

No. 732,890.

PATENTED JULY 7, 1903.

C. G. PERKINS.
PUSH BUTTON ELECTRIC SWITCH.

APPLICATION FILED JAN. 19, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1.

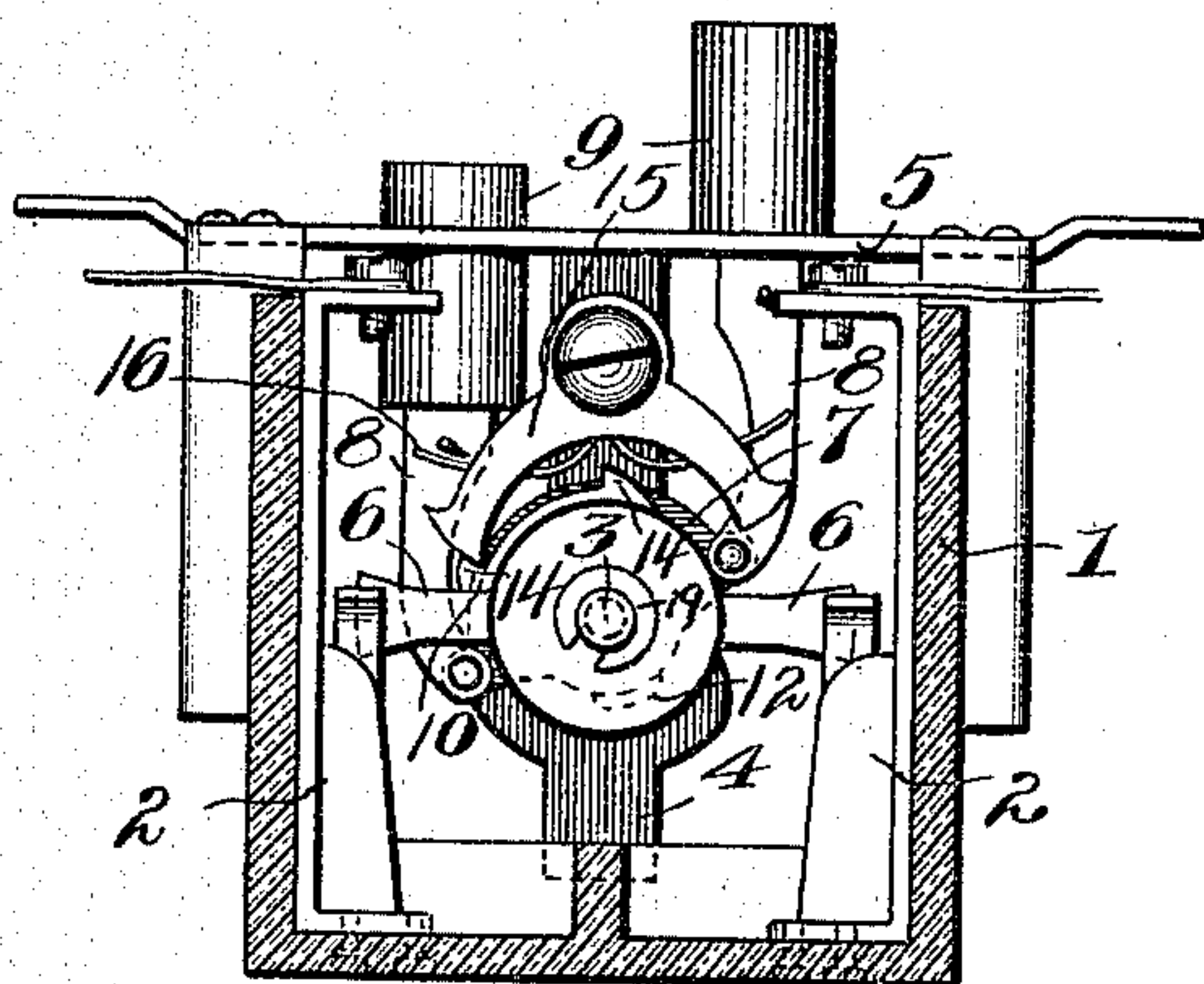
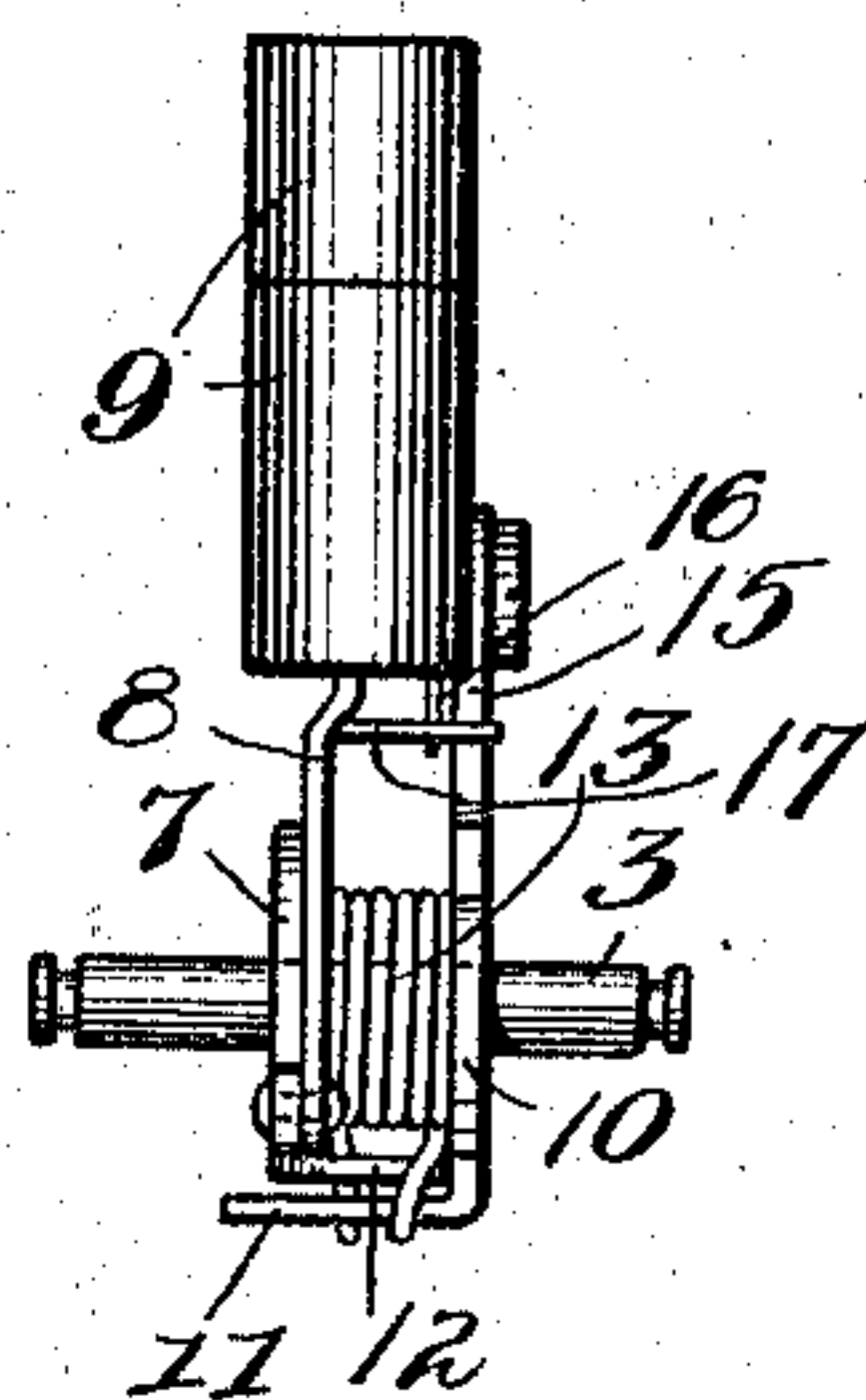


Fig. 5.



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Echel M. Lowe.

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3 SHEETS—SHEET 2.

Fig. 4.

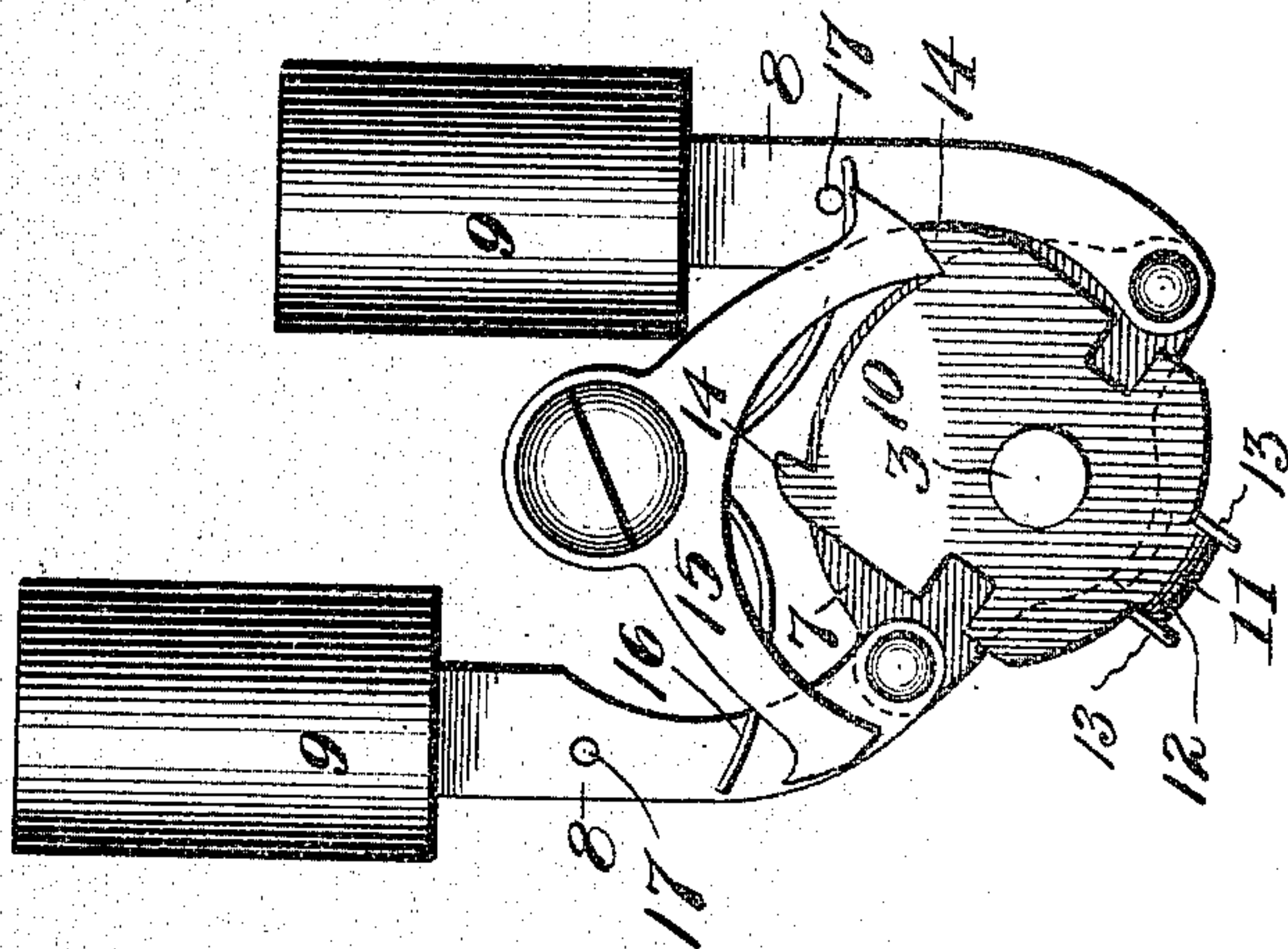


Fig. 3.

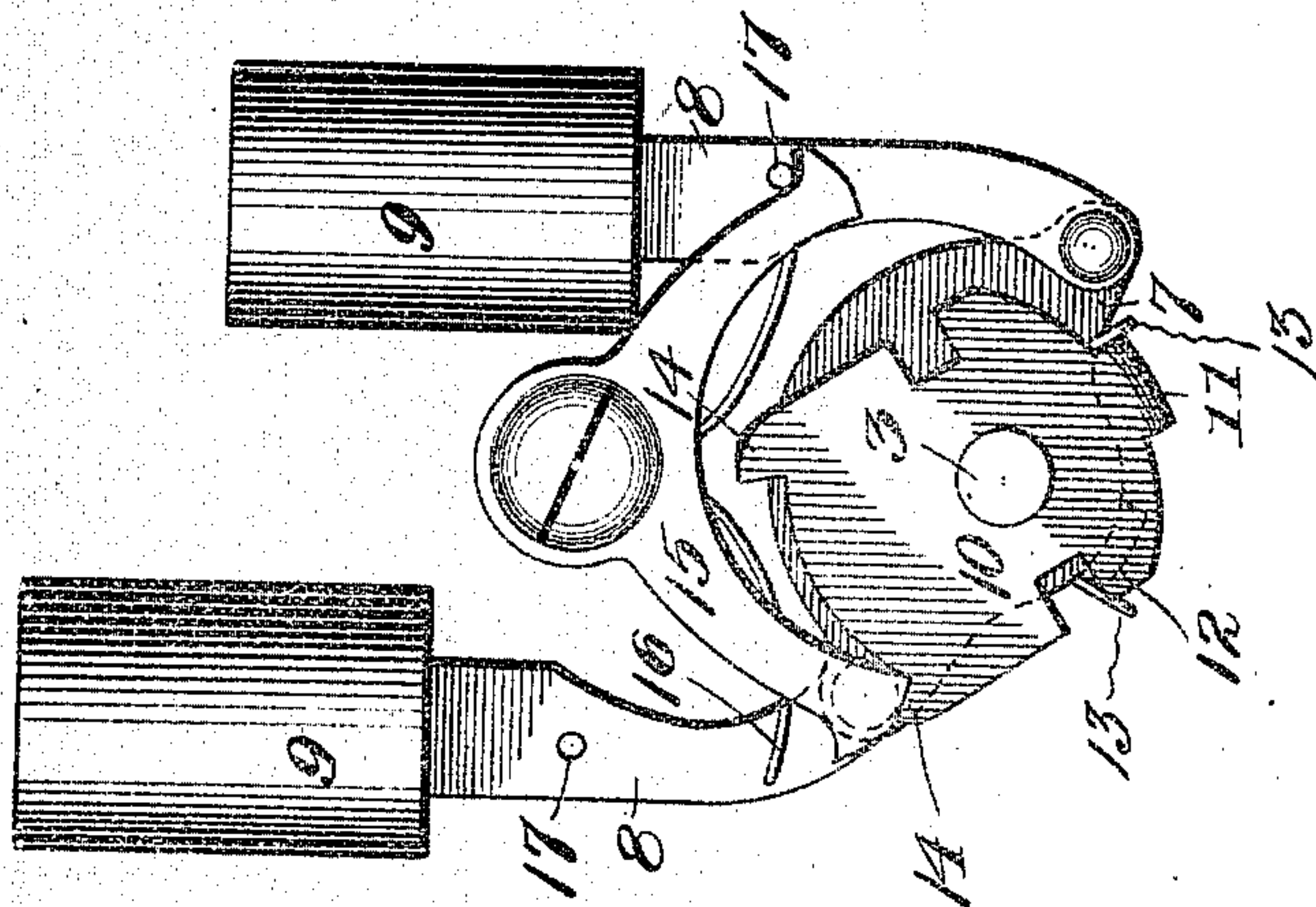
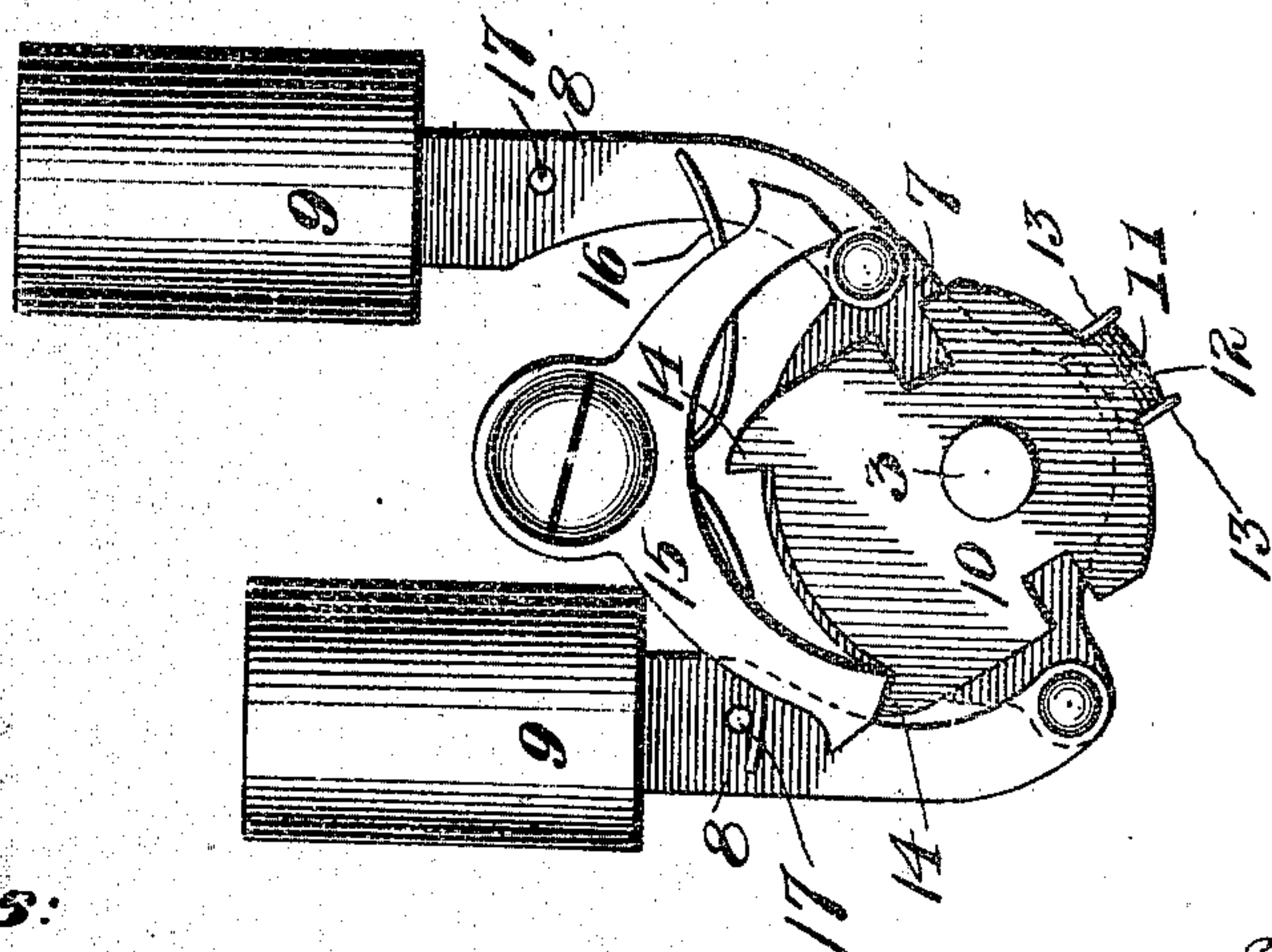


Fig. 2.



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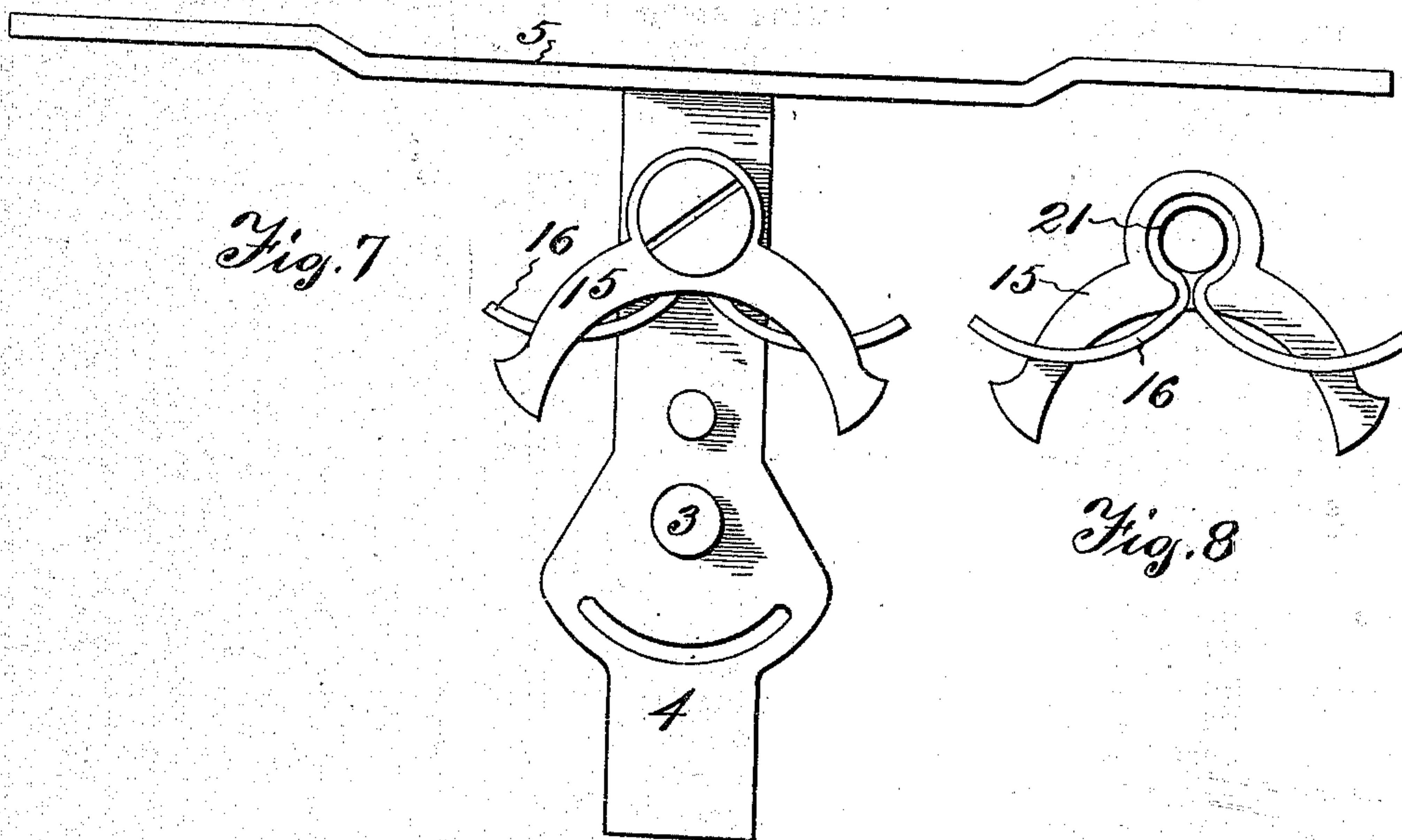
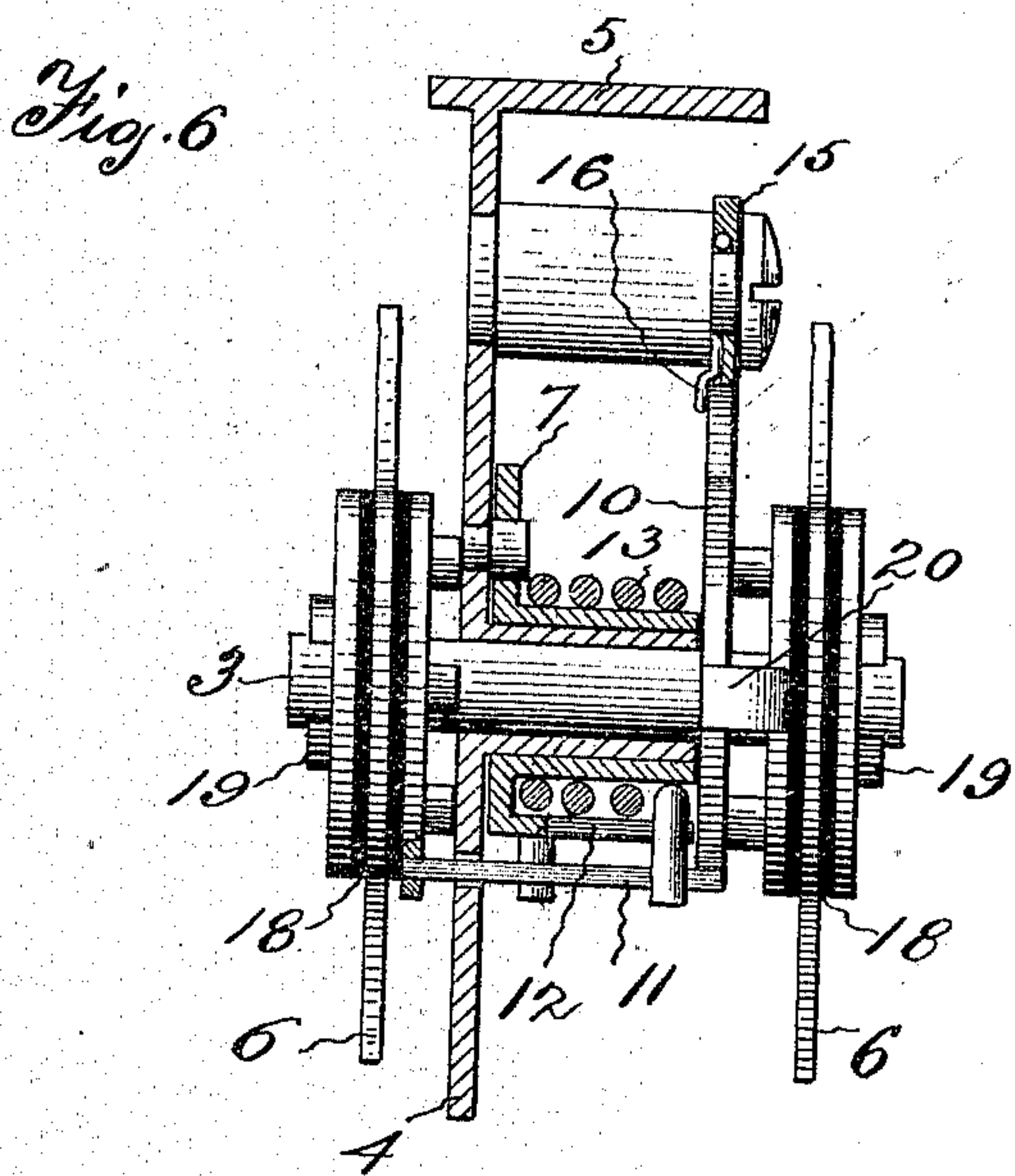
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3 SHEETS—SHEET 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES G. PERKINS, OF HARTFORD, CONNECTICUT.

PUSH-BUTTON ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 732,890, dated July 7, 1903.

Application filed January 19, 1903. Serial No. 139,530. (No model.)

To all whom it may concern:

Be it known that I, CHARLES G. PERKINS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Push-Button Electric Switches, of which the following is a specification.

This invention relates to an electric switch which has poles that are oscillated by a spring which is made tense by the reciprocation of push-buttons.

The object of this invention is to provide a simple, safe, and durable mechanism which will operate easily, smoothly, and quickly.

In the embodiment of the invention that is illustrated the oscillating pole-pieces are borne by a spindle, loose on which is the escapement-plate to which the pole-pieces are connected and the spring-plate to which the push-buttons are connected. Each of these plates has a lug that extends between the ends of the operating-spring, which is coiled about the spindle. An oscillating escapement is mounted on the supporting-arm in such position that the inward thrust of a push-button causes the end of the escapement adjacent to that push-button to engage with a tooth on the escape-plate, in which engagement that end of the escapement remains until an inward movement of the other push-button has placed the spring under tension and pushed the other end of the escapement inward, so as to engage with the other tooth on the escape-plate.

Figure 1 of the accompanying drawings shows a side view of one of these switches with a side of the receptacle cut away so as to expose the mechanism, the parts being in the positions occupied when the pole-pieces are engaged with the contacts and the circuit is closed. Fig. 2 shows, on larger scale, the push-buttons, the spring-plate to which they are connected, the escape-plate to which the pole-pieces are connected, and the oscillating escapement in the same relative positions as shown in Fig. 1. Fig. 3 shows the same parts with the push-buttons in the positions occupied just before the escapement is released, so as to allow the poles to be thrown for opening the circuit. Fig. 4 shows the same parts in the positions occupied after the

escapement has been oscillated, so that the poles may be oscillated for opening the circuit. Fig. 5 shows an edge view of these parts. Fig. 6 shows a transverse section taken through the frame-plate on the plane of the spindle, showing the manner of supporting the poles on the spindle and connecting them with each other and also with the escape-plate. Fig. 7 shows a face view of the frame-plate and the escapement, and Fig. 8 is a view of the back side of the escapement and its spring.

The receptacle 1 for this switch may be made of porcelain or any other suitable material in any desired shape. The contacts 2 are mounted in the receptacle in the usual way and provided with ordinary binding-screws for the attachment of the circuit-wires. The spindle 3 is loosely held by the frame-plate 4, which is attached to the supporting-plate 5, that is fastened in any suitable manner across the open end of the receptacle. The pole-pieces 6, that are properly insulated by the washers 18, are mounted on the ends of the spindle and held in place by the split washers 19. The spring-plate 7 is loosely mounted on the spindle, and to the opposite ends of this plate the fingers 8 of the push-buttons 9 are pivoted. Loosely mounted on the spindle is the escape-plate 10. This plate is connected with one pole-piece by the lug 11 and with the other pole-piece by the lug 20, so that its oscillation causes the oscillation of the pole-pieces. The lug 11 extends from the plate 10 toward the plate 7, and the plate 7 has a lug 12, that extends toward the plate 10. A spring 13 is coiled about the spindle in such manner that its ends press against opposite edges of both of these lugs. On the edge of the plate 10 are two teeth 14, that face each other, and pivotally mounted upon the frame-plate, so that its ends will engage these teeth, is the escapement 15. A spring 16 lies in a groove 21 in the back of the escapement.

When one of the push-buttons is thrust inwardly, a pin 17, projecting from its finger, engages one end of the escapement-spring and forces an end of the escapement into engagement with one of the escape-teeth. When the outer push-button is thrust inwardly, the spring-plate to which it is attached is oscillated, so that its lug engages one end of the

spring and places the spring under tension for the reason that the other end of the spring is held by the lug projecting from the escape-plate, which is held from movement by the
 5 escapement until after the spring has been put under considerable tension. Then the pin projecting from the finger of the push-button that is being pushed inwardly engages the outer end of the escapement and oscil-
 10 lates it in such manner as to withdraw the end that is engaged with the tooth on the escape-plate, allowing the escape-plate to which the poles are attached to be thrown by the spring. This oscillation of the escapement,
 15 which withdraws one end from engagement with one of the teeth, throws the other end into engagement with the other tooth, so that when the push-button that is now out is thrust inwardly the escapement will hold the escape-
 20 plate until the inward movement of the push-button causes a disengagement.

With this mechanism until just before the escapement is oscillated to cause a disengagement the push-buttons have only to place the
 25 spring under tension, and then they easily cause a disengagement by reason of the fact that they engage with the escapement at some distance from its pivot. The disengagement of the escapement from the escape-plate is
 30 caused positively, as is also the engagement; but in order to insure a smooth movement the engagement is first effected by the elasticity of the small spring connected with the escapement, which is engaged by the pins pro-
 35 jecting from the push-button arms when the push-buttons are thrust in.

All of the parts of this mechanism are simple to make and easy to assemble. The operation is smooth and easy, for there are no
 40 cams. All the movements are positive, and yet they are quick, for the operating-spring throws parts which are perfectly free when the escapement is released.

I claim as my invention—

45 1. An electric switch having a frame-plate, a spindle mounted on the frame-plate, oscillatory poles mounted upon the spindle, an escape-plate having two teeth that face each other on its edge, mounted upon the spindle
 50 and connected with the poles, an oscillatory

escapement mounted on the frame-plate between the spindle and the push-buttons and having its ends adapted to engage the teeth on the escape-plate, a spring-plate mounted upon the spindle, a spring coiled about the
 55 spindle and adapted to be placed under tension by the oscillation of the spring-plate, and push-buttons adapted to first oscillate the spring-plate and then oscillate the escapement, substantially as specified. 60

2. An electric switch having a frame-plate, a spindle mounted on the frame-plate, oscillatory poles mounted upon the spindle, an escape-plate having two teeth that face each other on its edge, mounted upon the
 65 spindle and connected with the poles, an oscillatory escapement mounted on the frame-plate and having its ends adapted to engage the teeth on the escape-plate, a spring mounted upon and movable with the escapement, a
 70 spring-plate mounted upon the spindle, a spring coiled about the spindle and adapted to be placed under tension by the oscillation of the spring-plate, and push-buttons adapted to first oscillate the spring-plate and then
 75 oscillate the escapement, substantially as specified.

3. An electric switch having a frame-plate, a spindle mounted on the frame-plate, oscillatory poles mounted upon the spindle, an
 80 escape-plate having two teeth that face each other on its outer edge, mounted on the spindle and connected with the poles, an oscillatory escapement mounted on the frame-plate between the spindle and the push-buttons and
 85 having its ends adapted to engage the teeth on the escape-plate, a spring mounted upon and movable with the escapement, a spring-plate mounted upon the spindle, a spring coiled about the spindle and adapted to be
 90 placed under tension by the oscillation of the spring-plate, and push-buttons adapted to first oscillate the spring-plate and then oscillate the escapement, substantially as specified.

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Witnesses:

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