

(No Model.)

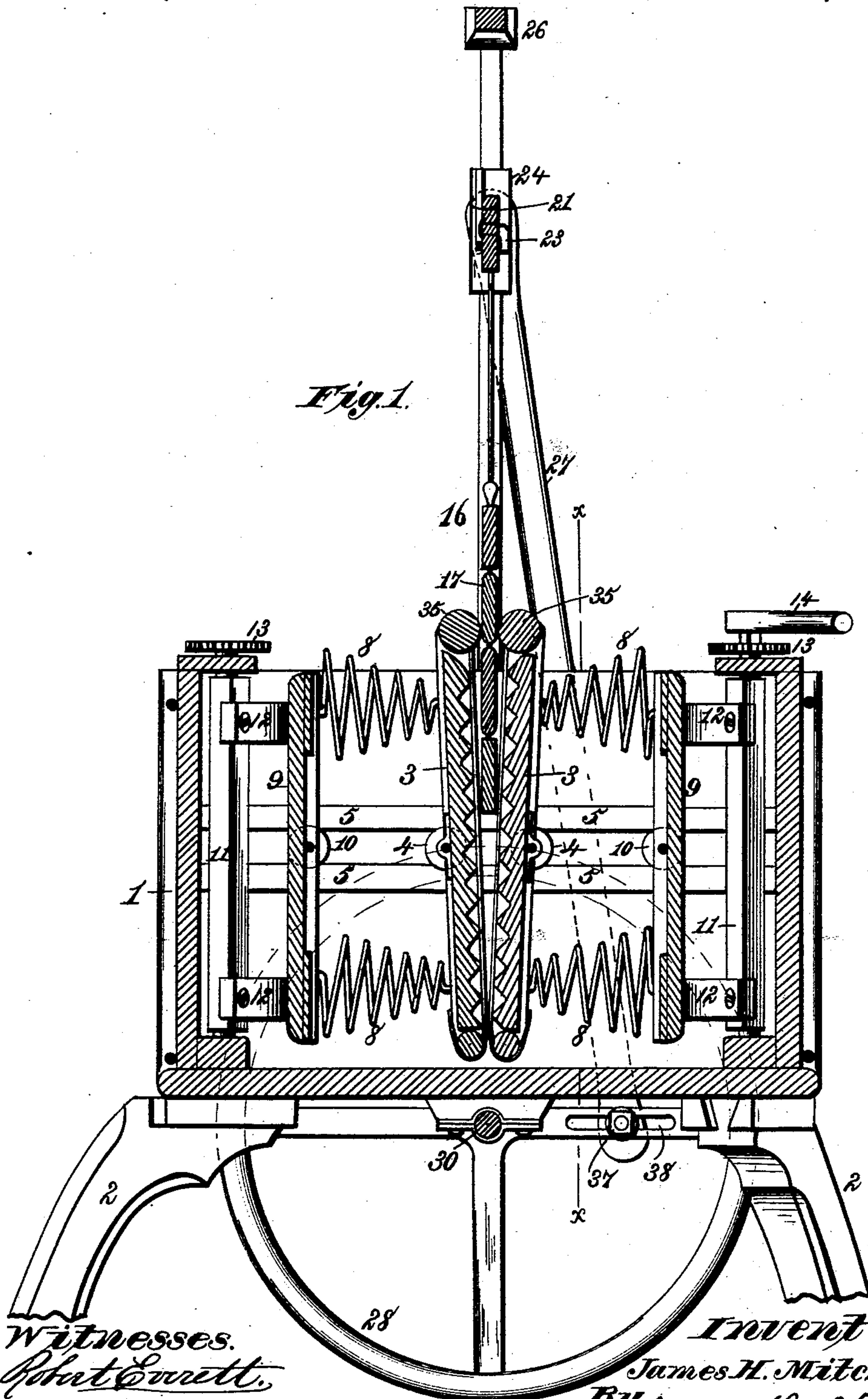
3 Sheets—Sheet 1.

J. H. MITCHELL.

WASHING MACHINE.

No. 339,004.

Patented Mar. 30, 1886.



Witnesses.

Robert Everett.

Vinton Gomb

Inventor.

James H. Mitchell.

By James L. Norris.  
Atty.

(No Model.)

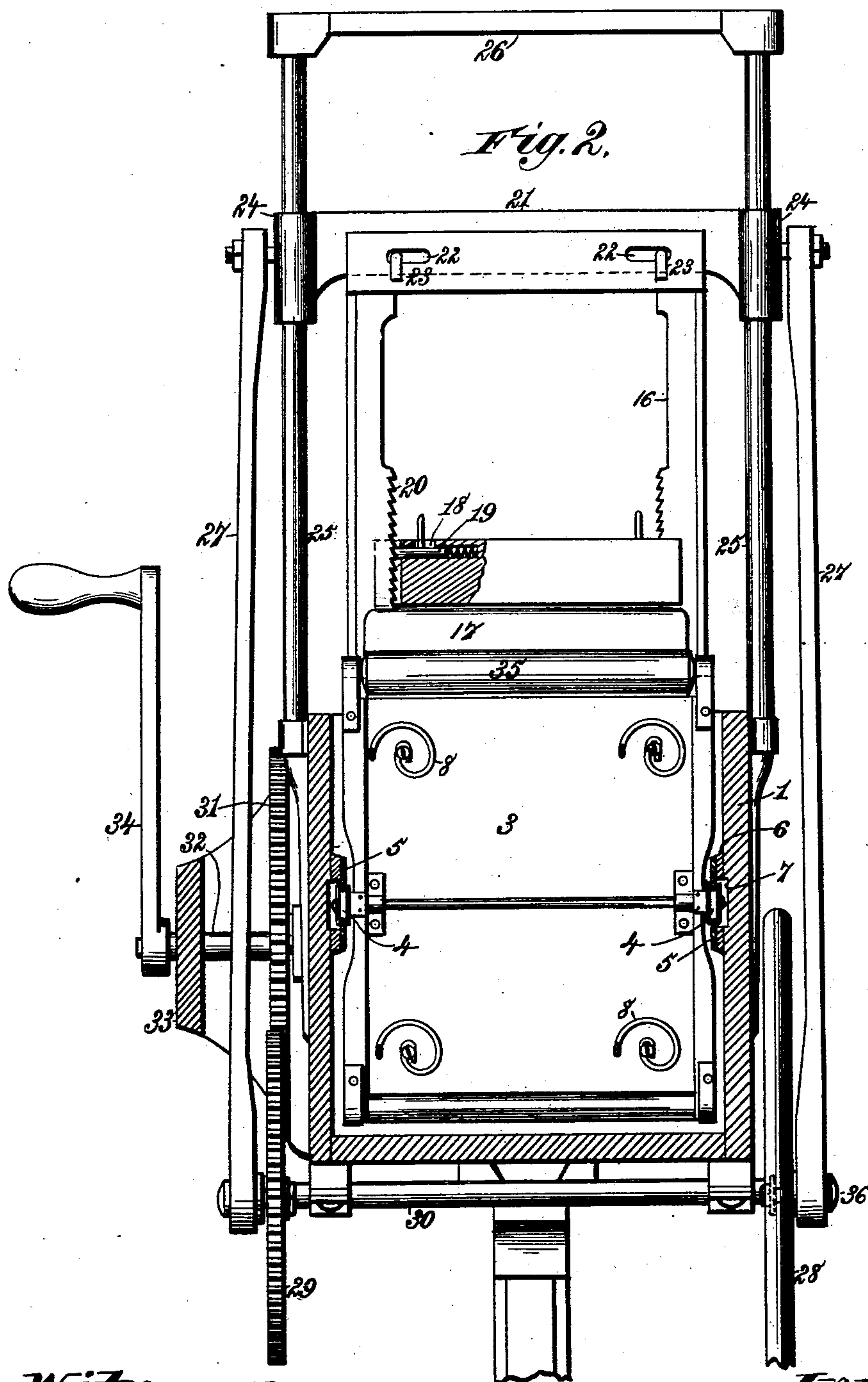
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Inventor.  
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3 Sheets—Sheet 3.

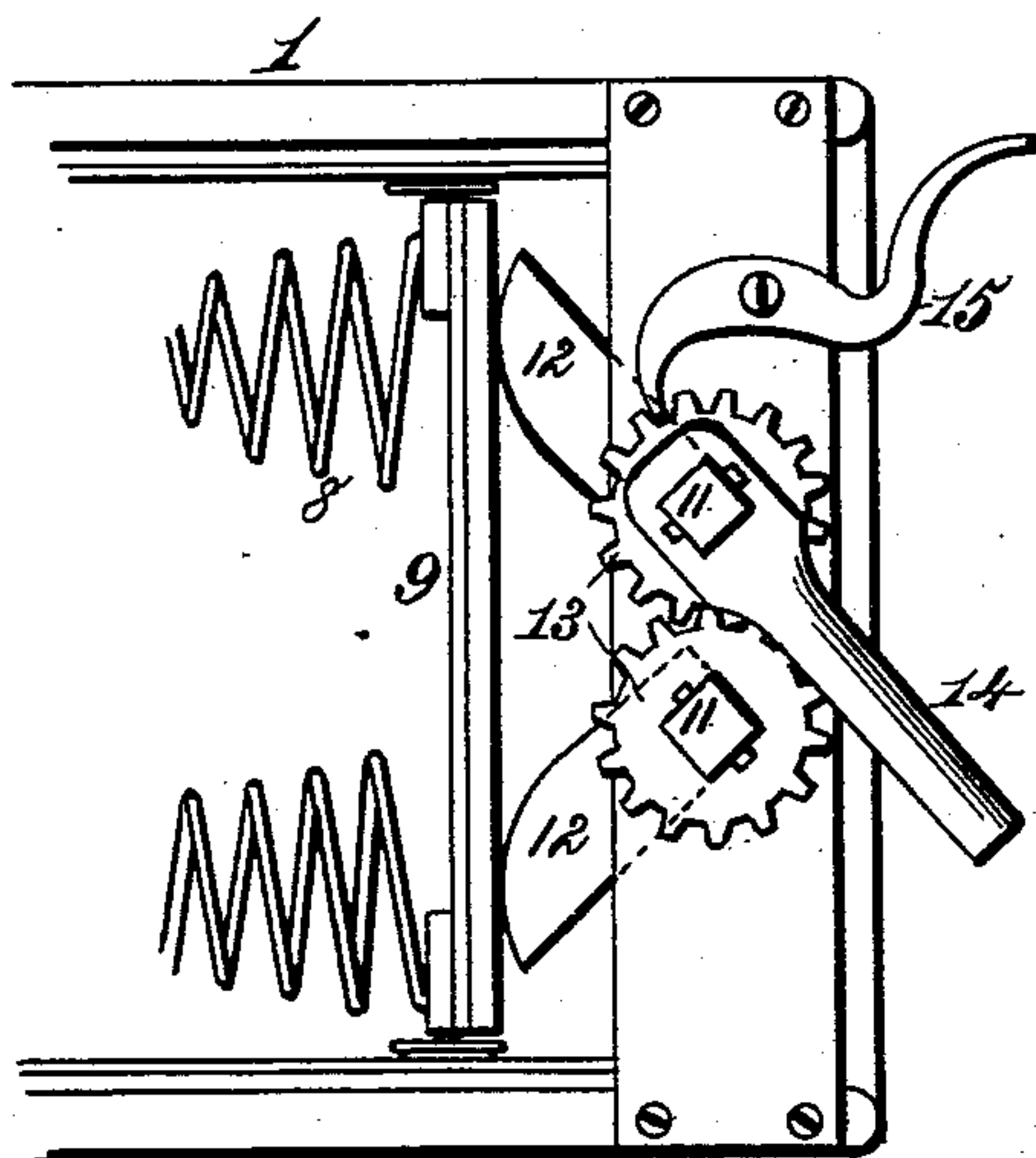
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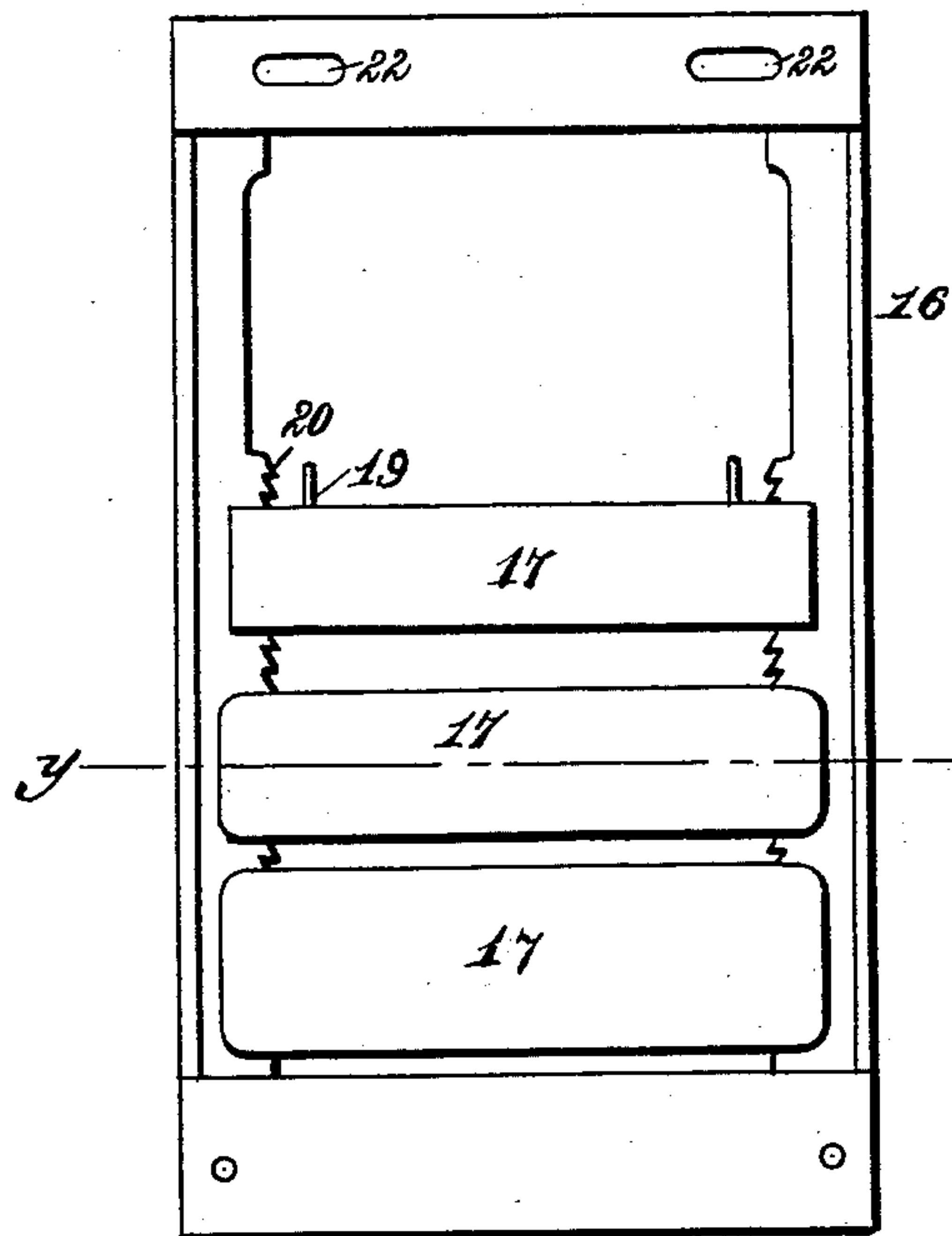
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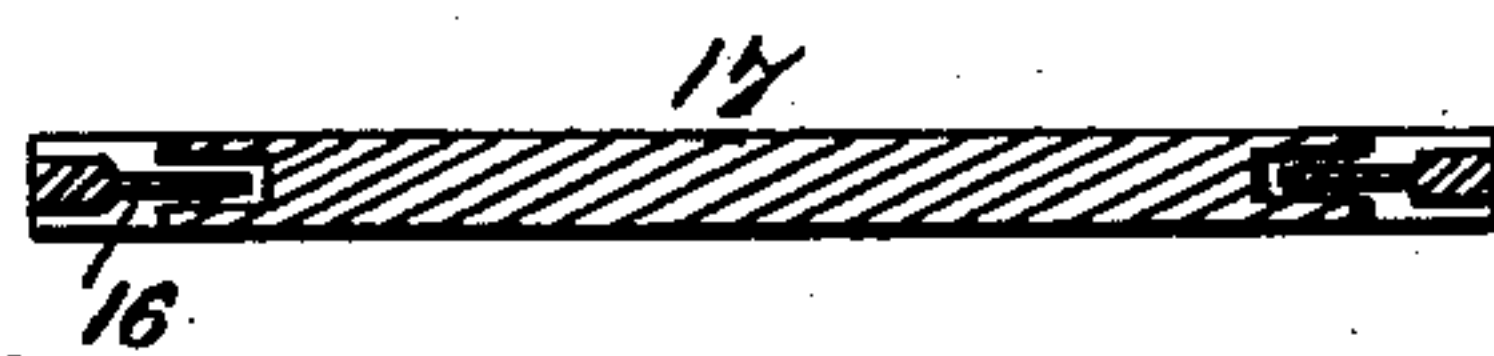
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



Witnesses.

*Robert Smith*

*Vinton Coombs*

Inventor.

*James H. Mitchell*

By

*James L. Norris*

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# UNITED STATES PATENT OFFICE.

JAMES H. MITCHELL, OF SEWALL'S STATION, WEST VIRGINIA.

## WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 339,004, dated March 30, 1886.

Application filed September 12, 1885. Serial No. 176,953. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES H. MITCHELL, a citizen of the United States, residing at Sewall's Station, in the county of Fayette and State of West Virginia, have invented new and useful Improvements in Washing-Machines, of which the following is a specification.

My invention relates to a washing-machine in which the garments to be cleansed are secured in a vertical reciprocating sash arranged between two yielding wash-boards or rubbers that are each supported at or about its center in a suitable tub or box, each of said wash-boards being connected by springs at top and bottom to a horizontally-adjustable rest-board that can be adjusted and secured as desired to regulate the degree of pressure to be exerted by the wash-boards or rubbers.

This invention consists in the novel construction and combination of devices hereinafter described and claimed.

In the annexed drawings illustrating the invention, Figure 1 is a vertical longitudinal section of a washing-machine embodying my improvements. Fig. 2 is a vertical transverse section on the line *xx* of Fig. 1. Fig. 3 is a plan view of one end of the machine, showing one of the rest-boards or spring-supports adjusted outward. Fig. 4 is a view of the sectional sash or clothes-holder. Fig. 5 is a transverse section on the line *yy* of Fig. 4.

Referring to these drawings, the numeral 1 designates a tub or box, preferably rectangular in form and supported on legs 2, as usual.

The vibrating rubbers or wash-boards 3 are made with solid backs of wood or other material and have their faces formed with a corrugated rubbing-surface, preferably of zinc. These wash-boards 3 do not extend quite to the bottom of the tub. Each wash-board is provided on its side edges at or about the center with a grooved pulley or roller, 4, that engages the flanged ways 5 on the inner sides of the tub. These flanged ways consist of brass strips secured in a horizontal position to cleats 6, that are fastened to the sides of the tub, the walls of which may, if desired, be grooved at 7, between said cleats, to afford room for the pulleys or rollers 4, without en-

croaching too much on the space occupied by the wash-boards or rubbers.

It will be seen that by means of the grooved rollers 4 and flanged ways 5 the wash-boards or rubbers are pivotally supported at or about the center, and opposite to each other, in such a manner as to be capable of a back-and-forth or vibratory movement on their pivotal roller-supports.

To the back of each wash-board, at top and bottom, are secured two spiral springs, 8, each wash-board being thus provided with four spring-bearings. The other ends of these springs are fastened to what I term "rest-boards" 9, one of which is arranged vertically in each end of the tub, to afford an adjustable support for the springs and connected wash-boards or rubbers, whereby the pressure to be exerted on the clothes can be controlled at pleasure, and in such a manner as to save them from injury. Each rest-board or adjustable support 9 is provided on each edge at or about the center with a grooved pulley or roller, 10, similar to those with which the wash-boards are provided. These grooved rollers 10 engage with the flanged ways 5 at or toward their ends.

In each end of the tub, box, or casing 1 are journaled a pair of vertical shafts, 11, each of which carries at top and bottom a horizontally-projecting arm, 12. The ends of these arms 12 are rounded or curved on one side, as shown in Fig. 3, so as to move easily in contact with the rear side of the adjacent rest-board 9, and bear thereon with gradually increasing or diminishing pressure as the shafts 11 are turned in either direction, as the case may be. The upper journals of the shafts 11 are provided with intermeshing gears 13, and one of said journals projects a little above the other one and carries a horizontally-movable hand-lever, 14, by which the connected gears 13, shafts 11, and pressure-arms 12 are actuated.

To the top of the tub or box 1 is attached a pawl, 15, or other suitable catch, for engaging one of the gears 13, and so holding the rest-board 9 in the position to which it may have been adjusted by the pressure of the arm 12 at its back. It will therefore be seen that by turning the levers 14 to the right or left, as required, so as to actuate the gears 13,



shafts 11, and arms 12, the rest-boards 9 can be moved forward against the tension of the springs 8, or allowed to recede under their pressure until in either case the said rest-boards are brought into the required position, where they can be secured by the engagement of the gears 13 with their catches. By means of the movable supports or rest-boards 9 the tension of the springs 8 can thus be readily controlled, so as to regulate the pressure of the vibratory rubbers or wash-boards 3, as may be necessary according to the quantity of clothes placed in the machine or the degree of friction required to effect their cleansing.

By supporting the vibratory wash-boards 3 and horizontally-movable rest-boards 9 at or about the center on grooved rollers moving on flanged ways in the sides of the tub or box, great facility of adjustment is afforded with necessary ease of movement in the various parts during the operation of the machine.

The articles to be washed are securely supported in a sectional clothes holder or sash, 16, that is vertically reciprocated between the vibratory rubbers or wash-boards. The clothes holder or sash 16 consists of an oblong rectangular frame composed of wood or metal, or partly of each. This sash is provided with a series of horizontal slats, 17, between which the clothing is held. The lower slat or cross-bar is fixed, and forms an integral part of the sash-frame. Above this fixed slat or cross-bar are several vertically-movable slats, preferably three, as that number is sufficient to securely hold a quantity of clothing corresponding to the capacity of an ordinary-sized machine. These movable slats 17 are slotted, grooved, or bifurcated at their ends to engage the vertical side bars of the shaft on which they move. The upper movable slat 17 is provided at each end with a vertical slot or recess, 18, inclosing a spring-pawl or catch, 19, for engaging ratchet-teeth 20, formed on the inner edges of the vertical sides of the sash.

The articles of clothing to be washed are folded, if necessary, to a suitable size and placed between the several slats or sections 17, the upper slat being then let down and secured by the engagement of its catches 19 with the ratchet-teeth 20 in the sides of the sash, thus firmly clamping the articles placed between the several slats.

Before placing the articles of clothing in the clothes holder or sash they may be soaked for a while in water, and soap may be applied, if desired, the articles being then folded to a suitable form, according to the width of the sash, and placed therein one by one and separated by the several slats, as shown, the whole being clamped by lowering and securing the upper slat.

The sash 16 is detachably connected to a cross-bar, 21, by means of slots 22 in the upper end of said sash, engaging turn-buckles 23 on one side of said cross-bar. This cross-bar 21 carries at each end a vertical guide-sleeve, 24, that moves on a vertical guide-rod, 25,

secured to either side of the machine, said guide-rods being connected at the top by a cross-bar, 26, by which said rods are braced.

To the outer ends of the movable cross-bar 21 are pivoted the upper ends of the pitmen or connecting-rods 27, by which said bar and connected sash are actuated. One of these connecting-rods is pivoted at its lower end to a fly-wheel, 28, on one side of the machine, while the lower end of the other connecting-rod is pivotally attached to a gear-wheel, 29, on the opposite side of the machine, and mounted on the same shaft, 30, that carries the fly-wheel, said shaft being journaled in bearings beneath the tub. The gear-wheel 29 meshes with a gear-wheel, 31, on a crank-shaft, 32, that is partly journaled in one side of the machine and partly in a bearing-frame, 33, projecting therefrom. By turning the crank-handle 34 the gears 29 31, shaft 30, fly-wheel 28, and connecting-rods 27 will be actuated, so as to impart a vertical reciprocating movement to the cross-bar 21 and attached sash or clothes-holder 16, which is thus caused to move up and down between the yielding rubbers or wash-boards 3 and communicate a vibratory movement thereto.

At the top of each wash-board is mounted an entering-roller, 35, that rotates in contact with the reciprocating sash, from which said rollers receive motion, the rollers thus serving to diminish friction at the point of entrance between the wash-boards and allow the clothes to pass between the boards without liability of catching at top.

It will be observed that the respective pitmen 27 are pivoted to the fly-wheel 28 and gear 29 by an adjustable connection, which consists of a crank-pin, 36, that is held by means of a screw-nut, 37, in a slot, 38, formed in one of the spokes of said wheels or at other convenient point. This manner of connecting the pitmen to their actuating wheels or gears enables said pitmen to be adjusted according to the length of stroke required.

It will be observed that as the clothes holder or sash 16 reciprocates between the yielding wash-boards 3, the latter are vibrated from end to end with an opening and closing movement alternately at top and bottom. This results from the arrangement of the springs 8 at the top and bottom, giving four distinct yielding points of bearing to each board or rubber, and enables the clothing to be thoroughly cleansed without injury, as there is no liability of it becoming pinched or caught between the rubbing-surfaces and thereby torn.

The manner in which the wash-boards or rubbers are mounted on grooved rollers, so as to have a yielding movement under the action of their springs, enables the boards to readily adjust themselves to the varying bulk of clothing carried by the sash, while the facilities for adjusting the springs, as described, allows the operation of the machine to be controlled with varying degrees of pressure, as may be required.



The tub or box in which the wash-boards or rubbers are placed being partly filled with water when the machine is in use, it is obvious that the clothing to be washed need not be previously wetted, the action of the machine serving to thoroughly distribute the water and suds through the clothing with the effect of completely cleansing even the finest and most complicated portions of garments without wear or other injury.

What I claim as my invention is—

1. The combination, in a washing-machine, of a tub or box having its sides provided with interior guideways, a pair of vibratory yielding wash-boards or rubbers each provided at their ends with central rollers supported by and movable along the guideways, and a vertically-reciprocating clothes-holder between said wash-boards or rubbers, substantially as described.

2. The combination, in a washing-machine, of a tub or box having its sides provided with interior guideways, a pair of vibratory wash-boards or rubbers each provided at their ends with central rollers supported by and movable along the guideways, an adjustable rest-board arranged behind each wash-board or rubber, springs bearing against the rest-boards and against the rubbers above and below their end roller-supports, and a vertically-reciprocating clothes-holder between the rubbers, substantially as described.

3. The combination, in a washing-machine, of a tub or box, a pair of yielding rubbers therein, a vertically-reciprocating sash-frame between the rubbers having a rack at each side, and a series of slats carried by the sash-frame, the upper slat having spring-pawls at

its ends which engage the racks, substantially as described.

4. In a washing-machine, the combination of a tub or box, yielding wash-boards or rubbers centrally supported therein, vertical rest-boards adjustably supported in each end of said box, springs for connecting said wash-boards and rest-boards, vertical shafts journaled in the ends of the box and provided with arms 12 and gears 13, the lever 14, catch 15, and a vertically-reciprocating clothes-holder, substantially as described.

5. In a washing-machine, the combination of a tub or box having flanged ways 5, wash-boards or rubbers 3, centrally supported in said tub or box and having grooved rollers 4, engaged with said flanged ways, the rest-boards 9, having grooved rollers 10, also engaged with the flanged ways, the springs 8, reciprocating clothes-holder 16, means for adjusting the rest-boards 9, and means for actuating the clothes-holder, substantially as described.

6. In a washing-machine, the combination of the box 1, having vertical guide-rods 25, the cross-bar 21, movable on said rods, the adjustable pitmen 27, fly-wheel 28, gear 29, and actuating mechanism, the reciprocating sash or clothes-holder detachably connected to the bar 21, and the yielding wash-boards 3, centrally mounted in the tub, substantially as described.

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

JAMES H. MITCHELL.

Witnesses:

JAMES L. NORRIS,

J. A. RUTHERFORD.