

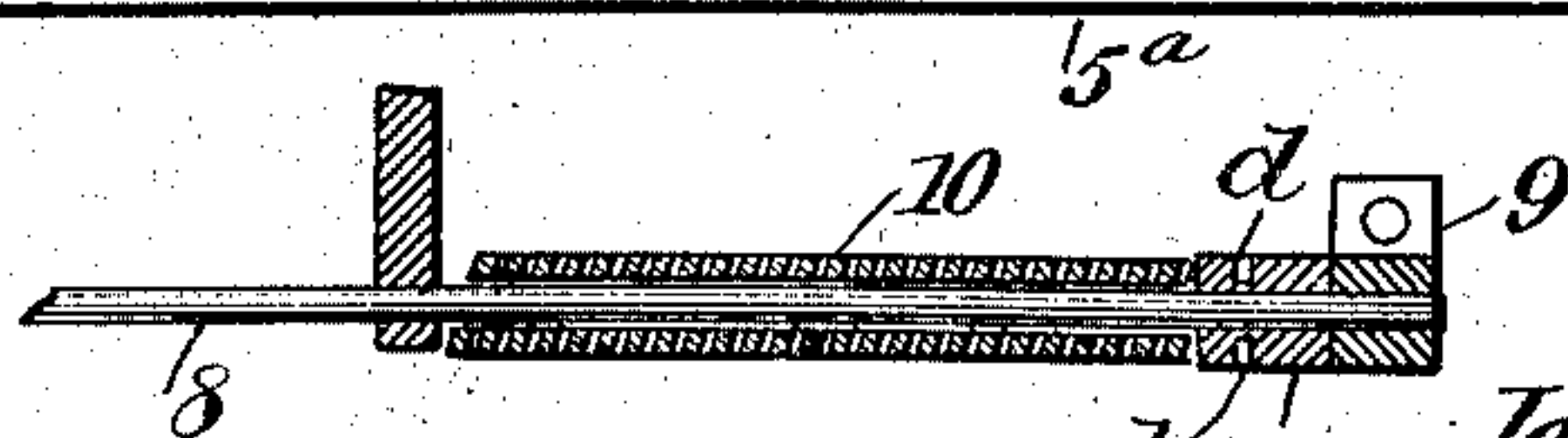
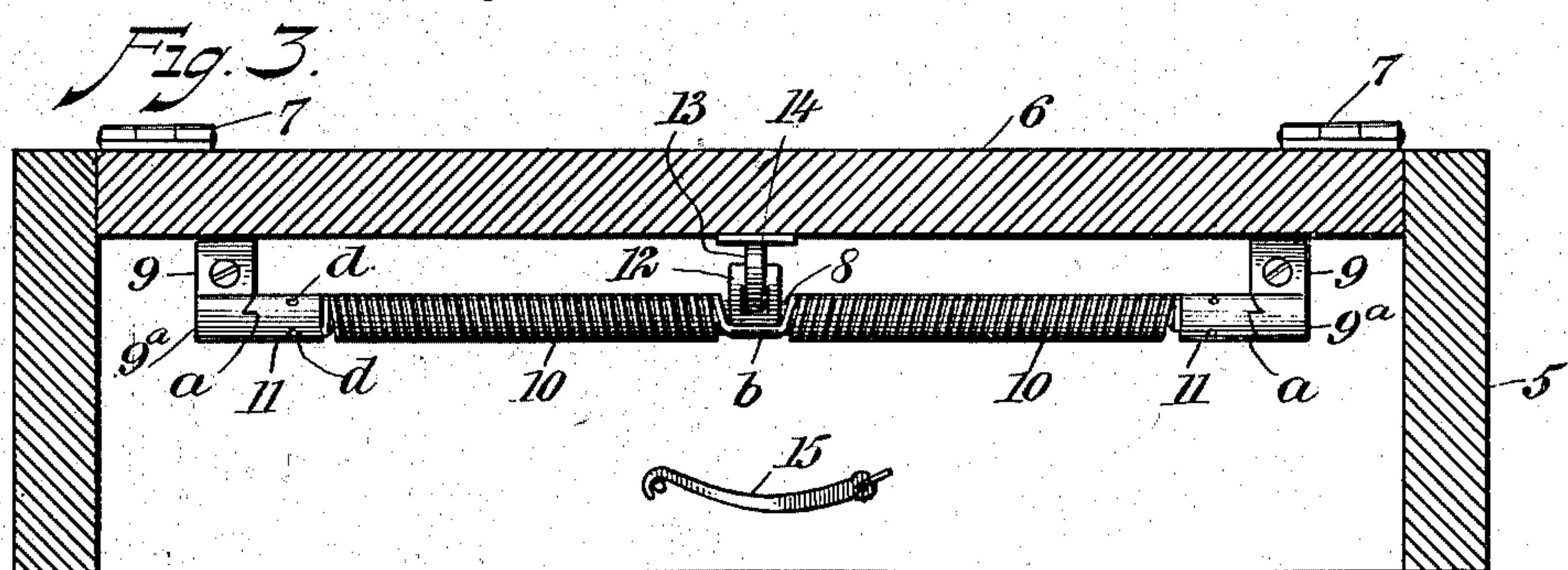
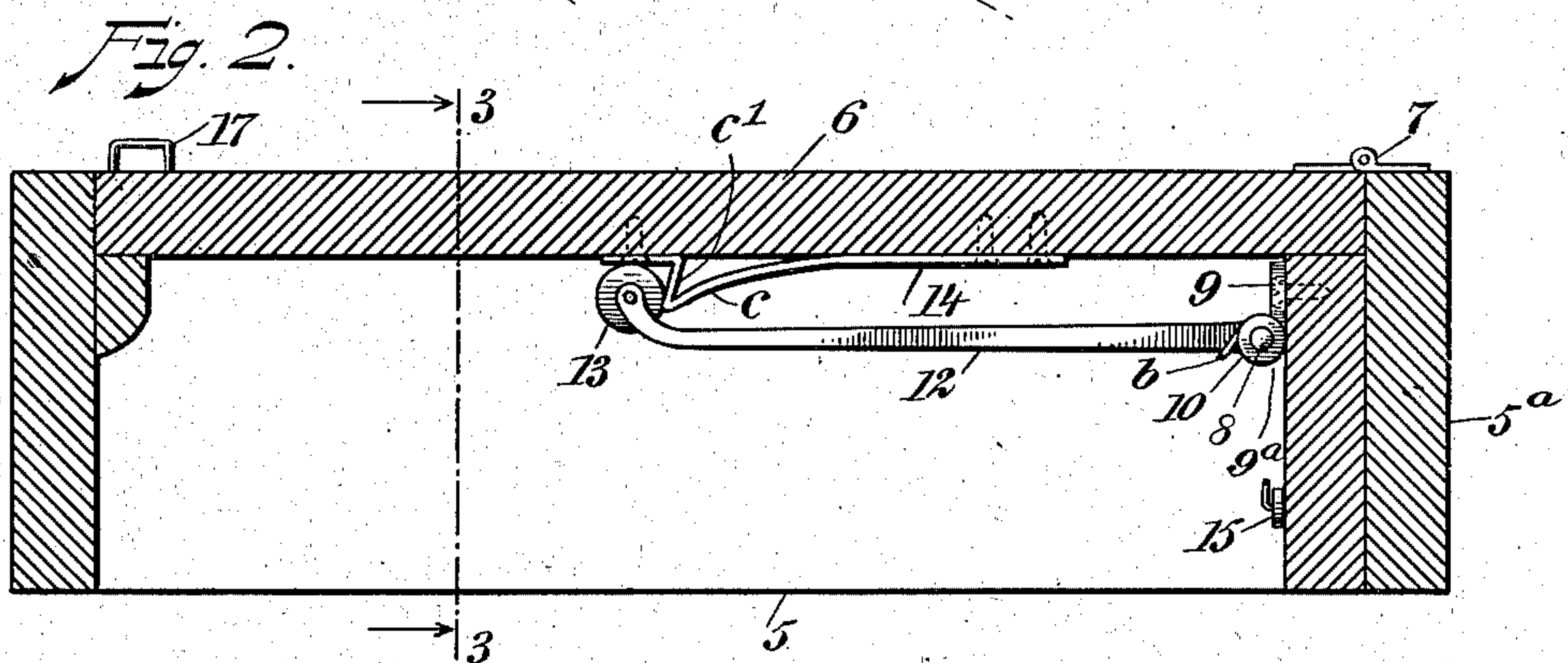
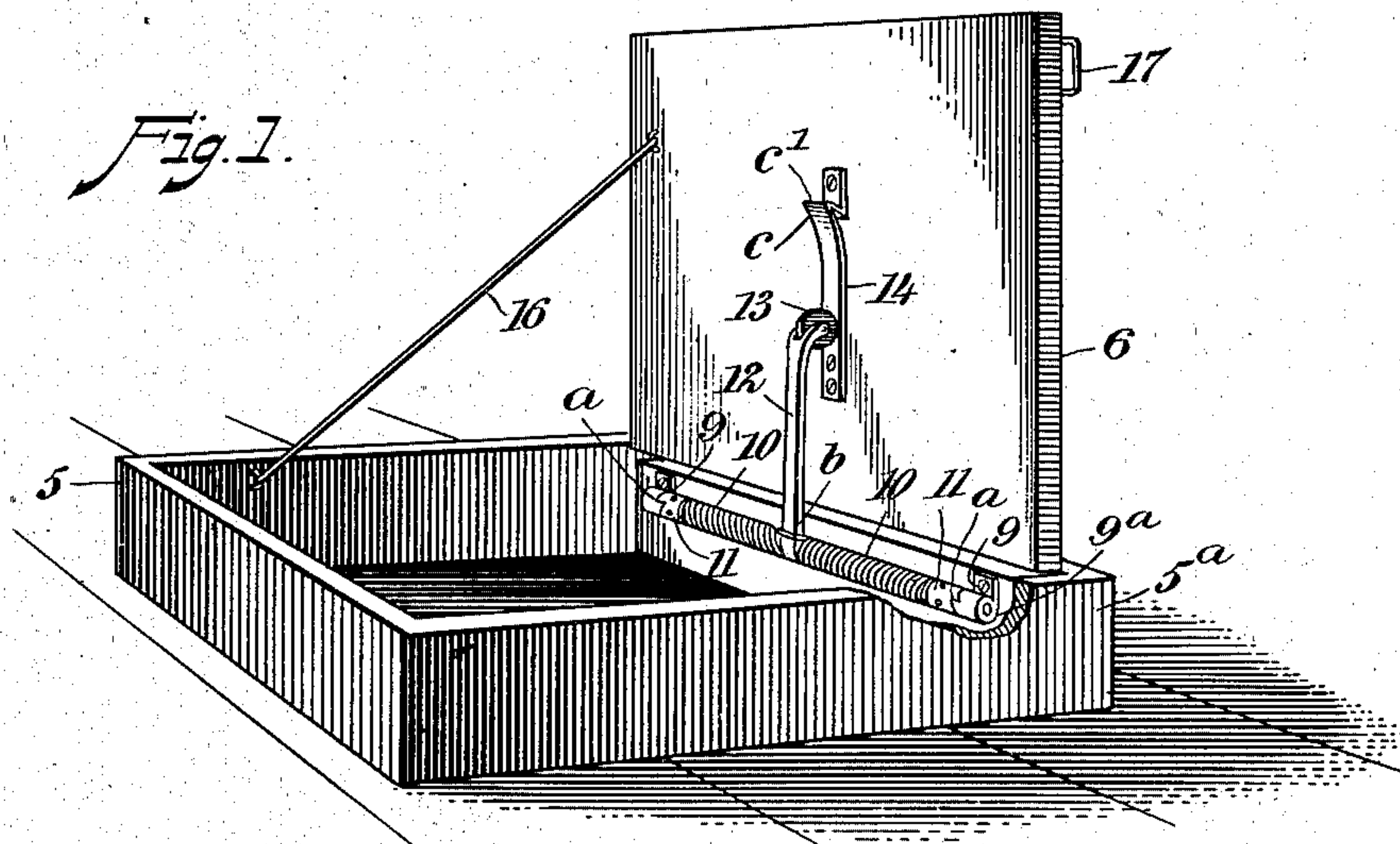
No. 736,714.

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J. D. GENDRON.
DOOR OPENER AND HOLDER.

APPLICATION FILED FEB. 27, 1903.

NO MODEL.



WITNESSES:

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JEFFRY D. GENDRON, OF GENTILLY, MINNESOTA, ASSIGNOR TO HIMSELF
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DOOR OPENER AND HOLDER.

SPECIFICATION forming part of Letters Patent No. 736,714, dated August 18, 1903.

Application filed February 27, 1903. Serial No. 145,307. (No model.)

To all whom it may concern:

Be it known that I, JEFFRY D. GENDRON, a citizen of the United States, and a resident of Gentilly, in the county of Polk and State of Minnesota, have invented a new and Improved Door Opener and Holder, of which the following is a full, clear, and exact description.

This invention has for its object to provide novel simple means for the opening of a door, and more particularly for the raising of a horizontal trap-door into a vertical position after it has been manually released by a slight upward pull, a further object being to adapt the improved door-opener for the retention of the door either in open or in closed adjustment until it is started upward by slight manual effort.

The invention consists in the novel construction and combination of parts, as is hereinafter described, and defined in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of the invention applied to a trap-door for its rocking elevation and retention in an elevated position. Fig. 2 is a longitudinal sectional view of a trap-door and its surrounding frame and a side view of the improvement applied and adjusted to hold the door closed. Fig. 3 is a transverse sectional view of the door and frame on the line 3-3 in Fig. 2 and a front view of the improvement adjusted to hold the door closed; and Fig. 4 is a fragmentary and partly-sectional view of details of the invention, showing the support for the coiled springs that effect an elevation of the door.

In the drawings, 5 indicates a rectangular frame whereon the rectangular door 6 is hinged by one edge, as shown at 7, whereby the door is held on the frame and adapted for a free rocking movement to open or close the opening bounded by the frame 5.

The improved door opener and holder comprises the following constructive details and their relative arrangement in connection with the frame and door:

Upon the inner side of the frame member 5^a whereon the door 6 is hinged and at a suit-

able distance below the upper edge of said frame portion a pintle-rod 8 is held parallel with the door when closed by the bracket-arms 9, secured upon the frame member 5^a. Upon the pintle-rod 8 two coiled springs 10 of proper dimensions and tensional force are mounted, said spiral springs being coiled oppositely. Upon the rod 8 two clutch-sleeves 11 are loosely mounted and are secured upon the outer ends of the springs 10. Each outer end of the rod 8 is journaled in a box 9^a, formed on an arm 9, secured on the inner side of a transverse wall of the frame 5, whereon the door 6 is to rock. The ends of the boxes 9^a that are adjacent to the ends of the sleeves 11 have ratchet-teeth thereon, and similar teeth *a* are formed on the ends of the sleeves for interlocking engagement with the boxes, so as to hold the springs 10 under tension. The length of the springs 10 is equal, and they are joined together at their inner ends by an integral loop *b* or similar means, which serves to space the springs apart sufficiently to permit a pressure-arm 12 to be rockably mounted by one end thereof upon the rod 8, as is clearly shown in Fig. 4, and the connecting-loop member *b* of the springs 10 bears upon the edge of the arm 12 farthest from the inner surface of the door 6. The pressure-arm 12 is of a length that permits its free end to extend a suitable distance toward the center of the door 6, and the trend of the coiled springs 10 is such as will adapt them to exert tensional stress upon the arm through the loop *b* to press said arm with the maximum force of the springs toward the inner side of the door. The free end portion of the pressure-arm 12 is forked, and between the similar-spaced members of the fork a roller 13 is pivoted, so that the edge of the roller will be forced by the springs 10 toward the door 6 and into contact with a wear-plate 14, secured upon the door by screws or other means. As shown, the wear-plate 14 is mainly level; but at a point near the end farthest from the door-hinges an angular projection *c* is formed or secured, this essentially V-shaped projection hooking slightly toward the end of the wear-plate farthest from the pintle-rod, whereby an abutment-shoulder *c'* is produced on the angular projection *c*.

The clutch-sleeves 11, that are loosely supported on the rod 8, have spaced radial perforations formed therein, as shown at *d*, for reception of a pin-wrench 15, (shown in Figs. 2 and 3 as hung upon suitable projections on a side wall of the frame 5,) and it will be seen that by an engagement of the pin-wrench with the perforations *d* the clutch-sleeves may be rotatably adjusted on the rod 8 to increase the torsional force of the springs 10, and thus adapt said springs for a proper elevation of the door 6.

A flexible connection 16 may with advantage be provided to prevent the door 6 from rocking too far away from the opening in the frame 5 when it is thrown up by the spring-pressed arm 12.

In operation the act of closing the door 6 rocks the arm 12 into a horizontal position and correspondingly increases the torsional force of the coacting springs 10, and it will be seen in Fig. 2 that the arm will be projected toward the free transverse edge of the door such a degree as to cause the roller 13 to ride over the projection *c* on the wear-plate 14 and drop against the flat end of the plate, so that the stress of the springs will be exerted to press the roller against the shoulder *c'*, whereby the door will be prevented from rocking upward, as the arm 12 cannot reversely traverse the plate 14, which is necessary to permit the stress of the springs 10 to elevate the door. When it is desired to open the door 6, it is only necessary to pull with but little force upon the handle 17 or other projection on the upper side of the door near its free transverse edge, which will cause the roller 13 to ride over the projection *c* and glide toward the opposite end of the wear-plate 14, the torsional force of the springs 10 serving to press the arm against the door and elevate it into a vertical position.

It is evident that the improvement may be readily applied to open a door that swings in a vertical plane and hold it open or closed by the engagement of the arm 12 with the wear-plate 14, as hereinbefore explained.

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

1. A device to open a door, or hold the door closed, comprising a torsion-spring, means for mounting the spring on a door-frame, an arm

rocked by the spring, a roller on the free end of the arm adapted to traverse the door, an angular projection on the door over which the roller will ride when the door is closed, and a catch thereon holding the door shut until the door is manually rocked, thereby rolling the roller back over the angular projection, whereupon the door is opened by stress of the springs.

2. A door opener and holder, comprising a rod mounted by its ends on the door-frame, two torsion-springs carried by the rod, a pressure-arm rockably supported on the rod between the springs and pressed by them, a roller loosely mounted on the free end of the arm, and a wear-plate on the door and having a projection, the roller being adapted to traverse the wear-plate when the door is opened by stress of the springs, and ride over and engage the projection, to hold the door closed.

3. The combination with a rectangular frame, and a trap-door hinged by one edge on the frame so as to swing upward, of a door opener and holder, comprising a pintle-rod, bracket-arms engaging the ends of the rod and fixed on the side wall of the frame whereon the door is hinged, two clutch-sleeves loosely mounted on the pintle-rod, and having ratchet-toothed engagement with adjacent ends of boxes on the bracket-arms through which the ends of the pintle-rod pass, two torsion-springs mounted on the pintle-rod and engaged at their outer ends with the respective clutch-sleeves, said springs being spaced apart at their inner ends by a loop member, a pressure-arm rockably mounted on the pintle-rod between the springs, a roller carried by the arm at its free end, a wear-plate on the door, having a projection for engagement with the roller, means for restricting the rocking movement of the door, and means for rotating the clutch-sleeves for regulating the tension of the springs.

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

JEFFRY D. GENDRON.

Witnesses:

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H. L. CLAMOTH.