Dec. 31, 1935. J. W. HERNLUND 2,026,038

ATTACHMENT FOR APPLYING MASTER SHEETS TO DUPLICATING MACHINES

Filed Sept. 4, 1934 3 Sheets-Sheet 1

Fig. 1.

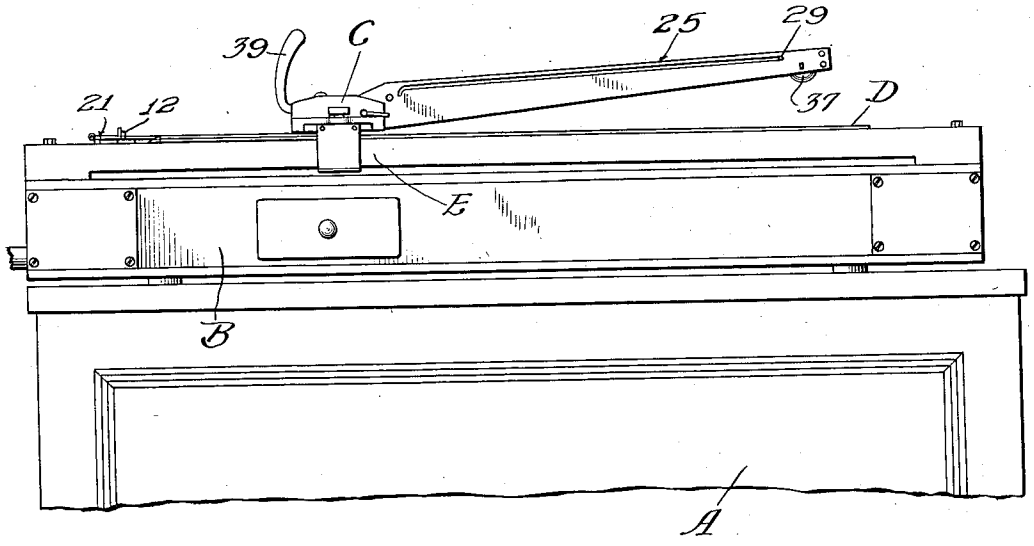
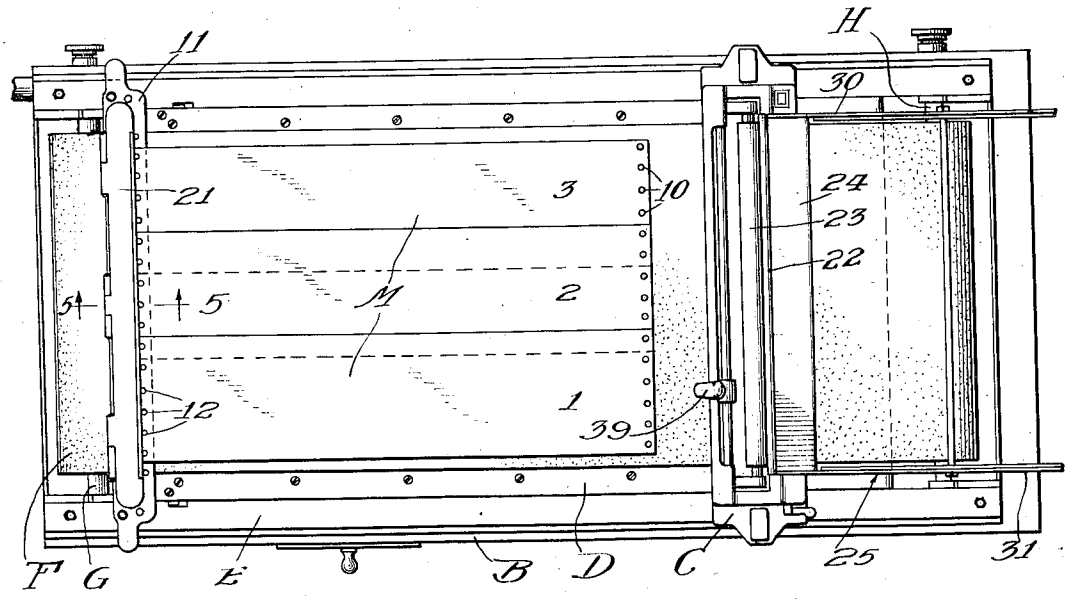


Fig. 2.



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Filed Sept. 4, 1934 3 Sheets-Sheet 2

Fig. 3.

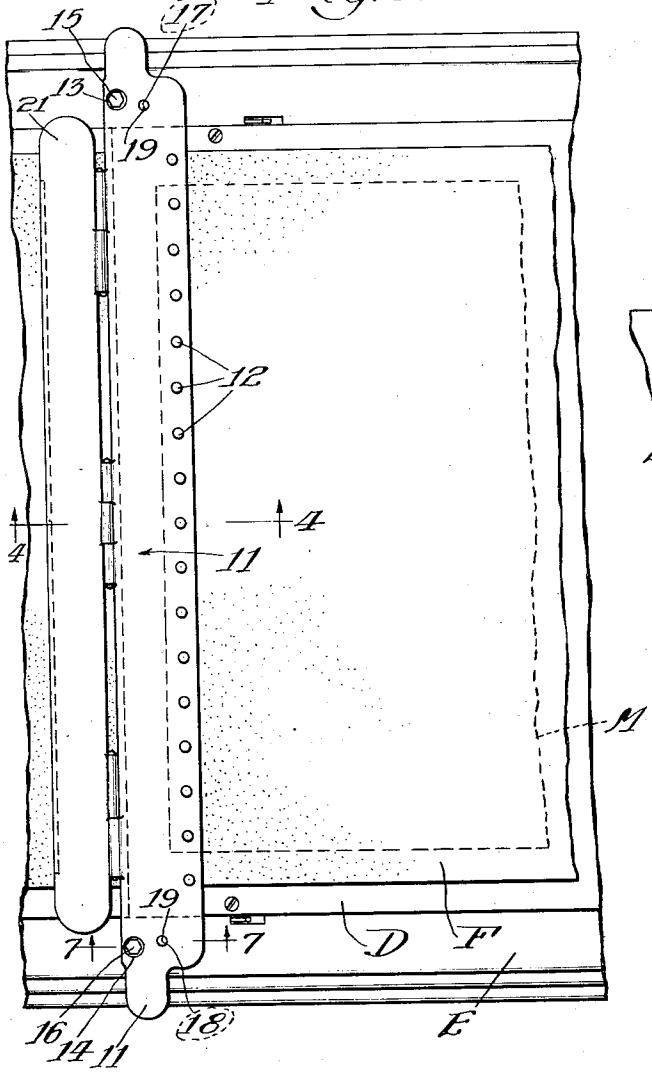


Fig. 5.

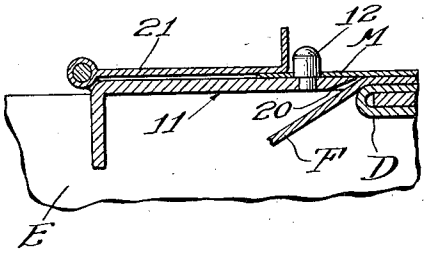


Fig. 6.

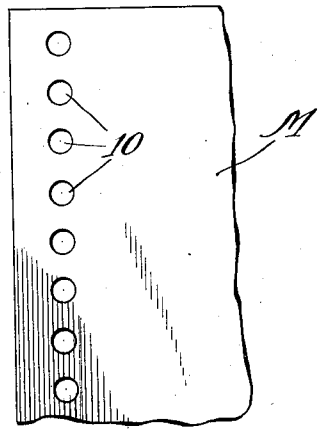


Fig. 4.

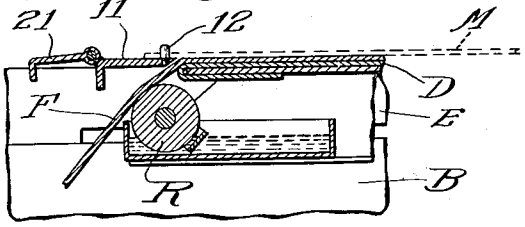
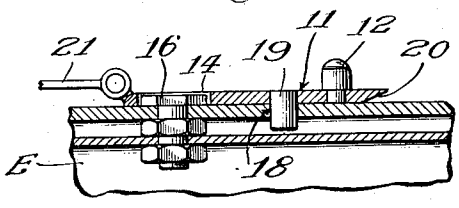


Fig. 7.



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ATTACHMENT FOR APPLYING MASTER SHEETS TO DUPLICATING MACHINES

Filed Sept. 4, 1934 3 Sheets-Sheet 3

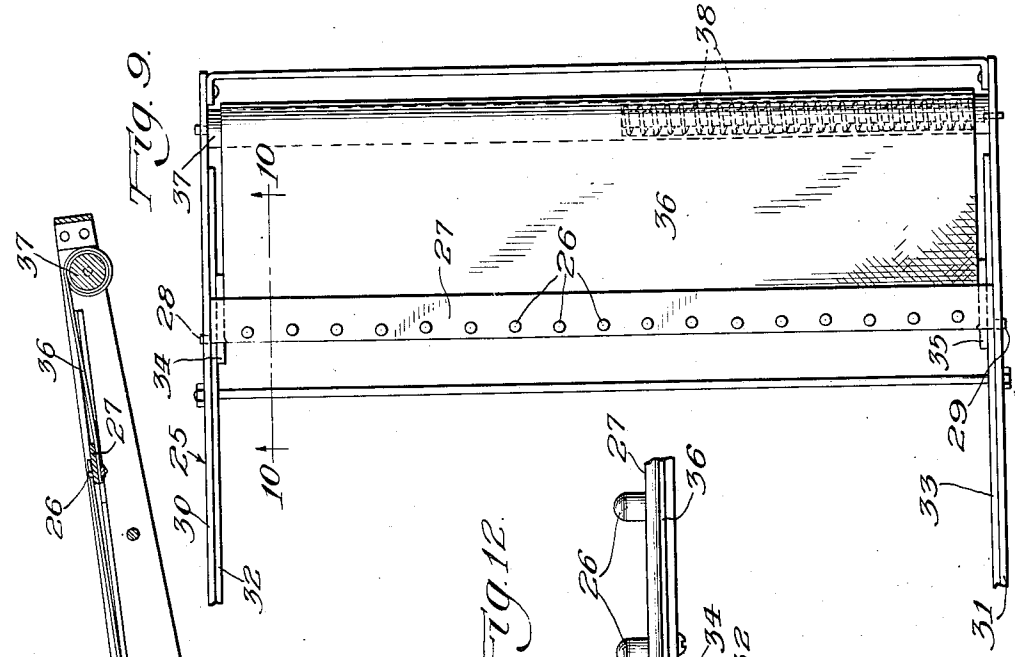

Fig. 9.

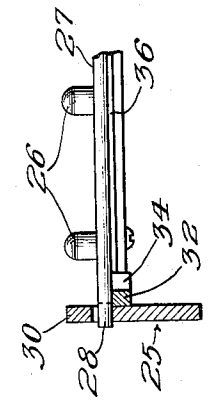

Fig. 12.

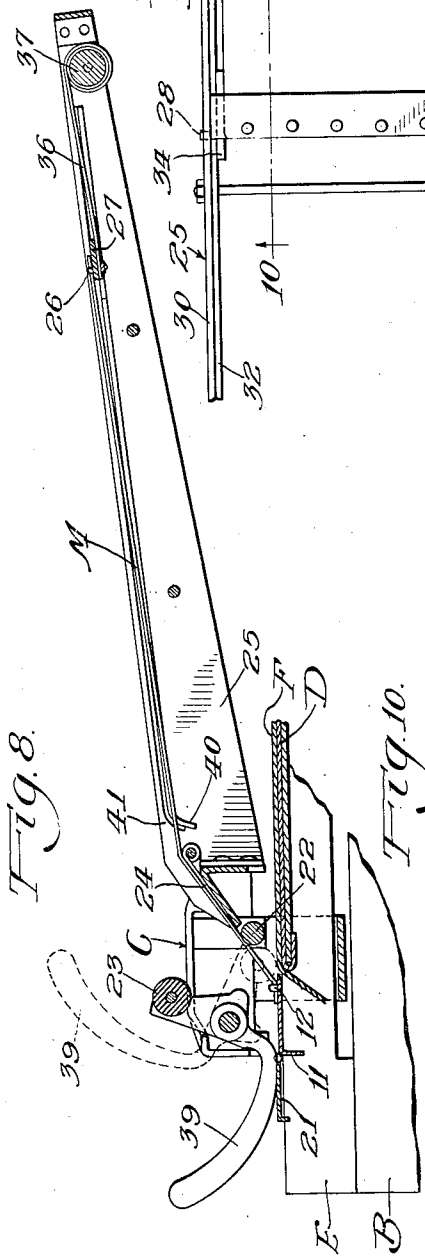

Fig. 8.

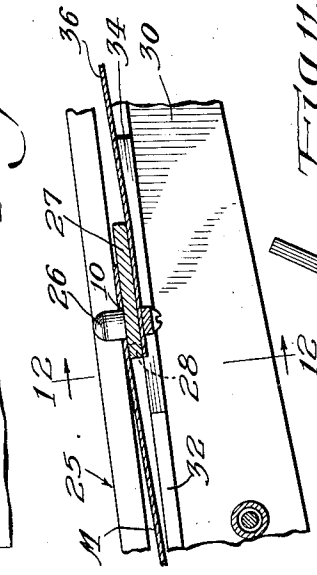

Fig. 10.

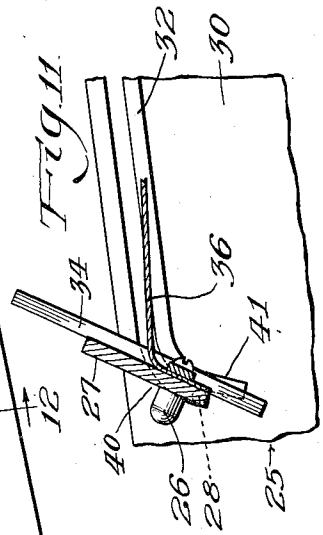

Fig. 11.

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Patented Dec. 31, 1935

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UNITED STATES PATENT OFFICE

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ATTACHMENT FOR APPLYING MASTER SHEETS TO DUPLICATING MACHINES

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Application September 4, 1934, Serial No. 742,605

11 Claims. (Cl. 101—133)

This invention relates to duplicating mechanisms and particularly to means whereby master records made up from a plurality of separate strips or sheets may be assembled either side by side or in overlapping relationship and applied to a duplicating mechanism to produce a single copy which contains the material exposed on the several strips or sheets.

In the keeping of records for certain types of business, a great number of different items found on several sheets must often be brought together for determining their totals or their relative values. As an example, records may be provided concerning three or four or more different producing units each of which employs a number of workers, and the workers may be interchanged between the units indiscriminately. Therefore, in order to arrive at relative costs with respect to production at the different units, the individual record sheets for workers may be divided into several columns each headed by the mark of a production unit and each column being subdivided into minor columns giving the hours of work, the rate of pay, the amount of production, and the total pay. Now, when it is desired to compare these items for a given length of time for any production unit, the information needs to be taken from the original record sheets, which are made daily, and put together in a single form where it is more readily followed and understood.

In the present device, means are provided whereby strips of master sheets having thereon columns of records in a copying ink may be assembled together in overlapping or adjacent relationship and duplicated upon a single copy sheet or as many copies as may be necessary.

It is the purpose of the present invention to provide a device for assembling in parallel or overlapped relation a series of master sheets or strips and positioning them during assembly with relation to a margin bar of a duplicating machine so that the same may be pressed down in contact with a duplicating band by the usual platen roller used in making copies.

It is a further purpose of this invention to provide a novel mechanism in a device of this character whereby the master sheet margin bar structure may be utilized in stripping off the several assembled master sheets from the duplicating band.

Other and more specific objects and advantages of the invention will appear as the description proceeds in connection with the accompanying drawings wherein—

Fig. 1 is a view in side elevation of a duplicating machine embodying my invention;

Fig. 2 is a plan view of a machine;

Fig. 3 is an enlarged plan view of a portion of the machine illustrating the margin bar construction;

Fig. 4 is a sectional view on the line 4—4 of Fig. 3;

Fig. 5 is an enlarged sectional view on the line 5—5 of Fig. 2;

Fig. 6 is a plan view of a portion of the master sheet used;

Fig. 7 is an enlarged sectional view on the line 7—7 of Fig. 3;

Fig. 8 is a sectional view taken lengthwise through the carriage mechanism and the special margin bar construction;

Fig. 9 is a plan view of a portion of the carriage mechanism;

Fig. 10 is a sectional view on the line 10—10 of Fig. 9;

Fig. 11 is a view similar to Fig. 10 showing the mechanism in a changed position; and

Fig. 12 is a sectional view on the line 12—12 of Fig. 10.

Referring now in detail to the drawings, the invention is shown as applied to a duplicating machine of the hectograph type having a flat printing bed. The stand of the machine is indicated at A, and on this stand is the frame B of the machine which carries the printing bed D and has guides E for guiding the carriage C. A suitable duplicating band F is mounted on the rollers G and H and passes over the printing bed D. The machine may have the usual standard margin bar, not shown, and a suitable moistening device such as indicated at R in Fig. 4.

This structure so far described is well known in the art and will not be described further except in so far as it is necessary to bring out the function of the novel features added.

The originals or master sheets adapted to be used in this machine are preferably provided along the opposite edges, for example the top and bottom edges, with spaced holes such for example as indicated upon the master sheet M in Fig. 6 at 10. When the master records are to be divided up and reassembled, they are divided into strips each strip of which may contain one or more columns of information, and preferably each strip should have at least two of the holes at each end thereof. In applying these sheets to the machine, the strips are securely mounted at one end upon the special margin bar 11 having pins 12 thereon.

By reference to Fig. 2, it will be noted that there are three strips which for convenience are marked as 1, 2, and 3. These strips overlap as shown so that only a portion of each of the strips 2 and 3 is exposed. Since these sheets are placed face down, however, the entire surface of the sheet 3 is in contact with the gelatin band while the sheets 1 and 2 have portions thereof not in contact with the band so that the printed matter on these portions will not appear on the gelatin band and the copy made therefrom.

The special margin bar 11 has openings at 13 and 14 which fit down loosely around the heads 15 and 16 of the bolts on the frame. In addition, the frame may be apertured at 17 and 18 to receive suitable pins 19 on the margin bar 11 to thus accurately position the margin bar with respect to the printing bed. The front edge of the margin bar is tapered or bevelled as indicated at 20 so that it may fit up closely to the gelatin band as shown for example in Figs. 4 and 5. Thus there is very little distance between the edge of the master sheet that is secured on the margin bar 11 and its point of contact with the gelatin band. The margin bar 11 has the hinged portion 21 which is thrown back into the position indicated in Figs. 3 and 4, while the sheets are being applied to the pins 12, and this portion 21 may then be folded over into the position shown in Fig. 5 and held there by the operator to prevent the master sheets from coming off the pins 12 when they are being stripped from the gelatin band.

Referring now to Fig. 8, the manner in which the master strips are mounted and pressed down upon the gelatin band will be described. As stated before, the strips are mounted upon the pins 12 of the margin bar 11, and, in order to do this, one end of the strip is passed down through the carriage C between the pressure roller 22 and the raised platen roller 23. The strips then pass up over the shelf portion 24 of the supporting frame 25 and are secured by means of the holes at the free ends thereof to the pins 26 on the plate 27. This plate 27 has the trunnions 28 and 29 at its opposite ends which trunnions are guided in suitable slots in the opposite side walls 30 and 31 of the frame 25. Just beneath the slots the side walls 30 and 31 are provided with guide rails 32 and 33 on which the plate 27 rides. Adjacent the rails, the plate 27 carries the bars 34 and 35 which are welded to the lower side of the plate so as to hold the plate in proper alignment at all times. The plate 27 is connected by means of the flexible sheet 36 to a roller 37 journalled in the frame 25, and this roller is substantially like the ordinary curtain roller in that it has a spring 38 normally tending to wind the flexible sheet 36 on the roller and thus pull the plate 27 toward the roller.

It is belived to be evident from the above description that the master strips may be readily attached to the plate 27 by means of the pins 26, and the plate 27 may be pulled away from the roller 37 any desired amount to facilitate attaching the master strips.

After the master strips have been mounted on the pins 12 and 26, the carriage handle 39 is moved in the usual fashion to move the platen roller 23 from the full line position shown in Fig. 8 down against the master sheets to force them down upon the gelatin band. The carriage is then shoved forward in the usual fashion causing the platen roller to roll the master sheets down against the gelatin band, and, as this action takes place, the plate 27 will, of course, be drawn to the left from the position shown in Fig. 8 toward the carriage. At the carriage end of the frame 25, the guide rails 32 and 33 and the slots in the frame members 30 and 31 are turned downward as shown at 40 and 41 in Fig. 8 so that, when the plate 27 arrives at the carriage end of the frame 25, it will be tipped up into the position shown in Fig. 11, and the master sheets will be pulled off of the pins 26 so that the carriage may be pushed on over the ends of the master sheets leaving them spread out in the fashion shown in Fig. 2.

The operator then strips the master sheets from the gelatin band by folding the member 21 over into the position shown in Fig. 5 and grasping the opposite ends of the margin bar 11 and the member 21 in his fingers and lifting the entire margin bar and the master sheets up away from the gelatin band. The carriage C may then be pulled back to home position and copies made in the usual manner using the portion 24 of the frame 25 as a copy sheet support in feeding the copy sheets to the machine. The plate 27, of course, moves back to the extreme right hand end of the frame 25 as soon as the master sheets are pulled off the pins 26 and remains there until it is used again.

While certain embodiments of the invention have been shown and described, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and the scope of the invention as disclosed in the appended claims in which it is the intention to claim all novelty inherent in the invention as broadly as possible in view of the prior art.

The invention having thus been described, what is claimed as new and desired to be secured by Letters Patent is:

1. In a duplicating machine having a duplicating surface, a supporting frame, and a carriage which carriage has a platen roller thereon, means for laying a plurality of master sheets upon said surface together comprising means on the carriage to which one end of each sheet is attached and a margin bar on the frame to which the other end of each sheet is attached, said first named means being movable to permit advance of the carriage and platen roller over the sheets attached thereto to roll them down upon the duplicating surface.

2. In a duplicating machine having a duplicating surface, a supporting frame, and a carriage which carriage has a platen roller thereon, means for laying a plurality of master sheets upon said surface together comprising means on the carriage to which one end of each sheet is attached and a margin bar on the frame to which the other end of each sheet is attached, said first named means being movable to permit advance of the carriage and platen roller over the sheets attached thereto to roll them down upon the duplicating surface, said carriage having means to release the sheets as the platen roller approaches the ends of the sheets attached to said first named means.

3. In a duplicating machine having a duplicating surface, a supporting frame, and a carriage, which carriage has a platen roller thereon, means for laying a plurality of master sheets upon said surface together comprising, a member on the frame to which one end of each sheet may be secured, an elongated frame on the carriage hav-

ing means slidable thereon for mounting the other end of each sheet.

4. In a duplicating machine having a duplicating surface, a supporting frame, and a carriage, which carriage has a platen roller thereon, means for laying a plurality of master sheets upon said surface together comprising cooperating securing devices on the carriage and frame to which said sheets may be attached, and means to release the sheets from the carriage when the carriage is advanced over them.

5. In a machine of the character described, a master sheet holding attachment to the carriage comprising a supporting frame, a mounting plate slidable on the supporting frame toward and away from the carriage, and spring means for pulling said plate away from the carriage.

6. In a machine of the character described, a master sheet holding attachment to the carriage comprising a supporting frame, a mounting plate slidable on the supporting frame toward and away from the carriage, said mounting plate and supporting frame having cooperating means to aid removal of the sheets from said plate, when said plate reaches the limit of its movement toward the carriage.

7. In a duplicating machine having a duplicating surface, a supporting frame, and a carriage, a margin bar for removable mounting on said frame, said margin bar having mounting means for selectively securing a plurality of master sheets thereon.

8. In a duplicating machine having a duplicating surface, a supporting frame, and a carriage, a margin bar removably mounted on said frame and having a row of pins thereon, and a gripping bar hinged to the margin bar.

9. In a duplicating machine having a duplicating surface, a supporting frame, and a carriage, a margin bar removably mounted on said frame and having a row of pins thereon, and means mounted on said bar for holding a plurality of master sheets on said pins.

10. In a machine of the character described, a master sheet holding attachment to the carriage comprising a supporting frame, a mounting plate slidable on the supporting frame toward and away from the carriage, pins on said plate for mounting master sheets thereon, and means on said frame to tip said pins as the plate is moved to limiting position toward said carriage whereby to aid removal of the master sheets from said pins.

11. In a machine of the character described, a master sheet holding attachment to the carriage comprising a supporting frame, master sheet mounting means movable on said frame, and yielding means opposing movement of said mounting means in one direction, said frame having means cooperating with said mounting means to release master sheets from the mounting means when said mounting means approaches its limiting position in said direction.

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