

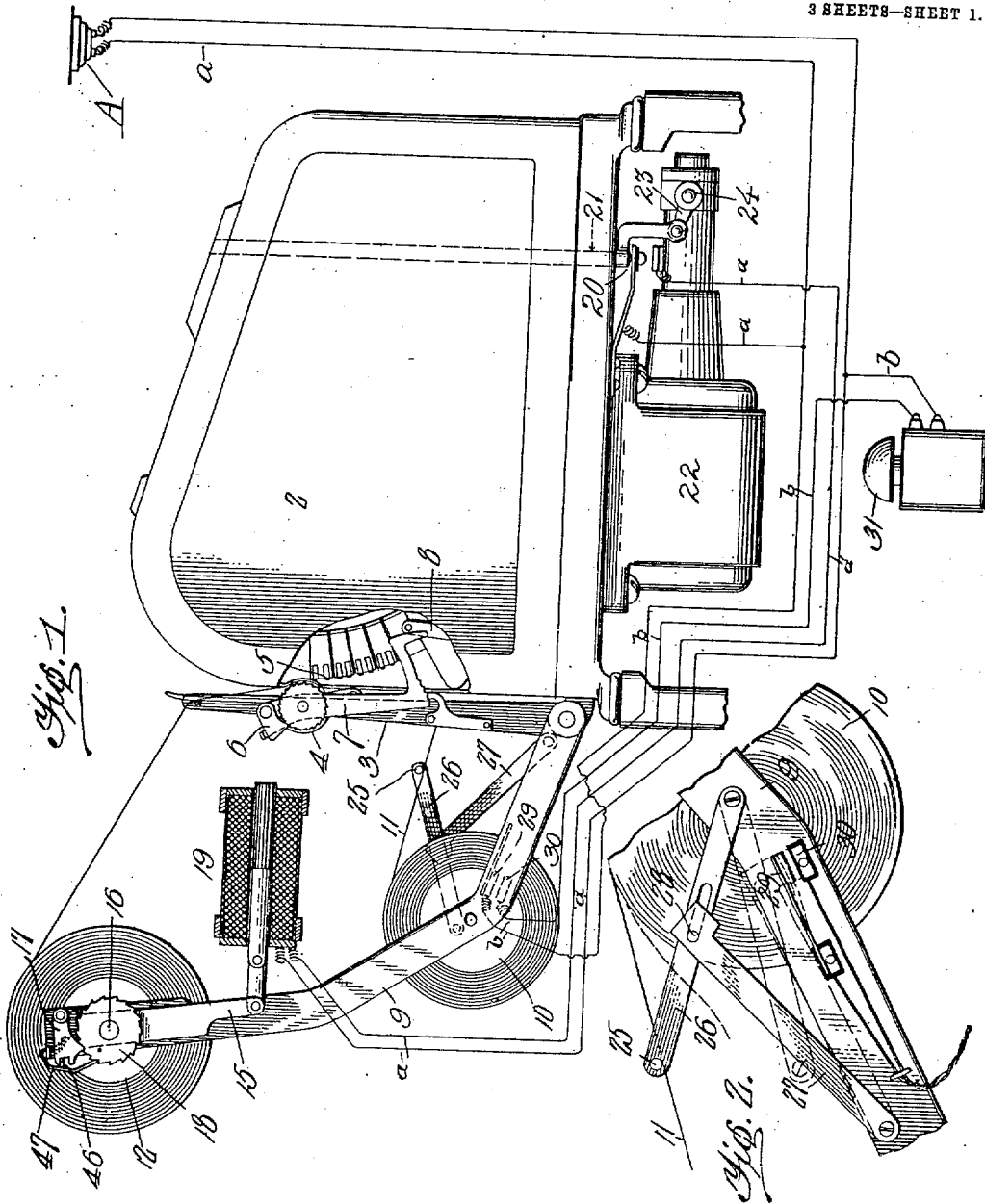
No. 884,721.

PATENTED APR. 14, 1908.

S. J. DAVIDSON.
PAPER REWIND MECHANISM FOR ADDING MACHINES.

APPLICATION FILED MAR. 13, 1906.

3 SHEETS—SHEET 1.



WITNESSES:

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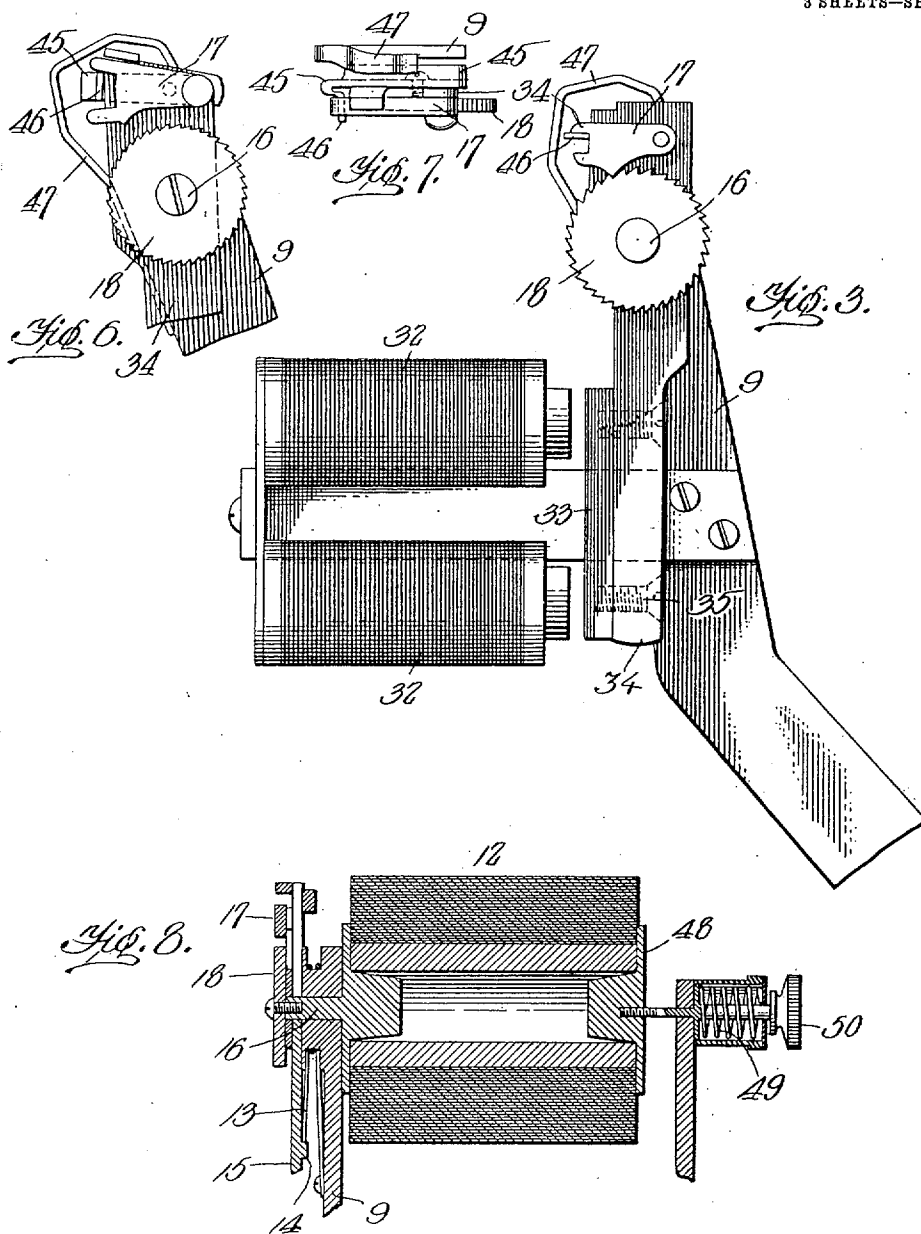
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3 SHEETS—SHEET 2.



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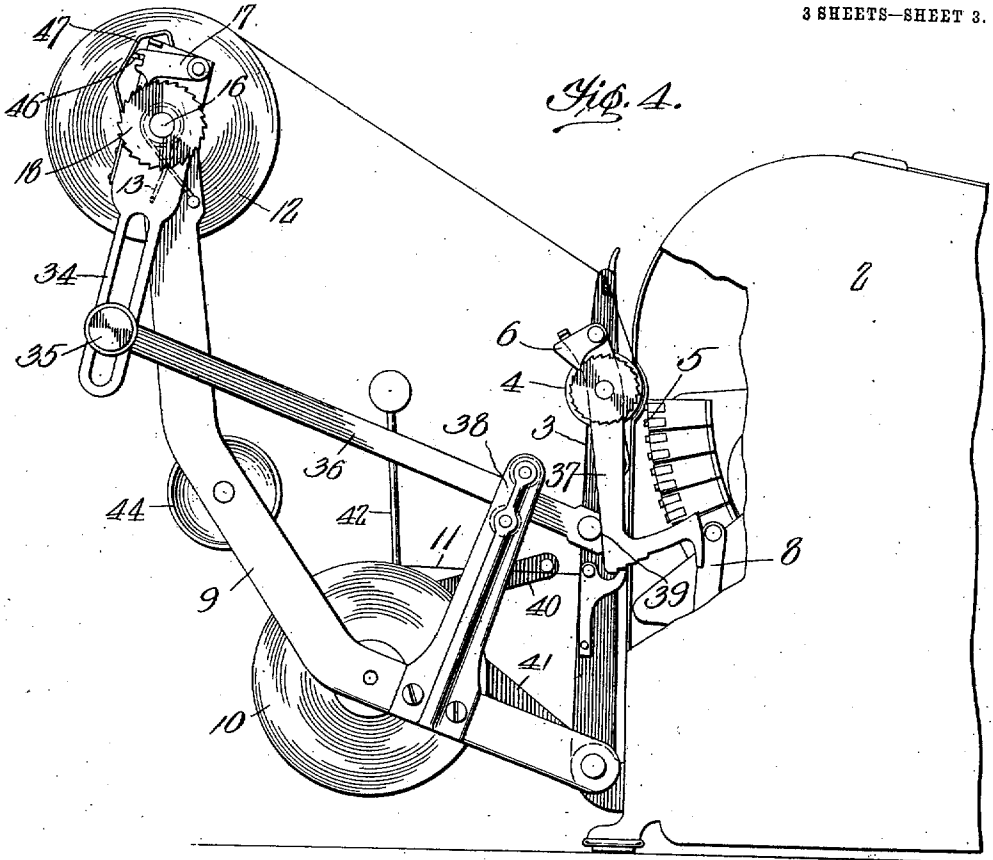
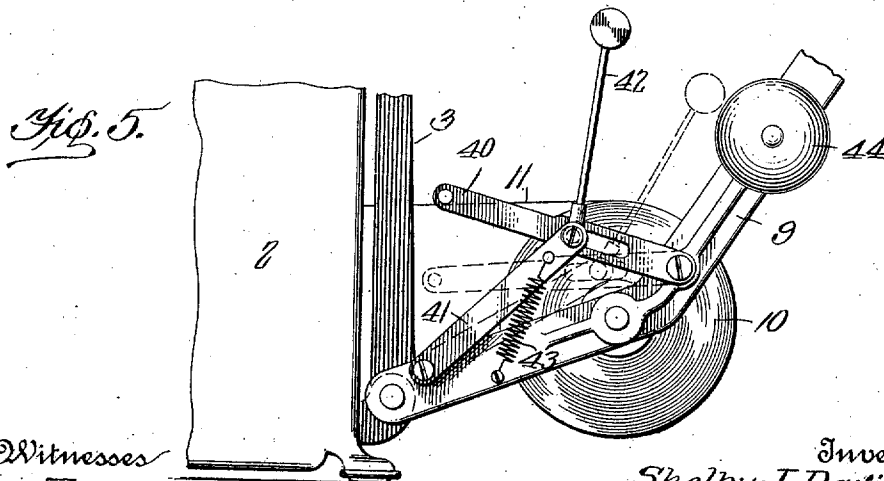
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3 SHEETS—SHEET 3.



Witnesses

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UNITED STATES PATENT OFFICE.

SHELBY J. DAVIDSON, OF LEXINGTON, KENTUCKY.

PAPER-REWIND MECHANISM FOR ADDING-MACHINES.

No. 884,721.

Specification of Letters Patent.

Patented April 14, 1908.

Application filed March 13, 1906. Serial No. 305,830.

To all whom it may concern:

Be it known that I, SHELBY J. DAVIDSON, a citizen of the United States, residing at Lexington, in the county of Fayette and State of Kentucky, have invented new and useful Improvements in Paper-Rewind Mechanism for Adding-Machines, of which the following is a specification.

My invention relates to paper rewind mechanism for adding machines, and has for its object to provide an attachment or adjunct to machines of the class mentioned, which will care for the strip as it is drawn from the supply roll and printed, reeling it up step-by-step at each printing and spacing action of the counting mechanism, so that the tabulated strip is delivered in the form of a compact roll and all danger of mutilation of the strip, the annoyance and delay incident to gathering and winding up by hand the loose coils of paper at the end of the day's work is eliminated, and, if desired, the roll bearing the rewound strip may be reversed, placed in the feed roll bearings, and the strip used again.

In addition to the rewind feature of my invention, I have made provision for giving notice, by suitable indicator or signal mechanism of the running out or tearing of the strip, so that the operator may put in a fresh supply roll, or join the severed strip, as the case may be.

In order that my invention may be clear to those skilled in the art, I have shown in the accompanying drawings so much of an adding machine as will serve to illustrate the use and operation of my invention, the machine shown being of the well-known "Burroughs" type, although it will be understood that the rewind and alarm attachment is equally useful with and adaptable to machines other than the "Burroughs" in which a strip or continuous sheet is used.

In the drawings herewith—Figure 1 is a view in side elevation of an adding machine (the machine proper being conventionally shown) with my attachment applied thereto. Fig. 2 is a detail view of one form of alarm mechanism for the record strip; Fig. 3 is a detail view of a different form of actuating mechanism for the rewind shown; Fig. 4 is a view of the rewind mechanism shown in Fig. 1, provided with mechanical means for operating it. Fig. 5 is a detail view of the alarm mechanism for the record strip used

in the type of machine shown in Fig. 4. Figs. 6 and 7 are side and top detail views respectively, of the pawl disengaging mechanism for the rewind roll. Fig. 8 is a sectional view of the rewind roller and its associated parts.

Referring to the drawings by numerals, like numbers indicating like parts in the several views and turning first to Fig. 1 of the drawing, 2 indicates the case of the machine, being simply outlined to clearly show the manner of attaching my invention thereto, certain parts of the machine being omitted for clearness of illustration.

The machine is provided as usual, with a supporting bracket 3, on which is mounted the impression roller 4, which coöperates with the printing type 5 in the usual manner, said impression roller 4 being operated as is customary by means of the spring actuated pawl 6, and the swinging lever 7, which lever receives its impulse from the thrust arm 8 within the machine, said thrust arm being actuated after setting up the numbers to be recorded and upon throwing in the operating mechanism of the machine either manually or by power, as usual in the Burroughs machine, and as these constructions and operations are well understood and form no part of my present invention, their illustration and description is limited to so much as will make my invention clear.

Secured to suitable brackets on the machine frame is the supporting frame 9 for my rewind mechanism, which comprises two side arms between which is supported the usual supply roll 10, which carries the paper strip. From the supply roll 10 the strip 11 passes in the usual manner over the impression roller 4, and thence to the rewind roller 12, which is journaled at the upper end of the side arms of the frame 9. The said rewind roller 12 is provided with an actuating spring 13, (see Fig. 8) one end of which is secured to the frame 9, the other end of the spring engaging a lug 14 on the arm 15 carried by the stub shaft 16, which forms the support for one end of the rewind roller 12. The said arm 15 is provided with a pawl 17 which normally engages ratchet teeth on a disk 18, secured to the stub shaft 16 above referred to. At its lower end the said arm 15 is linked to the core of a solenoid 19, the solenoid core normally occupying the position shown in Fig. 1, so that upon energization of the solenoid the

core will be sucked into the same and impart a swinging movement to the arm 15, retracting the pawl 17 over the ratchet teeth of the disk 18 and placing the spring 13 under stress. Immediately the solenoid 19 is de-

energized the spring 13 will return the arm 15 to its normal position and by means of the ratchet and pawl connection advance the rewind roll 12 the proportionate distance necessary to take up the paper which has been spaced off by the impression and spacing roller 4, which, as is well understood, acts in the Burroughs machine as a pull-off for the paper strip 11.

In order that the rewind mechanism may be accurately timed with respect to the operation of the printing and spacing mechanism of the machine, I make provision for energizing the solenoid 19 at or just after the moment that the printing mechanism is set into operation, so that the rewind roll 12 will take up the slack in the record strip 11 between it and the impression roller 4, and keep the same always in taut and smooth condition.

In the type of machine shown in Fig. 1, which is the well-known Burroughs electric machine, this is accomplished by means of a manually operated circuit maker and breaker 20, which is so placed with reference to the thrust rod 21 which is ordinarily used for clutching the continuously running motor 22 with the actuating mechanism of the printing instrumentalities, as that depression of the thrust rod 21 will close the contact 20 and, through the circuits shown in Fig. 1, close the circuit through the solenoid 19, and cause a properly timed actuation of the rewind mechanism relative to the operation of the printing mechanism. The said thrust rod 21 is connected in the usual manner with a crank arm 23, on a clutch operating shaft 24, which clutch operating shaft, through proper mechanism, as is well understood, connects the continuous running motor 22 with the actuating mechanism for printing the figures of which have been set up, but as this forms no part of my present invention, and is of the usual or any suitable construction I deem it unnecessary to describe the same in detail.

The electric supply for actuating the solenoid 19 may be lead in from any suitable source, as from the conventionally illustrated plug A; or it may be drawn, and preferably is, from the motor circuit with which the Burroughs electric machine is usually equipped, but for convenience of illustrating and laying out the circuits, I have shown it in the present instance as drawn from the plug A. The solenoid circuit from the plug A may be readily traced through the lines *a* which include the contact 20, and the solenoid 19, in a complete circuit.

It sometimes happens that a mutilated strip of paper is found on the supply roll 10,

and in some instances the web of paper 11 after it passes from the supply roll will, because of undue strain, become torn, and in order that the operator may be advised of this breakage of the web, promptly, and in order that he may be informed when the supply on the roll 10 runs out, and so avoid setting up items which will not be printed because of the fact that the record strip is not in proper position relative to the impression roller 4 and its cooperating printing instrumentalities, I provide an alarm mechanism which comprises a feeler 25 carried by an arm 26 pivoted to one of the side arms of the frame 9. The feeler 25 normally rests upon the upper side of the web 11, as clearly shown in Figs. 1 and 2, so that the arm 26 is supported in the position shown. Pivoted to one of the side arms of the frame 9 is a hammer lever 27 which has a pin and slot connection 28 with the arm 26, as shown in Fig. 2. In event of running out or tearing of the strip 11, the feeler arm 26 will be no longer supported by the strip 11, but will drop to the position shown in dotted lines in Fig. 2, whereupon the hammer lever 27 will fall, striking a spring contact arm 29, so as to close circuit through a fixed contact place 30, in which circuit is included any suitable indicating or signaling device, an audible signal 31 being shown in the present instance. This alarm circuit is supplied with energy from any suitable source and may be conveniently supplied from the source of supply for the solenoid by simply dividing the circuit from the plug A and sending it, by means of the lines *b* through the alarm circuit.

In Fig. 3 I have illustrated another type of actuating mechanism for the rewind roller, which is the equivalent of the solenoid above described, the construction shown in Fig. 3, being identical in all of its features with the rewind construction hereinbefore set forth, except that instead of a solenoid for actuating the swinging arm of the rewind roller, I provide an electro-magnet 32, the poles of which are arranged in such relation to an armature 33 carried by the pawl operating arm of the rewind roller, as that when the magnets are energized the swinging arm will be actuated to drag the pawl over the ratchet teeth of the rewind roll and put the actuating spring of the roll under stress in the same manner as the construction shown in Fig. 1.

As hereinbefore stated, the present invention is adaptable to either the electric machine or the mechanically operated machine, and in Fig. 4 I have illustrated the adaptation of the invention to the mechanical type of machine. In said figure, the printing and spacing instrumentalities for the strip are identical with those shown and described in connection with the electric machine, but as

is well understood, these instrumentalities, instead of being actuated through a motor, are brought into operation by manually controlled means, such as a hand-crank or treadle-mechanism. In this mechanically operated rewind mechanism, the pawl operating arm 34 is connected by an adjustable slot and thumb-screw connection 35 to a thrust rod 36, the free end of which lies in operative relation to the lever 37 of the printing and spacing roller of the machine, the said thrust rod 36 being preferably supported near its free end by a roller-bearing arm 38. The free end of the thrust rod 36 is provided with a roller stud 39, which engages the swinging lever 37, so that when the machine is operated and the lever 37 swings forward to space the strip after the printing operation has been effected, it will thrust the rod 36 outwardly and impart a swinging movement to the pawl carrying arm 34 of the rewind roller, giving the same result as that secured in the case of the electric machine above described.

In the mechanical type of machine shown in Fig. 4, a mechanically operated signal mechanism is provided, which comprises a feeler arm 40 pivoted to the side arm of the supporting frame and having a pin and slot connection with a striker arm 41 also pivoted to the side arm of the supporting frame, said striker arm having a bell clapper 42, and being provided with a spring 43 which normally tends to pull the striker arm 41 downwardly and cause the clapper 42 to impinge upon the bell 44 secured to the side arm of the supporting frame. Obviously, if the web from the supply roll breaks, or comes to its end, the feeler arm 40 will drop to the position shown in dotted lines, the striker arm 41 will be pulled downwardly by the spring 43, and an audible signal, indicating abnormal conditions of the record strip, will be given by the clapper 42 striking the bell 44.

It sometimes happens that the operator will wish to consult the items on the tabulated strip and in order that the rewind roller 12 may be conveniently turned back for this purpose, the pawl 17 is provided with means for holding it temporarily out of engagement with the ratchet teeth on the disk 18, this means consisting of a pivoted pawl engaging plate 45, which is preferably secured on the inner side of the pawl carrying arm 34, and is provided with a lug 46 which engages the lugs 71 and 72 at the end of the pawl 17. The pawl 17 is normally in engagement with the ratchet teeth, but should the operator desire to reverse the rewind roll 12, he has simply to raise the pawl-lifting plate 45 so as to engage the upper lug 71 at the end of pawl 17 and disengage the pawl 17 from the ratchets on the disk 18. In order to sustain the pawl and the pawl-lifting plate in their upper disengaged positions, as shown in Fig. 6, a

spring strip 47 is secured to one of the side arms of the supporting frame 9, the end of the said strip being bent over so as to bear against the upper edge of the pawl lifting plate 45. When in disengaged position, the end of the spring strip 47 rests on the pawl-lifting plate 45, in rear of the pivotal point of said plate (see Fig. 6,) so as to hold the plate and pawl in their raised position, but immediately upon swinging forward of the arm 34, as the machine is put in operation, the end of the spring strip 47 will ride along the edge of the pawl lifting plate 45, moving it downwardly into contact with lug 72 on pawl 17, and force the pawl 17 downward to engaging position. The normal movement of the swinging lever 34 for operating the pawl 17 is not sufficient to cause the spring 47 to ride past the pivot of the plate 45 and elevate the forward end and lift the pawl 17, but even if this did occur, the reverse swing of the lever 34 would result in throwing the plate 45 and pawl 17 downwardly and effect the engagement of the pawl and ratchet. From this it will be seen that the operator, after having once lifted the pawl out of engagement, need not further concern himself with throwing it to its proper position, as this is done automatically upon starting the machine.

The rewind roll 12 is preferably mounted between coned disks 48, carried by the side arms of the supporting frame, one of these disks being carried by a retractable spring-held support 49, so that by simply drawing this cone outwardly the rewind roller 12 may be readily withdrawn and replaced by a fresh one, the said retractile disk having a thumb nut 50 by means of which the roll 12 may be reversed and the strip run back after the pawl is released, and by which the slack of the unwound strip may be taken up and the same brought to taut condition before again starting the machine.

It is believed that the operation of the machine and its component parts has been sufficiently set forth in describing the several mechanisms, and no recapitulation of its operation is deemed necessary.

It will be understood that the invention may be worked out by means of different mechanical expedients than those here shown and described, and as this disclosure of my invention is merely illustrative, I do not limit myself to any of the details of construction herein shown and described, except in so far as I am limited by the terms of the appended claims and the art to which this invention belongs.

Having described my invention, I claim:

1. In combination, an impression platen and pull-off mechanism past which a record strip travels, a supporting frame, a freely rotatable strip supply roll mounted in said frame, a normally idle rewind roll mounted

in said frame to which said strip is delivered, and intermittently operated roll-driving means acting on said rewind roll to effect an automatic step-by-step rotation of said rewind roll to take up the slack of the strip as it comes from the impression platen and pull-off mechanism and store it in roll form.

2. An adding machine having an impression platen and pull-off mechanism past which a record strip travels, a supporting frame, a freely-rotatable strip supply roll mounted in said frame, a strip rewind roll mounted in said frame to which the strip is delivered from said platen and pull-off mechanism, and means operated from a moving part of the adding machine to automatically impart a step-by-step rotation to said rewind roll to take up the slack of the strip as it comes from the impression platen and store it in roll form.

3. An adding machine having an impression platen and pull-off mechanism past which a record strip travels, a supporting frame, a freely-rotatable strip supply roll mounted in said frame, a strip rewind roll mounted in said frame to which the strip is delivered from said platen and pull-off mechanism, and electro-mechanical means energizable from a moving part of the adding machine to automatically impart a step-by-step rotation to said rewind roll to take up the slack of the strip as it comes from the impression platen and store it in roll form.

4. An adding machine having an impression platen and pull-off mechanism past which a record strip travels, a supporting frame, a freely-rotatable strip supply roll mounted in said frame, a strip rewind roll mounted in said frame to which the strip is delivered from said platen and pull-off mechanism, mechanism for rotating said rewind roll, a thrust-rod to actuate said roll-rotating mechanism, and means operated from a moving part of the adding machine to intermittently move said thrust-rod.

5. An adding machine having an impression platen and pull-off mechanism past which a record strip travels, a supporting frame, a freely-rotatable strip supply roll mounted in said frame, a spring-rotated rewind roll to take up the slack of the strip as it comes from said platen and pull-off mechanism and store it in roll form, pawl-and-ratchet mechanism to set the roll-spring and drive the rewind roll, a thrust-rod to intermittently actuate said pawl-and-ratchet mechanism, and means operated from a moving part of the adding machine to move said thrust-rod.

6. Strip handling mechanism for adding machines, comprising, in combination, a strip-supply, a spring-rotated rewind roll to which the strip is delivered, a pawl-and-ratchet mechanism to set the roll-spring and drive the roll, electrically operated means to

actuate said pawl-and-ratchet mechanism, and mechanical means for energizing said roll-actuating means.

7. Strip-handling mechanism for adding machines comprising in combination, a supporting frame, a freely-rotatable supply-roll mounted on said frame, a rewind roll journaled on said frame, means for rotating said rewind roll, and a floating gravity-impelled indicating device resting upon the upper surface of and supported by the strip between the rolls and adapted to fall on failure of the strip.

8. Strip-handling mechanism for adding machines comprising, in combination, a supporting frame, a supply roll mounted thereon, a rewind roll journaled in said frame, means for automatically rotating said roll, a floating gravity-impelled feeler normally supported by the strip intermediate said supply roll and said rewind roll, and an alarm operable by falling of the feeler upon failure of the strip.

9. Strip-handling mechanism for adding machines, comprising, in combination, a roll-supporting frame, a strip supply roll mounted thereon, an impression platen over which the strip passes, a rewind roll to which the strip is delivered from said platen, means for automatically rotating said rewind roll to take up the printed strip, and means supported by the strip between the impression platen and the supply roll to indicate failure of the strip.

10. Strip-handling mechanism for adding machines, comprising, in combination, a roll-supporting frame, a strip supply roll mounted thereon, an impression platen over which the strip passes, a rewind roll to which the strip is delivered from said platen, means for automatically rotating said rewind roll to take up the printed strip, a pivoted arm having a feeler finger resting upon said strip and normally supporting said arm, and a signal arm upheld by said pivoted arm and so connected therewith as to be free to fall and give a signal upon failure of the strip.

11. An adding machine having an impression platen, a strip supply device, a rewind roll, means for automatically rotating said rewind roll to take up the printed strip coming from the impression platen, a pivoted arm supported by the strip between the impression platen and the supply device, a hammer arm normally upheld by said strip-supported arm but free to fall upon failure of the strip, a normally open alarm circuit, and circuit-closing devices in the path of said hammer arm.

12. Strip-handling mechanism for adding machines, comprising, in combination, a supply roll, a rewind roll, means for rotating said rewind roll, a feeler normally supported by the strip intermediate the supply and rewind rolls, an audible signal, and means op-

erated by falling of the feeler upon failure of the strip to sound said signal.

13. Strip rewind mechanism for adding machines, comprising a spring-rotated re-
5 wind roll having a ratchet-member, a pawl-
carrying lever in operative relation to said
ratchet member to set the roll spring, man-
ually operable means for holding the pawl
out of engagement with the ratchet-member
10 to permit reversal of the roll, and means to
throw said pawl-holding device to inopera-
tive position automatically upon movement
of the pawl-carrying lever.

14. Strip rewind mechanism for adding
15 machines, comprising a spring-rotated re-

wind roll having a ratchet-member, a swing-
ing lever having a pawl in operative relation
to said ratchet member, means for operating
said pawl-lever to set the roll-spring, a de-
tent to hold said pawl-and-ratchet disen- 20
gaged, and means for throwing said detent
out of engagement with said pawl upon
movement of said lever.

In testimony whereof I have hereunto set
my hand in presence of two subscribing wit- 25
nesses.

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Witnesses:

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