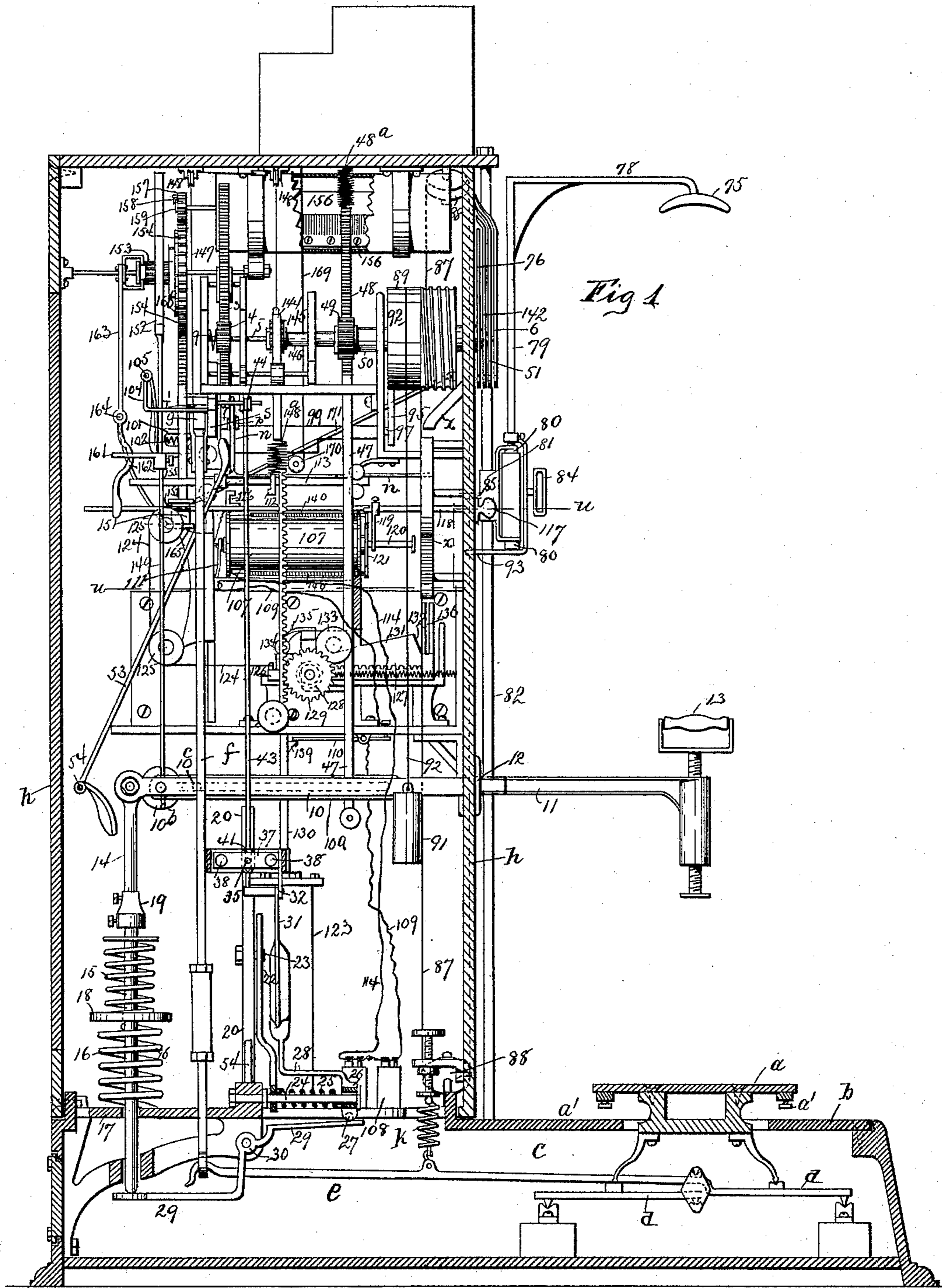


(No Model.)

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A. SUNDH.
COMBINED WEIGHING, LIFTING, MEASURING, AND ELECTRIC MACHINE.
No. 477,613. Patented June 21, 1892.



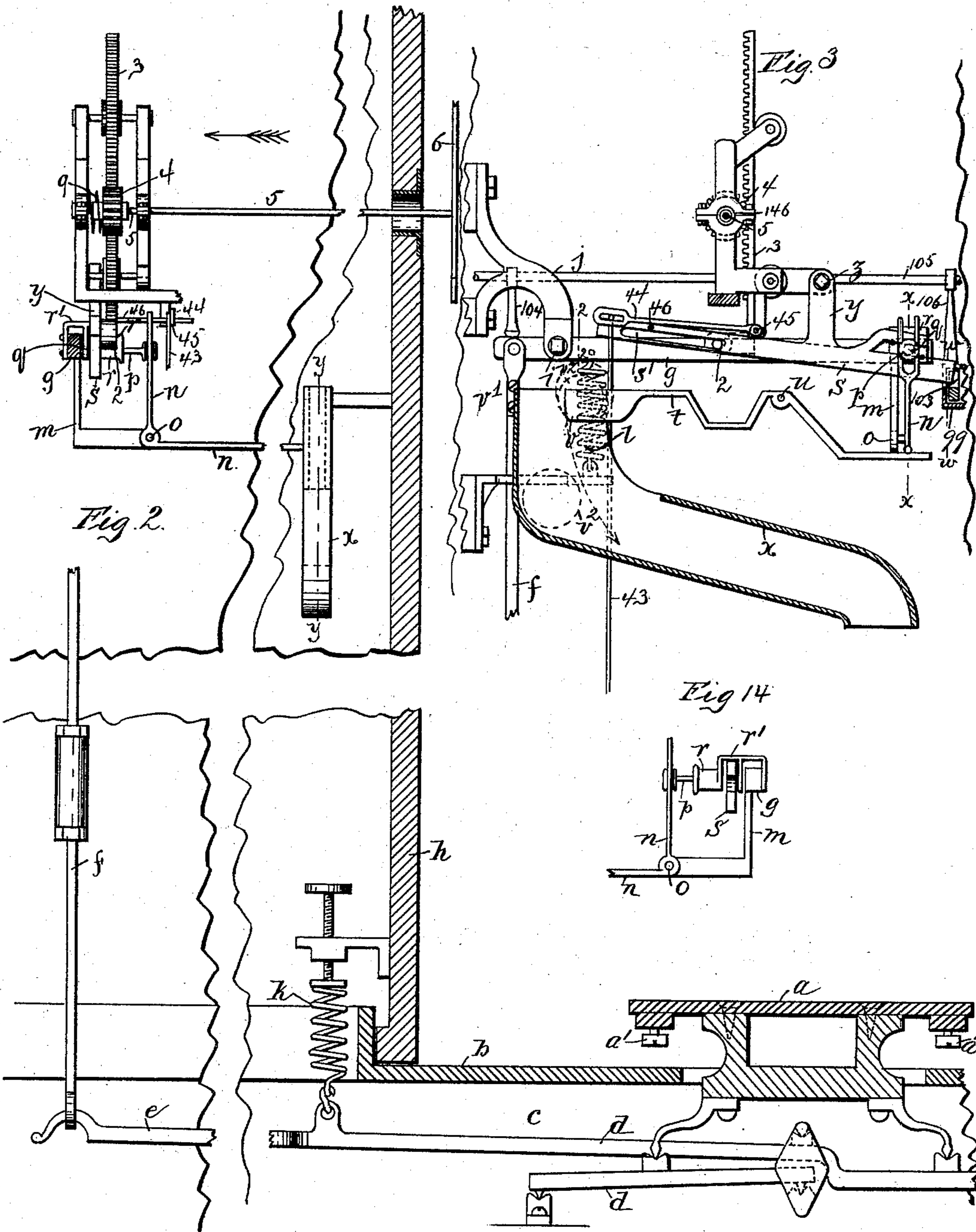
Witnesses
Wilfred P. Eull
C. J. Morgan

Inventor
August Sundh
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(No Model.)

8 Sheets—Sheet 2.

A. SUNDH.
COMBINED WEIGHING, LIFTING, MEASURING, AND ELECTRIC MACHINE.
No. 477,613. Patented June 21, 1892.



Witnesses
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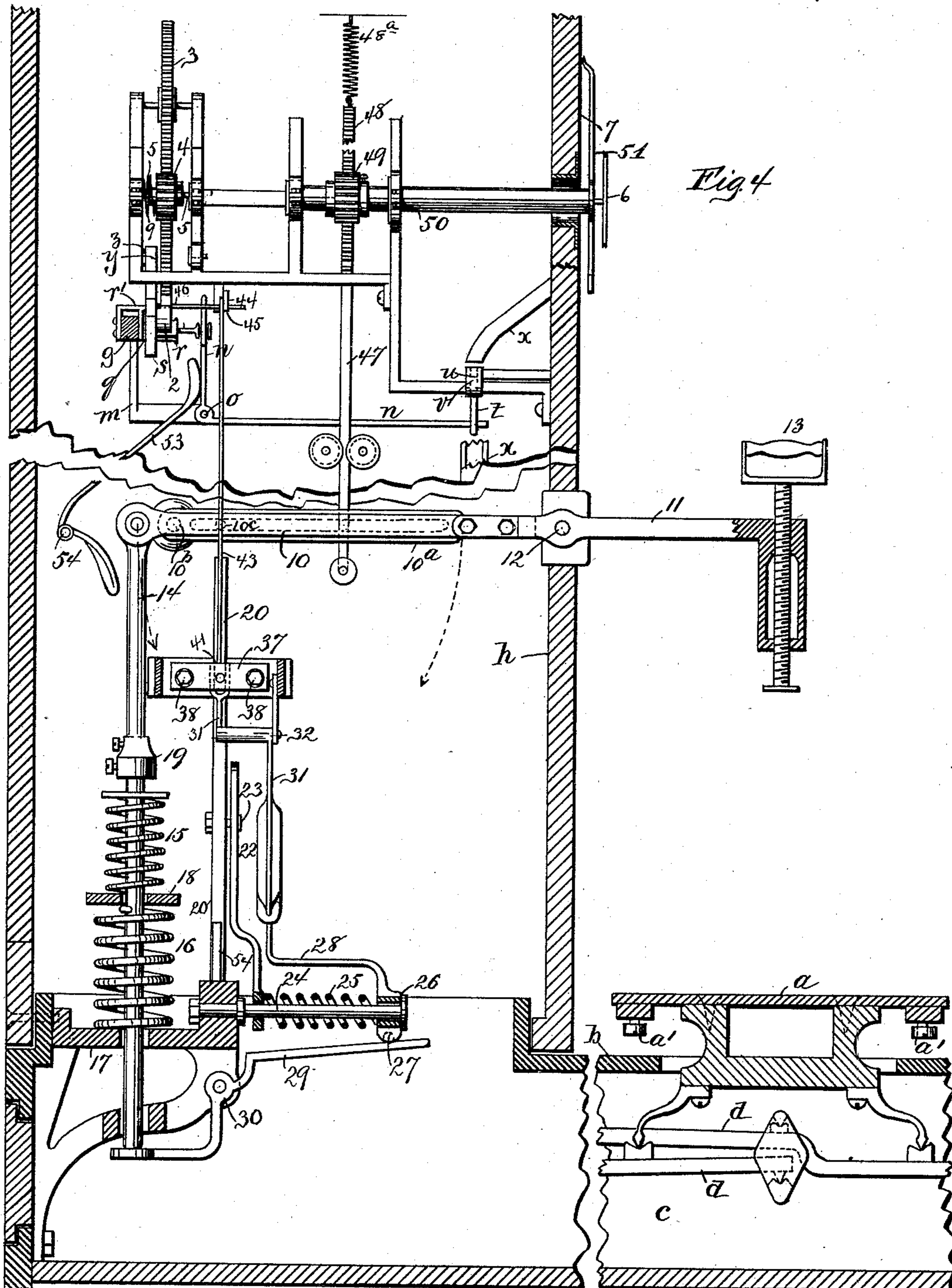
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8 Sheets—Sheet 3.

A. SUNDH.
COMBINED WEIGHING, LIFTING, MEASURING, AND ELECTRIC MACHINE.

No. 477,613.

Patented June 21, 1892.



Witnesses

Wilfred P. Caill
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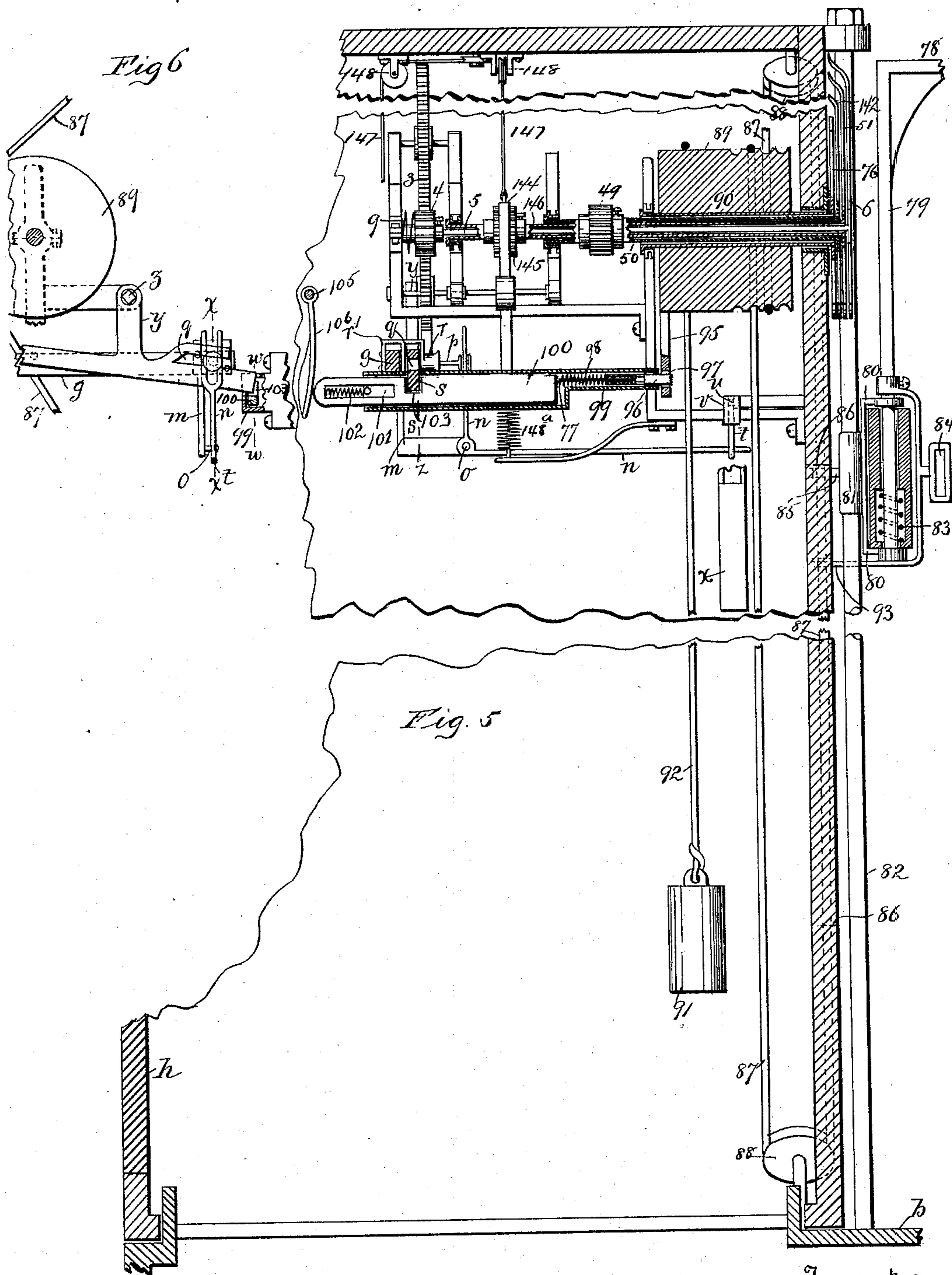
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A. SUNDH.
COMBINED WEIGHING, LIFTING, MEASURING, AND ELECTRIC MACHINE.

No. 477,613.

Patented June 21, 1892.



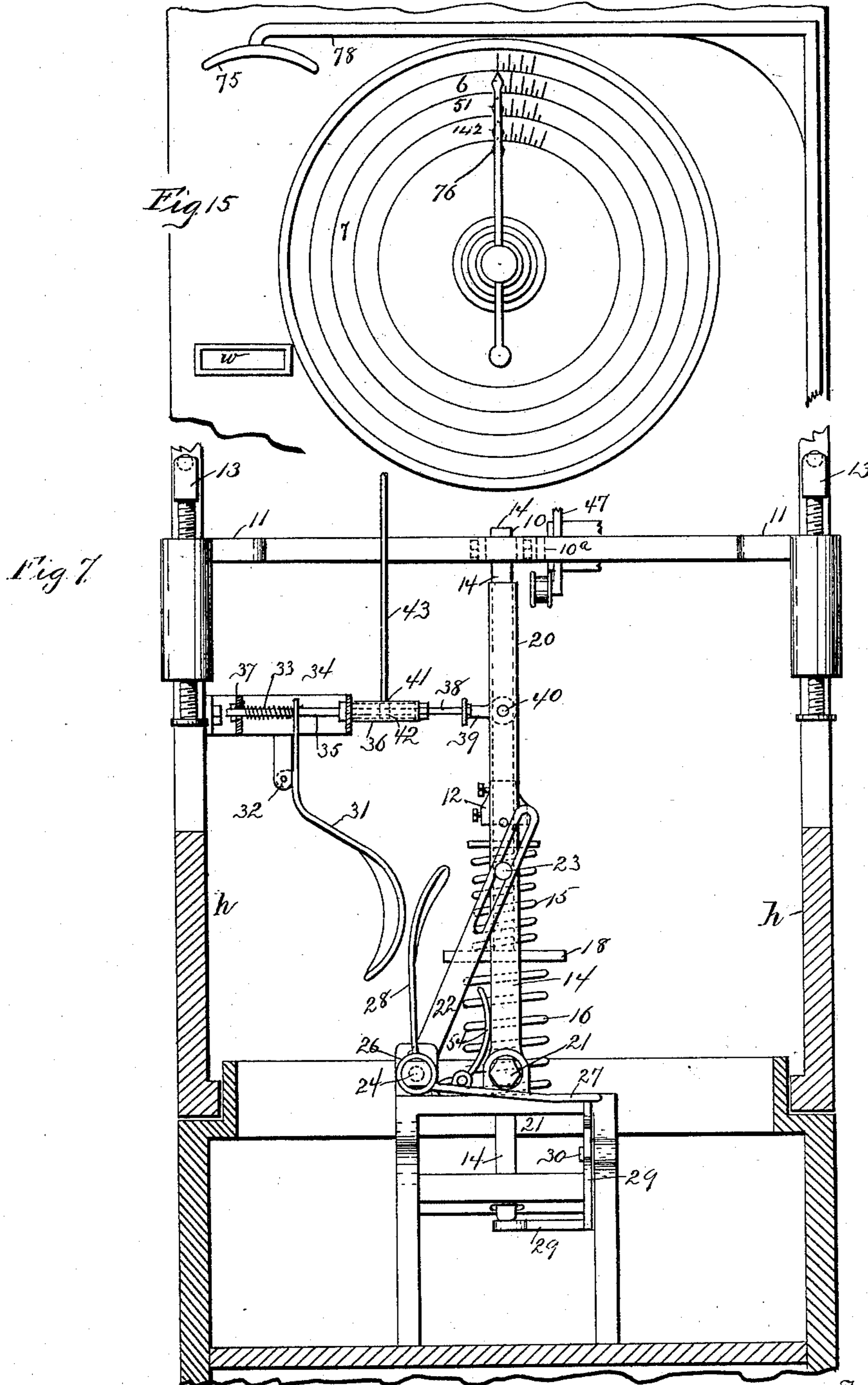
Witnesses
Wilfred. B. Gull
Chas. Morgan

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(No Model.)

8 Sheets—Sheet 5.

A. SUNDH.
COMBINED WEIGHING, LIFTING, MEASURING, AND ELECTRIC MACHINE.
No. 477,613. Patented June 21, 1892.



Witnesses

Wilfred. P. Earl
J. J. Morgan

By his Attorney

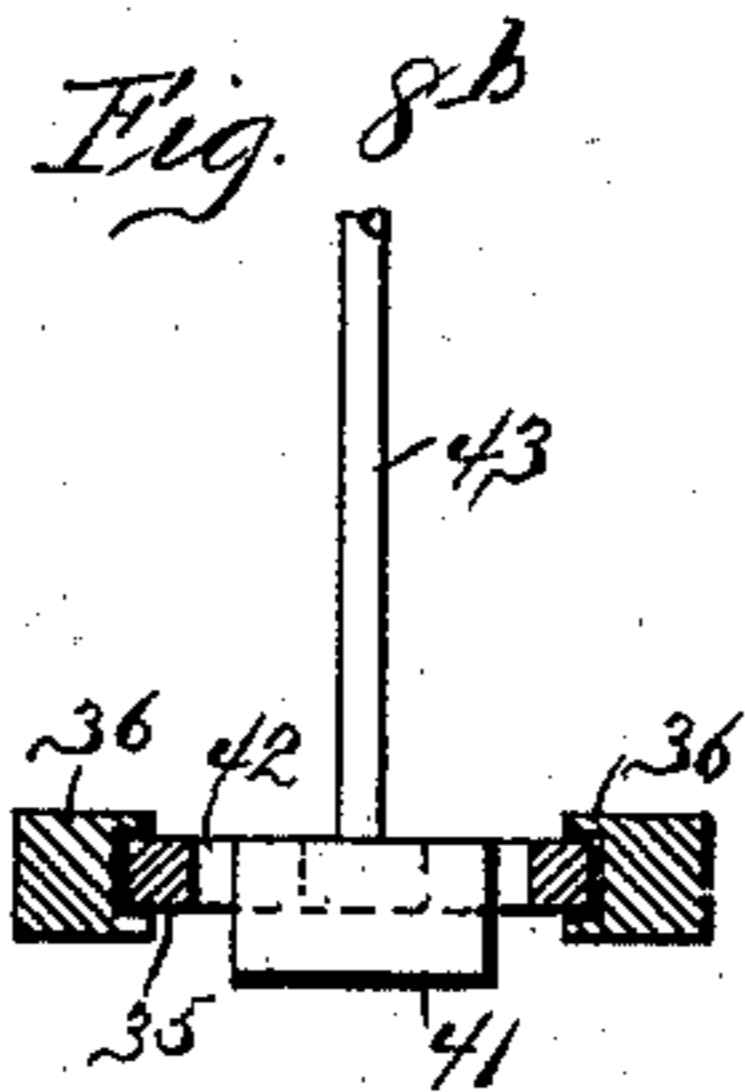
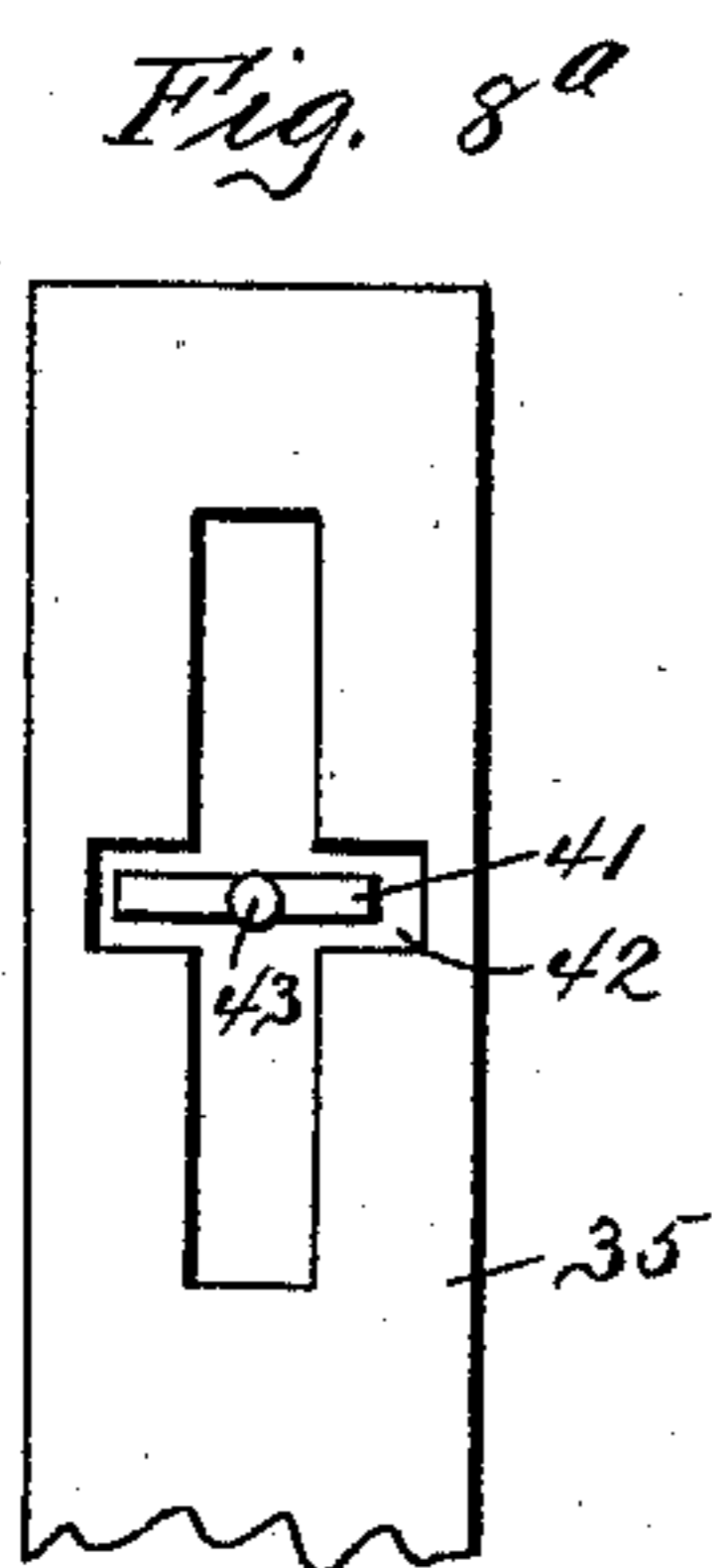
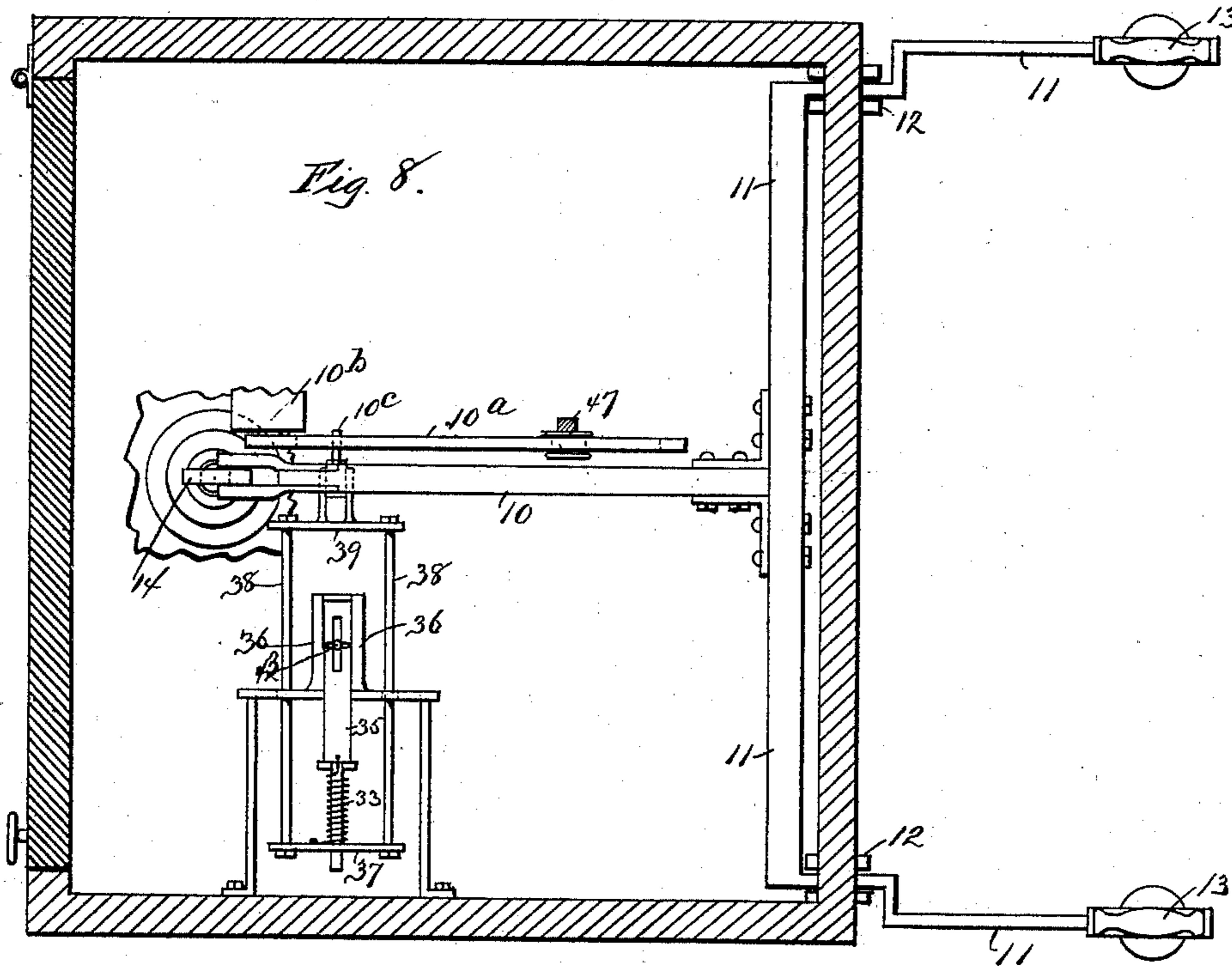
Inventor

August Sundh.
A. P. Thayer

(No Model.)

8 Sheets—Sheet 6.

A. SUNDH.
COMBINED WEIGHING, LIFTING, MEASURING, AND ELECTRIC MACHINE.
No. 477,613. Patented June 21, 1892.



Witnesses
Wilfred B. Cull
W. J. Morgan

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(No Model.)

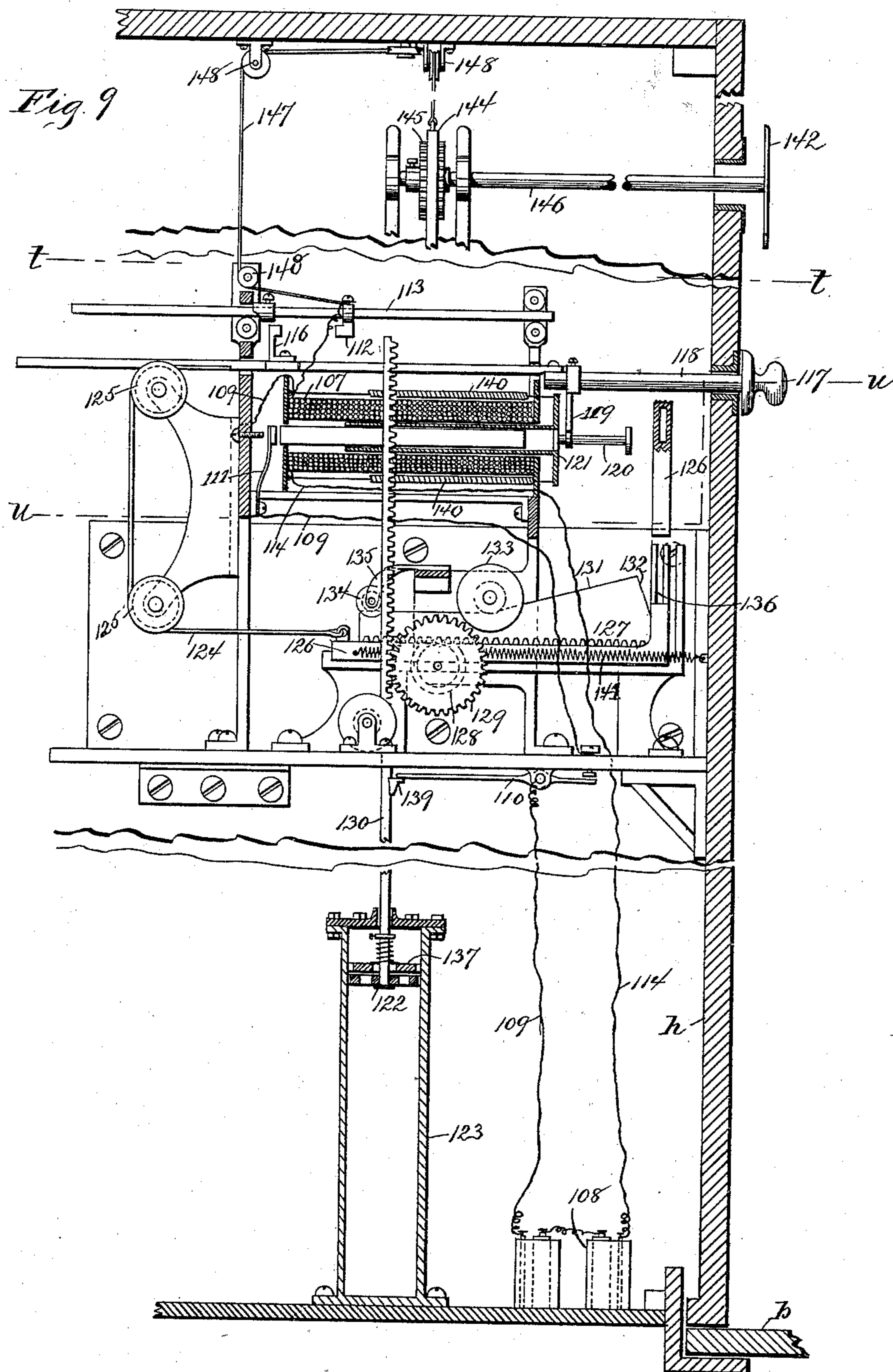
8 Sheets—Sheet 7.

A. SUNDH.

COMBINED WEIGHING, LIFTING, MEASURING, AND ELECTRIC MACHINE.

No. 477,613.

Patented June 21, 1892.



Witnesses

Wilfred. P. East
Chas. J. Morgan

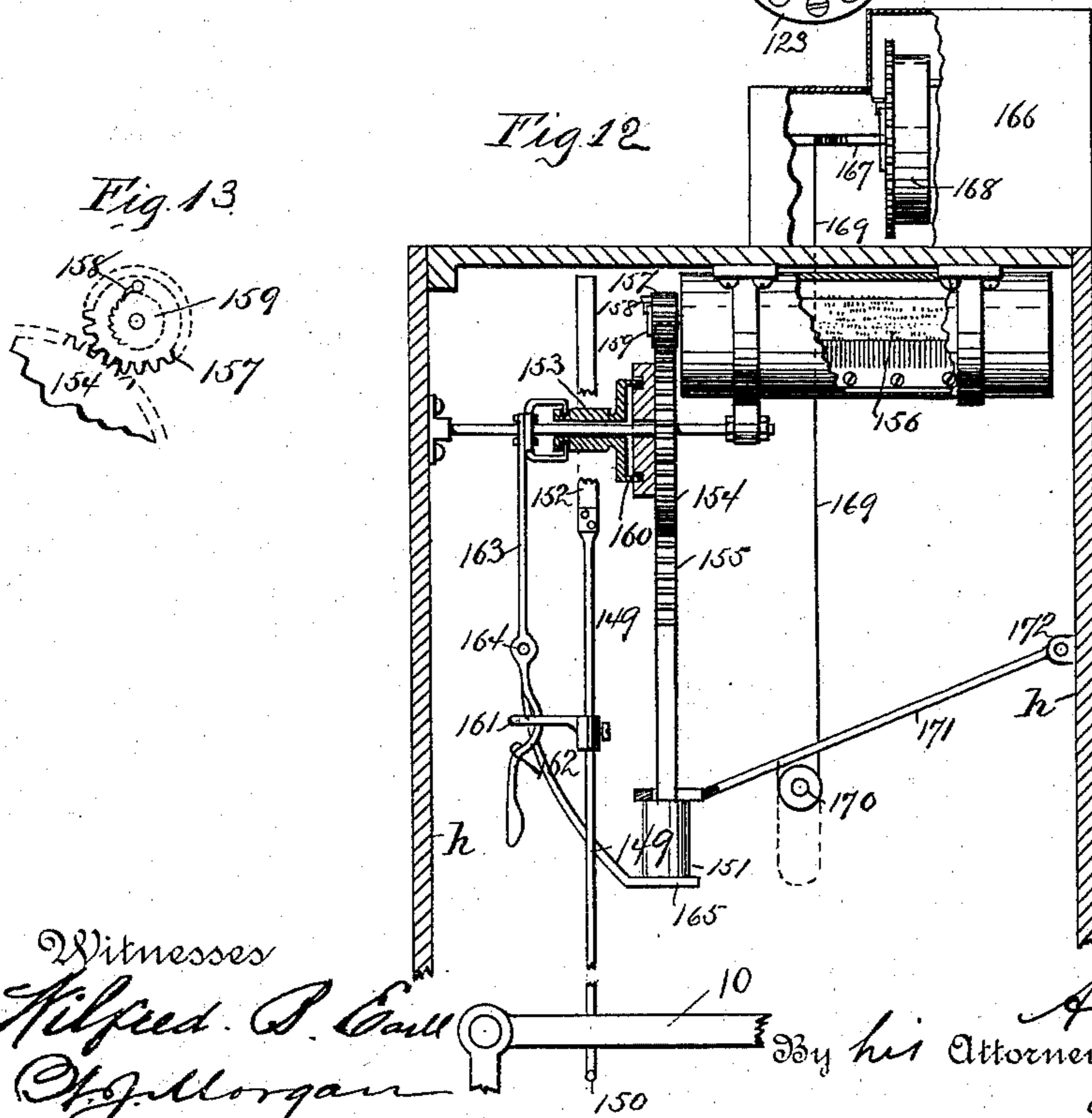
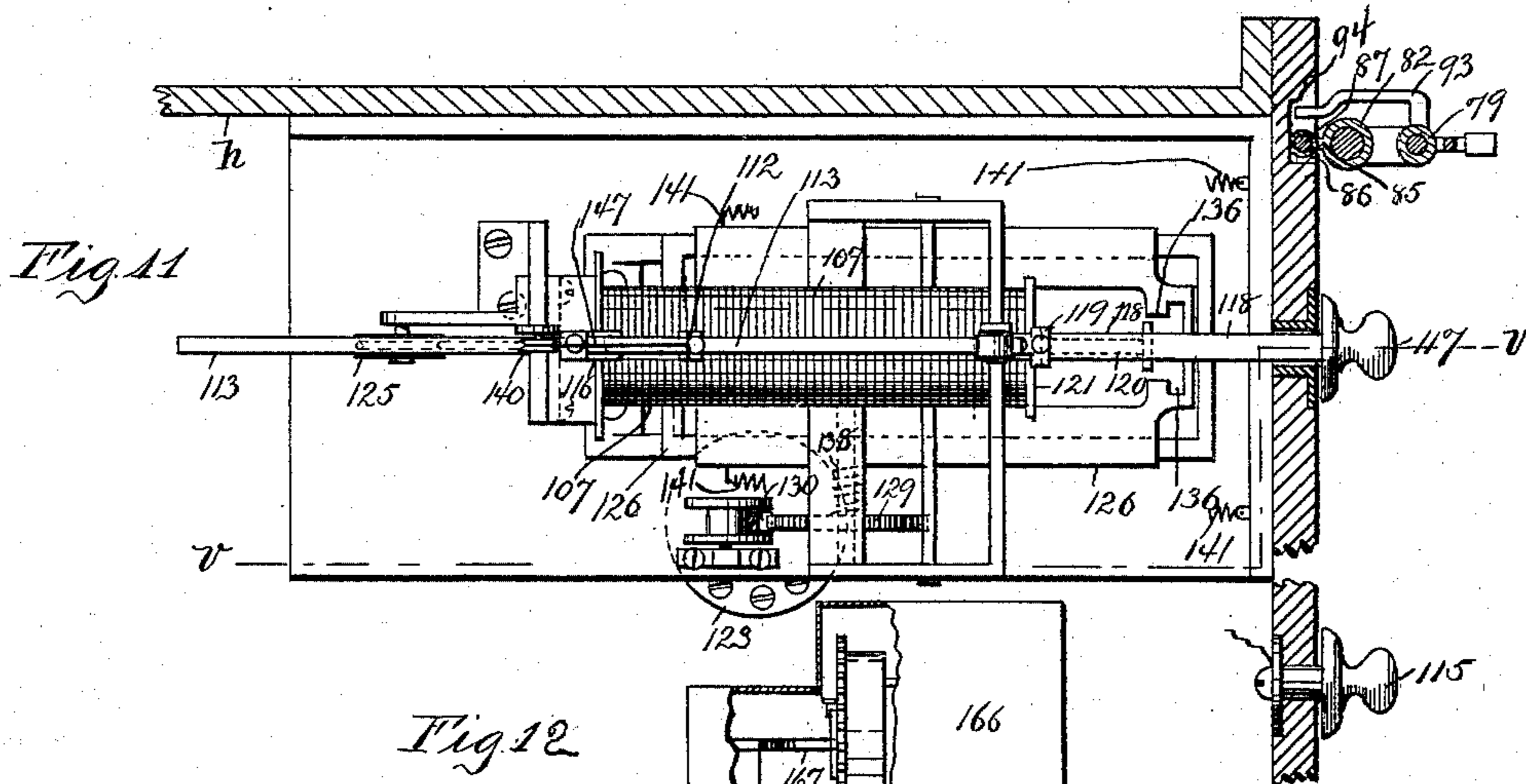
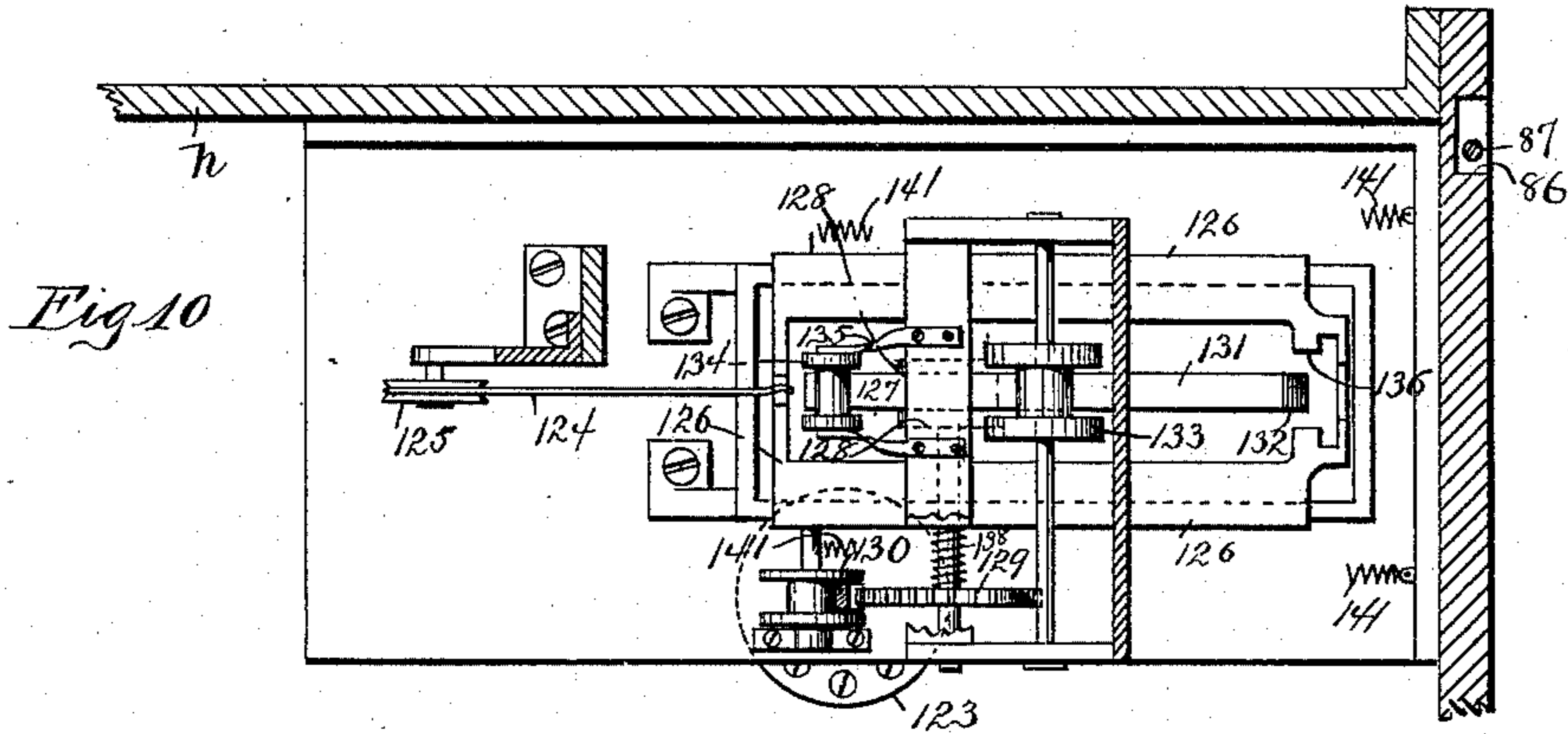
Inventor

Inventor
August Sundh
By his Attorney
A. O. Thayer

(No Model.)

8 Sheets—Sheet 8.

A. SUNDH.
COMBINED WEIGHING, LIFTING, MEASURING, AND ELECTRIC MACHINE.
No. 477,613.
Patented June 21, 1892.



Witnesses
Hilfred S. Cull
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Inventor
August Sundh
By his Attorney
A. O. Thayer

UNITED STATES PATENT OFFICE.

AUGUST SUNDH, OF YONKERS, NEW YORK.

COMBINED WEIGHING, LIFTING, MEASURING, AND ELECTRIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 477,613, dated June 21, 1892.

Application filed November 4, 1890. Serial No. 370,281. (No model.)

To all whom it may concern:

Be it known that I, AUGUST SUNDH, a citizen of the United States, and a resident of Yonkers, in the county of Westchester and State of New York, have invented new and useful Improvements in a Combined Weighing, Lifting, Measuring, and Electric Machine, of which the following is a specification.

My invention consists in improved contrivances, combinations, and arrangements of apparatus whereby, with a platform weighing-scale as the basis of the machine and provided with means whereby it is operative for indicating weight only when a coin is dropped in the slot, the operator may, through the instrumentality of said coin, avail himself of one operation each of the several functions of the machine—viz., to ascertain his weight, the strength of his lifting powers, measure his height, test his endurance of electric shocks, hear the music, and wind up the clock; and it is also in such contrivance that the electric part of the machine may of itself be used independently of the rest through the instrumentality of a smaller coin than that employed for rendering all the functions available, all as hereinafter fully described, reference being made to the accompanying drawings, in which—

Figure 1 is mainly a side elevation as seen with one side of the case removed; but the platform and one of the supporting-brackets are sectioned. Fig. 2 represents parts of the apparatus in the same view with the scale-beam in section on line 2 2, Fig. 3. Fig. 3 is a section of part of the apparatus of the upper portion of Fig. 2 on line *y y* and side view of the rest from the front, as indicated by the arrow in Fig. 2, except at the extreme right hand of the figure, which is a detail in section on line *z z*, Fig. 5. Figs. 2 and 3 are more particularly intended to illustrate the weighing apparatus and key-lever device. Fig. 4 is a sectional elevation from front to back, about the same as Fig. 2, but showing more of the apparatus. Fig. 5 is a sectional elevation of parts of the apparatus from front to back, partly central, partly on line *w w*, and partly on line *x x*, Figs. 3 and 6. This figure is intended more particularly for illustrating the height-measuring apparatus. Fig. 6 is a detail of apparatus of Figs. 1 to 5 as seen looking from

the front. Fig. 7 is a detail of the lifting apparatus in sectional elevation from side to side as seen looking from the front. Fig. 8 is a detail of the lifting apparatus in plan view and horizontal section of the case. Fig. 8^a and 8^b are details of the apparatus of Fig. 8 in plan view and transverse section, respectively, and enlarged. Fig. 9 is a vertical section from front to back on line *v v*, Fig. 11, illustrating the electrical apparatus. Fig. 10 is a horizontal section of the apparatus of Fig. 9 on line *u u*. Fig. 11 is a horizontal section of the apparatus of Fig. 9 on line *t t*. Fig. 12 is a detail in vertical section, illustrating the music and clock-winding apparatus. Fig. 13 is a detail of the music apparatus in side view as seen looking from the left hand of Fig. 12 and enlarged. Fig. 14 is a detail of the scale-beam and key-lever apparatus as seen in elevation, looking from the right hand of Fig. 3. Fig. 15 is a front view of part of the case showing the dial, pointers, coin-slot, and part of measuring apparatus.

a represents the weighing-platform of an ordinary platform-scale, below which is the fixed cover *b* of the chamber *c* underneath said platform containing the usual scale-levers *d* on which the platform rests, one of which is prolonged at *e* and suspended at the free end on the vertical rod *f*, which hangs from the short arm of the scale-beam *g*, located at a suitable height in the vertical case *h*, extending upward from the back portion of the chamber *c*, said beam being pivoted at *i* in a bracket *j*, attached to one side of the case. The part *e* of the scale-lever suspended from the scale-beam has a counterbalancing-spring *k*, and the scale-beam also has a counterbalancing-spring *l*.

Near the end of the long arm of the scale-beam there is a bracket *m* suspended from it, on which the elbow-lever *n* is pivoted at *o*, the upper end of which carries a pin *p*, resting in the socket *r* of a yoke *r'*, attached to the scale-beam, which pin is by the vibrations of said lever made to thrust forward through the slot *q* of a lever *s* and into a hole in the middle prong of the yoke or withdraw therefrom, according as the said lever is shifted one way or the other. The other end of this lever ranges over one arm of the tilting lever *t*, which is pivoted at *u*, and at the other end car-

ries the spoon v , into which the coin v^2 is dropped through the slot w and chute x . The spoon thus weighted descends and tilts up the other arm of said lever t , which actuates lever n , so as to thrust pin p forward and connect said slotted end of lever s with the scale-beam, which being done the spoon still holds the coin because of not yet having descended far enough to open a passage between it and the guard v' to discharge the coin. (See dotted lines, Fig. 3.) The lever s has a rigid arm y , by which it is suspended from a pivot-stud z in a fixed position at about the level and parallel with the scale-beam. It is the means of rendering, through the instrumentality of the scale-beam, the several functions of the machine available—viz., weighing, lifting, measuring, music-giving, and also the winding of the clock—and I therefore call it the "key-lever." At 2 said key-lever is connected by a stud-pin engaging its slot s' to a toothed rack 3, capable of sliding up and down and geared with the pinion 4, which turns the shaft 5, that carries the pointer 6 around the dial 7, which indicates the weight.

From the foregoing description it will now be seen that unless the coin be dropped in the slot and the key-lever s thereby connected with the scale-beam said key-lever s will not be effected by the scale-beam when raised by the weight on the platform, and consequently the pointer will not respond to the action of the scale and no indication of the weight will be given.

With the rise of the scale-beam and the elbow-lever n suspended from it the coin-holding spoon v will tilt further down and open the passage between the end of the spoon and guard v' wide enough to permit the escape of the coin and will then tilt back to the normal position, leaving elbow-lever n free; but the pin p will remain in consequence of the binding effect of the resistance of the key-lever s and of the slightly-coiled spring 9, which I apply to the shaft 5 for so retaining said pin and for insuring the return of the pointer-rack and key-lever s , when the pin is subsequently disconnected. Said spring also prevents backlash in the gears.

When the person weighed steps off the platform and the parts return to the normal position, the connecting-pin p is withdrawn by the gravitating action of the lever n , ready for another operation; but if the person remains to work the lifter said pin is to be detached for rendering the lifting apparatus available, as will appear farther on.

The lifting apparatus, which will now be described, and which is also rendered available to the operator by the scale-beam and the key-lever s , enabling him to use the weighing-scale, consists of the lever 10, having the branches 11 projecting out through the front of the case and pivoted at 12 and provided with handles 13, suitably located for use by the operator standing on the platform, said handles being adjustable vertically to accom-

modate persons of different heights, from the inner end of which lever the thrust-rod 14 is suspended through the coiled springs 15 and 16, seated on the fixed platform 17, one above another, with the follower-plate 18 between them and with the collar 19 fixed adjustably on the rod above spring 15, to be thrust on the spring for producing the resistance to the one using the machine. The upper spring is considerably less powerful than the lower one and is used to afford greater range of movement of the lifting-levers to persons of limited powers, while the stronger spring is for the benefit of persons of greater strength; but a single spring of the greater capacity may of course be used, the dial being graduated in either case in accordance with the spring or springs.

The platform a of the weighing-scale has stops a' , that come to rest on the fixed cover b to relieve the weighing apparatus of undue strain when to the weight of the operator is added to the down-thrust of his lifting power.

Under the lever 10 and terminating at a short distance below it when in the normal position is a stop 20, pivoted at 21 for the support of the lower end, so as to swing clear of said lever at its upper end, and which must be thus shifted before the lifting apparatus can be used. For so shifting it said stop has the lever 22 connected to it by the pin 23, extended through the slot of the lever, said lever being pivoted on the fixed shaft 24 and connected by the strong spring 25, coiled around said shaft to the hub 26 of the elbow-lever 27 28, also pivoted on said shaft, with its arm 27 resting on one arm of the lever 29, pivoted at 30, and at the end of the other arm, subject to the down-thrust of the rod 14, when lever 10 is actuated by the operator. The arm 28 of the elbow-lever extends upward in range of, but at a certain distance away from, the pendent arm of a lever 31, pivoted at 32, and at its upper end bearing against the outer end of a slotted locking-plate 35, sliding in the ways 36 and connected by the spring 33 with the cross-bar 37, attached to the ends of the forks 38 of the cross-head 39, pivoted to the stop 20 at 40. With this locking-plate is a key 41, suspended in the locking-slot 42 by the rod 43, hanging from the free end of lever 44, pivoted to a fixed support at 45, and ranging over the pin 46, projecting from key-lever s , so that when said lever is connected with the scale-beam by the pin p and swings with it when raised by the person standing on platform a the key 41 is permitted to drop out of the slot of the locking-plate 35, which is thus released to allow the stop to be shifted from under the lever 10, which is effected by the spring 25 through the tension applied to it by the levers 27 and 29, the latter being actuated by the thrust-rod 14. The lifting apparatus is then in condition for use, and being so used by lifting on the handles 13 the intermediate lever 10^a, pivoted to a support at 10^b and connected to lever 10

by pin 10^c, pulls down the rod 47, which by its toothed part 48 turns the pinion 49 and shaft 50, carrying the pointer 51, which indicates the strength of the operator on the dial. The spring 48^a pulls the rack up again. When the operator releases his hold of the handles, the stop 20 immediately swings under the lever to lock it again.

It will be seen from the foregoing description that if the key-lever *s* should continue in connection with the scale-beam by the pin *p* the key 41 would remain down and the stop would not be locked, so that the lifting apparatus might be used by others indefinitely without paying another coin, provided the pin should not jar out and release said key-lever *s*. To prevent such repeated use, the elbow-lever 53, pivoted at 54, is provided with its short arm in range of the end of lever 10, and so that after said lever has moved a short distance and caused sufficient tension on spring 25 to shift stop 20 when released said elbow-lever 53 will be actuated by it. The end of the long arm of said lever bears against elbow-lever *n* in such direction that it will force said elbow-lever *n* back and withdraw pin *p*, so as to disconnect key-lever *s* from the scale-beam, which by assuming its normal position raises key 41 preparatory to securing the slotted locking-plate 35 and again locking the stop in its normal position.

It will be seen that in the further down movement of the lever 10 after being released by the stop 20 the arm 28 of the elbow-lever, actuated by lever 29 and the thrust-rod 14, presses lever 31 back forcibly, which thrusts the locking-plate back and permits the key 41 to rise into and lock it, and causes such tension on the spring 33 that it and a spring 54 to be used, if necessary, thrust the stop 20 back under the lever 10 the moment it rises to the upper end of said stop, and thus the stop cannot again be unlocked until a coin in the slot has again caused the connection of key-lever *s* and the scale-beam.

The measuring apparatus consists of a cap 75 to be brought down on the top of the head of the person standing on the scale-platform and means for causing the pointer 76 to rotate for indicating the height on the dial 7, said means being rendered available through the instrumentality of the scale-beam and the lever *s*, and will now be described. The cap 75 is suspended from the arm 78 of a rod 79, fitted to the supporting-bracket 80, which is attached to the slide 81, adapted to shift up and down freely on the rod 82, standing outside but close to the front of the case near one corner, which in this example is at the right hand. The rod 79 is adapted to swing in its bearings in said bracket, so that when not in use the cap and its supporting-arm will close against the side of the case to be more compact, and it has a spring 83 for so closing it and a handle 84 by which to swing it out into the position for use.

From the slide 81 there is a stud 85, pro-

jecting into a slot 86 in the front of the case, where it is connected to the endless cord 87, extending over the guide-pulleys 88 and around the drum 89, to which it is attached, so that one will be worked by the other, according as the power is applied, said drum being mounted on the sleeve 90, which carries the pointer 76 and having a weight 91 suspended from it by a cord 92, which returns the measuring-arm and pointer to the normal positions. An arm 93 is attached to the measuring-rod to swing into the slot 86 through a notch 94, which arm holds the rod 79 and measuring-cap 75 in the outward position for use and against the tendency of the spring to close them after being shifted below the notch. The drum 89 has an arm 95, with which the latch-bolt 96 engages to lock it and prevent the use of the measuring devices except when released through the instrumentality of key-lever *s*, when it is rendered operative by the coin-actuated lever. The said arm has a suitable slot 97, into which the end of the bolt is thrust by the spring 98 in the usual way of latch-bolts, when the arm returns to the normal position and forces the bolt back against the spring by striking its bevel side. The latch-bolt is arranged in the slideway 99 and is connected to the slide-bar 100 by the T-headed rod 77, fitted in its socket and slot so that it has sufficient play for thus engaging the arm; but when the slide-bar is pushed back it will withdraw the latch-bolt and release the arm of the drum. In the slot 101 of this slide-bar 100 is a push-spring 102, which when the slide-bar is released so withdraws the latch-bolt and releases the arm 95. The slide-bar is held against the spring 102 and the latch-bolt kept in the slot of the arm of the drum by the end of key-lever *s* dropping into the notch 103 of said bar when assuming its normal position. When said key-lever *s* is connected with the scale-beam by the pin and the lever is raised by the beam, said end of the lever is lifted out of the notch and the measuring apparatus released.

To force the slide-bar back against spring 102 for again locking the measuring apparatus, an arm 104 of a rock-shaft 105 is suitably arranged with the short arm of the scale-beam to be raised thereby when the long arm of the scale-beam falls, which forces another arm 106 of said rock-shaft against the end of the slide-bar 100 and pushes it to the position for receiving the end of key-lever *s* in its notch and for enabling the latch-bolt to secure the arm of the drum.

For the electric apparatus there is an induction-coil 107, which is connected with one of the poles of the battery 108 by the wire 109 through the circuit-breaking lever 110 and the spring-armature 111, and is also connected with the circuit-closing contact-piece 112 on the sliding bar 113, with which connection is made through contact-piece 116 with the knob 117 on the sliding rod 118. When said rod has been pulled out by the operator to a

certain extent, said coil is connected with the other pole of the battery by the wire 114 and with the knob 115, attached to the front of the case. When the rod 118 has been pulled out so that contact-pieces 116 and 112 touch and complete the circuit, the arm 119 on sliding rod 118 reaches the head of rod 120 of the movable core 121 of the induction-coil and draws it outward, so as to increase the power of the electric current as the operator may desire. The pull on the knob 117 is resisted by the plunger 122 in the cylinder 123, containing glycerine or other suitable liquid, through the instrumentality of the cord 124, attached to rod 118 and passing over pulleys 125 and attached to the slide 126, on which there is a toothed bar 127, that gears with the pinion 128 on the shaft of the wheel 129, that gears with the toothed rod 130 of the piston 122. This bar 127 has the inclined upper edge 131 and the bevel end 123 and rests on said pinion 128 and is kept in position thereon by the flanged rolls 133 and 134, the latter being supported in the spring-hangers 135, so that the bar 127 may rock on the pinion 128 when the incline 131 is forced under the roll 133. The slide 126 receives the coin from the spoon in the slotted receptacle 136 in front of the bevel end 132 of the toothed bar 127, so that the coin forms an abutment through which the said bar is forced forward by the moving slide, and thus the piston is forced down through the liquid in the cylinder, the valve 137 rising freely to allow it to descend. When the toothed bar 127 has thus been forced along so far that the contact-pieces 112 and 116 and the arm 119 and the head 120 have come together and have closed the circuit, or a little later, as when the current has been somewhat strengthened by the induced current, the bevel end of the toothed bar 127 escapes under the coin and is thus released from the pull of the slide, and at the same time the coin is thrust upward and discharged from the receptacle 136. A coiled spring 138, connected to the shaft of wheel 129, forces the piston 122 and toothed bar 127 back slowly, the movement being obstructed by the valve 137, which partly closes the passages for the escape of the liquid downward to retard the movement for a time, during which the operator may receive the electric current. When the toothed bar and the piston are returned to the normal position, the tappet 139 on the rod 130 lifts the circuit-breaking lever 110 and automatically breaks the circuit for the relief of the operator.

It will now be seen that the purpose of the arrangement whereby the knob 117 is pulled out a certain distance before closing the circuit is to set the automatic circuit-breaking piston so that the circuit will be broken at the proper time without dependence on the operator, who, under the influence of the current, might not have sufficient control of himself to shove back the knob and break the circuit by that means. The movable core 121

of the induction-coil has springs 140 to return it to the normal position, and the slide 126 is also provided with retracting-springs 141. The strength of the current as developed by the extent to which the movable core of the induction-coil is pulled out is indicated by the pointer 142 on the dial by means of the toothed rack 144, which is made to rotate said pointer by the pinion 145 on its shaft 146, said rack being actuated by the cord 147, attached to rod 113, so as to be pulled forward thereby and extending over suitable guide-pulleys 148. Spring 148^a returns the pointer to zero. It is to be noted that this part of the apparatus is rendered available to the operator by the coin falling into the receptacle 136 after it has effected the connection of lever *s* and the scale-beam for weighing, lifting, and measuring. The coin-tilting lever *t* is adapted for being operated by a coin of the size and weight of "nickel" half-dime, and the passage through which it escapes from the spoon is adapted for said coin. Said passage is also adapted to let a penny escape without tilting lever *t*, and a penny serves as well as a half-dime for effecting the operation of the electric machine, so that it may be used alone for that service. It will be seen that without the coin in the receptacle there can be no connection of the circuit through the lever 110, and consequently no electrical action.

For the musical part of the machine there is a vertical rod 149, having an arm 150 reaching under the lever 10 at such distance below it when in the normal position that after the stop 20 is withdrawn from under said lever said rod 149 is pulled down and made to raise a weight 151 through the rack 152 on the upper part of said rod, pinion 153, wheel 154, and the toothed rack 155, to the lower end of which said weight is attached. The wheel 155 gears with a pin-barrel 156 of a musical instrument by the pinion 157, pawl 158, and ratchet-wheel 159 in such manner that the pinion 157 turns idly on the shaft of the pin-barrel while the weight 151 is being raised by the wheel 154. The pinion 153 is coupled to the wheel 154 by a clutch 160, which, when rod 149 has descended so far as that it has raised the weight 151 to the required height, is disconnected by the arm 161 taking effect on the inclined part 162 of the clutch-shifter 163, pivoted at 164. The weight then descends slowly and actuates the music-barrel through the wheel 154, pinion 157, and the pawl and ratchet during its descent, at the end of which it comes to rest on the arm 165 of the clutch-shifter and stops the music and at the same time throws in the clutch again, ready for again raising the weight and working the music-barrel, when the lifting-lever is again released by the stop through the instrumentality of the lever *s* and the scale-beam.

In case it may not be desired to include the weight-indicating appliances with the rest of the machine the toothed rack and pointer,

coupled with the lever s therefor, may be omitted, as the lifting, measuring, and music devices are equally available through the instrumentality of the scale-platform, scale-beam, and said lever s, whether they have the weight-indicating functions or not, and it is to be understood that, while I designate these devices as "parts of a weighing-scale," it is immaterial for the said purposes, whether they are such parts of a scale or are only similar devices contrived for the said purposes only.

The clock is located in the small case 166 on the top of the main case, in which is seen the winding-shaft 167 on the spring-barrel 168. A cord 169 is wound on this shaft and extended downward around the guide-pulley 170 and connected to the lever 171, having a fulcrum at 172 and at its far end resting on the weight 151, so that when the weight is raised to set the music apparatus in motion the cord will turn the winding-shaft 167 and wind up the clock. When the weight falls, the loop of the cord falls slack below the pulley 170, and thus allows the clock to run free.

Certain features of the electric apparatus shown and described, but not claimed herein, are claimed in another application for a patent filed by me April 28, 1891, Serial No. 390,784.

I claim—

1. The combination, with the beam of a weighing-scale concealed in a case, of the key-lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, and the coin-receiving tilting lever for actuating said coupling-pin lever, said key-lever adapted to control the weighing, lifting, and other functions of the machine, substantially as described.

2. The combination, with the beam of a weighing-scale concealed in a case, of the key-lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, coin-receiving tilting lever for actuating said coupling-pin lever, and the pointer and toothed rack and pinion coupling said pointer and key-lever, substantially as described.

3. The combination, with the beam of a weighing-scale concealed in a case, of the key-lever mounted on a fixed pivot, the lever and pin coupling said key-lever and beam, coin-receiving tilting lever for actuating said coupling-pin lever, the lifting-lever and its opposing springs, the stop for said lever, the locking-plate for securing said stop, and the key for unlocking said stop, said key controlled by the key-lever, substantially as described.

4. The combination, with the beam of a weighing-scale concealed in a case, of the key-lever mounted on a fixed pivot, the lever and pin coupling said key-lever and beam, coin-receiving and tilting lever for actuating said coupling-pin lever, the lifting-lever and its opposing springs, the stop for said lever, the locking-plate for securing said stop, the key for unlocking said stop and controlled by the

key-lever, the pointer-shaft and pointer, and the pinion and toothed rack coupling said pointer-shaft and lifting-lever, substantially as described.

5. The combination, with the beam of a weighing-scale concealed in a case and the scale-platform exterior to said case, of the key-lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, coin-receiving and tilting lever for actuating said coupling-pin lever, the lifting-lever and its opposing springs, the pointer-shaft and pointer, and the pinion and toothed rack coupling said pointer-shaft and lifting-lever, substantially as described.

6. The combination, with the beam of a weighing-scale concealed in a case and the scale-platform exterior to said case, of the key-lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, coin-receiving tilting lever for actuating said coupling-pin lever, the lifting-lever and its opposing springs, the stop for said lever, locking-plate for the stop, locking-key for said plate, the lever suspending said key over the pin projecting from the key-lever, and the elbow-lever subject to the thrust of the lifting-lever for tripping the coupling-pin, substantially as described.

7. The combination, with the lifting-lever and its pivoted stop and thrust-rod, of the lever subject to the action of said thrust-rod, the elbow-lever on the fixed shaft, the lever connected to the stop and connected by the coiled spring to said elbow-lever, the locking-plate and lever actuated by one of the arms of said elbow-lever and thrusting against said locking-plate, the yoke connected to said locking-plate by the spring and connected with the lifting-lever stop, and the locking-key suspended from the lever controlled by the key-lever, substantially as described.

8. The combination, with the beam of a weighing-scale concealed in a case, of the key-lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, coin-receiving tilting lever for actuating said coupling-pin lever, the drum controlling the measuring-cap, the latch-bolt for locking said drum, and the notched slide-bar for reception of the key-lever for locking the latch-bolt, substantially as described.

9. The combination, with the beam of a weighing-scale concealed in a case, of the key-lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, coin-receiving tilting lever for actuating said coupling-lever, the drum controlling the measuring-cap, the latch-bolt for locking said drum, the notched slide-bar for reception of the key-lever for locking the latch-bolt, spring for unlocking the latch-bolt when released by the key-lever, and the rock-shaft and arms actuated by the short arm of the scale-beam for returning the latch-bolt to lock the drum, substantially as described.

10. The combination, with the beam of a

weighing-scale concealed in a case, of the key lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, coin-receiving tilting lever for actuating said
 5 coupling-pin lever, the drum controlling the measuring-cap, the latch-bolt for locking said drum, the notched slide-bar for reception of the key-lever for locking the latch-bolt, the vertically-sliding measuring-cap coupled with
 10 the drum by the endless cord, the retracting-weight suspended from the drum, and the pointer attached to the axis of the drum, substantially as described.

11. The combination, with the beam of a
 15 weighing-scale concealed in a case, of the key-lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, coin-receiving and tilting lever for actuating said coupling-pin lever, the drum controlling
 20 the measuring-cap, the latch-bolt for locking said drum, the notched slide-bar for reception of the key-lever for locking the latch-bolt, the vertical sliding bracket carrying the measuring-cap coupled by the arm extending
 25 through the slot in the case with the endless cord connected to the drum, the staff supporting the measuring-cap, mounted to rotate in the sliding bracket, and the spring for retaining said cap against the side of the case,
 30 substantially as described.

12. The combination, with the beam of a weighing-scale concealed in a case, of the key-lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, the
 35 coin-receiving and tilting lever for actuating said coupling-pin lever, lifting-lever, stop, locking-plate for said stop, locking-key controlled by the key-lever, and the music-barrel train coupled by the toothed rack and
 40 pinion, with the lifting-lever for setting said music-barrel train for operation by the lifting-lever when relieved of the stop, substantially as described.

13. The combination, with the beam of a
 45 weighing-scale concealed in a case, of the key-lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, the coin-receiving and tilting lever for actuating said coupling-pin lever, lifting-lever, stop,
 50 locking-plate for said stop, locking-key controlled by the key-lever, music-barrel train coupled by the toothed rack and pinion with the lifting-lever, the clutch coupling said pinion with the music-barrel-driving shaft, clutch-shifting lever connected with the toothed rack
 55 for disconnecting the clutch, the weighted rack geared with the music driving-wheel, and the arm of the clutch-lever subject to the weighted rack for connecting the clutch, substantially as described.
 60

14. The combination, with the beam of a weighing-scale concealed in a case, of the key-lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, the
 65 coin receiving and tilting lever for actuating

coupling-pin lever, lifting-lever, stop, locking-plate for said stop, locking-key controlled by said key-lever, music-barrel train coupled by the toothed rack and pinion with the lifting-lever, clutch coupling said pinion with the
 70 music-barrel-driving shaft, clutch-shifting lever connected with the toothed rack for disconnecting the clutch, the weighted rack geared with the music-driving wheel, clock located in the top of the case, cord coiled on
 75 the clock-winding shaft, the winding-cord-actuating lever coupled with the weighted music-barrel-driving rack, and the guide-pulley for the cord, said cord looped under said guide-pulley and connected to said lever,
 80 substantially as described.

15. The combined coin-actuated weighing and electric machine having the coin-receiving tilting lever, in combination with the scale-beam, key-lever, and lever and pin for
 85 coupling said key-lever and beam, and also with the coin-receptacle of the electric machine, in which said coin, having first established operative connection of the weighing-machine, then forms an operative part of said
 90 electric machine and prepares it for use subsequent to the use of the weighing-machine, substantially as described.

16. The combined coin-actuated weighing and electric machine having the coin-receiving
 95 tilting lever, in combination with the scale-beam, key-lever, and lever and pin for coupling said key-lever and beam, and also with the coin-receptacle of the electric machine, in which the coin forms an operative
 100 part of said machine and prepares it for use, said coin-receiving tilting lever adapted while in its normal position for admitting to the coin-receptacle of the electric machine coins of smaller size and lighter weight than such
 105 as have the power of operating it, and thus permitting the use of the electric machine independently of the weighing-machine, substantially as described.

17. The combined coin-actuated weighing
 110 and lifting machine having the key-lever, coin receiving tilting lever, and lever and pin for coupling said key-lever and beam by the said coin receiving and tilting lever, also the devices with which through the instrumen-
 115 tality of said key-lever said lifting and weighing mechanisms are each respectively operative for each operation of the coin-receiving tilting lever and are inoperative independently of said tilting lever, substantially as de-
 120 scribed.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 4th day of October, 1890.

AUGUST SUNDH.

Witnesses:

OTTO JAEGER,
 FRED. GRIEDER.