

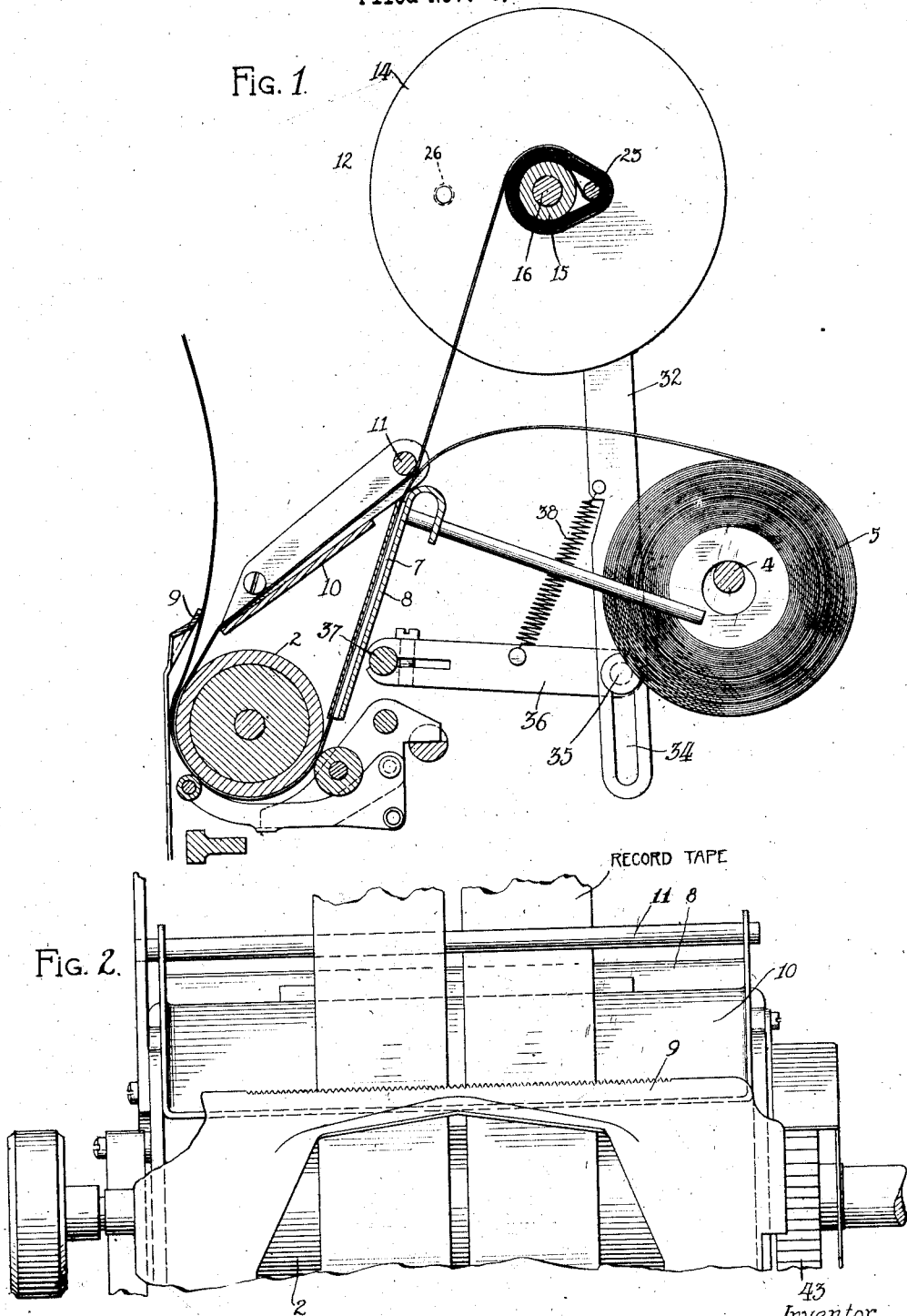
May 19, 1925.

1,537,971

O. J. SUNDSTRAND
ADDING AND LISTING MACHINE

Filed Nov. 5, 1921

3 Sheets-Sheet 1



Inventor:
O. J. Sundstrand.
By Miller Chiswell Baker Atty's.

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FIG. 3

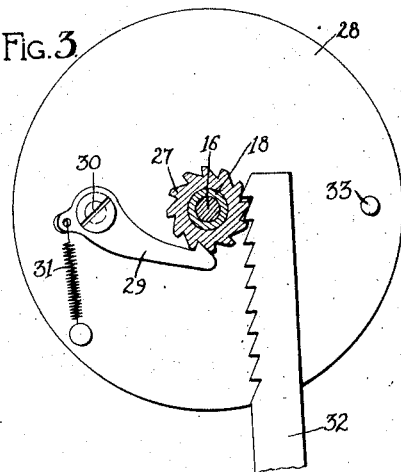
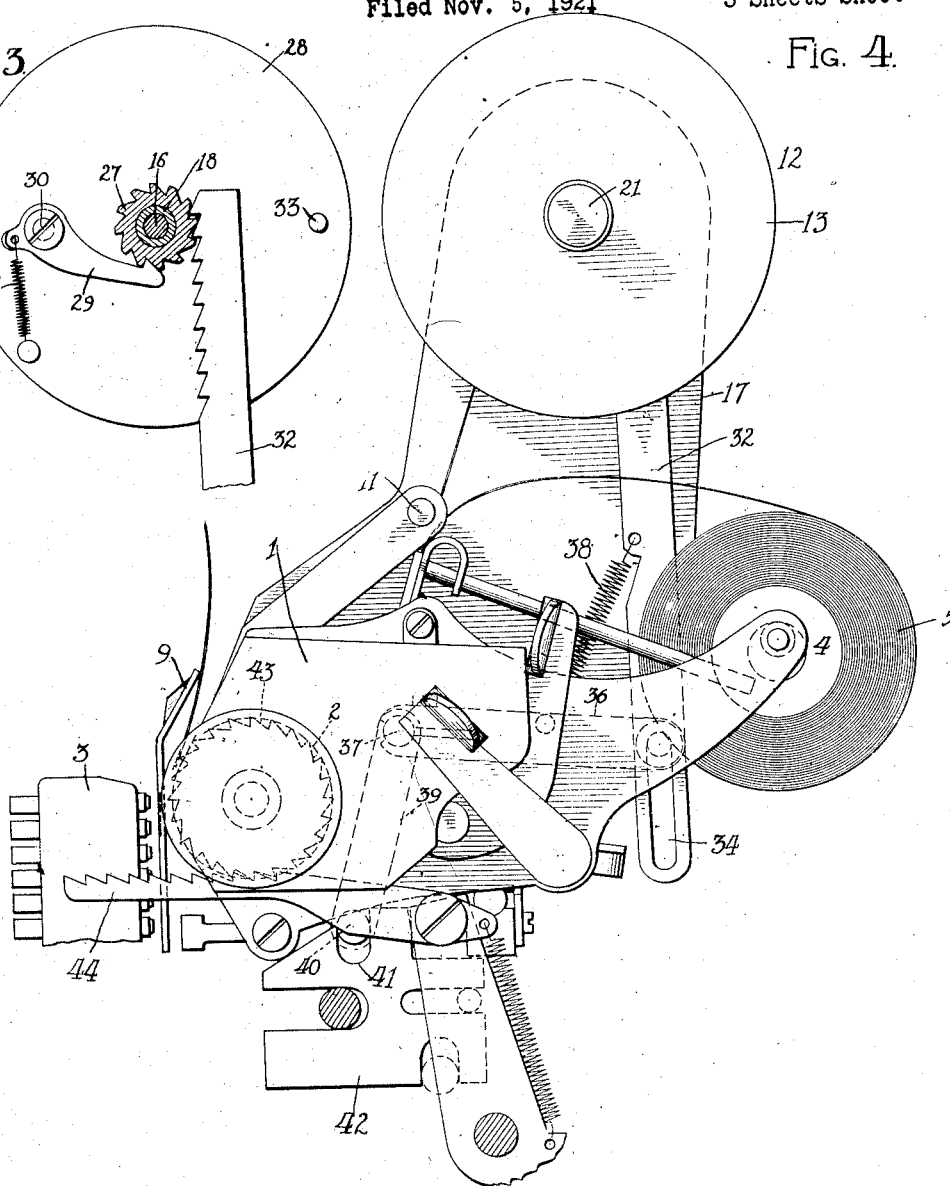


FIG. 4



Inventor
O. J. Sundstrand
By Miller Christall Parker
Atty's.

May 19, 1925.

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Fig. 5.

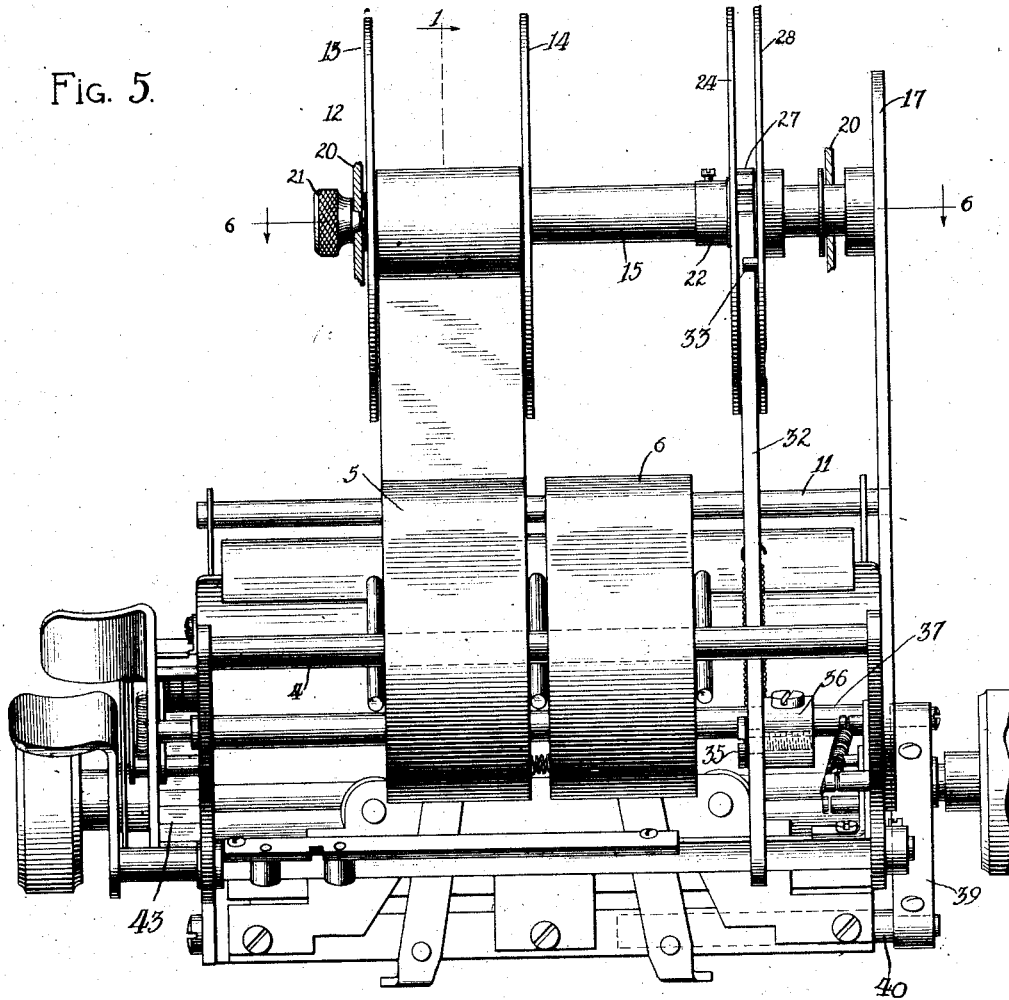
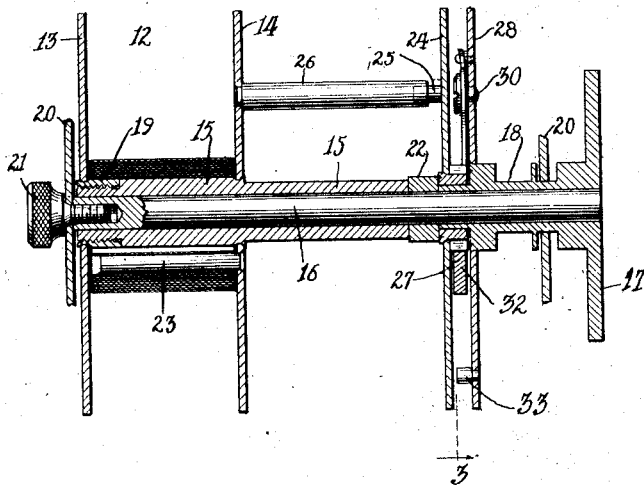


Fig. 6.



Inventor
O. J. Sundstrand
By Miller, Chidwell & Parker
Atty's.

UNITED STATES PATENT OFFICE.

OSCAR J. SUNDSTRAND, OF ROCKFORD, ILLINOIS, ASSIGNOR TO ROCKFORD MILLING MACHINE COMPANY, OF ROCKFORD, ILLINOIS, A CORPORATION OF ILLINOIS

ADDING AND LISTING MACHINE.

Application filed November 5, 1921. Serial No. 512,985.

To all whom it may concern:

Be it known that I, OSCAR J. SUNDSTRAND, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Adding and Listing Machines, of which the following is a specification.

The present invention has particular reference to means for winding up a tape on which imprints have been made and to a paper table upon which a tape may be supported while manuscript notations are being made thereon.

In the accompanying drawings, Figure 1 is a vertical sectional view through the paper carriage of a machine equipped with the present invention. The view is taken in the plane of dotted line 1 of Fig. 5. Fig. 2 is a fragmental front view. Fig. 3 is a view taken in the plane of line 3 of Fig. 6. Fig. 4 is a side elevation of the paper carriage and some of the related parts of the adding machine. Fig. 5 is a rear view of the paper carriage. Fig. 6 is a view taken in the plane of line 6—6 of Fig. 5.

While the present invention may be embodied in adding machines of various classes, it is herein exemplified in a machine of the general character illustrated in the Sundstrand Patent No. 1,198,487, dated September 19, 1916.

In the practical use of an adding machine, it is frequently desirable to preserve the tape upon which items and totals have been recorded. It sometimes is desirable to produce adding machine records in duplicate, and to this end it is customary to employ two tapes wound face to face, the rear face of the top tape being carbonized. When using two tapes, the lower tape is rewound for preservation, the upper tape being severed to provide slips to be handed to the customers.

The present invention is herein disclosed in connection with an adding and listing machine of the general character of that shown in my application Serial No. 492,242, filed August 15, 1921, said machine comprising two adding and listing mechanisms, each mechanism being arranged to print upon a separate tape, the two tapes lying side by side, i. e., abreast of each other.

Machines embodying the present inven-

tion are especially useful in retail stores where it is desired to give each customer a slip showing the various items of his purchase, together with the total of the items, and to preserve a record of the items of all sales.

In the drawings, 1 is the paper carriage, 2 the platen, and 3 the type bars (see Fig. 4). Upon a spindle or pivot 4 at the rear end of the paper carriage are rotatably mounted two supply rolls 5 and 6. The tapes from these supply rolls are passed through guideways 7 (Fig. 1) provided upon an inclined plate 8 which extends transversely of the paper carriage. After passing through the guideways 7, the tapes pass down around the platen 2 and up behind the usual tearing plate 9. The latter is rigidly secured to the framework of the adding machine. A plate 10 (Figs. 1 and 2) extends upwardly in an inclined position from a point adjacent to and rearwardly of the plate 9, said plate extending transversely of the paper carriage and being of sufficient width to serve as a table upon which the tapes from the supply rolls 5 and 6 may rest when the salesman desires to make notations upon them.

The tape from the supply roll 5 (which may be termed the record tape) extends over the table 10 and beneath a transverse rod 11, said rod being located above and rearwardly of the paper table 10 and being rigidly secured to the carriage 1. The rod 11 directs the record tape away from the tearing plate 9. The record tape extends thence to a reel upon which it is to be rewound for preservation. While the reel may be of any suitable construction, there is herein shown a reel 12 comprising two disks 13 and 14. The disk 14 has a long hub 15 which is rotatably mounted upon a spindle 16 which is rigidly secured to a bracket 17 extending upwardly from the main portion of the paper carriage 1. As shown in Fig. 6, the spindle 16 is secured in a sleeve 18 which is a part of the bracket 17. One end of the hub 15 is reduced in diameter and externally screw-threaded to receive the internally-threaded hub 19 of the disk 13. If desired, the supply rolls, the rewinding reel 12 and the means for rotating the reel 12 may be enclosed in a removable housing portions of which are shown at 20 in Figs. 5 and 6. 21 is a screw passing through a hole in said

housing and entering a threaded opening in one end of the spindle 16.

As shown in Fig. 6, the hub 15 projects from both sides of the disk 14. One end of said hub lies in contact with a collar 22 fixed upon the spindle 16.

The disk 14 carries a pin 23 (Figs. 1 and 6) for convenience in attaching the record tape to the reel.

In the construction herein shown, the reel 12 is arranged to be rotated by means of power applied to the reel as distinguished from power applied to the periphery of the roll carried by said reel. Inasmuch as said roll varies in diameter and therefore takes up a variable amount of tape for a movement of the reel through a given arc, I provide means whereby the reel-rotating means may yield when the tape is under tension.

The invention is herein illustrated as embodied in a machine having means for imparting a variable line-space movement to the platen, and means for imparting a relatively long feed movement to the tapes after the printing of each total in order to carry the printed matter to a point above the upper edge of the tearing plate 9, and thus obviate the necessity of manually rotating the platen to carry the tape from the supply roll 6 to a position where the printed section thereof can be torn off and given to the customer. I therefore provide reel-rotating means of such character as to be capable of eventually taking up the slack produced in the record tape by such extra-long movement of the tapes after the printing of totals.

The reel-rotating means herein shown comprises a disk 24 carrying on one side a stud 25 adapted to engage a pin 26 fixed to the disk 14 and thus drive the reel. The disk 24 is fixed to a ratchet wheel 27 which is rotatably mounted on the sleeve 18. A disk 28 is fixed to said sleeve adjacent to the disk 24, said disks thus providing between them a space to receive and guide the reciprocating ratchet bar hereinafter mentioned. The ratchet wheel 27 is arranged to be engaged by an anti-return dog 29 (Fig. 3) pivoted at 30 to the disk 28, said dog being held in engagement with the ratchet wheel by means of a coiled contractile spring 31.

A bar 32 is mounted to reciprocate in a generally vertical direction through the space between the disks 24 and 28, the upper portion of said bar being provided with a series of ratchet teeth to engage the ratchet wheel 27. On the stationary disk 28 is a stop pin 33 to prevent the ratchet bar 32 from being moved out from between the disks 24 and 28. In the lower portion of the ratchet bar 32 is an elongated opening 34 through which a headed screw 35 extends, said screw being seated in an arm 36 fixed

upon a rock shaft 37 journaled in the paper carriage. A coiled contractile spring 38 is connected at one end to the arm 36 forwardly of the ratchet bar 32, and at its other end to said ratchet bar at a point above said arm. The spring 38 therefore tends to pull the ratchet bar down until the upper end wall of the elongated opening 34 bears against the screw 35. The spring 38 also acts to pull the ratchet bar forwardly so as to hold the ratchet teeth in contact with the ratchet wheel 27. Upon one end of the rock shaft 37 outside the paper carriage 1 is fixed an arm 39 (Fig. 5) carrying a pin 40 which lies within a notch 41 (Fig. 4) in a horizontal reciprocatory element 42. This element is reciprocated once in each cycle of operations of the adding machine. Thus, it will be seen that in each cycle of operations of the machine, the shaft 37 will be rocked to reciprocate the ratchet bar 32. By reason of the yielding connection between said ratchet bar and the arm 36, the latter is free to swing through its full stroke every time the adding machine is operated, notwithstanding the fact that during a portion of said stroke the record tape may be under tension and thus hold the ratchet wheel 27 and the ratchet bar 32 against movement. The length of movement which the arm 36 is capable of imparting to the ratchet bar 32 is sufficient to take up in one or two cycles of operation the slack produced in the record tape by the extra-long movement occurring after the printing of a total.

A ratchet wheel 43 (Figs. 2 and 4) is secured to the shaft of the platen 2 and is arranged to be engaged by a lever 44 having a series of ratchet teeth. The lever 44 is arranged to be reciprocated to impart the desired line-space movement to the platen and is also arranged to be given an extra-long movement after the printing of a total in order to cause the platen to advance the tapes to bring the total above the upper edge of the tearing plate 9. Inasmuch as the particular means for actuating the ratchet-toothed lever 44 has no necessary relation to the invention claimed, such means is not disclosed herein.

The operation of the mechanism herein disclosed will be readily understood from the foregoing description. At the close of business for the day or at any other desired time, the manager or other person in charge can remove the reel 12 and unwind the record tape therefrom.

I claim as my invention:

1. An adding and listing machine having, in combination, means to support a supply roll, a platen for feeding tape from said roll, a reel for rewinding said tape, and means for rotating the reel, said rotating means comprising a disk carrying a stud, a pin

on the reel lying in the orbit of said stud, a ratchet wheel connected to said disk, a dog engaging said ratchet wheel to prevent reverse movement of the latter, a ratchet bar in engagement with said ratchet wheel, said bar having an elongated opening therein, a rock shaft, an arm on said rock shaft, a member on said arm extending through said slot, a spring connected to said arm and ratchet bar, said spring serving to hold the ratchet bar in engagement with the ratchet wheel and said spring also tending to hold one end wall of said elongated opening in contact with said member, and means actuated in the operation of the adding and listing machine for rocking said shaft.

2. An adding and listing machine having, in combination, means to support a supply roll, a platen for feeding tape from said roll, a reel for rewinding said tape, and means for rotating the reel, said rotating means comprising a ratchet wheel arranged to turn the reel, a ratchet bar in engagement with said ratchet wheel, said bar having an elongated opening therein, a rock shaft, an arm on said rock shaft, a member on said arm extending through said slot, a spring connected to said arm and ratchet bar, said spring tending to hold one end wall of said elongated opening in contact with said member, and means actuated in the operation of the adding and listing machine for rocking said shaft.

3. In an adding and recording machine, a paper carriage framework, means at the rear side of said framework for supporting two supply rolls side by side, a platen rotatably mounted at the forward side of the framework, guide means on the framework for directing the tapes from said rolls to the platen, a tearing plate located in front of the platen and extending across the width of both tapes, a bracket fixed to and rising from said framework, a reel supported on said bracket above the supply rolls and rearwardly of the platen, a guide on the framework to direct one of said tapes away from the tearing plate and to said reel, and means to rotate the reel.

4. An adding and listing machine having, in combination, a bracket having a spindle fixed thereto, a reel rotatably mounted on said spindle, means for removably holding said reel on the spindle, a pin fixed to the side of said reel, a disk rotatably mounted concentrically with the spindle, a stud on the side of said disk in position to engage said pin, a ratchet wheel secured to said disk and concentric therewith, a second disk secured to said bracket, an anti-return dog pivoted on said second disk and engaging the said

ratchet wheel, and a feed member arranged to engage said ratchet wheel.

5. An adding and listing machine having, in combination, a bracket having a spindle fixed thereto, a reel rotatably mounted on said spindle, a pin fixed to the side of said reel, a disk rotatably mounted concentrically with the spindle, a stud on the side of said disk in position to engage said pin, a ratchet wheel secured to said disk and concentric therewith, a second disk secured to said bracket, an anti-return dog pivoted on said second disk and engaging the said ratchet wheel, and a feed bar arranged to engage said ratchet wheel and to reciprocate between said disks.

6. An adding and listing machine having, in combination, a reel, a disk rotatably mounted concentrically with the reel, a stud on the side of said disk in position to engage said reel, a ratchet wheel secured to said disk and concentric therewith, an anti-return dog engaging the said ratchet wheel, and a feed member arranged to engage said ratchet wheel.

7. An adding and listing machine having, in combination, a bracket having a spindle fixed thereto, a reel rotatably mounted on said spindle, means for removably holding said reel on the spindle, a pin fixed to the side of said reel, a disk rotatably mounted concentrically with the spindle, a stud on the side of said disk in position to engage said pin, and means to rotate the disk.

8. An adding and listing machine having, in combination, means to support a supply roll, a platen for feeding tape from said roll, a reel for rewinding said tape, and means for rotating the reel, said rotating means comprising a disk carrying a stud, a pin on the reel lying in the orbit of said stud, a ratchet wheel connected to said disk, and a ratchet member to turn the ratchet wheel.

9. In an adding and recording machine, a framework, means at the rear side of said framework for supporting a supply roll, a platen rotatably mounted at the forward side of the framework, guide means for directing the tape from said roll to the platen, a bracket fixed to and rising from said framework, a reel supported on said bracket above the supply roll and rearwardly of the platen, a guide on the framework to direct said tape to said reel, a paper table in said framework between the platen and the last-mentioned guide, the tape extending across said table, and means to rotate the reel.

In testimony whereof, I have hereunto set my hand.

OSCAR J. SUNDSTRAND.