

No. 822,791.

PATENTED JUNE 5, 1906.

H. E. WAITE.
SELF FEEDING MAIL MARKING MACHINE.

APPLICATION FILED FEB. 27, 1906.

3 SHEETS—SHEET 1.

Fig. 1.

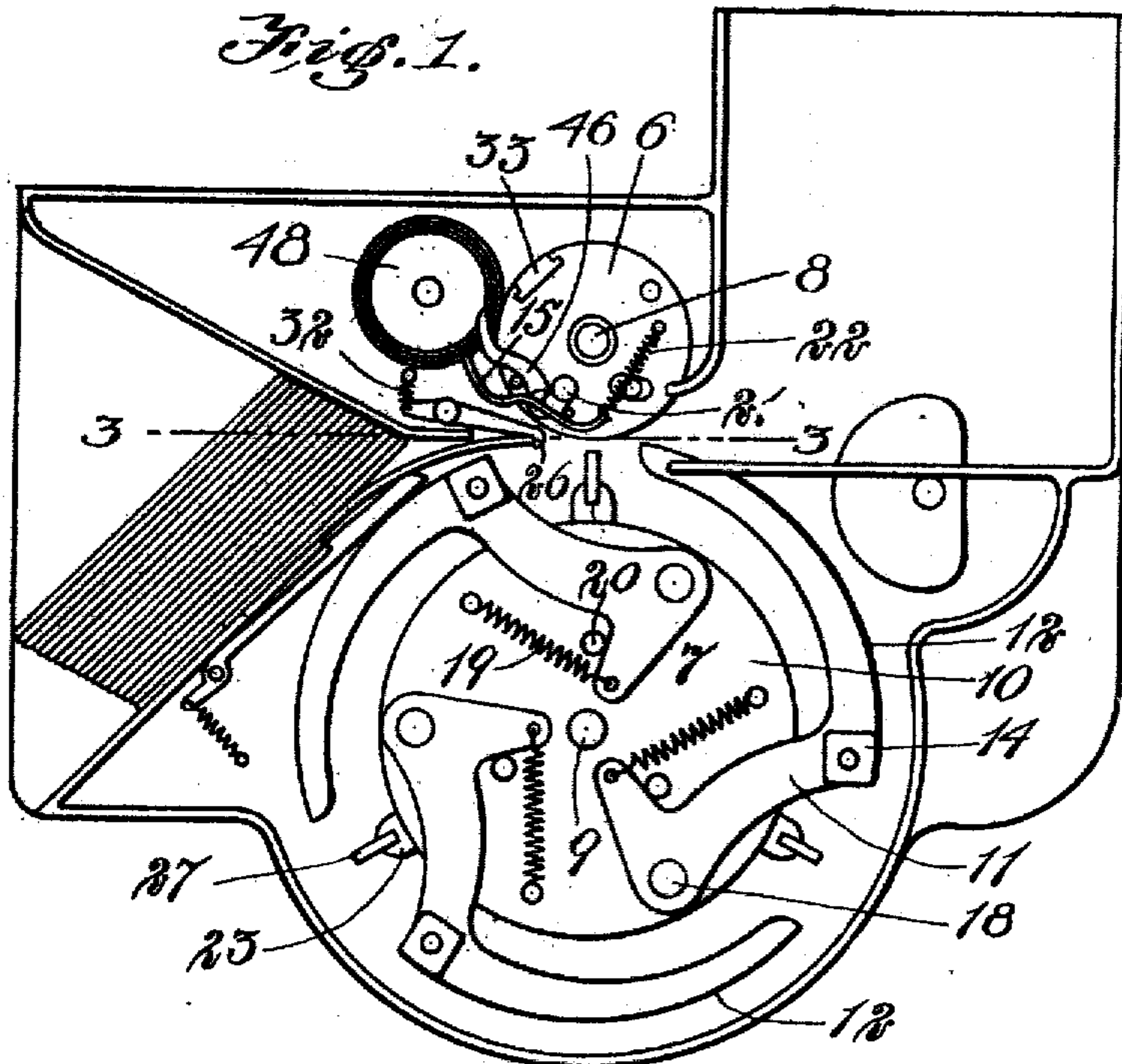
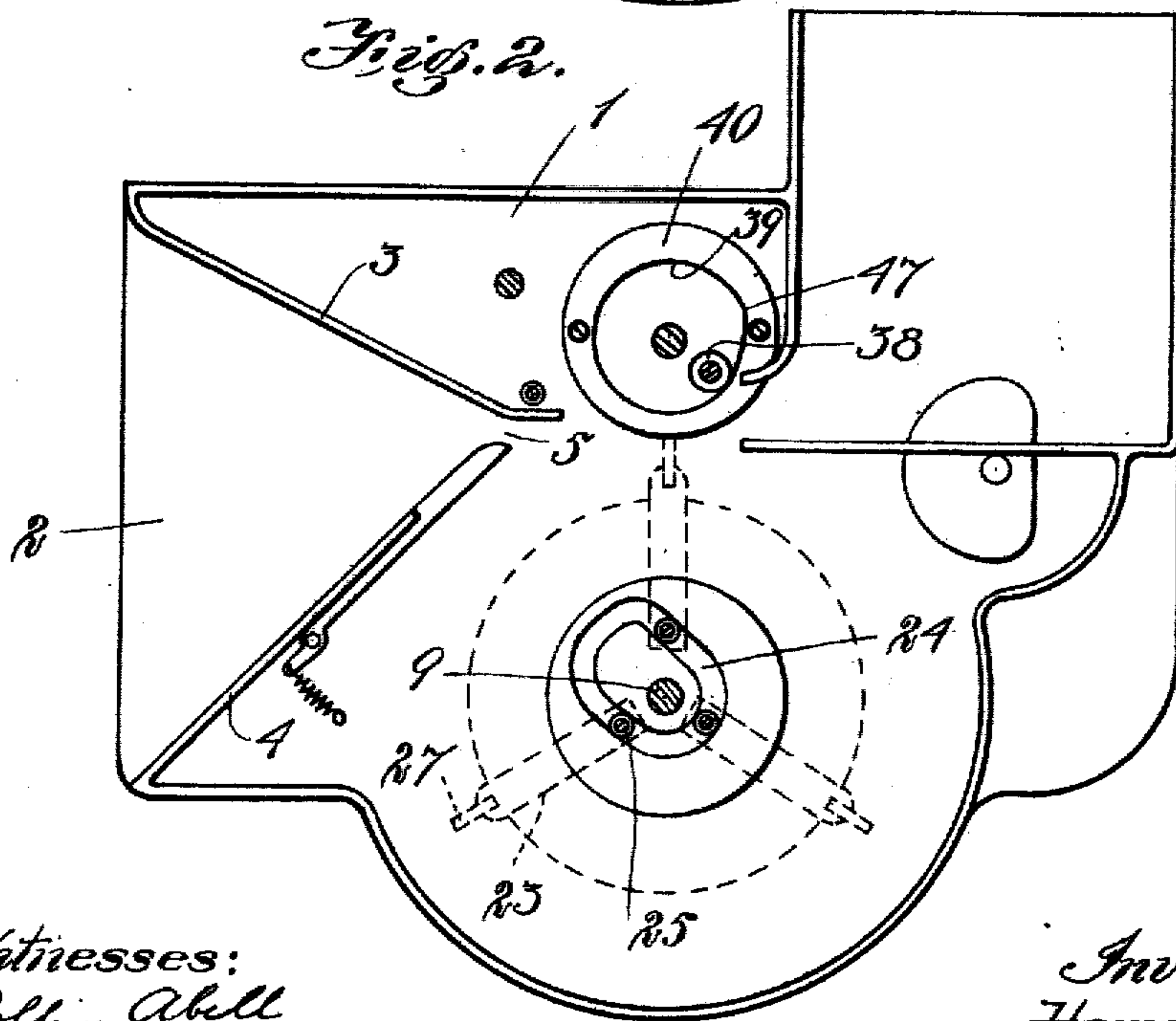


Fig. 2.



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3 SHEETS—SHEET 2

Fig. 3.

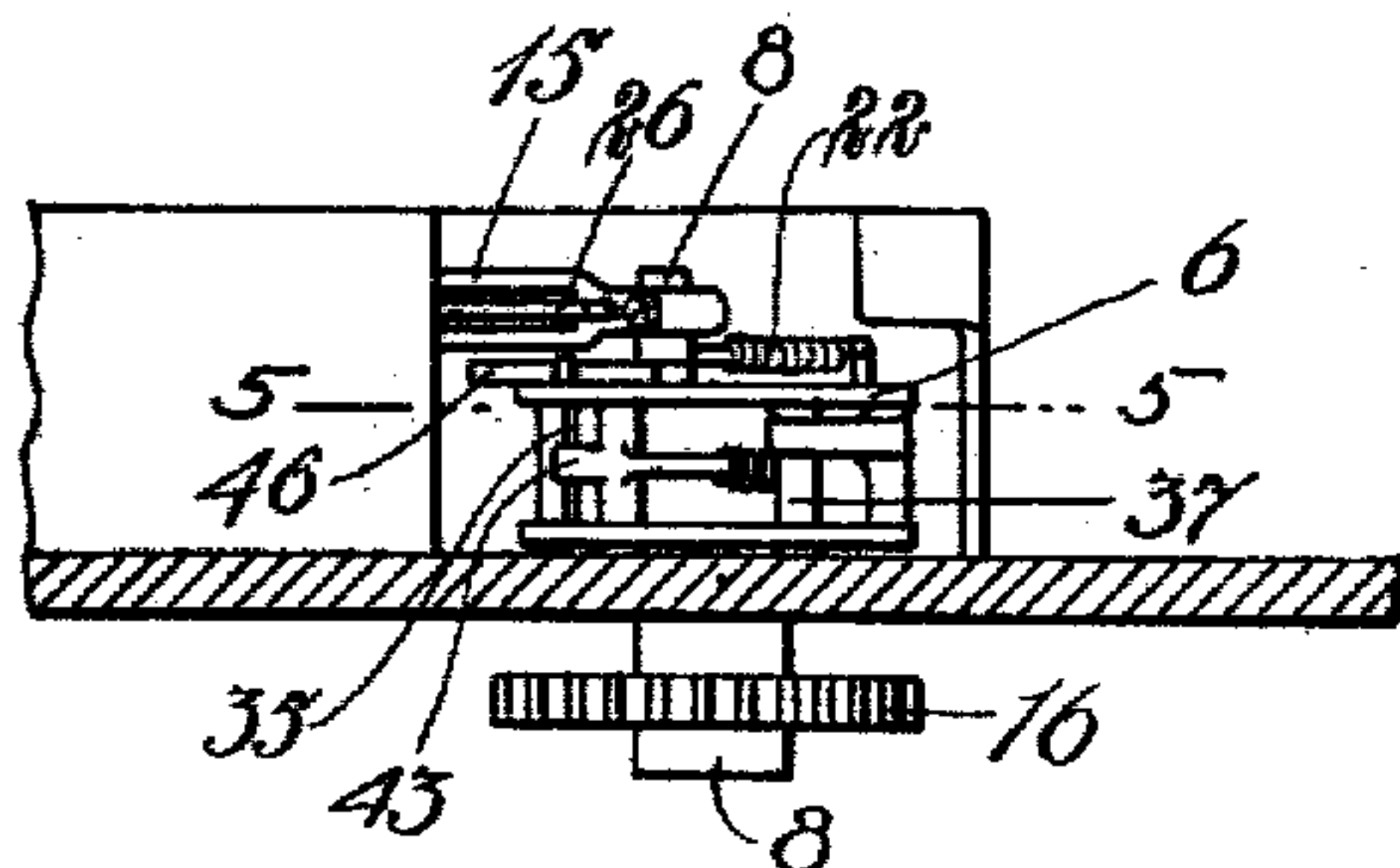


Fig. 4.

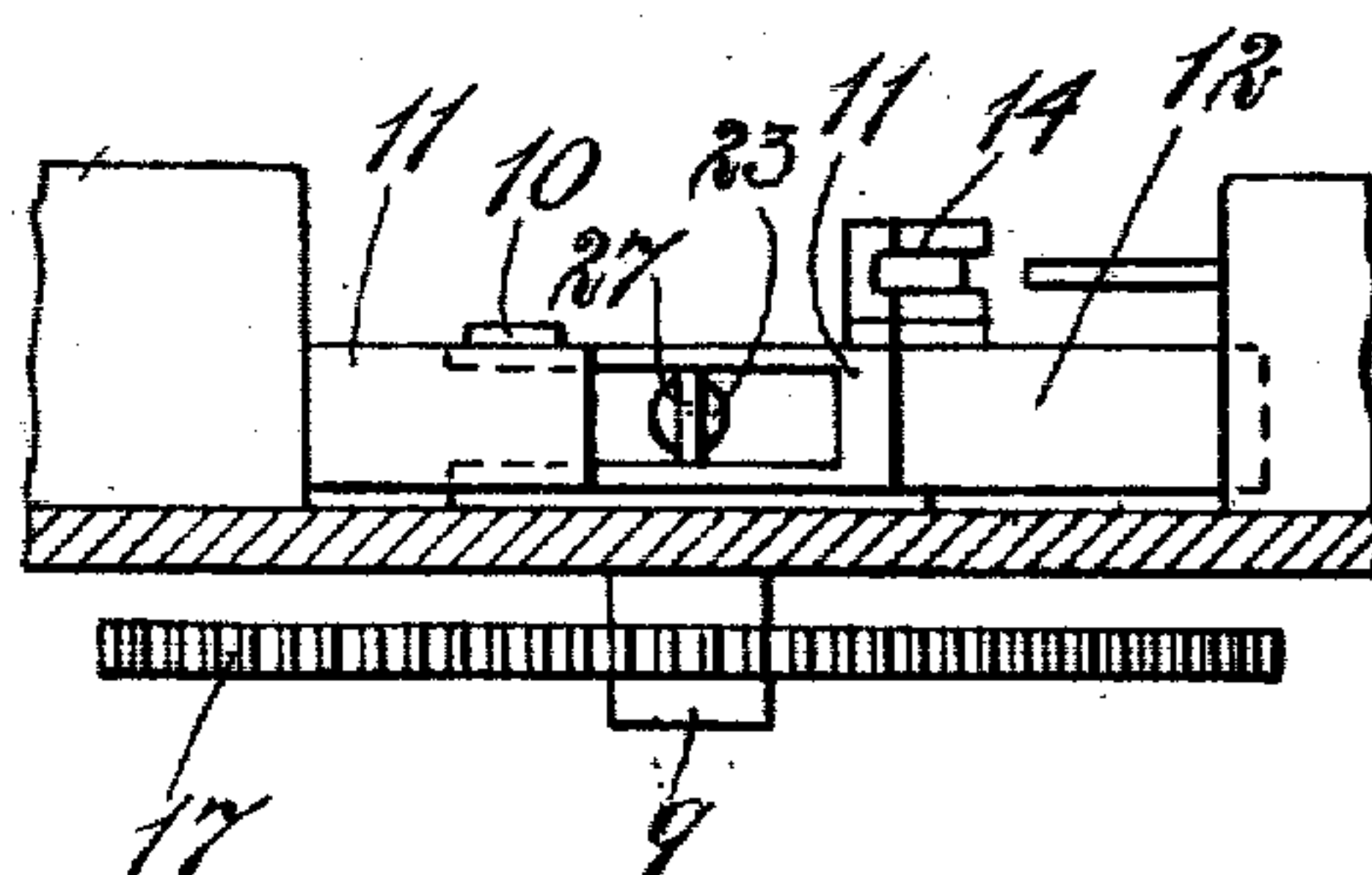


Fig. 5.

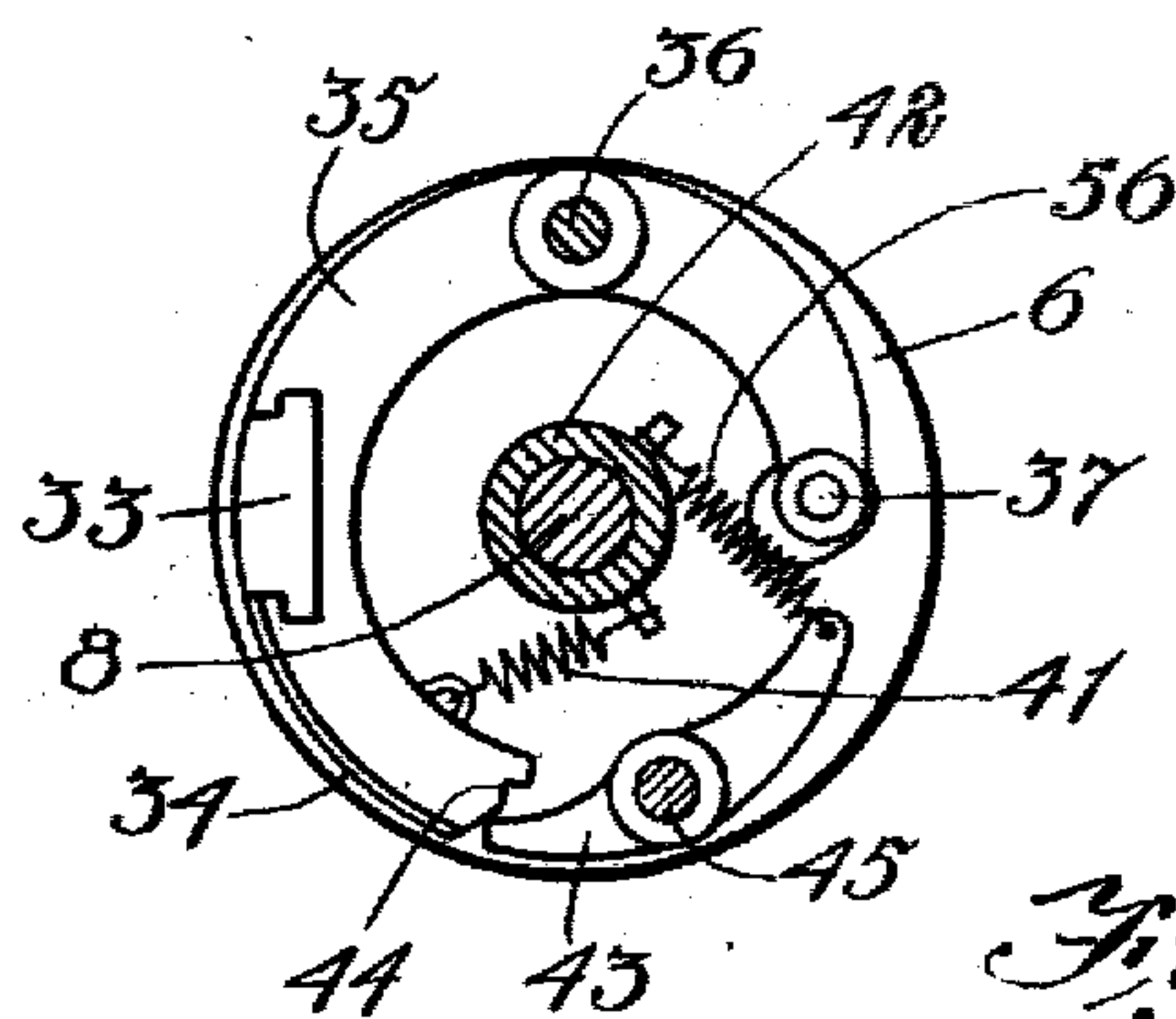


Fig. 6.

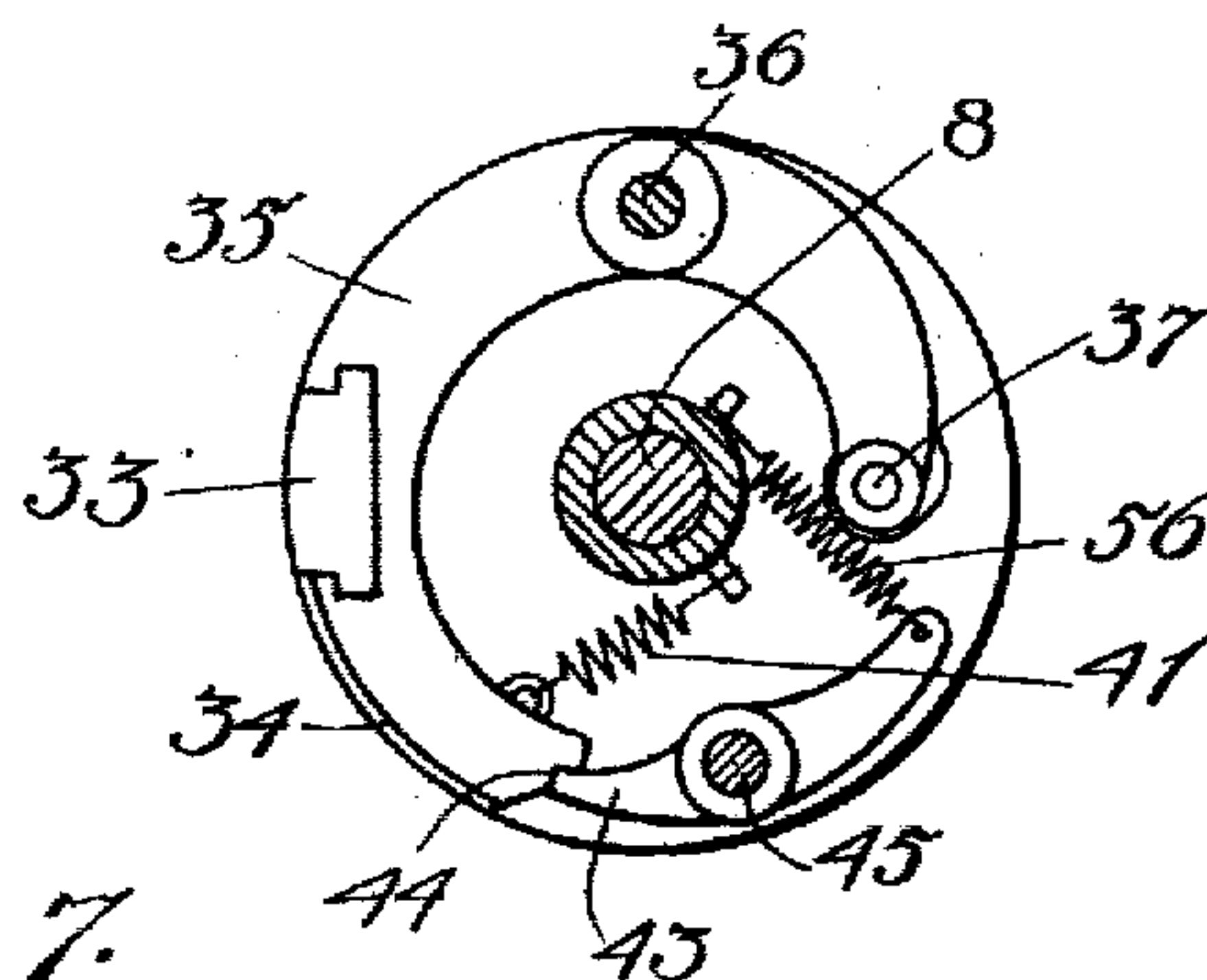
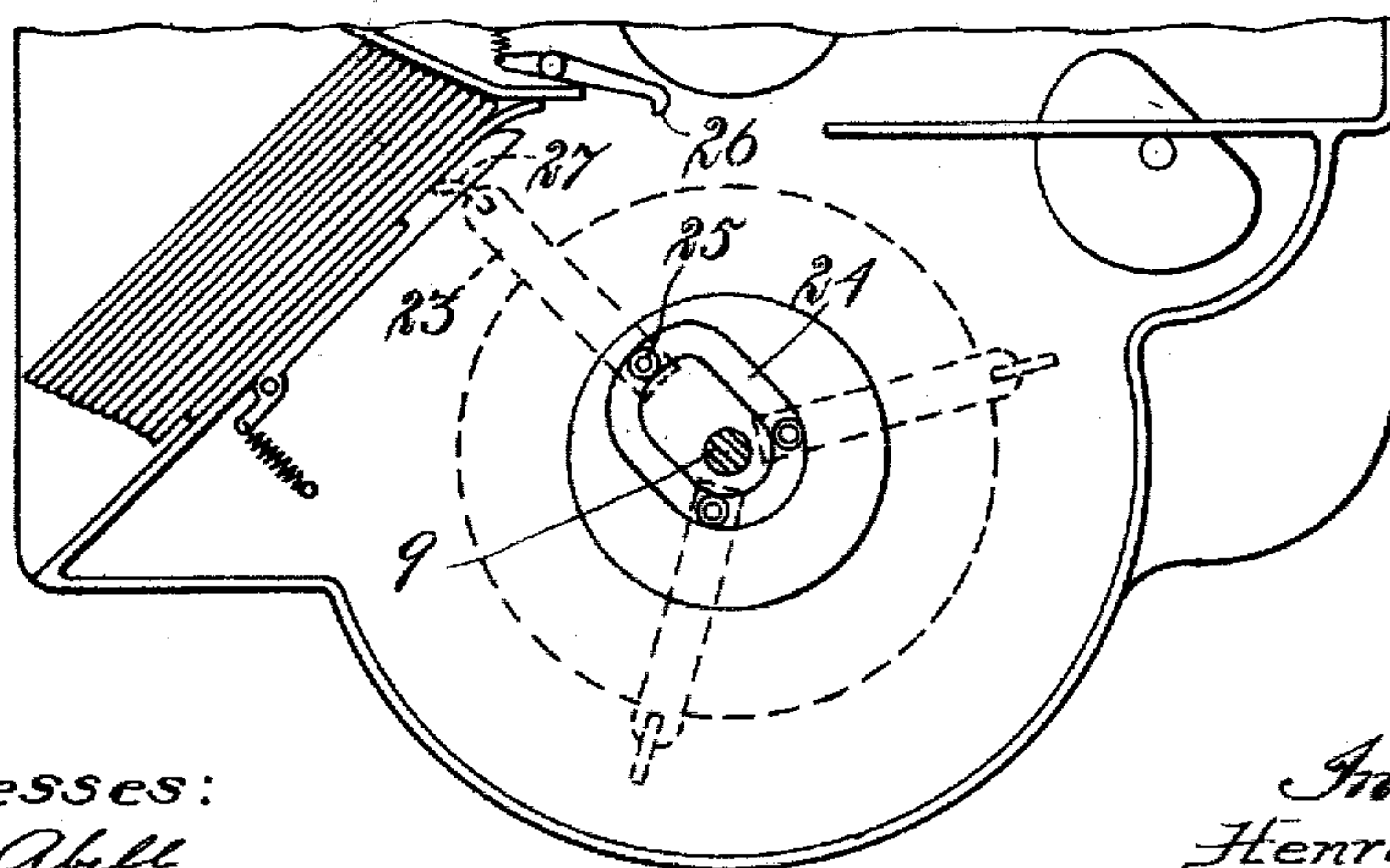


Fig. 7.



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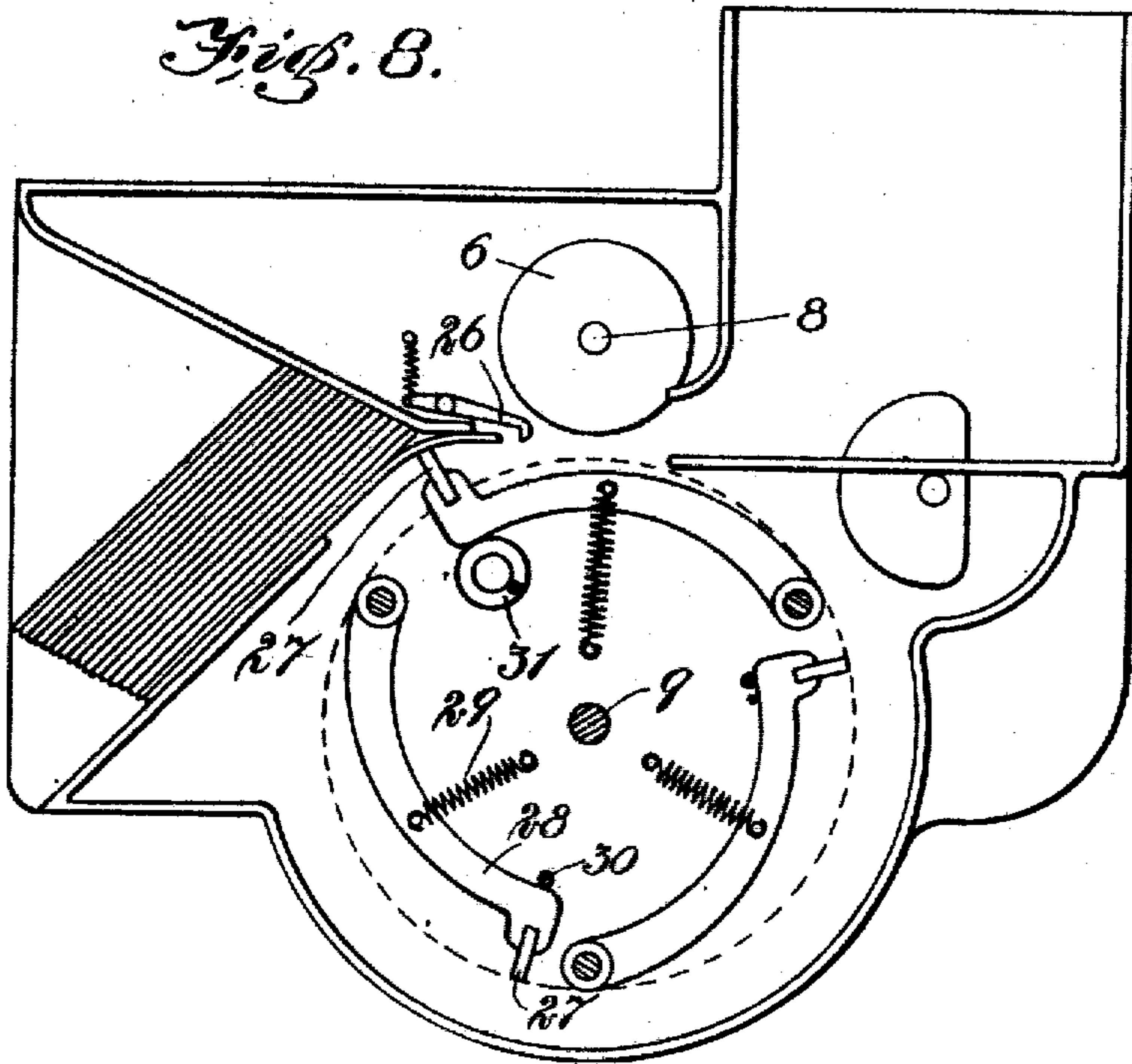
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3 SHEETS-SHEET 3.

Fig. 8.



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UNITED STATES PATENT OFFICE.

HENRY E. WAITE, OF NEWTON, MASSACHUSETTS.

SELF-FEEDING MAIL-MARKING MACHINE.

No. 822,791.

Specification of Letters Patent.

Patented June 5, 1906.

Application filed February 27, 1905. Serial No. 247,482.

To all whom it may concern:

Be it known that I, HENRY E. WAITE, of Newton, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Self-Feeding Mail-Marking Machines, of which the following is a specification.

This invention relates to mail-marking machines in which the letters are automatically fed in a faced condition from the face of a pack to the marking devices. Its object is to provide in a machine of this character a printing-couple revolving in fixed bearings and having gripping members timed with the printing means to present a letter to the printing device in proper relation to have the stamp canceled and the postmark applied and also provide a preliminary feed to separate a letter from the pack and present it into position where it can be engaged by the gripping members which carry the letter to and through the printing-couple.

A further object is to provide improved mechanism for printing the postmarks and cancellation-marks and for controlling the printing device so as to avoid a deposit of ink upon the impression member of the printing-couple when no letter is present.

By the improvements referred to the greatest possible efficiency in use and a reduction in the cost of construction and liability of getting out of order are obtained.

Of the accompanying drawings, Figure 1 represents a plan view of an improved machine constructed in accordance with my invention. Fig. 2 represents a similar view showing the impression member removed. Fig. 3 represents a section on line 3 3 of Fig. 1 looking toward the top of said figure. Fig. 4 represents a sectional view taken on the same line looking in the opposite direction. Fig. 5 represents a cross-section on line 5 5 of Fig. 3, showing in plan the printing-die, its holder, and the lock for the same. Fig. 6 represents a similar view showing the parts in a somewhat different position. Fig. 7 represents a view similar to Fig. 2, showing the preliminary feeding devices in a different position. Fig. 8 represents a view similar to Figs. 2 and 7, showing a modified form of feeder.

The same reference characters indicate the same parts in all the figures.

1 represents a table in a compartment 2,

on which separated from the rest of the table by partitions 3 4 is held a pack of letters in a faced condition, with their backs directed toward the partition 4. The partitions are arranged convergently, and between their adjacent portions is left an opening 5, through which letters may be fed to the printing-couple, which consists of a printing member 6 and an impression member 7, mounted on the shafts 8 and 9, respectively. The impression member 7 consists of a disk 10, having pivoted to it arms 11, of which a portion of each is curved on a circular arc, the outer surfaces 12 of which act to press the letters against the printing-roll 6 and may therefore be called "impression-surfaces." Upon each of the arms 11 is mounted a feeding member or gripper 14, which is adapted to cooperate with a gripper 15, carried by the printing member, to grasp a letter and carry it into position to receive a deposit of ink from a printing-die carried by the roll 6, the parts 14 15 constituting cooperating grippers, while the printing-roll and arms constitute a printing-couple.

The impression member and roll are geared together by means of spur-gears 16 17, carried by the shafts 8 and 9, respectively, which cause the grippers, printing member, and impression member to revolve synchronously, whereby the grippers are timed to present a letter in proper relation to the printing-couple. The impression-arms 11 are adapted to yield to permit the passage of thick letters and for that purpose are pivotally mounted upon the disk 10 by the pivots 18 being projected outwardly yieldingly by the springs 19, connected one to each of the arms and to a fixed abutment on the disk. Stops 20 limit the outward throw of the arms. The gripper 15 is also yieldingly mounted, being pivotally connected at 21 to the printing-roll and actuated by a spring 22 to project its letter-engaging portion.

Machines by which a single feeding member both separates a letter from the pack and carries the letter through the printing members are found to be objectionable because of the difficulty of separating a single letter, the liability of carrying more than one letter at a time, and failure to accurately time thick letters through the printing-couple. Paper of very many different qualities is used in the manufacture of envelopes, and the fric-

tion with which they engage the other letters of the pack varies greatly, and it has been found that a feeder having a frictional surface which engages a letter having a smooth surface with sufficient force to separate it from the pack is liable when it encounters letters with rough surfaces to draw off a number at once or slip and fail to feed. Where a positive instead of a frictional feed is employed, this danger is eliminated to a great extent; but a greater objection is substituted, in that there is liability of tearing a letter when the resistance between it and the pack or the printing member is very great. It is well known that thick letters cannot readily enter members of a printing-couple against the printing-pressure of from ten to thirty pounds, which is necessary to overcome inequalities like folds or flaps in the letters or envelopes in order to print a clear impression. Either the preliminary feeder or the printing members must slip on the letters to prevent tearing or the letters must be forced through by hand. In order to overcome these objections, I have provided a primary or preliminary feeder which is adapted to engage a letter and separate it a slight distance from the pack with as little friction as possible, moving it to a predetermined point, where it leaves it in position to be engaged by the grippers and carried on into the printing-couple. In the preferred form this preliminary feeder consists of a bar 23, mounted to rotate with the disk 10, there being as many of the bars 23 carried by the disk as there are impression-arms 11. These bars are mounted radially of the disk and are arranged to be projected and retracted by a fixed cam-slot 24 in the table, the inner and outer sides of which slot alternately project and retract the bars by acting on trundle-rolls 25, carried by the bars and projecting into the slot. The latter is so arranged that as the disk turns to bring a bar near the letter-pack, the bar is projected and caused to engage the nearest letter and move the same a short distance until its end engages a pivoted stop 26, whereupon the bar is suddenly retracted. Each of these bars is provided at its end with a frictional member 27, such as a strip of rubber.

A modified form of preliminary feeder is shown in Fig. 8, where the frictional feeding members or tongues 27 are mounted upon pivoted arms 28, which are normally held retracted by springs 29 against stops 30, all being carried by the disk 10 on its under side and so being movable, but which when brought adjacent the letter-pack engage in turn a fixed roll or stud 31, held on the table beneath the disk, by which their free ends are moved outward, so that the friction-pieces 27 engage the letters. By the time the letters have been moved far enough to en-

gage the stop the ends of the arms have passed over the member 31 and are then suddenly retracted by the springs. By thus retracting the feeder danger of its coming into contact with the printing-roll or tearing the letter while the same is engaged by the timing-stop is avoided. After a letter has been left in contact with the stop 26 by a preliminary feeder it is engaged by the next succeeding gripper 14, which engages the letter on one side at the same time that the gripper 15 engages it on the other and also simultaneously strikes the stop and moves it about its pivot against the resistance of spring 32 to clear the letter. It will be seen that by having the preliminary feeder which separates the end of a letter a short distance from the pack and moves it into such a position that coacting grippers may engage opposite sides of the letter a more positive secondary feed for carrying the letter to the printing-couple is provided, while at the same time the necessity of having the gripper 14 separate the letter from the pack, and so perform this additional work, is avoided. The danger of carrying more than one letter to the printing member is also greatly reduced.

It is well known that with all machines for feeding mail-matter (the present included) under the various conditions of letter-mail not only feeders but even grippers sometimes slip on a letter and fail to carry it past the timing-stop, which holds it until with the present machine the preliminary feeder 27 in its next round or the next feeder comes in contact with it. If in this contingency the feeder were caused to remain in close frictional contact with the letter while the timing-stop engages and prevents its forward movement, the letter would be either crumpled or torn. If, however, the stop 26 instead of the feeder were withdrawn to prevent tearing the letter when the grippers slip and the next feeder passes the stop, then there would be no timing of the letter into the printing device and the object for which the stop 26 is provided would be defeated. Therefore it may be seen that the novelty and importance of my invention in the withdrawing of the preliminary feeder consists in preventing the crumpling or tearing of letters at the top by the next feeder should the grippers slip as well as in allowing the friction-feeder to pass the printing-roll on the same level without coming into contact therewith. If the grippers were removed from the machine, the first letter fed to the stop would remain there locked with the pack against further action of the feeders, which would slip and withdraw, for when the feeders 27 first engage the letter, being then projected, they are opposite the pack, which yields and allows the feeders to slip over the letters. Then by the time the feeders reached the projecting

portion of the partition 3 they would be withdrawn out of contact with the letter and pass by the same without touching it.

Printing-dies 33 and 34 for making the postmark and cancellation-marks are mounted upon a die-holder 35, which is a curved two-armed lever, pivoted at 36 to the printing-roll 6. The arm which carries the dies is curved approximately concentric with the roll, while the other arm is eccentric and carries a stud 37, having a roll 38, which engages the internal cam-surface 39 of an annular cam member 40, fixed on the table of the machine. A spring 41, connected to the die-holder, and a sleeve 42, on the roll surrounding the shaft 8, tends normally to hold the arm carrying the dies inward from the periphery of the roll and at the same time holding the roll 38 against the cam-surface. 43 is a locking-dog, pivoted to the printing-roll and adapted to engage a shoulder 44 of the die-holder when the latter is projected and hold the same outward adjacent the periphery of the printing-roll. A spring 56 tends to hold the dog out of engagement with the die-holder. Connected to the shaft 45, to which the dog is connected, is an arm 46, which extends outward from the periphery of the printing-roll above the same and is adapted to be engaged by a letter when one is present between the grippers. In case no letter is present, however, the arm 46 projects over the top of the arm 11.

The cam 40 is arranged to project the dies when they are on the side of the printing-roll away from the impression member and is provided with a depression 47, adapted to release the die-holder and allow the dies to be retracted just before they come to the point of tangency of the printing-roll and impression-surfaces. When a letter is present, however, it is engaged by the arm 46 immediately before the cam-roll 38 reaches this depression, whereby the free end of the arm is moved toward shaft 8 and the locking-dog turned, so that its locking portion engages the shoulder 44, as shown in Fig. 6, thereby preventing spring 41 from retracting the dies. Thus the die-holder and dies are held in their projected position and caused to make a deposit of ink on the letter. In the absence of a letter, however, the arm 46 and locking-dog 43 are not operated, so that the dies are retracted by the spring when the cam-roll reaches the depression 47. When the cam-roll again engages the cam after the die-holder has been locked by the dog, it is operated to force the latter outward a slight amount sufficient to allow the dog to become disengaged by its actuating-spring 56.

48 is an inking-roll for inking the dies.

I claim—

1. In a mail-marking machine, a printing-couple comprising a printing member, and an

impression member carrying a frictional letter-feeder to feed the letters from the pack to a predetermined point out of contact with the printing-couple, a feeding-gripper to feed the letters from said predetermined point into and through the printing-couple, and an impression-surface to cooperate with the printing member.

2. In a mail-marking machine, a printing-couple comprising a printing member, and an impression member carrying a frictional letter-feeder to feed the letters from the pack to a predetermined point out of contact with the printing-couple, a feeding-gripper to feed the letters from said predetermined point into and through the printing-couple, and an impression-surface to cooperate with the printing member, the said impression-surface yielding for thick letters.

3. In a mail-marking machine, a printing-couple comprising a printing member carrying a feeding-gripper, and an impression member carrying a frictional letter-feeder to feed the letters from the pack to a predetermined point out of contact with the printing-couple, a feeding-gripper to feed the letters from said predetermined point into and through the printing-couple, and an impression-surface to cooperate with the printing member, the feeding-gripper on the printing member cooperating with the feeding-gripper on the impression member.

4. In a mail-marking machine, a printing-couple comprising a printing member carrying a feeding-gripper, and an impression member carrying a letter-feeder to feed the letters from the pack to a predetermined point, a feeding-gripper to feed the letters from said predetermined point into and through the printing-couple, and an impression-surface to cooperate with the printing member, the feeding-gripper on the printing member cooperating with the feeding-gripper on the impression member, and a trip and locking lever on the printing member.

5. In a mail-marking machine, a timing-stop, and a printing-couple consisting of a printing member, and an impression member having a letter-feeder to feed the letters from the pack to the timing-stop, a feeding-gripper to feed the letters from the timing-stop into the printing-couple, and an impression-surface cooperating with the printing member.

6. In a mail-marking machine, a timing-stop, and a printing-couple consisting of a printing member, and an impression member having a letter-feeder to feed the letters from the pack to the timing-stop, a feeding-gripper to feed the letters from the timing-stop into the printing-couple, and an impression-surface cooperating with the printing member, the timing-stop operated by the impression member.

7. In a mail-marking machine, a printing member and an impression member having a letter-feeder adapted to feed a letter from a pack to, and leave the same at, a predetermined point out of contact with the printing and impression members, a gripper adapted to engage the letter at said predetermined point and feed the same past the printing member, and an impression-surface in the same horizontal zone with the letter-feeder cooperating with the printing member.

8. In a mail-marking machine, a printing member, and an impression member having a letter-feeder adapted to feed a letter from a pack, a timing-stop located in the path of motion of the letter so fed adapted to arrest the same, a rotary gripper arranged to engage the letter and move it past the stop and the printing member, and an impression-surface cooperating with the printing member.

9. In a mail-marking machine, a printing member and an impression member connected to rotate in synchronism and to cooperate in marking a letter constituting a printing-couple, grippers adapted to engage a letter and feed the same to and through said printing-couple, a stop arranged to hold a letter in position to be engaged by said grippers in properly-timed relation with the printing-couple, and a preliminary feeder on the impression member arranged to feed a letter from a pack to said stop and to withdraw and leave the same in engagement therewith.

10. In a mail-marking machine, printing mechanism including an impression member, grippers adapted to grasp and feed a letter to said printing mechanism and timed therewith to present the letter in proper marking relation thereto, a single feeding member on the impression member of the printing mechanism for engaging and feeding a letter from a pack into position to be engaged by said grippers and withdrawing from contact with the letter, and a timing-stop arranged to arrest the letter engaged by said feeding means and hold the same until taken by the grippers.

11. In a mail-marking machine, a printing member, an impression member, grippers adapted to engage the opposite sides of a letter simultaneously, and a single feeding member on the impression member for advancing to engage and carry a letter from a pack into position to be grasped by said grippers, and then withdrawing from engagement with the letter, leaving the letter out of contact with the printing member.

12. In a mail-marking machine, a printing member, an impression member, grippers adapted to engage the opposite sides of a letter simultaneously, a single feeding member on the impression member for advancing a letter from a pack into position to be grasped by said grippers, and a stop located in the

path of motion of the letter and adapted to arrest the same in such position.

13. In a mail-marking machine having a printing member and a rotatable impression member, a timing-stop, a letter-feeder adapted to separate a letter from a pack and feed the same forward leaving it out of contact with the printing and impression members, comprising an arm carried by said impression member having an engaging surface, and means for alternately projecting and retracting said arm to engage and release the letter.

14. In a mail-marking machine having a printing member and a rotatable impression member, a timing-stop, a letter-feeder adapted to separate a letter from a pack and feed the same forward leaving it out of contact with the printing and impression members, comprising an arm carried by said impression member having a frictional letter-engaging surface, and means for alternately projecting and retracting said arm to engage and release the letter.

15. In a mail-marking machine, a printing member, a member having an impression-surface cooperating therewith to constitute a printing-couple, a feeder on said impression member adapted to feed a letter from the face of a pack, a stop for arresting the letter, means for withdrawing the feeder from the letter as soon as the same is engaged by the stop, and a secondary feeder adapted to release the letter from the stop and feed it to the printing-couple.

16. In a mail-marking machine, a printing member, an impression member cooperating therewith, a die eccentrically pivoted on said printing member, positive means for advancing the die toward the letter-engaging portion of the printing member, and means for retracting the die when no letter is present to avoid a deposit of ink on the impression member.

17. In a mail-marking machine, a printing member, an impression member cooperating therewith, a die eccentrically and pivotally mounted on the printing member, positive means for advancing the die toward the letter-engaging portion of the printing member, yielding means tending to retract the die, and a letter-operated lock for holding the die in its advanced operative position.

18. In a mail-marking machine, a printing member, an impression member cooperating therewith, a die eccentrically and pivotally mounted on the printing member, positive means for advancing the die toward the letter-engaging portion of the printing member, yielding means tending to retract the die, a locking-dog adapted to engage and lock the die in its advanced position when a letter is presented, and letter-actuated means for operating said dog.

19. In a mail-marking machine, a printing-
couple comprising a pair of members, one
bearing and operating in succession a letter-
feeder, a gripper and an impression-bed, and
5 the other member bearing and operating in
succession a coöperating gripper, a locking-
arm and a marking-die.

In testimony whereof I have affixed my
signature in presence of two witnesses.

HENRY E. WAITE.

Witnesses:

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E. T. GRAHAM.