

No. 747,922.

PATENTED DEC. 29, 1903.

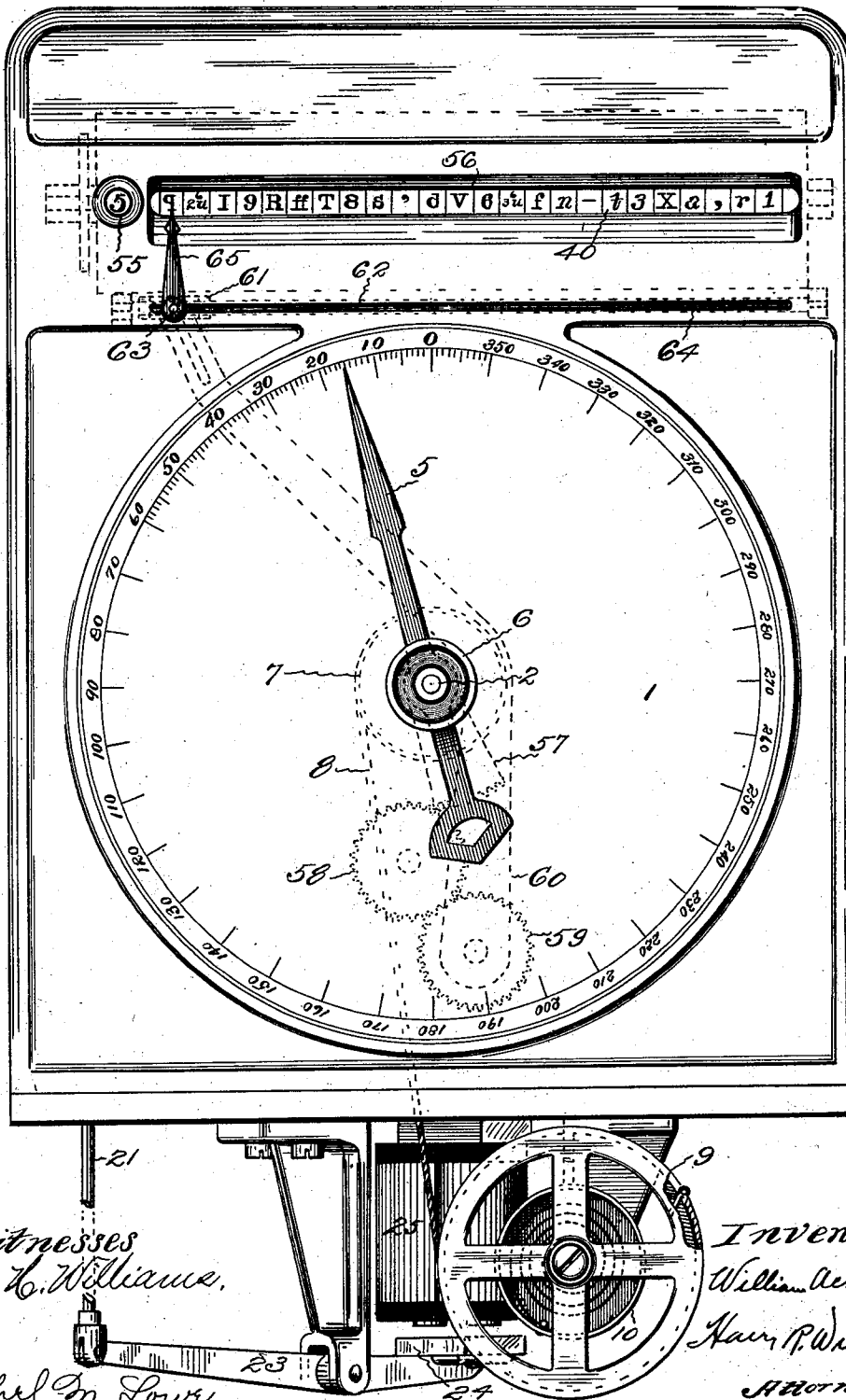
W. ACKERMAN.
COUNTING AND INDICATING MACHINE.

APPLICATION FILED OCT. 6, 1902.

NO MODEL.

5 SHEETS—SHEET 1.

Fig. 1



Witnesses
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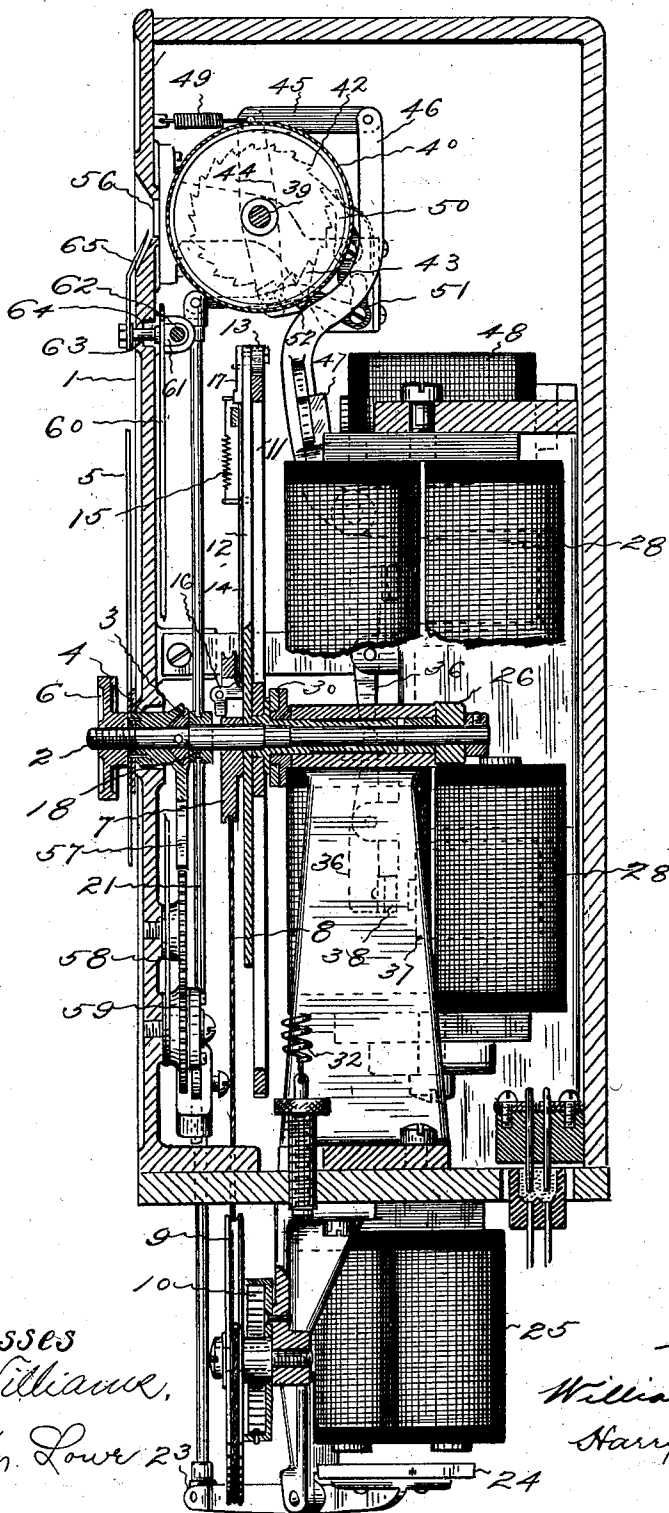
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5 SHEETS—SHEET 2.

Fig. 2



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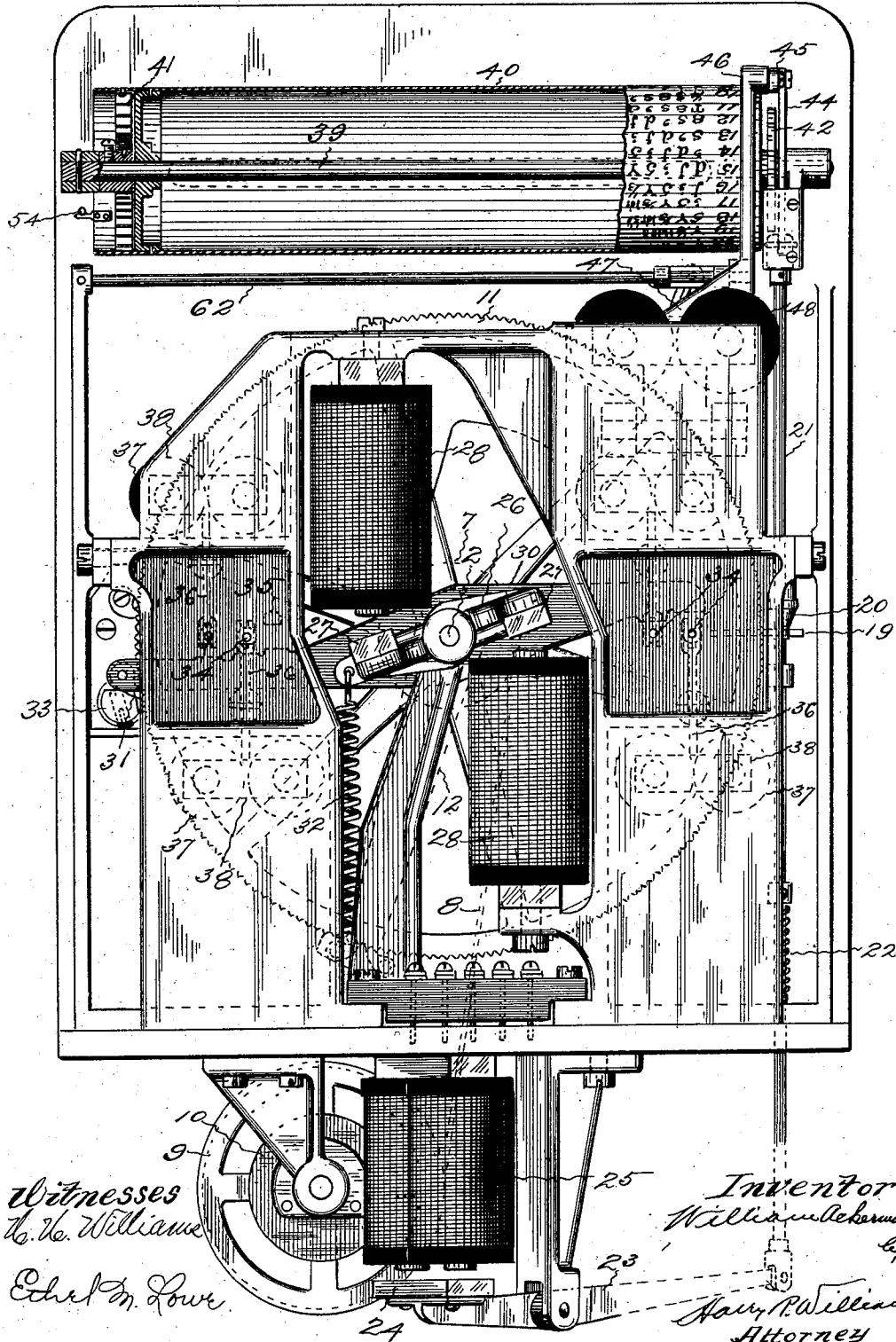
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5 SHEETS—SHEET 3.

Fig. 3



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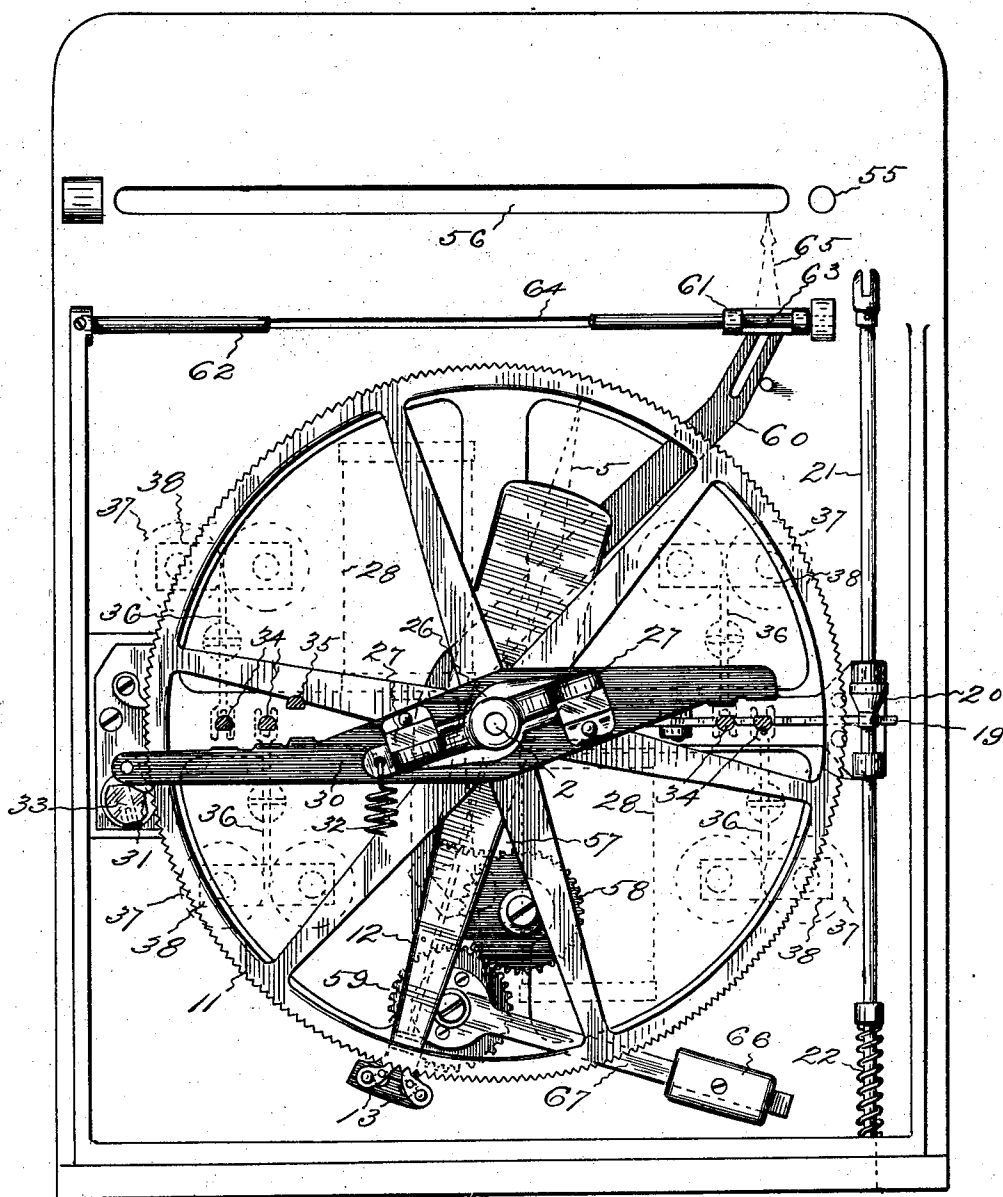
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5 SHEETS--SHEET 4.

Fig. 4



Witnesses

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NO MODEL.

5 SHEETS—SHEET 5.

Fig. 5

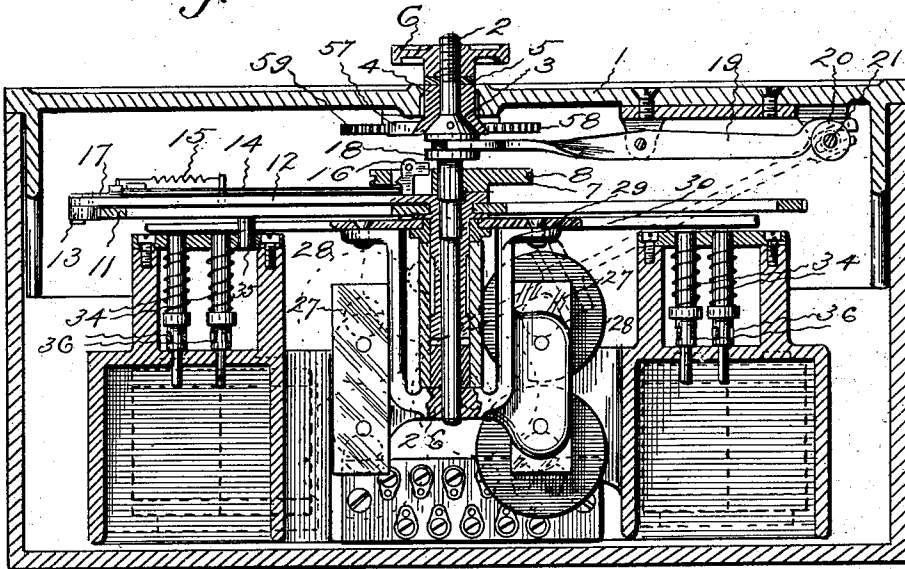


Fig. 6

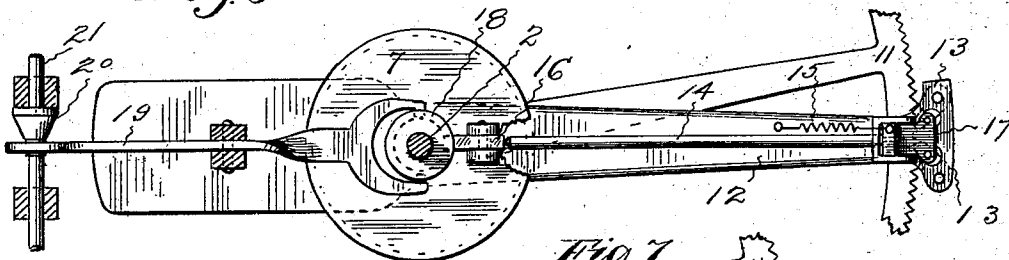


Fig. 7

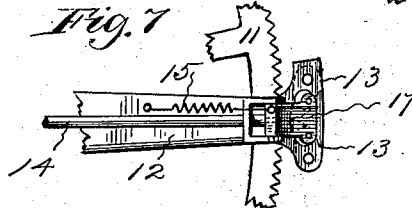
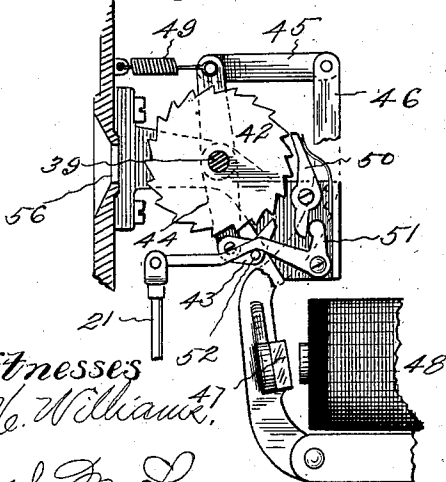


Fig. 8



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM ACKERMAN, OF NEW YORK, N. Y., ASSIGNOR TO THE UNITED STATES GRAPHOTYPE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

COUNTING AND INDICATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 747,922, dated December 29, 1903.

Application filed October 6, 1902. Serial No. 126,114. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ACKERMAN, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Counting and Indicating Machines, of which the following is a specification.

The operations of the mechanisms of machines which are constructed to automatically cast, compose, and justify individual type of the class set forth in United States Patent to G. A. Goodson, August 16, 1898, No. 609,098, are controlled by perforated strips. Such strips are prepared on a composing-machine which has keys that when touched cause the characters indicated by the keys to be printed and simultaneously cause the strips to be perforated in such manner that the characters on the keys of the composing-machine which were touched will be reproduced, composed, and justified by the casting-machine in which the strips are used. A composing-machine of this nature is set forth in United States Patent to G. A. Goodson, June 21, 1898, No. 606,007. Each type has a thickness of a certain number of predetermined units, and in order that the justifying-perforations may be properly punched in a strip to cause a line of type to be exactly filled a device is connected with the composing-machine which counts the number of units of the type and spaces which would be cast in a line by the perforations made and indicates to the operator when near the end of a line the number of units which must be added to or taken from the normal spaces between the words to justify the line.

The present invention relates to an indicating device which is particularly adapted for a composing-machine of this nature.

The object of this invention is to provide an indicating device which will count the number of units of type and spaces that will be set by the perforations made in the strip of paper and which will not only indicate how many units are necessary to be added to or removed from the spaces for justifying the line, but will indicate the proper key of the

type-writer to be struck to produce the perforations necessary to accomplish the justifying.

Figure 1 of the accompanying drawings is a front elevation of my indicating device. Fig. 2 is a central vertical section of the device. Fig. 3 is a rear elevation showing the magnets. Fig. 4 is a rear elevation with the magnets and indicating-roller removed. Fig. 5 is a central horizontal section of the device. Fig. 6 is a side elevation showing the mechanism for releasing the driving-wheel clutch-arm from the driving-wheel. Fig. 7 is a detail showing the driving-wheel clutch-arm released from the driving-wheel. Fig. 8 is a detail elevation showing the indicating-roller-driving mechanism in released position.

On the front of the frame is a dial 1, that is graduated into three hundred and sixty degrees and has zero at the top. An arbor 2 extends through the center of the dial. This arbor bears a fixed cone 3 and a loose sleeve 4, with a conical recess adjacent to the cone. A hand 5 is connected by dowel-pins with this sleeve, that fits the central opening in the front plate of the frame. On the threaded outer end of the arbor is a clamp-nut 6. When the clamp-nut is loosened, the hand and sleeve may be turned on the arbor to any desired degree; but when this nut is tightened the sleeve is clamped against the fixed cone, so that the hand will turn with the arbor. Fixed on the arbor back of the cone is a pulley 7, that is connected by a cord 8 with a pulley 9, fastened to a spring-drum 10, which is mounted below the frame. The spring in this drum is under such tension that the hand clamped to the arbor is normally pulled around the dial from the lowest to the highest graduation. Loose on the arbor is a driving-wheel 11. Extending in front of the driving-wheel and fastened to the arbor is an arm 12. The outer end of this arm has two oppositely-acting pawls 13, that are held by suitable springs, so as to engage teeth on the periphery of the driving-wheel. If these pawls are engaged with the teeth when the driving-wheel is turned, the arm is moved, and consequently turns the arbor, to which it is con-

nected, and the hand fastened to the arbor. On the front side of this arm is a rod 14, that is retracted toward the arbor by a spring 15. Mounted on the pulley 7 is a bell-crank 16. The inner end of the rod 14 rests against one end of the bell-crank, while the outer end of the rod is connected with a block 17, that lies adjacent to the inner ends of the pawl 13. When the bell-crank is oscillated so as to push the rod outwardly, the block at its end disengages these pawls from the teeth of the driving-wheel and releases the arm, allowing the arbor to be returned to its starting position by the pulleys, cord, and spring-drum. One end of the bell-crank is adjacent to the collar 18, that slides on the arbor. Engaging with a groove in this collar is the forked end of a lever 19, that extends toward one side of the machine and has an end lying adjacent to the cone 20, that is fixed to the release-rod 21. This rod is held raised by a spring 22 and is pulled down by the lever 23, that is attached to the armature 24 of the magnets 25, that are fastened to the bottom of the frame and are adapted to be connected with the trip-circuit of the composing-machine.

Loosely mounted on the rear end of the arbor is a lever 26, which carries armatures 27, that are attracted oppositely when the magnets 28 are energized. The coils of these magnets are adapted to be connected with a circuit that is closed each time a key of the composing-machine is depressed. A fork 29 extends from the hub of this armature-lever, and attached to the fork is an arm 30. The outer end of this arm 30 bears the pawl 31, that is arranged to engage the teeth of the driving-wheel. The arm is oscillated so as to draw the pawl backward over the teeth by the pull on the armatures and so as to feed the wheel forward by the pull of the spring 32, attached to the armature-lever. A stop-stud 33 is fastened to the frame in position to stop the end of the arm 30 when it is pulled by the spring and form a positive limit for the forward feed of the wheel. This stop-stud is also arranged to limit the movement of the arm 12 when it is released and thrown back by the rotation of the arbor. The amount of return movement of the arm 30 which is caused by the action of the magnets and that determines the amount of feed of the driving-wheel is determined by the contact of the edge of the arm with either one of the movable pins 34 or the fixed pin 35 that happens to be in the path of the arm. These pins are arranged different distances from the arm, so that the length of its return movement can be varied. The pins 34 are movably connected with levers 36 and are held out of the path of the arm 30 by springs and are drawn into the path of the arm by the attraction of the magnets 37 for the armatures 38 on the levers 36. These magnets are wound with wires that are adapted to be connected in circuits, which are closed by the depression of the various keys of the composing-machine. All of the

characters, which are the same number of units thick, are connected with the same magnet, so that a certain pin is thrown out into the path of the arm when perforations are made for characters having the same unit value. By means of this the distance the driving-wheel is fed depends upon the number of units in the character that is perforated.

Supported on an axle 39, near the top and back of an opening through the front of the frame, is a roller 40. In one end of this roller a spring 41 is arranged in such manner as to tend to rotate the roller in one direction. A ratchet-wheel 42 is attached to the other end of the roller. A pawl 43, mounted on the lever 44, engages the teeth of this ratchet-wheel. The lever is by link 45 connected with a lever 46, that bears the armature 47 of the magnet 48. A spring 49 draws the lever 44, so as to cause the pawl to feed the ratchet and the roller. The energization of the magnet 48 draws the armature in such manner and so moves the levers that the pawl 43 is drawn back over the teeth of the ratchet-wheel in position to feed it. The coils of the magnet 48 are adapted to be connected with a circuit that is closed each time the space-key of the composing-machine with which the device is used is touched, so that each time a space-perforation is made in the strip the roller is advanced one step. A pawl 50 engages the teeth of the ratchet to prevent it from rotating backwardly under the influence of the spring in the end of the roller. The upper end of the rod 21 is connected with a lever 51, which is arranged to engage with the end of the holding-pawl 50 and also with a pin 52, that projects from the feed-pawl 43. When the rod 21 is drawn down and releases the clutch-arm from the teeth of the driving-wheel, it oscillates the lever in such manner that the feed-pawl and holding-pawl are withdrawn from the teeth of the ratchet, allowing the roller to be returned by its spring to its normal position. The inner end of the roller-spring is attached to a sleeve 53, that can be turned on the axle for adjusting the amount of tension of the spring, and a stop 54 is attached to the frame to engage a part projecting from the roller, so that the roller will always return to the same position. About one end of the roller are figures, which show through an opening 55 in the front of the frame. These figures indicate the number of steps that the roller has been turned, and therefore tell the number of spaces that have been punched in the strip. The rest of the surface of the roller is lettered with different characters, which show through the elongated opening 56 in the front of the frame. These characters are in rows and are arranged with reference to the wiring of the casting-machine, in which the strip perforated by the composing-machine is to be used.

Fastened to the sleeve 4, to which the hand 5 is secured, is a segmental rack 57. This

rack is arranged to mesh with the teeth of a gear 58, that meshes with gear 59, mounted on studs projecting inwardly from the front of the frame. Attached to the hub of the gear 59 is an arm 60, which extends just inside of the front nearly to the top of the frame. The upper slotted end of this arm engages a slide 61, that moves on a rod 62, that has a stud 63 projecting through a slot 64 in the front frame. Attached to this stud is a pointer 65, whose upper end points to the different characters on the roller which are exhibited through the opening 56. The segmental rack travels with the hand, and when the hand approaches the zero position on the dial the segment-teeth engage the gear-teeth, and as the hand continues its movement toward zero and for a few degrees beyond the segmental rack causes the arm to move the pointer along the slot in front of the roller. In the arrangement shown the pointer begins to travel when the hand reaches the fifteenth degree before zero and continues to travel until the hand reaches the eighth degree beyond zero—that is, between plus “15” and minus “8” the pointer moves with the hand—so that any degree between these degrees is indicated by the pointer. Of course when the hand is returned to its normal position the pointer is returned by the counterbalance-weight 66 on the lever 67 to its position of rest, which is that shown in Fig. 1 of the drawings.

When this device is connected with a type-writing and strip-perforating machine of the character described in the patents previously referred to, the number of units of thickness of each of the characters punched in the strip are counted reversely by the hand, so that the operator can see at a glance just how many more units he may put into the line which he is perforating. Each time a space is inserted between a word the roller is turned and the number of spaces indicated through the opening already described. When the line is nearly completed and the hand approaches the zero position, which is that of an exactly-full line, the pointer begins to travel and each time points to the character which if struck on the keyboard will place such perforations in the strip as will exactly complete the line—that is, if the line is too full the pointer will indicate the character which if struck will make perforations which will cause a removal of some of the units of space and if the line is not full enough the character which the pointer indicates if struck will make such perforations as will add space units to those already in position and complete the line. In other words, by the use of this attachment to a perforating type-writer or composing-machine the character that is indicated by the pointer will be the one to touch in order to produce the proper perforations in the strip to effect the justification when the strip is being fed through the casting-machine.

The parts of this device which are returned when the release is operated, as at the end of each line when the trip-key is touched, are few and light. The heavy parts are not returned. By the reason of this light springs may be used, so that the machine will run noiselessly, with but little wear on the parts, and will add but little load to the operation of the composing-machine.

I claim as my invention—

1. An indicating device for use in connection with a composing-machine, having a graduated dial, a hand movable around the dial, mechanism for moving the hand, a pointer movable with the hand during part of the movement of the hand, a roller, mechanism for intermittently feeding the roller, and mechanism for disengaging the hand-moving mechanism and the roller-feeding mechanism and allowing the hand and the roller to be returned to their normal positions, substantially as specified.

2. An indicating device for use in connection with a composing-machine, having a graduated dial, a hand movable around the dial, mechanism for moving the hand a variable distance, a pointer movable with the hand during part of the movement of the hand, a roller, mechanism for intermittently feeding the roller, and mechanism for disengaging the hand-moving mechanism and the roller-feeding mechanism and allowing the hand and the roller to be returned to their normal positions, substantially as specified.

3. An indicating device for use in connection with a composing-machine, having a graduated dial, a hand movable around the dial, an electromagnetic mechanism for moving the hand in one direction, a spring for moving the hand in the opposite direction, a pointer movable with the hand during part of the movement of the hand, a roller, an electromagnetic mechanism for moving the roller in one direction, a spring for moving the roller in the opposite direction, an electromagnetic mechanism for disengaging the hand-moving mechanism and the roller-feeding mechanism and allowing the hand and the roller to be returned to their normal positions, substantially as specified.

4. An indicating device for use in connection with a composing-machine, having a graduated dial, a hand movable around the dial, mechanism for moving the hand forwardly and backwardly, mechanism for disengaging the mechanism for moving the hand forwardly and allowing the hand to be returned to its normal position, a pointer movable with the hand during a part of the movement of the hand, a roller, mechanism for intermittently feeding the roller, and mechanism for disengaging the roller-feeding mechanism and allowing the roller to be returned to its normal position, substantially as specified.

5. An indicating device for use in connection with a composing-machine, having a

- graduated dial, a hand movable around the dial, a feeding-wheel, an electromagnetic mechanism for feeding the wheel, a connection between the hand and the feeding-wheel, a pointer movable with the hand during a part of the movement of the hand, a roller, an electromagnetic mechanism for intermittently feeding the roller, and electromagnetic mechanism for simultaneously disengaging both the hand-moving mechanism and the roller-feeding mechanism, substantially as specified.
5. An electromagnetic mechanism for disengaging the connection between the hand and the feeding-wheel and allowing the hand to be returned to its normal position, substantially as specified.
6. An indicating device for use in connection with a composing-machine, having a graduated dial, a hand movable around the dial, a feeding-wheel, an electromagnetic mechanism for feeding the wheel, a connection between the hand and the feeding-wheel, an electromagnetic mechanism for disengaging the connection between the hand and the feeding-wheel and allowing the hand to be returned to its normal position, a pointer, a connection between the hand and the pointer, a roller, an electromagnetic mechanism for feeding the roller, and an electromagnetic mechanism for disengaging the roller-feeding mechanism and allowing the roller to be returned to its normal position, substantially as specified.
7. An indicating device for use in connection with a composing-machine, having a graduated dial, a hand movable around the dial, a feeding-wheel, an oscillating lever for feeding the wheel, electromagnetic mechanism for oscillating the lever, an arm connected with the feeding-wheel and also with the hand, an electromagnetic mechanism for disengaging the arm from the feeding-wheel and allowing the hand to be returned to its normal position, substantially as specified.
8. An indicating device for use in connection with a composing-machine, having a graduated dial, a hand movable around the dial, a feeding-wheel, an oscillating lever for feeding the wheel, an electromagnetic mechanism for oscillating the lever, a pawl connecting the lever with the feeding-wheel, an arm connected with the hand, pawls connecting the arm with the feeding-wheel, an electromagnetic mechanism for disengaging the pawl from the feeding-wheel and allowing the hand to be returned to its normal position, substantially as specified.
9. An indicating device for use in connection with a composing-machine, having a graduated dial, a hand movable around the dial, a feeding-wheel, an oscillating lever for feeding the wheel, movable pins for limiting the oscillation of the lever, an electromagnetic mechanism for moving the pins, an arm connected with the hand, pawls connecting the arm with the feeding-wheel, and an electromagnetic mechanism for disengaging the pawl from the feeding-wheel and allowing the hand to be returned to its normal position, substantially as specified.
10. An indicating device for use in connection with a composing-machine, having a graduated dial, a hand movable around the dial, a feeding-wheel, an electromagnetic mechanism for feeding the wheel, a connection between the hand and the feeding-wheel, a pointer movable with the hand during a part of the movement of the hand, a roller, an electromagnetic mechanism for intermittently feeding the roller, and electromagnetic mechanism for simultaneously disengaging both the hand-moving mechanism and the roller-feeding mechanism, substantially as specified.
11. An indicating device for use in connection with a composing-machine, having a graduated dial, a hand movable around the dial, a pointer movable with the hand during a part of the movement of the hand, electromagnetic mechanism for feeding the hand, electromagnetic mechanism for disengaging the feeding mechanism from the hand, and means for returning the hand, but not the hand-feed mechanism to a normal position, substantially as specified.
12. An indicating device for use in connection with a composing-machine, having a graduated dial, a hand movable around the dial, a pointer movable with the hand during a part of the movement of the hand, a roller, an electromagnetic mechanism for feeding the hand, an electromagnetic mechanism for feeding the roller, an electromagnetic mechanism for disengaging the feeding mechanism from the hand and the feeding mechanism from the roller, and mechanism for returning the hand and the roller, but not their feed mechanisms, to their normal positions, substantially as specified.
13. An indicating device for use in connection with a composing-machine, having a graduated dial, an arbor, a hand attached to the arbor, a feeding-wheel loose upon the arbor, an arm attached to the arbor and having pawls engaging teeth on the feeding-wheel, a lever loose upon the arbor and having a pawl engaging teeth on the feeding-wheel, a magnet and spring for oscillating the lever, an electromagnetic mechanism for disengaging the pawls on the arm from the teeth on the feeding-wheel, and a spring for returning the arbor to its normal position, substantially as specified.
14. An indicating device for use in connection with a composing-machine, having a graduated dial, an arbor, a hand adjustably connected with the arbor, a nut for clamping the hand to the arbor, a feeding-wheel loose upon the arbor, an arm attached to the arbor and having pawls engaging teeth on the feeding-wheel, a lever loose upon the arbor and having a pawl engaging teeth on the feeding-wheel, a magnet and spring for oscillating the lever, an electromagnetic mechanism for disengaging the pawls on the arm from the teeth on the feeding-wheel, and a spring for returning the arbor to its normal position, substantially as specified.
15. An indicating device for use in connection with a composing-machine, having a graduated dial, an arbor, a spring for return-

ing the arbor to its normal position, a hand
attached to the arbor, a feeding-wheel loose
upon the arbor, an arm attached to the arbor
and having pawl-engaging teeth on the feed-
5 ing-wheel, a lever loose upon the arbor and
having a pawl engaging teeth on the feeding-
wheel, a magnet and spring for oscillating the
lever, a pointer movable with the hand dur-
ing part of the movement of the hand, a roller,
10 a ratchet and pawl for feeding the roller, an
electromagnetic mechanism for intermit-
tently operating the ratchet and pawl, a
spring for returning the roller to its normal
position, and an electromagnetic mechanism
15 for disengaging the pawls on the arm from
the teeth on the feeding-wheel and simulta-
neously disengaging the pawl from the ratchet

attached to the roller, substantially as speci-
fied.

16. An indicating device for use in connec- 20
tion with a composing-machine, having a
graduated dial, a hand movable forwardly
and backwardly around the dial, mechanism
for moving the hand, a connection between
the hand and the hand-moving mechanism 25
and mechanism for disengaging the connec-
tion from the hand-moving mechanism and
allowing the hand to be returned to its normal
position, substantially as specified.

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Witnesses:

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