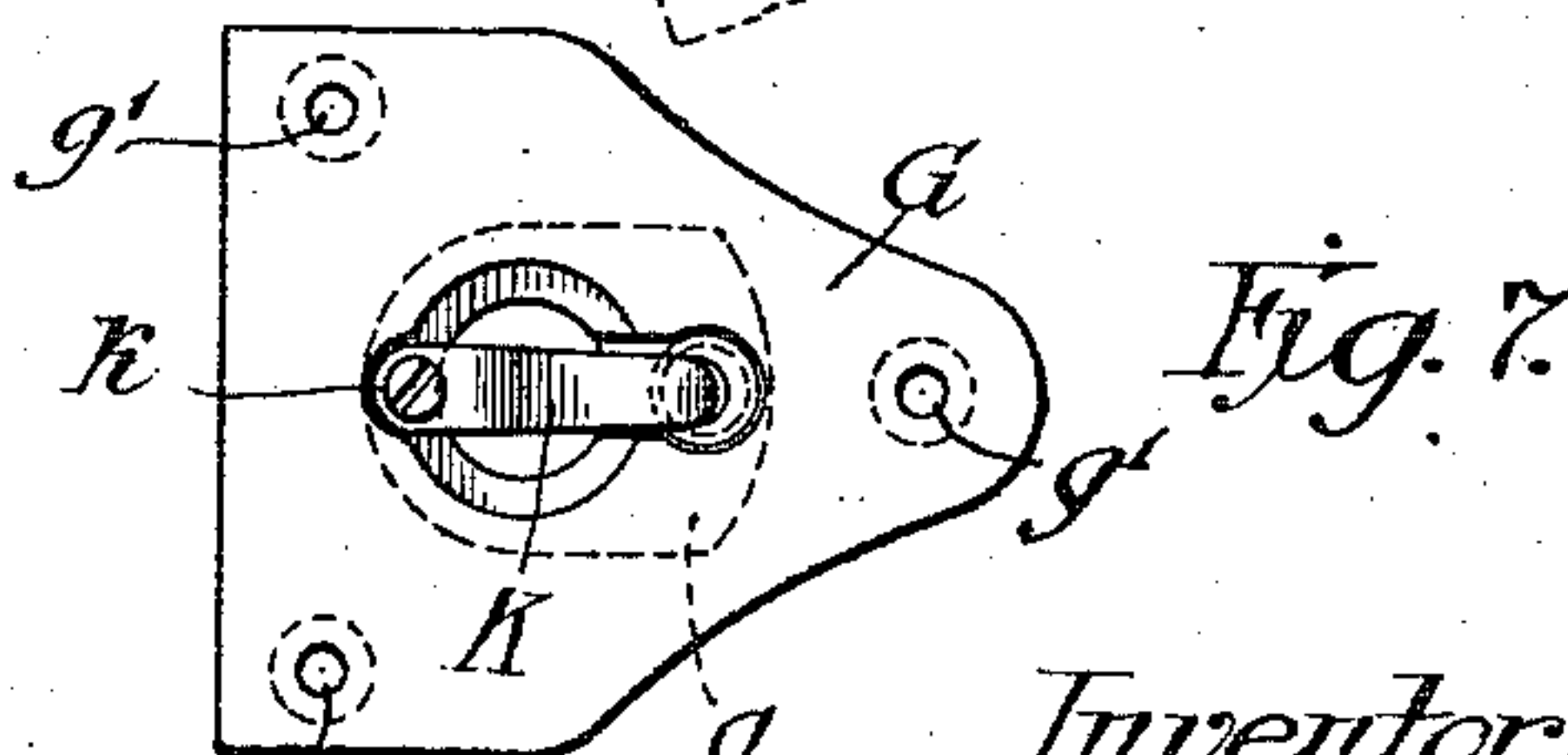
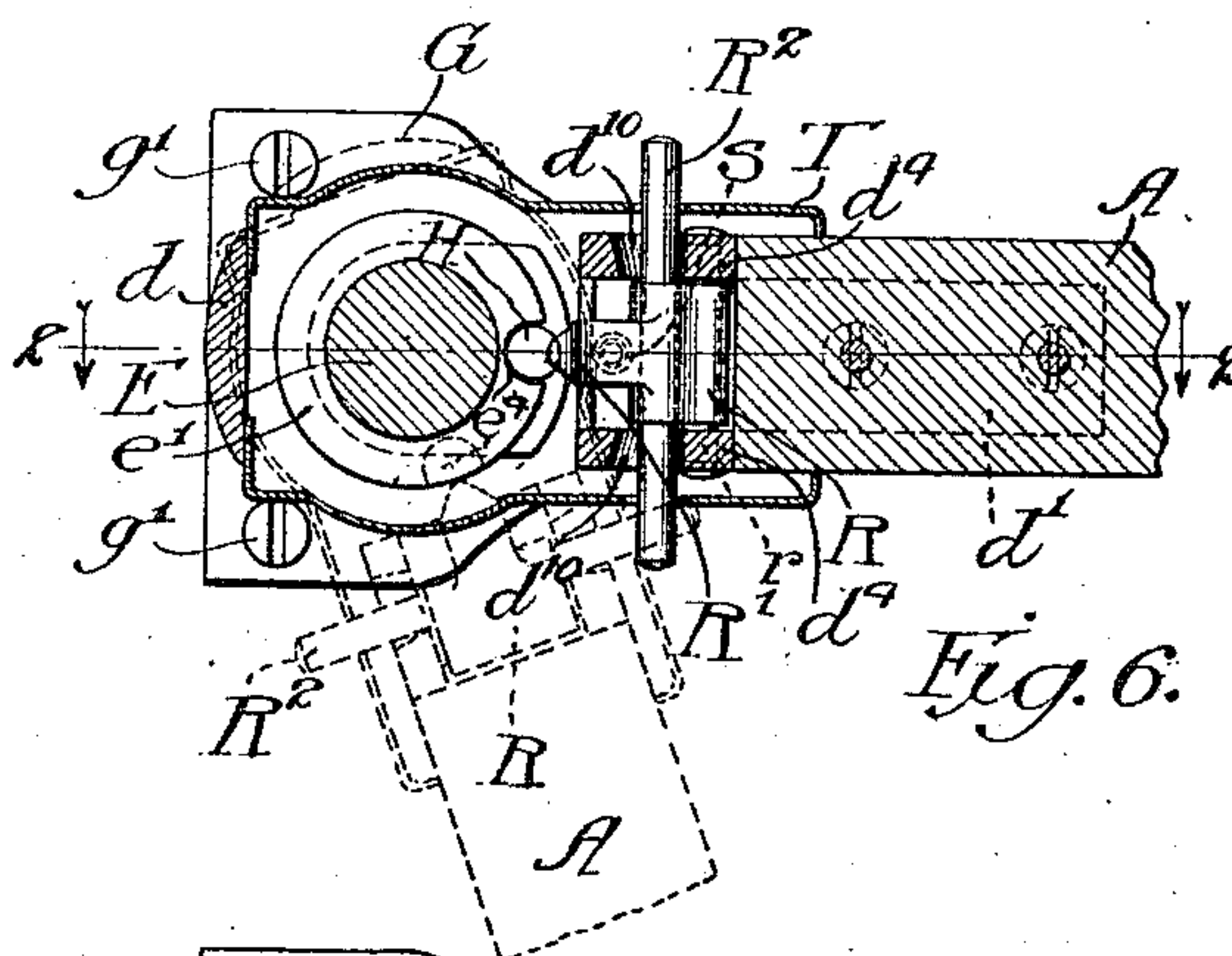
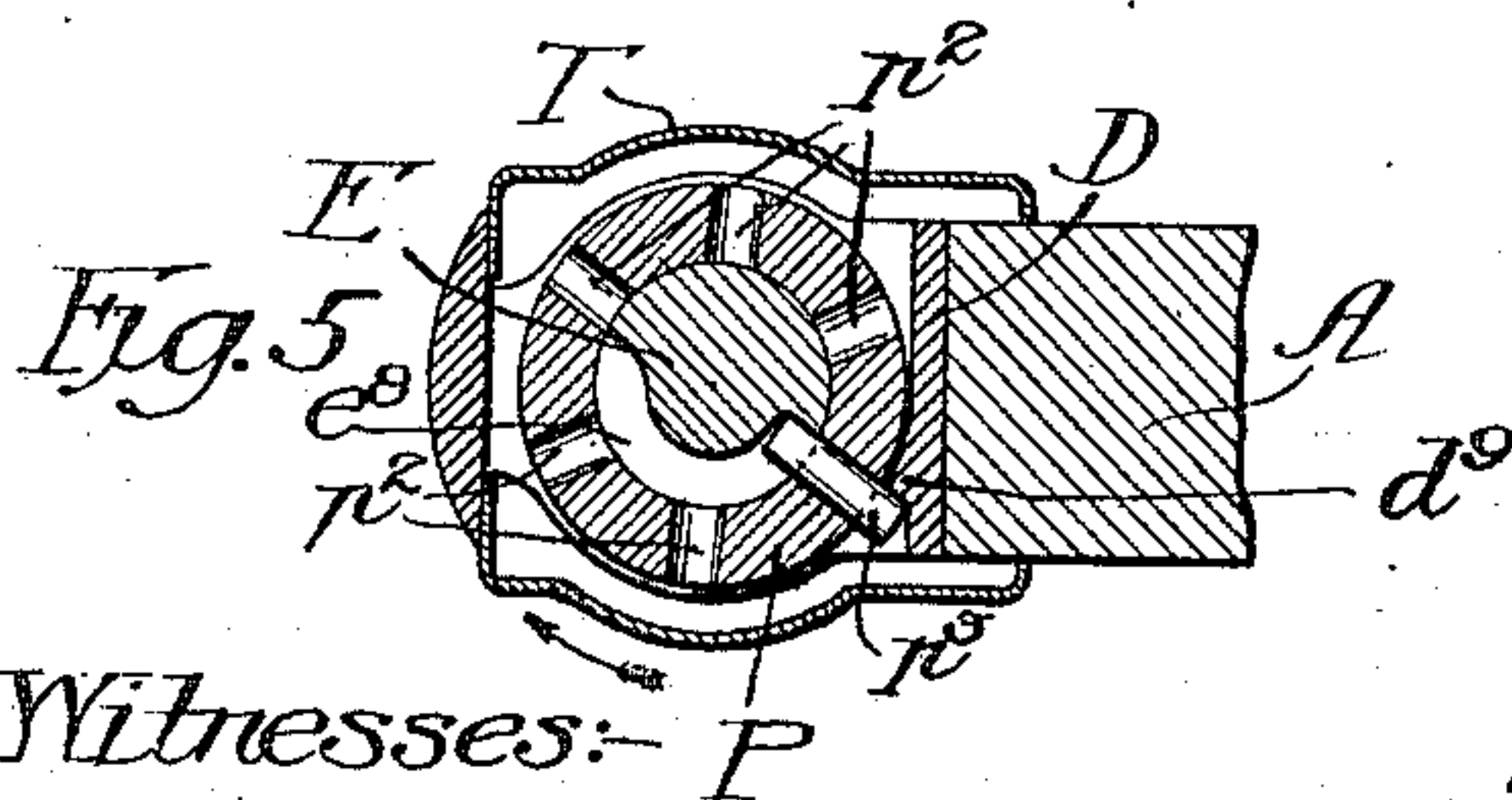
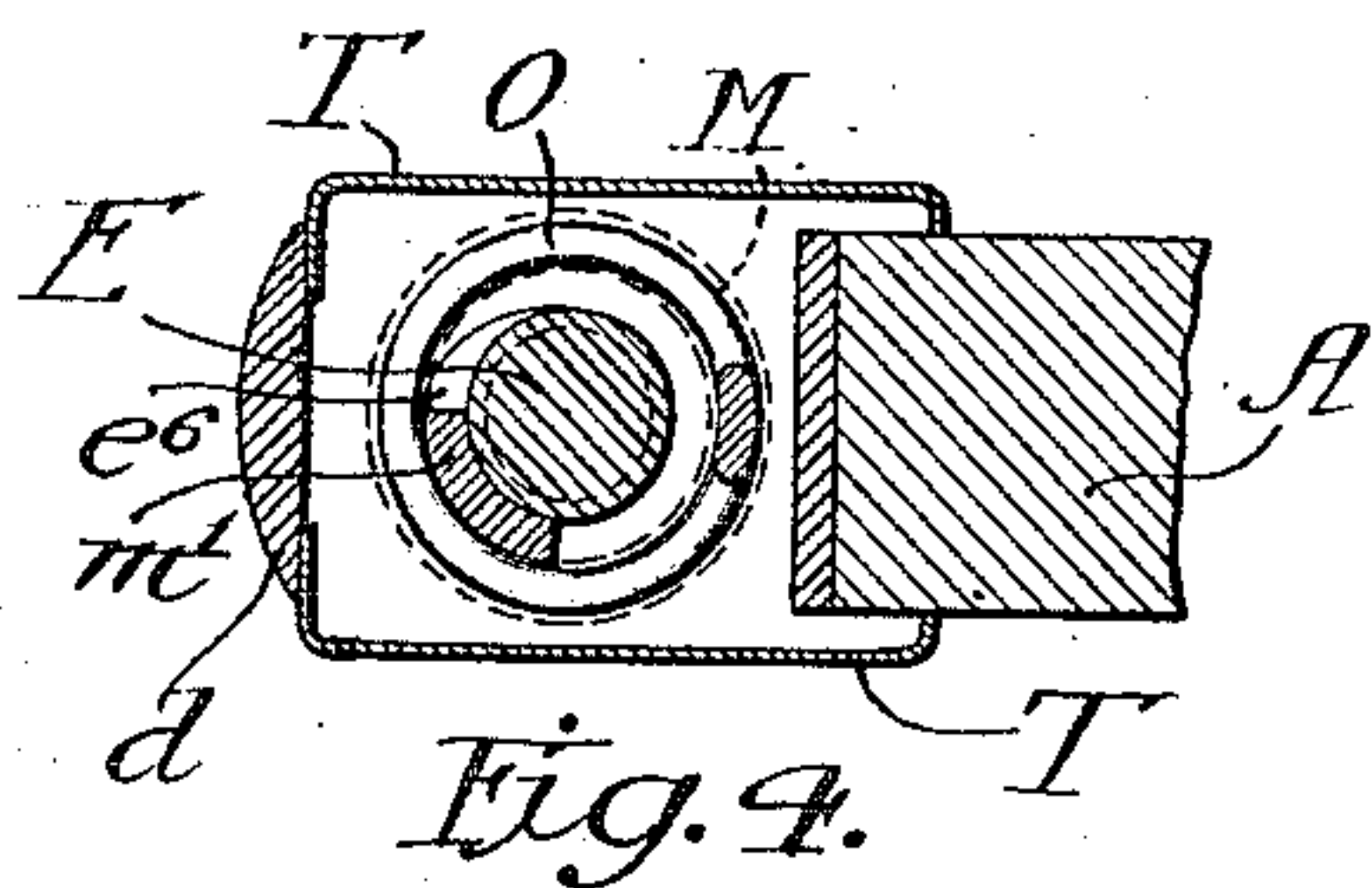
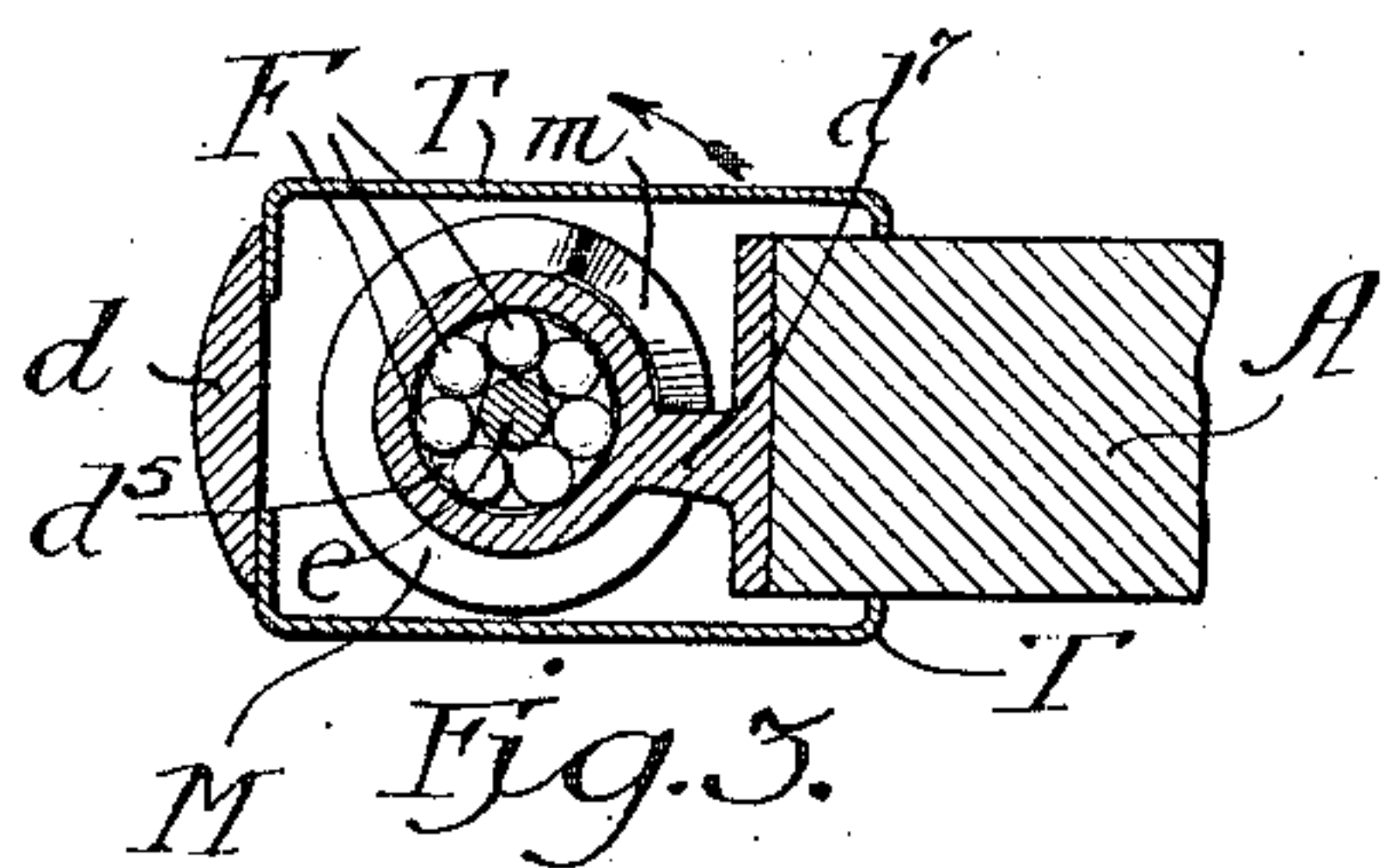
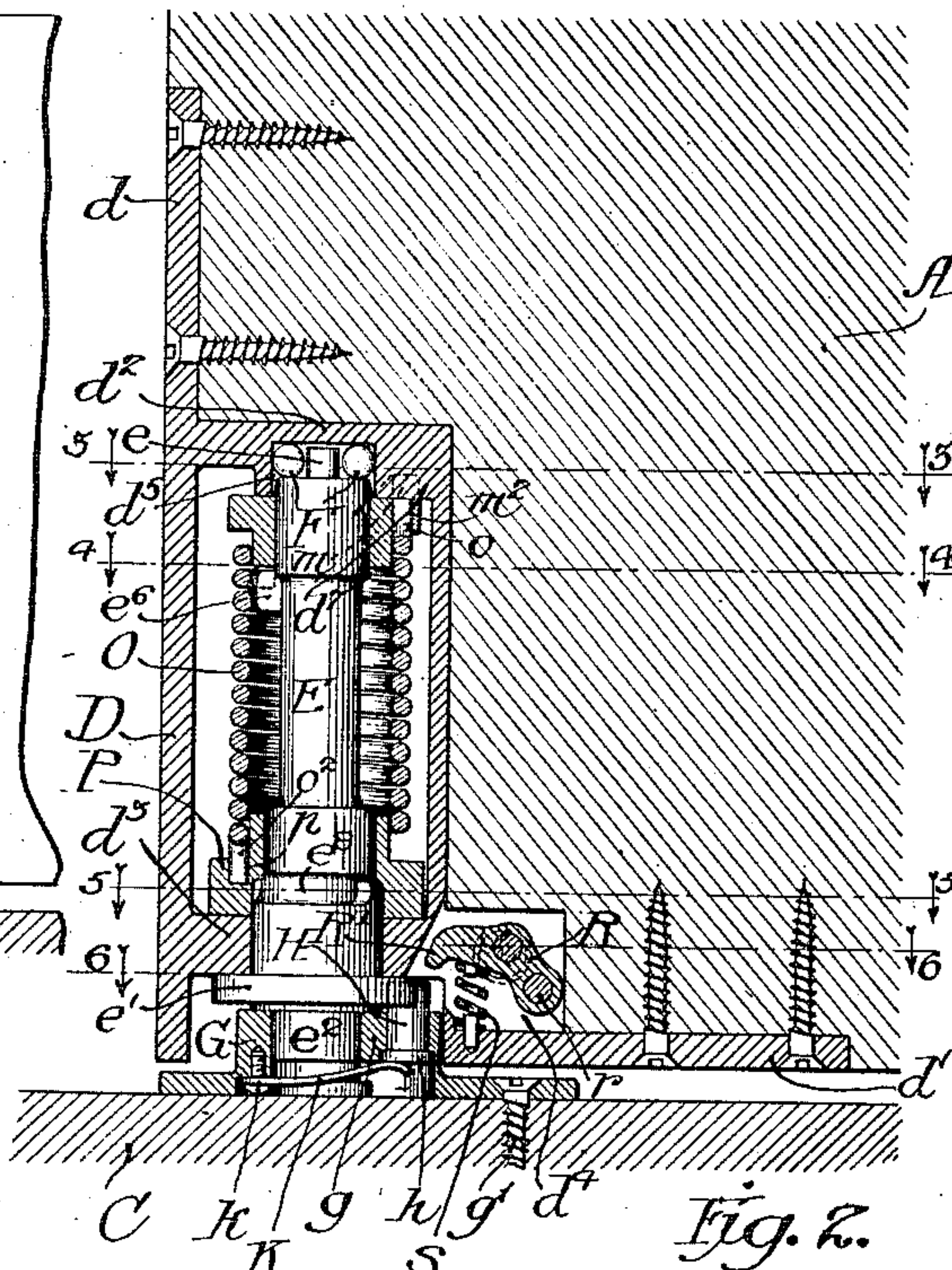
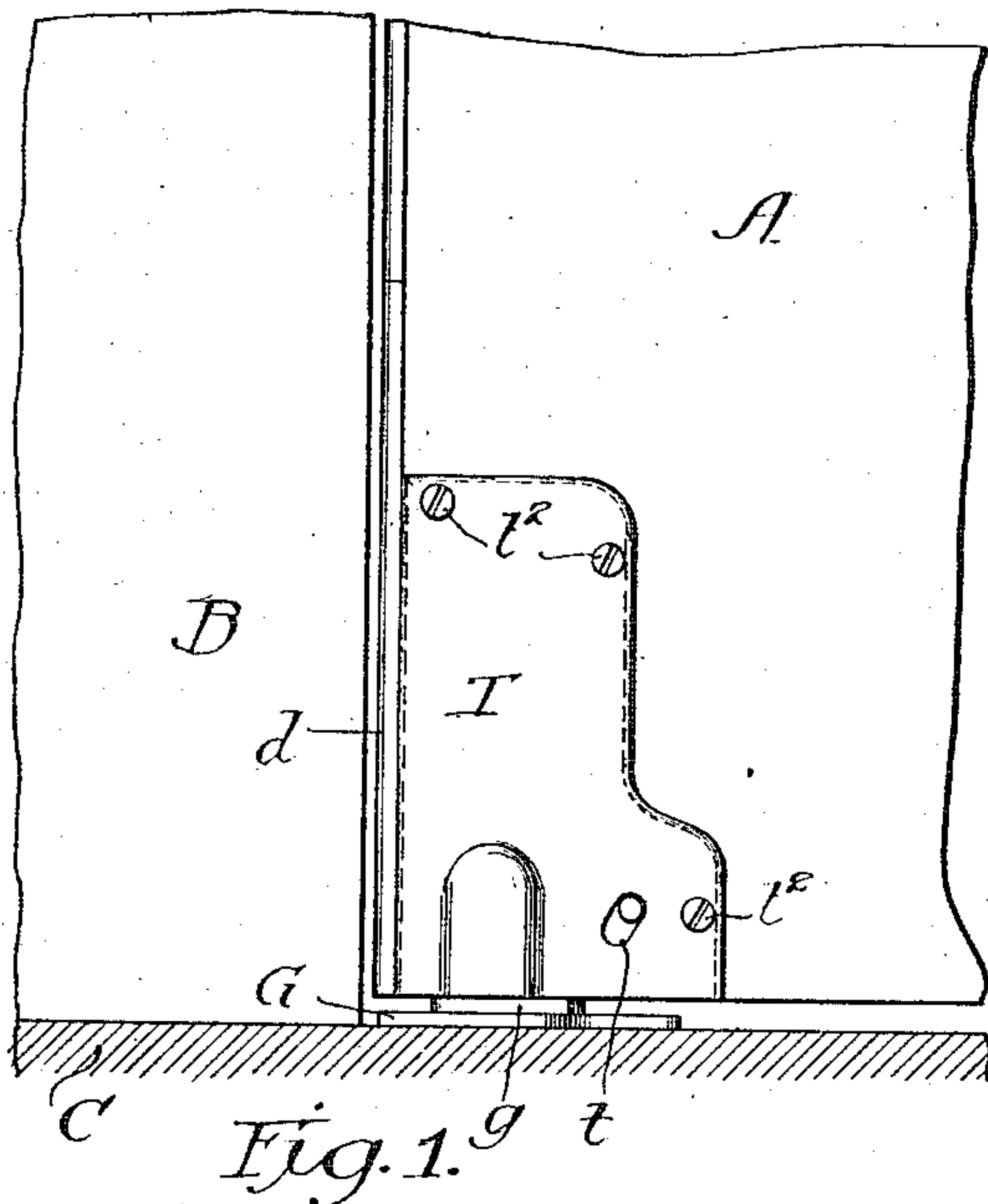


SPRING HINGE.

APPLICATION FILED DEC. 31, 1909.

998,692.

Patented July 25, 1911.



Witnesses:- P
Frank W. Bernin
Eleanor Fagenow.

Inventors:
Mr J. Keene
and Geo. W. Schuster
By: Prince & Fisher
Attys.

By: Price & Fisher
Attys.

UNITED STATES PATENT OFFICE.

WILLIAM J. KEENE AND GEORGE W. SCHUSTER, OF CHICAGO, ILLINOIS, ASSIGNORS TO
CHICAGO SPRING BUTT COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION.

SPRING-HINGE.

998,692.

Specification of Letters Patent.

Patented July 25, 1911.

Application filed December 31, 1909. Serial No. 535,740.

To all whom it may concern:

Be it known that we, WILLIAM J. KEENE and GEORGE W. SCHUSTER, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Spring-Hinges, of which we do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification.

One of the main objects of the present invention is to provide improved means whereby the spring that controls the swinging movement of the door may be thrown out of action, so that the door can be swung in the ordinary manner and can be left in open position without being influenced by the spring. The invention contemplates, also, influences in various details, as will hereinafter more fully appear.

Figure 1 is a view in side elevation, showing the lower corner of a door and the adjacent portion of a door jamb and floor having our invention applied thereto. Fig. 2 is a view in central vertical section on line 2—2 of Fig. 6. Fig. 3 is a view in horizontal section on line 3—3 of Fig. 2. Fig. 4 is a horizontal section on line 4—4 of Fig. 2. Fig. 5 is a view in horizontal section on line 5—5 of Fig. 2. Fig. 6 is a view in horizontal section on line 6—6 of Fig. 2. Fig. 7 is an inverted plan view of the socket plate that will be attached to the floor. Fig. 8 is a detail view in side elevation of the upper locking collar that encircles the pintle.

A designates the lower inner corner of the door, B designates the door jamb and C denotes the floor. The lower portion of the door A is mortised out so as to receive the casing or frame D of our improved hinge. As shown, this casing is provided at its upper end with an arm or extension d that is set within the vertical inner edge of the door, being attached thereto by suitable screws, and is provided at its bottom with an arm or extension d' that is set within the bottom edge of the door and is attached thereto by screws. The casing D is formed with a top plate d^2 and adjacent its bottom are formed the transverse bar d^3 and the parallel lugs or bars d^4 . Within the casing D is mounted the vertical spindle E, the upper end of which is seated within a socket

d^5 of the casing; and, as shown, the reduced end e of the spindle E is surrounded by anti-friction balls F that serve to receive the weight of the door. The lower portion of the spindle E passes through a hole formed in the transverse bar d^3 and beneath this bar d^3 the spindle E is provided with an expanded shoulder e' below which the reduced portion e^2 of the spindle projects. This reduced portion e^2 of the spindle is revolubly mounted within the raised portion g of the floor socket G that is conveniently attached by screws, as at g' to the floor. At one side of the opening in the raised portion g of the socket G is formed a hole through which passes a vertically movable detent or plunger H, which is held normally in the elevated position shown in Fig. 2 of the drawing by means of a spring. As shown, the lower end of the detent H is formed with an extended head h to limit its upward movement, and the spring which holds the detent H in its normally raised position is the plate spring K, one end of which is fixed, as at k to the socket G, while its free end extends beneath the detent H. By reference more particularly to Figs. 2 and 6 of the drawing, it will be seen that the extended shoulder or offset e' of the spindle E is provided with an open notch or slot e^4 into which the detent H projects when the detent is in the normally raised position shown in Fig. 2 of the drawing.

Upon the spindle E, adjacent its upper end, is loosely mounted a locking collar M (see Figs. 2 and 8). The upper portion of this locking collar M is provided with a shoulder or offset m adapted to engage with an offset portion d' formed within the upper portion of the casing D. The lower portion of the locking collar M is provided with a similar offset portion or projection m' that is adapted to engage a stud or offset e^6 of the spindle E. The spindle E is encircled by a stout coiled spring O, the upper end of which encircles the lower portion of the locking collar M, the bent upper end o of the spring O entering a hole m^2 formed within the flange portion of the collar M. The lower portion of the coiled spring O encircles a tension collar P that is loosely mounted upon the spindle E immediately above the cross bar d^3 , and the lower end o^2 of the coiled spring enters a hole p that

is formed in the collar P. The tension collar P is provided with a series of radial holes p^2 , adapted to receive the tension pin p^3 . The inner end of this tension pin p^3 is adapted to enter a segmental slot e^8 that is formed in the side of the spindle E, while the outer end of the tension pin p^3 is adapted to engage with a shoulder or offset d^9 that is formed upon the interior of the casing D (see Fig. 5).

When the parts, as thus far described, are assembled, the spring O will be placed under tension by inserting a suitable instrument into one of the radial holes p^2 of the tension collar P and turning this collar against the force of the spring O, and when the desired tension is given to the spring, the tension pin p^3 will be inserted in one of the radial holes p^2 so that when the instrument whereby the spring has been placed under tension is withdrawn from the collar P, the tension pin p^3 will engage with the shoulder d^9 on the casing D and will hold the spring under the desired tension. Under the influence of the spring O the projection m of the locking collar M will be forced into engagement with the offset or projection d^7 (see Fig. 2) in the upper part of the casing D, while the stud or offset e^6 of the spindle E will be forced into engagement with the projection m' of the collar M and the tendency of the spring O to unwind will also hold the tension pin p^3 against the offset d^9 (see Fig. 5) in the lower portion of the frame D. When the door A is in the closed position, the parts will occupy the relative positions shown in full lines in the drawing, and at such time the inner end of the tension pin p^3 will be at one end of the segmental slot e^8 of the spindle, as shown in Fig. 5. Now assuming that the detent H is in engagement with the shoulder or offset e' of the spindle E it will be seen that if the door A be swung from the position shown in full lines to the position shown by dotted lines in Fig. 6, the spindle E will be held against rotation by the detent H, but the engagement of the shoulder d^9 (see Fig. 5) with the detent pin p^3 will cause the pin p^3 and the tension collar P to rotate in the direction of the arrow, Fig. 5, thus "winding up", or increasing the tension of the spring O, as the upper end of such spring is fixed to the locking collar M which at such time is in engagement with the offset e^6 of the spindle E. When the door A is turned in a direction opposite from that last described, that is to say, toward a position opposite to that shown by dotted lines in Fig. 6, the shoulder d^7 at the top of the casing D, by its engagement with the offset projection m of the locking collar M, will turn this collar M in the direction of the arrow, Fig. 3, thereby "winding up" or increasing the tension of the spring O, the up-

per end of which is locked to the collar M. During such movement the lower shoulder or offset m' of the collar M will recede from the stud or offset e^6 of the spindle E, which is held against rotation, and the offset d^9 (see Fig. 5) will recede from the locking pin p^3 , because the inner end of such pin p^3 is prevented from movement by reason of its having reached the end of the segmental slot e^8 .

It is frequently desirable to relieve the door from the action of the spring, so that the door may be left in open position, and to enable this to be accomplished we provide the improved mechanism next to be described: Between the arms d^4 of the casing D is pivotally mounted, as at r , the trip or latch R. The inner end R' of the latch R extends over a detent H, but slightly outside the path of movement of the shoulder or offset e' of the spindle E (see Figs. 2 and 6). This trip or latch R is held normally in elevated position by means of a coiled spring S, the lower end of which bears upon the arm d^7 of the casing D, while its upper end engages the under side of the trip R. From the trip R extend the foot rods R^2 that pass through holes d^{10} in the arms d^4 of the casing D. These foot rods R^2 also extend through slots t in the side plates T which inclose the casing of the hinge and are held in position by suitable screws t^2 . When it is desired to relieve the door from the action of the spring O, the pressure of the foot upon either of the foot rods R^2 will swing downward the trip or latch R, causing its arm R' to engage the top of the detent H, and to press this detent H against the spring K until the detent passes completely below the shoulder or offset e' of the spindle E. The door may then be freely turned in either direction and as soon as the slot portion of the shoulder or offset e' of the spindle is away from the top of the detent H, the pressure of the foot upon the foot rod R^2 may be released without materially impeding the free swinging movement of the door. And when the detent H has thus been disengaged from the shoulder or offset e' of the spindle E, the door may be left in open position at either side of its normally closed position. As soon, however, as the door is returned to its normally closed position, the detent H will automatically reengage with the shoulder or offset e' of the spindle E and again bring the spring O into action.

While we have described what we regard as the preferred embodiment of our invention, we wish it understood that the details of construction above described may be varied without departure from the scope of the invention, and that features of the invention may be employed without its adoption as an entirety.

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

1. In a double acting spring hinge for 5 doors and the like, the combination with a spindle, of a locking detent mounted on one of the hinged parts and arranged to engage said spindle, a right and left acting spring connecting said spindle to the other 10 of the hinged parts, whereby the door is yieldingly held in central position, means for disengaging said detent from said spindle to permit the door to swing free, and a spring for automatically reengaging said 15 detent with said spindle when the door is returned to normal central position.

2. In a spring hinge of the character described, the combination with a spindle and spring carried by one of the hinged parts, 20 of a movable detent carried by the other hinged part and arranged to hold the spindle against rotation, and a trip carried by said first mentioned hinged part and adapted to release said detent.

3. In a spring hinge of the character described, the combination with a spindle and spring carried by one of the hinged parts, of a spring actuated detent carried by the other 25 of the hinged parts and arranged to hold said spindle against rotation, and a trip for releasing said detent carried by said first mentioned hinged part and spring-held in normal position.

4. A double acting spring hinge comprising hinge members, a spindle journaled in both of said hinge members, a right and left acting spring yieldingly connecting said spindle to one of said hinge members, said spindle having a notched shoulder at one 35 end, a detent mounted upon the other of said hinge members arranged to engage the notch of said shoulder to rigidly secure said spindle to said second hinge member, a trip for disengaging said detent to permit 40 said hinge members to swing freely to any position, and a spring for automatically restoring said detent when said hinge members are returned to normal central position.

5. A double acting spring hinge comprising hinge members, a spindle journaled in both of said hinge members, a right and left acting spring yieldingly connecting said spindle to one of said hinge members, said spindle having a notched shoulder at one 45 end, a detent mounted upon the other of said hinge members arranged to engage the notch of said shoulder to rigidly secure said spindle to said second hinge member, and a trip carried by said first mentioned hinge 50 member and arranged to engage said detent at a point outside of the path of movement of said shoulder.

6. A double acting spring hinge for doors and the like comprising hinge members, a spindle journaled in both of said hinge 55

members, a detent for rigidly securing said spindle to one of said hinge members, a right and left acting spring yieldingly connecting said spindle to the other of said hinge members, and a trip carried by said 70 second hinge member for releasing said detent from engagement with said spindle.

7. A double acting spring hinge comprising a casing adapted to be mounted in the mortised corner of a door, a vertical spindle 75 journaled in said casing, a right and left acting spring yieldingly connecting said spindle to said casing, a floor plate in which the lower end of said spindle is journaled, said spindle having a shoulder adjacent said floor 80 plate with a notch in said shoulder corresponding to the central position of the hinged parts, a detent eccentrically mounted on said floor plate and arranged to engage the notch of said shoulder, and a trip mounted 85 on said casing outside of the path of said shoulder and arranged to shift said detent out of engagement therewith.

8. A spring hinge of the character described, comprising a casing, a spring carried by said casing, a spindle mounted in the casing and suitably connected to said spring and provided adjacent one end with a shoulder, a socket plate in which one end of said spindle is journaled, a spring-actuated detent 90 mounted in said socket plate for engagement with the shoulder of the spindle and a spring-actuated trip mounted in said casing and arranged to force said detent from engagement with said spindle. 95 100

9. A spring hinge of the character described, comprising a casing, a spring carried by said casing, a spindle journaled in said casing and passing through said spring, said spindle being provided adjacent one end 105 with a shoulder, a socket plate wherein one end of said spindle is mounted, a detent carried by said socket plate and arranged to engage said shoulder of the spindle and a trip mounted on said casing and arranged 110 to engage said detent at a point outside the path of travel of the shoulder of the spindle and force said detent out of engagement with said spindle.

10. A double acting spring hinge for 115 doors and the like comprising two hinge members, a spindle rotatably mounted in both of said hinge members, a detent for rigidly connecting said spindle to one of said hinge members, a right and left acting spring connecting said spindle to the other 120 of said members, whereby the door is yieldingly held in central position, said detent being releasable to permit the door to swing free, and a spring for automatically shifting said detent to its engaged position when the door is returned to normal central position.

11. A double acting spring hinge for doors and the like comprising a hinge mem- 125 130

ber adapted to be secured to the door, a spindle journaled in said hinge member, a right and left acting spring yieldingly connecting said spindle to said hinge member, 5 a socket plate for said spindle, a detent for rigidly connecting said spindle to said socket plate, a trip for disengaging said detent movably mounted on said hinge member and arranged to shift therewith as the door is 10 opened and closed and a spring for automatically shifting said detent to engaged position when the door is returned to normal central position.

12. A double acting spring hinge comprising 15 a casing adapted to be secured to the door, a socket plate adapted to be fixed in

position, a spindle journaled in said casing and in said socket plate, a right and left acting spring yieldingly connecting said spindle to said casing, a detent mounted in 20 said socket plate and arranged to rigidly connect said spindle thereto, a releasing trip for said detent movably mounted in said casing and arranged to shift therewith as the door is opened and closed and operating 25 arms for said trip projecting laterally through slots in the sides of said casing.

WILLIAM J. KEENE.

GEORGE W. SCHUSTER.

Witnesses:

I. L. LUTHER,

H. R. LUTHER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
