

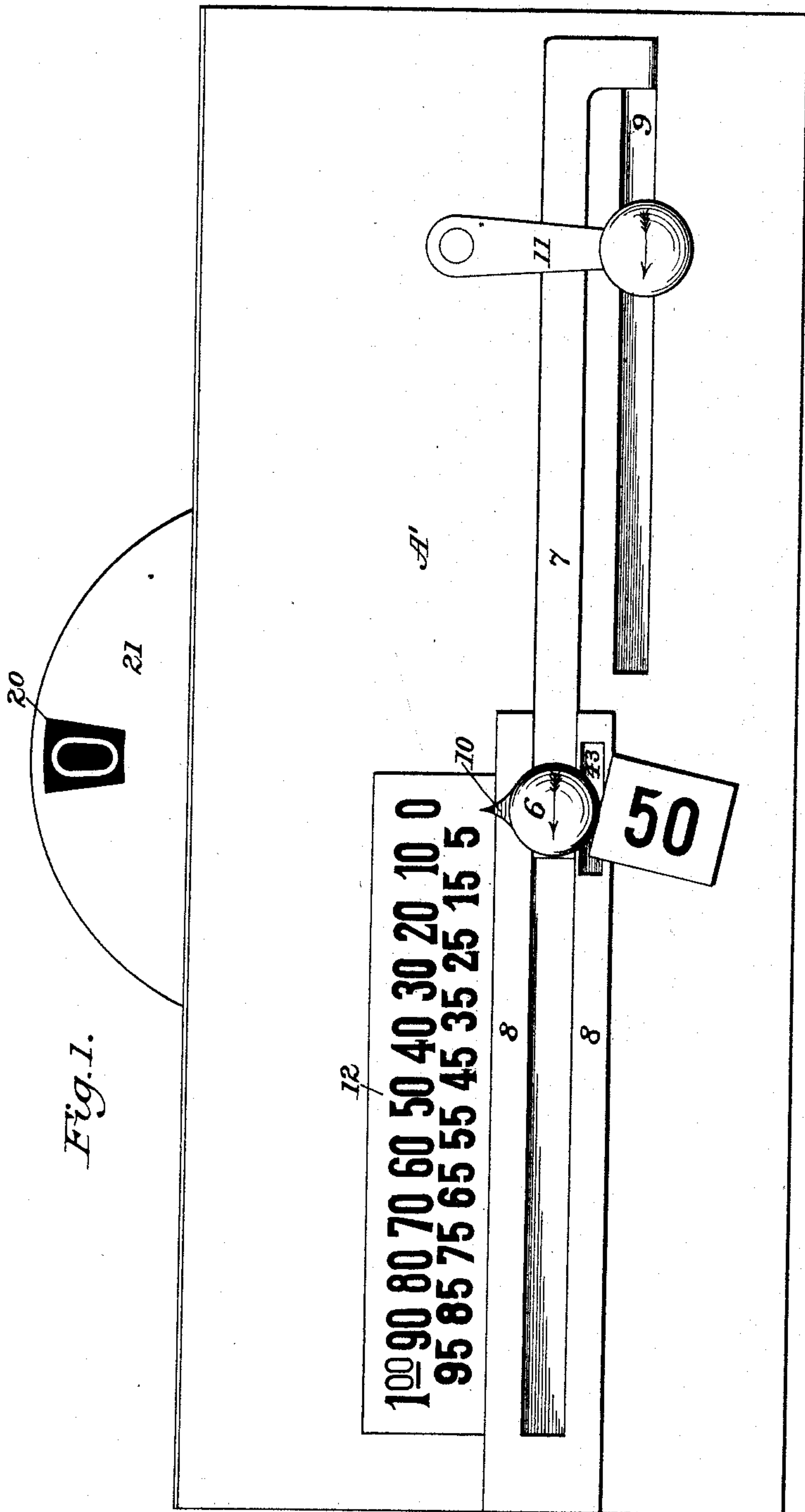
(No Model.)

7 Sheets—Sheet 1.

W. KOCH.
CHECK MACHINE.

No. 428,678.

Patented May 27, 1890.



Attest:
A. N. Jespersen
E. M. Watson

Inventor:
William Koch
By *David A. Burr*
A. G.

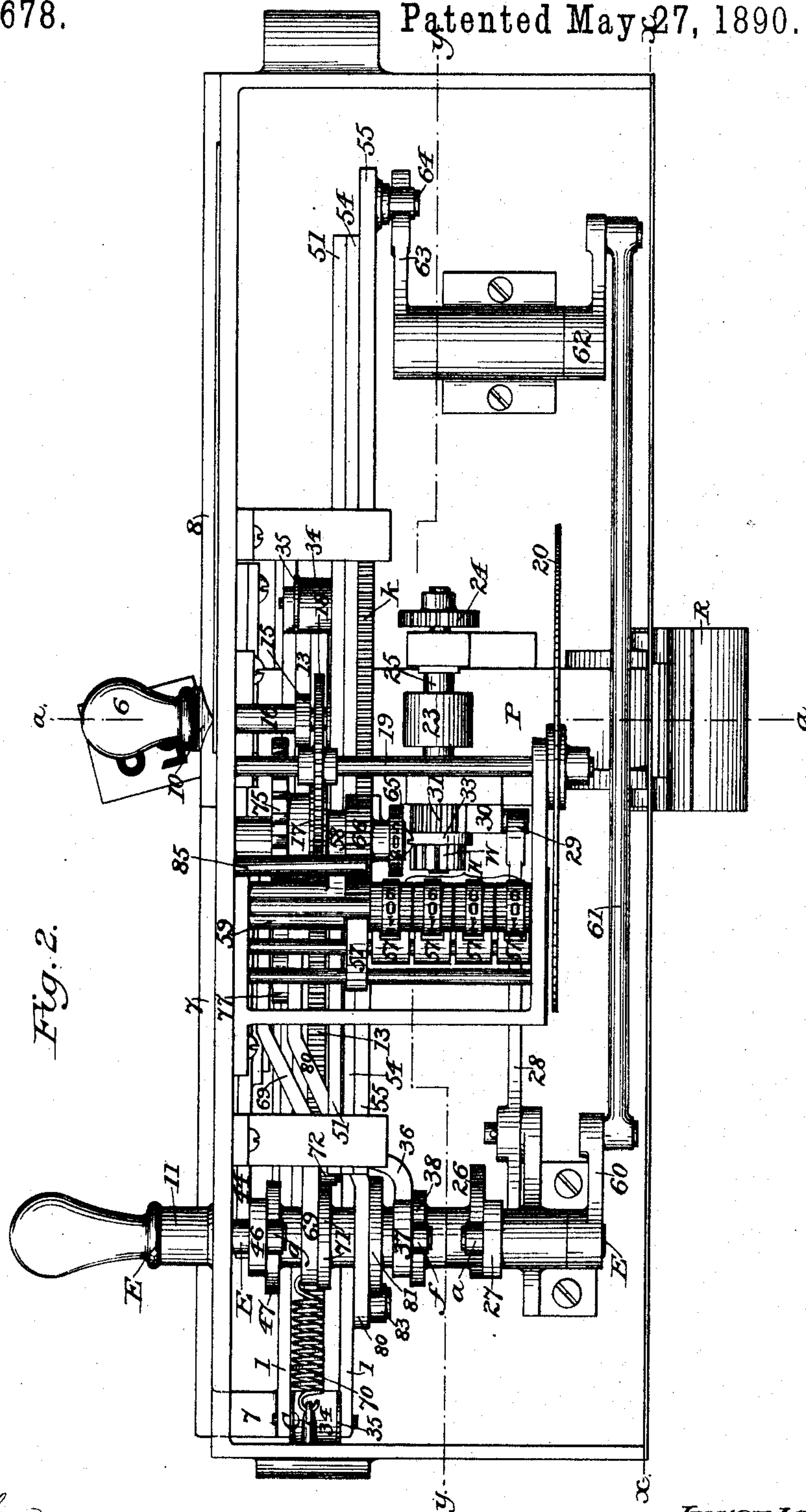
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7 Sheets—Sheet 2.

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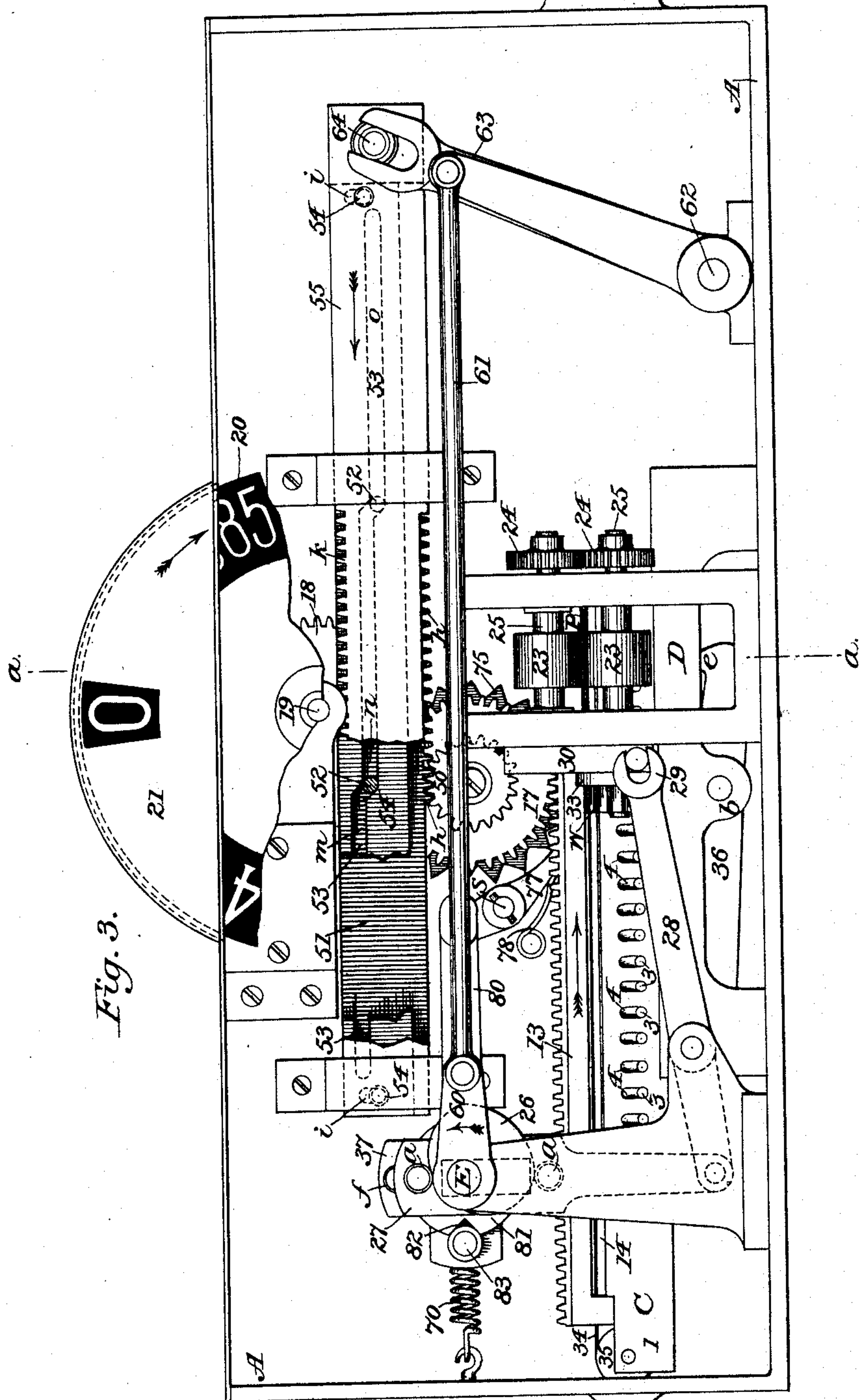


Fig. 3.

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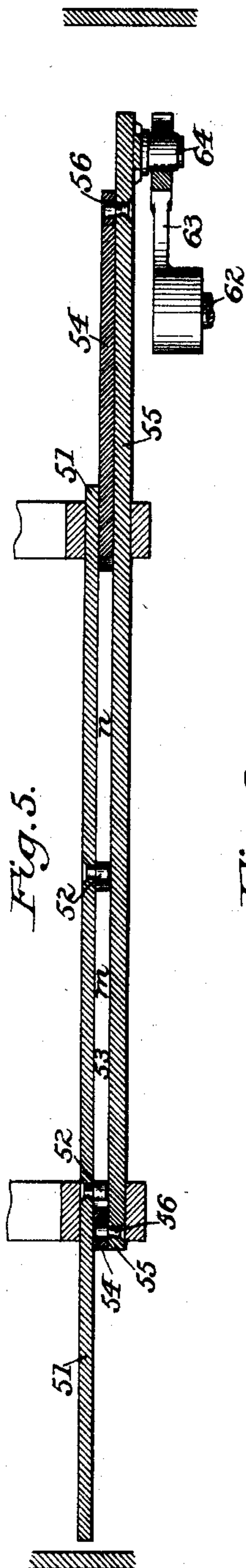


Fig. 5.

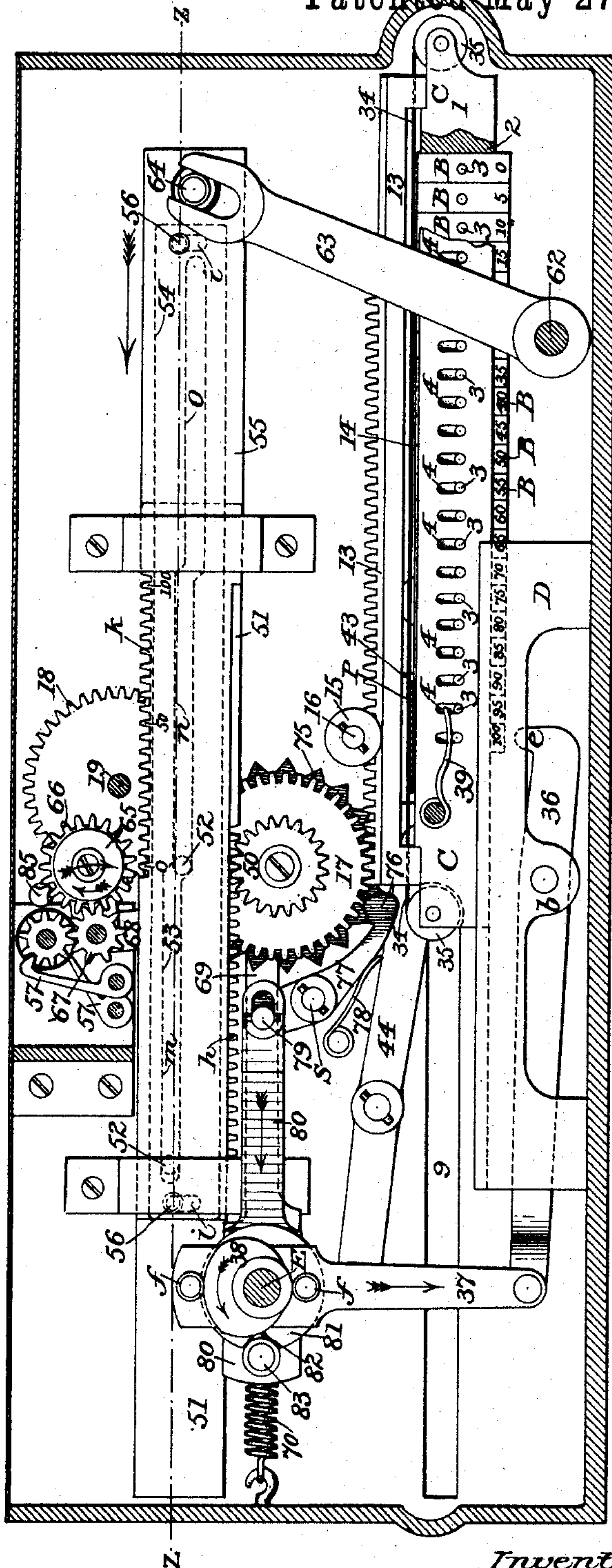


Fig. 4.

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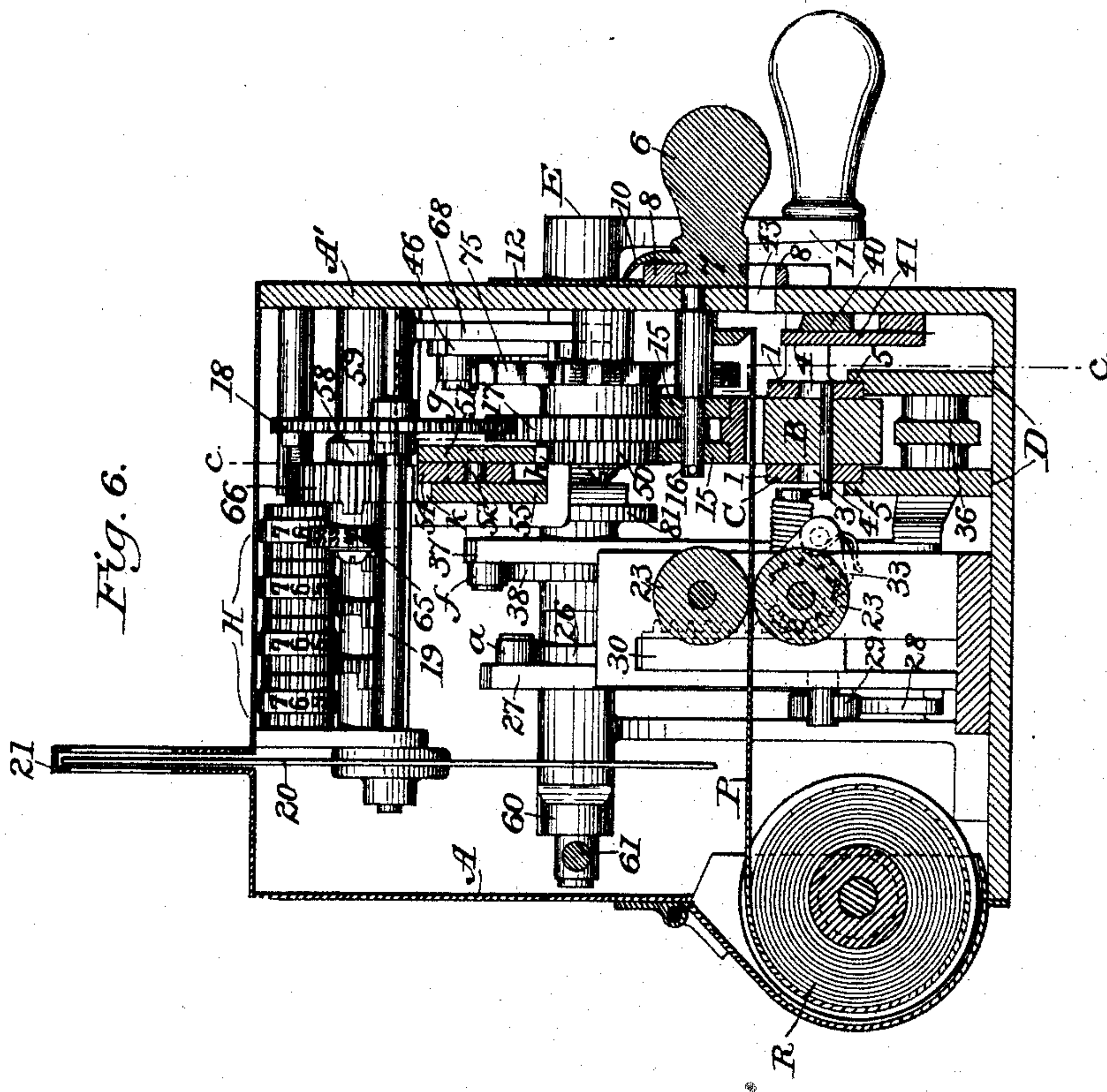
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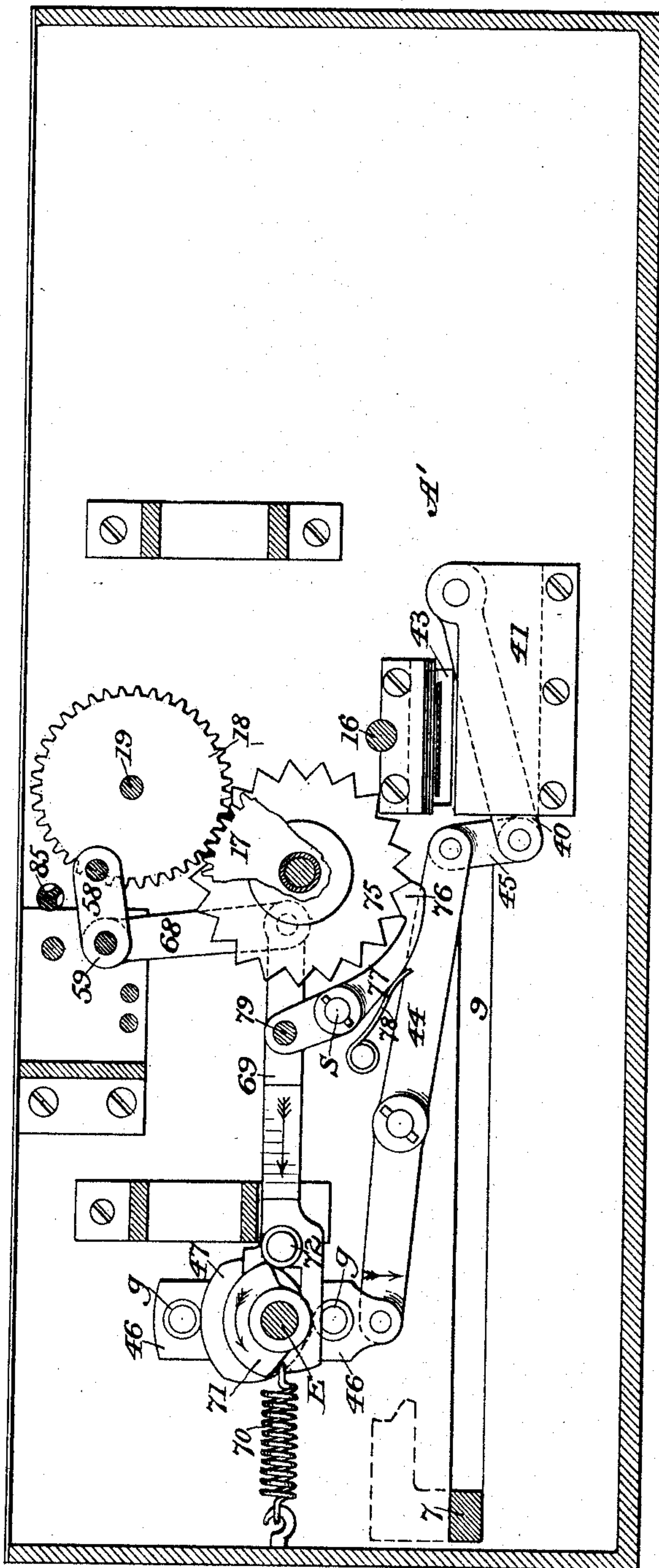
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Fig. 7.



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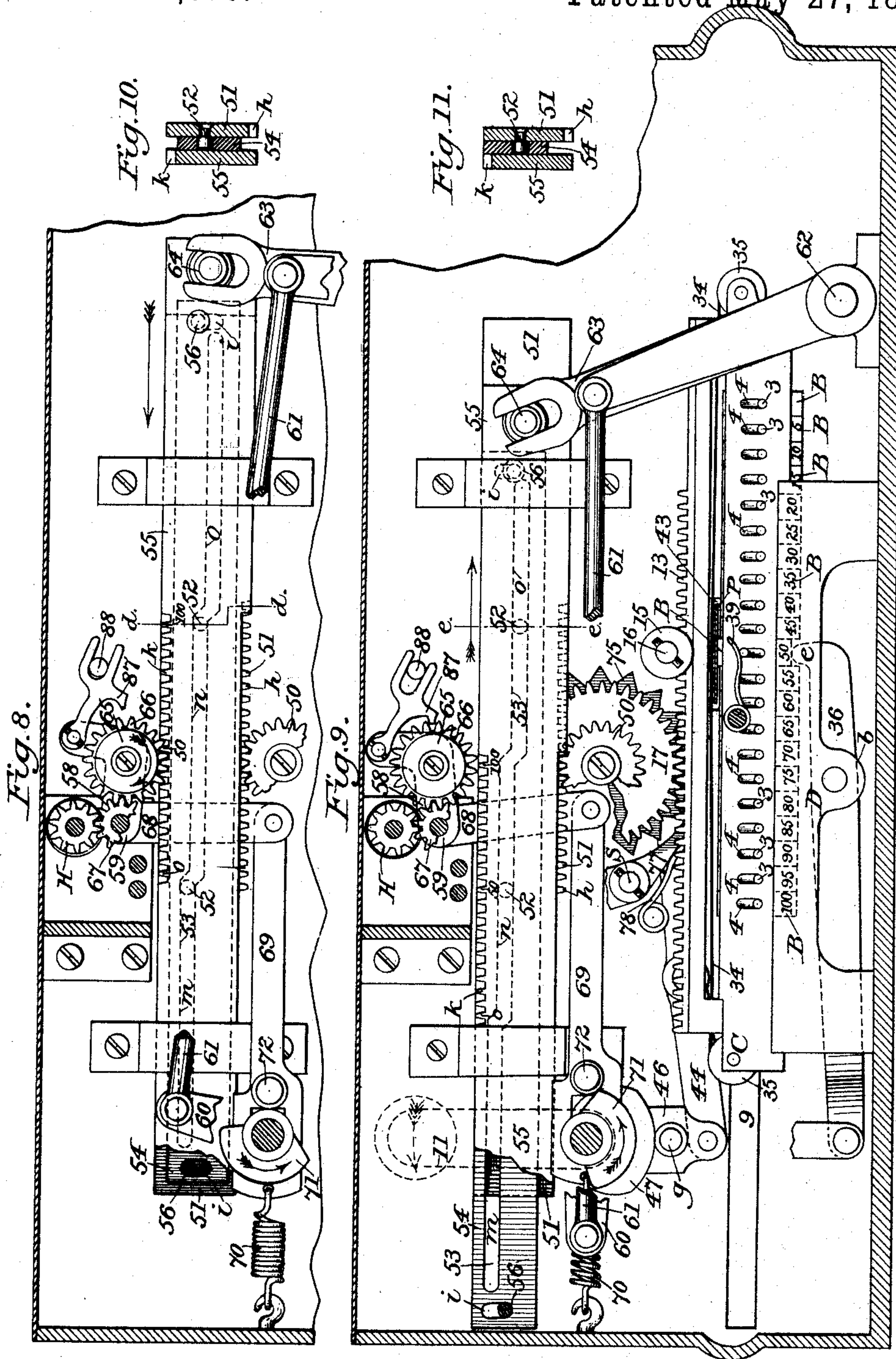
(No Model.)

7 Sheets—Sheet 7.

W. KOCH.
CHECK MACHINE.

No. 428,678.

Patented May 27, 1890.



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UNITED STATES PATENT OFFICE.

WILLIAM KOCH, OF NEW YORK, N. Y., ASSIGNOR TO THE KRUSE CHECK
AND ADDING MACHINE COMPANY, OF NEW YORK.

CHECK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 428,678, dated May 27, 1890.

Application filed October 15, 1888. Serial No. 288,180. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM KOCH, of the city, county, and State of New York, have invented certain new and useful Improvements in Machines for Printing and Adding Checks; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification, in which—

Figure 1 is a front elevation of my check printing and adding machine; Fig. 2, a top view of the same looking from the rear, with the covering-plate removed and the mechanism in its first or normal position; Fig. 3, a rear elevation with the back plate removed in line *xx* of Fig. 2 and the mechanism in its first position; Fig. 4, a vertical longitudinal section in line *yy* of Fig. 2, with the indicating mechanism set at 100; Fig. 5, a detailed horizontal section of the slides controlling and actuating the adding mechanism in line *zz* of Fig. 4; Fig. 6, a vertical transverse section in line *aa* of Figs. 2 and 3; Fig. 7, a detailed vertical longitudinal section in line *cc* of Fig. 6; Fig. 8, a detailed section in same plane as Fig. 4, with the printing and stop devices omitted, the indicating mechanism set at 50, and the slide actuating the adding mechanism at nearly one-fourth the length of its stroke; Fig. 9, a similar view with the printing mechanism included and with the adding slide at one-half stroke to illustrate more fully the operation thereof; Fig. 10, a detailed cross-section of the adding and adjusting slides and interposed guard-plate in line *dd* of Fig. 8, and Fig. 11, a similar section in line *ee* of Fig. 9.

Similar letters and numbers indicate like parts in all of the figures.

My invention relates to that class of check-machines in which the amount of the check is first indicated by the movement of a pointer, and then by the single revolution of a crank is imprinted upon a check, which is delivered from the machine, the amount being simultaneously added to the sum of the checks previously issued and the total registered upon the wheels of the adding mechanism.

It consists in the novel construction and combination of mechanical devices herein-

after described and claimed, by means of which said operations are produced, enforced, and guarded.

The operative parts of this improved machine are inclosed and supported in the customary manner by a suitable frame and casing A.

The type for imprinting the checks are formed or fitted upon the upper ends of blocks B B, placed side by side in a frame or carriage C, consisting of two extended parallel plates 1 1, secured to and united by interposed strips 2 at each end. The type-blocks B are each suspended and supported in the carriage C by means of a pin 3, passed transversely through the type, (see Fig. 6,) and whose ends extend through vertical slots 4 in the two side plates 1 and 1 to permit of a vertical movement of the type in the frame. The carriage is mounted to slide longitudinally upon suitable ways 5 5, formed upon an extended pedestal D in a direction parallel with the front plate A' of the machine and approximately thereto, and are moved back and forth by means of a knob or button 6 upon one end of an outer bar 7, fitted to slide in horizontal ways 8 8, formed to receive it upon the front face A' of the casing. The opposite end of this sliding bar 7 is bent inward to pass through a slot 9 in the front plate A' and is secured to one end of the carriage C, (see Figs. 1 and 2,) the bar being extended in length, so as to carry the knob 6 clear of the crank 11 of the machine. An index-pointer 10 on the knob is made to pass, in the movement of the sliding bar and the type-carriage C actuated thereby, over an index-scale 12, having characters marked thereon corresponding with those on the type B, and which are arranged systematically in the same order.

In the accompanying drawings the mechanism for use in a "five-cent" machine is illustrated, and the type B are made severally to represent the numerals by fives from 0 to 100, the same numerals being repeated in order upon the index-scale 12, as shown in Fig. 1.

A rack-bar 13 is mounted longitudinally upon the carriage C, being supported upon the same at its ends only, so as to leave an extended slot 14 between the bar and the type

B B fitted in the carriage, as shown in Figs. 3, 4, and 9. Its under side is made to serve as a platen, against which the type are carried to produce an imprint therefrom upon an interposed piece of paper.

The bar is made of the same width as the carriage, and the teeth of the rack on its upper face are made about one-half as wide, so as to leave on either side thereof a plain bearing-surface for two friction-rollers 15 15, mounted upon a stud 16, projecting from the front plate of the casing inwardly over the rack, as shown in Fig. 6. These friction-rollers serve to steady the carriage as it moves back and forth under them and to resist the pressure of the type when forced upward against the under side of the rack-bar. The rack is made to engage a spur-wheel 17, gearing with a pinion 18, fixed upon a spindle 19, mounted in the upper part of the machine, and which carries upon its inner end a large indicating disk or wheel 20, made to project peripherally above the top of the machine, so that its face shall be brought to view thereat. Each face of the disk is marked with characters or numerals corresponding to those on the type, and these characters are exposed singly to view through an opening in each plate of the cover 21, fitted over the disk, as shown in Figs. 1 and 3.

The gear is so proportioned as that a complete movement of the type-carriage C in either direction shall produce a complete revolution of the indicating-disk 20, and so arranged as that the number thereon brought to view upon said disk above the top of the machine at front and rear through the openings in the cover 21 shall correspond with that of the index-scale 12 to which the index-pointer 10 may be moved and with the particular type B brought by such movement to the line of print in the machine, as hereinafter described.

The printing from the type is effected immediately under the friction-wheels 15 15, a strip of paper P (see Fig. 6) being fed at this point transversely through the extended slot 14 under the rack-bar 13 over the face of the particular type B which may by the movement of the type-carriage C be brought beneath it. The paper P is drawn from a reel R, mounted in the machine at the rear, and is fed intermittently forward by means of a pair of feed-rollers 23 23, (see Fig. 2,) which are geared together by spur-wheels 24 (see Fig. 3) at one end of their axial spindles 25. Their intermittent revolution is produced by means of a cam 26 upon a crank-shaft E at one end of the machine, said cam 26 being made to revolve between two rollers *a a*, fitted upon stud-pins projecting from the face of a vertically-sliding slotted bar 27, embracing said shaft, and whose lower end is pivoted to one end of a pivoted lever 28, which engages, by means of a fork 29 at its opposite end, a pin upon a vertically-sliding rack-bar 30, whose teeth mesh with a pinion 31, which re-

volves loosely upon the spindle of one of the feed-rollers 23 and carries a pawl 33, engaging a ratchet-wheel W, fixed to said spindle, (see Figs. 2, 3, and 6,) whereby the oscillation of the pinion, produced by the reciprocation of the rack-bar 30, is made to produce in the customary manner an intermittent rotation of the spindle.

It is evident that a stationary platen may be mounted at line of print to support the paper as it receives the impression from the type instead of the extended bar 13, and the spur-wheel 17 be made to engage a rack on the side of the carriage.

An inking-ribbon 34, wound upon spools 35 35, mounted one at each end of the carriage C, is led longitudinally under the platen or bottom side of the rack-bar 13, its tension being secured by the friction of the spools in their bearings.

Each type B, when brought by a movement of the carriage C into position or line for print immediately under the friction-wheels 15, is forced up against the paper to produce an imprint thereon of the inking-ribbon 34 by the action of a type-lifter, shown in the form of an oscillating lever 36, pivoted between lugs *b b*, dependent from the side plates of the pedestal D, upon which the carriage C slides. One end of said lever 36 terminates in a finger *e*, turned upward immediately under the axis of the friction-rollers 15 in line to bear against the lower end of the particular type which may be brought into line therewith. The opposite end of said lever extends to a point immediately below the crank-shaft E and is pivoted to an upright bar 37, slotted to embrace the shaft E and fitted with friction-rollers *f f* upon its face to embrace between them a cam 38 (see Fig. 4) upon said shaft, whereby at each revolution of the shaft and cam the lever is oscillated in manner to bear the type engaged by the lever upward against the paper at line of print.

Instead of using an inking-ribbon to obtain an impression from the type, a die-plate may be inserted upon the under side of the rack 13, having a counterpart intaglio for the opposed type sunken in its face, so that by closing the type against the die the intervening paper shall be embossed with the appropriate character, or a strip of rubber or other elastic yielding material may be used instead of the die-plate to accomplish the same result.

The dropping of the uplifted type to clear it from the paper when the finger end *e* of the lever 36 descends is enforced by means of a spring 39, (see Figs. 4 and 9,) made fast at one end to the front plate A', so as to project with its free end in position to bear down upon the transverse pin 3 of each type when the type is brought to line of print. As the type is moved up it carries the spring with it, so that the stress of the spring will operate to return the type so soon as it is left free.

After the paper has been imprinted and

fed forward for a new impression, the printed end is severed from the strip by means of a knife 40, (see Figs. 6 and 7,) pivoted upon one side of the line of print against the inner face of the front plate A' between it and a parallel guard or guide plate 41, secured to the front plate upon an intervening strip placed along its lower edge, so that the knife shall be free to oscillate between the two plates and to swing upward with a drawing cut across an opening 43, formed in the front plate A' in register with the paper strip P and in position to allow the strip as it is fed forward to pass out through said opening 43. The upward movement of the knife 40 is produced after the paper has been moved by means of an oscillating lever 44, (see Fig. 7,) whose forward arm is coupled to the free end of the knife by a link 45, and whose opposite end is pivoted to a slotted upright 46, embracing the crank-shaft E, and having two friction-rollers *g g* pivoted upon its face to embrace between them the periphery of a cam 47, fixed upon the shaft, whereby the knife will be carried up and down at each revolution of the shaft, and in its upward movement will sever for use as a check the printed end of the strip P as it projects from the front of the casing.

The particular amount printed upon each check which is severed, as described, from the strip of paper P is added to the sum of the amounts previously printed by the movement of a train of adding-wheels H, (see Fig. 6,) which may be of any approved description, and whose construction need not herein be described. This train of adding-wheels is fitted within the casing, preferably near the top thereof, in position to be read through a suitable opening in the casing. To actuate said wheels, a toothed wheel 50 is fixed upon the spindle of the spur-wheel 17, which gears with the rack 13 of the type-carriage C, and a horizontally-sliding adjusting-plate 51 is mounted above the wheel 50 to reciprocate longitudinally in a direction at right angles to said spindle. This adjusting-plate 51 is provided with a rack *h* to engage the teeth of the wheel 50, so that the revolution of said wheel, produced by a movement of the carriage C, will operate to move said plate 51 back or forth, as the case may be. Two stud-pins 52 52 are secured to the inner face of the adjusting-plate to pass into an extended irregular longitudinal slot 53, (see Fig. 5,) cut in a guard-plate 54, (see Figs. 3 and 5,) mounted parallel with the adjusting-plate and left free to slide back and forth independently thereof, yet in contact therewith, upon the stud-pins 52 52. A third parallel plate or adding-slide 55, of equal length with the adjusting-plate 51, (see Fig. 5,) is united with the guard-plate 54 by means of lateral stud-pins 56 56, made fast to the slide to project into slots *i i*, cut transversely in the guard-plate near to each end thereof. A rack *k* is formed centrally upon the upper edge of this adding-slide, with teeth cor-

responding in number and size with those of the rack *h* upon the lower edge of the adjusting-plate 51. The guard-plate 54 is made so much narrower than the two outer plates or slides 51 and 55 as that its edges will not overlap the racks *h* and *k* thereon when it is in a central position between said racks. It is, however, left free to move upwardly, so as to cover the teeth of the rack *k* on the adding-slide by reason of the vertical slots *i i*. The longitudinal slot 53 or guideway in the guard-plate is formed in three sections *m n o* (see Figs. 3, 4, 8 and 9) of equal length, extending in three parallel planes, each removed from the other by a distance equal to the depth of the teeth in the rack *k* of the adding-slide, the two ends of the central section *n* being connected the one with the end of the section *m* above it and the other with the end of the section *o* below it by an inclined offset, so that the three sections form unitedly the one continuous irregular slot or guideway 53.

The edges of the slot form in effect bearing-surfaces for the stud-pins 52, and it is evident that flanges or strips projecting laterally from the guard-plate may be substituted as an equivalent for the slot in providing such extended bearing-surfaces.

It will be noted that the adjusting-plate 51, which moves in unison with the type-carriage C, has only a longitudinal movement, that the central guard-plate 54 has both a longitudinal and an up-and-down movement against the adjusting-plate 51, and that the adding-slide 55 has only a longitudinal movement.

The stud-pins 52 52, projecting into the slot 53, are placed at a distance apart equal to the distance between the offsets in the slots, and by reason thereof, when the guard-plate 54 is moved longitudinally over the face of the adjusting-plate 51, the former will be elevated or depressed with reference to the latter by means of said offsets. When thus raised, the upper edge of the guard-plate will be brought flush with the outer ends of the teeth in the rack *k* of the adding-slide 55, so as to guard them, and when depressed it will drop to the level of the inner ends of said teeth, so as to expose them. The moment at which the guard-plate 54 will, in the longitudinal movement of the adding-slide 55, be elevated to cover the teeth of its rack *k* is determined by the position of the adjusting-plate 51, carrying the stud-pins 52 52, on which said guard-plate moves, said position being determined mediately, as described, by that of the type-carriage C and of the index-pointer 6.

The adding-slide 55 is made to move back and forth a distance equal to the length of its rack *k* at each revolution of the crank-shaft E by means of a crank 60 upon said shaft, (see Fig. 3,) coupled by a connecting-rod 61 with one arm of a rock-shaft 62, having a second corresponding arm 63, whose free end is forked to embrace a projecting pin 64 upon

the end of the slide 55, as is fully shown in Figs. 2, 3, and 4.

The master-wheel 66 of the adding-train H is pivoted upon the free end of an arm 58, 5 extending radially from one end of a rocking sleeve 59, (see Figs. 2 and 6,) oscillating upon a shaft serving as the axis for a transmitting-pinion 67, gearing both with the master-wheel and with the units-wheel of the adding-train. 10 The opposite end of the sleeve 59 is fitted with a second longer arm 68, extending radially at a right angle with the arm 58, the two arms forming in effect with the intermediate sleeve 59 a bent lever. (See Fig. 7, 8, and 15 9.) The axial shaft for the rocking sleeve 59 and transmitting-pinion 67 is so located as that the master-wheel upon the arm 58 may swing into and out of engagement with the rack k of the adding-slide 55, while at the 20 same time it meshes uninterruptedly with the pinion 67. The arm 68 is actuated to produce an oscillation of the rocking sleeve 59, so as to carry the master-wheel 66 into position to engage the rack k by means of a 25 bar 69, slotted at one end (see Fig. 7) to embrace the crank-shaft E, and which is pivoted at the other to the lower end of the arm 68. A spring 70, attached to the slotted end of the connecting-bar 69, operates automati- 30 cally by its stress to swing the master-wheel 66 into engagement with the rack k , and the wheel is positively swung out of said position, so as to be prevented during a full half-revolution of the crank-shaft E from engaging the rack, by means of a cam 71 upon 35 said shaft, whose periphery is brought to bear against a pin 72 on the connecting-bar 69, as shown in Figs. 8 and 9 of the drawings.

40 An indicating-wheel 65 is mounted on the spindle of the master-wheel 66 to denote, in unison with the indicating-disk 20, the amount last added to the sum indicated on the adding-wheels H. Pawls 57 57 (see Fig. 4) are 45 provided, as is customary, to engage both the pinion 67 and the units-wheel of the adding-train, so as to prevent a reverse movement of the adding mechanism.

The several parts as described are so organized and arranged in due relation to each other as that when the index-pointer 10 is 50 moved to any one figure on the index-scale 12 the corresponding type is brought to line of print and the corresponding figure is brought to view at front and rear upon the 55 indicating-disk 20 through the openings at the top of the machine, and simultaneously the adjusting-plate 51 is moved a distance corresponding to the relative value of the 60 figure indicated, so as to adjust the pins 52 52, which are thereafter to guide the movement of the adding-slide 55, by means of which the adding mechanism is actuated. Thus by means of the index-pointer 10 the 65 type are first set and the extent of movement of the adding mechanism predetermined. When this is accomplished, a revolution of

the crank 11, causing a rotation of the crank-shaft E, will, during the first one-eighth of said revolution, allow the gear for the adding 70 mechanism to come into play by the movement of the cam 71 on said shaft, and will simultaneously cause the adding-slide 55 to begin its movement in the direction to actuate said mechanism. When an eighth-revo- 75 lution of the crank is accomplished, the printing-lever 36 begins to move to produce an impression from the type B, said movement being completed before a half-revolution is made. At the half-revolution the feeding 80 mechanism begins to act to feed the imprinted slip forward out of the machine, and the adding-slide 55, having completed its forward movement and actuated the adding mechanism, begins its return movement, the adding- 85 gear being first disengaged therefrom. In the meantime, so soon as the feed of the paper is accomplished by the movement of the feed-rollers 23 23, the knife 40 (see Fig. 7) is brought into play to cut the printed check 90 before the revolution of the crank is fully completed.

The index-pointer 10 and the indicating-disk 20 are constantly locked, so as to prevent any movement thereof, excepting only 95 when the crank is at rest in its first or normal position, during which the adding mechanism is also locked. This locking of the indicating mechanism is produced by means of a star-wheel 75, fixed upon the spindle of 100 the toothed wheel 17, which is geared to the rack 13 on the type-carriage. The star-wheel is engaged by a dog 76 upon one end of a lever 77, pivoted to swing upon a stud-pin S, projecting from the casing. The opposite end 105 of the lever is provided with a pin 79 to project into a slot in one end of a reciprocating bar 80, (see Figs. 2 and 4,) slotted at its opposite end to embrace the crank-shaft E. A circular disk 81 is fitted upon said crank- 110 shaft, and a notch 82 is cut in the periphery of the disk to receive a pin 83, fitted with a friction-roller, and which projects from the face of the bar, so as to carry said roller into contact with said periphery. The notch 82 115 is so located as to register with the pin 83 when the crank 11 is at its normal position of rest, (see Figs. 2, 3, and 4,) and when thus in register the lever is free to swing, so as to permit of a disengagement of the dog 76 from 120 the wheel 75 by means of the play permitted to the pin 79 in the slot in the bar 80. So soon, however, as the crank begins to revolve the pin 83 is carried out of the notch to ride upon the periphery of the disk 81, and the 125 bar 80 is thereby drawn toward the crank-shaft far enough to bring the outer end of the slot through which the pin 79 projects into contact with said pin, and thereby prevent a movement of the dog 76 during the 130 entire revolution of the crank.

The adding mechanism is positively locked by means of a pin 85, projecting from the casing in position to engage the teeth of the

master-wheel 66 when the latter is swung up out of engagement with the adding-slide, as shown in Fig. 4; or, as an equivalent device, a dog 87 may be pivoted to the outer end of the arm 58, carrying the master-wheel in position to drop into engagement with the teeth of said wheel, (see Fig. 8,) its engagement being prevented, however, when the wheel is swung forward to engage the adding-slide, by means of a pin 88, fixed to the casing to project through a slot or fork in the dog in such position as to lift the dog from the wheel when the wheel swings forward, as illustrated in Fig. 9.

In the operation of the machine the amount of cash paid in, and for which a check is to be issued, is first indicated by a movement of the sliding knob 6, so as to bring the index-pointer 10 in line with the figures on the index-scale 12 denoting said amount. This movement operates to move the sliding carriage C, so as to bring the particular type thereon corresponding with the figure indicated into line with the printing-finger *e* on the oscillating lever 36 and under the strip of paper P, led transversely through the slot under the toothed bar 13 and beneath the friction-rollers 15. The movement of the carriage C thus produced operates by means of the spur-wheel 17 and intermediate gear to produce a partial revolution of the indicating-disk 20, so as to bring to view the figure thereon corresponding with that indicated by the pointer 10. It operates, furthermore, by means of the pinion 50, carried with the wheel 17, to move the plate 51, carrying the adjusting-pins 52 52, into a position whereat said pins will cause the guard-plate 54 to be carried up to disengage the master-wheel 66 of the adding-train from the teeth of the rack *k* of the adding-slide 55 whenever said adding-slide, carrying the guard-plate with it, has been moved far enough to carry a number of teeth in its rack *k* corresponding with the amount indicated by the index-pointer forward under the master-wheel. By this means, when the master-wheel has been turned by the movement of the adding-slide a number of points corresponding to the amount indicated by the pointer, the elevation of the guard-plate disengages it from the adding-slide, and the latter will complete its movement without further actuating the adding mechanism. If the pointer be placed at zero, the guard-plate will prevent altogether the engagement of the master-wheel with the adding-slide. If the pointer be at 100, the master-wheel will remain in engagement with the adding-slide during its full forward stroke. These movements are illustrated in Figs. 3, 4, 8, and 9 of the drawings.

In Fig. 3 the carriage and the adding-slide are both shown in their first or normal positions, with the pointer at zero and the zero type at line of print, the adjusting-plate being consequently likewise in its first or normal position.

In Fig. 4 the type-carriage is represented as in the extreme position, to which it is carried when the index-pointer is at 100 and the type 100 consequently at line of print, the guard-plate and adding-slide being represented as in their normal position when at rest after the revolution of the crank is completed.

In Fig. 8 the adjusting-plate is represented as having been moved one-half the length of its stroke by reason of the movement of the carriage to bring the type 50 to line of print, as is shown in Fig. 9. The stud-pins 52 52 are therefore in position to throw up the guard-plate 54 when, in connection with the adding-slide, it has made very nearly one-half of its forward stroke by reason of a quarter-turn of the crank, as shown in Fig. 8. It will be noted that the subsequent continued movement of the adding-slide in completing the half-stroke will, by carrying the offsets in the slot 53 over the pins 52, cause the guard-plate to rise and lift the teeth of the master-wheel 66 out of engagement with the rack *k* so soon as the particular tooth on the rack *k* corresponding with the type 50 at line of print has actuated and left it, thereby arresting the further movement of the adding mechanism.

In Fig. 9 the crank is represented as having made half its revolution, whereby, as therein illustrated, the adding-slide and the guard-plate are brought to the end of the forward stroke in readiness to move back, the rack on the adding-slide being guarded by the edge of the guard-plate, which was uplifted midway its stroke by the position of the stud-pins 52 52 consequent, as above described, upon setting the type 50 at line of print, as shown.

In the revolution of the crank 11, after the desired type has been brought to line of print by a movement of the index-slide, its first movement operates to release the cam 71 on the crank-shaft from the pin 72, so as to allow the spring 70 to draw back the bar 69, and thereby unlock the adding mechanism and cause the master-wheel 66 of the adding-train to drop into engagement with the adding-slide 55. In the meantime and until the crank has completed its revolution the dog 76 will hold the star-wheel 75 and the pinion 17 and prevent any movement thereof or of the indicating-wheel or adjusting-slide geared thereto. Simultaneously with the release of the adding mechanism the adding-slide 55 will be started forward by the movement of the crank-arm 60; but as said arm is in starting upon the dead-center, as shown in Fig. 3, sufficient time is permitted for the release and descent of the master-wheel to engage the slide before the forward movement of the slide begins. When the crank has made a half-revolution, the movement of the adding-slide is reversed, and simultaneously the master-wheel 66 is uplifted and the adding mechanism locked by the engagement of the mas-

ter-wheel with the pin 85, (or the dog 87, as described.) In the meantime when the crank has made one-eighth of its revolution the movement of the type for imprint on the paper begins, by reason of the action of the cam 81 on the crank-shaft, and the printing is effected before the half-revolution is completed. At the half-revolution the feed-rollers 23 are actuated by the operation of the cam 26 on the crank-shaft, so as to move the paper strip P forward a distance equal to the length required in the checks, and thereby carry the printed end of the strip out of the machine through the opening 43. So soon as the feed ceases the knife 40 is brought into play by the cam 71 on the crank-shaft to sever the check or projecting printed end of the strip.

I claim as my invention—

1. The combination of the longitudinally-reciprocating rack-bar or adding-slide, a parallel lateral guard-plate traversing said bar to cover and uncover its rack, adding-wheels, and a toothed wheel swinging into and out of engagement with said rack and geared to the train of adding-wheels, substantially in the manner and for the purpose herein set forth.

2. The combination of the longitudinally-reciprocating rack-bar or adding-slide, adding-wheels, a toothed wheel swinging into and out of engagement with said rack-bar and continuously geared to the train of adding-wheels, and a dog mounted to engage and lock the toothed wheel when it is free from the rack, substantially in the manner and for the purpose herein set forth.

3. The combination, with a registering apparatus, of adding mechanism, a pinion geared to actuate said mechanism, a sliding rack-bar for actuating said pinion, a guard-plate carried with and movable in respect to said rack-bar, and a type-carriage, and connections between the same and the guard-plate for moving the latter to throw the pinion and rack into and out of gear, substantially as described.

4. The combination of the parallel longitudinally-sliding adjusting-plate, longitudinally-reciprocating rack-bar or adding-slide, an interposed guard-plate carried by the rack-bar to partake of its longitudinal movement, but free to move transversely thereon, and formed with three longitudinal bearing-surfaces extended in parallel planes and joined by inclines to form a continuous extended way, substantially as described, pins projecting from the adjusting-plate to engage said way, and a toothed wheel swinging into and out of engagement with the rack-bar and geared to a train of adding-wheels, substantially in the manner and for the purpose herein set forth.

5. The combination of the parallel longitudinally-sliding adjusting-plate, longitudinally-reciprocating rack-bar or adding-slide, an interposed guard-plate united to the rack-bar to partake of its longitudinal movement, but free to move transversely thereon, and

formed with three longitudinal bearing-surfaces extended in parallel planes and joined by inclines to form a continuous extended way, substantially as described, pins projecting from the adjusting-plate to engage said way, a toothed wheel swinging into and out of engagement with the rack-bar and geared to a train of adding-wheels, an index-scale, a pointer moving over said scale, and mechanism, substantially as described, for gearing the pointer with the adjusting-plate, whereby the two are made to move in unison, substantially in the manner and for the purpose herein set forth.

6. The combination of the parallel longitudinally-sliding adjusting-plate, longitudinally-reciprocating rack-bar or adding-slide, an interposed guard-plate united to the rack-bar to partake of its longitudinal movement, but free to move transversely thereon, and formed with three parallel longitudinal bearing-surfaces joined by inclines to form a continuous extended way, substantially as described, pins projecting from the adjusting-plate to engage said way, a toothed wheel swinging into and out of engagement with the rack-bar and geared to a train of adding-wheels, a longitudinally-moving type-carriage, a series of type mounted in said carriage to be carried thereby to a line of print, mechanism, substantially as described, for obtaining an imprint from either of said type brought to line of print, and intermediate gear, substantially as described, connecting the type-carriage with the adjusting-plate, whereby they are made to move in unison, substantially in the manner and for the purpose herein set forth.

7. The combination of an index-scale, indicating mechanism, a pointer moving over said scale, a type-carriage actuated by said pointer to move in unison with it and connected to move said mechanism, a series of type corresponding with the figures upon the index-scale and mounted in order upon said carriage to have each a free independent movement in the same direction, a printing-platen against which the type may severally strike when moved, an actuating-finger independent of the carriage over which the type are severally carried by the movement of said carriage and which is mounted to move against the particular type brought in register therewith and bear it toward the platen, paper-feeding rollers mounted parallel with the line of movement of the carriage at one side thereof and in line with the actuating-finger, a rotating driving-shaft, and mechanism, substantially as described, connecting said shaft with the feed-rollers and finger, whereby an alternate intermittent movement of the finger and rollers is produced in the rotation of the shaft, all substantially in the manner and for the purpose herein set forth.

8. The combination of the longitudinally-sliding carriage, a series of type mounted loosely in a row side by side in said carriage,

an actuating-finger independent of the carriage and mounted to strike and lift to line of print either of the type brought in register therewith in the movement of the carriage, a platen connected with the carriage and fitted above the type with an intermediate space to receive the paper for print and mounted in line with the actuating-finger, and a spring mounted independently of the carriage to bear upon the particular type which is in register with the actuating-finger, whereby when said type has been moved by the finger its return is enforced by the spring, substantially in the manner and for the purpose herein set forth.

9. The combination of the longitudinally-sliding carriage, a series of type mounted loosely in a row side by side in said carriage, an actuating-finger independent of the carriage and mounted to strike and lift to line of print either of the type brought in register therewith in the movement of the carriage, and an indicating-wheel geared to said carriage to move in unison therewith and bearing numbers or characters corresponding to those on the index-scale and type, and an opening whereby to expose one of said numbers at a time, whereby the position of the wheel will indicate the particular type brought to line of print by the carriage, substantially in the manner and for the purpose herein set forth.

10. The combination of the index-scale, a longitudinally-moving type-carriage, a series of type corresponding with the numbers or characters on the index-scale and mounted in a row in said carriage, mechanism, substantially as described, for obtaining an imprint from each type when brought to a given point by the movement of the carriage, a pointer attached to the carriage and adjusted to move over the index-scale and denote thereon the denomination of the particular type brought into position for printing, a rack formed upon the carriage, a longitudinally-sliding adjusting-plate for the adding mechanism, intermediate gear whereby the carriage and adjusting-plate are made to move in unison, a guard-plate mounted parallel with the adjusting-plate and formed with an extended longitudinal lateral guideway having inclined offsets in its length, lateral pins on the adjusting-plate engaging and sliding along said guideway to elevate or depress the guard-plate, said guard-plate being united to said adjusting-plate to move longitudinally in unison therewith, but left free to move independently thereon at a right angle to its length, a parallel longitudinally-reciprocating adding-slide provided with a rack upon its edge, whose teeth are covered by the guard-plate when it is elevated, and a train of adding-wheels gearing with the rack on the adding-slide to be actuated thereby when not interrupted by the guard-plate, all substantially in the manner and for the purpose herein set forth.

11. The combination, with sliding type-carriage and indicating mechanism, of an add-

ing-train having a transmitting-pinion, a master-wheel mounted in bearings swinging upon the axis of said pinion in continuous gear therewith, and a sliding rack with which the master-wheel may be brought into engagement by its oscillation, as described, substantially in the manner and for the purpose herein set forth.

12. The combination of a movable type-carriage, an adding-wheel, a transmitting-pinion geared to the adding-wheel, a master-wheel mounted in bearings swinging upon the axis of said pinion in continuous gear therewith, a sliding rack with which the master-wheel may be brought into engagement by its oscillation, as described, and a guard-plate mounted parallel with the sliding rack to cover and uncover its teeth and thereby control the engagement therewith of the master-wheel and connections between the guard-plate and carriage, substantially in the manner and for the purpose herein set forth.

13. The combination of an adding-wheel, a pinion geared thereto, a master-wheel pivoted upon an arm swinging upon the axis of said pinion to gear continuously therewith and oscillate about the same, a sliding rack with which the master-wheel may be brought into engagement by its oscillation, as described, a revolving shaft, a cam upon said shaft, and a lever actuated by said cam and actuating the oscillating arm carrying said master-wheel, whereby the master-wheel is carried into and out of engagement with the sliding rack at each revolution of the shaft, substantially in the manner and for the purpose herein set forth.

14. The combination of a reciprocating sliding rack, a transmitting-wheel in an adding-train, an arm vibrating on the axis of said wheel, a master-wheel pivoted upon said arm to gear continuously with the transmitting-wheel and vibrate into and out of engagement with the rack, a rotating driving-shaft, a crank revolving with said shaft and connected mediate with the sliding rack to produce its reciprocation, and a cam likewise revolving with said shaft geared mediate to the swinging arm carrying the master-wheel to actuate said arm and adjusted to move it when the crank is passing its dead-center, whereby the engagement or disengagement of the master-wheel with the reciprocating rack is effected at the end of its stroke in either direction during the continuous rotation of the driving-shaft without interference with the movement of the reciprocating rack, substantially in the manner and for the purpose herein set forth.

15. The combination, with a toothed wheel in the adjusting-gear for a train of adding-wheels, the driving-gear governed by said adjusting-gear and actuating the adding-train, and a rotating shaft actuating the driving-gear in manner substantially as described, of a dog engaging said toothed wheel to lock it, a reciprocating bar actuating said dog, a

disk fitted upon the rotating shaft to revolve
with it, having a single notch in its periphery,
and a pin projecting from the reciprocating
rod to engage the periphery of the wheel and
5 prevent a movement of the dog until the pin
and notch are brought into register, substan-
tially in the manner and for the purpose
herein set forth.

In testimony whereof I have signed my
name to this specification in the presence of 10
two subscribing witnesses.

WILLIAM KOCH.

Witnesses:

A. N. JESBERA,
E. M. WATSON.