No. 843,635. PATENTED FEB. 12, 1907.

D. W. SHIEK.

KEY RELEASING MECHANISM FOR COMPUTING MACHINES, &c.

APPLICATION FILED NOV. 14, 1903.

3 SHEETS—SHEET 1.

Fig. 1.

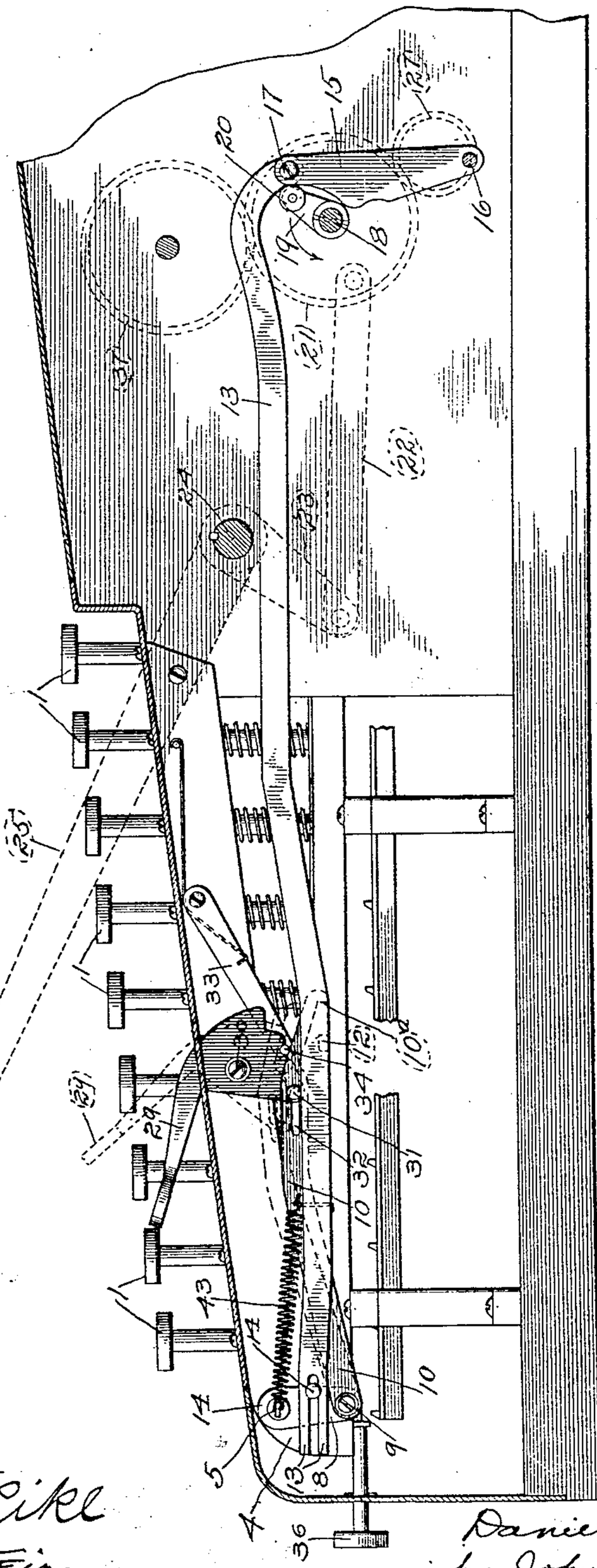

Fig. 2.

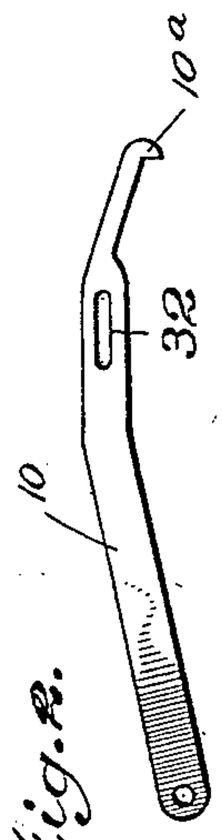

Fig. 6.

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Fig. 3.

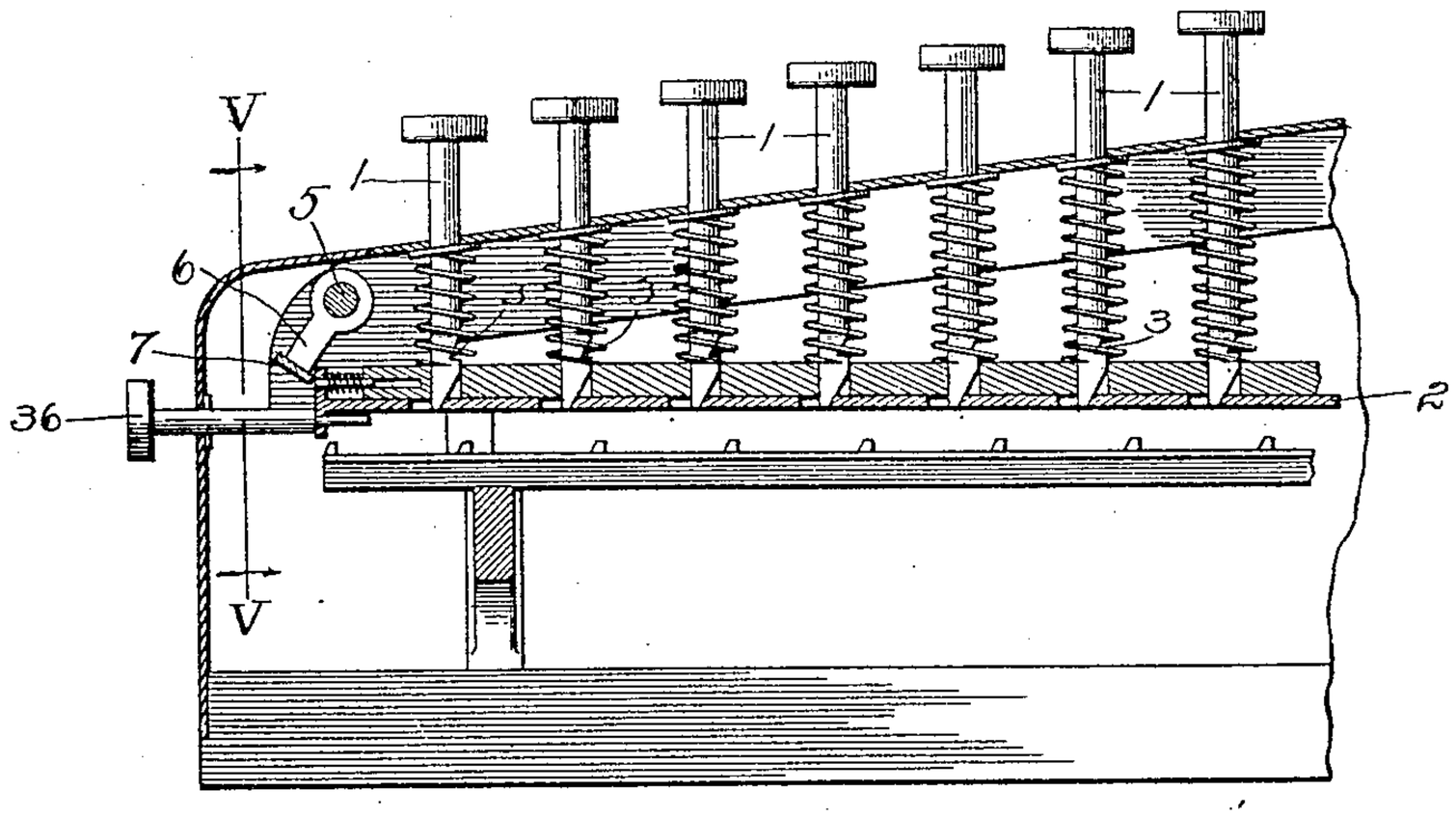


Fig. 4.

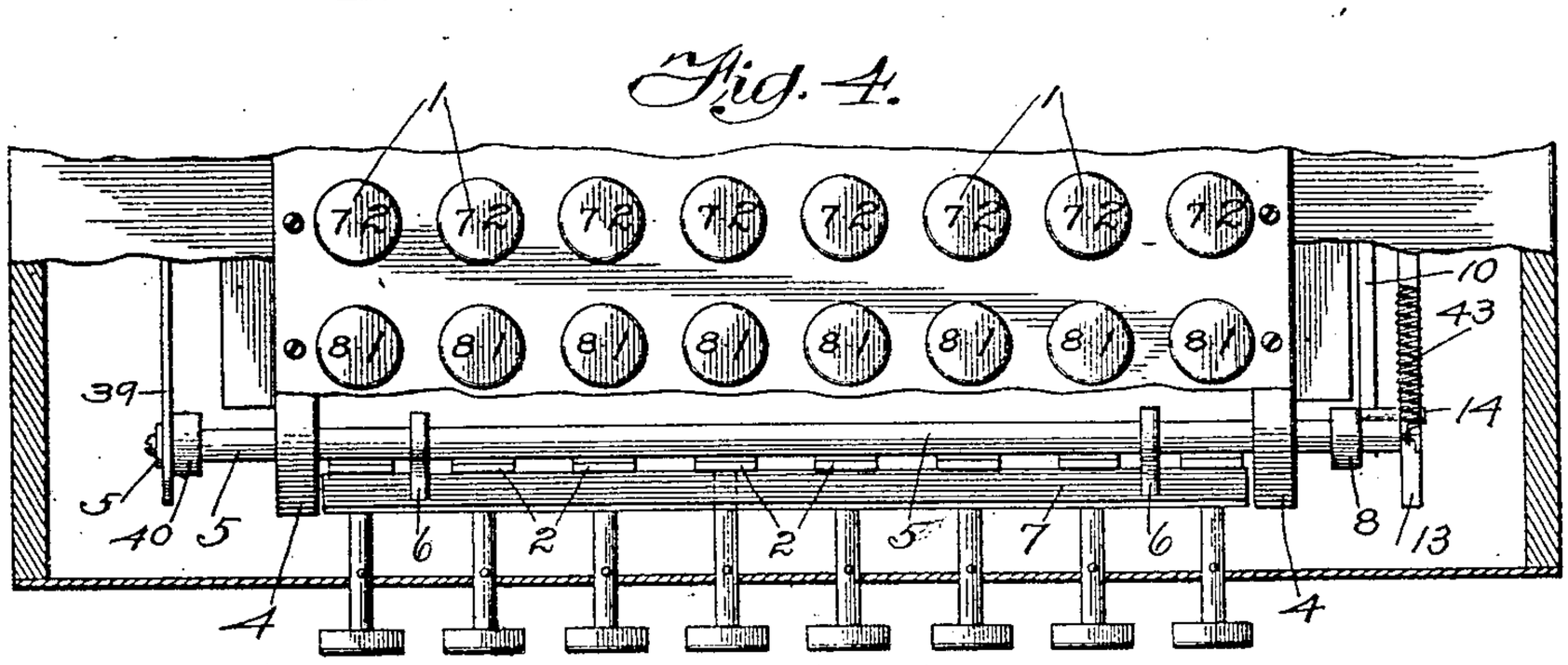
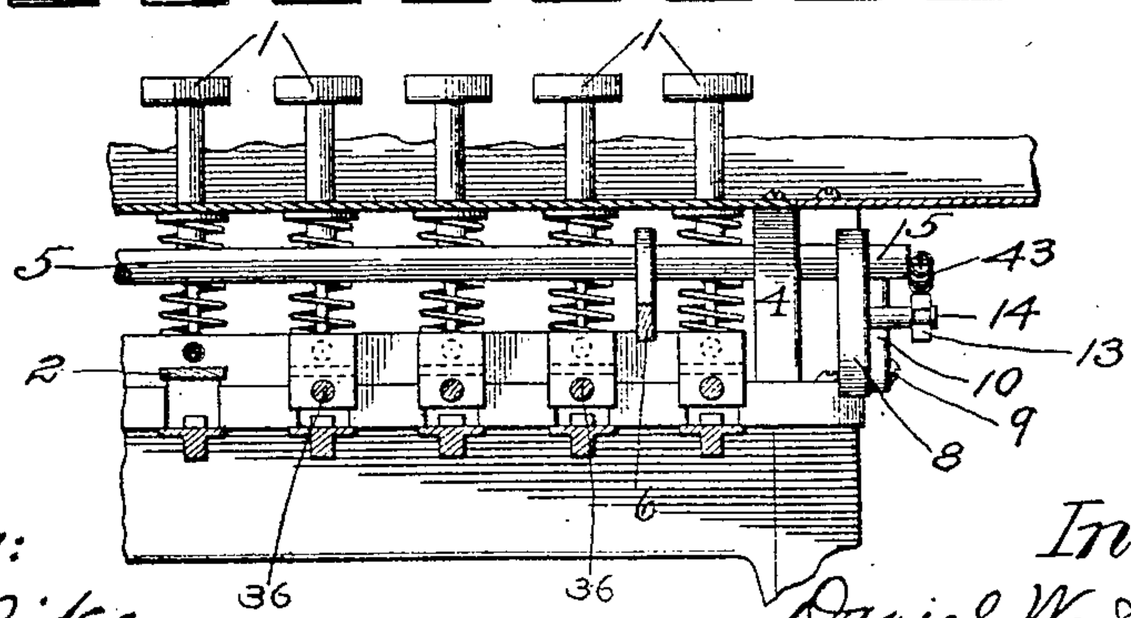


Fig. 5.



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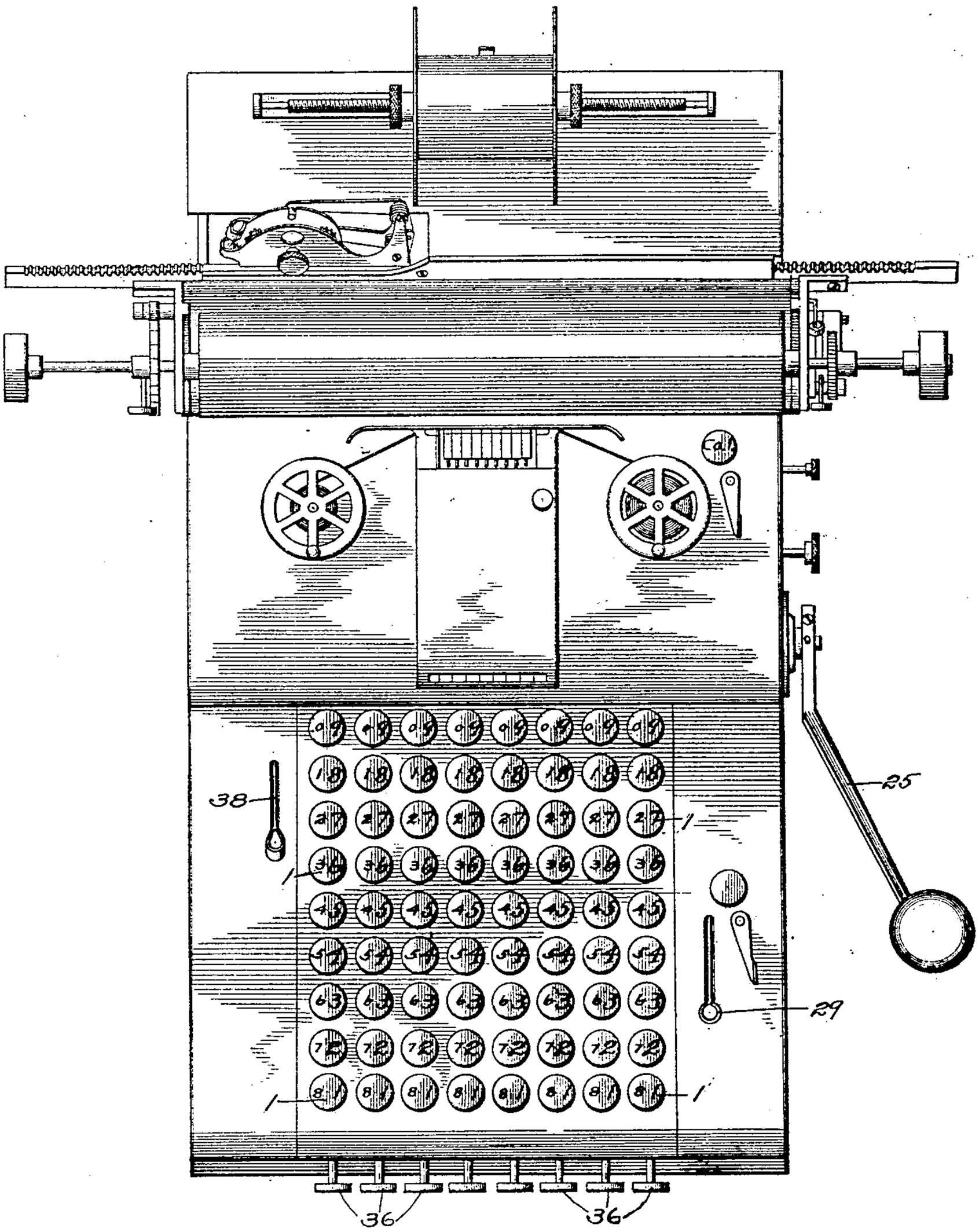
3 SHEETS—SHEET 3.

Fig. 7.



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UNITED STATES PATENT OFFICE.

DANIEL W. SHIEK, OF CHICAGO, ILLINOIS, ASSIGNOR TO ADDISON BYBEE, OF MILFORD, UTAH.

KEY-RELEASING MECHANISM FOR COMPUTING-MACHINES, &c.

No. 843,635. Specification of Letters Patent. Patented Feb. 12, 1907.

Application filed November 14, 1903. Serial No. 181,255.

To all whom it may concern:

Be it known that I, DANIEL W. SHIEK, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Key-Releasing Mechanism for Computing-Machines and the Like, of which the following is a description; and my invention consists in the novel construction, combination, and arrangement of parts hereinafter described, and pointed out in the claims.

I will proceed to describe my invention with reference to the accompanying drawings, in which—

Figure 1 is a sectional side elevation of a portion of my preferred key-releasing mechanism, the parts being shown in their normal positions. Fig. 2 is a side elevation of part 10 detached. Fig. 3 is a longitudinal section of one of the key detents or releasing slides, keys controlled thereby, and a portion of the key-releasing mechanism. Fig. 4 is a plan view of the resetting-bar, the direct means for actuating said bar, and the key-releasing keys. Fig. 5 is a sectional view taken on line V V of Fig. 3, showing keys of several sections, the bar 7 being omitted. Fig. 6 is a top view of a part of rod 13. Fig. 7 is a plan view of a computing-machine provided with my invention.

1 designates the usual keys, the function of which is well known in the art to which this invention pertains. These keys are arranged in longitudinal and transverse rows or, to apply more convenient terms to such rows, are arranged in "sections" and "banks," the latter term applying to the transverse rows.

The sections of keys are respectively engaged by locking-bars or retaining latches or slides 2, the peculiar construction and operation of which is the subject-matter of my pending application, filed December 10, 1901, Serial No. 85,383, for patent on calculating-machines.

The lower portion of each key is provided with a notch 3, and each key projects down through an opening in one of the slides 2, and when a key is fully depressed its notch 3 will be engaged by the slide, which is spring-actuated for that purpose, and the key will be thereby detained until the slide is released therefrom by moving the same in the opposite direction.

This invention relates to means by which these locking-slides 2 may be simultaneously or separately moved longitudinally for the purpose of releasing any set key or keys. My preferred means for so operating all of the slides in unison is actuated either by the regular operation of the machine or by a special lever which may be worked by the operator, and I provide means for individually so operating each locking-slide, all of which devices will now be described in the order named.

Mounted in bearings 4 above the front ends of the locking-slides 2 is a rock-shaft 5, which carries two depending arms 6, to which is secured a releasing-bar 7, which is adapted to engage the preferably upturned ends of the locking-slides, as shown in Figs. 3 and 4. Fixed upon one end of the shaft 5 (see Figs. 1 and 5) is a depending arm 8, to which is connected at 9 a rearwardly-extending-arm 10, which terminates in a depending hook 10^a or some equivalent device. In Fig. 1 said arm 10 is shown in lowered position ready to be engaged by a lug 12, that projects from a longitudinally-movable reach-rod 13. This rod 13 is supported and connected, preferably, as follows: Its forward end is bifurcated or slotted, as shown, and the slot is engaged by a headed pin 14, secured to arm 8. The rear end of the reach-rod is supported by a rocker-arm 15, fulcrumed at 16, to which it is pivotally connected at 17. The reach-rod is normally held forward by a tension-spring 43, one end of which may be connected, as shown, to the rock-shaft 5 or to some fixed portion of the machine. The crank-actuated rocker-arm 15 is thereby held in engagement with crank 19.

18 is a transverse shaft hereinafter called the "cam-shaft." Fixed upon this shaft in line to engage the anterior face of rocker-arm 15 is a crank 19, provided, preferably, with an antifriction-roller 20. On the cam-shaft 18 near its opposite end is keyed a gear-wheel 21, which is connected by a pitman 22 with or to a rocker-arm 23, rigidly secured on the main operating-shaft 24, on the right-hand end of which is fixed the operating-lever 25.

The pitman 22 is connected to gear-wheel 21 at such a point that when the operating-lever 25 is depressed said wheel is rotated in the direction of arrow, it being carried past the "dead-center" position by a tension-spring 26, connected to a pinion 27, that meshes with gear 21. When spring 26 has acted, the pitman, drawn forward by a strong spring 28, completes the revolution of said gear, and hence that of crank 19 on the other end of the shaft 18. This rotation of crank 19 will have pushed back its coengaging rocker-arm 15, which draws back the reach-rod 13, the projection 12 of which engages the hook 10^a of arm 10, which, through arm 8, rocks the releasing-shaft 5, which forces the rockable bar 7 against the detent-slides 2 and imparts sufficient motion to them to release any key or keys that may have been set. This action will occur if the hooked arm 10 be in lowered position. I provide a device for lifting said arm out of the path of lug 12, preferably as shown in Fig. 1. A small lever 29, pivoted at 30, has a handle passing through a slot in the top of the machine. Secured to the lower portion of this lever is a pin 31, which projects through a slot 32, cut in the hooked arm 10. When lever 29 is raised from its normal position to that shown by dotted lines, its pin 31 lifts the arm 10, and thereby the hook 10^a, above the path of lug 12, so that the latter cannot engage it when brought forward, as heretofore described. Lever 29 is held in either normal or raised position by a spring-actuated finger 33, carrying a pin 34, which engages either of two notches formed in the bottom of said lever, as shown. When said lever is at normal, its pin 33 is at the back end of slot 32 in arm 10. Hence if said lever be farther depressed said arm will be drawn forward and will cause all set-keys to be released, as will be readily understood. Thus when lever 29 is in normal position the keys will be released by every upward or return stroke of the operating-lever 25. Secured to the front of each detent-slide is a releasing or resetting key 36. (See Fig. 4.) By operating these keys any set key or keys of any particular section may be released independently of all other verticalr ows of keys.

The operation of this machine is such that normally it will print any figures indicated by any set key or keys. Consequently to insure a correct printing of a total it is desirable that no key be set during the total-printing operation.

I have thus described the preferred form of my improvement; but it is obvious that various immaterial modifications may be made without departing from the spirit of my invention. Hence I do not wish to be understood as limiting myself to the exact form and construction shown.

In the claims by "section" I refer to the longitudinal rows of keys and by "banks" I refer to the transverse rows.

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

1. In a computing or similar machine having keys, the combination of key-releasing devices, a transversely-extended releasing-bar common to and adapted to actuate all of said devices, an operating-lever, a movable rod, and mechanism arranged to loosely connect with said rod and move therewith to actuate said releasing-bar, and means controlled by the operator for removing said mechanism from the paths of the rod whereby it will not be operated by the latter when the said lever is operated.

2. In a computing or similar machine having keys, the combination, with key-releasing bars, of a transversely-extended releasing-bar arranged adjacent the forward end of the bars and adapted to simultaneously actuate said bars, and means actuated by operation of the machine for securing said simultaneous action including two longitudinally-movable members having a detachable hook engagement with one another; substantially as described.

3. In a computing or similar machine having keys, the combination, with key-releasing bars, of a releasing-bar adapted to engage the forward end of said bars; an operating-lever, and means actuated by said lever for moving said releasing-bar said means including a rearwardly-extended arm on said releasing-bar having an operative engagement with a reciprocatory reach-rod connected to said operating-lever; substantially as described.

4. In a computing or similar machine having keys, an operating-lever, key-releasing mechanism actuated thereby, said mechanism comprising two longitudinally-movable members, said members when in normal position having an operative connection with one another, and a lever for moving the one member from its normal position and disengaging said operative connection to prevent the key-releasing operation, in combination with means for separately releasing each section of keys.

5. In a computing or similar machine having keys, the combination of a main operating-lever, key-releasing means actuated thereby, said means comprising two longitudinally-movable members normally adapted to engage each other, a detachable hook connection between the members and means for spacing said members from one another for preventing coengagement when said lever is operated; substantially as described.

6. In a computing or similar machine having keys, the combination, of a key-releasing device including a hooked finger and bar; key-releasing mechanism including a rod;

said finger being normally in position to be actuated by said rod; and means for moving said finger from its normal position rendering the releasing device inoperative; substantially as described.

7. In a computing or similar machine having keys, the combination with key-detents and a main operating-lever, of a rod actuated by movement of said lever, a finger normally actuated by said rod, a rockable bar actuated by said finger; said bar being adapted to reset all of said key-detents and means for spacing said finger out of the path of said rod; substantially as described.

8. In a computing or similar machine having keys, the combination, with key-detents, and a main operating-lever, of a rod actuated by said lever, means for restoring said rod to normal position, a finger normally actuated by said rod, a rockable bar actuated by said finger; said bar being adapted to reset all of said key-detents and means for spacing said finger out of the path of said rod; substantially as described.

9. In a computing-machine having a plurality of sections of keys, a separately-operable key-releasing device for each section, and a supplemental releasing device arranged to simultaneously release all the sections of keys, and means whereby said supplemental device may be rendered inoperative during the operation of the aforementioned releasing devices.

10. In a computing-machine having a plurality of sections of keys, a separately-operable key-releasing device for each section, and a supplemental releasing device arranged to simultaneously release all the sections of keys, said supplemental releasing device including reciprocatory members normally in operable engagement with one another, and means for releasing said engagement whereby said supplemental releasing device may be rendered inoperative during the operation of the aforementioned releasing devices.

11. In a computing-machine having a plurality of sections of keys, a separately-operable key-releasing device for each section, and a supplemental releasing device arranged to simultaneously release all the sections of keys, said supplemental releasing device including oppositely-disposed reciprorocatory members normally in operable engagement with one another, and means for separating said reciprocatory members from one another, whereby said supplemental releasing device may be rendered inoperative during the operation of the aforementioned releasing devices.

12. In a machine of the character described, having a plurality of sections of keys, a plurality of releasing devices, one for each section, adapted to act separately thereupon, a supplemental releasing device arranged to simultaneously release all the keys, and means whereby the supplemental releasing device may be rendered inoperative during the operation of the aforesaid releasing devices.

13. In a machine of the character described, the combination with key-releasing bars, of a transversely-extended releasing-bar arranged to engage all of said first-mentioned bars to simultaneously actuate the same, and means actuated by the operation of the machine for securing said simultaneous action, including two longitudinally-movable members having a detachable hooked engagement with one another.

14. In a machine of the character described, the combination with key-releasing bars, of a transversely-extended releasing-bar arranged to engage one end of all of said bars and simultaneously actuate the same, means actuated by the operation of the machine for securing said simultaneous action, including two longitudinally-movable members having a detachable hooked engagement with one another, and means for separately operating said key-releasing bars.

15. In a machine of the character described, a series of transversely-extended keys, a transversely-extended releasing-bar common to all of said keys, a rock-shaft for the bar, two longitudinally-extended members having a detachable engagement with one another, one of said members being connected to the rock-shaft, an actuating-lever for the other member adapted to operate said releasing-bar, and means for spacing said longitudinally-extended members from one another, whereby the releasing-rod will remain stationary upon the movement of said actuating-lever.

16. In a machine of the character described, a series of sections of keys, a transversely-extended releasing-bar common to all of said keys, a rock-shaft for the bar, two longitudinally-extended members having a detachable engagement with one another, one of said members being connected to the rock-shaft, an actuating-lever for the other member adapted to operate said releasing-bar, means for spacing said longitudinal members from one another whereby the releasing-bar will remain stationary upon the movement of said actuating-lever, and means for separately actuating each section of keys after said spacing operation.

17. In a computing or a similar machine having keys, the combination of a key-releasing bar, a movable arm operatively connected with said bar, means actuated by the operation of the machine for imparting movement to said arm whereby said bar is actuated to release the keys, releasing means for said last-mentioned means, and said re-

leasing means having connection with said arm whereby the latter may be operated by said releasing means, independent of the means actuated by the operation of the machine.

18. In a computing or similar machine having keys, the combination of a key-releasing bar, a movable arm operatively connected with said bar, means actuated by the operation of the machine for imparting movement to said arm whereby said bar is actuated to release the keys, releasing means for said last-mentioned means including a lever pivoted to a stationary part of the machine and having a pin-and-slot engagement with said arm, whereby the arm may be operated thereby to release the keys, independent of the means actuated by the operation of the machine.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

DANIEL W. SHIEK.

Witnesses:
I. E. HILL,
CHARLES I. COBB.