Dec. 21, 1937. M. GARBELL 2,102,693

ADDING MACHINE

Filed June 3, 1937 3 Sheets-Sheet 1

Fig. 1

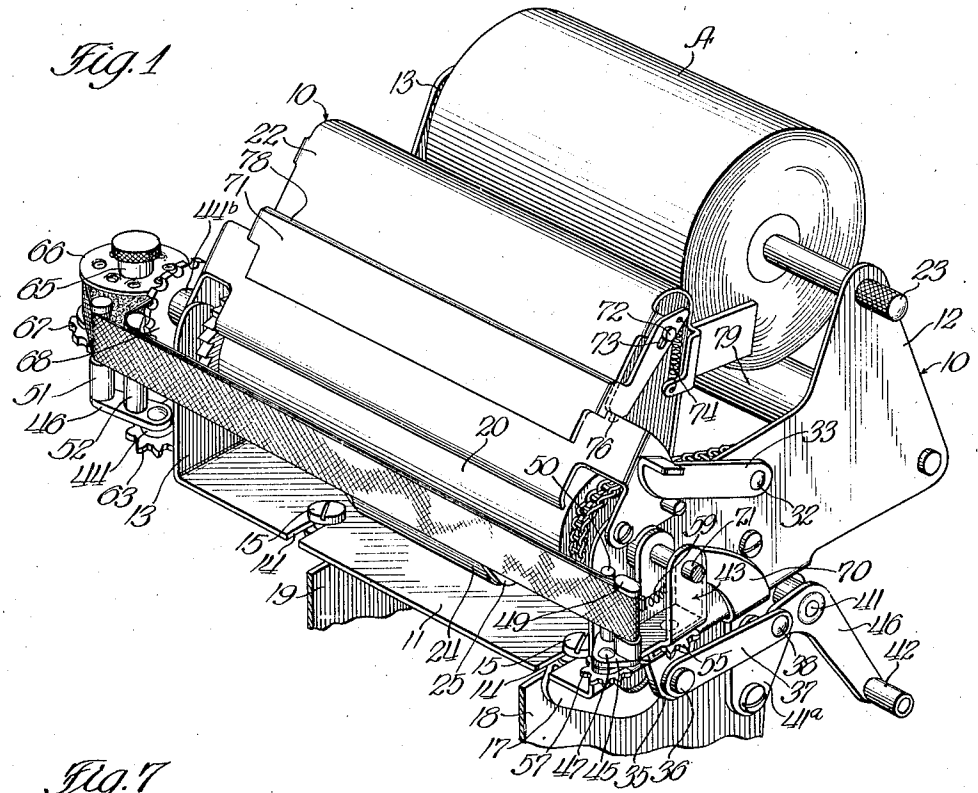
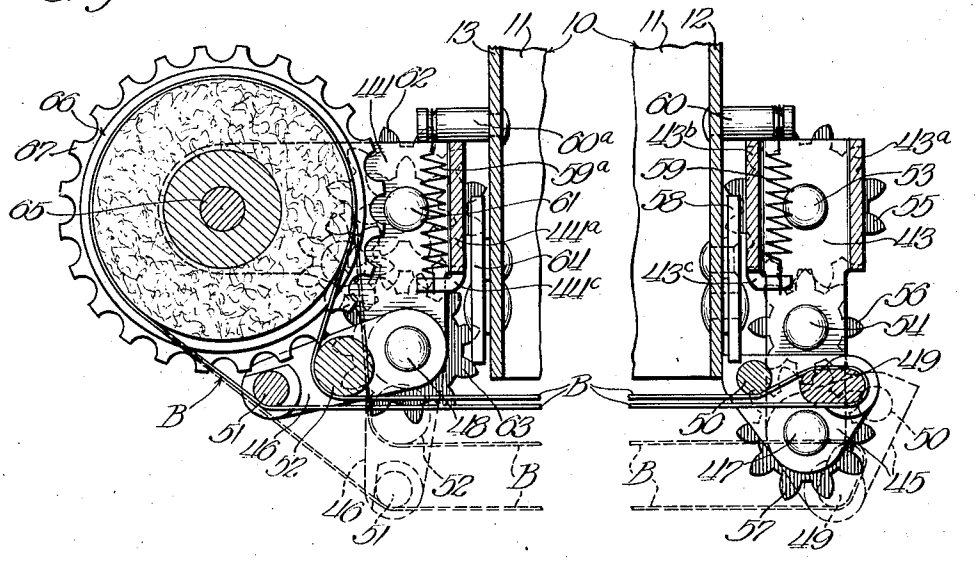


Fig. 7



Witness:
Ralph Mershon

Inventor:
Max Garbell
By Leo F. Dunmais Atty.

Dec. 21, 1937. M. GARBELL 2,102,693

ADDING MACHINE

Filed June 3, 1937 3 Sheets-Sheet 2

Fig. 9

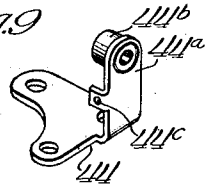


Fig. 2

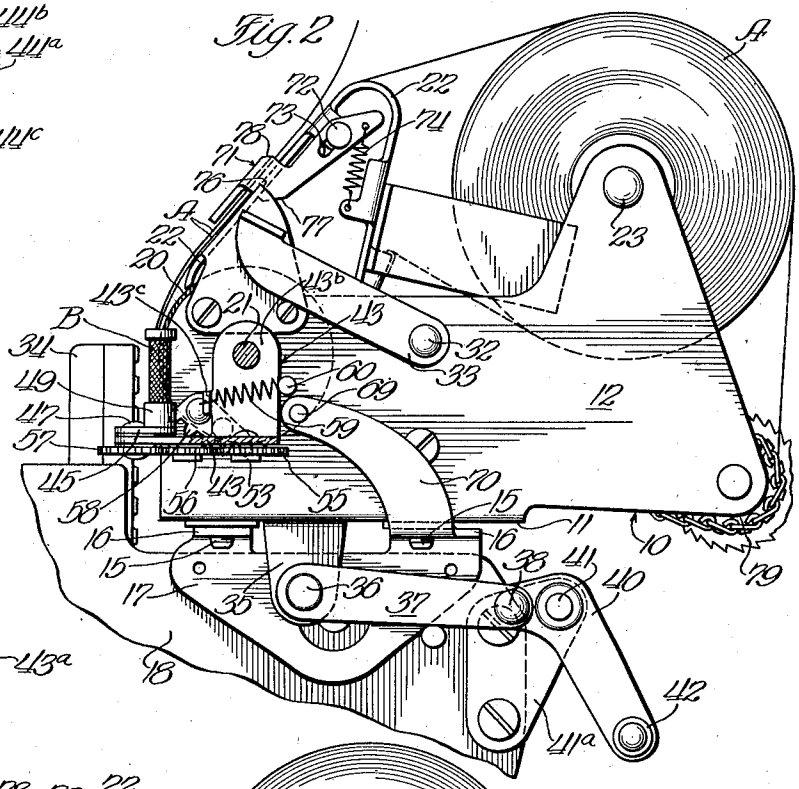
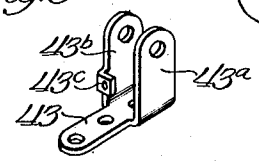


Fig. 8



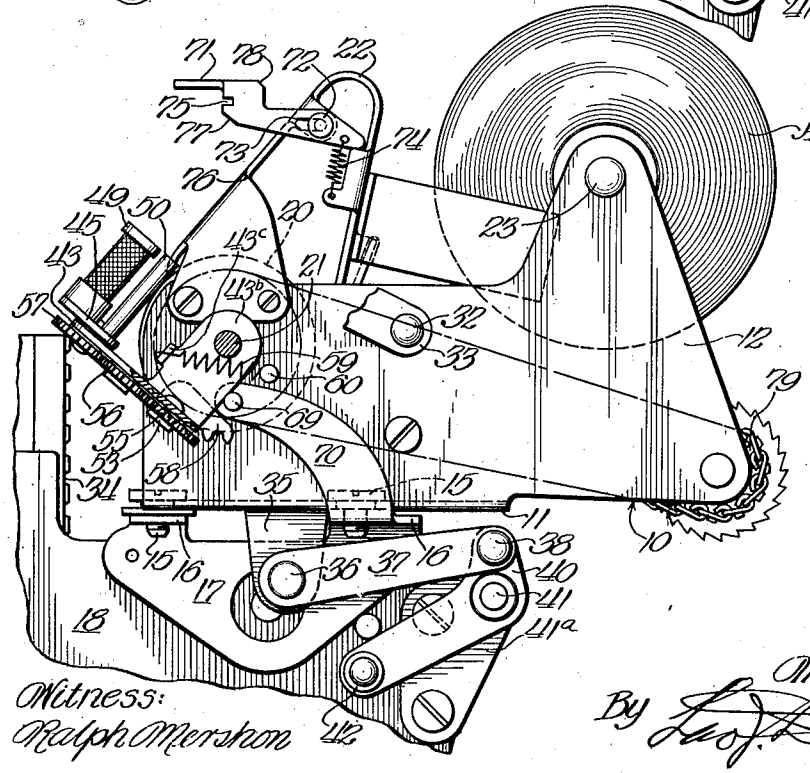


Fig. 3

Witness:
Ralph Mershon

Inventor:
Max Garbell
By Leo J. Dennis Atty.

Dec. 21, 1937. M. GARBELL 2,102,693

ADDING MACHINE

Filed June 3, 1937 3 Sheets-Sheet 3

Fig. 4

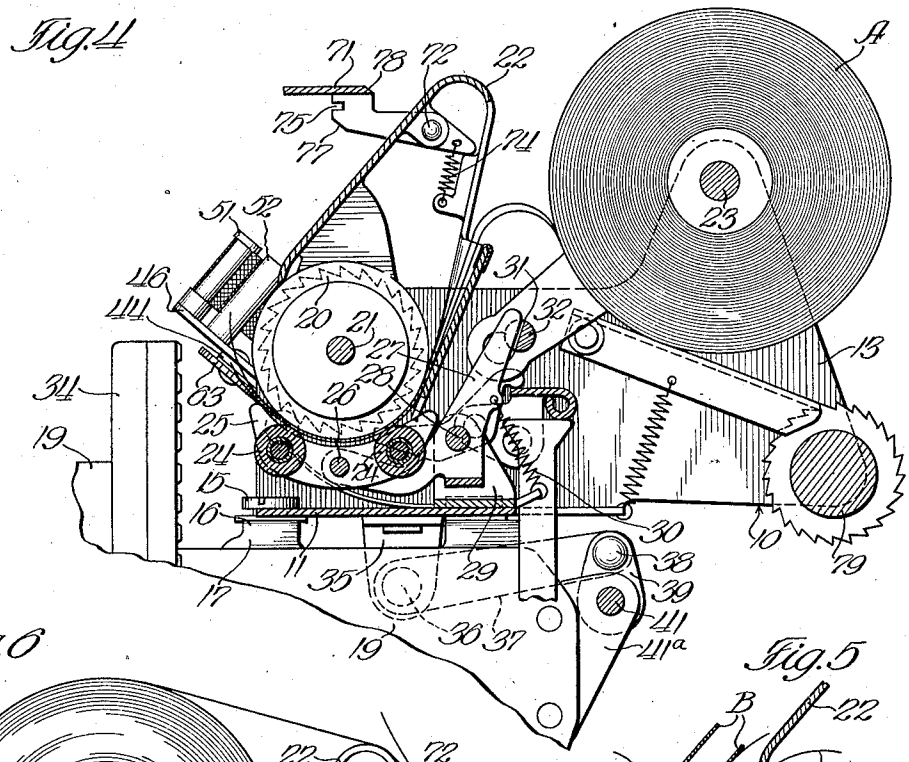


Fig. 6

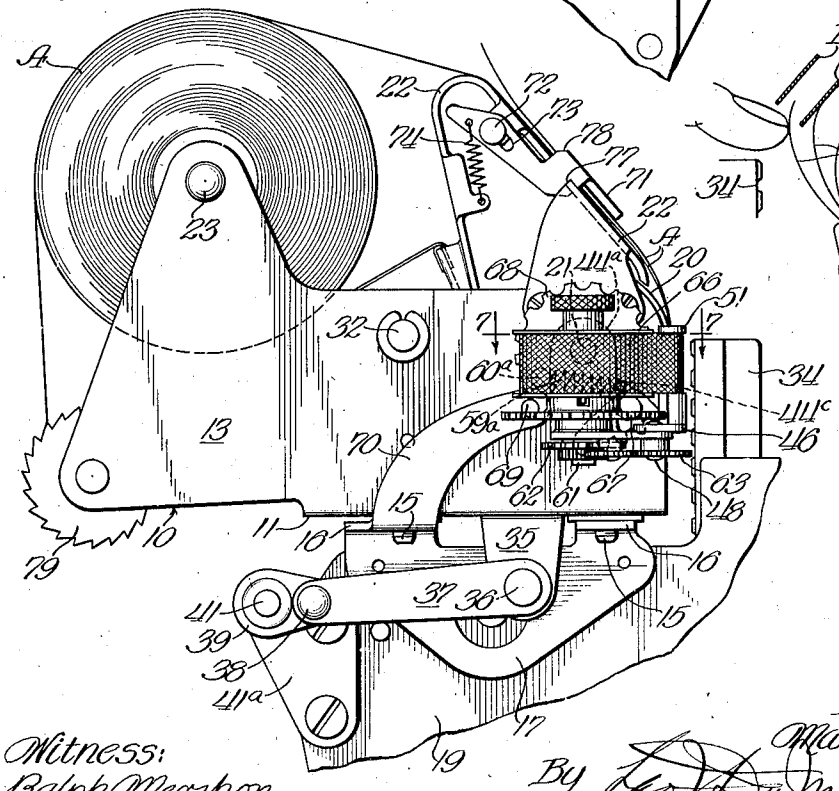
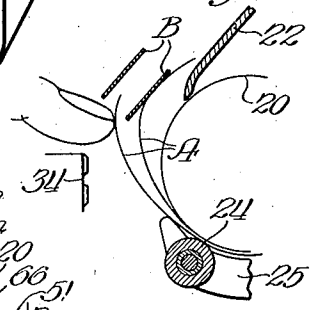


Fig. 5



Witness:
Ralph Mershon

Inventor:
Max Garbell
By Leo J. DeMars Atty.

Patented Dec. 21, 1937 2,102,693

UNITED STATES PATENT OFFICE

2,102,693

ADDING MACHINE

Max Garbell, Chicago, Ill., assignor to Victor Adding Machine Company, Chicago, Ill., a corporation of Delaware

Application June 3, 1937, Serial No. 146,171

16 Claims. (Cl. 197—153)

This invention relates to adding machines or the like, and is more particularly directed to means for moving the platen away from the printing elements and simultaneously swinging the inking ribbon in a position to render the same accessible for threading the free ends of the paper with respect thereto.

It is common in adding machine construction to utilize a double paper strip fed from a single roll, and it is with the use of this type of roll that my invention is shown. When the double paper strip is used, a double inking ribbon is employed and the free ends of the paper strips are fed so that one of the strips will be directed between the platen and the ribbon while the other is directed between the two ribbons. My invention contemplates the use of a double ribbon and means for effecting a movement thereof upwardly and outwardly of the platen while effecting a spreading of the ribbons.

In practice it has been a rather tedious task to reach between the platen and the printing elements in order to properly guide the free ends of the paper strips to their respective positions and it is to this end that my invention is directed.

It is therefore the primary object of the present invention to eliminate this arduous task by manually positioning the platen in spaced relation with the printing elements of the machine and to simultaneously swing the inking ribbons to accessible position.

A further object is the provision of manually controlled means for effecting the movement of the platen and to simultaneously swing and spread the inking ribbons with respect to the platen and the inking ribbons with respect to each other.

A still further object is the provision of a carriage having a platen and ribbon supported thereon and arranged to bodily move with the carriage and with manually controlled means for holding the carriage in operative position and for effecting its movement to move the platen away from the printing elements and with means extending into the path of movement of the carriage for effecting a swinging and spreading movement of the ribbons.

And a still further object is the provision of a pivotally supported paper guide for directing the outward movement of the paper strips from the platen, and which guide serves when in position as a tear-off blade to sever one of the strips.

Referring to the drawings:

Figure 1 is a detail perspective view of an adding machine carriage with my invention attached thereto.

Figure 2 is a side elevation illustrating the operative connections for effecting movement of the carriage and the ribbon associated therewith.

Figure 3 is a view similar to Figure 2 illustrating a changed position with the carriage in moved position and the ribbon simultaneously moved upwardly thereby.

Figure 4 is a medial sectional view of the carriage in the position shown in Figure 3.

Figure 5 is a diagrammatic view illustrating the inserting of the paper strips while the carriage and ribbon are in the positions shown in Figures 3 and 4.

Figure 6 is a view in side elevation of the reverse side of the carriage illustrating the operative connections cooperating with those shown in Figures 1 and 2 for effecting movement of the carriage and ribbons.

Figure 7 is an enlarged detail plan sectional view partially broken away, illustrating the control means operable to spread and swing the ribbons away from the platen, taken on the line 7—7 of Figure 6.

Figure 8 is a detail perspective view of the rockable member on the right hand side of the carriage as viewed in Figure 1; and

Figure 9 is a detail perspective view of the rockable member on the left hand side of the carriage as viewed in Figure 1.

As illustrated herein, the invention is shown as applied to an adding machine for effecting movement of the carriage and ribbon thereof.

The carriage designated as a whole as 10, is of U-formation having a bottom wall 11 and side walls 12 and 13. The bottom wall 11 of the carriage 10 is provided with a plurality of elongated slots 14 through which shouldered screws 15 extend and which screws are threaded into ears 16 formed on L-shaped brackets 17 which are secured to each of the side plates 18 and 19 of the machine.

The carriage 10 carries a platen 20 which has its shaft 21 journaled in the side walls 12 and 13 and a paper table 22 coacts with the platen for guiding paper strips fed from a roll A which is also carried on the carriage by a shaft 23. The usual feed rolls 24 coact with the platen 20 and are supported in a cage 25, (Fig. 4), that is pivotally carried at 26 on an adjustable frame 27 which is pivoted on a rod 28 that is supported in brackets 29, (one of which is shown), secured to the bottom wall 11 of the carriage. A spring 30 is fixed to the frame 27 and to the bracket 29

and normally urges the frame 27 and cage 25 upwardly with the feed rolls 24 thereof in contact with the platen 20. The upper portion of the frame 27 extends into the path of notches 31 arranged in a shaft 32 that is pivotally supported in the side walls 12 and 13 of the carriage and this shaft has a lever 33 fixed thereto outwardly of the side wall 12 for manually controlling the movements of the frame 27 and cage 25 to effect the disengagement of the feed rolls 24 with the platen 20.

As above stated, the carriage 10 is arranged for sliding movements on the machine by reason of the slots 14 and shouldered screws 15 and these slots 14 permit of a given forward and backward sliding movement of the carriage 10, which, when moved forwardly, positions the platen in close proximity with printing elements 34, (Figs. 2 and 6), and when moved rearwardly, carries the platen therewith away from the printing elements, (Figs. 3 and 4).

In order to effect this forward and rearward movement of the carriage 10, a pair of L-shaped brackets 35 are secured to the bottom wall 11 and each has a pin 36 secured thereto to each of which a link 37 is pivoted and which links extend rearwardly and are pivoted at 38 to an arm 39 and bell-crank 40, respectively, fixed to a shaft 41 pivoted in brackets 41a which are secured to each of the side plates 18 and 19 of the machine. The bell-crank 40 has a handle 42 fixed thereto which may be manually gripped to turn the shaft 41 and arm 39 therewith to exert a pull on the links 37 and carry the carriage 10 for a rearward sliding movement. This rearward movement of the carriage carries the platen away from the printing elements 34 providing a relatively large space therebetween.

The platen shaft 21 supports a pair of rockable members 43 and 44 outwardly of each of the side walls 12 and 13 of the carriage and each of the rockable members is arranged to carry an inking ribbon guide member 45 and 46, respectively, which is pivoted thereto at 47 and 48. A pair of upstanding pins 49 and 50 are fixed to the guide member 45 and a pair of upstanding pins 51 and 52 are fixed to the guide member 46. These pins 49—50 and 51—52 serve to guide the inking ribbon B fed from the ribbon spool 66 in printing relation with the platen and as the ribbon is of the band type, a single strand is threaded to engage the pins 52 and 50 and around the pin 49, and the ribbon then is brought back to overlap itself and engage the pin 51 and back to the ribbon spool. The pins 49 and 50 of the guide member 45 are normally aligned with each other and in spaced relation with the pivot 47 while the pins 51—52 of the guide member 46 are aligned radially of the pivot 48. The guide member 45 is arranged to swing in a clockwise direction from full line position to dotted line position as viewed in Fig. 7, while the member 46 is arranged to swing simultaneously therewith in a counter-clockwise direction from full line position to dotted line position as viewed in Fig. 7.

The guide members 45 and 46 are controlled for swinging movements by the rockable member 43 and 44 on which they are carried and when in their normal positions, will retain the overlapped inking ribbon B in close proximity with the platen, and when moved to dotted line position, (Fig. 7), will spread the overlapped ribbon and retain it in spaced relation with the platen.

The rockable member 43 is of U-formation having upstanding integral apertured arms 43a and 43b through which the platen shaft 21 extends for pivotally supporting the same for rocking movements thereon. The rockable member 43 is provided with depending studs 53 and 54 which are aligned with the pivot 47, and these studs serve with the pivot to each support a pinion gear 55, 56, and 57, respectively, on the underneath side of the rockable member. The studs 53 and 54 loosely support the pinion gears 55 and 56, respectively, while the stud 47 has the pinion gear 57 fixed for turning movements therewith and this stud 47 is also fixed to the guide member 45. The pinion gear 55 is in meshing engagement with a segment 58 that is secured to the side wall 12 of the carriage 10, and this segment serves to effect a turning movement to the gears 56 and 57 as the rockable member 43 is rocked on the platen shaft 21. The upstanding arm 43b of the rockable member is provided with an inturned ear 43c to which one end of a tension spring 59 is secured and which spring has its other end secured to a pin 60 extending from the side wall 12 of the carriage. This pin 60 also serves as a stop against which the upstanding arm 43b of the rockable member 43 normally rests.

The rockable member 44 is of L-shaped formation providing an integral upstanding apertured arm 44a which has a bushing 44b secured therein for pivotally supporting the same on the platen shaft 21. The rockable member 44 is also provided with an inturned ear 44c to which a tension spring 59a is attached and which spring has its other end secured to a pin 60a which also serves as a stop for the rockable member 44. This rockable member 44 has a depending stud 61 fixed thereto which carries a pinion gear 62 that is in mesh with a pinion gear 63 fixed to the stud 48 which extends through the rockable member 44 and is secured to the guide member 46. The pinion gear 62 is in meshing engagement with a segment 64 secured to the side wall 13 of the carriage 10. The rockable member 44 is relatively wide and carries a vertical shaft 65 which serves to pivotally support a ribbon spool 66. This ribbon spool 66 is provided with a gear 67 that is normally in mesh with a gear 68 fixed to the platen shaft 21 and as the platen 20 is actuated for a step-by-step movement to feed the paper strips, as is common in adding machines, the gear 68 will effect a turning movement of the ribbon spool 66.

As thus far described, it will be noted that the links 37, arm 39 and bell-crank 40 form a break-joint when in the positions shown in Figs. 2 and 6, so that, as the handle 42 of the bell-crank 40 is manually gripped and rocked in a clockwise direction, the shaft 38 will be turned to break this break-joint and the links 37 will then assume the positions shown in Figs. 3 and 4. This movement of the links 37 will effect a rearward sliding movement of the carriage 10 to carry the platen 20 thereon away from the printing elements 34. During this rearward sliding movement of the carriage 10, the upstanding arms 43b and 44a of the rockable members 43 and 44 will each be brought into engagement with a pin 69 carried on arms 70 extending from the brackets 17. As these arms 70 normally extend toward the rockable members 43 and 44, their pins 69 are directed in the path of movement of the upstanding arms 43b and 44a so that the rearward sliding movement of the carriage 10 will

cause the rockable members to engage the pins **69** and during the rearward movement of the carriage, the rockable members will engage the pins **69** and be caused to rock about the platen shaft **21**. This rocking movement of the rockable members **43** and **44** is against the tension of the springs **59** and **59***a* and when rocked, the rockable member **43** carries the pinion gears **55**, **56**, and **62** therewith and the rocking movement of the rockable member **44** carries the pinion gears **62** and **63** therewith. As the pinion gears **55** and **62** are in mesh with the respective segments **58** and **64**, they will be caused to turn during this rocking movement of the rockable members. This turning movement of the pinion gears **55** and **62** is transmitted to the gears **57** and **63** which effects a swinging movement of the guide members **45** and **46**. When the rockable members **43** and **44** and the guide members **45** and **46** are moved to the position shown in Figs. 3 and 4, the pin **49** of the guide member **45** is carried to approximately 90 degrees and as this pin **49** is elongated as viewed in cross section, it will effect a spreading of the overlapped strands of ribbon. The pins **51** and **52** of the guide member **46** also serve to spread the overlapping ribbon to keep the same aligned with the spreading effected by the pin **49**.

It will be noted that the guide members **45** and **46** normally lie in folded relation to the rockable members on which they are carried, and when moved, the guide member **45** will turn in a clockwise direction while the guide member **46** will move in a counterclockwise direction which will compensate for the outward movement of the ribbon away from the platen and still permit of its spreading movement, (Fig. 7).

This swinging movement of the rockable members **43** and **44** also serves to bodily carry the ribbon B upwardly from the position shown in Fig. 2 to Fig. 3 position which is during the rearward sliding movement of the carriage **10**. In effect, the overlapped ribbon will be caused to spread and move away from the platen during its upward movement and while the platen and ribbon are being bodily carried by the carriage in spaced relation with the printing elements **34**.

When the ribbon is in its raised position, (Figs. 3 and 4), the free ends of the paper strips A may then be fed around the platen and guided by the feed rolls **24** to the position shown in Figs. 4 and 5, and when in this position, the free ends of the paper strips may be directed by the finger (Fig. 5) to their respective positions, that is, one of the strips between the platen and ribbon, while the other is directed between the ribbons.

After the paper has been inserted as above described, the handle **42** is then rocked rearwardly to exert a force against the links **37** to restore the carriage **10** to its normal position. During this restoring movement of the carriage, the rockable members **43** and **44** are carried away from the pins **69** of the arm **70** and the springs **59** and **59***a* will urge the rockable members to their normal positions and while being restored, the rockable members **43** and **44** and the gears **55** and **62** are rotated in a reverse direction by engagement with the segments **58** and **64** to restore the guide members **45** and **46** which will restore the inking ribbon B to the position shown in Figs. 1 and 2. When at the limit of its movement, the bell-crank **40** and arm **38** will again serve as a break-joint with the links **37** to retain the carriage **10** in its normal position.

After the paper has been inserted with respect to the platen and overlapped ribbon, the platen may then be rotated to cause a feed of the paper strips over the paper table **22**, and at which time, a paper guide **71** is brought into position to guide the paper strips over the table and this guide **71** then serves as a tear-off blade to sever one of the strips. The paper guide **71** is pivotally supported at **72**—**72** to the paper table **22** and is provided with elongated slots **73**—**73** on each side thereof which permits of a relatively vertical movement of the paper guide. On each side of the paper guide is a spring **74** secured thereto and to the paper table **22**, and this spring normally exerts a downward pressure on the guide to retain a notched-out portion **75** thereof into engagement with a shoulder **76** formed on the paper table. The paper guide **71** is provided with a cam edge **77** which serves to properly guide the same to latched position after the paper strips have been properly positioned. This guide **71** is preferably provided with a sharp edge **78** which extends its entire length and against which the top paper strip may be severed while permitting the other strip to be fed over the paper roll A and to a take-up roll **79** which is also carried on the carriage **10**, and which take-up roll may be driven in any suitable manner.

While I have shown my invention with an endless inking ribbon arranged in overlapped relation to form a double ribbon, other means such as two ribbons may be employed as long as they are bodily carried by the carriage and movable therewith, likewise the segments **58** and **64** may be omitted and a series of arcuate perforations provided in side walls **12** and **13** of the carriage.

I claim:

1. In an adding machine or the like, a carriage having a platen adapted to receive impressions from the printing elements of the machine, said carriage being arranged to move toward and away from the printing elements, of manually controlled means operatively connected to the carriage for effecting its movement, a ribbon carried by the carriage and arranged to be fed in overlapped relation in close proximity with the platen, and means guiding said ribbon including operative connections associated with said carriage whereby upon the movement of said carriage away from the printing elements said guiding means will be rocked to swing and spread the ribbon.

2. In an adding machine or the like having a carriage and a platen, means for moving said carriage and platen toward and away from the printing elements of the machine, a ribbon carried by the carriage and arranged in overlapped relation between the platen and the printing elements, and guide means for said ribbon including operative connections associated with said carriage for rocking the guide means upwardly and swinging them whereby to carry the ribbon upwardly and to spread the same during its upward movement.

3. In an adding machine or the like having printing elements, a carriage having a platen, means for moving said carriage and platen toward and away from the printing elements, a ribbon carried by the carriage and arranged in overlapped relation between the platen and printing elements, and guide means for said ribbon including operative connections associated with said carriage for rocking the guide means upwardly and swinging them horizontally, the upward rocking movement of the guide means serv-

ing to raise the ribbon and the swinging movement of said guide means serving to spread overlapped portions.

4. In an adding machine or the like, a carriage having a platen, means for moving said carriage and platen from and toward the printing elements of the machine, a ribbon arranged in overlapped relation between the platen and printing elements, guide means for said ribbon including operative connections associated with said carriage for swinging the same whereby upon the movement of said carriage from the printing elements said guide means will be rocked upwardly and swung to spread the overlapped ribbon.

5. In an adding machine having a carriage and a platen carried thereby, means for moving said carriage and platen away from the printing elements of the machine, an inking ribbon extending in overlapped relation adjacent to and longitudinally of the platen, means for guiding said ribbon, connections associated with said guiding means and carriage for effecting an upward movement of the ribbon when the carriage is moved away from the printing elements, said guiding means being arranged to increasingly effect a greater space between the overlapped portions of the ribbon while it is being moved upwardly.

6. In an adding machine or the like, a carriage having a platen, means for moving said carriage and platen from and toward the printing elements of the machine, a ribbon carried by the carriage and arranged in overlapped relation between the platen and printing elements, guide means for said ribbon including rockable members having operative connections associated therewith and with said carriage, and means in the path of said rockable members whereby to rock them and the guide means upwardly upon the movement of said carriage from the printing elements, said operative connections forming means to swing the guide means and spread the ribbon while said rockable members are being rocked upwardly.

7. In an adding machine having printing elements and a carriage supporting a platen, means for moving the carriage to move the platen away from the printing elements, an inking ribbon extending in overlapped relation longitudinally of the platen, means for guiding said ribbon, connections associated with said guiding means and carriage for effecting a spreading movement of the overlapped ribbon when the carriage is moved away from the printing elements.

8. In an adding machine or the like, a carriage having a platen adapted to receive impressions from the printing elements of the machine, said carriage being normally positioned with the platen in close proximity with the printing elements and arranged to move away from said printing elements, operative connections between the carriage and machine for effecting movement of the carriage, a ribbon arranged in overlapped relation between the printing elements and platen, means for guiding the ribbon while in position between the printing elements and platen and arranged to move the ribbon upwardly and spread the overlapped portions thereof when the carriage is moved away from the printing elements, said ribbon guide means comprising rockable and swingable members having geared means operable to swing the guide members, and means in the path of said rockable members for imparting a rocking movement thereto for effecting a swinging movement of the guide means under the control of the gears.

9. In an adding machine or the like provided with printing elements and having a carriage supporting a platen, said carriage being arranged for sliding movements on the machine and normally positioned with the platen in close proximity with the printing elements, of operative connections between the carriage and machine for effecting movement of the carriage, a ribbon arranged in overlapped relation between the printing elements and platen, guide means for the ribbon arranged to spread the overlapped positions thereof when the carriage is slidably moved away from the printing elements, said ribbon guide means being operatively connected with the machine in such manner that the sliding movement of the carriage away from the printing elements will rock the guide means and ribbon upwardly and the movement of the carriage in the other direction will rock the guide and ribbon to normal positions.

10. In combination with an adding machine having a slidable carriage supporting a platen and ribbon in printing relation with the printing elements of the machine, of operative connections between the carriage and machine for effecting sliding movements of the carriage, means pivotally carried on the carriage including guide means for the ribbon guiding the same in overlapped relation to provide a double ribbon, means in the path of the said pivotal means engageable during the sliding movement of the carriage, and operative connections connecting the guide means with the carriage whereby the engagement of the pivotal means with the said means will operate the operative connections to spread the overlapped ribbon.

11. The combination of claim 10 hereof in which the spreading of the overlapped ribbon positions overlapped portions in spaced relation with each other and with the platen for facilitating the insertion of a pair of paper strips fed by the platen.

12. In combination with an adding machine having a platen and an overlapped ribbon in printing relation with the printing elements of the machine, means operable for manually effecting movements of the platen away from the printing elements, means including guide means for supporting the ribbon, said guide means being operatively connected for movement with the platen and for independent movements to carry the ribbon therewith and for spreading the overlapped portions apart during the movement of the platen away from the printing elements.

13. The combination of claim 12 hereof in which there are spring means coacting with the guide means for restoring said guide means to restore the ribbon to normal position when the platen is restored in printing relation with the printing elements.

14. In combination with an adding machine having a slidable carriage supporting a platen and ribbon in printing relation with the printing elements of the machine, connections between the carriage and the machine for manually effecting sliding movements of the carriage, means carried on the carriage including guide means for the ribbon for supporting said ribbon in overlapped relation to provide a double ribbon, fixed means extending in the path of the said means to be engaged thereby during the sliding movement of the carriage, geared means connecting the guide means with the carriage, said geared

means serving to effect a movement to the guide means to spread the overlapped ribbon when the fixed means is engaged by the said means.

15. The combination of claim 14 hereof in which said guide means is pivoted to swing on said means under the driving action of said geared means when the said means is brought into engagement with the said fixed means.

16. In combination with an adding machine having a platen and a double ribbon in printing relation with the printing elements of the machine, means operable for effecting movement of the platen from and toward the printing elements, guide means supporting the double ribbon with respect to the platen and being operatively connected therewith to spread the double ribbon upon a movement of the platen from the printing elements.

MAX GARBELL.