T. P. MARTIN, Jr.

PAPER FEED ALARM FOR ADDING MACHINES.

APPLICATION FILED MAY 20, 1918.

1,378,887. Patented May 24, 1921.

2 SHEETS—SHEET 1.

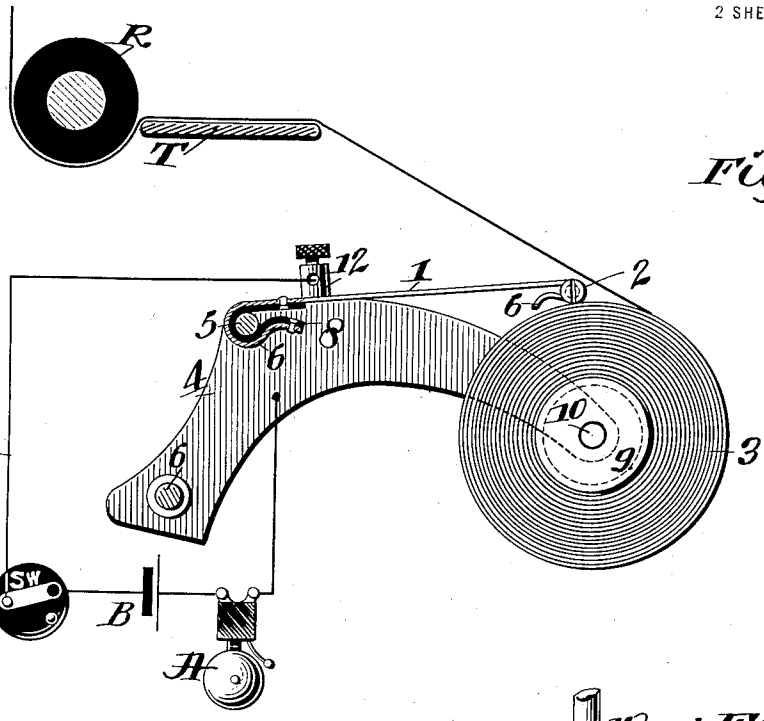


Fig. 1.

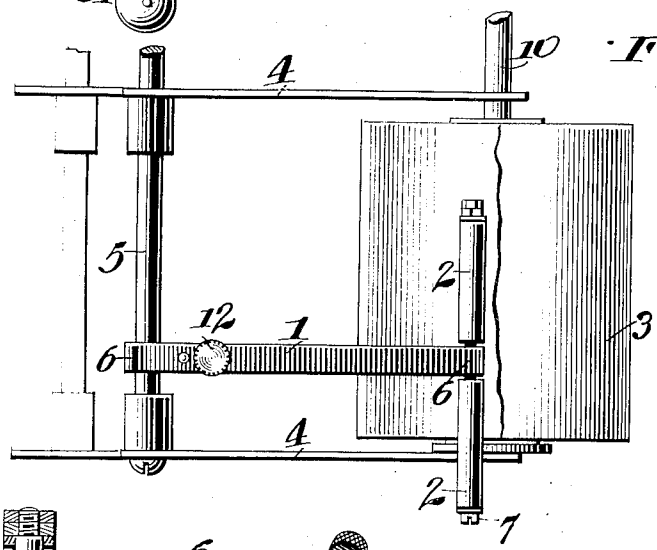


Fig. 2.

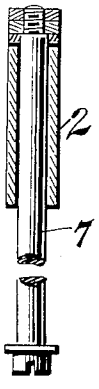


Fig. 3.

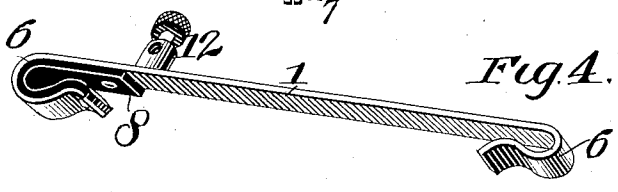


Fig. 4.

WITNESSES

J. S. Schrott

INVENTOR

Thomas P. Martin, Jr.

BY Munn & Co.

ATTORNEYS

T. P. MARTIN, JR.

PAPER FEED ALARM FOR ADDING MACHINES.

APPLICATION FILED MAY 20, 1918.

1,378,887. Patented May 24, 1921.

2 SHEETS—SHEET 2.

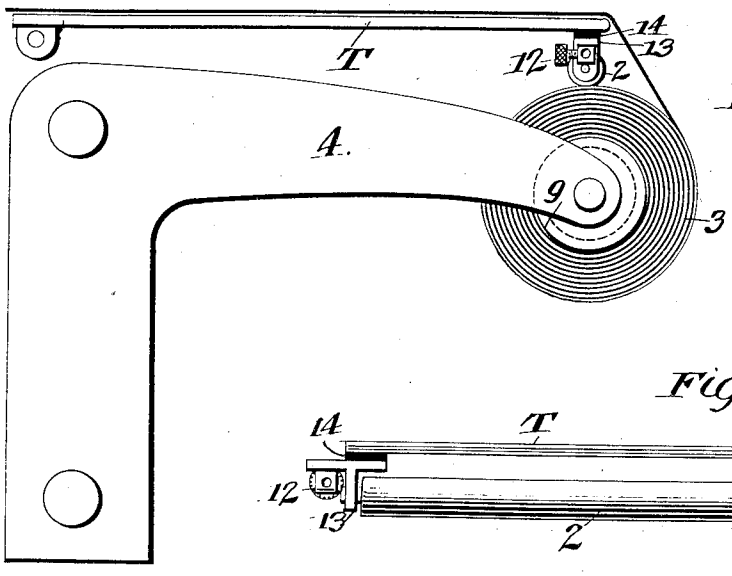


Fig. 5.

Fig. 6.

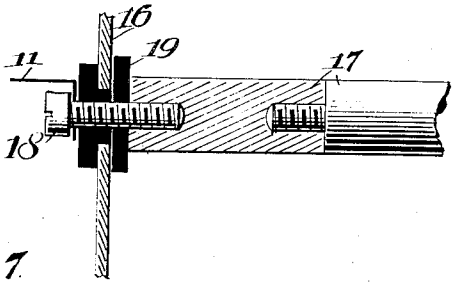


Fig. 8.

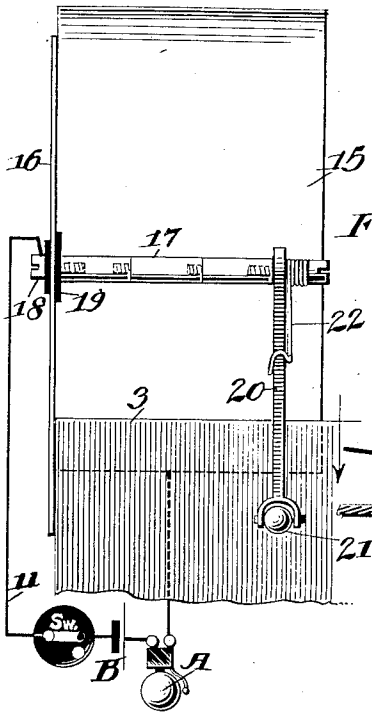
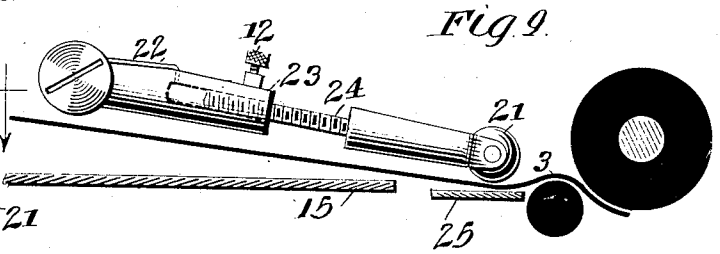


Fig. 7.

Fig. 9.



WITNESSES

J. S. Schrott

INVENTOR

Thomas P. Martin, Jr.

BY Munn & Co.

ATTORNEYS

UNITED STATES PATENT OFFICE.

THOMAS PUGH MARTIN, JR., OF OKLAHOMA, OKLAHOMA.

PAPER-FEED ALARM FOR ADDING-MACHINES.

1,378,887. Specification of Letters Patent. Patented May 24, 1921.

Application filed May 20, 1918. Serial No. 235,529.

To all whom it may concern:

Be it known that I, THOMAS P. MARTIN, Jr., a citizen of the United States, and a resident of Oklahoma city, in the county of Oklahoma and State of Oklahoma, have invented certain new and useful Improvements in Paper-Feed Alarms for Adding-Machines, of which the following is a specification.

My invention relates to improvements in adding machines, being more particularly an improvement on the mechanism for apprising the operator of the end of the paper supply, and it consists in the constructions, combinations and arrangements herein described and claimed.

The principal object of the invention is to provide an electrically operated alarm mechanism for an adding machine, in which the paper itself acts as an insulator for normally separating a pair of electrical contacts which, when the end of the paper approaches a predetermined point, are made to engage and sound an alarm to apprise the operator of the need of a renewal of the supply of paper.

Other objects and advantages will appear in the following specification, reference being had to the accompanying drawings in which:

Figure 1 is a sectional view of a portion of an adding machine showing the invention applied,

Fig. 2 is a plan view of the parts shown in Fig. 1,

Fig. 3 is a detail sectional view of the contact roller spindle,

Fig. 4 is a detail perspective view of the removable contact bar,

Fig. 5 is a side elevation illustrating a slight modification for a different type of adding machine,

Fig. 6 is a detail rear elevation of the contact roller shown in Fig. 5,

Fig. 7 is a plan view of a further modification,

Fig. 8 is a detail sectional view of a portion of the extensible contact holder illustrated in Fig. 7, and

Fig. 9 is a detail side elevation of a still further modification of the contact making member.

Before describing the construction and operating principles of the invention, it should be stated that the device is capable of attachment to any of the well known types of adding machines and in order to effect this attachment, but slight modification in the construction is necessitated and the operating principle remains the same.

Considering then, Figs. 1 to 4 in which one of the forms of the invention is illustrated, it will be observed that I provide a contact bar 1 which carries a pair of contact rollers 2 that bear upon the paper roll 3 of the adding machine.

No more of the adding machine is illustrated than is necessary to illustrate the application of the invention. The adding machine includes a pair of brackets 4, one of which is adjustable so that various sizes of rolls of paper 3 may be accommodated. The brackets 4 are mounted upon rods 5 and 6 and the upper rod 5 forms the support upon which the contact bar 1 is sprung.

In this connection, attention is directed to Fig. 4 in which the construction of the contact bar 1 is best shown. The ends of the bar 1 are formed so as to provide spring clips 6. The front clip springs over the spindle 7 upon which the rollers 2 are mounted and securely supports the spindle. The rear clip 6 is lined with insulating material 8 so that when this end is sprung over the rod 5, the combined function of supporting the contact bar and insulating it from the rod 5 is performed. The contact rollers 2 bear upon the paper roll 3 as previously explained and are adapted to follow the roll as it diminishes in size and the outermost one of the contact rollers 2 then engages the edge of a metallic washer 9 and the spindle 10 upon which the roll 3 is mounted and completes an electrical circuit.

One of the wires 11 of the electrical circuit is attached to a binding post 12 on the contact bar 1 while the other end of the circuit is connected to one of the brackets 4 or to some other metallic portion of the machine. The electrical circuit embraces the switch *Sw*, the battery B and the alarm A. It will now be readily understood that as the contact rollers 2 follow the paper roll and finally engage the washer 9, current from the battery B flows through the wires of the circuit and the metallic portions of the machine and rings the alarm A so that the operator of the machine knows that the

paper has gotten down so low that a new roll must be substituted.

The metallic washer 9 is slightly larger in diameter than is the wooden core of the paper roll 3. If it be desirable the washer 9 may be omitted and the outermost contact roller 2 be permitted to engage the adjacent bracket 4. Obviously, however, the provision of a metallic washer enables the gaging of the time at which the alarm A is to ring, since by substituting a larger or a smaller washer according to the size of the wooden core of the paper roll, the alarm may be made to ring at such a time when the contact roller reaches a predetermined position with respect to the wooden core. In other words, if the wooden cores of a certain lot of paper rolls should be particularly large, a relatively larger washer 9 will be employed so that the alarm may be sounded before the paper runs entirely out. Similarly, if a lot of the paper rolls should have wooden cores unusually small, a washer 9 of a corresponding size will be employed for the same purpose.

The adding machine of the type illustrated in Fig. 1, has a table T upon which the paper from the roll 3 runs and finally passes under the rubber roller R to other portions of the machine. The contact rollers 2 are disposed beneath the strand of paper.

In Figs. 5 and 6 the contact roller 2 is supported in brackets 13 which are insulated at 14 from the table T. Here it will be observed that the invention is applied to another type of adding machine. One of the brackets 13 has an extension at one side to which the binding post 12 is secured so as to enable the fastening of one wire of the electrical circuit 11 thereto. The contact roller 2 follows the paper roll 3 since the table T is pivoted, and when the roller engages the washer 9, the electrical circuit is completed similarly as in Fig. 1 and the alarm is sounded. The two forms of the invention just described are adapted more particularly for adding machines using rolls of paper. The invention is equally well adapted to such machines as use sheets of paper.

In Figs. 7 to 9, two forms of the invention adapted to such instances, are shown. In Fig. 7, 15 is the ordinary paper guide found at the side of certain adding machines. This guide includes an upstanding edge 16. A hole is formed in this edge to enable the fastening of the extensible contact holder 17. A screw 18 passes through insulating washers 19 at opposite sides of the edge 16 and into the first section of the holder 17. This secures the holder in place on the edge.

The holder 17 is made in sections arranged to be screwed together as illustrated in Figs. 7 and 8 so that the arm 20 of the ball contact 21 may be extended out as far as necessary. A spring 22 is carried by the holder 17 and presses on the arm 20, holding the contact 21 in firm engagement with the surface beneath.

The arm 20 is taken off if desired by removing the screw at one end of the holder which normally holds the arm in place. The contact 21 is made in the shape of a ball, which may be universally movably mounted so that at such times when the paper is made to slide under the contact in any direction, there will be less hindrance to the free movement of the paper than would otherwise be the case. The arrangement of the electrical circuit 11 can be readily understood from the illustration in Fig. 7. When the contact 21 bears on the paper sheet 3, the electrical circuit is broken. But when the sheet 3 passes the contact 21 so that the contact engages the metallic portions beneath, the electrical circuit is completed so that the alarm is sounded.

An extensible contact arm 23 in Fig. 9 takes the place of the extensible contact holder in Fig. 7. Here it will be observed that the arm 23 is made in two parts; one provided with a threaded bore and the other with a threaded stem 24 which screws into the bore. If it be desired that the roller contact 21 engage the paper support 25 of the adding machine, the extensible portion of the arm 23 is unscrewed as illustrated. If it be desired that the contact 21 bear on the guide 15 in Fig. 9, the extensible portion of the arm is screwed in so that the contact will bear on the guide accordingly. It will be readily understood that as long as the paper 3 remains between the contact 21 and either the guide 15 or the paper support 25, the electrical circuit will remain broken. As soon as the paper leaves the roller contact 21 and permits it to engage the metallic portions therebeneath, the electrical circuit will be completed so that the alarm is sounded similarly as in the first instances.

As formerly stated, the principle of the invention is capable of still further modification in order to adapt the device to the various forms of adding machines now in use. The underlying principle resides in the normal separation of an electrical alarm circuit by means of the paper itself which is being worked upon in the machine, with the result that when the paper nearly gives out the operator may be apprised of the fact so that he may replenish the supply. The device is so designed that even after the alarm rings, there is space enough left for eight or ten additional figures. This enables the operator to add a few more figures to finish up a column if he so desires. This feature also avoids the reaching of the end of the paper before the operator becomes aware that the paper is so nearly at an end and consequently the work of rewriting a whole column is avoided.

Ordinarily, the operator cannot see when the bottom of the sheet is about reached. In many cases he guesses at it and frequently puts figures on the machine which are added by the machine but not printed on the paper. This necessitates doing over all of the work. In some instances, a mechanically operated bell is provided to warn the operator of the approach of the end of the sheet, but this device must be continually set for different lengths of column of figures so that the operator has the difficulty of gaging the device each time and this additional duty tends to discourage the use thereof.

The device herein illustrated acts automatically and requires no particular attention on the part of the operator outside of turning on and off the switch *Sw*. It has been fully pointed out how the invention may be employed both in connection with paper rolls and paper sheets and the invention is so designed that it will act faithfully in all instances.

While the construction and arrangement of the device as herein described and illustrated is that of a generally preferred form, obviously modifications and changes may be made without departing from the spirit of the invention or the scope of the claims.

I claim:—

1. A circuit closer adapted to be used in a paper feed alarm, comprising a metallic paper-supporting member, paper contacting means including a ball having a swinging supporting arm reaching over the paper; an insulating mounting for said arm on said paper supporting member, means assisting the gravitation of the ball into engagement with the paper, and means operatively associated with the swinging arm and mounting, enabling the extension of the ball over the paper to dispose the ball over a different point of contact.

2. A circuit closer, adapted to be used in a paper feed alarm for adding machines comprising in combination, a paper guide having an upstanding edge with a hole, an extensible contact holder supported on said edge and consisting of a plurality of sections fitted together, an insulating mounting for said holder on said edge, a contact arm pivotally mounted on the extremity of said holder, a ball contact carried by said arm adapted to engage a metallic portion of the machine and normally held from such contact by an interposed paper sheet, and a spring engaging said arm and pressing said ball contact against the paper.

3. An extensible contact for paper feed alarms, consisting of a pivotal support, a contact arm including a section having a threaded bore and a section provided with a threaded spindle screwed in said bore and permitting the extension of the latter section, a ball contact carried by said latter section, and a spring mounted on the pivotal support with an end engaging the contact arm to press the ball contact downwardly.

4. A circuit closer adapted to be used in a paper feed alarm, including a contactor of relatively adjustable sections, one with means bearing on a passing web; a fixture from which the web keeps the means from engaging, and contactor-supporting means, insulatively mounted on the fixture, including a plurality of sections capable of increase or decrease to provide a lateral adjustment for the contactor over the web.

THOMAS PUGH MARTIN, JR.