

April 9, 1935.

E. RACZ ET AL

1,997,077

PAPER EQUIPMENT FOR CALCULATING MACHINES

Filed Feb. 2, 1933

3 Sheets-Sheet 1

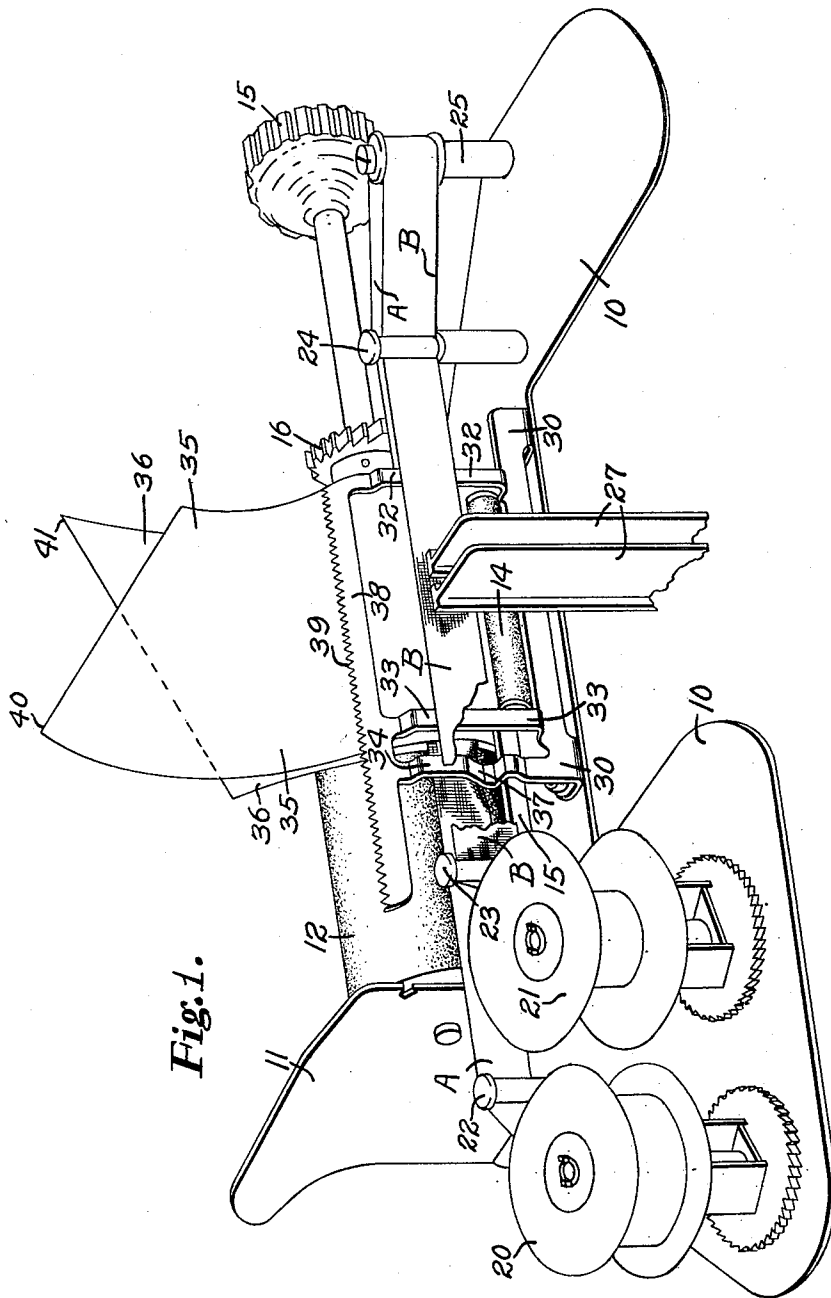


Fig. 1.

INVENTORS
Ernest Racz
BY Oscar Cannon
Rector, Kilmer, Davis & Macaulay
ATTORNEYS

April 9, 1935.

E. RACZ ET AL

1,997,077

PAPER EQUIPMENT FOR CALCULATING MACHINES

Filed Feb. 2, 1933

3 Sheets-Sheet 2

Fig. 2.

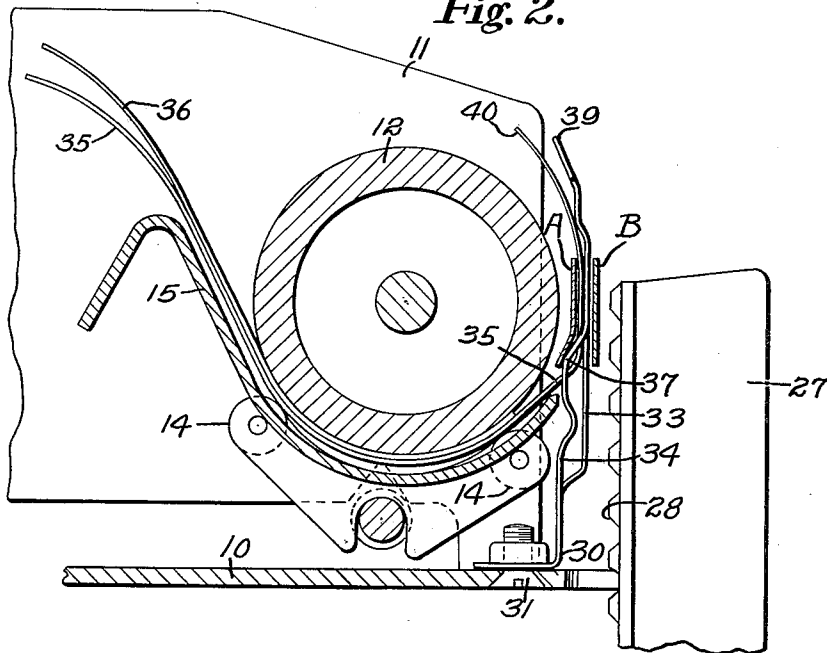
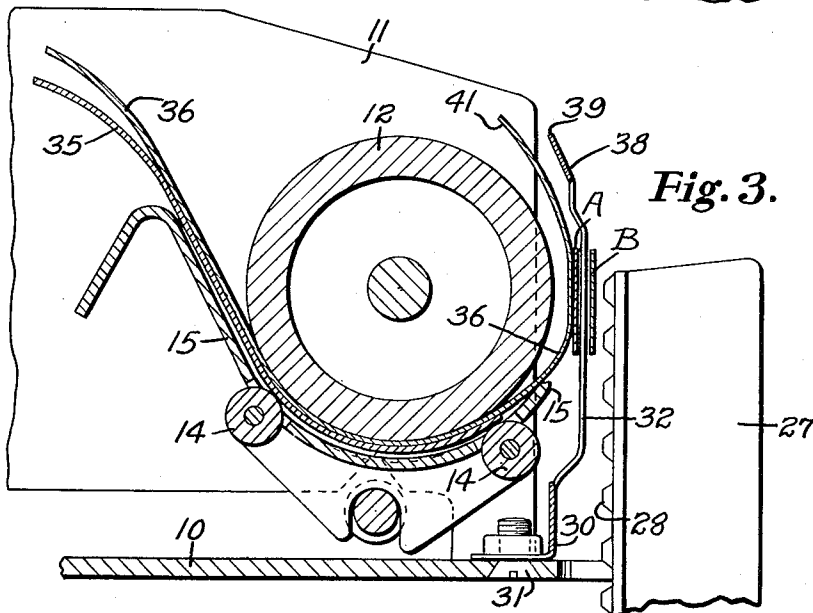


Fig. 3.



INVENTORS
Ernest Racz
BY Oscar Cannon
Racz, Hoken, Cannon & Macaulay
ATTORNEYS

April 9, 1935.

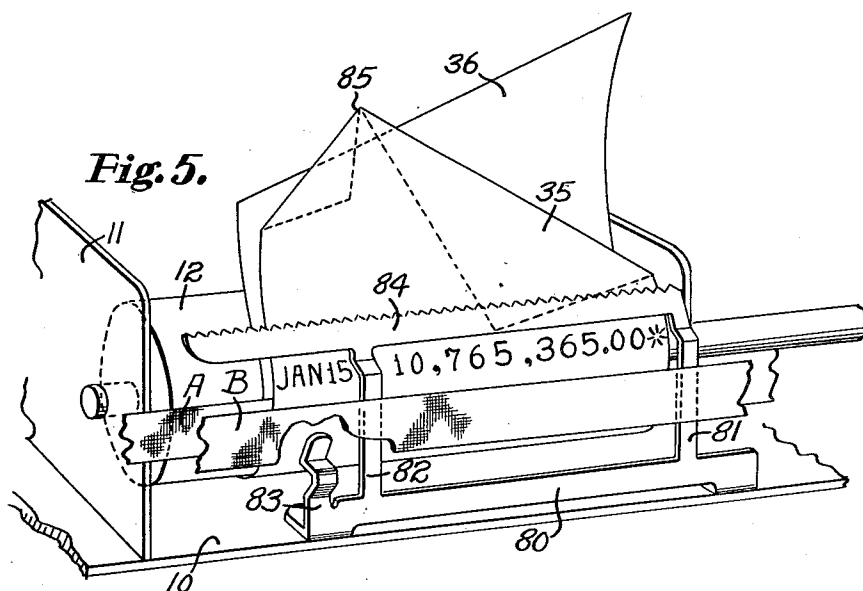
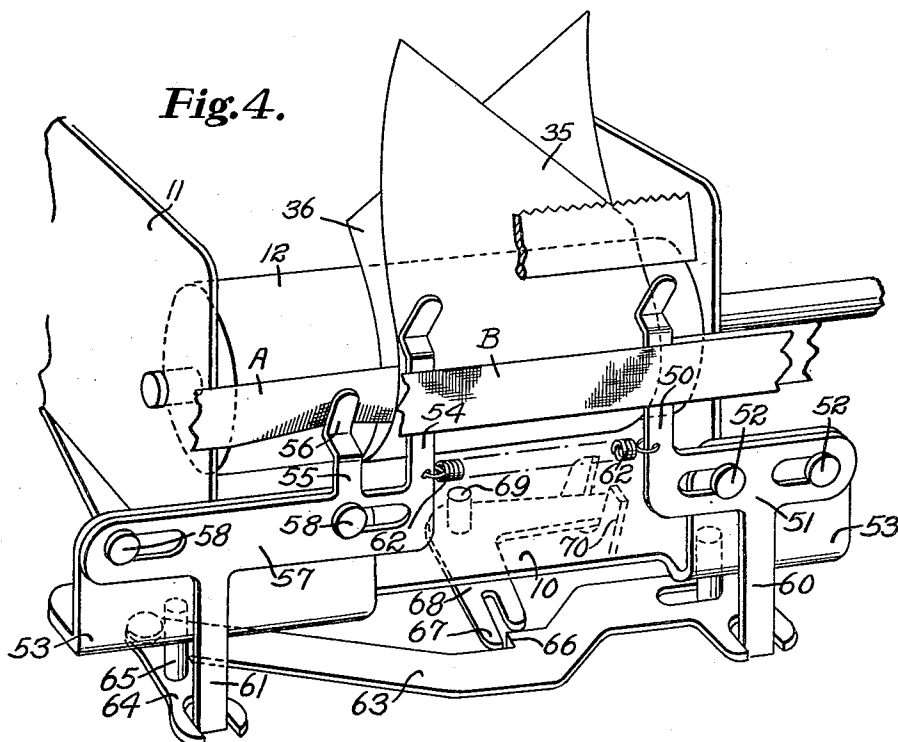
E. RACZ ET AL

1,997,077

PAPER EQUIPMENT FOR CALCULATING MACHINES

Filed Feb. 2, 1933

3 Sheets-Sheet 3



INVENTORS
Ernest Racz
BY Oscar Cannon
Rector, Huber, Davis & Macaulay
ATTORNEYS

UNITED STATES PATENT OFFICE

1,997,077

PAPER EQUIPMENT FOR CALCULATING MACHINES

Ernest Racz and Oscar Cannon, Detroit, Mich.,
assignors to Burroughs Adding Machine Com-
pany, Detroit, Mich., a corporation of Michigan

Application February 2, 1933, Serial No. 654,793

11 Claims. (Cl. 197—127)

This invention relates to paper equipment for calculating machines. It is directed particularly to equipment for guiding papers between two webs of ribbon in a double-ribbon machine.

Multiple webs of ink ribbon are sometimes used in the calculating machine and typewriter arts to obtain duplicate copies instead of employing carbon paper. Two or more ribbons are supported along the printing line of the platen. One of the papers is positioned to the rear of the ribbon next to the platen and the other papers go between succeeding ribbons. Considerable difficulty is encountered in getting the papers into proper position between the ribbons and the present invention is directed to a solution of this problem. It is also directed to improving the means for enabling the projecting ends of the papers to be torn off when desired.

The general object of the invention is to provide an improved paper equipment for calculating machines and the like.

A more particular object is to provide an improved means for guiding papers between the ribbon webs of a multiple ribbon machine.

Another object is to provide an improved tear-off blade for calculating machines or the like.

A further object is to provide a combined paper guiding and paper tearing-off means for guiding papers between the ribbon webs of a multiple ribbon machine and for enabling the projecting ends of the papers to be readily torn off when desired.

Other objects and advantages will appear from the specification and drawings.

An embodiment of the invention is shown in accompanying drawings in which:

Figure 1 is a perspective view of the invention applied to a calculating machine.

Fig. 2 is a combined side elevation and section showing particularly the means for guiding the paper that goes between two webs of ink ribbon.

Fig. 3 is a view similar to Fig. 2 showing particularly the means for guiding the paper that goes between the platen and the ribbon next to the platen.

Fig. 4 is a perspective view showing a modified form of the invention in which certain parts of the guiding means are automatically moved as the machine is operated so that they will be out of the way of the printing mechanism where the mechanism has to operate on the full width of the paper.

Fig. 5 is a perspective view of still another modification.

The invention is shown applied to a Burroughs

portable calculating machine of the type shown in Horton Patent No. 1,853,050. Only the parts more particularly associated with the present invention have been illustrated and described.

Referring to Fig. 1, a base plate 10 is provided which is adapted to be mounted on top of the calculating machine. This plate has upstanding ears 11 supporting a rotatable platen 12. Cooperating with the platen are feed rolls 14 (Fig. 2) for feeding papers about the platen. A paper apron or pan 15 is also provided for guiding papers under the platen and causing them to pass upwardly and to the point as they are fed. The platen can be rotated to feed papers about it by a hand twirler 15 or fed automatically during operation of the machine by means of a line space ratchet wheel 16. For a more detailed explanation of the platen mounting and operation reference is made to Horton Patent No. 1,690,487.

The ink ribbon is supported so that there are two webs of ribbon A and B along the printing line of the platen. The web A is next to the platen and will be called the rear web. The web B will be referred to as the front web. Two ribbon reels 20 and 21 are provided, both mounted on the same side of the machine. The web A passes from the reel 20 to the rear of guide pins 22 and 23 along the printing line of the platen, then to the rear of a guide pin 24 and around pin 25. As it returns it forms web B which passes to the rear of guide pin 24, along the printing line in front of web A, and to the rear of pin 23 to reel 21. The two reels are automatically fed by ribbon feeding mechanism including an automatic reversing device of the type illustrated in Patent No. 1,690,487.

The calculating machine is provided with a printing mechanism including the type bars 27 which carry types 28 (Fig. 2) and which are driven into engagement with the platen at the appropriate time during the operation of the machine, reference being had to Patent No. 1,730,147 for details of this mechanism.

Paper guiding means

The means for guiding papers between the webs of ribbon acts automatically when the papers are fed around the platen and, at the same time, it is of very simple and inexpensive construction.

The guiding means is preferably made out of a single piece of metal. Referring to Fig. 1, this guiding means has a bottom or base portion 30 which is rigidly attached to the base plate 10 of the machine by bolts 31 (Fig. 2). As shown in Figs. 2 and 3, the base plate 10 is below the platen,

and the plane of support for the guiding means is also below the platen. Extending upwardly in front of the platen from this base portion 30, and integral therewith are three guiding members 32, 33 and 34.

The guiding members 32 and 33 project upwardly between the ribbon webs, the member 32 being positioned at one side and in front of the paper strips 35 and 36, after they have been positioned, and the member 33 being positioned at the other side and in front of said strips. The portions of these two guide members which project between the two webs of ribbon are narrow, flat, and straight.

The third upstanding member 34 is positioned at the side of the left-hand member 33 (Fig. 1) and slightly to one side of the paths of the paper strips. The guide member 34 also extends between the two webs of ribbon but it is not a straight member. Instead, it has a rearwardly extending bent portion 37 acting as a cam or guiding surface to hold the bottom edge of the rear ribbon A at the side where the member 34 is located, rearward out of its normal path so as to separate this bottom edge from the front ribbon and the guide member 33. This is done without disturbing the position of ribbon web A at the other side of the paper strips, as shown in Fig. 3.

The tops of the guide members 32, 33 and 34 are preferably joined together by a cross piece 38 which has a saw-tooth edge 39 that enables the cross piece to act as a tear-off blade as will be later explained.

It is to be observed that the guiding means is made out of an integral piece of metal, certain portions being stamped out so as to leave the guide members 32, 33, and 34. The metal stamping is then bent to the shape illustrated in Fig. 1.

When the paper strips are to be inserted into the machine they are preferably cut or bent as illustrated in Fig. 1, so as to provide a pointed end 40 at one side of one paper strip 35, and a similar pointed end 41 at the other side of the other strip 36. This cutting or bending is to make the leading ends of the paper strips more independent of one another so that one strip can be more easily guided one way and the other strip the other.

The manner in which the front paper strip 35 is guided between the ribbon webs will first be explained, reference being had to Fig. 2.

As the paper strip 35 passes under the platen and comes up at the front thereof, it tends to straighten out and pass slightly upward and forwardly. The pointed end 40 does not strike the ribbon web A because the lower edge of this web is held rearward on this side of the path of the paper by means of the guide 34 and its bent portion 37. The first thing that the end 40 of paper strip 35 engages is the guiding member 33. This guiding member 33 deflects the paper upwardly and guides it between the two webs of ribbon.

Referring to Fig. 3, the other paper strip 36 tends to act the same way as it passes forward under the platen. But the projecting forward corner 41 of this paper strip is on the opposite side and, as this corner comes up, it engages the rear side of the rear ribbon web A which, at this side of the machine, is not held away from the front ribbon web B. This rear ribbon is supported or backed by the guide member 32 and, consequently, the ribbon web A being firmly backed by member 32, the paper strip 36 is deflected upward between the platen and ribbon web A.

It is to be understood, of course, that the two strips of paper are fed together and that the

above described action for the two paper strips takes place simultaneously.

The paper strips can be fed about the platen by inserting them from the rear and turning the platen, preferably, by means of twirler 15, or they can be inserted from the rear and the machine operated so that the papers are line spaced forward at a regular rate.

Tear-off blade features

The construction described also provides an improved tear-off blade by means of which the projecting ends of the papers may be torn off when desired.

As previously mentioned, the upper ends of the guide members 32, 33 and 34 are joined by a cross member 38. This member has teeth 39 on its edge for engaging the paper to tear it off when the paper is pulled forwardly.

The guiding means described is made out of fairly rigid sheet steel which, however, is sufficiently flexible to permit the tear-off blade to be pulled away from the platen if sufficient force is applied to it. On the other hand, the material is stiff enough to resist the forward pull on the paper when the latter is jerked to tear off the projecting paper ends.

As shown in Figs. 2 and 3, the upper end of the tear-off blade is bent rearward slightly so as to guide the incoming ends of the paper rearward. This also positions the saw-tooth edge of the blade so that it will take a good bite on the paper to prevent the paper being pulled upward when it is grasped and pulled forward to tear it off. The tear-off blade, however, is spaced some distance from the platen so that the paper strips will not easily jam between the platen and the tear-off blade. Should any such jamming occur, it is a simple matter for the operator to grasp the resilient tear-off blade and pull it forward to free the papers.

Tear-off blades are generally positioned quite close to the platen and made very rigid so that when the projecting ends of the paper are pulled, the tear-off blade will not yield. As far as known, this is the first tear-off blade construction spaced from the platen, made sufficiently rigid to act as a tear-off blade when the papers are jerked against it, and, at the same time, made sufficiently resilient so that, if pulled away slowly, as distinguished from a jerk, it can be pulled away a considerable distance to permit access to the strip that may be jammed behind it. This construction has proven to be very advantageous in actual commercial use and is a distinct advance over the old construction.

Modification No. 1

It is sometimes desirable to print on the entire width of the paper strips but the guiding members 32 and 33 shown in Fig. 1 would interfere because they are in front of the strips at each side thereof. Provision is made for overcoming this difficulty in the construction illustrated in Fig. 4.

In this form, the right hand guiding member 50 is carried by a slide 51 mounted by a pin and slot connection 52 on a supporting plate 53. The left hand guiding member 54, and the guiding member 55 which has a bent portion 56 in it, are carried by another slide 57 mounted by a pin and slot connection 58 on the plate 53. The bent portion 56 of member 55 functions as a guiding surface to hold a portion of the bottom edge

of the rear ribbon A out of its normal path. The upper ends of guiding members 50 and 54 are bent as shown in Fig. 4 to aid in guiding and holding the upper ends of the strips rearwardly over the platen.

The slides 51 and 57 have downward extending projections 60 and 61, respectively, and the two slides are connected together by a spring 62 which serves to urge them toward one another, their movement being limited, however, by the slots 52 and 58 engaging their respective studs.

The downwardly extending projection 60 of slide 51 is engaged by the forked end of a slide 63 mounted on the base plate 10. The other end of the slide 63 is pivoted to a lever 64 which, in turn, is pivoted at 65 to the plate 10 and provided with a forked end engaging over the downwardly projecting portion 61 of the slide 57.

The slide 63 has a shoulder 66 adapted to be engaged by a projection 67 on a bell crank lever 68 pivoted at 69 on plate 10. This bell crank lever is rocked counter-clockwise as viewed in Fig. 4 during each operation of the machine by means of the oscillating member 70 that line spaces the platen, such member and the operating means for it being disclosed in detail in said Horton Patent No. 1,690,487.

So far as guiding the papers is concerned, the operation of this form of the guiding means is the same as that of the form heretofore described. But, as the machine operates, the bell crank 68 rocks counterclockwise automatically which moves the slide 63 to the right as viewed in Fig. 4. This separates the slides 51 and 57 and moves the guiding members 50 and 54—55 away from each other so as to move them out of the path of the printing mechanism. After printing has occurred, and during the return stroke of operation of the machine, the parts return to normal.

Modification No. 2

Another modification for enabling printing to occur for the full width of the paper is illustrated in Fig. 5.

The guiding means of this modification is similar to that first described, that is, a base 80 is provided from which extend upwardly three guiding members 81, 82 and 83. The upper ends of the guide members 81 and 82 are joined by a cross member 84 forming a tear-off plate that extends considerably to the left of guide member 82. In this form the guide member 83 is not attached at its top to the tear-off blade, but ends abruptly as illustrated in Fig. 5.

As far as guiding the paper is concerned, this form acts in the same manner as the form first described, but it will be observed that the right hand guide member 81 is beyond the edge of the paper and the left hand guide member 82 is spaced sufficiently far from it to allow for wide printing. In addition to this, the month and date may be printed on the left hand side of the guide member 82 because of the shortened guide member 83. In other words the date printing mechanism may operate above the guide 83 and print on the paper which extends to the left of the guide 82, the tear-off blade 84 being made plenty wide enough to tear off the entire strip.

In this form the papers are preferably folded or torn as illustrated in Fig. 5, that is, the strip 36 is cut, torn, or folded at an angle as shown and the forward strip 35 is torn so as to provide a projecting point 85 slightly inward from its left hand edge.

It is to be understood that the constructions

shown are for purposes of illustration and that variations may be made therein without departing from the spirit and scope of the invention as defined by the appended claims.

We claim:

1. A machine of the class described having a platen, a pair of ink ribbons supported along the printing line of said platen, means operable to feed two papers under said platen from the rear and up in front of said platen, said papers being in engagement with one another from the rear of said platen until they reach said ribbons, and means adjacent said ribbons acting to automatically receive and guide said papers as they reach said ribbons so that continuous feeding of said paper strips will, without any attention on the part of the operator, cause one of said papers to pass between said ribbons and the other to pass between said platen and the ribbon next to it.

2. A machine of the class described having a platen, a pair of ink ribbons supported along the printing line of said platen, means for feeding two paper strips about said platen, and means holding the ribbon next to the platen away from the other ribbon near one side of the path of said strips while leaving the two ribbons in normal position at the other side of said path whereby, when said two paper strips are fed about said platen with one strip having a pointed end on one side and the other having a pointed end on the other side, one of said strips will be guided between said ribbons and the other will be guided between said platen and the ribbon next to it.

3. A machine of the class described having a platen, a pair of ink ribbons supported along the printing line of said platen, means for feeding two paper strips about said platen, means holding the lower edge of the ribbon next to the platen slightly away from the other ribbon near one side of the path of said paper strips, and means between said ribbons at the other side of said path forming a backing for the ribbon next to the platen and with which backing said ribbon is in close engagement whereby, when two paper strips are fed about said platen with the end of one pointed on one side and the end of the other pointed on the other side, one of said strips will pass between said ribbons and the other will pass between said platen and the ribbon next to it.

4. A machine of the class described having a platen, a pair of ink ribbons supported along the printing line of said platen, means for feeding paper strips about said platen, paper guiding means including guiding members extending between said ribbons near each side of the path of said paper strips, and means adjacent one of said members for holding the bottom edge of the ribbon next to the platen away from the guiding member adjacent to it.

5. A machine of the class described having a platen, a pair of ink ribbons supported along the printing line of said platen, means for feeding paper strips about said platen, and paper guiding means rigidly supported below said platen and having three upwardly extending members, two of said members extending between said ribbons, one being near one side of the path of said paper strips and the other near the other side of said path, the third member being provided with means for holding the lower edge of the ribbon adjacent the platen away from the other ribbon and away from the upwardly extending member which is adjacent to said third member.

6. A machine of the class described having a

platen, a pair of ink ribbons supported along the printing line of said platen, means for feeding paper strips about said platen, and an integral paper guiding means supported below said platen and having three upwardly extending members positioned between said ribbons, one of said members being near one side and another being near the other side of the path of said paper strips, the third member being adjacent one of the other two and being provided with means for holding the bottom edge of the ribbon that is adjacent the platen away from the adjacent upwardly extending member.

7. A machine of the class described having a platen, a pair of ink ribbons supported along the printing line of said platen, means for feeding paper strips about said platen, paper guiding means supported adjacent the platen and having three upstanding members positioned between said ribbons, one of said members being near one side of the path of said paper strips and the other near the other side, the third member being adjacent one of the first two and provided with means for holding the lower edge of a portion of the ribbon which is adjacent the platen away from the adjacent member, and a tear-off blade supported by said members.

8. A machine of the class described having a printing mechanism, a platen, a pair of ink ribbons supported along the printing line of said platen, means for feeding paper strips about said platen, paper guiding means for guiding said paper strips into proper position relative to said ribbons, said guiding means including members normally positioned in front of the side edges of said paper strips where they are in the path of portions of said printing mechanism, and means operating automatically as the machine is operated to move said interfering members out of the path of said printing mechanism.

9. A machine of the class described having a printing mechanism, a platen, a pair of ink ribbons supported along the printing line of said platen, means for feeding paper strips about said

platen, paper guiding means for guiding said paper strips into proper position relative to said ribbons, said guiding means including upstanding members positioned in front of said paper strips at the sides thereof where they are normally in the path of portions of said printing mechanism, and means operating automatically during a machine operation to move said members sideways out of the path of said printing mechanism.

10. A machine of the class described having a printing mechanism, a platen, a pair of ink ribbons supported along the printing line of said platen, means for feeding paper strips about said platen, paper guiding means including two upstanding members extending between said ribbons, one of said members being at one side of and in front of said paper strips and the other member being at the other side of and in front of said paper strips, said guiding means also including a third member having means for holding the lower edge of the ribbon next to the platen away from the adjacent upstanding member, and means for moving said members automatically as the machine is operated to move them out of the path of said printing mechanism.

11. A machine of the class described having a platen, a pair of ink ribbons supported along the printing line of said platen, means for feeding two papers under said platen from the rear and across said printing line, said papers being in engagement with one another from the rear of the platen until they reach said ribbons, a paper guide supported below said platen and having members extending upward between said ribbons to receive said papers as they reach said ribbons and guide them so that continuous feeding of said strips will, without any attention on the part of the operator, cause one of said strips to pass between said ribbons and the other to pass between said platen and the ribbon next to it, and a tear-off blade supported by said guide members above said ribbons.

ERNEST RACZ.
OSCAR CANNON.