

No. 661,437.

Patented Nov. 6, 1900.

E. G. BATES & C. SPIELMANN.  
TYPOGRAPHIC NUMBERING MACHINE.

(Application filed Aug. 30, 1897.)

2 Sheets—Sheet 1.

(No Model.)

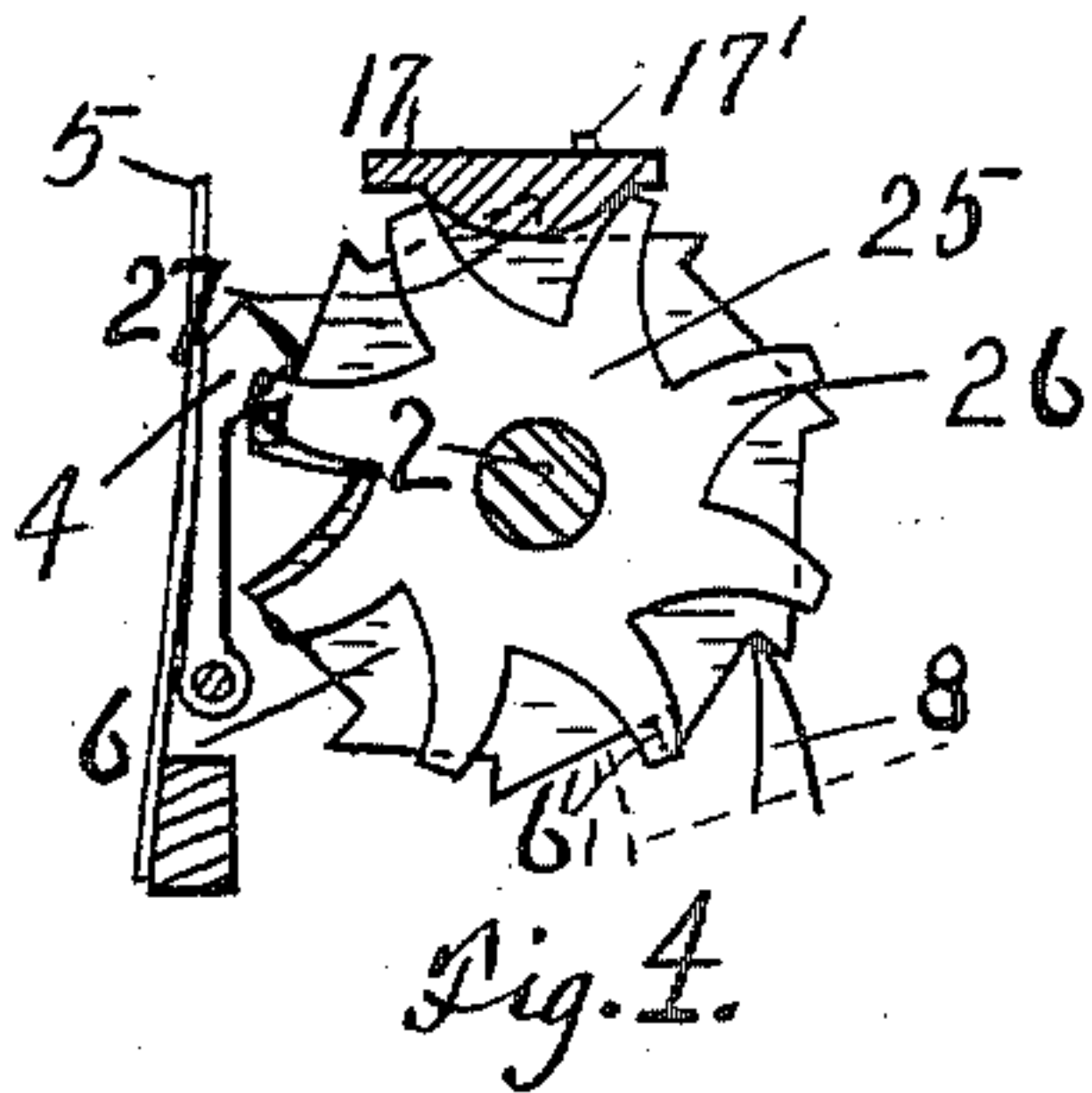


Fig. 1.

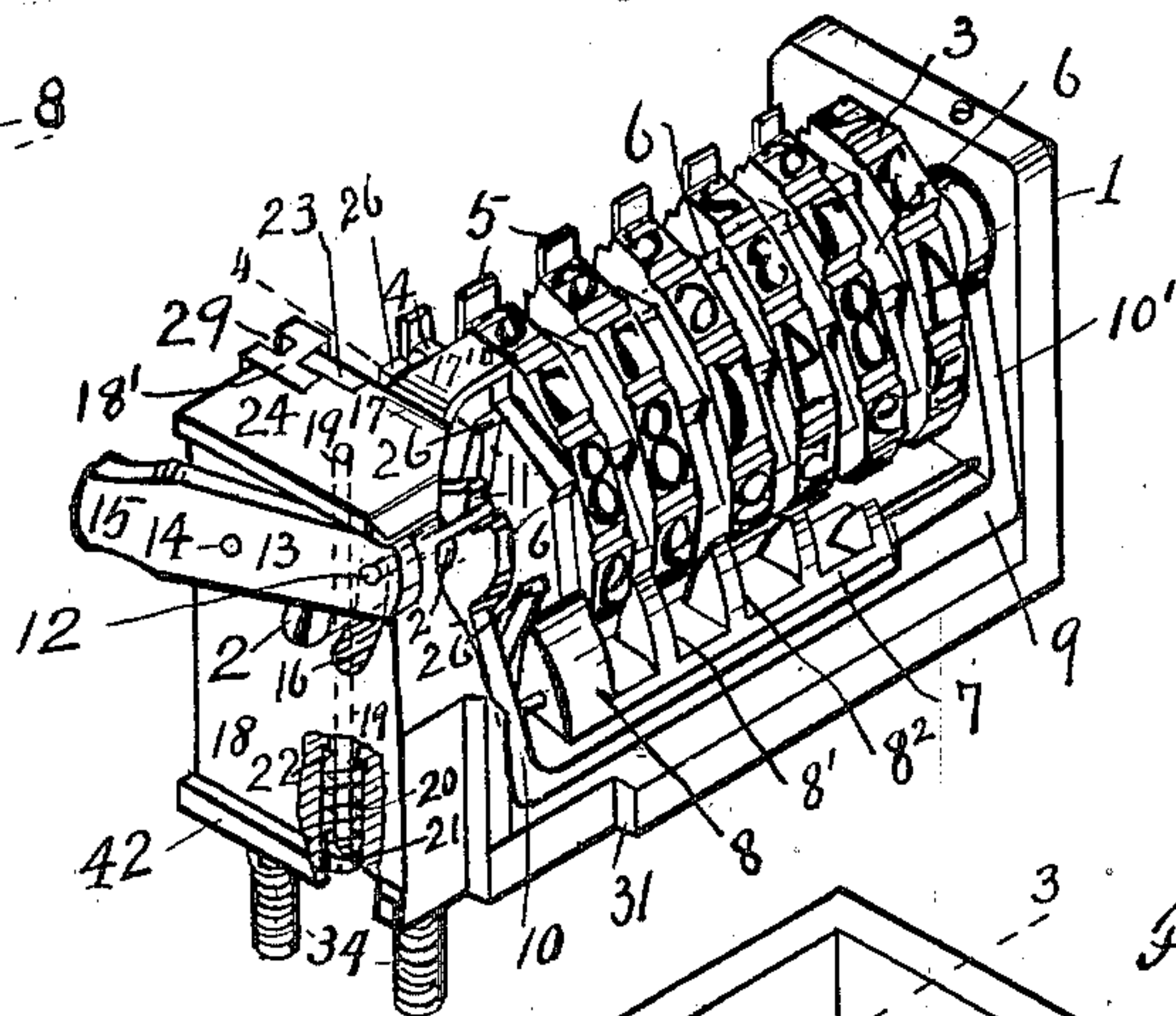


Fig. 5.

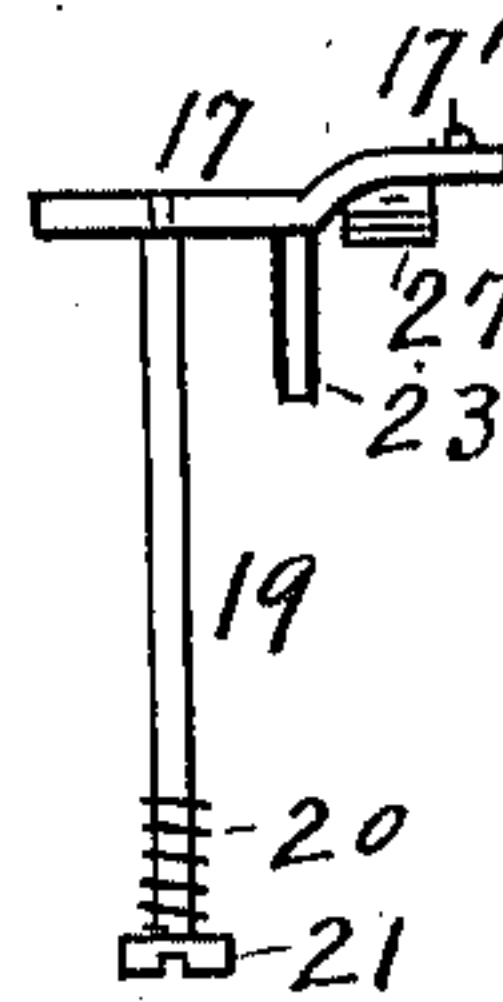


Fig. 2.

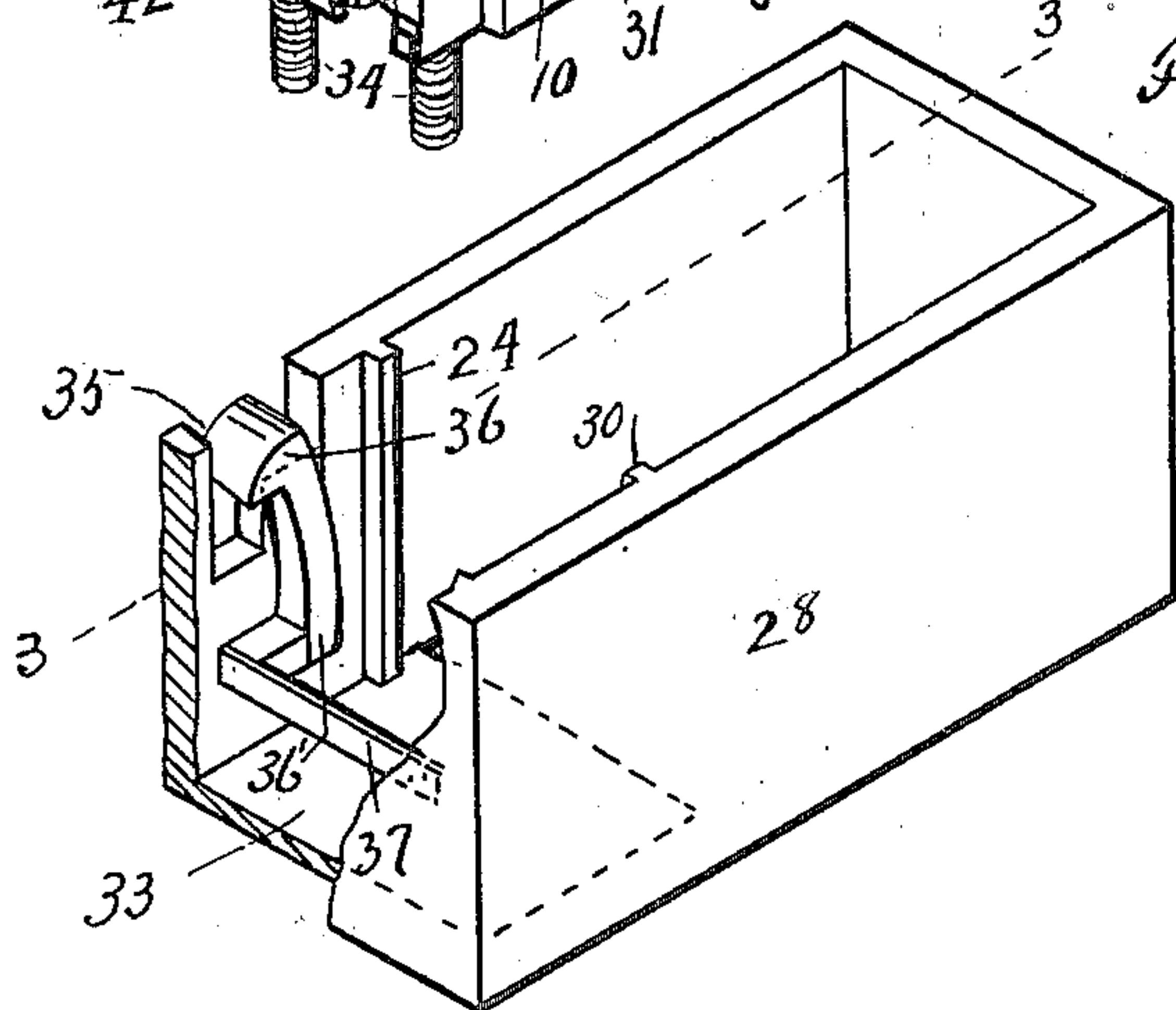


Fig. 3.

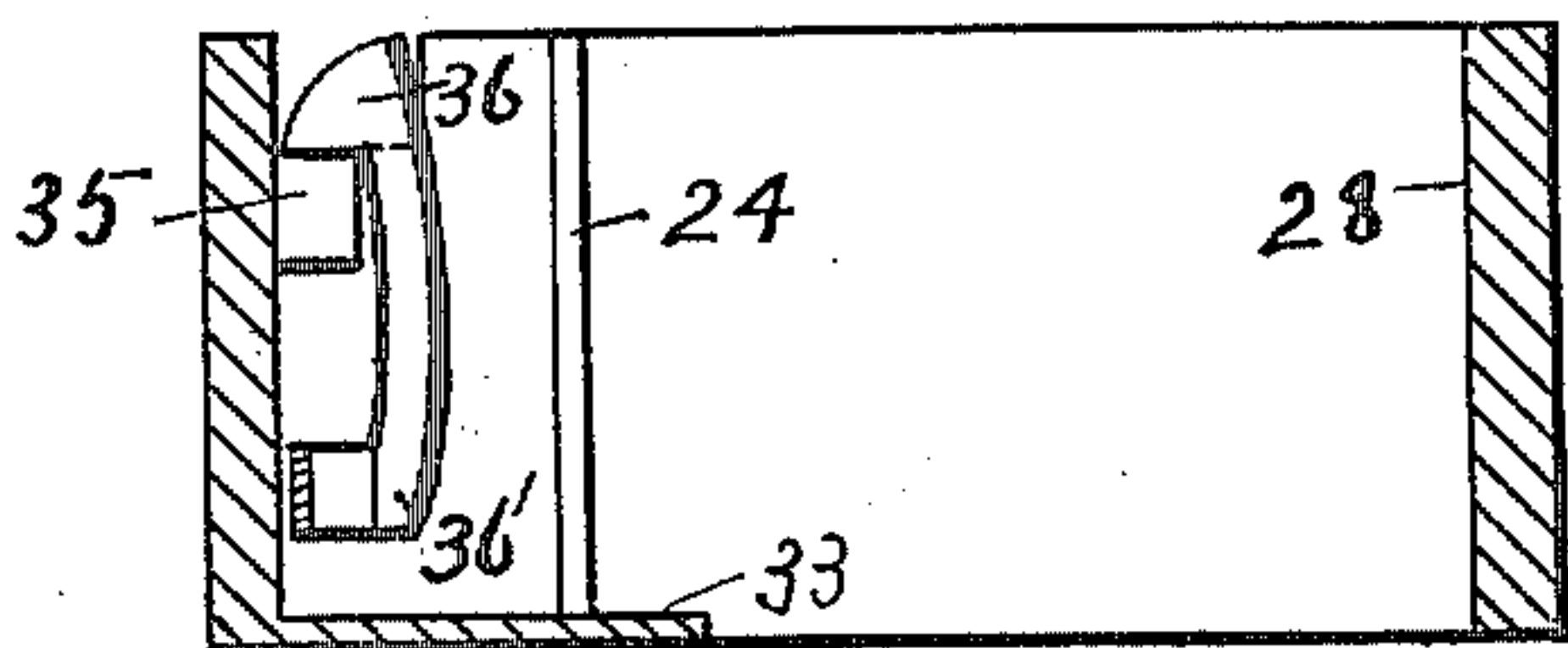
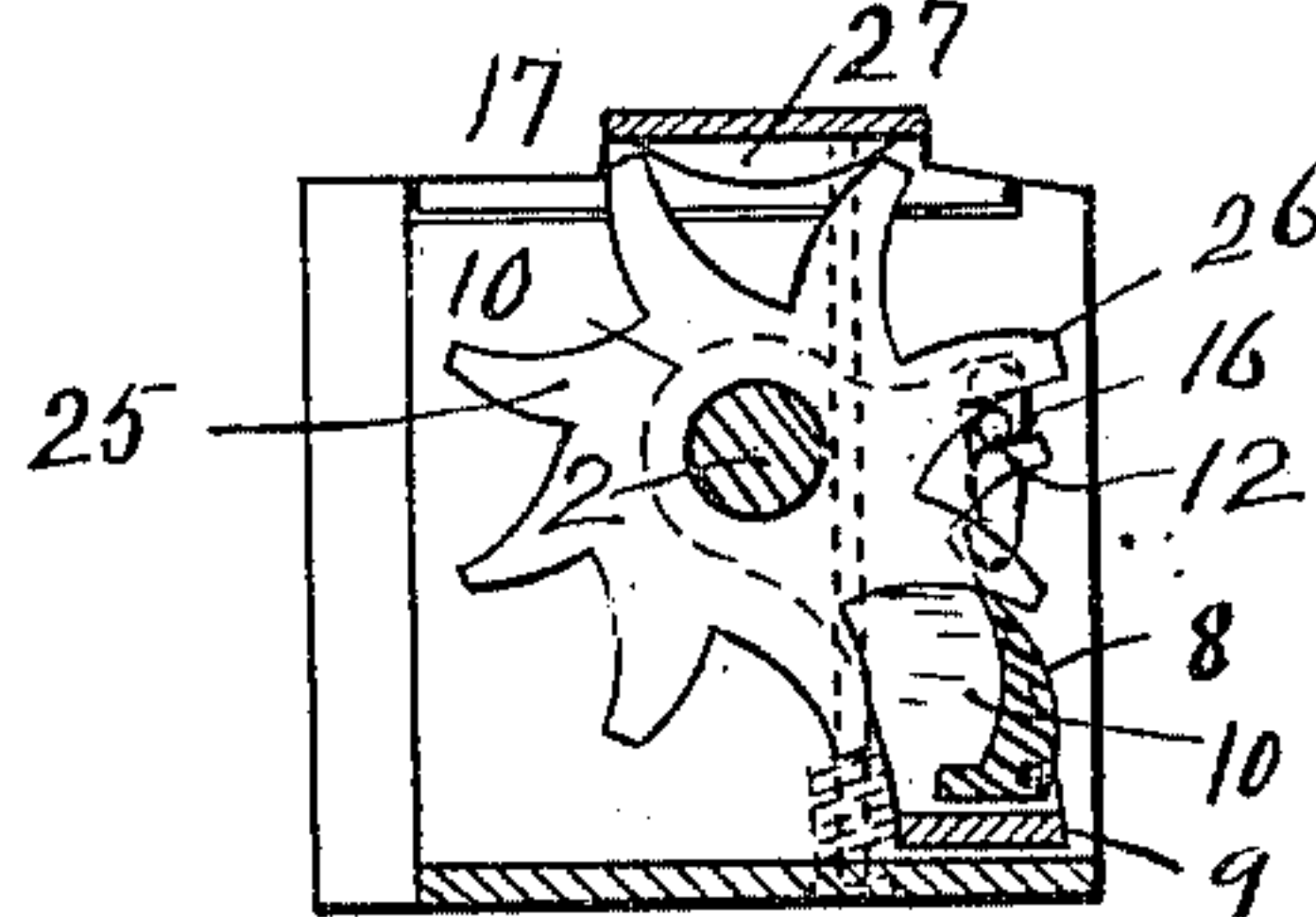


Fig. 14.



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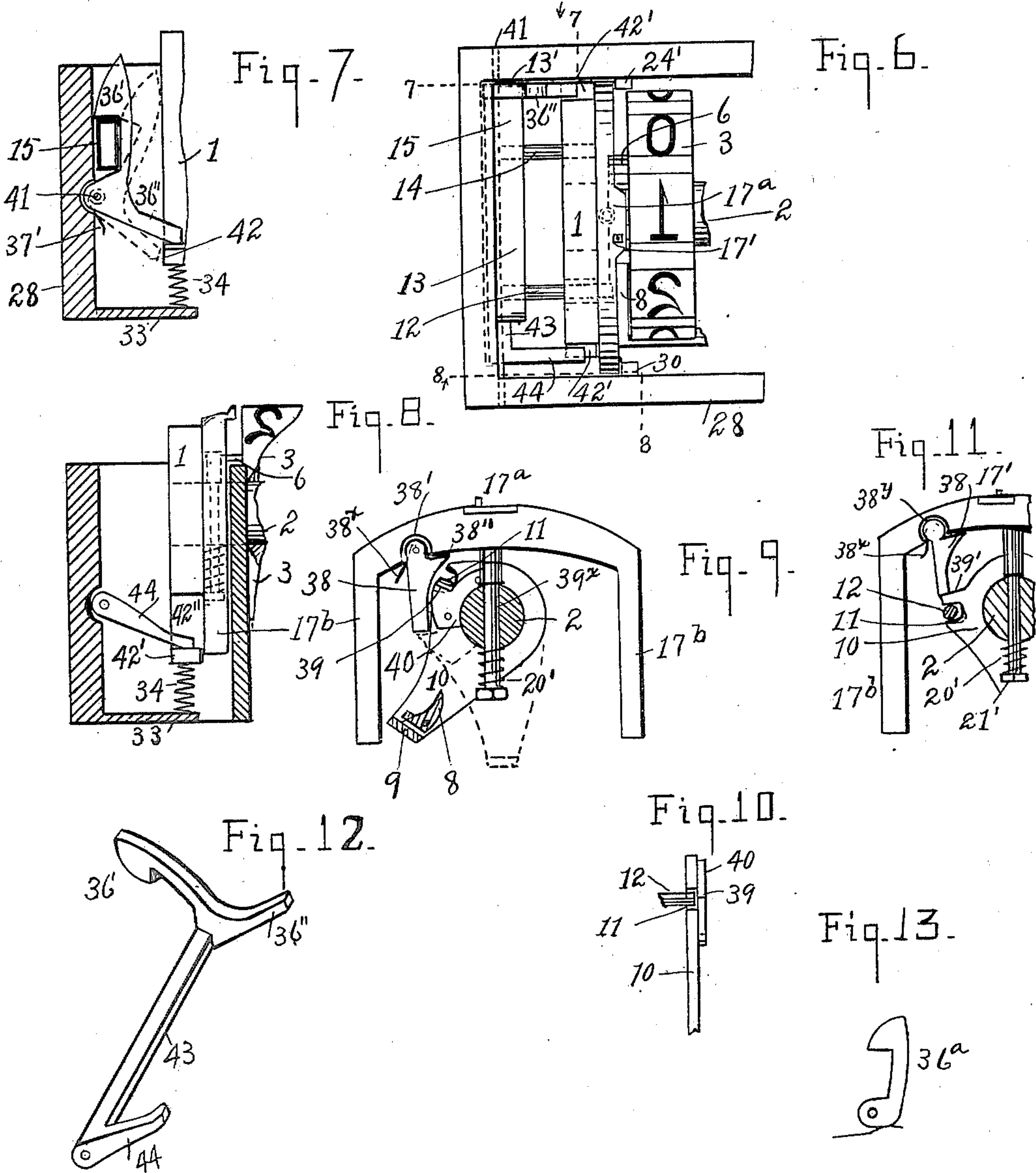
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(Application filed Aug. 30, 1897.)

(No Model.)

2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

EDWIN G. BATES AND CHARLES SPIELMANN, OF NEW YORK, N. Y., ASSIGN-  
ORS, BY DIRECT AND MESNE ASSIGNMENTS, TO THE BATES MACHINE  
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## TYPOGRAPHIC NUMBERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 661,437, dated November 6, 1900.

Application filed August 30, 1897. Serial No. 649,984. (No model.)

*To all whom it may concern:*

Be it known that we, EDWIN G. BATES, a resident of New York, county of New York, and CHARLES SPIELMANN, a resident of New York, (Brooklyn,) county of Kings, State of New York, citizens of the United States, have invented certain new and useful Improvements in Typographic Numbering-Machines, of which the following is a specification.

10 This invention relates to automatic numbering-machines adapted to be locked in a chase with a form, being surrounded by type-matter or used separately when numbers only are to be printed; and the main object of the invention is to provide such a machine with means for retarding rotary movement of the first or unit figure-wheel, and consequently of the following wheels as their pawls come into action, until there is a clearance between the printed paper and the peripheries of the figure-wheels.

Another object is to provide automatic catch and stop devices for the numbering-head.

25 In the drawings, Figure 1 is a perspective view of the numbering-head. Fig. 2 is a like view of a casing for the head. Fig. 3 is a vertical section on line 3 3 of Fig. 2. Fig. 4 is a partial section on line 4 4 of Fig. 1. Fig. 5 is an end view of a period plate or device detached. Fig. 6 is a plan of a modification. Fig. 7 is a section on line 7 7 of Fig. 6. Fig. 8 is a section on line 8 8 of Fig. 6. Fig. 9 shows a modified retarding device in elevation. Fig. 10 is a partial edge view thereof. Fig. 11 shows another modified device. Fig. 12 is a perspective view of a locking device. Fig. 13 shows a modified hook, and Fig. 14 is a vertical section of the numbering-head on a plane between wheel 25 and the first ratchet-wheel.

1 is a frame, in which is mounted a non-rotary axis 2, on which are several figure-wheels 3, normally held from turning by pawls 4 and springs 5, the pawls engaging teeth of the ratchet-wheels 6, each figure-wheel having such a ratchet-wheel secured to it.

7 is a pawl-plate, with stepped pawls 8 8'

8<sup>2</sup>, &c., carried by the swinging plate 9, supported by arms 10 10', having bearings on the axis. Arm 10 has a notch 11, into which extends a pin 12 from lever 13, pivoted at 14 and having a head 15, extending out beyond the rear side of the numbering-head.

16 is a slot in which pin 12 can travel.

17 is a period-carrying device normally held on the end 18 of the frame 1 by the rod or screw 19, extending vertically through said end, being pressed down lightly by a spring 20, acting between the screw-head 21 and shoulder 22, which shoulder is formed by making the hole larger at the bottom than at the top, as shown in Fig. 1.

23, Figs. 4 and 5, is an arm projecting down from the period-plate, adapted to rest against one side of the channel-piece 18', forming a part of the frame end 18, the channel being adapted to fit and to move on rib 24. The period-plate 17 is movable in relation to the frame end 18 and channel-piece 18'. Arm 23 and rod 19 guide plate 17 in a straight vertical line when it is moved, as hereinafter explained.

17' is a period-printing projection on the plate 17.

In the preferred form of retarding device on the axis beside ratchet-wheel 6 of the first or unit figure-wheel is a loose wheel 25, having a different number of teeth 26 than wheels 6 have ratchet-teeth. Wheel 25, as shown, has eight teeth, and these do not correspond in angular position to the teeth of the ratchet-wheels. It will be found that when the first—that is, the longest—pawl 8, which is made wide enough to engage both wheel 6 and wheel 25, is in position to advance its figure-wheel (see dotted position in Fig. 4) the pawl must turn wheel 25 a certain distance before it can reach the next tooth 6' of the ratchet-wheel to advance it. On the under side of the period-plate is a curved tooth or cam 27, which fits in between the two upper teeth of wheel 25. The outer case 28, open at top and bottom, is adapted to receive the head.

24 is a rib adapted to fit a corresponding groove 29 in frame 1 to insure exact position



and accurate movement of the head. A similar guide-rib 30 may be placed on the opposite side of the case, and this may cooperate with shoulder 31 of the frame. Shelf 33 forms an abutment for springs 34 of the head.

In the rear side of the case is a notch 35, adapted to receive the head of pivoted lever 13, locked therein by an automatic spring-catch 36, 37 being its operating-spring.

When the numbering-head is pressed down into the case, the head of lever 13 pressing against the beveled head of the catch forces it back and when fully entered is engaged thereby, but not so as to prevent movement of the lever on its pivot. This construction provides for removal of the numbering-head from the case for cleaning or other purpose without removing any screws and merely by pressing back the catch, which can be done without even unlocking the form. When pressure is removed from the numbering-head, it is forced up a short distance by springs 34, as it is also after each printing impression. The period normally is in position level with the peripheries of the figures of the number-wheels in printing position, and these are when at rest (before being pressed upon) about an eighth of an inch or less above the height of type in the form, and upon being pressed in the act of printing descend to the height of the type, and upon pressure being removed the wheels and period move upward about one thirty-second of an inch, when the moving pawl comes in contact with one of the teeth of the loose wheel, advancing said wheel, causing one of its arms 26 to press against cam 27, forcing the period-block upward above the peripheries of the figure-wheels about one-sixteenth of an inch. As arm 26 passes the highest part of the cam the resistance to movement of the pawl decreases and the pawl freely advances the figure-wheels engaged thereby. Downward movement of the numbering-head in the case advances the pawl-plate by lever 13, the outer end of which is held by the catch, so that one or more of its paws engage the next ratchet-teeth to advance one or more of the figure-wheels, which is accomplished when the head rises. Wheel 25, cam 27, and the yielding plate by which it is carried constitute means for retarding the advancement of the figure-wheels until they have positively separated from the printed paper.

Hook 36 is so supported that its lower end 36' normally stands when the head is in the case just above rib 42, thus forming a stop to limit the upward movement of the head. When the head is introduced, the combined catch and stop automatically yields to admit the end of the lever 13 below the catch and to allow the rib to pass below the stop, spring 37 then acting to hold the catch in engagement and the stop over the rib.

36<sup>a</sup>, Fig. 13, is a modified hook adapted to catch and hold lever 13, but not adapted to

act as a stop and may be used with a separate stop device.

A modified device for retarding rotary movement of the unit figure-wheel is shown in Figs. 6, 8, 9, and 10. Instead of the period-plate of form shown in the figures above described and the loose wheel 25 a period device 17<sup>a</sup> is used having guide-arms 17<sup>b</sup> to insure straight up-and-down movement, also a pin 39<sup>x</sup>, adapted to move vertically in a hole in the shaft, being pressed down lightly by spring 20'. This period plate or device, which spans the ratchet 6 on the unit-wheel 3, has a pawl 38, pivoted in a socket 38', adapted when the pawl-plate is moved into the position indicated by dotted lines in Fig. 8 by the depression of the numbering-head in the case 28 to engage a tooth or shoulder 39 on arm 10 of plate 9, supporting the stepped paws and to retard movement of the unit-wheel until the pawl and tooth become disengaged. Notch 11, it will be understood, has the same purpose as the like notch in Fig. 1—that is, it is designed to receive the end of a pin 12, by which the pawl-plate is swung, as above described.

Tooth or shoulder 39 is formed on a metal piece 40, secured to the inner face of arm 10 in the position shown in Figs. 9 and 10. When the head is up, arm 10, tooth 39, and pawl 38 occupy the relative positions shown in full lines in Fig. 9, and when the head is pressed down in the act of printing arm 10 is thrown to dotted position—for example, by a pin 12 and cooperating parts, as shown in Fig. 1—thus bringing tooth 39 below the bottom of pawl 38, which is at once caused to engage said tooth by spring 38<sup>x</sup>, and arm 10 in moving reversely must raise the period device against spring 20', thereby retarding the return—that is, the figure-wheel-feeding movement due to expansion of springs 34. Before arm 10 reaches its full-line position shoulder 39 will slip from under pawl 38, owing to the lateral movement of said pawl being limited by a projection or stop 38.

In Fig. 11 pawl 38 has a circular head which fits snugly in a similarly-shaped socket 38<sup>y</sup>, of such shape as to hold the pawl without a pivot-pin and allowing a slight turning or hinge movement. In this form the pawl engages shoulder 39' formed on arm 10.

In order to automatically engage head 15 of lever 13 when the numbering-head is introduced into case 28, we may dispense with the notch 35 and terminate lever 13 inside the case and provide a spring-pressed engaging hook-lever 36', pivoted at 41, lever 36' being adapted to catch the end 15 of lever 13. With this construction the hook is so formed that when the end of lever 13 is inserted it will stand directly above the pivot, and the hook will thus form a rigid bearing for the end of the lever, corresponding to the bottom of notch 35, Fig. 2, to turn lever 13 on its pivot 14 when the head is depressed. The lower end



36" of this hook-lever stands above ribs 42' on frame 1 in such position as to form a stop to arrest upward movement of the head at the proper point. When the head is placed in the case, the hook-lever automatically moves to allow ribs 42' to pass below it. Preferably the hook-lever has a transverse extension 43, carrying an arm 44, also adapted to engage the rib 42' at the other side of the case on an edge of frame 1, a clearance 42" being provided to allow up-and-down movement of the head within desired limits.

We claim—

1. In an automatic numbering-machine, the combination of figure-wheels having ratchet-wheels, stepped pawls, which when set for advancing said wheels are a short distance behind the ratchet-teeth to be operated on, means for moving the pawls for advancing the ratchet and figure wheels, and means consisting of a movable period-plate in position to be moved by the stepped-pawl mechanism before the pawls can engage the ratchets of the figure-wheels to be moved for preventing the beginning of rotation of the figure-wheels until said wheels have moved a distance from the plane of the printed paper.

2. The combination of a numbering-head having a frame, an axis, figure and ratchet wheels thereon, a pawl-plate and stepped pawls, the longest pawl being wider than its ratchet, a loose toothed wheel 25 on the axis beside the ratchet of the unit-wheel in position to be moved by said longest pawl, the teeth of wheel 25 having a different radial or angular arrangement than the ratchet-wheel teeth, whereby when the pawl-plate is moved so that one or more of the pawls will on their return movement advance figure-wheels, the longest pawl first engages a tooth of wheel 25 before reaching a tooth of the ratchet-wheel, and means for retarding movement of wheel 25.

3. In a numbering-machine having figure-wheels, stepped pawls and means for moving the pawls, a movable period-plate having a downwardly-extending cam or tooth, a loose toothed wheel between the teeth of which the cam is adapted to fit, and a tooth of the stepped pawl adapted to engage a tooth of the loose wheel before moving the first figure-wheel.

4. In a numbering-machine having figure-wheels, ratchets and stepped pawls for advancing them, said pawls when set for advancing the ratchets and figure-wheels being a short distance behind the ratchet-teeth to be engaged, a lever for moving said pawls, a period-plate, and means operated by movement of said lever for raising the period-plate before said pawls reach ratchet-teeth to move figure-wheels, thereby retarding the latter.

5. In a numbering-machine having figure-wheels and stepped pawls for advancing them, a lever for moving said pawls, a period-plate, a spring normally holding it on a level with the figure-wheels, and means operated by movement of said lever for raising the period-plate against tension of its spring.

6. In a numbering-machine having figure-wheels and stepped pawls for advancing them, a lever for moving said pawls, a period-plate, a spring normally holding the period-plate on a level with the figure-wheels, and means operated by movement of said lever for raising the period-plate against the tension of its spring before said pawls move figure-wheels, thereby retarding the latter, and means for guiding the period-plate in a perpendicular line.

7. In a numbering-machine having figure-wheels and means for advancing them, a period-plate normally level with the figure-wheels, means for raising the period-plate, said means acting to raise the period-plate above the figure-wheels before the means for advancing them moves the first figure-wheel.

8. The combination of a case, a numbering-head adapted to move up and down therein, a pivoted arm carried by the head and projecting therefrom, a catch connected to the case and having a hook engaging said pivoted arm on the head, said catch having a part distinct from said hook adapted to engage the head to limit outward movement thereof.

9. The combination of a case, a numbering-head adapted to move up and down therein, and a hook connected to the case and holding the head therein, said hook having a part adapted to engage the head to limit outward movement thereof, said hook having also a transverse extension with an arm 44 adapted to engage the head at the opposite side thereof.

10. The combination of a case, a numbering-head adapted to move up and down therein, a yielding hook with beveled head within the case, and an arm connected to the head in position to press back said hook and to be engaged thereby when the head is introduced into the case.

11. The combination of a case, a numbering-head adapted to move up and down therein, a rib on the head, a stop-arm adapted to be automatically moved back when the head is introduced into the case to allow the rib to pass it, and a spring for returning the stop-arm to position to engage the rib to limit its outward movement.

Signed this 16th day of August, 1897.

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