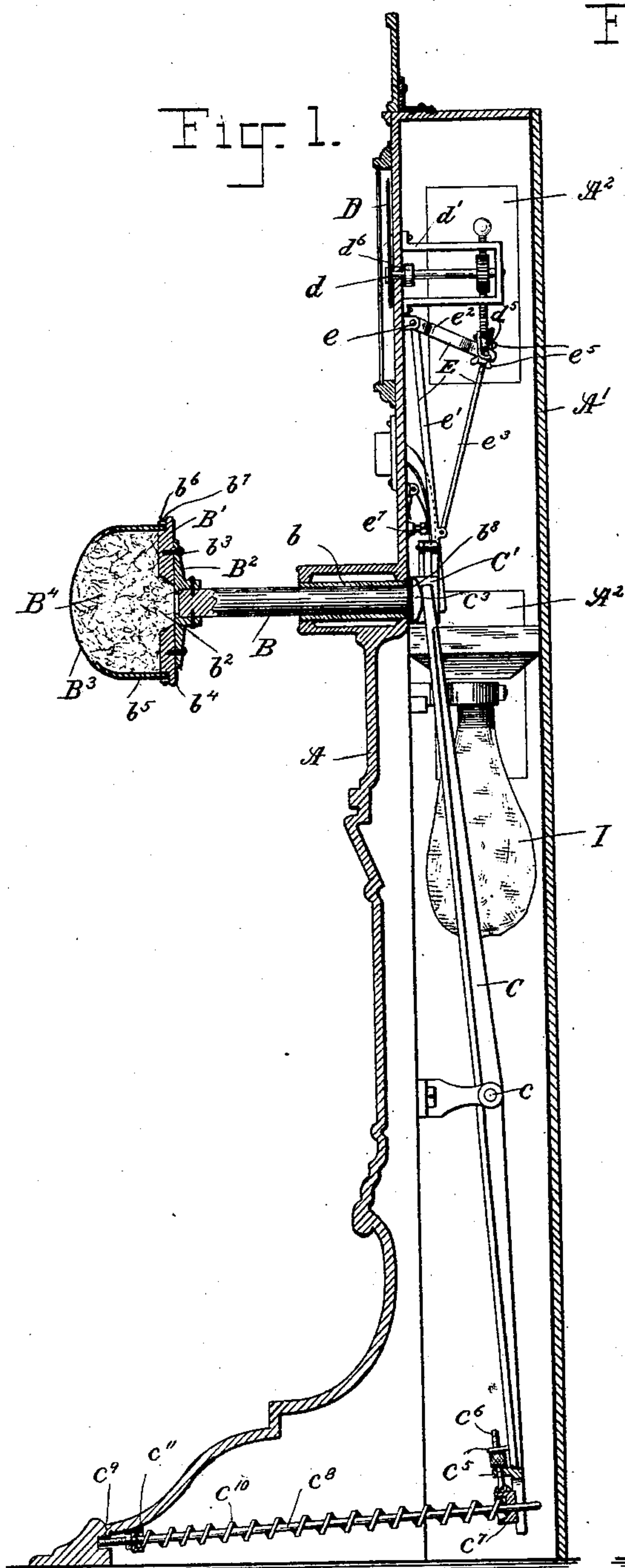


2 Sheets—Sheet 1.

No. 454,256.

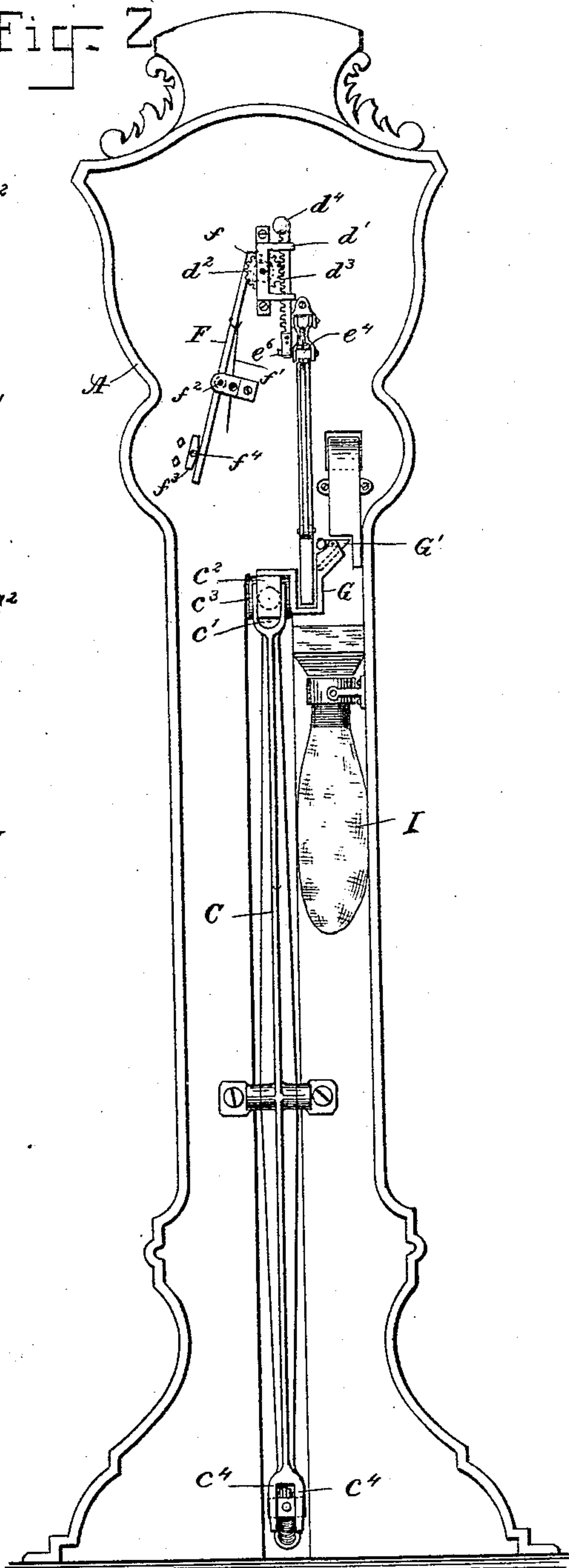
Patented June 16, 1891.

Fig. 2



Witnesses.

John F. Nelson,
George Truett



Inventor.

Henry Cooper.
by. Must. and Letm.
Attorney.

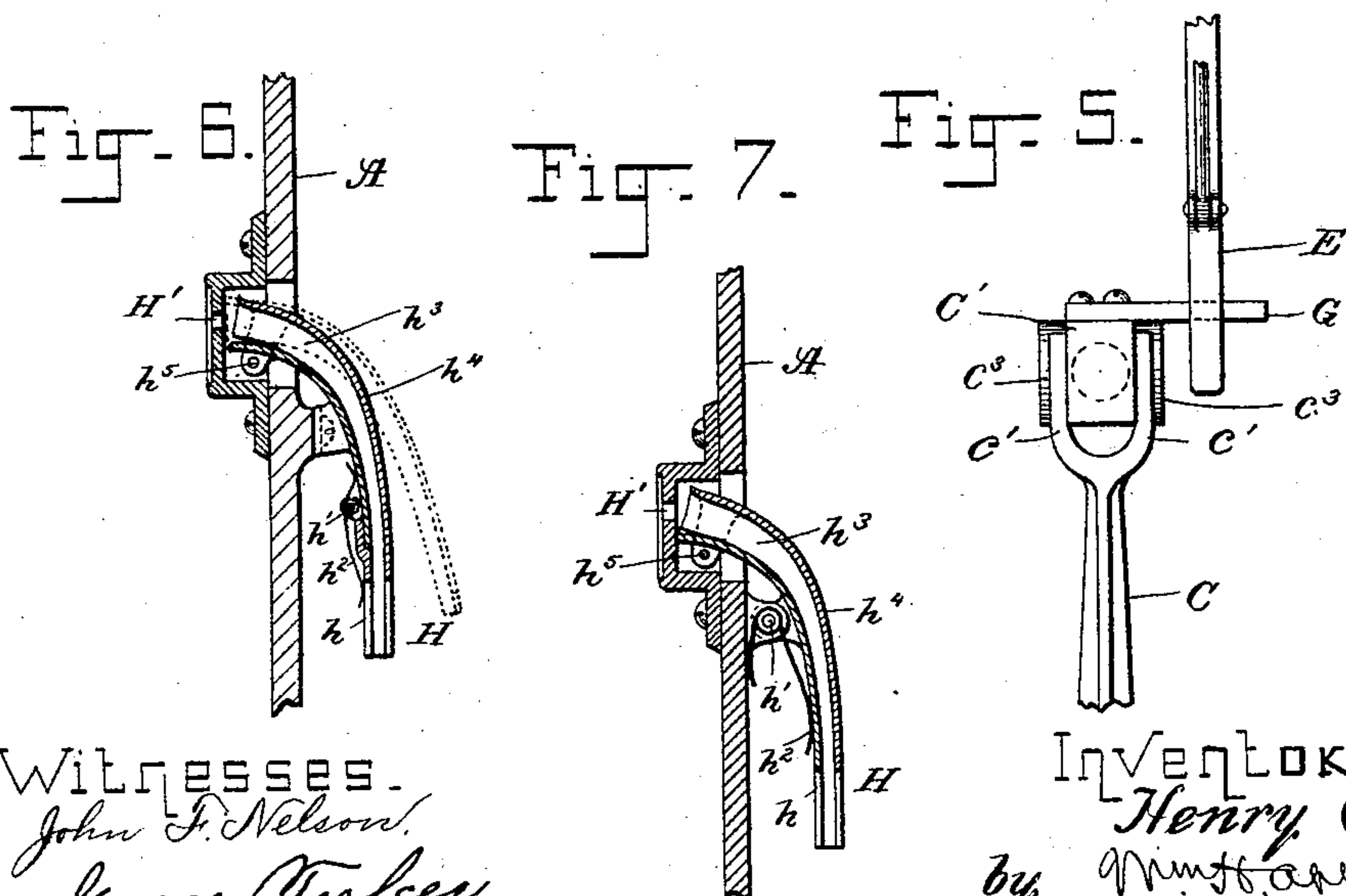
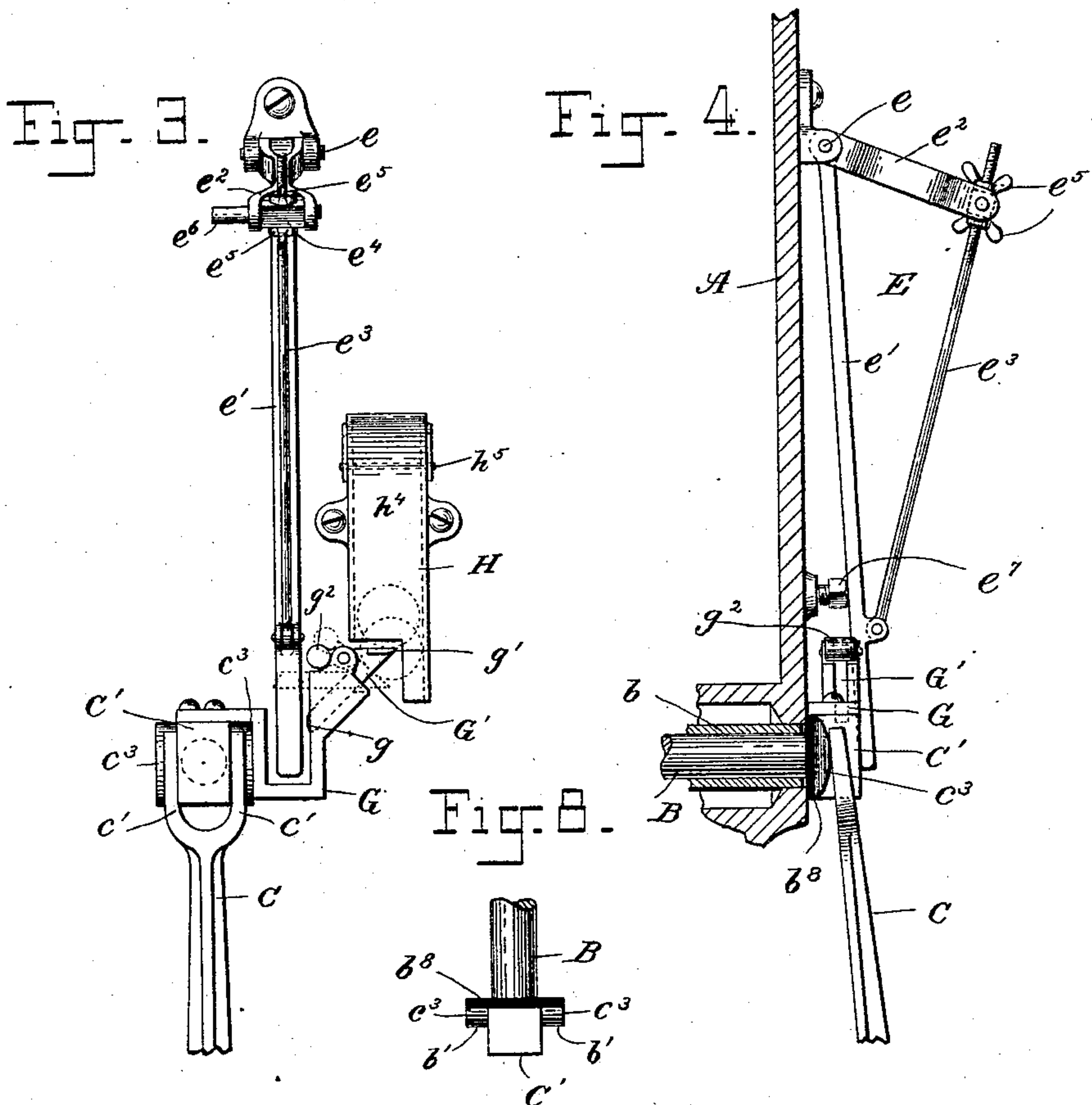
(No Model.)

2 Sheets—Sheet 2.

H. COOPER.
COIN CONTROLLED STRIKING MACHINE.

No. 454,256.

Patented June 16, 1891.



Witnesses.
John F. Nelson.
George Trefce.

Inventor
Henry Cooper.
by *Wm. H. Appleton*
Attorney.

UNITED STATES PATENT OFFICE.

HENRY COOPER, OF BROOKLYN, NEW YORK.

COIN-CONTROLLED STRIKING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 454,256, dated June 16, 1891.

Application filed February 26, 1891. Serial No. 382,906. (No model.)

To all whom it may concern:

Be it known that I, HENRY COOPER, a subject of the Queen of Great Britain, and a resident of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Coin-Controlled Striking-Machines, of which the following is a specification.

My invention, while relating generally to coin-controlled machines of the class made use of to register the force of blows delivered upon a striking-head or buffer, has reference more particularly to that form of such machine which is shown and described in Letters Patent of the United States which were granted to me on August 20, 1889, and numbered 409,453, to which reference may be had, its object being to provide a machine of this class which shall be simple in construction, effective in operation, and which shall at the same time insure that the pointer or index-finger will operate only when a proper coin has been deposited and yet permit the striking-head and rod to be moved at any time in order to avoid risk of injury to a person who may attempt to use the machine without depositing a coin, or one of a size or weight not proper to place the machine in condition for use as intended.

To these ends my invention consists in certain peculiarities of construction and combination of parts, the nature and distinguishing characteristics of which will best appear by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved machine with the frame or housings and the striking-head in section; Fig. 2, a rear elevation of the same with the back removed; Figs. 3 and 4, rear and side enlarged detail elevations, respectively, of the coin-controlled mechanism for connecting the striking-head rod with the indicator; Fig. 5, a detail elevation illustrating a slight modification by which the connection referred to may be made permanent; Fig. 6, an enlarged vertical section of the coin-chute; Fig. 7, a similar view illustrating a modification of the same, and Fig. 8 a detail plan showing the inner end of the striking-head rod and the block thereon.

In all the figures like letters are employed to designate corresponding parts.

A indicates the frame or housings of the machine, the same being constructed in any

preferred form and design, and provided with a suitable back plate A' and with doors A², through which latter access to the interior of the frame or housings may be had. These housings have, at suitable height from the ground, a bearing b for the rod B, which carries the striking-head or buffer, upon which the blows are to be delivered. At the inner end the rod B has an enlargement or block C', the rear face of which forms a stop for limiting the outward motion of the rod when resting against the inner end of the bearing, a rubber or leather washer b⁸ being interposed between the said end of the bearing and the rear face of such block.

The striking-head or buffer consists of a back or bottom plate B', having a central opening b², which plate is detachably secured, as by screws b³, to a disk B², that is rigidly affixed to the outer end of the rod B. This plate B' has its rear edge provided with a flange b⁴, and a ring b⁵, of some soft yielding material—such, for instance, as soft rubber—fits the edge in front of said flange with the rear edge of the ring resting against the flange. A facing-sheet of soft leather, rubber, or cloth B³ is drawn over the ring b⁵, and its edge, as well as the ring b⁵, is confined in place by a binding-band b⁶, which is secured to the edge of the plate B' by screws or nails b⁷ passing through the facing-sheet and the ring b⁵ into the plate B', the flange b⁴ of which forms an abutment to prevent the ring b⁵ and facing-sheet from being forced back by blows happening to strike the edge of said ring. The space or chamber formed inside the head or buffer is filled with some suitable soft elastic material B⁴, as hair or soft rubber shreds, which filling may be introduced through the opening b² in the back plate before said plate is secured to the disk B². The said opening being central and opposite the end of the rod B, any tendency of a blow to force the filling out through the opening is resisted by said rod.

C indicates a lever, pivoted at c to a bracket secured to the frame or housings, and having its upper end bifurcated at c' to receive the block C'. This block, as shown, is carried by the inner end of the rod B, and is formed with a rectangular portion c², which fits between the arms at c', and with lateral flanges at c³, which rest against the face of said arms, the inner face of each flange c³ being rounded,

as at b' , to ride smoothly against the arms. The lever C is also bifurcated at its lower end or provided with arms c^4 and has lugs c^5 , forming bearings for a screw-threaded rod c^6 , having a nut fitted to it between the lugs, whereby the said rod may be vertically adjusted. The lower end of this rod carries a block c^7 , the back of which rests against the arms c^4 , and said end is bored to permit the free passage of a rod c^8 , the front end of which is fitted into or received in a socket c^9 in the frame of the machine. A spring c^{10} is coiled around the rod c^8 and confined between the face of blocks c^7 and an adjustable stop c^{11} on the front end of the rod, and this spring, through the connections described, resists the force of the blows delivered upon the striking-head or buffer. The adjustable stop c^{11} and the adjustability of the block c^7 to and from the fulcrum of the lever enable the power of the spring to be nicely adjusted to the scale marked on the dial or otherwise, the mechanism for operating the pointer of which will now be described.

In Fig. 1 the pointer D of the indicator is shown mounted upon the outer end of a shaft d , having suitable bearings in the front of the frame or housings, and a bracket d' , secured to said housings. Fixedly attached to this shaft is a pinion d^2 , meshing with a rack d^3 , having a weight d^4 at its upper end, if desired, said rack being free to slide vertically in bearings formed in the bracket d' .

At a point near the front plate of the frame or housings under the bracket d' is pivoted at e an adjustable bell-crank lever E, the construction of which is shown more clearly in Figs. 3 and 4. Of this lever the bar e' is hung at its upper end on a pivot e . The horizontal arm e^2 is hung upon the same pivot, and the link or connecting-rod e^3 is pivoted to a lug near the lower end of the bar e' and extends up through a block e^4 , carried at the outer end of the arm e^2 , being adjustably connected therewith by the winged nuts e^5 , fitted to screw-threads on said link above and below the block. This block e^4 is hung on a pivot at the end of the arm e^2 , and a lateral extension or pin e^6 enters a recess d^5 at the lower end of the rack d^3 . By means of the nuts e^5 the height of the rack, and consequently the position of the pointer when the bell-crank lever or its bar e' is resting against the adjustable stop e^7 , can be adjusted as desired. The object of the adjustable stop e^7 is to limit the normal or lower position of the lever E to such a point as will enable its lower end to be properly engaged by the connecting or operating mechanism presently described.

On the shaft d is a cylindrical surface d^6 , (shown in Fig. 1 and indicated by dotted lines in Fig. 2,) against which a friction-pad f , carried at the upper end of a lever F, is pressed by a spring f' . The lower end of this lever extends below the pivot f^2 , and a simple cam-block f^3 , mounted on a shaft f^4 , which ex-

tends through the front of the casing, is located adjacent to the lower end of such lever, and when the pointer-shaft has been revolved the friction-pad holds it in such position until the cam-block is turned, so as to operate the lever to release the said pad from the surface d^6 .

As shown in Figs. 2 and 3, an arm G, secured to the block C' , extends laterally under the lower end of the bell-crank lever E on its bar e' and up on the other side thereof and has a latch G' pivoted to its upper end, the said latch being so balanced as to normally rest in the position shown in full lines in Fig. 3, with its outer end g out of the path of the bar e' and with its inner flat end g' under the coin-chute H, a balancing-weight being shown at g^2 . It will thus be seen that if the buffer or striking-head be struck without a proper coin being deposited in the chute the lever C will operate, but not the lever E and the indicator; but when a coin is deposited in the chute it tilts the latch to the position shown in dotted lines in Fig. 3, bringing the end g of such latch into the path of the bar e' or in front of the same, whereby when the rod B and the lever C are operated the lever E, and through it the indicator, are similarly operated. As the flat end g' of the latch is carried from under the chute, the coin drops into the receptacle I provided for that purpose, and the latch, when the lever E has been swung inward to its innermost limit, then returns to its normal position ready for the reception of another coin.

For some purposes—as, for instance, in gymnasiums, where the use of coins will be dispensed with—I may provide the block C' with a straight lateral arm extending directly in front of the bar e' , as shown in Fig. 5. In such construction the coin-chute will be unnecessary and may be omitted.

With the construction shown in Fig. 3 it will readily be understood that should a coin become lodged in the position shown by the lower dotted circle and fail to fall from that position when the rod B, block C' , and latch G are driven back, then upon the return of these parts under the force of the spring c^{10} there would be danger of the latch being broken or the end of the chute being bent, for upon said return the latch would be in the position shown by the full lines and would strike the coin. To obviate this, as shown in Fig. 6, I hinge the lower front portion h of the chute, as at h' , and retain it in its normal position by a spring h^2 . This enables a lodged coin to be knocked out by the returning latch, the said portion h yielding for that purpose.

To enable the chute to be cleared of any paper or other material that may be mischievously inserted or otherwise, I form the sides and back h^3 h^4 in one piece, separate from the front rigid and hinged pieces, and pivot the upper end of said sides and back, as at h^5 . If the chute becomes clogged, a rod

may be pushed in through the coin-slit H' , and by tilting the back of the chute, as indicated by dotted lines in Fig. 6, the said chute is opened, and any foreign substances therein will drop or may be pushed out.

Instead of hinging a lower section of the front plate of the chute, as in Fig. 6, I may hinge the entire front plate, as at h' in Fig. 7, the spring h^2 operating the same as in the other construction described. It will thus be seen that I produce a machine for registering the force of blows, which, while permitting of the free and unrestrained movement of the striking-head or buffer at all times, not only prevents the movement of the registering devices, except when a coin of the proper size and weight is deposited in the coin-chute, but also prevents breaking or injury of the parts when, from jamming in the lower end of the chute or otherwise, the coin is held therein after the striking-head and its supporting-rod have been driven in by the force of a blow and afterward return to their normal position, bringing the latch carried by the latter into contact therewith.

In the foregoing I have described the best means contemplated by me for carrying my invention into practice; but I wish it distinctly understood that I do not limit myself strictly thereto, as it is obvious that the same may be modified in various ways without departing from the spirit thereof.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The buffer or striking-head consisting of a back plate having an annular flange, a soft yielding ring, and a facing-sheet having a suitable elastic packing, said ring and sheet being secured to the edge of the back plate close to the flange, substantially as described.

2. In a machine for testing the force of blows, the combination, with a longitudinally-movable rod having a striking-head or buffer, of a lever having one end engaged by the rod and having its other end connected with a spring and means for adjusting the said spring connection toward and from the fulcrum of the lever, substantially as described.

3. The combination, with the lever C , having lugs c^5 , of the screw-rod c^6 , carrying block c^7 , a nut for adjusting the rod vertically, a rod fitted to a socket in the frame or housings and passing through the block c^7 , and a spring coiled on the last-mentioned rod and confined between the said block and an adjustable stop c^{11} , substantially as described.

4. In a machine for testing the force of blows, the combination, with an indicator-pointer and a rack and pinion for operating it, of a movable blow-receiving rod and an adjustable bell-crank lever for operating the rack and adapted to be engaged and moved by the said rod, substantially as described.

5. The combination, with the adjustable bell-crank lever, of the movable rod and connecting mechanism therefor, an indicator

operated by the said lever, and an adjustable stop for limiting the normal position of the lever, substantially as described.

6. In a machine for testing the force of blows, the combination, with a striking-head or buffer and a movable support therefor, of an indicator, and a mechanism consisting of a pivoted lever arranged to be tilted by a coin for connecting said movable support and indicator, substantially as described.

7. The combination, with the striking-head or buffer and its resisting lever and spring, of an indicator and a lever for operating it, and a latch arranged with one of its ends in the path of a coin and the other end adapted to swing into the path of the indicator-operating lever, substantially as described.

8. The combination, with the lever C and the rod B , having the block C' , of the arm G , carried by the block C' , the latch G' , pivoted to said arm, the coin-chute located on one side of the pivot of the latch, and the indicator-lever located on the other side of said pivot, substantially as described.

9. The combination, with the indicator and its shaft, the pinion, and rack, of the bell-crank lever E for operating said rack, said lever consisting of the bar e^1 , arm e^2 , pivoted at one point, and the link e^3 , pivoted to the rod and adjustably connected with the arm, substantially as described.

10. The combination, with a striking-head or buffer and a movable support therefor, an indicator, and a mechanism consisting of a pivoted lever arranged to be tilted by a coin for connecting said movable support and indicator, of a coin-chute arranged in proper relation to said lever and having a portion thereof capable of movement in the direction of motion of the buffer or striking-head support, substantially as described.

11. The combination, with a striking-head or buffer and a support therefor, an indicator, and a mechanism consisting of a pivoted lever arranged to be tilted by a coin for connecting said movable support and indicator, of a coin-chute arranged in relation to said lever with its lower front portion hinged, whereby to be movable, and a spring for holding said portion in its normal position, substantially as described.

12. The combination, with a striking-head or buffer and a movable support therefor, an indicator, and a mechanism consisting of a pivoted lever arranged to be tilted by a coin for connecting said movable support and indicator, of a two-part chute arranged in relation to said lever and having one of its parts movable with relation to the other, substantially as described.

In testimony whereof I have hereunto set my hand this 21st day of February, 1891.

HENRY COOPER.

Witnesses:

P. B. WILBER,
GEO. TREFCER.