

(No Model.)

2 Sheets—Sheet 1.

F. W. FRASER.  
STOP ACTION FOR ORGANS.

No. 501,880.

Patented July 18, 1893.

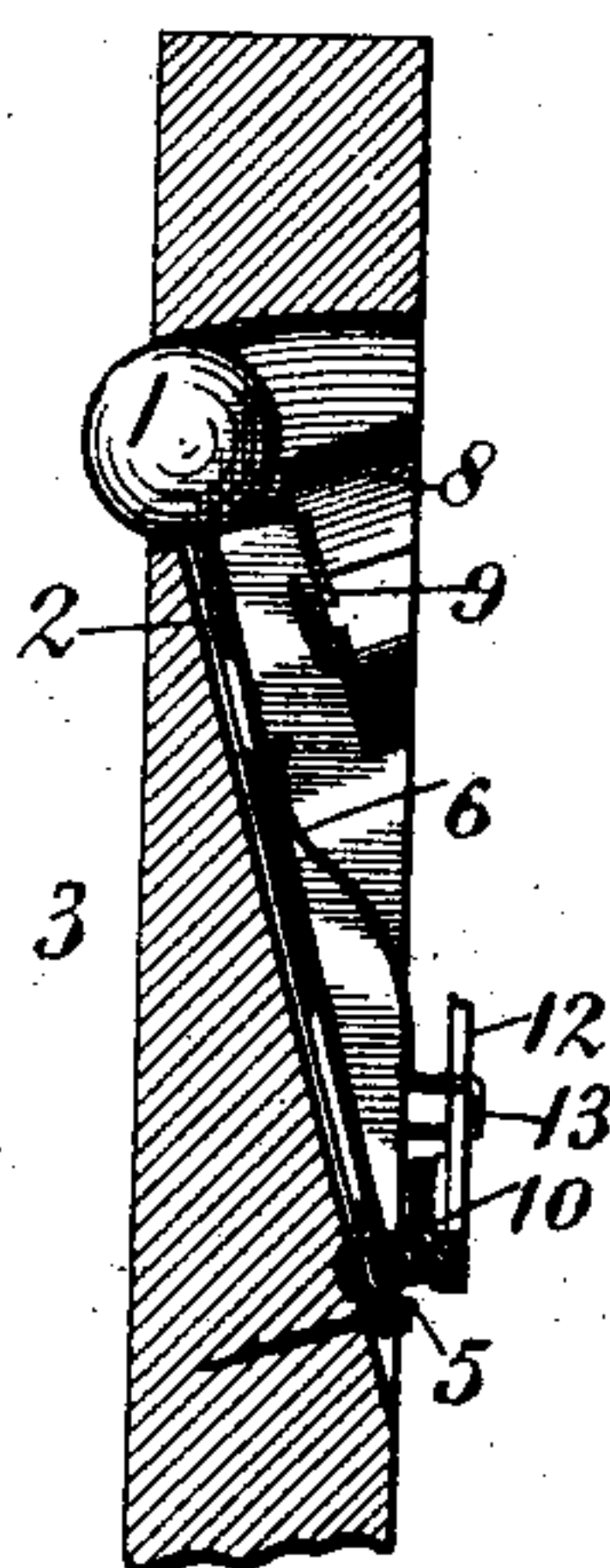


Fig. 1

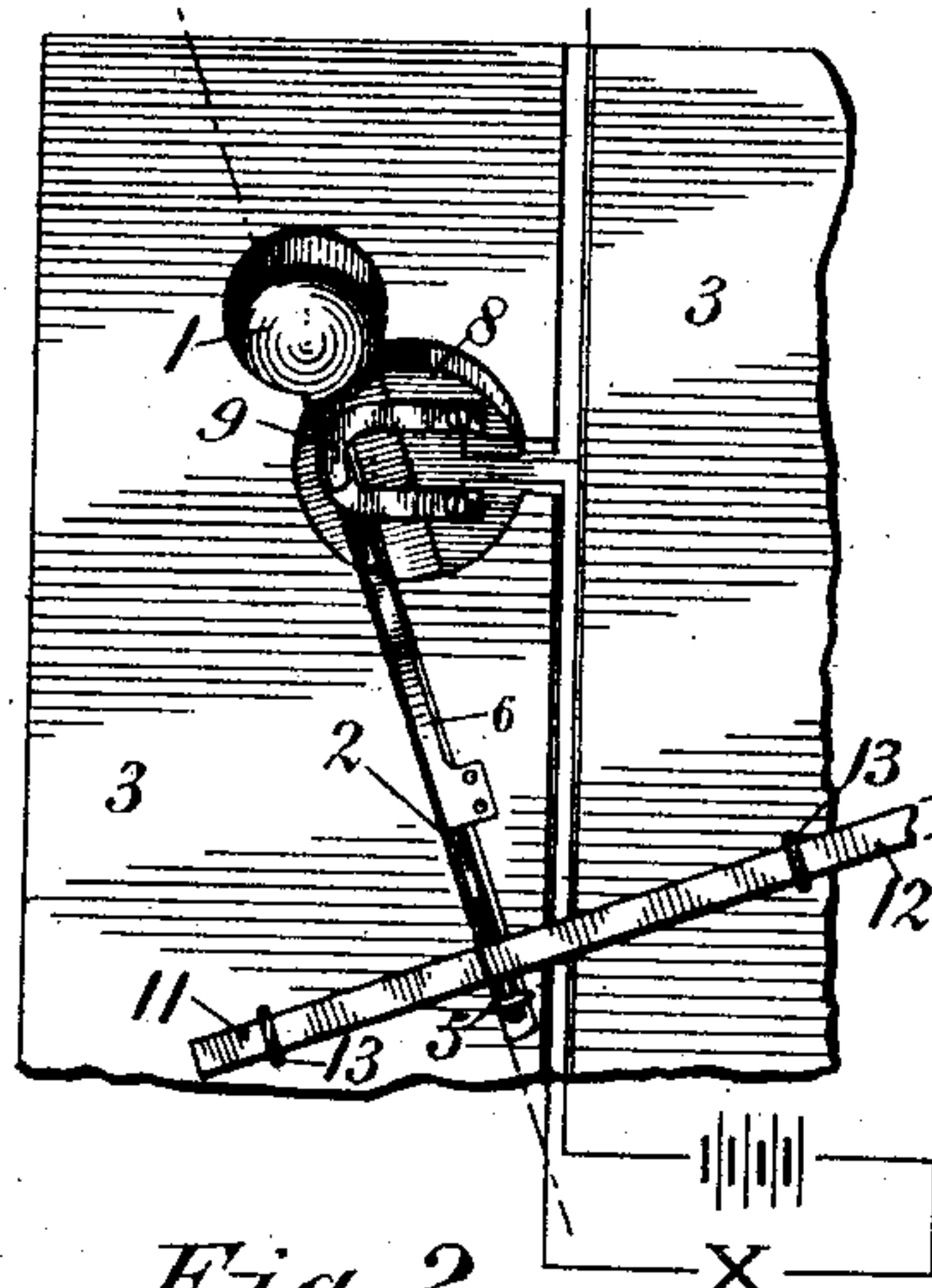


Fig. 2

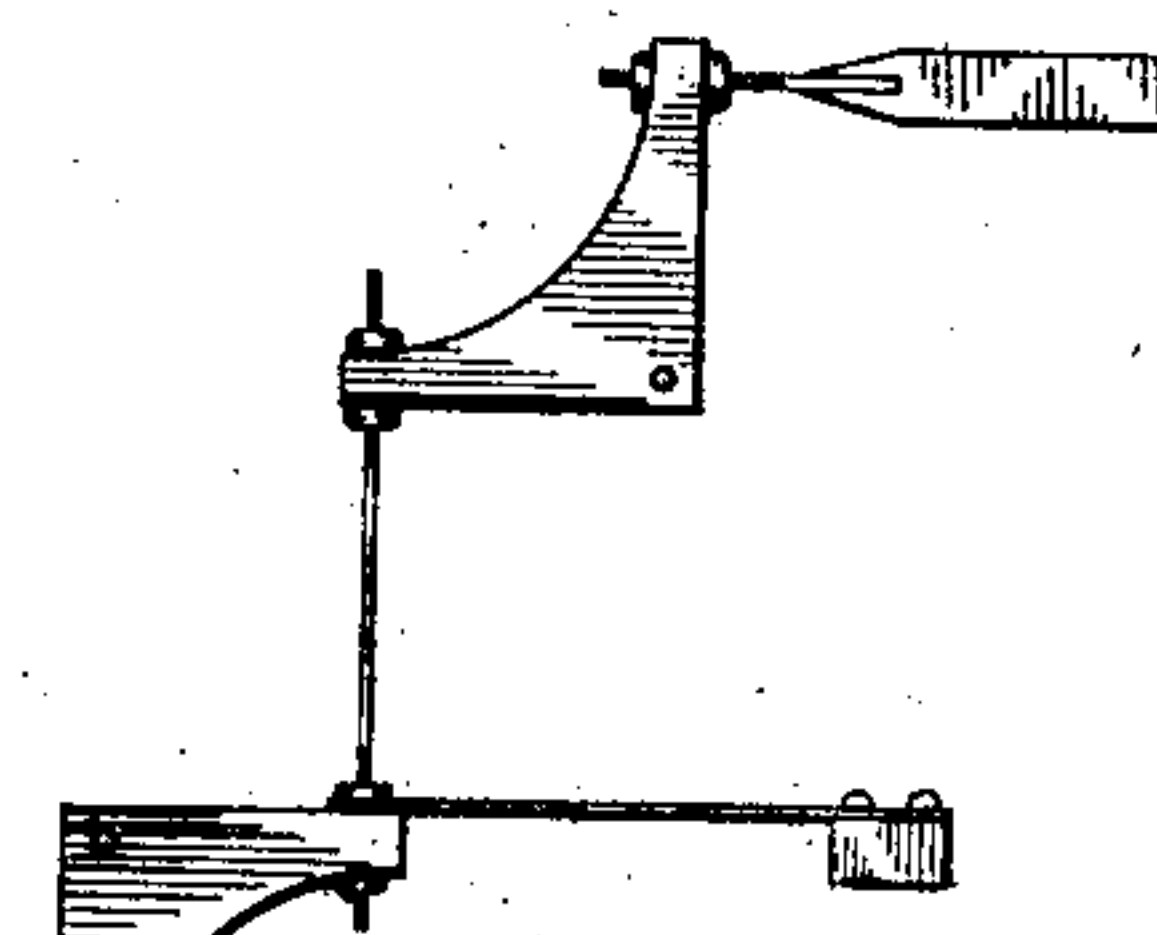


Fig. 3

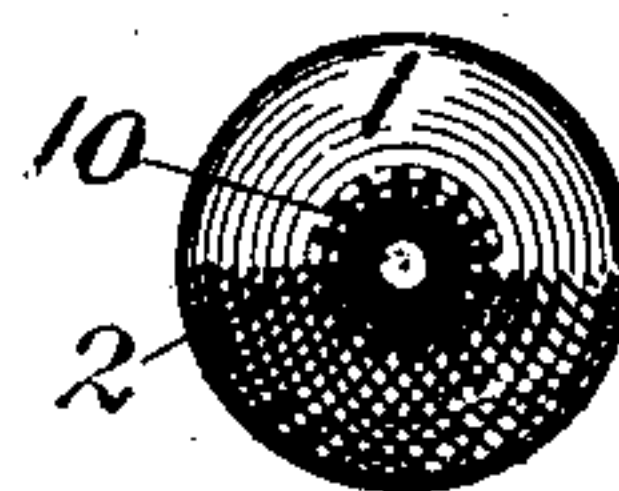


Fig. 4



Fig. 5

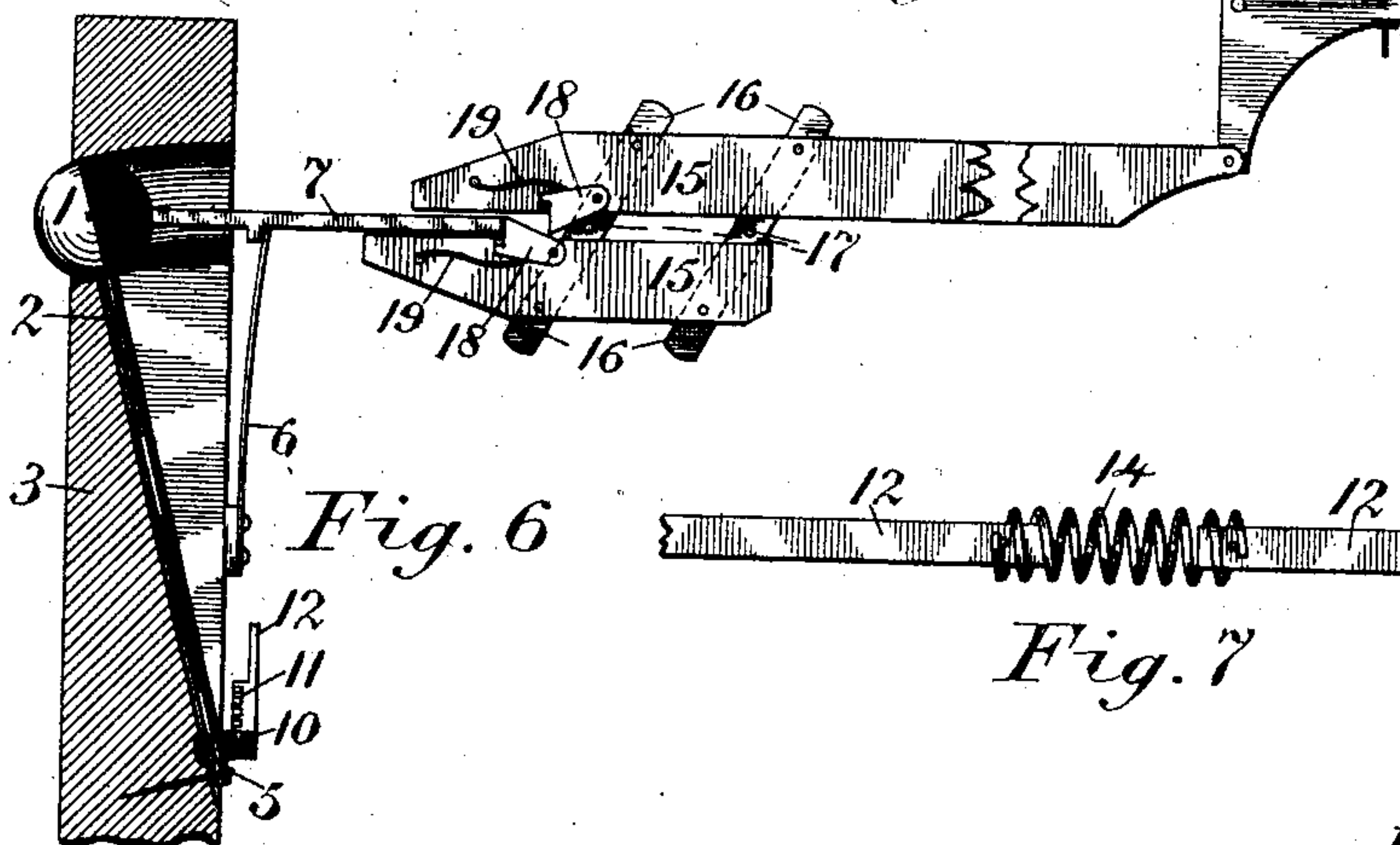


Fig. 6

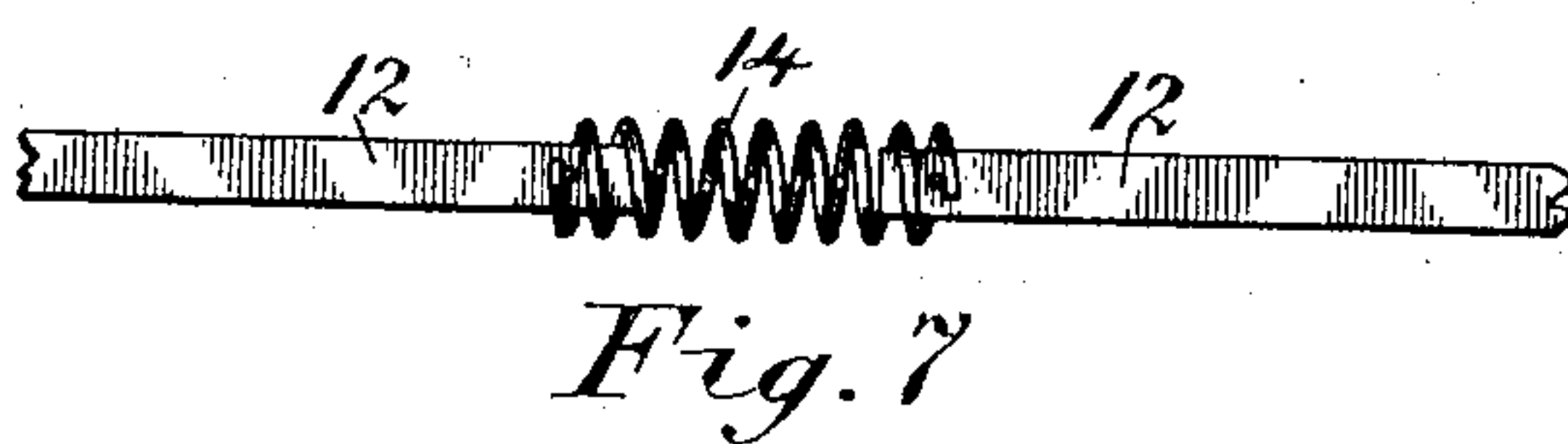


Fig. 7

Witnesses

H. Dixon

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Att'y

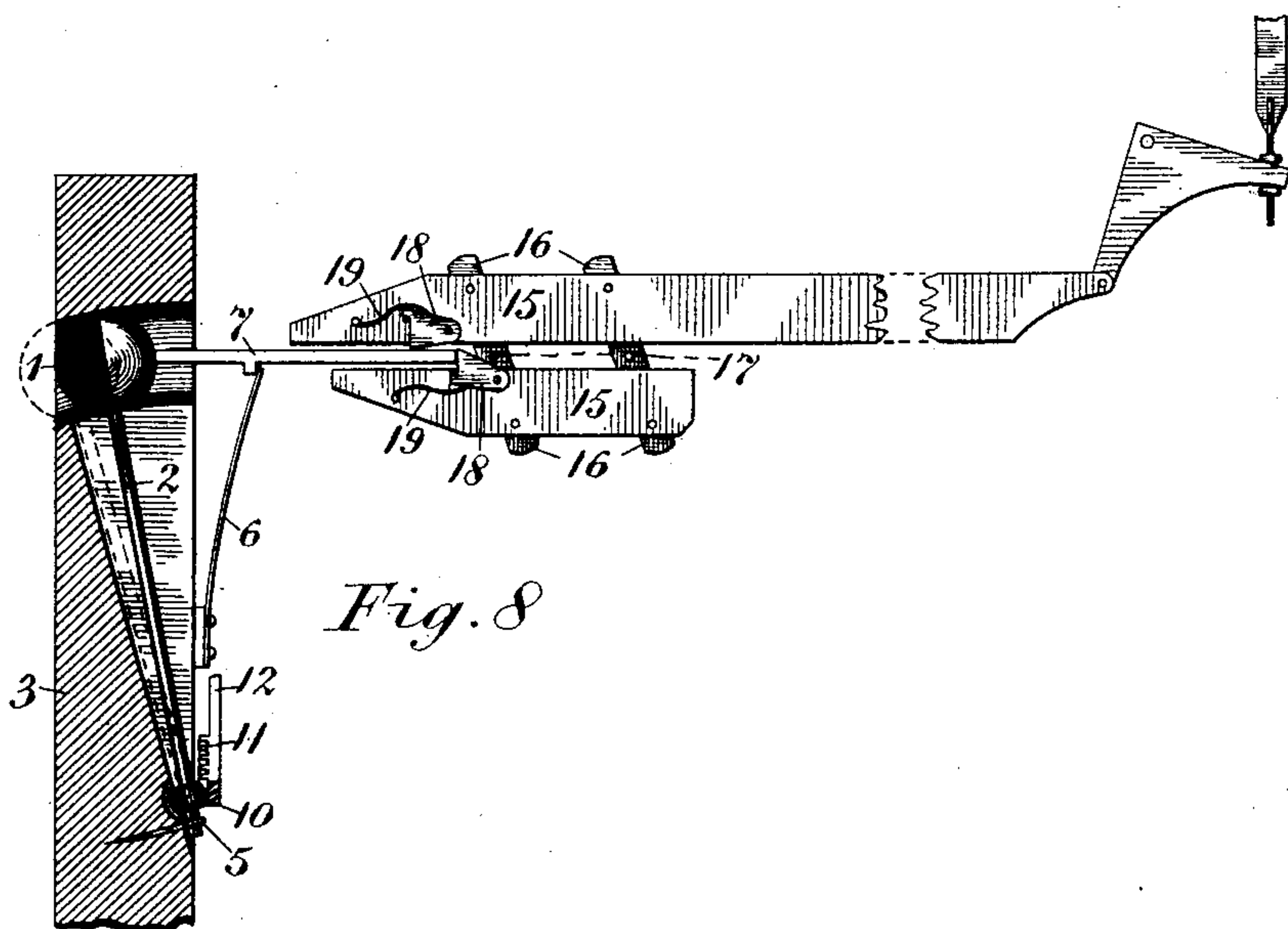
(No Model.)

2 Sheets—Sheet 2.

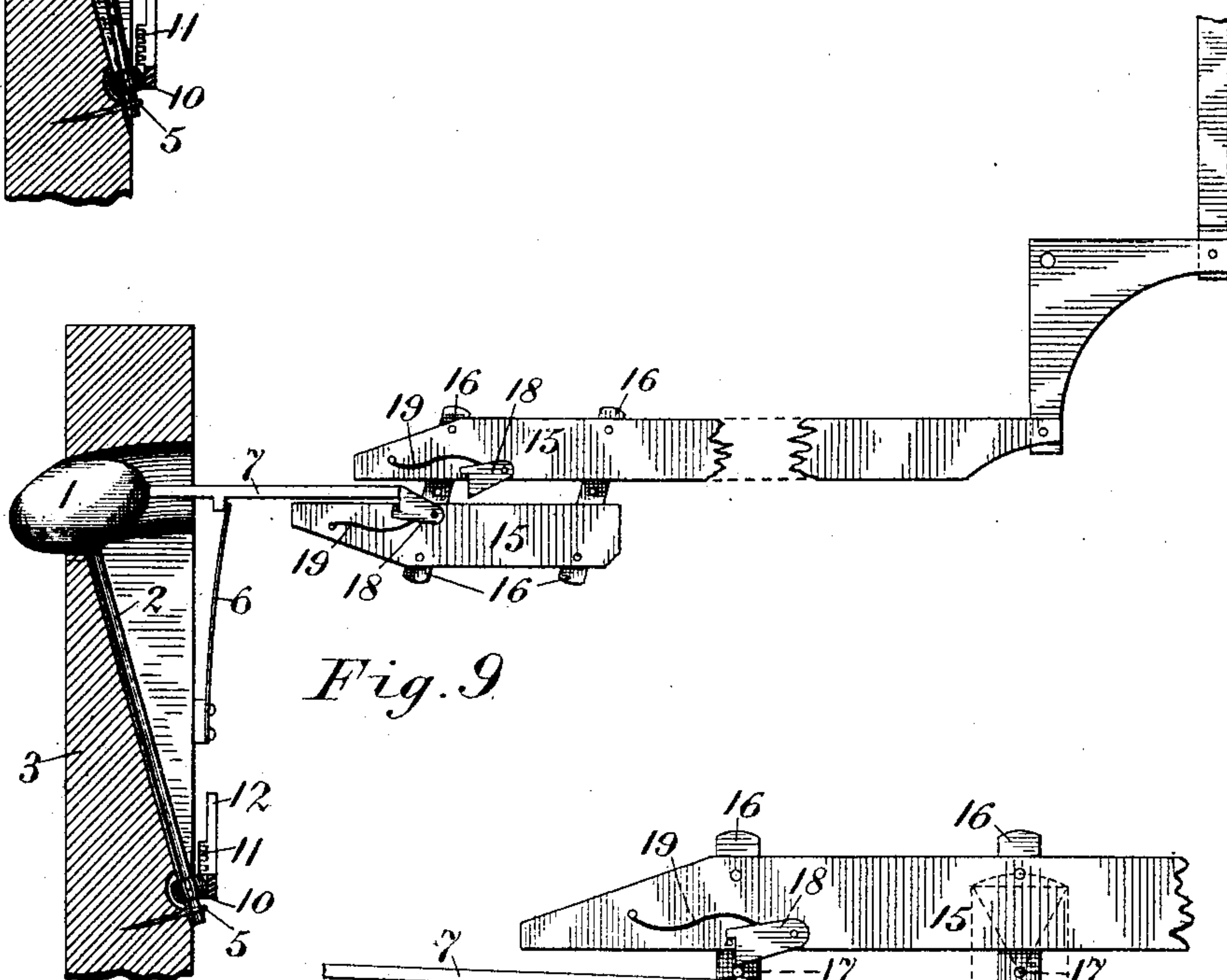
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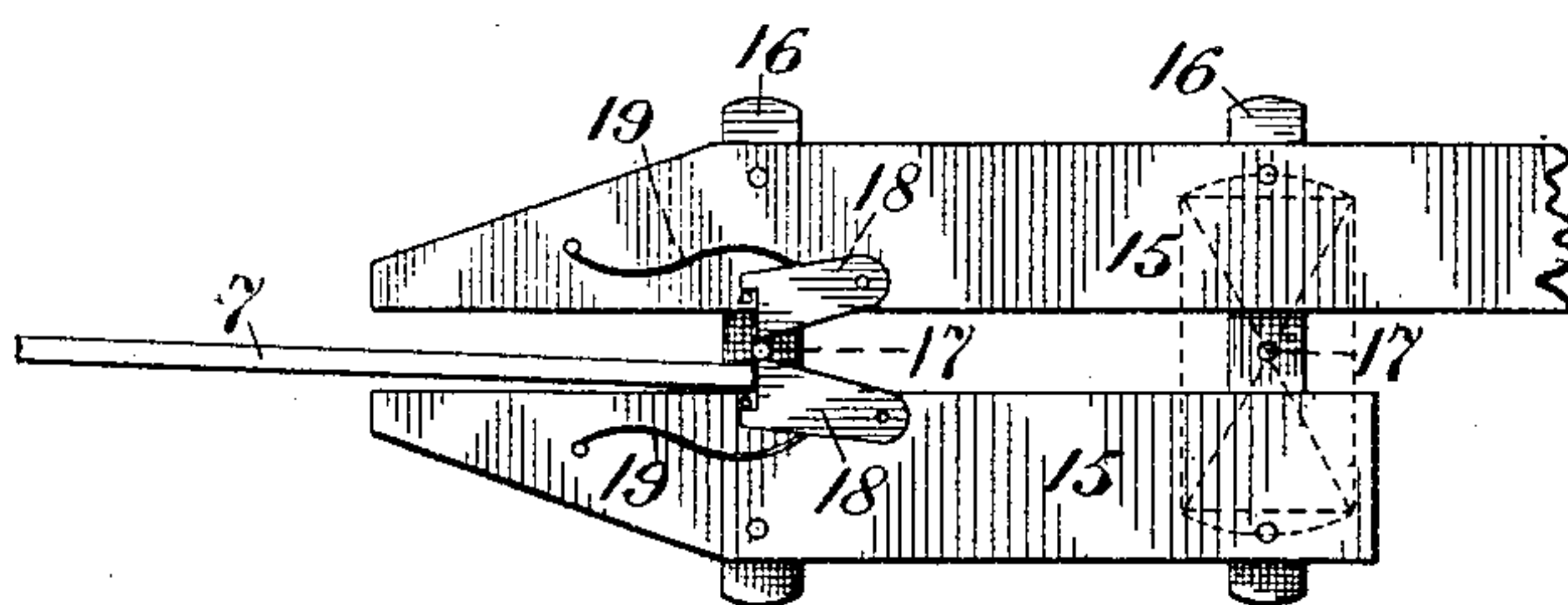
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*Fig. 8*



*Fig. 9*



*Fig. 10*

Witnesses

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# UNITED STATES PATENT OFFICE.

FRANKLIN WILLIAM FRASER, OF TORONTO, CANADA.

## STOP-ACTION FOR ORGANS.

SPECIFICATION forming part of Letters Patent No. 501,880, dated July 18, 1893.

Application filed October 20, 1892. Serial No. 449,498. (No model.)

*To all whom it may concern:*

Be it known that I, FRANKLIN WILLIAM FRASER, of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Stop-Actions for Organs, of which the following is a specification.

My invention relates particularly to stop actions of organs whether operated by electrical, pneumatic, or, direct mechanical connections, and has the following objects in view: first, to provide an easily and quickly operated stop; second, to provide a stop operated in the same direction for both stop on and stop off; third, to provide a stop of such construction that many of them can be operated by a single motion of an operator; fourth, to provide a stop in which its position as to stop on or stop off is indicated either by colors, by texture of surface, or by both color and texture of surface combined, of its stop button, and fifth, to provide a stop in which all the stops may be arranged in much smaller space than possible by any stop heretofore in use, thereby making it possible to arrange all the stops on the right, the left, or on both sides of the key board making it convenient to operate by either hand of an operator. I attain the above objects by means of the mechanism illustrated in the accompanying drawings, in which similar numbers and letters of reference refer to similar parts throughout, and in which—

Figure 1, represents a cross-section of a portion of the stop board having my invention thereon. Fig. 2, represents a rear view of a portion of a stop board having my invention thereon as adapted to operate electrically operated stop mechanisms. Figs. 3, and 4, represent detail side and end views respectively, of the stop rod and button thereon. Fig. 5, represents a detail of the rack meshing with the pinion on the stop rod. Fig. 6, represents a cross-section of the stop board, and exhibiting the connections by which pushing of the stop button in one direction produces stop on and stop off, alternately, in pneumatically operated organs. Fig. 7, represents a detail to illustrate the means for the storage of energy to vibrate the button. Fig. 8, represents the same mechanism as that shown by Fig. 6, but in the reverse or alterna-

tive position of the tracker rod, &c. Fig. 9, represents the stop rod and button according to my invention, adapted to operate directly by mechanical means or direct connections, and Fig. 10, represents an enlarged view of the mechanism for reversing the action alternately of the stop valve, said view showing the mechanism at half way travel to show the pawls passing and showing also a diagram of the path of the ends of the bars employed in the reversing mechanism.

My invention consists principally in the sphere, 1, (or, in some cases an oblate spheroid as shown in Fig. 9) having a shank, 2, secured thereto and supported at its lower end to vibrate back and forth at its upper end, and the sphere and shank, 1, and 2, respectively, to vibrate a half-turn transversely consequent upon the vibration backward so as to expose alternately the diametrically opposite sides of said sphere, 1, and thereby indicate the position of the valves within and controlling the open and closed positions of said valves of an organ, generally called stop on and stop off, respectively.

A portion of my invention also relates to adapted connection between the valves and the sphere, 1, which I call the push button, which button takes the place of knobs heretofore in use and which were pushed in or pulled out from the stop board, 3, and by connections within operated the valves which I actuate by pushing the button or sphere, 1, only in one direction inward. The shank, 2, carrying the sphere, 1, is loosely supported near its lower end by means of a groove, 4, therein which is engaged by a staple, 5, secured in the stop-board, 3, so as to allow the shank, 2, to vibrate backward and to turn round a half turn. Each sphere, 1, is colored, chased, or otherwise varied so that one-half is distinguished readily by color from the other half, or by a chased or grooved surface, or again, one-half may be both colored and chased so as to be distinguishable in the dark or to the blind by the touch alone, and in the light by either sight or touch.

The sphere or button, 1, and its shank, 2, are countersunk in an adapted form of cavity in the rear side of the stop board, 3, as shown, and the sphere, 1, projects on the front side of said board, 3, through a circular opening



therein. It will be observed that the shank, 2, inclines considerably from the vertical line, which is for the purpose of permitting of placing them in limited space by having the shank, 2, extend to one side of and below the button or sphere, 1, of the row beneath.

The sphere, 1, shank, 2, and the staple securing them are similar in each form of adaptation to electric, pneumatic and mechanical actions of valves, except that in the latter, the button, 1, is an oblate spheroid instead of a sphere, so as to provide for greater distance of vibration necessary in the mechanical action.

In the electric action I employ a spring, 6, secured to the stop board, 3, as shown, so as to bear on and maintain the shank, 2, forward. In the pneumatic and mechanical actions I apply the spring, 6, to bear on the stop rod, 7, in rear of and maintained in contact with the said sphere, 1. In a recess, 8, in the board, 3, and beneath the sphere, 1, is located the electric contact, 9, composed of small springs as shown overlapping one another and extending over the shank 2, so that when the button, 1, is pressed one of the springs near it is deflected backward to touch the rear spring and thereby closes the electric circuit between the general battery and the mechanism, represented by X in the diagram shown in Fig. 2. The mechanism represented by X may be that of Wacker's patent, or several other well known systems. Near the lower end of the shank, 2, a pinion, 10, is secured, and meshes with a rack, 11, on a tracker-rod, 12, which is secured by guides, 13, secured to the board, 3. The pinion, 10, is rounded so as to mesh with the rack, 11, at any point in the arc of vibration from front to rear. The tracker-rod, 12, is connected by rods and squares according to location, to the valve mechanism by which said tracker-rod, 12, is actuated. As the rack, 11, on the tracker rod, 12, meshes with the pinion, 10, the latter can be vibrated thereby.

In order to provide for valve mechanism actuating the tracker-rod, 12, without instantly vibrating the shank, 2, and pinion, 10, thereon, I employ a spring, 14, connected at its ends to each portion of the rod, 12, which is divided as shown within said spring, 14. The spring, 14, acts as a storage of the motion of said rod, 12, and when the sphere or button, 1, has been, or is being released from pressure of the finger of an operator, said spring, 14, causes the rack, 11, to vibrate the shank, 2, and expose the reverse side of the sphere, 1, alternately.

In the pneumatically operated valve mechanism the stop rod, 7, engages at its rear end with the alternate reversing mechanism composed of the parallel bars, 15, extending horizontally and coupled together by the parallel bars, 16, extending vertically and vibrating on pins, 17, at their centers. The horizontal

bars, 15, carry a pawl, 18, on each, and a spring, 19, to each pawl, 18, to operate said springs to engage the rear end of the stop rod, 7. The bars, 15, are each pivoted to each of the bars, 16, and operate reciprocally back and forth and reversely of one another, so that as one recedes under contact with the stop-rod, 7, when pressed, the other pawl advances and at half way the pawls, 18, are even, as shown in Fig. 10. The same means of vibrating the shank, 2, is employed as in the electrically connected means herein before described, and the same spring, 14, is employed to store the energy or motion of the rod, 12.

In the application of my invention to the mechanically or directly connected organ mechanisms, the same means are employed as in the pneumatically actuated mechanism next herein before described, and the vibration of the shank, 2, and sphere, 1, thereon is performed by the same means as specified to operate in the electric and pneumatic connections.

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

1. In combination, the spheroidal push button having the halves of its surface distinguishable to the senses of vision and touch and arranged to project through the face of the stop board from the rear, and the shank supporting said button at one end and supported to vibrate radially and transversely, substantially as shown and described.

2. In combination, the spheroidal push button distinguishable by halves of its surface as specified, the shank supporting said button on one end and supported at its opposite end on the stop board, and the pinion on the said shank near the supported end, substantially as shown and described.

3. In combination, the spheroidal push button distinguishable by halves of its surface as specified, the shank supported by the stop board at one end and supporting the said button on its opposite end, the pinion on said shank near the supported end, and the tracker-rod having a rack thereon, engaged with said pinion to vibrate it transversely and a spring to extend and compress for the purpose specified.

4. In combination, the spherical push button having the halves of its surface distinguishable as specified the shank supported in the stop board and supporting said button, and the electric contact springs to operate by contact of said shank, substantially as set forth.

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Witnesses:

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