

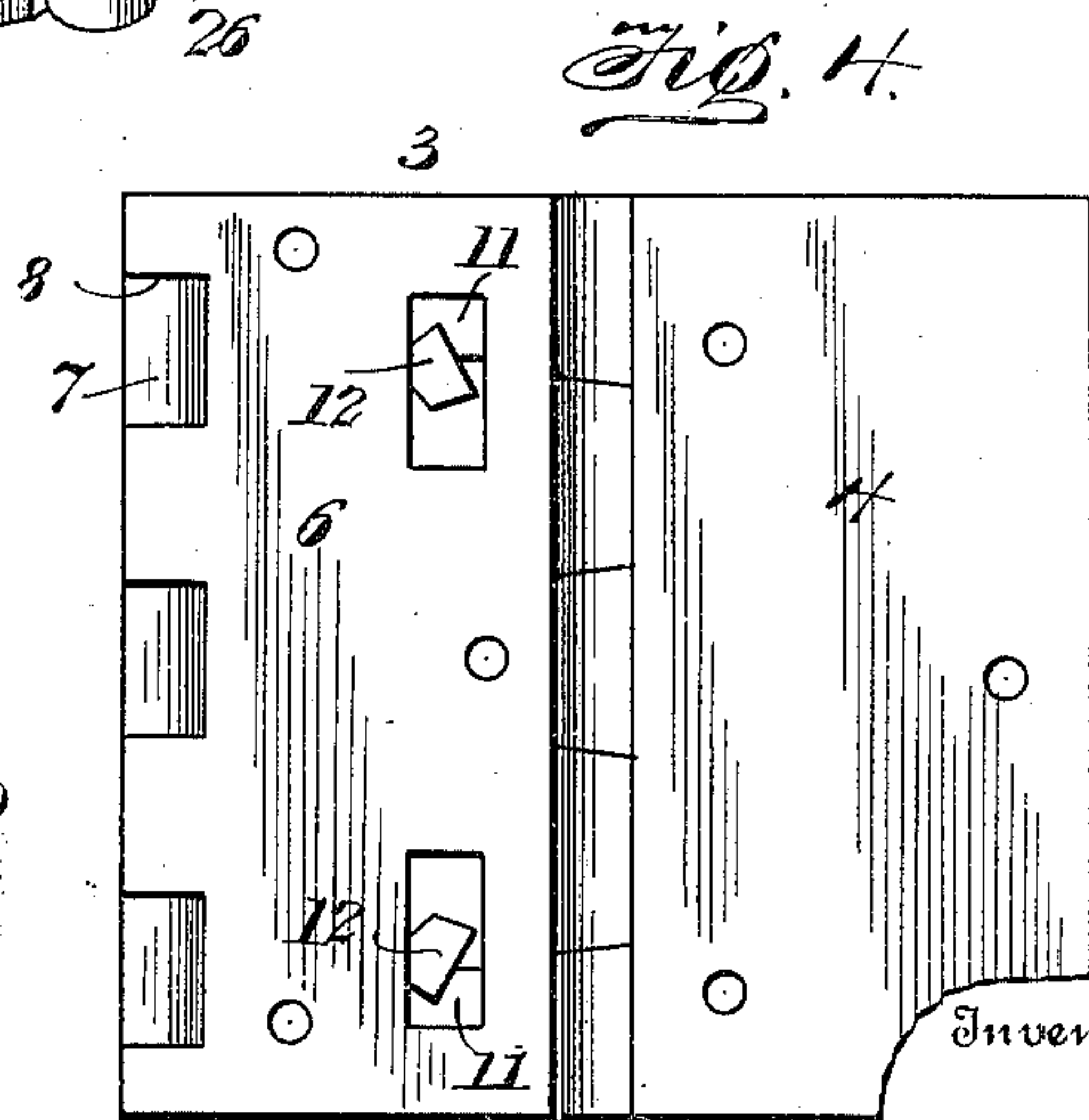
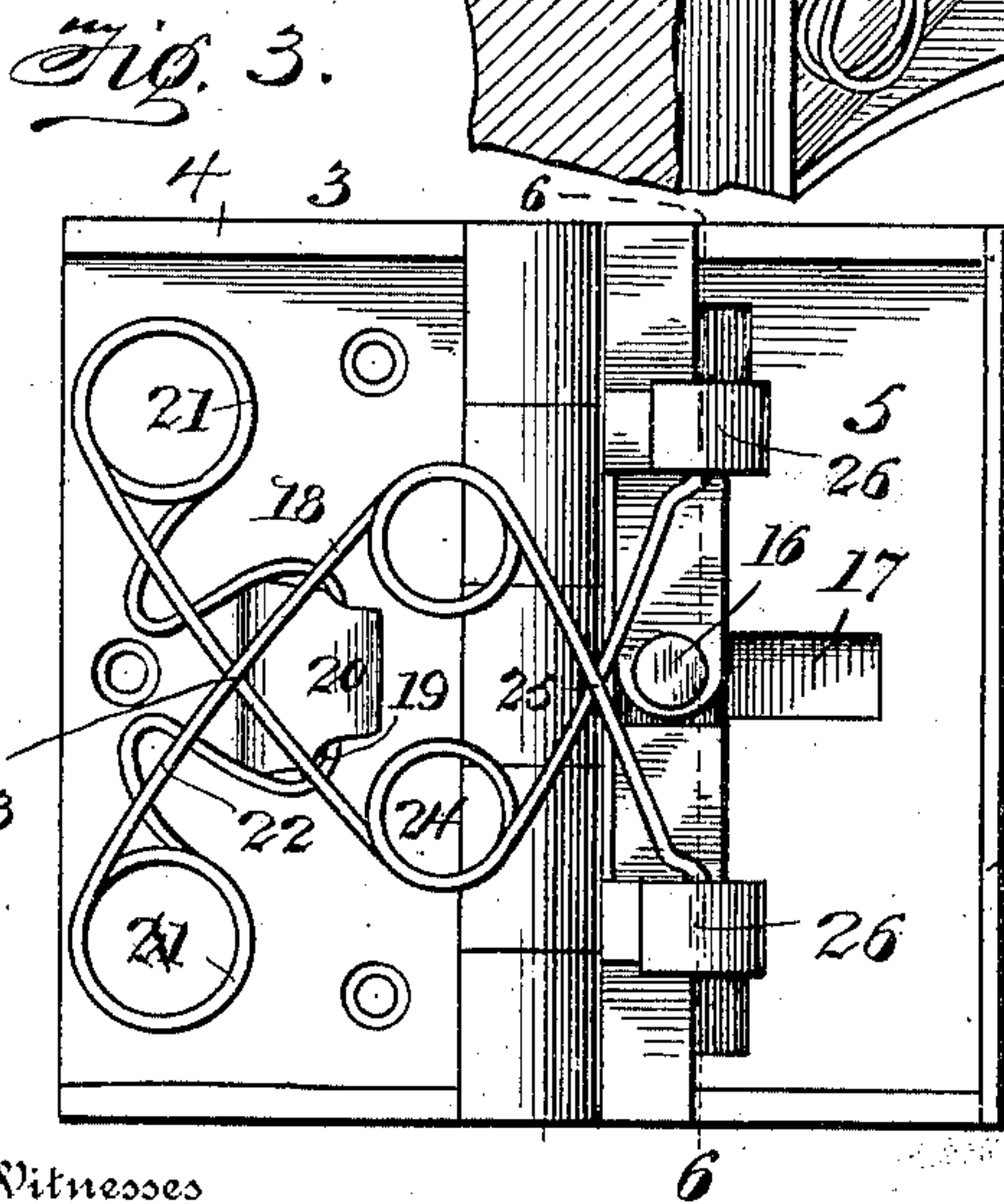
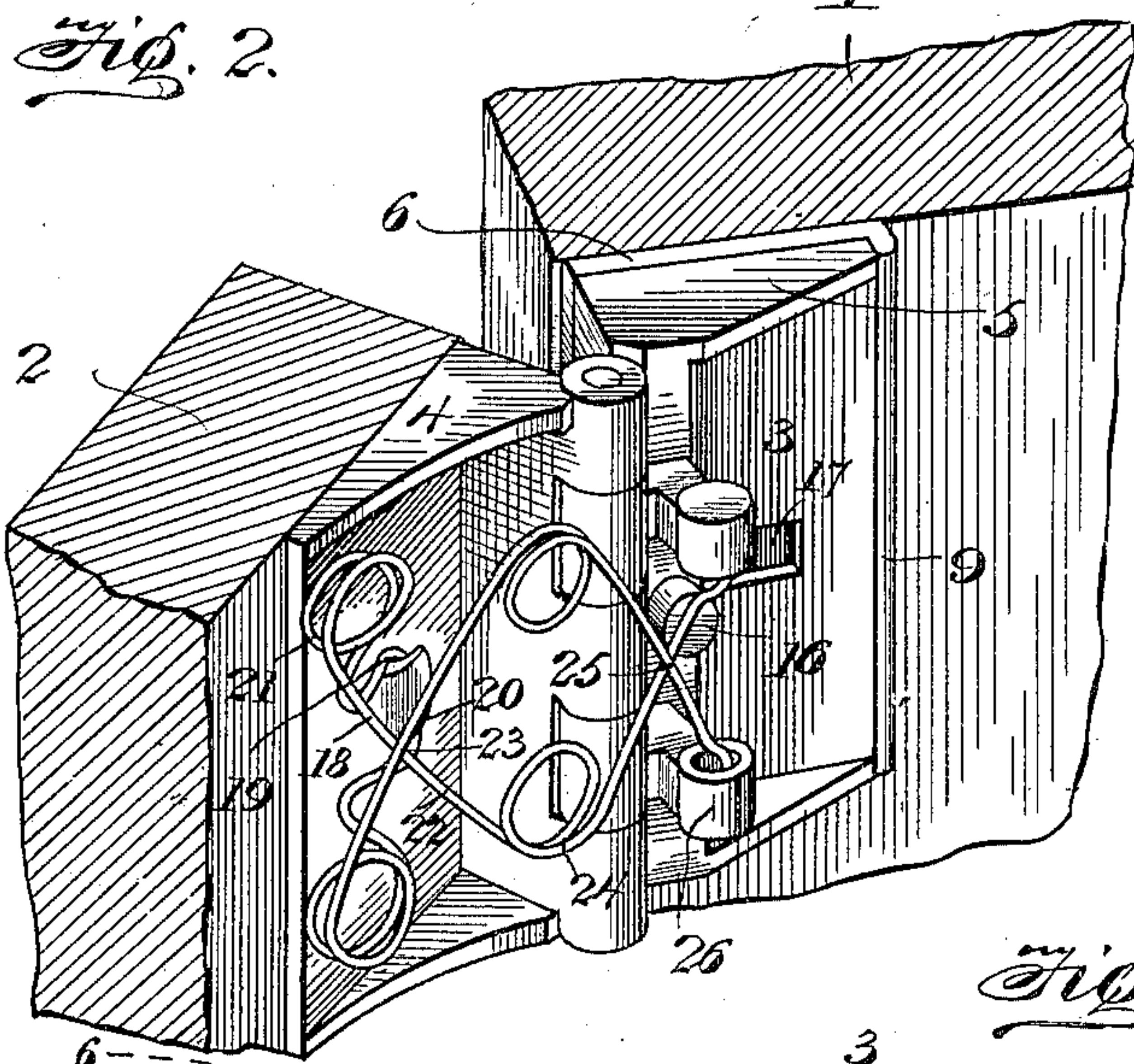
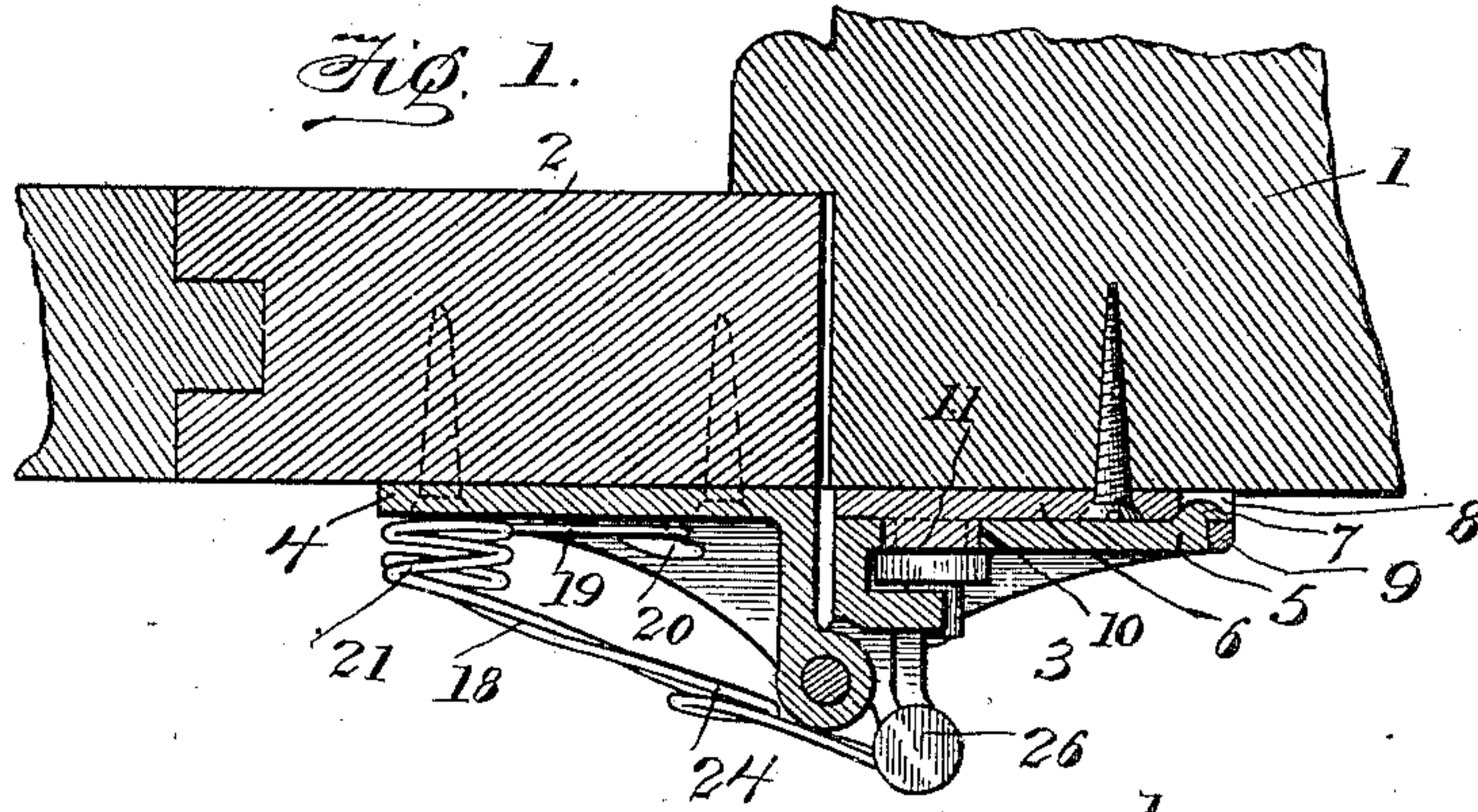
J. B. HOWLES.

SPRING HINGE.

(Application filed Mar. 3, 1902.)

(No Model.)

2 Sheets—Sheet 1.



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2 Sheets—Sheet 2.

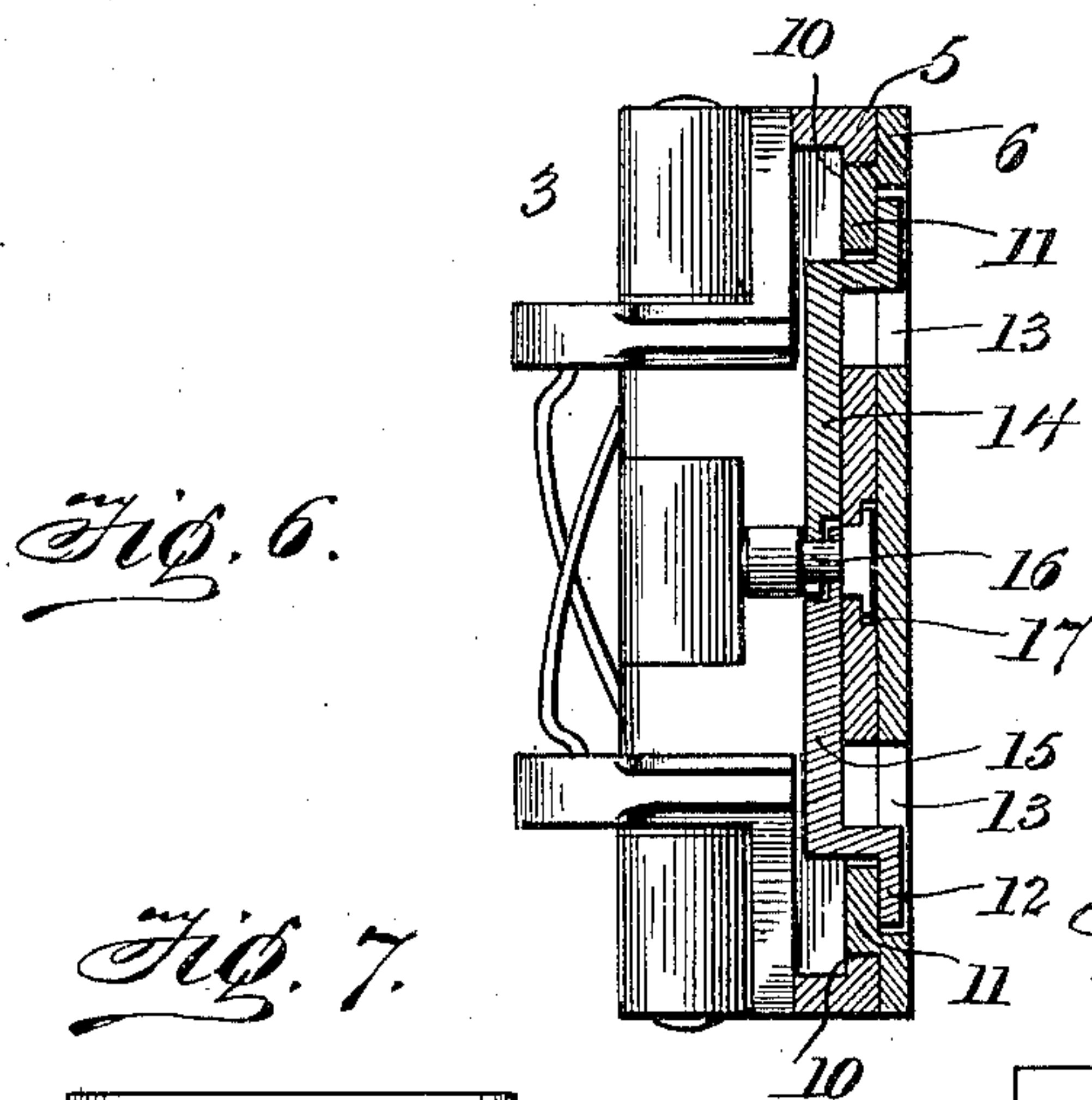
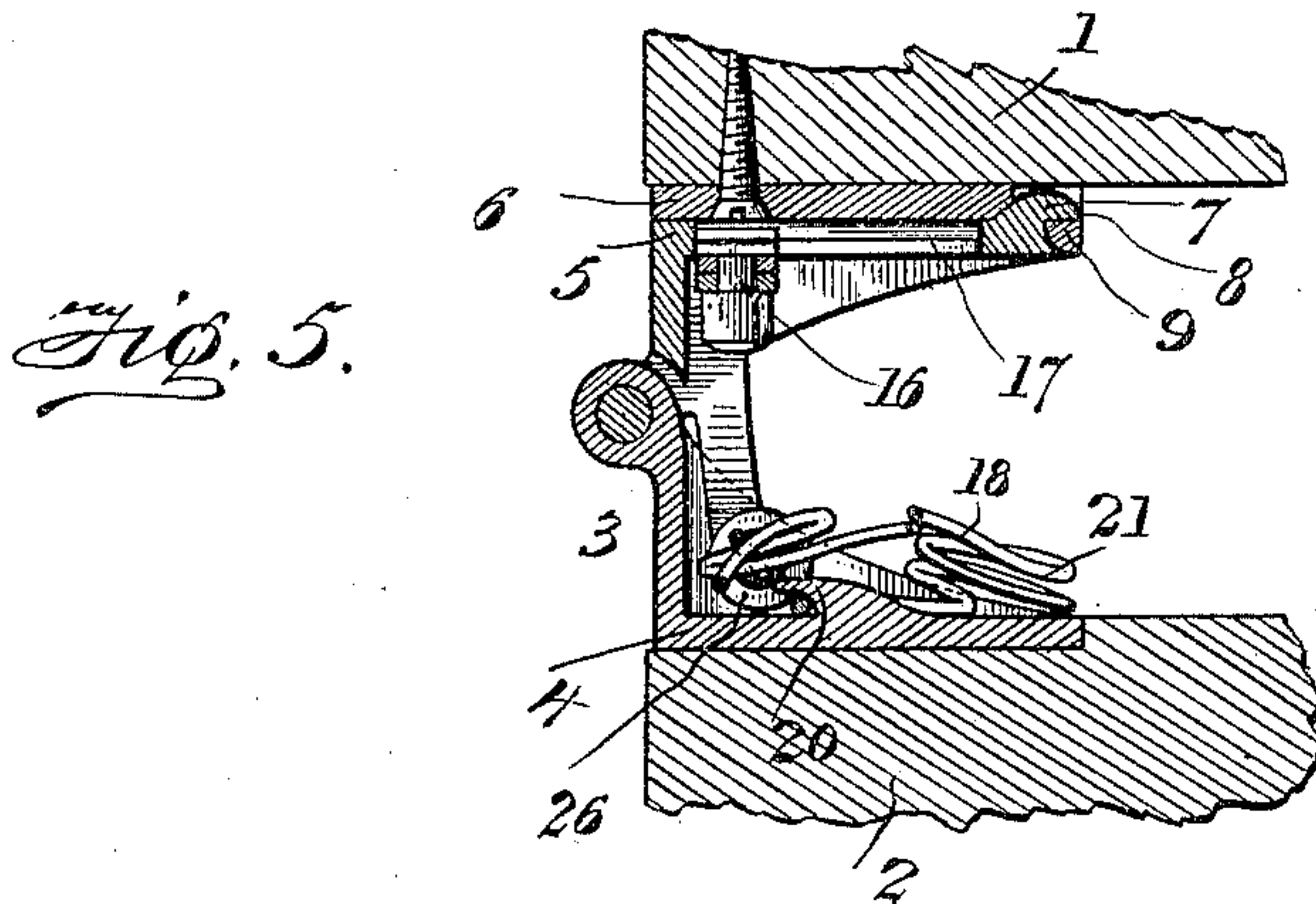
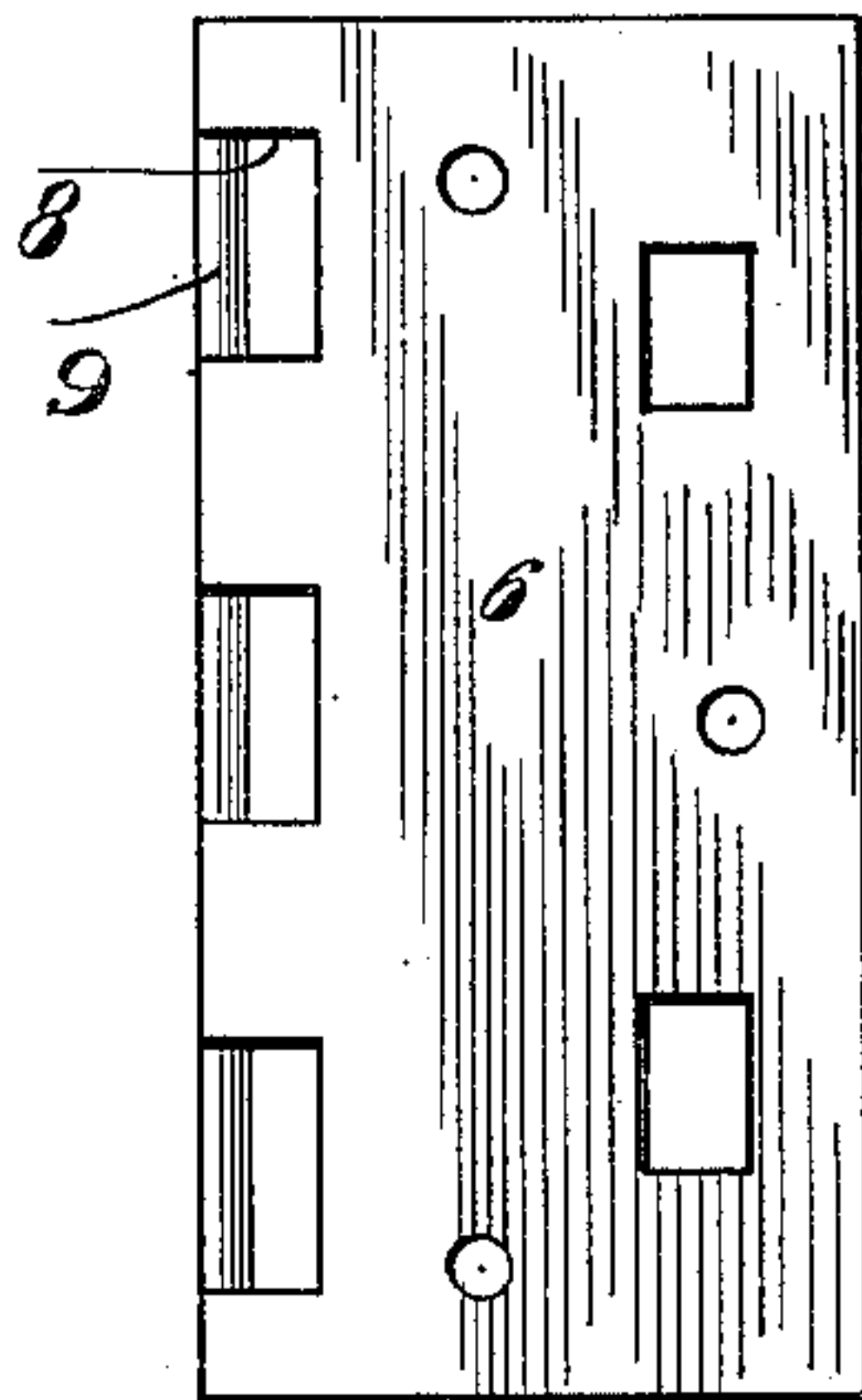
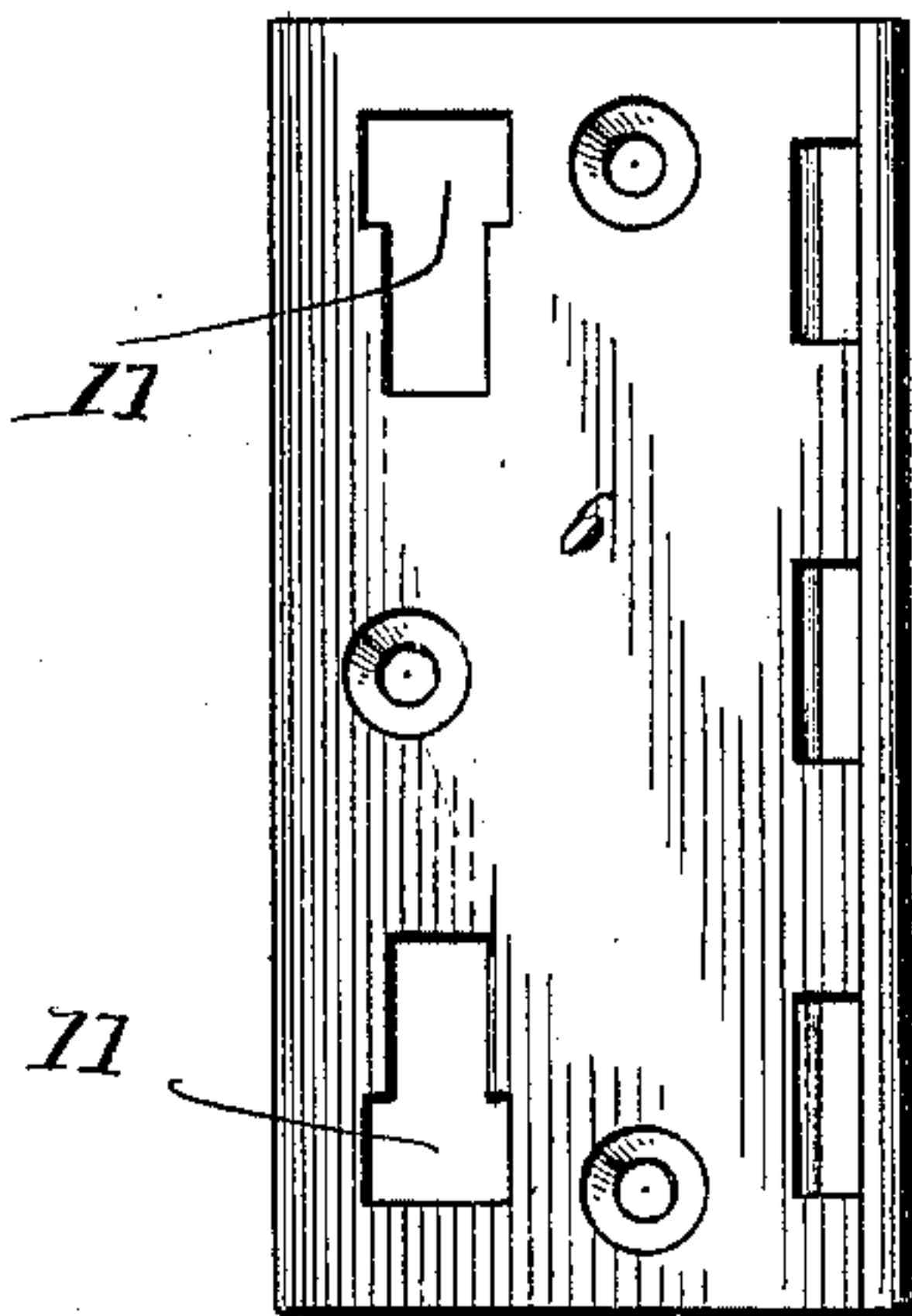


Fig. 7.

Fig. 8.



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UNITED STATES PATENT OFFICE.

JOHN B. HOWLES, OF SUGARGROVE, PENNSYLVANIA.

SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 701,344, dated June 3, 1902.

Application filed March 3, 1902. Serial No. 96,442. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. HOWLES, a citizen of the United States, residing at Sugargrove, in the county of Warren and State of Pennsylvania, have invented certain new and useful Improvements in Spring-Hinges; and I do 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 appertains to make and use the same.

This invention relates to improvements in spring-hinges, and particularly to a detachable spring-hinge for screen-doors.

The object of the invention is to provide a spring-hinge so constructed as to permit of the hinge being detached to remove the door without the necessity of marring the wood-work by the withdrawal of screws; and, further, to provide a hinge in which the spring when broken may be readily removed and replaced and acts to hold the door locked when the door is opened to the fullest position.

With these and other objects in view the invention consists in certain novel features of construction, combination, and arrangement of parts, which will be hereinafter more fully set forth, and particularly defined in the appended claims.

In the accompanying drawings, Figure 1 is a fragmentary sectional plan view of a door and the hinging-jamb of a door-frame, showing the application of the invention thereto. Fig. 2 is a fragmentary perspective view of the parts shown in Fig. 1, showing the door swung part way open. Fig. 3 is a front elevation of the hinge with the parts in normal position. Fig. 4 is a rear elevation thereof. Fig. 5 is a cross-section through the center of the hinge, showing the parts in the position they assume when the door is thrown full open. Fig. 6 is a longitudinal section through the jamb-leaf of the hinge on line 6-6 of Fig. 3, and Figs. 7 and 8 are front and rear views of the keeper-plate.

Referring to the drawings, the numeral 1 represents the hinging-jamb of a door-frame; 2, the door, which may be an ordinary screen-door, and 3 the hinge.

The hinge comprises the leaves 4 and 5, having the usual pivotal connection. The leaf 4, as shown, is suitably apertured for the pas-

sage of screws and is designed to be secured to the door, while the leaf 5 has a detachable connection with a keeper-plate 6, adapted to be screwed to the hinging-jamb of the door-frame. The detachable locking connection is effected through the instrumentality of the following coacting features: The leaf 5 is provided at its outer edge with lugs 7, adapted to be inserted through slots 8 beneath a raised rib or bar 9 at one side of the keeper-plate and is formed at its inner edge with T-shaped slots 10, whose enlarged portions are made rectangular to receive correspondingly-shaped bosses 11 on the keeper-plate. Slidably fitted in the smaller portions of the T-shaped slots are locking tongues or lugs 12, which are adapted to fit within slot 13, formed in said keeper-plate adjacent to the bosses 11, and to be inserted under said bosses to lock the hinge to the plate. As shown, the slots 13 extend beneath the bosses, so that the locking-tongues when projected beneath said bosses will not project beyond the rear face of the plate and will not prevent the plate from fitting flat against the face of the door-jamb 1. The tongues 12 are carried by the free ends of two levers 14 15, which are pivotally connected at their inner ends to a stud or operating device 16, sliding in a transverse slot 17, formed in the leaf 5. The keeper-plate 6 is designed to be secured as a permanent fixture to the jamb 1, and the purpose of said plate and the locking connections is to permit of the door being applied and removed whenever desired without the necessity of detaching the keeper-plate or of inserting or withdrawing any screws after the plate has once been applied to the jamb and the hinge-leaf 4 secured to the door. In hanging the door, assuming the parts to have been previously attached to the door and jamb, the door is first held and manipulated to insert the lugs 7 in the slots 8 and then turned to bring said lugs beneath the ribs 9 and to insert the tongues 12 into the slots 13, when by simply forcing the studs 16 of the upper and lower hinges inwardly the levers 14 15 will be straightened out and brought in alignment, thereby locking the leaves 5 of the hinges to the keeper-plates, whereupon the door will be hung for use. When it is desired to re-

move the door, the studs 16 are retracted to disengage the locking-tongues and the door then properly manipulated to withdraw the bosses 11 from the slots 12 and disengage the lugs 7 from the ribs 9, whereupon the door may be removed. By this construction of the parts it will be seen that the door may be repeatedly applied in position and removed without the necessity of inserting or withdrawing any screws and without marring the door-frame.

The spring 18 of the hinge, which performs the customary function of swinging the door closed, is constructed and mounted in such manner as to be readily removed when broken or injured, and is adapted to be employed for locking the door when the latter is swung wide open and it is desired to retain it in that position. To these ends the spring, which is composed of a single piece of spring-wire, is bent to form an attaching portion resting against the outer face of the leaf 4 and provided with a loop 19 to engage a hook 20 on said leaf, said loop being disposed at the center of said attaching portion, at the extremities of which are formed coils 21. As shown, the attaching portion is formed by properly bending the central portion of the wire, and from the coils 21 the arms 22 of the wire extend in reverse directions and are crossed at the point 23, thence formed with coils 24 and bent back and recrossed at 25, the free ends of the arms being seated in keepers or sockets 26 on the hinge-leaf 5. By this construction it will be seen that when the leaf 5 is swung outward toward the leaf 4 in the act of opening the door the crossed arms will yield back toward the leaf 4 and at the same time spread apart against the resistance of the coils 21 and 24, the reaction of which when the door is released will swing said door back to its closed position. Thus a spring of maximum strength is formed from a single piece of wire. If it should be desired to maintain the door in open position, the door is swung wide open, and the crossed arms of the spring are thereby depressed against the face of the leaf 4 and the leaf 5 moved to a position on the opposite side of the center line of the hinge in which the spring is rendered inactive except to act as a lock to prevent the door from casually closing. This will be readily understood by reference to Fig. 5. To set the hinge for action again, the door is swung back to the center line again,

when the expansive action of the spring will again be exerted to close it.

In case of injury to the spring said spring may be readily removed by simply forcing the free ends thereof out of the sockets 26 and then slipping the loop 19 out of engagement with the hook 20, whereupon a new spring may be substituted therefor in an obvious manner.

From the foregoing description, taken in connection with the accompanying drawings, the construction, operation, and advantages of my invention will be readily apparent, it is thought, without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of my invention.

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

1. In a hinge of the character described, the combination of a keeper-plate adapted to be applied to a door-frame, a hinge, one of the leaves of which is adapted to be secured to a door, levers pivotally connected to each other and provided with tongues for securing the other leaf of the hinge to the keeper-plate, and means for operating said levers to project and retract said tongues, substantially as described.

2. In a hinge of the character described, the combination of a keeper-plate adapted to be secured to a door-frame and provided at one edge with slots guarded by ribs and adjacent to the opposite side edge with slots and bosses, a hinge, one leaf of which is adapted to be secured to a door, the other being provided with lugs to engage said slots and ribs, levers upon the latter-named leaf pivotally connected to each other and provided with tongues to engage said slots and bosses, and a slidable operating device for actuating said levers to project and retract said tongues, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN B. HOWLES.

Witnesses:

W. F. MIX,
JOHN STUART.