

No. 710,258.

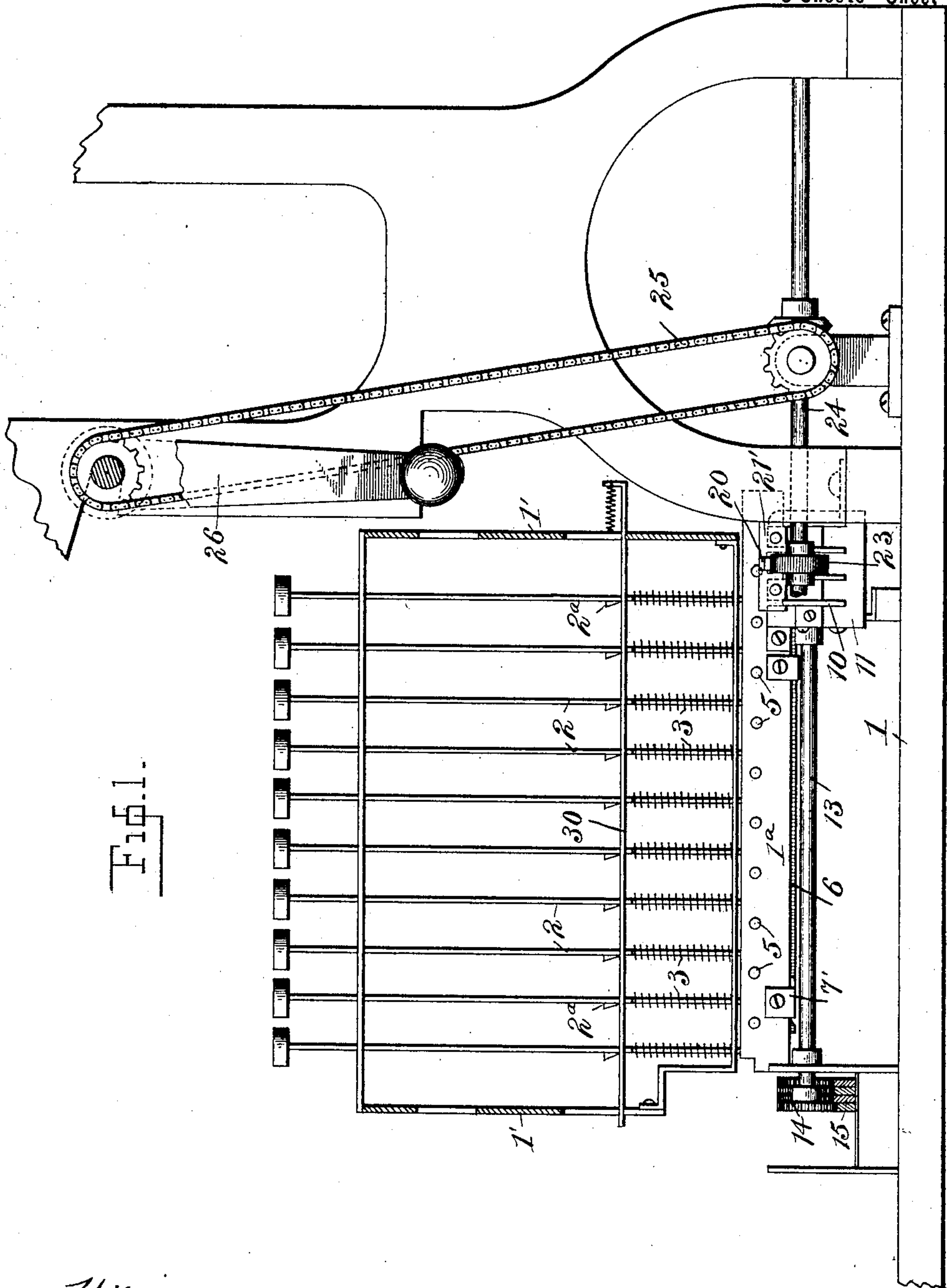
Patented Sept. 30, 1902.

I. S. DEMENT & F. J. HULL.
KEYBOARD MECHANISM FOR CASH REGISTERS.

(Application filed Sept. 20, 1901.)

(No Model.)

6 Sheets—Sheet 1.



Witnesses.
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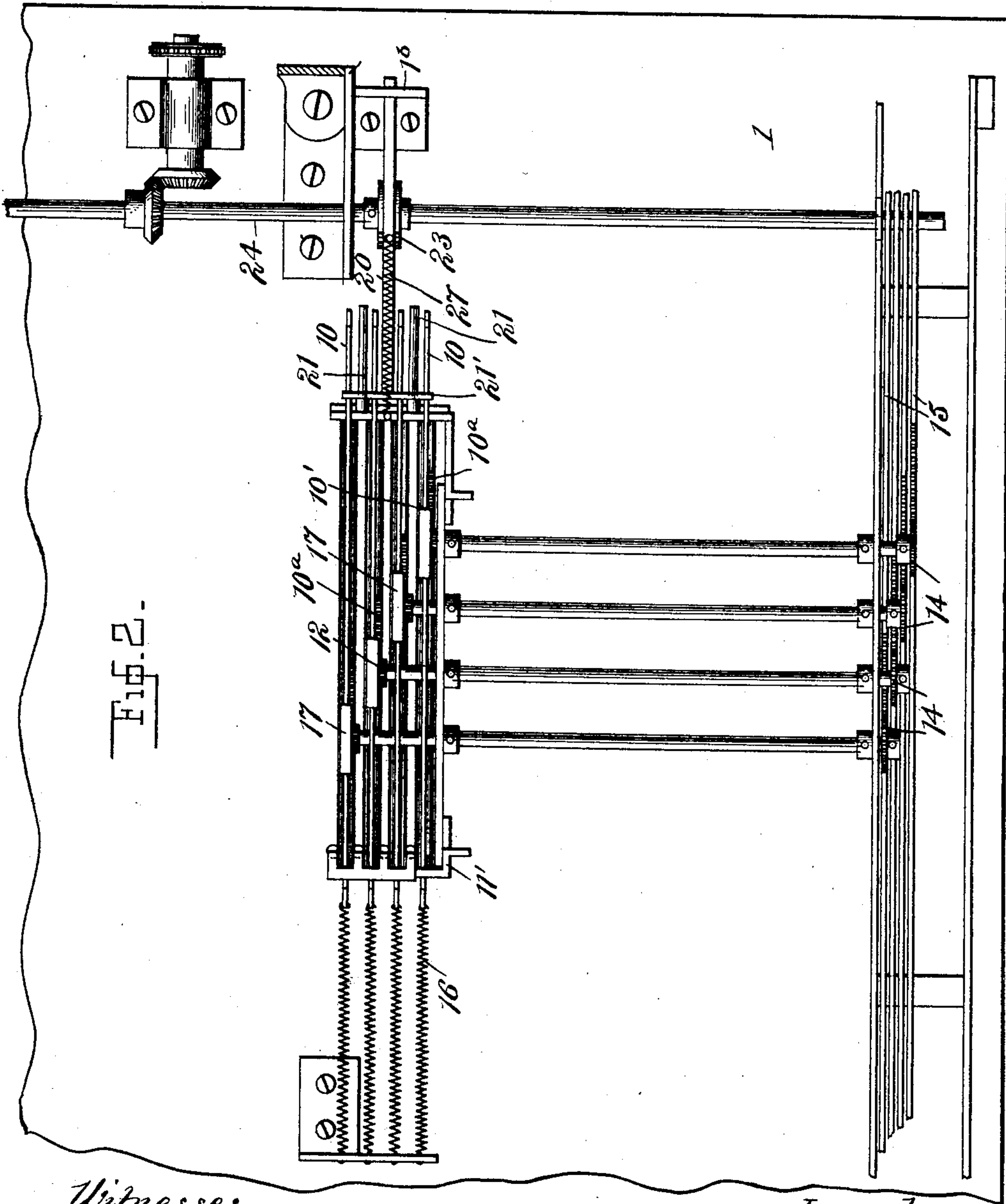


Fig. 2.

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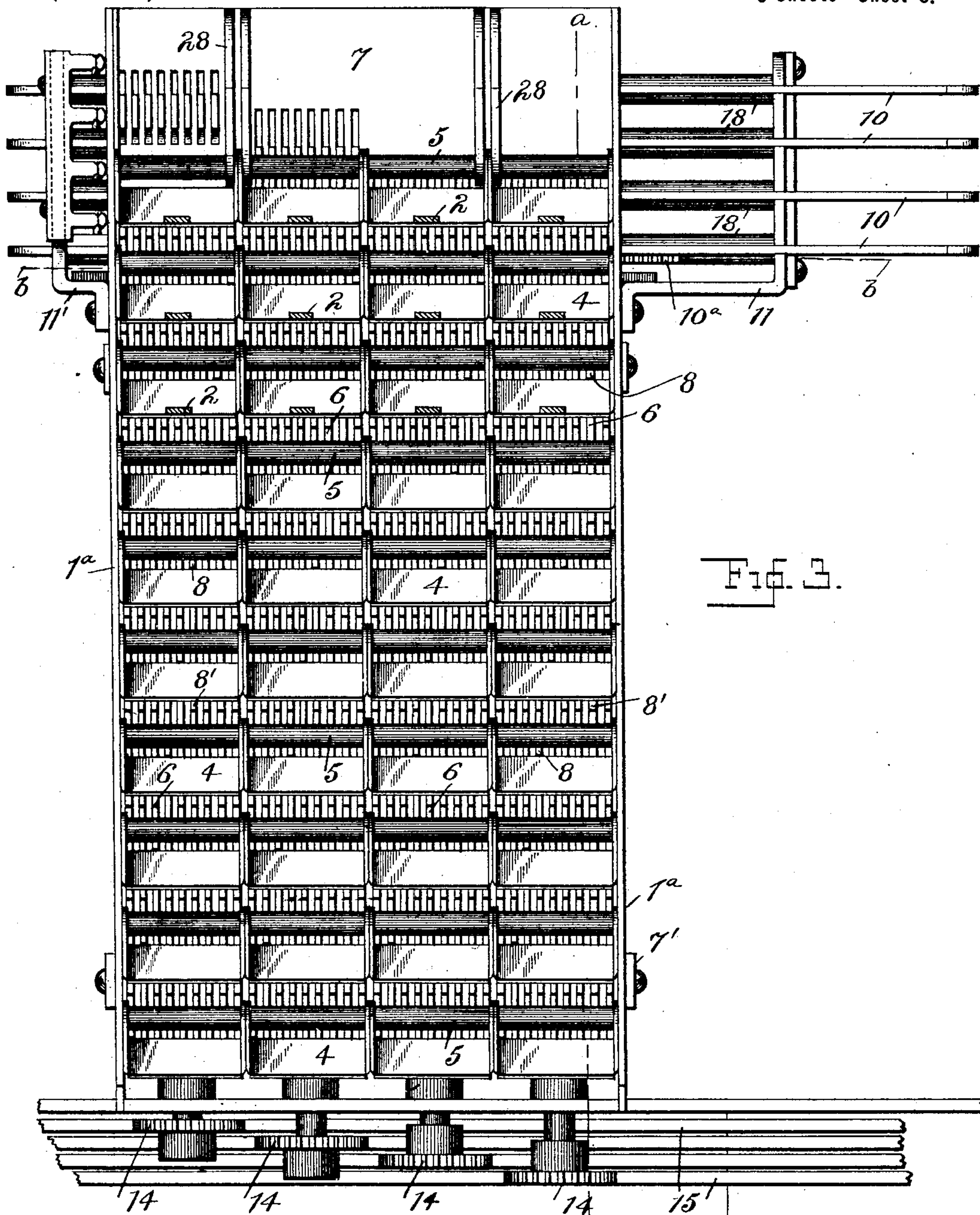


Fig. 3.

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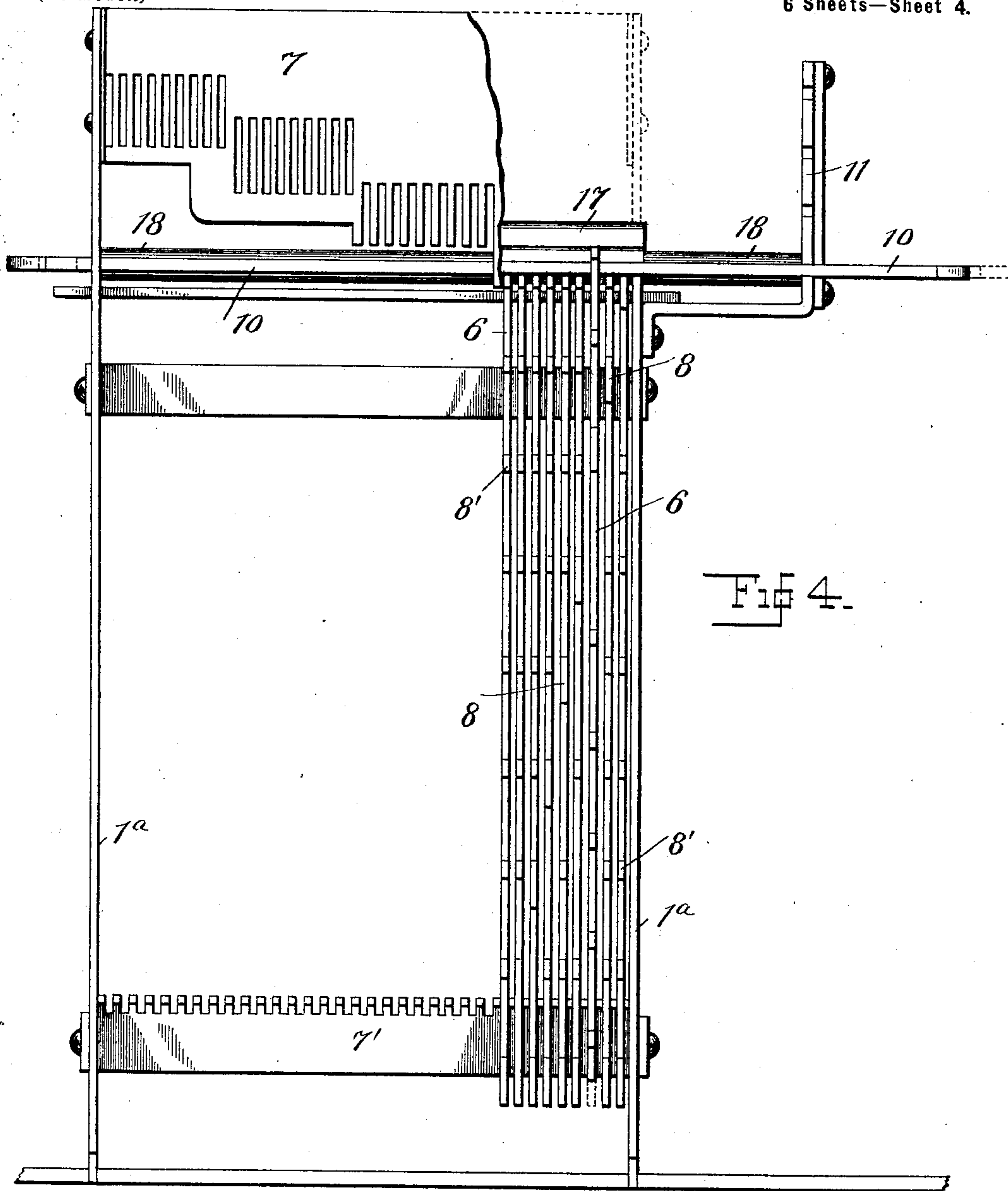
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6 Sheets—Sheet 4.



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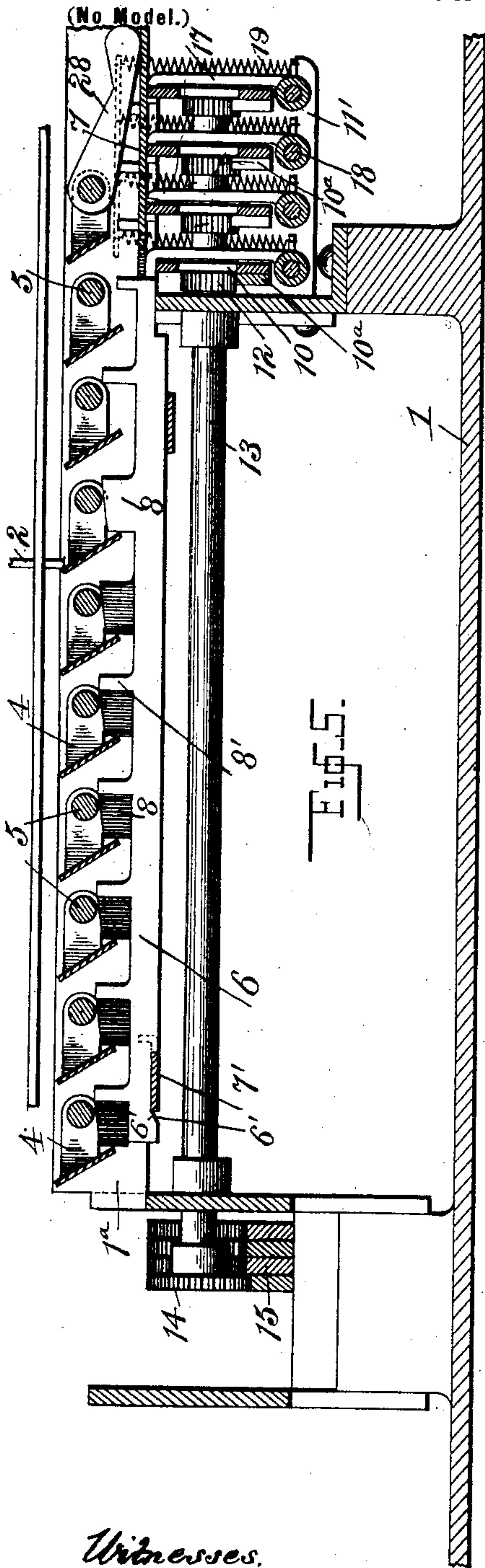
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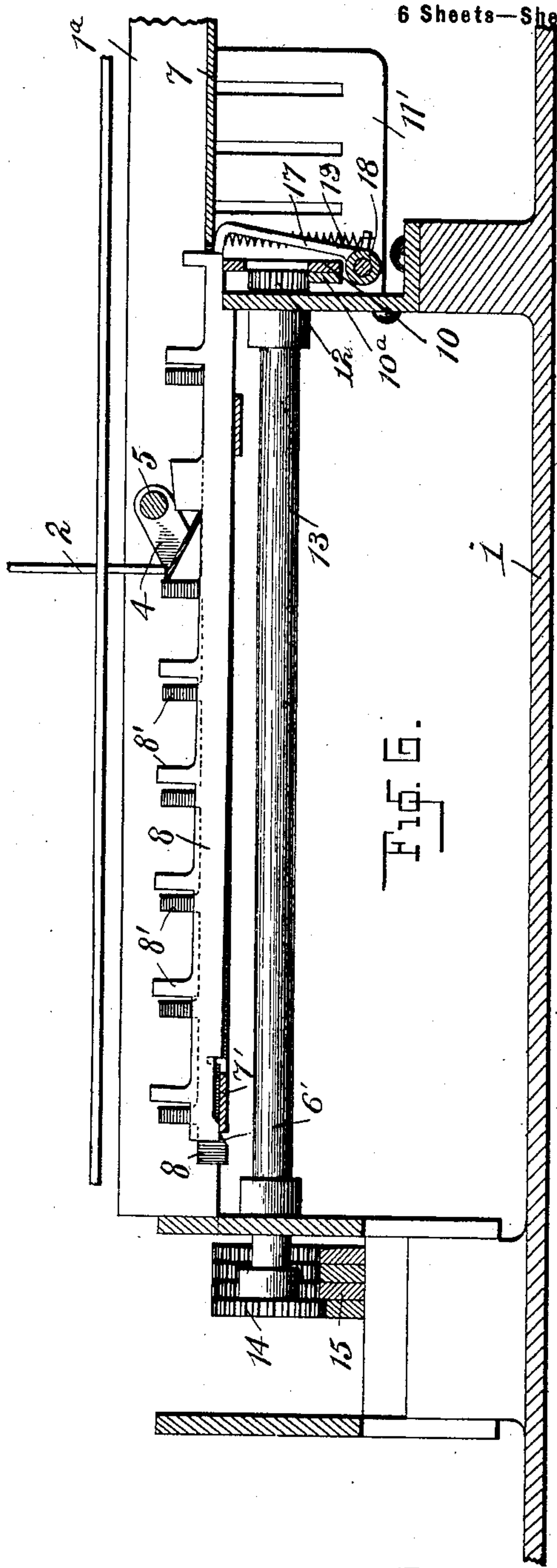
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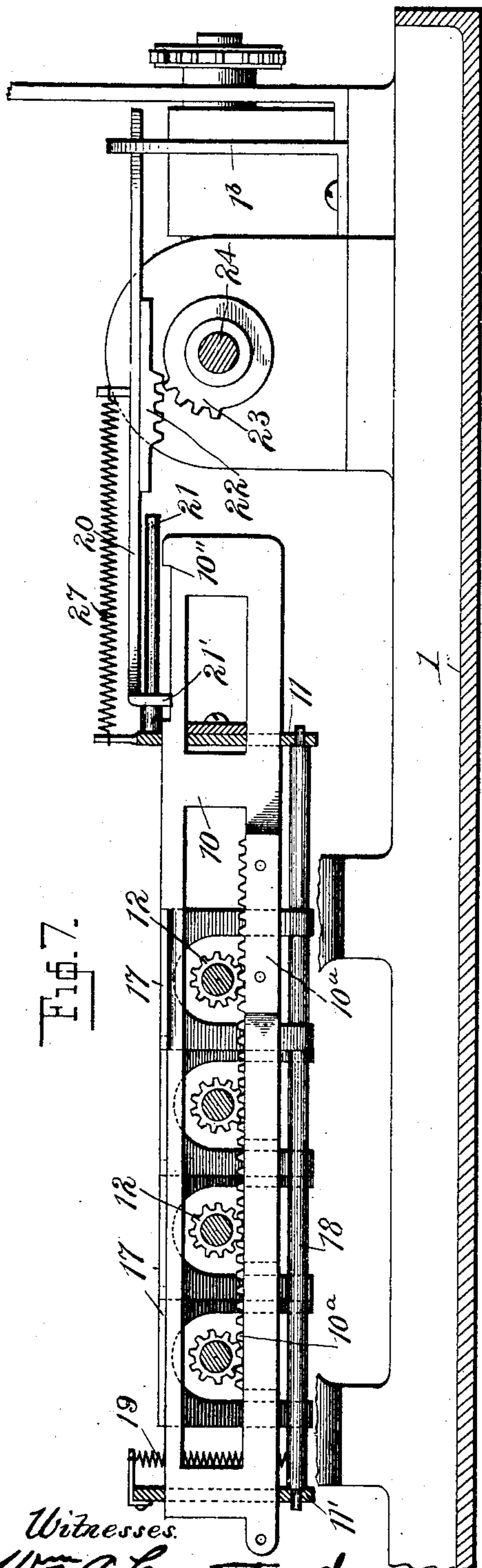
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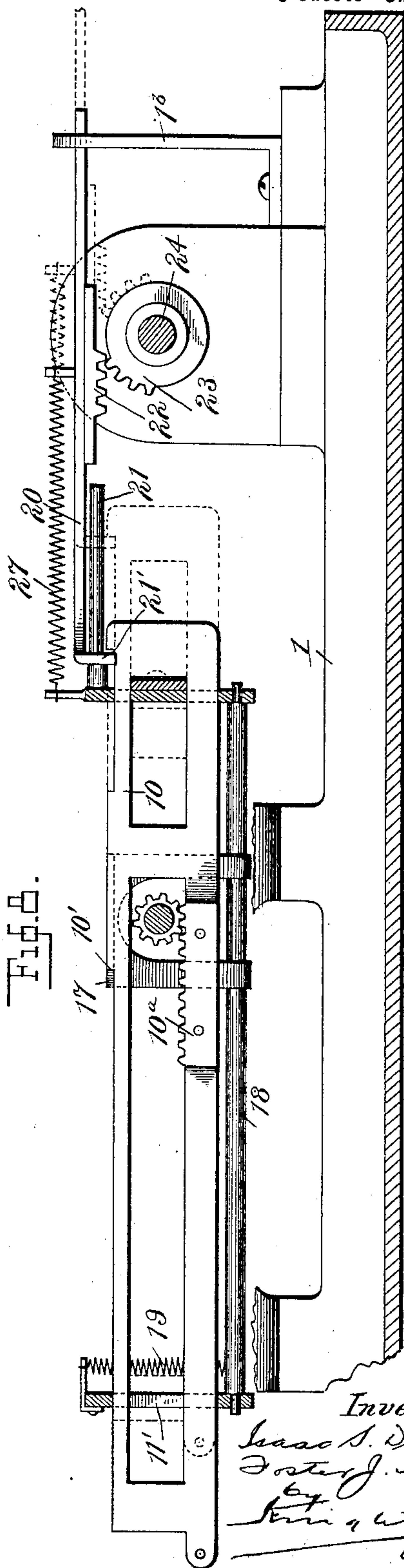
6 Sheets—Sheet 6.

Fig. 7.



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Fig. 8.



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UNITED STATES PATENT OFFICE.

ISAAC S. DEMENT, OF EAST ORANGE, NEW JERSEY, AND FOSTER J. HULL, OF BROOKLYN, NEW YORK, ASSIGNORS, BY MESNE ASSIGNMENTS, TO AMERICAN MECHANICAL CASHIER COMPANY, A CORPORATION OF NEW JERSEY.

KEYBOARD MECHANISM FOR CASH-REGISTERS.

SPECIFICATION forming part of Letters Patent No. 710,258, dated September 30, 1902.

Application filed September 20, 1901. Serial No. 75,948. (No model.)

To all whom it may concern:

Be it known that we, ISAAC S. DEMENT, residing at East Orange, in the county of Essex, State of New Jersey, and FOSTER J. HULL, residing at Brooklyn, in the county of Kings, State of New York, citizens of the United States, have invented certain new and useful Improvements in Keyboard Mechanism for Cash Registers and Recorders and Mechanical Cashiers, of which the following is a specification.

This invention relates to improvements in keyboard mechanism for cash registers and recorders and mechanical cashiers; and its object is to control the operation of such apparatus by selecting devices having a linear movement as distinguished from a rotary movement and to provide for locking of the keyboard mechanism in a simple and efficient manner.

The keyboard mechanism which forms the subject of the present invention comprises a plurality of groups of keys, a plurality of groups of selecting-slides, means whereby the operation of any key will operate the corresponding slide and will lock all the other slides of that group, and a plurality of controller-slides, each controlling one of the elements of the recorder or register and each cooperating with a group of the selecting-slides to control the extent of movement of such register and recorder element. In the case of a mechanical cashier each of the keys operates to control the cash-delivery mechanism, and the locking devices above described serve to lock the unoperated keys of the corresponding group, and therefore prevent improper operation of the cashier.

In the accompanying drawings, Figure 1 is a side elevation of the mechanism embodying our invention with some parts broken away and others shown in section. Fig. 2 is a plan view of the mechanism with the keyboard and selecting devices removed, showing the devices which directly control the operation of the register or recorder. Fig. 3 is a plan view of the selecting devices and the tumblers whereby they are actuated by the keys. Fig. 4 is a plan view of a portion of the selecting

devices, the actuating and locking tumblers being omitted. Fig. 5 is a section on the line *a a* in Fig. 3, showing the cooperation of the tumblers and selecting-slides. Fig. 6 is a view similar to Fig. 5, showing the operative position of a single train of key mechanism comprising a key, tumbler, selecting-slide, and controller-slide. Fig. 7 is a section on the line *b b* in Fig. 3, showing the controller-slides and their resetting devices. Fig. 8 is a view similar to Fig. 7, but showing the controller-slides in operated position.

The various parts of the mechanism are mounted on suitable frame-plates on a base 1 and are inclosed by a casing. (Not shown.)

The keyboard comprises the keys 2, sliding in guiding and supporting frame 1' and normally held up by springs 3. Beneath each key is pivoted a rocking tumbler-plate 4, these tumblers or rocking plates 4 being strung on pivot-shafts 5, fixed in the frame-plates 1^a, and the respective tumblers being located with their upper front portions beneath the respective keys, so that as each key is depressed it turns the corresponding tumbler. Ten keys 2 and ten tumblers 4 are shown for each group for the ten digits "0" to "9."

The selecting devices 6 consist of parallel bars arranged below the tumblers 4 in a plurality of groups, corresponding to the group of keys 2 and of tumblers 4, said bars 6 sliding in suitable fixed combs or guide-plates 7 7'. Each slide 6 of a group has a projection or lug 8, adapted to be engaged by the lower edge of the corresponding tumbler, and also a series of lugs 8', adapted to project in front of any tumbler that has been operated, so that as any key is depressed and turns the corresponding tumbler the lower edge of this tumbler engages the lug 8 of the corresponding selector-slide to move said slide rearwardly, as shown in Fig. 6, and the rear edge of said tumbler extends in back of a lug 8' on each of the other slides 6 of that group, so as to prevent rearward movement of such other slides, and thereby prevent the operation of any other key of that group. There are only nine slides 6, since the zero key and tumbler

do not have to move any selecting-slide, but only to lock the other keys of the group. Bars 6 have inclined shoulders 6', engaging plate 7, to hold the bars until they are operated by the keys.

The controlling devices proper for the register or recorder consist of slides or bars 10, sliding in fixed guide-plates 11 11' and extending parallel to one another, but transversely to the bars 6, there being one bar 10 for each group of keys and selector-slides. The parallel selecting-slides are located at a distance apart equal to the distance between adjacent positions of the corresponding controller-slide, and the movement of the latter slide is transverse to that of the selecting-slides and is parallel to the line or plane in which the stop portions of the selecting-slides are arranged and the same portion of the controller-slide engages with any one of the selecting-slides that may be projected. The bars 10 carry racks 10^a, engaging pinions 12 on shafts 13, which operate the register or recorder, or both, according to the character of the machine. Thus the shafts 13, through pinions 14, drive rack-bars 15, which may constitute the type-carrying members of a recorder, and these bars 15 may also serve to operate the several wheels of a register through any suitable connecting means. Springs 16 serve to draw the respective bars 10 longitudinally, and a series of pawls 17 on rock-shafts 18 engage with notches 10' in the respective bars to normally hold the bars against endwise movement, said pawls being held in such engagement by springs 19, acting on rock-shafts 18. Each pawl 17 is broad enough to extend across the ends of all the slide-bars 6 of a group, so that when any slide-bar of a group is operated, as above described, it will engage the pawl, and the latter will be forced out of the notch in the controller-slide 10, said slide then being pulled endwise by its spring 16 until the end of the notch strikes the bar 6 which has been thus projected. The amount of travel of the bar 10 thus depends on the position of the particular bar 6 which has been projected. If the first bar is projected, (by the operation of number 1 key,) then the slide 10 will move one space and the register and recorder will be operated to register and record the numeral "1." If number 2 key be operated, the second slide 6 will be projected and the slide 10 will move two spaces and record and register accordingly, and so on. The operation of a zero-key does not have any effect on slides 6, except to lock them, and does not release the controller-slides 10.

The resetting means for the controller-slides 10 may be of any suitable description. We have shown a resetting-frame 20 sliding on fixed pins 21, projecting from frame 1^a and also guided in a bracket on frame 1^b, having a downturned flange 21' engaging with shoulders 10'' of all the bars 10. A rack 22 on said frame 20 is engaged by a mutilated pinion 23

on a shaft 24, connected by chain 25 to a main handle 26, so that as said handle is rotated it causes the mutilated pinion to engage the rack 22 and draw the frame 20 from the position shown in full lines to the position shown in dotted lines in Fig. 8, thereby drawing any of the bars 10 which has been operated from its operated position to normal position, as also shown in full and dotted lines in Fig. 8. When the mutilated gear has been turned sufficiently to effect this, it slips off of the rack and the frame 20 is restored to normal position by a spring 27. When the slides 10 are restored to their normal position, the pawls 17 snap into the respective notches therein and at the same time engage the ends of the projected slide-bars 6 and drive the latter to normal position, the tumblers 4 being pushed up by the same action. The tumbler for the zero-key is, however, not so returned, as it does not engage with any lug 8, and a special returning means is therefore provided for same, consisting of a counterpoise 28, which lifts the tumbler as soon as the corresponding key is raised. Instead of the resetting mechanism, consisting of frame 20 and its actuating parts, any usual or suitable means for resetting the bars either simultaneously or successively may be employed.

By a "controller-slide" as herein referred to we mean a slide that is adapted to control the operation of a register or recorder in accordance with its own movement, and by a "keyboard mechanism for cash registers and recorders" we mean a mechanism adapted to control either a register or a recorder, or both a register and recorder.

It will be understood that the keys 2 are provided with suitable locking means, such as shoulders 2^a, engaged by a locking-plate 30, to hold any operated key in depressed position until said plate is moved to release the keys. Furthermore, the action of any operated tumbler in preventing operation of other tumblers also prevents the operation of the other keys, and in the case of a mechanical cashier this is an important feature, as the control of the cashier mechanism is or may be directly from said keys and not from the selectors or tumblers above described. The zero-key participates in this locking action as well as the others.

Having thus described our invention, the following is what we claim as new therein and desire to secure by Letters Patent:

1. A keyboard mechanism for cash registers and recorders, comprising a plurality of groups of keys, a plurality of groups of selecting-slides operated by said keys and a plurality of controller-slides provided with actuating means and adapted to engage the selector-slides and to be limited in their movement by such engagement, each controller-slide being movable to carry its engaging portion in a path adjacent and parallel to the stop portions of the selecting-slides, which are arranged in a line transverse to the move-

ment of said selecting-slides so that the same portion of the controller-slide engages with any one of the selecting-slides that has been projected, and the movement of the controller-slide is determined by the transverse distance between the selecting-slides.

2. In combination with the controller-slides for a cash register or recorder, and means for actuating said controller-slides, of a plurality of selecting-slides arranged parallel to one another and transversely to the controller-slides, said selecting-slides being arranged in groups one group for each controller-slide, and each of the controlling-slides being adapted to be engaged and stopped by any one of the corresponding groups of selecting-slides, and keys for operating said selecting-slides, each controller-slide being movable to carry its engaging portion in a path adjacent and parallel to the stop portions of the selecting-slides, which are arranged in a line transverse to the movement of said selecting-slides so that the same portion of the controller-slide engages with any one of the selecting-slides that has been projected, and the movement of the controller-slide is determined by the transverse distance between the selecting-slides.

3. In combination with the controller-slides for a cash register or recorder and means for actuating said controller-slides, of pawls engaging the respective controller-slides, selecting-slides arranged in groups engaging the respective pawls to release the pawls from the controller-slides on the operation of any selecting-slide of the group, said selecting-slides also engaging the controller-slides when so released to stop same in selective position, and keys for operating said selecting-slides, each controller-slide being movable to carry its engaging portion in a path adjacent and parallel to the stop portions of the selecting-slides, which are arranged in a line transverse to the movement of said selecting-slides so that the same portion of the controller-slide engages with any one of the selecting-slides that has been projected, and the movement of the controller-slide is determined by the transverse distance between the selecting-slides.

4. In a keyboard mechanism for the purposes described, the combination of the selectors controlling the extent of movement of a register or recorder and the tumblers engaging therewith to operate same, and to lock the unoperated selectors.

5. The combination with the keys and the selectors, of tumblers operated by the keys and operating the selectors and locking the unoperated selectors and also the unoperated keys.

6. In a keyboard mechanism, the combination with the digit and zero keys, and the selectors, of tumblers for the digit-keys and tumblers for the zero-keys, the latter having means for automatically restoring same to normal position, and the selectors having

means adapted to be engaged by all the tumblers to lock the same, and also having means adapted to be engaged by the digit-tumblers only, to operate the selectors.

7. In a keyboard mechanism, the combination with the digit and zero keys, and the selectors, of tumblers for the digit-keys and tumblers for the zero-keys, the latter having counterpoise means for automatically restoring same to normal position, and the selectors having means adapted to be engaged by all the tumblers to lock the same, and also having means adapted to be engaged by the digit-tumblers only, to operate the selectors.

8. In a keyboard mechanism for the purpose described, the combination with the plurality of keys and the plurality of selecting-slides, of the plurality of pivoted tumblers engaged by the respective keys and engaging with the selecting-slides to operate a slide on the operation of the corresponding key and to lock the other slides.

9. In a keyboard mechanism for the purpose described, the combination with the plurality of groups of keys and the corresponding groups of selecting-slides, of groups of pivoted tumblers arranged between said keys and slides, each tumbler being engaged by a corresponding key and engaging a corresponding slide, to operate the latter, and also engaging all the other selector-slides of the same group to lock the same from movement.

10. The combination of the sliding-keys, the selecting-slides moving transversely to the keys, the pivoted tumblers interposed between said slides and keys, each tumbler serving to operate one slide and lock other slides, and controlling mechanism for the purpose set forth, whose movement is controlled by said selecting-slides.

11. The combination with the sliding-keys, and the pivoted tumblers; of the selecting-slides, each having a lug engaged by one of said tumblers to operate the slide, and lugs coöperating with all the other tumblers when operated to prevent operation of the slide after said other tumblers are operated.

12. The combination with a plurality of selecting devices moving in parallelism, of a controller-slide serving to control apparatus of the character described and movable transversely to the selecting devices, actuating means for said controller-slide, and a pawl engaging with a stop part of said controller-slide to normally arrest said slide, said pawl being of sufficient width to be engaged by all of said selecting devices, so that on operation of any selecting device the pawl will be released from the controller-slide and the latter will move under the influence of its actuating means until it engages the operated selecting device.

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