July 3, 1934. H. M. BIELE 1,965,404

MULTIPLE COPY RACK

Filed July 14, 1932 3 Sheets-Sheet 1

Fig. 1.

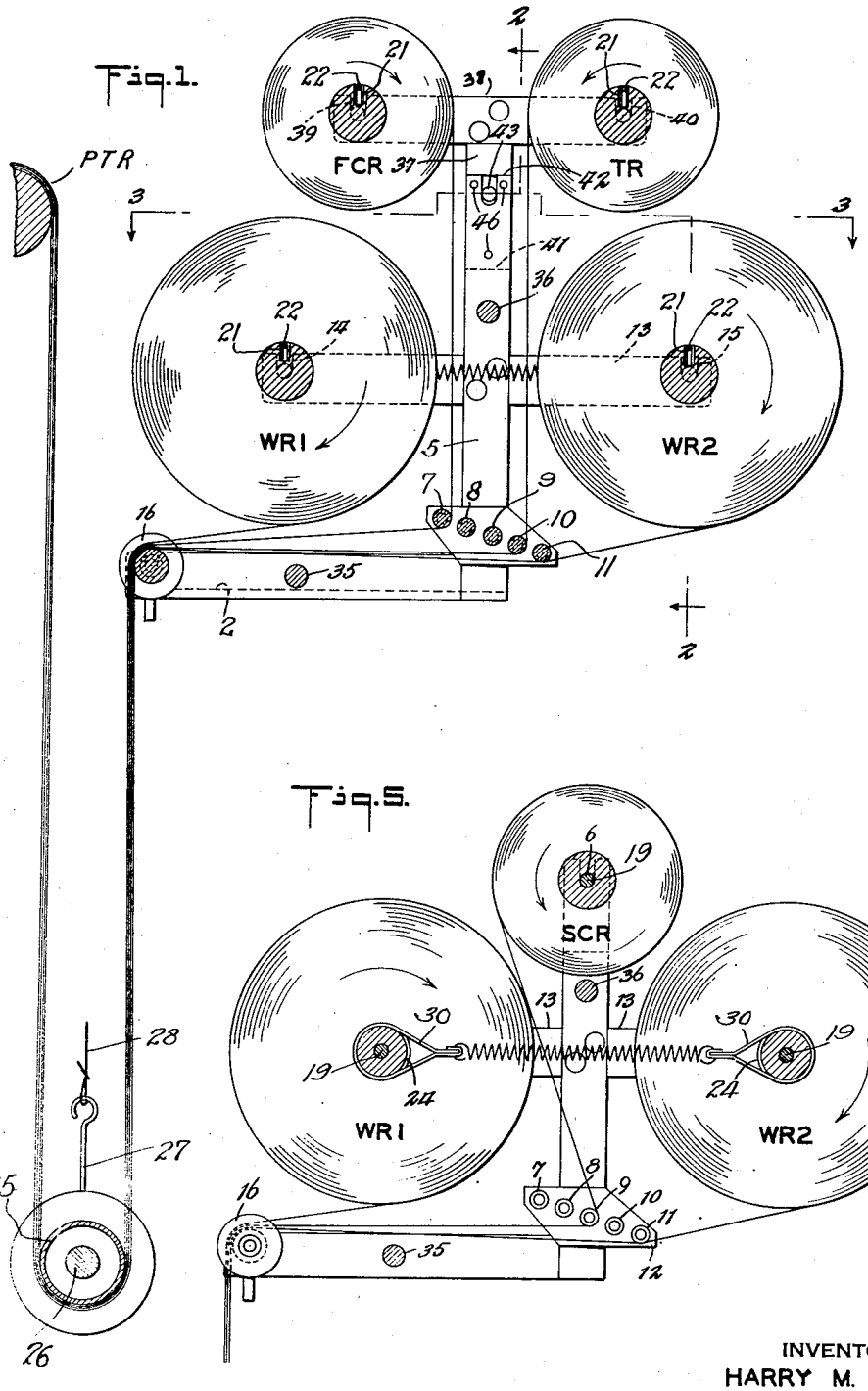


Fig. 5.

INVENTOR
HARRY M. BIELE
BY James N. Curtin
ATTORNEY

July 3, 1934. H. M. BIELE 1,965,404

MULTIPLE COPY RACK

Filed July 14, 1932 3 Sheets-Sheet 2

Fig. 2.

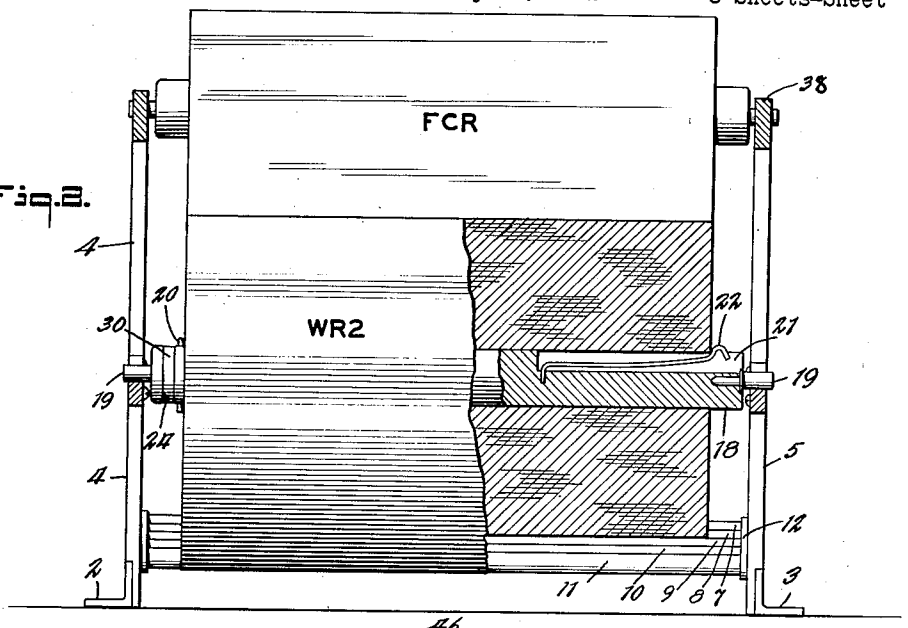


Fig. 3.

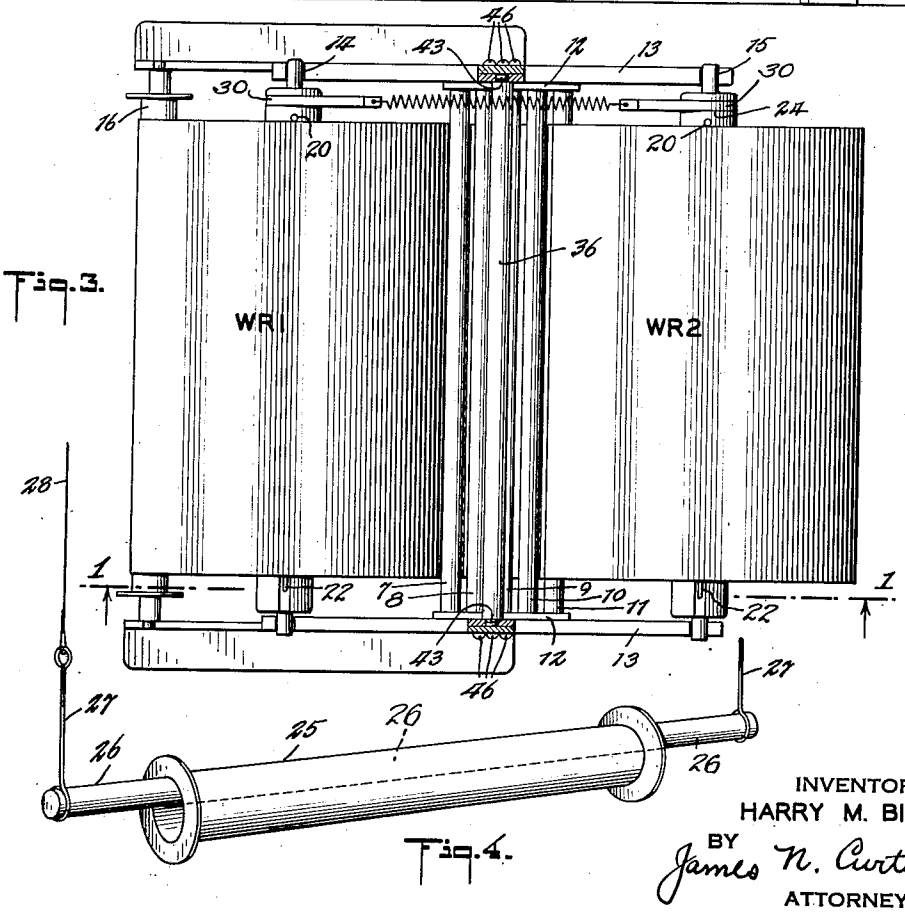


Fig. 4.

INVENTOR
HARRY M. BIELE
BY James N. Curtin
ATTORNEY

July 3, 1934. H. M. BIELE 1,965,404

MULTIPLE COPY RACK

Filed July 14, 1932 3 Sheets-Sheet 3

Fig. 1.

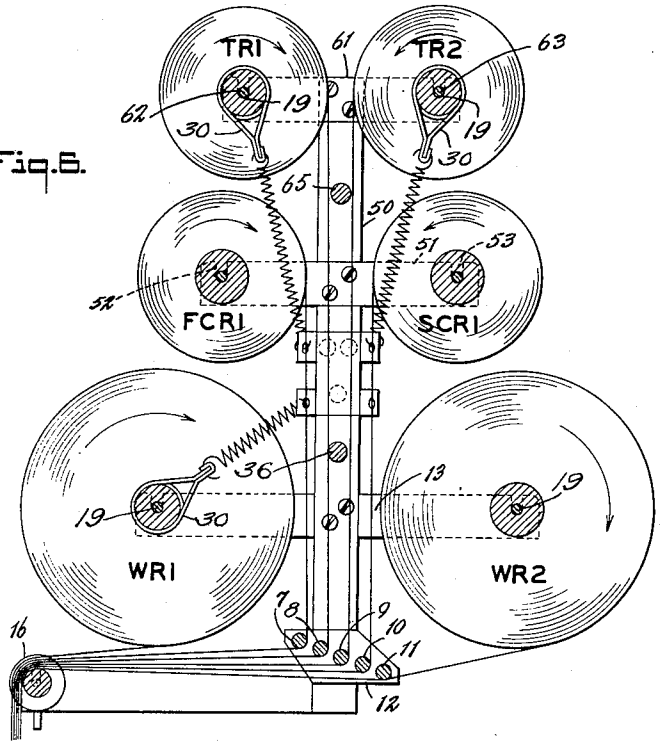
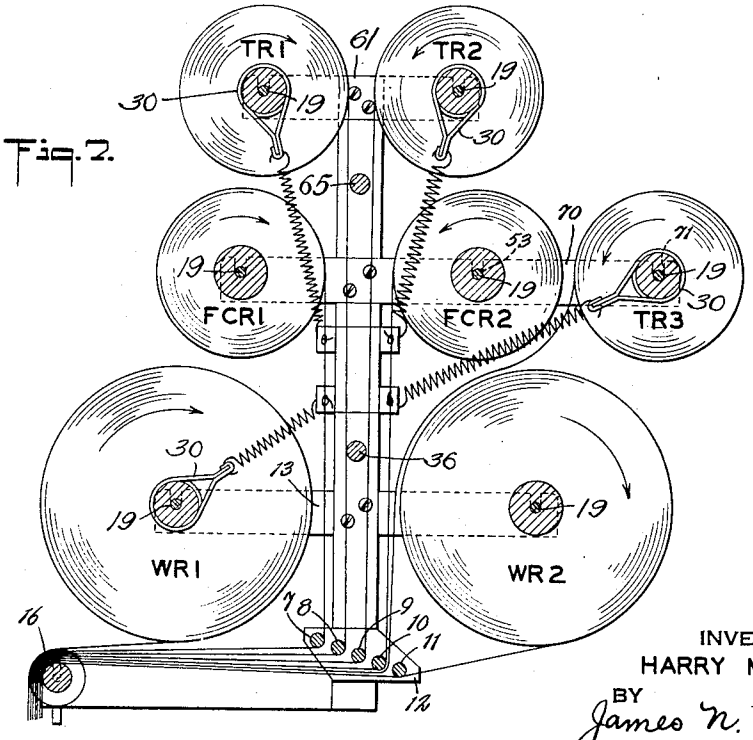


Fig. 2.



INVENTOR
HARRY M. BIELE
BY
James N. Curtin
ATTORNEY

Patented July 3, 1934

1,965,404

UNITED STATES PATENT OFFICE

1,965,404

MULTIPLE COPY RACK

Harry M. Biele, Hollis, N. Y., assignor to The Associated Press, New York, N. Y., a corporation of New York

Application July 14, 1932, Serial No. 622,398

9 Claims. (Cl. 197—133)

This invention relates to a multiple copy rack and more particularly to an arrangement for guiding and feeding paper from a number of different supply rolls into an automatic typewriting device.

Automatic telegraph printers are largely used by press associations in distributing news to their subscribers. For this purpose message blanks are not used, but instead a web of paper is fed into the printer as required, from a roll of paper, the paper feeding mechanism being operated by a transmitting operator. Such printing devices are expected to function perfectly without attention at the receiving stations, except for that attention occasionally given by a copy boy as he collects the copy or replenishes the paper supply. Printers ordinarily are adapted to make but one copy of an incoming report, and usually this is sufficient, but there are times when extra copies of the report may be required urgently, for example, at election time.

A single sheet of paper will feed through such printers without difficulty, but when it is desired to make carbon copies, considerable trouble is experienced in adjusting the printer so that the paper will feed straight. This trouble is not serious with typewriting devices when single blanks are used, for the paper is started in proper alignment each time a new blank is inserted, but where a web of paper is fed from a roll, the effect of any tendency the paper may have to run toward either end of the platen is cumulative, and in this case, before many yards of paper are used, the paper will become jammed at one end of the platen.

Further difficulties in making copies with an automatic printer are caused by the paper being fed while the carriage is in motion in returning to the beginning of a new line. In addition, the line feed pawl in printer is caused to rotate the platen by a sudden short stroke imparted by a cam or a magnet. For these reasons, in the past, the use of tissue papers and the lighter carbons in making copies was generally avoided owing to the difficulty in keeping the sheets in alignment, and because the varying inertia of several sheets of paper of different weights caused the sheets to slip longitudinally at times in respect to each other, often making the under copies useless. In order to surmount this difficulty, it was necessary to use paper of substantially the same weight for each copy. This had the effect of reducing the number of copies made, since the carbon sheets were of the same thickness as the other sheets, and consequently the number of copies made was seldom more than two.

Accordingly, the object of this invention is the provision of a novel rack for holding a number of rolls of paper, the rack being provided with means for guiding and feeding webs of paper from said rolls under uniform tension into an automatic printing device.

A further object, is the provision of a paper rack which may be readily increased or decreased in capacity according to the number of copies required.

Another object is the provision of certain novel arrangements of parts whereby paper may be fed uniformly from a number of rolls differing from each other in weight and balance.

Other objects will appear in the following description, given with the aid of the accompanying drawings, of which

Fig. 1 is an end view of one embodiment of this invention, partly in section, the section being taken through 1—1 of Fig. 3.

Fig. 2 is a front elevation of one embodiment of this invention showing one of the paper rolls partly cut away as indicated by the section line 2—2 of Fig. 1.

Fig. 3 is a plan view, partly in section, the section being taken through 3—3 of Fig. 1, showing two of the lower paper rolls in position in the rack, and also the rear separator rollers.

Fig. 4 shows the slack bar and guide roller.

Fig. 5 shows the rack as arranged for two copies.

Fig. 6 is an end view showing the rack as used when four copies are required.

Fig. 7 is a view of the rack showing the arrangement for five copies.

Referring to Fig. 2 of the drawings: Two parallel pieces of angle iron 2 and 3 form the base of the present invention. At the rear of each piece is secured upright members 4 or 5, each of which is provided with a recess 6 at the top for holding a roll spindle. A rod 35, Figs. 1 and 5, connects the base plates 2 and 3 and holds them firmly in place, while a similar rod 36 secured between the upright members 4 and 5 serve to brace this part of the structure.

Secured to each upright member, as shown in Figs. 3 and 5, is a pair of plates 12 which serve to support separator rollers 7 to 11 inclusive. Members 4 and 5 each carry a horizontal bar 13, recessed at each end at 14 to provide bearings for paper rollers. At the forward part of the base, a roller 16 having a wide flange at each end is supported by suitable bearings in members 2 and 3.

Fig. 5 shows an arrangement suitable for making two copies of an incoming press report. In this case two rolls of white paper WR1 and WR2 are provided with spindles which turn in recesses 14 and 15 at the ends of the horizontal bars 13.

A preferred form of spindle is shown in Fig. 2. It consists of a wooden roller 18 provided at each end with metal pins 19 which turn in the recesses in the rack. A pin 20 extending through the roller near one end serves as a stop for the paper roll, while at the other end the roll is held by a spring 22 in a slot 21 in the wooden roll.

Near the pin 19, the roller is grooved at 24, and in this groove a loop of leather 30 rides to serve as a brake. The loop is drawn against the roller by a suitable spring attached to the rack or to another brake. The brakes are adjusted so that they exert just sufficient pressure on the spindle to restrain the roll from turning except when the paper is drawn from the roll by the printer.

A roll of carbon paper SCR having carbon on only one side is free to rotate in the recesses 6 at the top of the upright members 4 and 5, the carbon side of the paper in this instance being adjacent to WR1. The carbon paper is threaded between a pair of separator rollers, such as rollers 9 and 10 while the paper from WR2 passes under roller 11. The paper then passes over the flanged guide roller 16 and then extends downward passing under a slack bar guide roller 25, as shown in Fig. 1 and then upwards into the printer, PTR where it is fed from the under side of a platen in the usual manner. While the present invention is suitable for use in connection with any page typewriting machine, it is particularly adapted to the well-known Teletype page printer, a machine which has been used for years by all large communication organizations, and which is so well described in U. S. Patent 1,665,594, issued April 10, 1928 to H. L. Krum, that further description here is believed to be unnecessary.

The slack bar guide roller is made of a tube of aluminum, or other light metal and is provided with large flanges at its ends. The roller 25 is freely movable on a slack bar 26 which is a metal rod of just sufficient weight to draw the paper down from the various rolls. Links 27 supported by cords 28 extending from the printer table serve to support the bar 26 and the roller 25. Two copies may be made with the arrangement just described, the original being on the paper from WR2.

The two copy rack in the form described is provided as permanent printer equipment. In the event that additional copies are necessary for some special occasion, then the two copy rack may be modified in the following manner to meet such requirements:

In order to make three copies the roll SCR is removed from the recesses 6 at the tops of 4 and 5, and a T-shaped extension consisting of upright members 37 (Fig. 1) to which are secured cross members 38 provided at their extremities with recesses 39 and 40 is substituted therefor. A preferred method of securing this extension to the upright members 4 and 5 is by means of a half lap joint indicated by 41 and 42 of Fig. 1. In this case the extension member may be provided with a set pin which fits snugly into recess 6, the joints being further secured by means of machine screws 46, (Fig. 3).

With this arrangement a roll of tissue paper, TR is placed so that its spindle turns in notches 40; and a roll of thin carbon paper FCR having a carbon deposit on both sides of the paper in notches 39. The paper is threaded through the guide rollers as shown in Fig. 1. The top copy is WR2 in this instance, and the bottom copy is from WR1, the printing on TR being reversed, but it may be readily read in the usual manner through the tissue paper.

Provision is made for four copies by the arrangement shown in Fig. 6. Secured to the upright members 4 and 5, in the same manner as just described in connection with the three copy rack are two vertical members 50, each being provided with a cross-piece 51 having near its extremities notches 52 and 53. A roll of carbon paper FCR1, having a carbon deposit on both sides is free to turn in notches 52, while notches 53 support a roll of carbon paper SCR1 having carbon on but one side, the carbon side facing toward WR1. Horizontal members 61 are secured to the uprights 50 some distance above members 51. These members are each provided with recesses 62 and 63 which support rolls of tissue paper TR1 and TR2 respectively. A bar 65 secured to the members 50 is used to brace the structure. The webs of paper are threaded between the guide rollers as shown in Fig. 6 of the drawings.

The structure just described may be modified to provide for five copies by using a middle horizontal bar with recesses for three rolls as shown by Fig. 7. The additional recess 71 carries a roll of tissue paper TR3 while 53, in this instance, supports a roll of carbon paper FCR2 having a carbon deposit on both sides. The drawing shows a method of threading the paper through the guide rolls, after which it passes under the slack bar guide roller as shown in Fig. 1.

Operation

Assuming an apparatus is set up according to one of the arrangements described above, then as the paper is drawn into the printer, the impact of each feeding operation will tend to lift roller 25 so that it will be supported by the loop of paper as shown in Fig. 1, rather than by the slack bar. The weight of the roller, in most instances will be sufficient to overcome the slight friction of the brakes and paper will be drawn from the roll until roller 25 again rests on the slack bar. However, if for some reason one or more of the webs tend to drag, such as might be occasioned by a roll having unbalanced winding, then several feeding operations may take place before more paper is drawn from the defective roll until the guide roller is drawn up against the slack bar when the combined weight of the slack bar and the guide roller will be sufficient to unwind more paper.

Occasionally, when through an oversight, a roll badly out of balance, having perhaps an elliptical cross-section, is placed in service, it may resist the combined weights of the slack bar and guide roller until both are drawn up a considerable distance. The guide roller, in a case like this prevents the slack bar from slipping to either side and falling out of the loop of paper, and at the same time the guide roller holds the various webs at a uniform length until the repeated jerks concentrated on the taut sheet by the printer line feed mechanism releases the faulty roll, and once the roll is free to move, the slack bar and guide roller draw down the paper again until the loop is again at its normal length. The loose-fitting guide roller on the slack bar also serves to take care of any distortion in the paper loop caused by the movement of the carriage.

The arrangement of brakes shown in the draw-

ings may be modified to suit individual needs. Usually brakes on the alternate rolls are sufficient for most purposes.

It will be seen from the foregoing that the braking mechanism and various guide rolls cooperate with the slack bar and its guide roller to keep the various webs of paper in alignment at uniform tension, making it possible to feed accurately a considerable number of webs of paper into a printer.

It is further to be understood that this invention may be embodied in various other forms of construction than that herein shown and described, and except where specifically limited in the following claims, it is the applicant's desire to claim the invention broadly.

I claim:

1. In a multiple copy rack, a base, upright members secured thereto, a bracket for supporting rolls of paper fastened to said upright members, roll holding means at the top of said upright members, and an auxiliary rack arranged to be interchangeable with said roll holding means.

2. In a device of the character described, a frame comprising upright members for supporting a plurality of rolls of paper, a plurality of separator rollers disposed in said frame for separating webs of paper depending from said rolls, a guide roller situated in the lower forward part of the frame for aligning said webs in superposed relation after passing through said separator rollers, gravity operated means for forming said webs into a freely swinging loop comprising a rod suspended below said guide roller by cords attached to the ends of said rod, and a loose fitting flanged idler roller carried by said rod under which said webs pass.

3. In a device of the character described, a frame comprising upright members for supporting a plurality of rolls of paper, a plurality of separator rollers disposed in said frame for separating webs of paper depending from said rolls, a guide roller situated in the lower forward part of the frame for aligning said webs in superposed relation after they pass through said separator rollers, gravity operated means for forming said webs into a freely swinging loop comprising a rod suspended below said guide roller by flexible means attached to the ends of said rod, and a loose fitting flanged idler roller carried by said rod under which said webs pass.

4. In a device of the character described, the combination with a typewriting machine having a laterally moving carriage, of a plurality of rolls of paper for supplying a continuous multiple ply web to said carriage, gravity operated means effective between said rolls and said machine for unwinding said web from said rolls comprising a weighted bar provided with a loose fitting flanged roller arranged to overlie said web to form a loop thereof and retain the respective webs in superposed relation.

5. In a device of the character described, the combination with a typewriting machine having a laterally moving carriage, of a plurality of rolls of paper for supplying a continuous multiple ply web to said carriage, gravity operated means effective between said rolls and said machine for unwinding said web from said rolls, comprising a weighted bar suspended below said carriage and said rolls, a loose fitting flanged roller carried by said bar arranged to overlie said web to form a loop thereof and retain the respective webs in superposed relation.

6. In a device of the character described, the combination with a typewriting machine having a laterally moving carriage, of a source for supplying a continuous multiple ply web to said carriage, means adapted to cooperate with the mechanism of said carriage for drawing web from said source and to guide it so that the respective webs feed into the carriage in uniform superposed relation, said means comprising a rod suspended from a support by cords so as to rest normally below said source and said carriage; a loose fitting flanged tube free to skew, rotate, or move endwise on said rod, and adapted to overlie said web between said source and said carriage to form the web into a loop free to swing with the motion of the carriage.

7. In a device of the character described, the combination with a typewriting machine having a laterally moving carriage, of a source for supplying a continuous multiple ply web to said carriage, means adapted to cooperate with the mechanism of said carriage for drawing web from said source and to guide said web into the carriage with the respective plies in uniform superposed relation, said means comprising a rod suspended by flexible means from a support so as to rest normally below said source and said carriage; a loose fitting flanged tube free to skew, rotate or move endwise on said rod, and adapted to overlie said web between said source and said carriage to form the web into a loop free to swing with the motion of the carriage.

8. In a device of the character described, the combination with a typewriting machine having a laterally moving carriage, of a source for supplying a continuous multiple ply web to said carriage, gravity operated means adapted to cooperate with the mechanism of said carriage for drawing web from said source and to guide said web into the carriage with the respective plies in uniform superposed relation, said means comprising a weighty rod suspended by flexible means from a support so as to rest normally below said source and said carriage; a loose fitting flanged tube free to skew, rotate, and move endwise on said rod, said tube being adapted to overlie said web between said source and said carriage, in order to draw down said web and form it into a loop free to swing according to the movement of the carriage.

9. In a device of the character described, a frame comprising upright members for supporting a plurality of rolls of paper, a plurality of separator rollers disposed in said frame for separating webs of paper depending from said rolls, a guide roller situated in the lower forward part of the frame for aligning said webs in superposed relation after passing through said separator rollers, gravity operated means for forming said webs into a freely swinging loop, comprising a rod suspended below said guide roller from a support by cords attached to the ends of said rod, a loose fitting tube carried by said rod under which said webs pass, said tube being free to skew, rotate or move endwise on said rod.

HARRY M. BIELE.