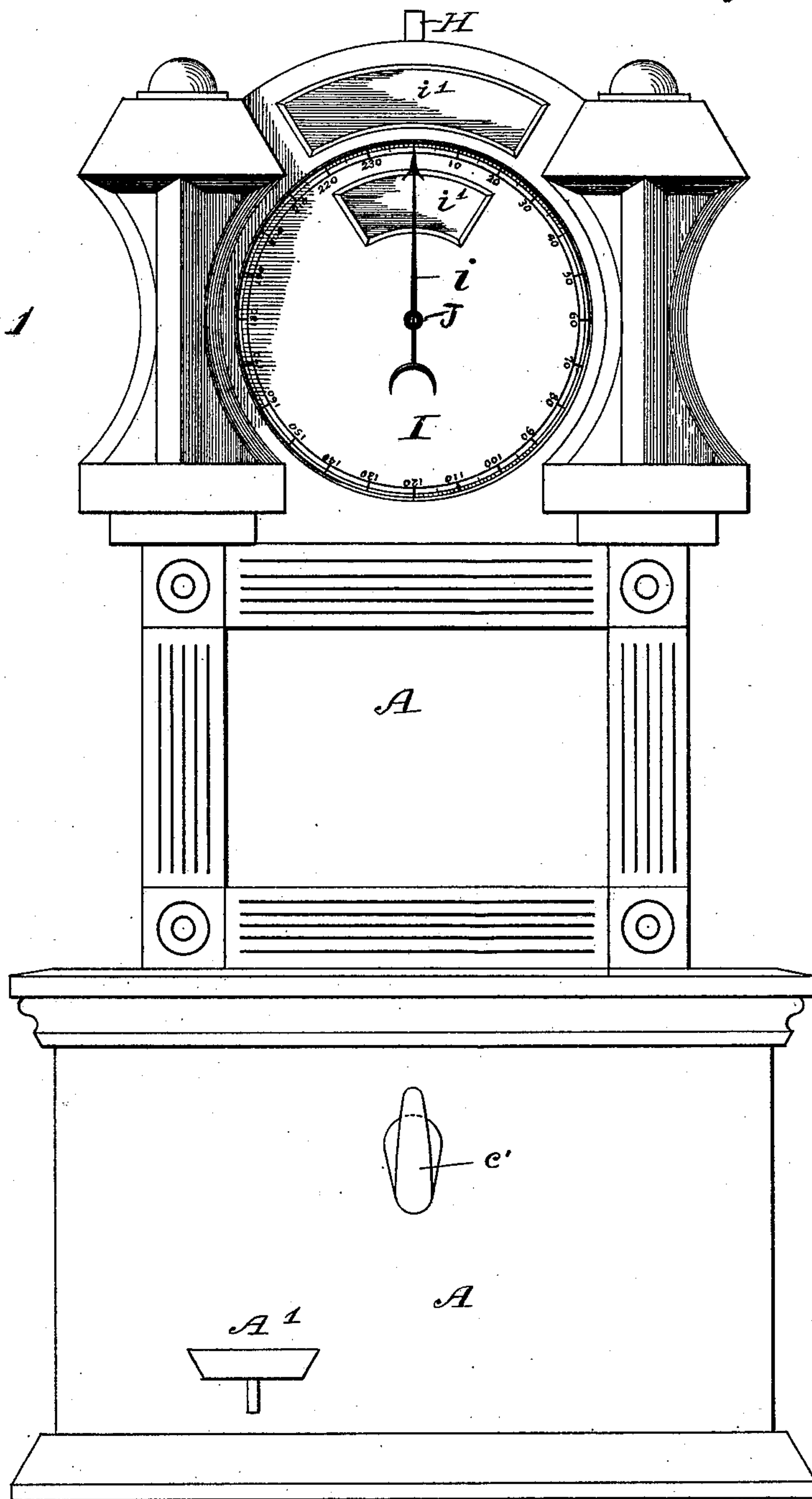


(No Model.)

4 Sheets—Sheet 1.

I. A. WATSON.
COIN CONTROLLED STRENGTH TESTING AND ADVERTISING MACHINE.
No. 428,821. Patented May 27, 1890.

Fig. 1



Witnesses

W. B. Hill
W. B. Howe

Inventor

Irving A. Watson

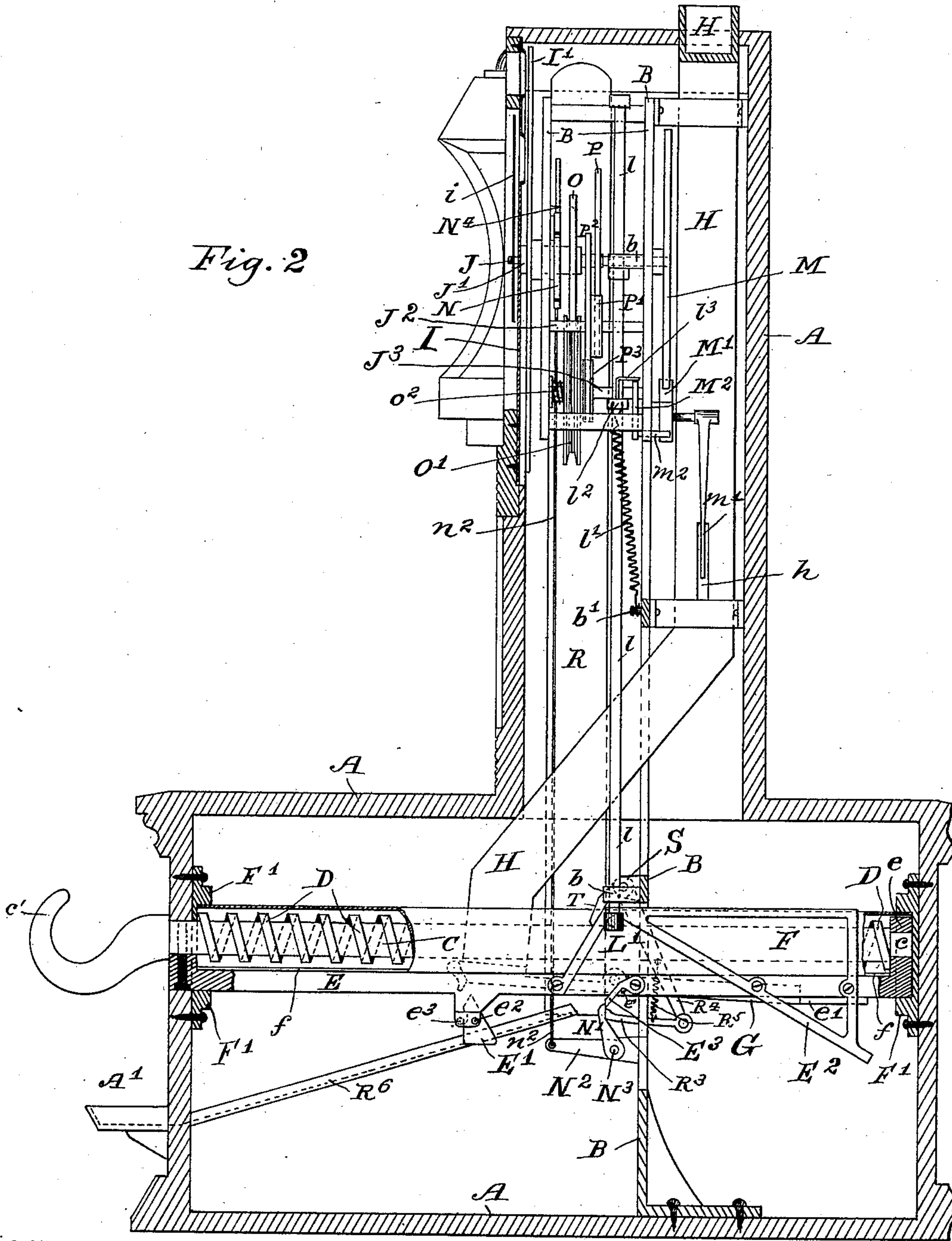
By *his* Attorney *J. B. Thurston*

(No Model.)

4 Sheets—Sheet 2.

I. A. WATSON.
COIN CONTROLLED STRENGTH TESTING AND ADVERTISING MACHINE.
No. 428,821.

Patented May 27, 1890.



Witnesses

W. B. Hill
W. B. Howe

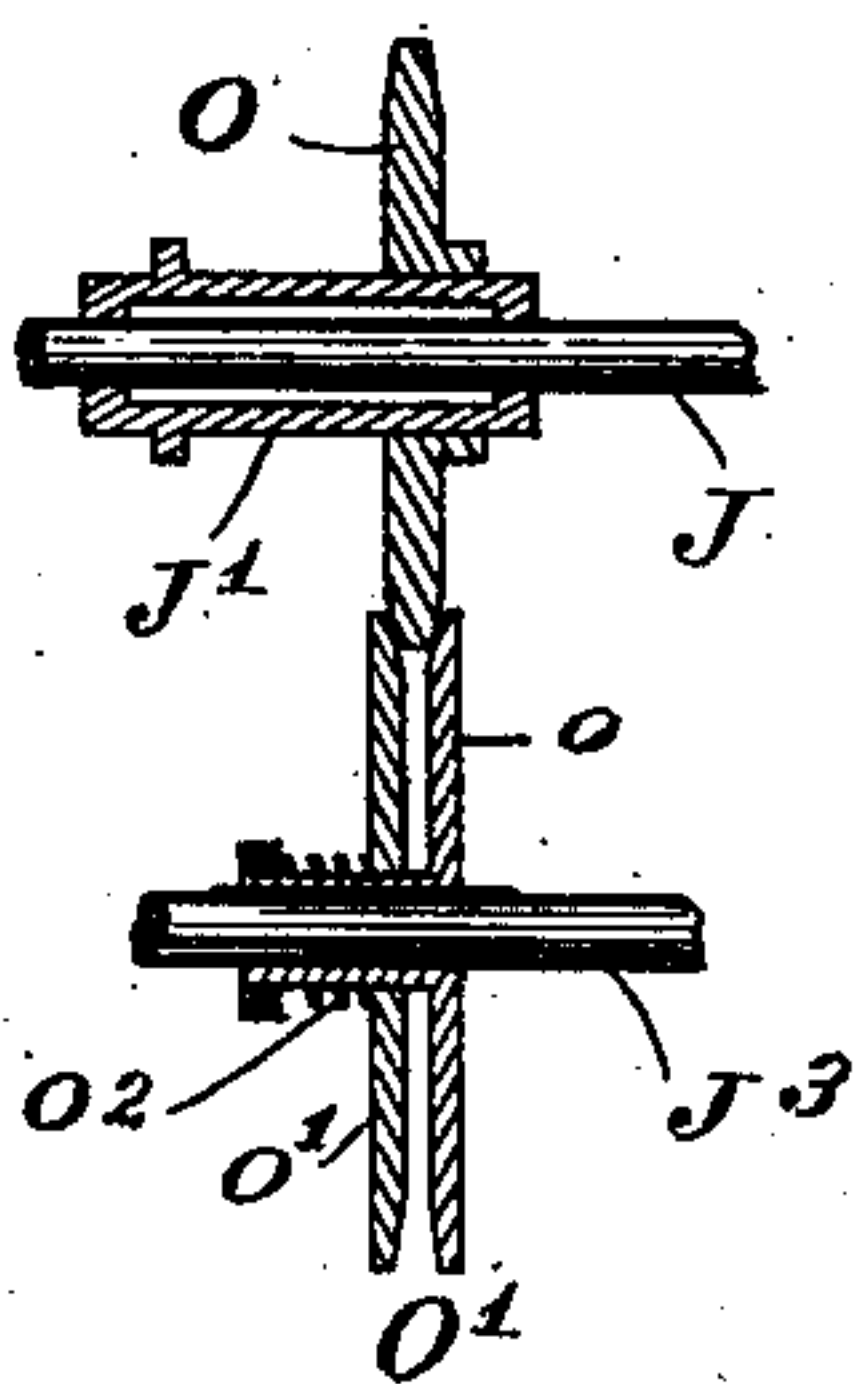
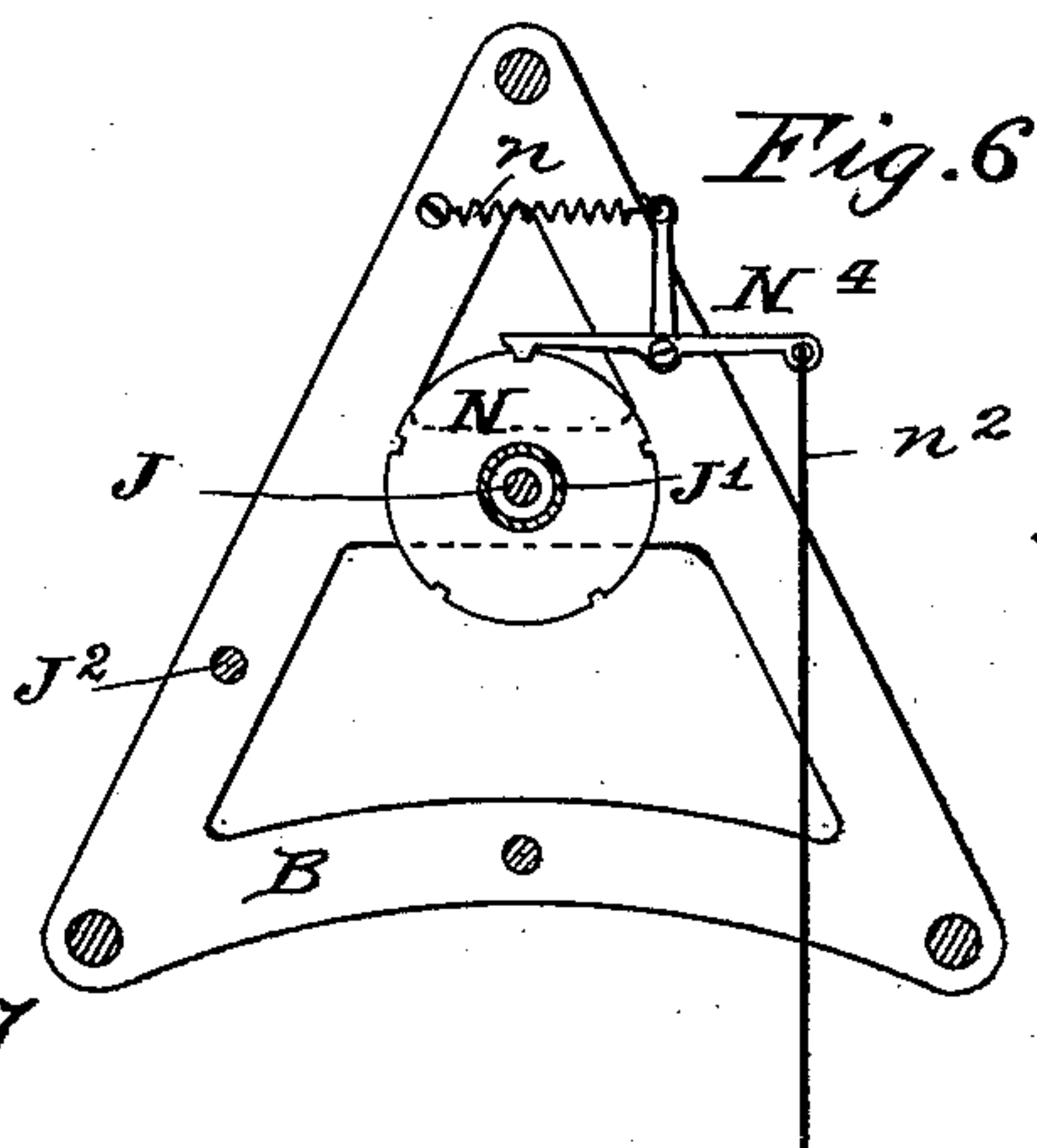
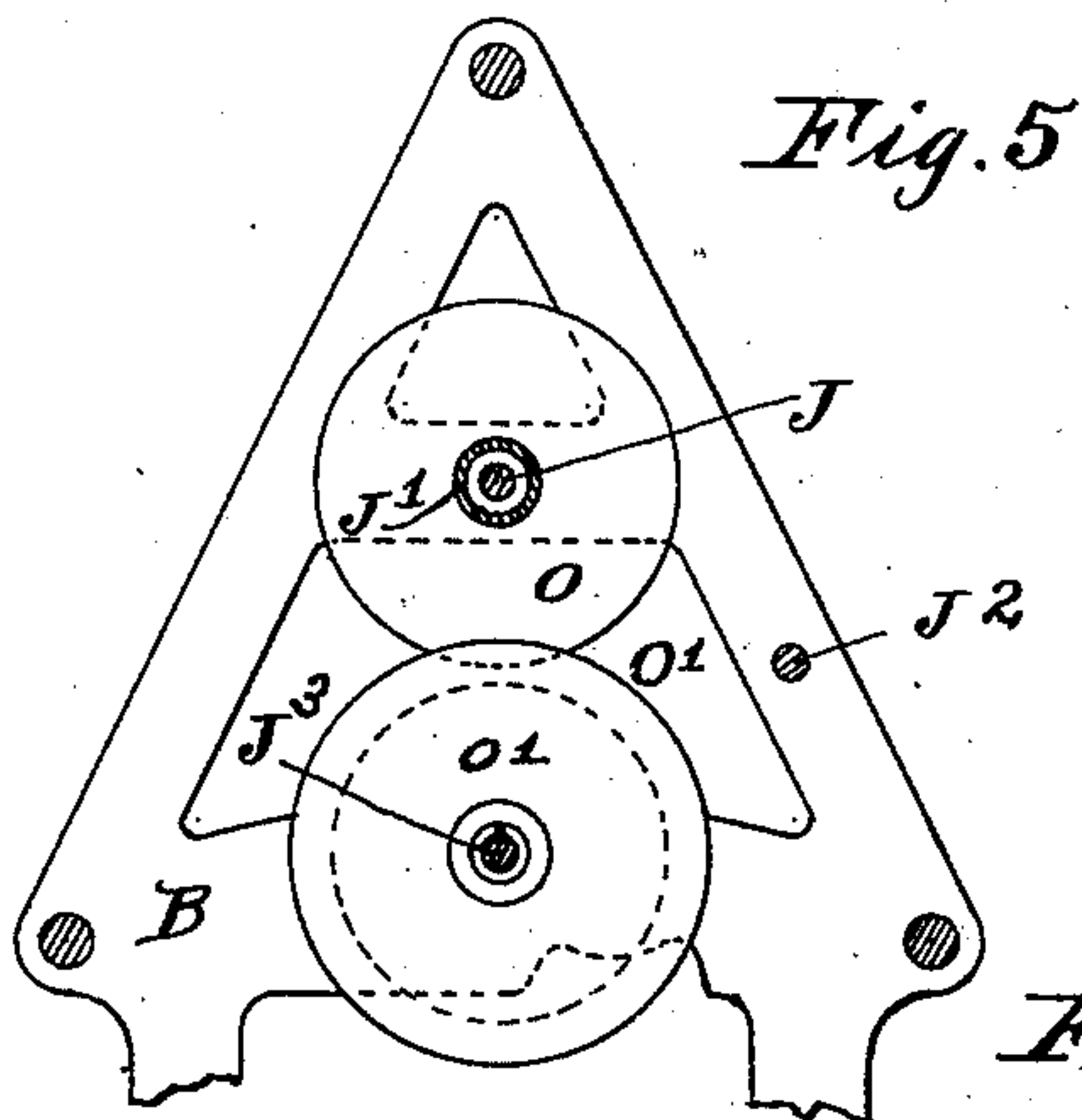
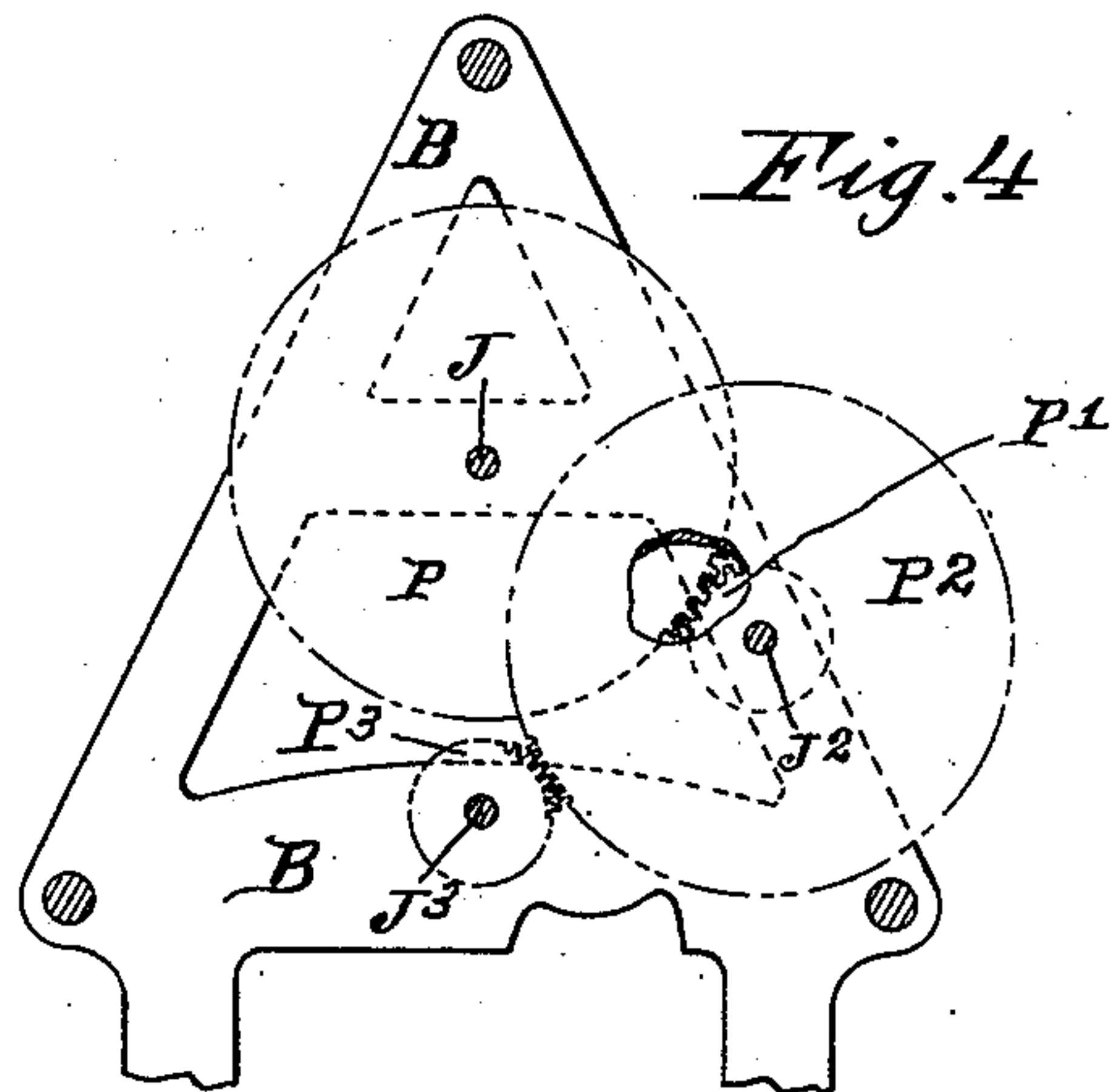
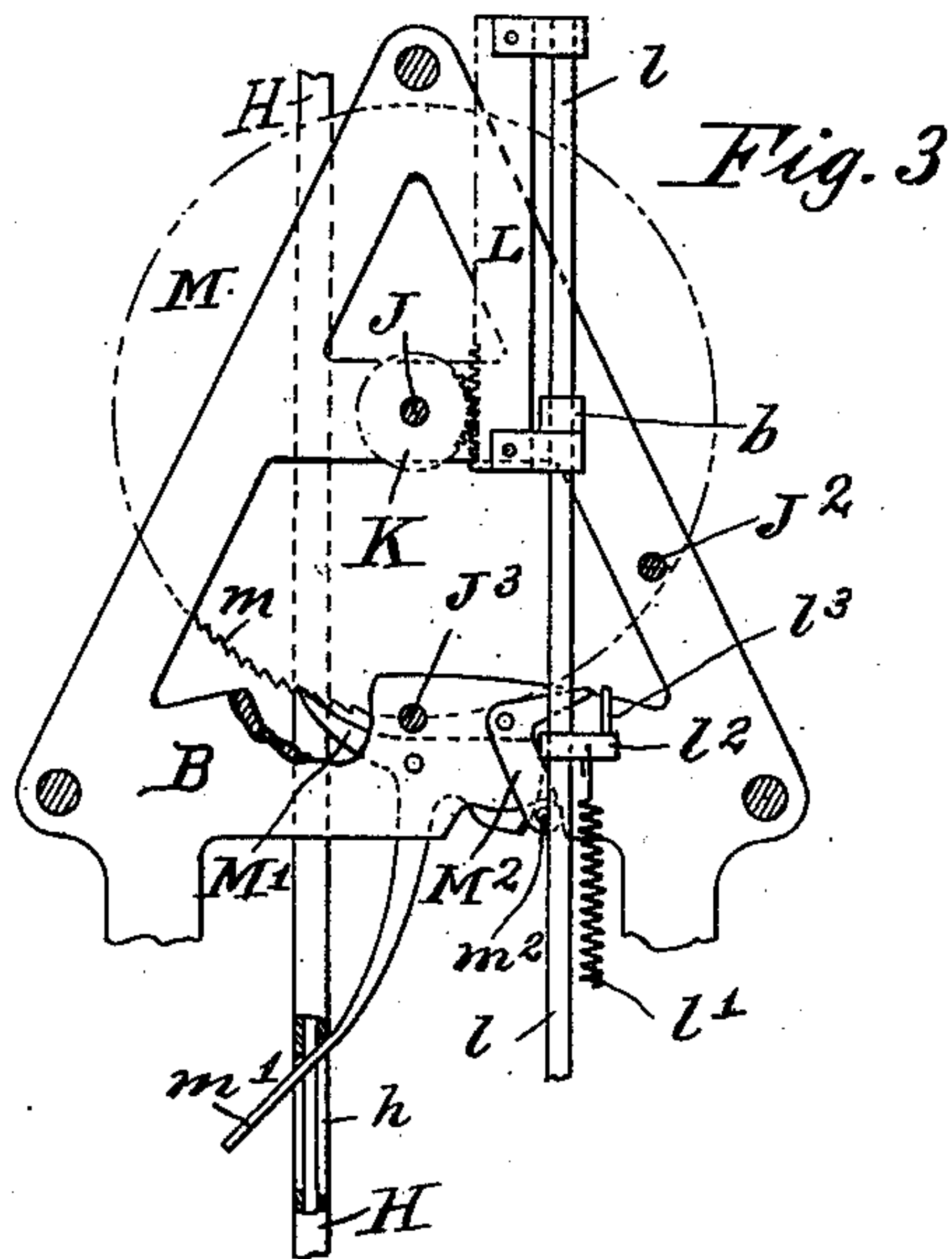
Inventor

Irving A. Watson
By his Attorney *J. B. Thurston*

(No Model.)

4 Sheets—Sheet 3.

I. A. WATSON.
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No. 428,821.
Patented May 27, 1890.



Witnesses

W. B. Hill
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COIN CONTROLLED STRENGTH TESTING AND ADVERTISING MACHINE.

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Fig. 8

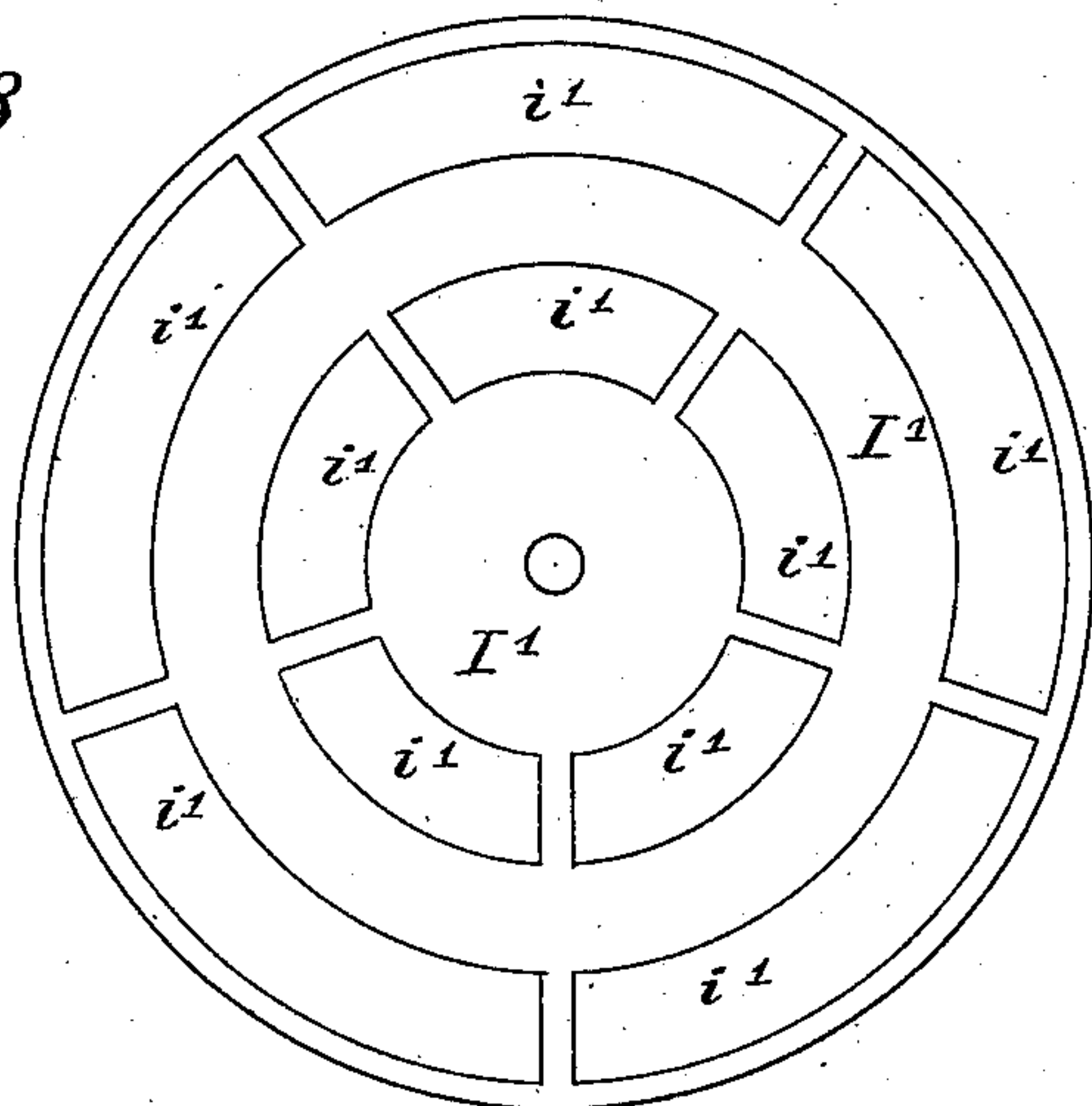


Fig. 9

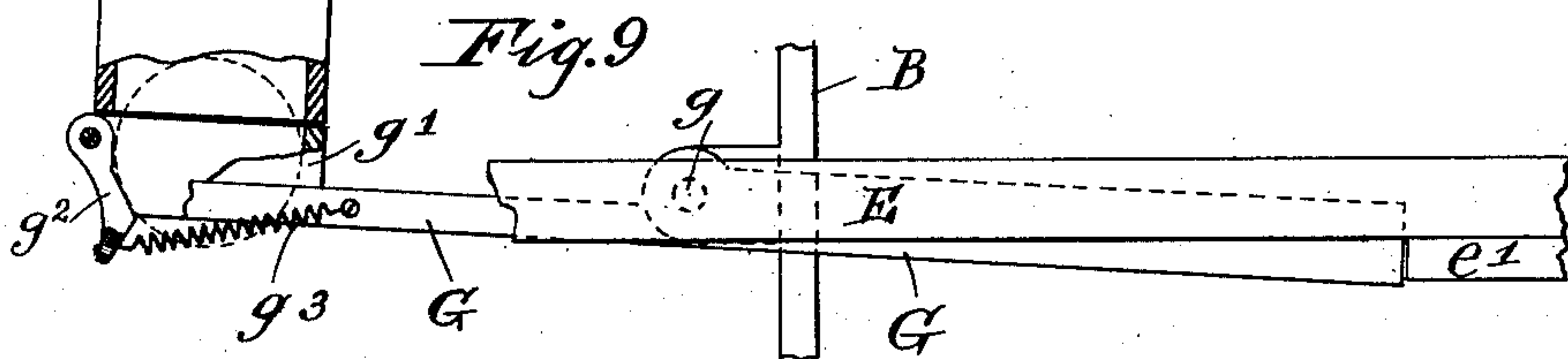


Fig. 10

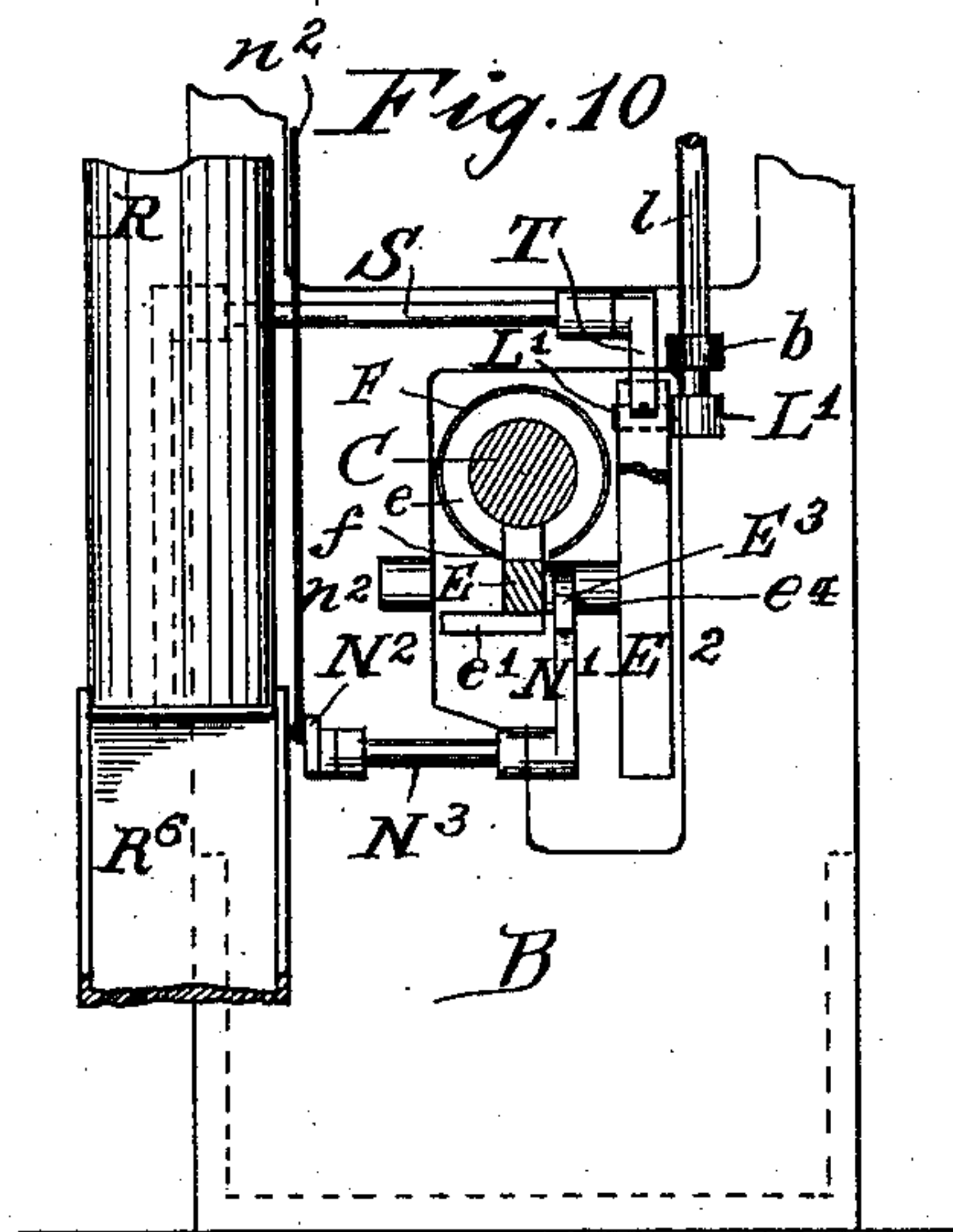
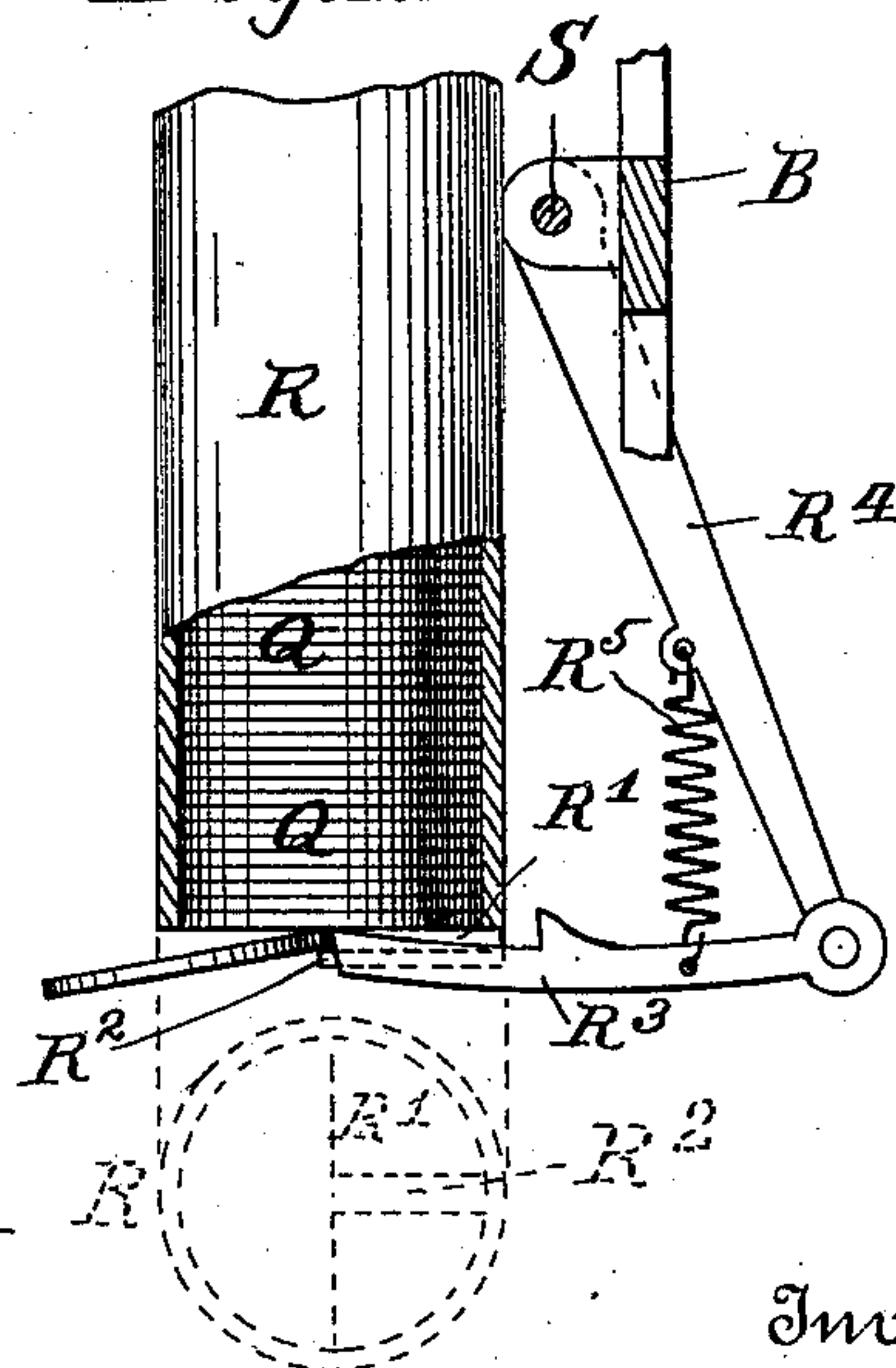


Fig. 11



Witnesses

W. H. Hill
W. R. Howe

Inventor

Irving A. Watson
By his Attorney J. B. Thurston

UNITED STATES PATENT OFFICE.

IRVING A. WATSON, OF CONCORD, NEW HAMPSHIRE.

COIN-CONTROLLED STRENGTH-TESTING AND ADVERTISING MACHINE.

SPECIFICATION forming part of Letters Patent No. 428,821, dated May 27, 1890.

Application filed July 23, 1888. Serial No. 280,720. (No model.)

To all whom it may concern:

Be it known that I, IRVING A. WATSON, a citizen of the United States, residing at Concord, in the county of Merrimac and State of New Hampshire, have invented certain new and useful Improvements in Coin-Controlled Strength-Testing and Advertising-Machines, of which the following is a specification.

10 This invention relates to machines designed to test the pulling-power of a single finger.

15 The object of the invention is to provide such a machine with locking mechanism, which can only be released by the insertion of a coin and mechanism for registering the amount of force applied by means of a dial, and also mechanism for operating an advertising-plate, which shall display another or 20 different advertisement at each pull, and a mechanism which shall also bring within reach of the operator an advertising check or coin.

25 The invention consists in the combination of the several novel devices hereinafter described, and referred to in the claims, and fully illustrated in the accompanying drawings, forming a part of this specification, of which—

30 Figure 1 is a front elevation of the machine; Fig. 2, a vertical sectional elevation. Fig. 3 is a cross-section showing the rack and pinion for rotating a shaft carrying at one end the registering-hand shown in Figs. 1 and 2, and also the ratchet-wheel and pawl and the 35 coin-tube. Fig. 4 is a cross-section showing a train of gears for imparting motion to friction-wheels by which the advertising-plate is operated. Fig. 5 is a cross-section showing 40 the said friction-wheels. Fig. 6 is a cross-section exposing the inner or back side of a notched pinion and pawl for limiting each movement of the advertising-plate. Fig. 7 is a cross-section of the friction-wheels mounted 45 upon their respective shafts, shown in sectional elevation. Fig. 8 shows the advertising-plate in elevation, upon which are shown the several spaces for advertisements. Fig. 9 is a sectional elevation, enlarged, showing 50 a portion of the coin-tube, the locking and coin-dropping mechanism, and a portion of the supporting-frame. Fig. 10 is a broken

sectional elevation cutting the pull-bar forward of the supporting-frame, illustrating more especially the mechanism for actuating 55 the feeding device for the advertising-checks; and Fig. 11 is an enlarged detached view showing a portion of the advertising check-tube and its feeding device.

The same reference-letters indicate the 60 same or corresponding parts.

A suitable case A, inclosing the working parts, may be of any convenient design and formed either of wood or metal.

A vertical bed piece or frame B is provided 65 with openings and ears or projections at various points for convenience in attaching the shafts and other parts of my improved mechanism, as will be hereinafter referred to.

A pull-bar C extends through the forward 70 end of the case A and terminates in a hook *c'* of convenient size to be grasped by a single finger of an operator, and upon this is mounted a spiral spring D. A bar E is suspended beneath and parallel with said pull- 75 bar and connected therewith only at its ends, the rear end of said suspended bar being formed into a circular collar *e* by reason of the connection of said bar E with the said pull-bar C, into which is fitted and secured 80 the journal *c* of the pull-bar C. The said collar *e* is made a movable fit for a tube F, which incloses the pull-bar C and spiral spring D, the bottom of said tube being left open, as at 85 *f*, to permit of the movement back and forth of the bar E and its collar *e* with any movement of said pull-bar. Metallic bearings *F'* are secured by screws or otherwise to the case A for supporting each end of said tube F. The spring D is expanded between the 90 forward bearing *F'* and the said collar *e*, as shown in Fig. 2. A lever G is pivoted at *g* to the frame B, and on its forward end is provided a pocket *g'* for receiving a coin of any given denomination from the coin-tube H, 95 which in the drawings is shown to extend thence to the top of the machine. The rear end of said lever G is made heavier than the forward or pocket end, so as to normally rest against the stop-piece *e'* of the bar E, which 100 prevents any movement of the pull-bar C.

To release the pull-bar from the lever G, a coin must be dropped into the tube H, whence it drops and lodges in the pocket *g'* of said

lever. The weight of the coin being sufficient to overbalance the opposite end of the lever, the said end rises above the said stop e' and permits the pull-bar to be drawn out, the spring D returning the same to its normal position. After a coin has been delivered into the pocket g' and the opposite end of the lever G has risen above the stop e' it so remains until an operator shall take the hook c' and pull the bar C, a slight outward movement of which causes a trip-catch E' , (see Fig. 2,) pivoted at e^2 to the bar E, to come in contact with a hinged end g^2 of the said pocket g' , which, by aid of a spring g^3 , normally holds a coin within the pocket g' , but which, by contact with the forward-moving catch E' , is made to increase the bottom opening in said pocket sufficiently to allow a coin to fall through. When the bar C shall have again returned to its normal position, the said lever G is permitted to return likewise. The catch E' is held by gravity normally in contact with a stop-pin e^3 ; but when the bar E is moving backward the said catch is tripped by the end g^2 sufficiently to allow the latter to pass over it.

A dial I is provided, and this may be graduated to pounds, as shown in Fig. 1, the number of pounds or form of graduation not being essential, however.

The registering mechanism consists of an indicator-hand i , attached to the forward end of a shaft J, mounted within the frame B, a pinion K, also mounted upon said shaft and meshing with a vertical rack L, carried upon a vertical rod or shaft l , mounted in bearings b , formed upon the bed or frame B, and an inclined frame E^2 , secured to one side of the bar E and inclining downward from its forward end rearwardly, upon the under side of which bears a slide L' , mounted upon the lower end of the vertical rod or shaft l , a spiral spring l' being attached to an arm l^2 , mounted upon said shaft l and connected at b' with the frame B. The said rack L, after having been moved downward by means of the pull-bar C, the incline E^2 , and the slide L' , attached to the lower end of the shaft l , is returned to its normal position by said spring l' .

In order that the hand i may remain in the position to which it may be moved by an operator long enough to enable any one to accurately note the number of pounds which have been pulled, I mount upon the shaft J a ratchet-wheel M, containing as many teeth m as there are pounds graduated upon the dial I, and upon the frame B at any convenient point I pivot a pawl M' , which shall engage the teeth of the ratchet by the action of gravity, the said pawl being provided with an arm m' , which enters a slot h in the coin-tube H, as seen in Figs. 2 and 3. This arm m' receives the whole weight of a coin while it is passing downward through the tube, which removes the pawl M' from the teeth m of the wheel M, which enables the pin m^2 of the swinging arm M^2 to support the heavy end of

said pawl by reason of said swinging arms assuming a vertical position. A right-angled projection extending outward from the pivotal point of said arm M^2 is struck by a pin l^3 , secured in the arm l^2 , when the rack nears its upward limit of stroke, causing the arm M^2 to move back to the position shown in the drawings, and permits the pawl M' to again engage the teeth of the ratchet-wheel M.

I do not limit myself to any one means for holding the indicating-hand at a given figure upon the dial, however, as various mechanisms can be substituted for the ratchet-wheel and pawl.

As a means of displaying advertisements, affording an additional source of revenue to the owners of one of my improved strength-testing machines, I attach just back of the registering-dial I to a hollow shaft J' a disk I' , upon which advertisements may be arranged upon or within the divisions or spaces i' , (said divisions being indicated in Fig. 8,) two of which are displayed through openings of corresponding size formed in the dial I.

Within the frame B and upon the hollow shaft J' are mounted a notched wheel N and a friction-wheel O.

It is desirable that the shortest pull of the weakest operator upon the hook c' may be sufficient to move the disk I' far enough to display a pair of advertisements through the dial I; hence a train of spur-gears P P' P^2 P^3 , rigidly mounted upon their respective shafts, are employed for increasing the speed of the hollow shaft J' , arranged as follows: The large gear P, mounted on the shaft J, meshes with a small gear P' , which is mounted close to a large gear P^2 upon a counter-shaft J^2 , and the gear P^2 meshes with a small gear P^3 , which, with a friction-wheel O' , is mounted on shaft J^3 . The latter imparts motion to the hollow shaft J' by aid of the friction-wheel O, and to insure perfect contact the wheel O' may be formed of two parts o o' , the part o having a hub which may be splined to the shaft J^3 , and upon said hub may be placed the part o' . A spiral spring o^2 surrounds the hub, and, bearing between the part o' and a collar, also mounted upon said hub, forces said loose portion toward the stationary portion, and thus affords good frictional contact with the wheel O.

The arms N' N^2 are mounted on opposite ends of a shaft N^3 , carried in bearings formed upon the frame B, and attached to the free end of the arm N^2 is a wire n^2 , which extends thence to one end of a stop-arm N^4 , the opposite end of which engages the notches of said notched wheel N. The said arm N^4 is pivoted to the frame B and held normally in contact with said wheel N by a spring n .

When the hook c is being drawn out, a latch E^3 , pivoted to the bar E and resting against the stop-pin e^4 , engages the upper end of the arm N' , moving it forward until the said latch passes by, and as the said arms N' N^2 are rigidly fastened to their shaft in their re-

spective positions this operation, by reason of the vertical wire n^2 connecting the arm N^2 with the stop-arm N^4 , lifts the arm N^4 and leaves the notched wheel N free to rotate until the next notch presents itself to the stop-arm, whereupon the advertising-disk I' ceases to revolve, and the friction-wheels O O' are caused to slip until the motion of the pull-bar C shall cease.

10 As another means of advertising in connection with such a machine, checks Q , with the name and address of the advertiser upon one or both sides, may be inserted in a tube R , having a slot in one side close to the bottom of sufficient thickness to allow a check Q to pass out, or a bottom R' may cover one-half of the tube, as shown in the dotted plan view projected from the sectional elevation, Fig. 11.

20 By slotting the bottom, as seen at R^2 , a push-bar R^3 may force one and another of said checks down an inclined chute R^6 and out onto a shelf A' within easy reach of an operator. The rear end of said push-bar R^3 is pivoted to an arm R^4 and adjustably supported or automatically retained at the proper elevation by a spiral spring R^5 , one end of which is connected to said push-bar and the other to the arm R^4 . The upper end of said arm R^4 is mounted upon a shaft S , supported in bearings formed on the frame A , and said shaft is rocked by means of its arm T , which comes in contact with the forward end of the frame E^2 .

35 In Fig. 3 the arm m' of the pawl M' is shown to be formed integral with said pawl; but in Fig. 2 said arm is detached from the pawl and mounted upon the stud upon which said pawl is fulcrumed. Either form of construction is as good as the other, the former requiring the said arm m' to be curved laterally in order to enter the slot h of the coin-tube H , while the latter construction permits the said arm to be formed straight vertically.

45 Having described the general arrangement and construction of my improved machine, what I claim as new is—

1. The combination, with the finger and spring-actuated pull-bar having a hook on its outer end and a parallel suspended bar connected at its ends to said pull-bar, of automatic holding mechanism comprising a coin-actuated lever pivotally connected to a supporting-frame, one end resting normally against a portion of said suspended bar and the other end being adapted to receive a coin, by which said lever is tilted and released from said suspended bar.

2. The combination, with a closed casing and a suitable interior supporting-frame, of a finger and spring-actuated pull-bar terminating in a hook outside of said casing, a parallel suspended bar connected at its ends to said pull-bar, a coin-tube entering said casing, a coin-actuated lever pivoted to said supporting-frame, and stopping and releasing mechanism for said lever, comprising a

stop-piece formed upon said suspended bar, against which one end of said lever rests normally, and a pivoted latch also attached to said suspended bar at a point to engage with the hinged end of a coin receptacle or pocket upon the opposite end of the said coin-actuated lever, and the coin-pocket on said lever, all substantially for the purpose set forth.

3. In a strength-testing machine, the combination, with the pulling mechanism, of an inclined slideway, a vertical shaft having a slide adapted to move along the under side of said slideway, a rack mounted upon said shaft and meshing with a pinion mounted upon a horizontal shaft, the said horizontal shaft and its pinion, an indicator-hand mounted upon said horizontal shaft, and a dial, all substantially for the purpose set forth.

4. In a strength-testing machine, the combination, with an indicating-dial, an indicator or pointer, and a shaft upon which said pointer is mounted, of a spur-pinion also mounted upon said shaft, a shaft carrying a rack for driving said pinion, the said rack, and an inclined slideway attached to the pulling mechanism, whereby said shaft and rack are operated, and the said pulling mechanism, all substantially for the purpose set forth.

5. The combination of the shaft carrying the indicator or pointer and the spur-pinion, the rack by which it is driven, the shaft to which the latter is attached, and its driving mechanism, of a ratchet-wheel and a pawl, an arm entering a slot formed in the coin-tube and connected with said pawl, whereby the descent of a coin shall disengage said pawl from the teeth of said ratchet-wheel, the coin-tube and the said slot formed therein, a spring connecting said rack-shaft with the supporting-frame for returning the former to its normal position, and mechanism whereby said pawl is again placed in contact with the teeth of said ratchet-wheel upon the return of said rack-shaft to its normal position, said mechanism comprising a swinging arm M^2 , having a projecting pin m^2 , and an arm projecting at an angle, as shown, the arm l^2 , secured to the rack-shaft and its pin l^3 , all substantially for the purpose described.

6. The combination, with the registering mechanism, of a ratchet-wheel, a pawl, an arm attached to the pivot or shaft carrying said pawl, a coin-receiving tube provided with a slot into which said pawl-arm enters and is acted upon by a descending coin for releasing said pawl from its ratchet-wheel, and means for returning said pawl to its normal position, comprising a swinging arm M^2 , having a projecting pin m^2 , and an arm projecting at an angle, as shown, the arm l^2 , secured to the rack-shaft, and its pin l^3 , substantially for the purpose explained.

7. The combination, with the supporting-frame, of the rack-shaft provided with an arm l^2 , and a spring l' , connecting said arm with said frame, the swinging arm M^2 , having a pin m^2 , and an arm projecting at an angle

therefrom, as shown, the ratchet-wheel, and its pawl, substantially for the purpose described.

8. The combination of the supporting-frame 5 and the shaft J, a ratchet-wheel and spur-pinion mounted upon said shaft, the rack-shaft carrying the rack, and an arm l^2 , provided with a projecting stud or pin l^3 and a spring l' , the coin-tube having the slot h , a 10 pawl M' and connected arm m' , and a pivoted arm M^2 , provided with a pin m^2 , and a right-angled projection for engaging the pin l^3 of the arm l^2 , all substantially as and for the purpose set forth.

9. In a coin-actuated strength-testing machine, in combination, first, a pulling and registering mechanism, of which the essential 15 elements are a pull-bar having a hook to be grasped by the finger of an operator, a helical spring mounted thereon, and a parallel bar suspended underneath said spring and attached to said pull-bar, provided with a projection e' , a swinging latch E' , and an inclined frame E^2 , a stop-lever pivoted to a stationary frame and provided with a coin- 25 pocket having one end hinged and adapted to be opened by said latch E' , a coin-tube leading to the pocket on said lever, a vertically-movable shaft operated by contact with said inclined frame and provided with a rack 30 meshing with a pinion carried upon a shaft J, the said shaft, a ratchet-wheel and indicating-hand mounted thereon, a registering-dial, a coin-actuated pawl engaging said ratchet-wheel, and a spring for returning the rack to its normal position; second, an advertising 35 mechanism, of which the essential elements

are a rotative disk, a hollow shaft carried upon the shaft J and upon which said rotative disk is mounted, the said shaft J, and 40 counter-shafts J^2 J^3 and spur-gears connecting the same, and, third, a check-distributing apparatus, of which the essential elements are a vertical tube having its bottom partially open and slotted to receive a push-lever 45 R^3 , the said push-lever, a shaft and arms mounted thereon, one being connected to said push-lever and the other being adapted to be rocked upward by means of the top portion of the frame E^2 , the said frame, and the pulling 50 mechanism to which it is attached, all arranged to operate substantially for the purpose described.

10. The combination, with the hollow shaft and advertising-plate, of a notched wheel 55 mounted on said shaft, an arm or lever having a spring for holding one of its ends normally in contact with said notched wheel, mechanism comprising shafts J J^2 J^3 , suitable spur and friction gearing, and a rack connecting with the pulling mechanism, the said 60 pulling mechanism, and a rod connected by cranks with a shaft N^3 , and the latch E^3 , connecting said arm or lever with the pulling mechanism of a strength-testing machine, 65 whereby said notched wheel is permitted to revolve at the proper time.

In testimony whereof I affix my signature in presence of two witnesses.

IRVING A. WATSON.

Witnesses:

J. B. THURSTON,
ALICE G. COCHRAN.