Feb. 12, 1935. C. M. LAMB 1,991,020

PRINTING MACHINE

Filed June 20, 1932 2 Sheets-Sheet 1

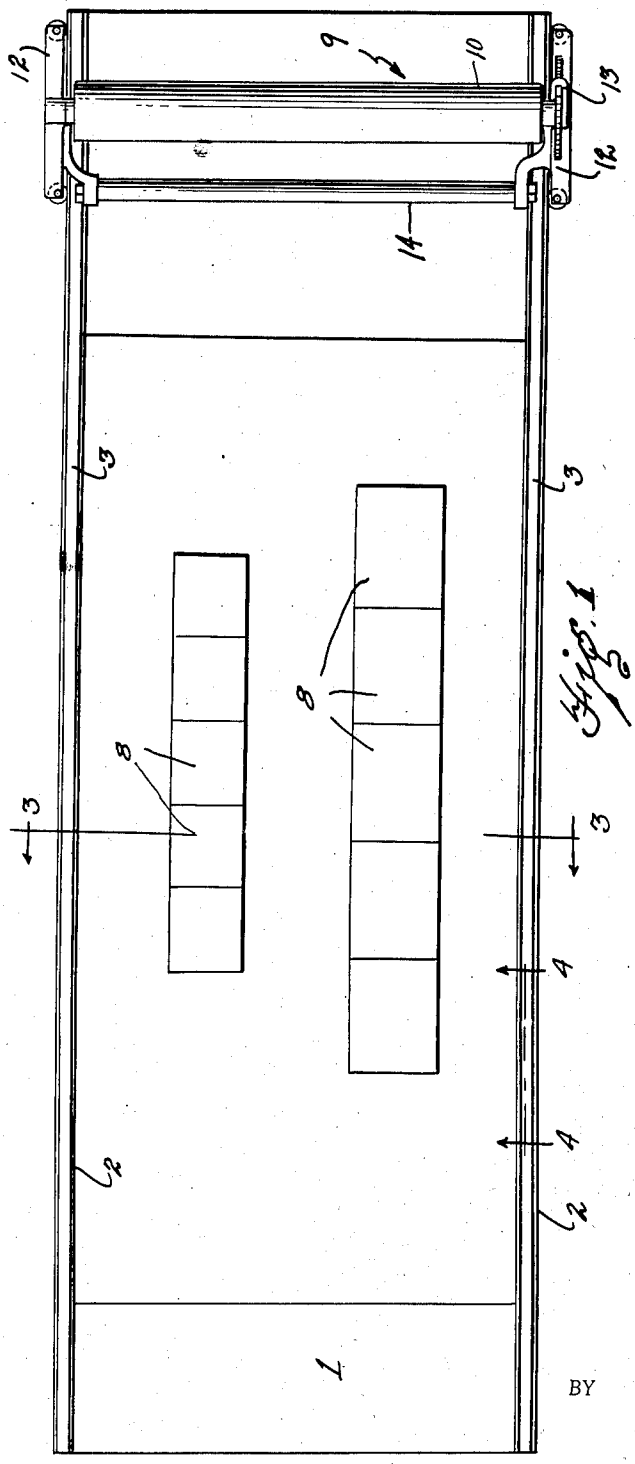


Fig. 1

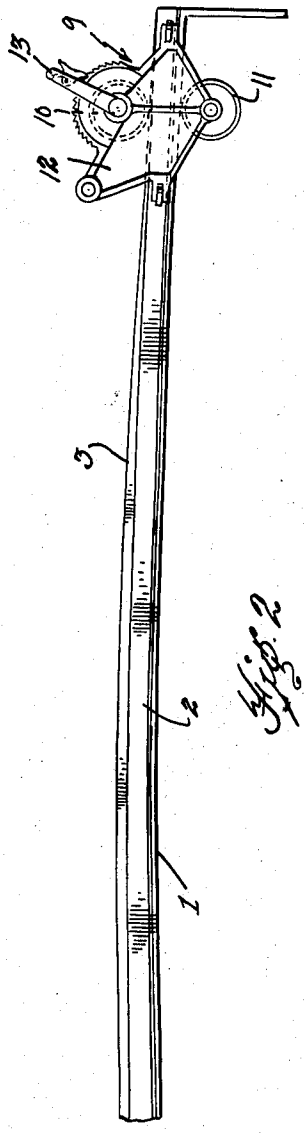


Fig. 2

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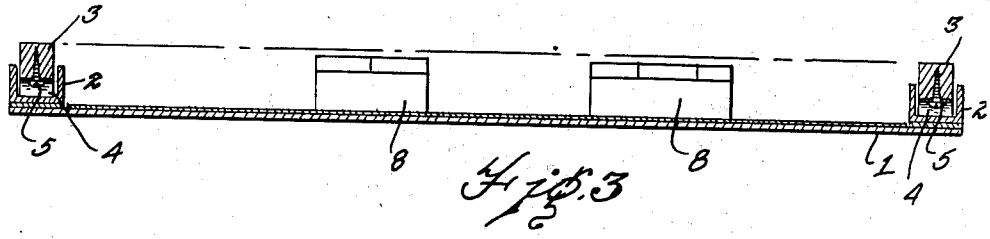


Fig. 3

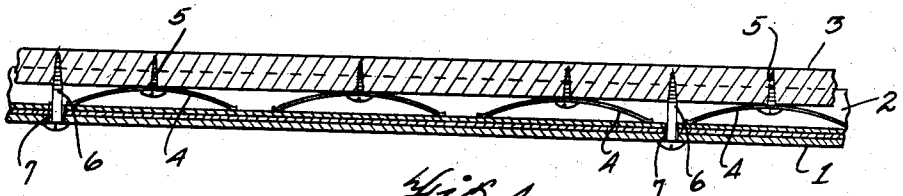


Fig. 4

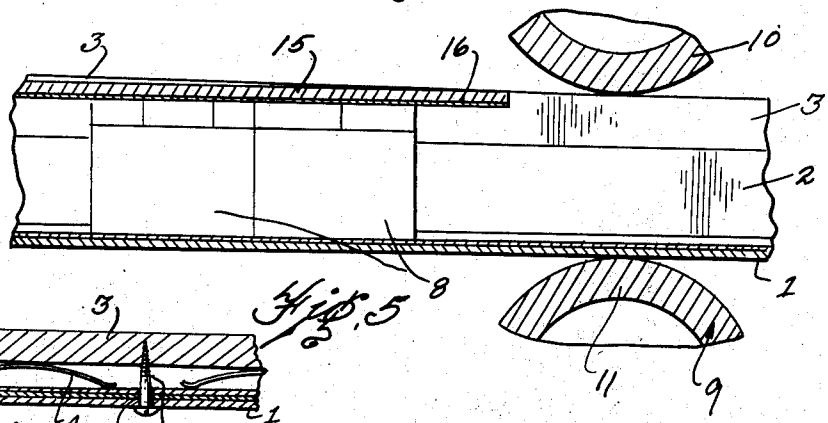


Fig. 5

Fig. 7

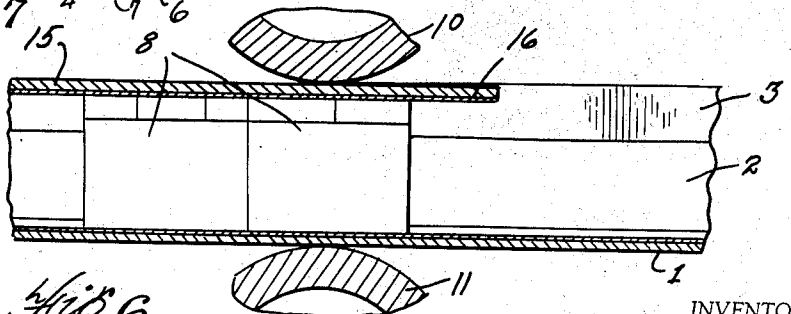


Fig. 6

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Patented Feb. 12, 1935 1,991,020

UNITED STATES PATENT OFFICE

1,991,020

PRINTING MACHINE

Charles M. Lamb, Pasadena, Calif.

Application June 20, 1932, Serial No. 618,169

6 Claims. (Cl. 101—269)

This invention relates to printing machines of the type that is used for printing posters, streamers or the like where a relatively long machine is required.

An object of the invention resides in the provision of a relatively long printing machine in which the bed plate is arched from end to end to prevent sagging thereof.

Another object of the invention resides in the provision of a printing machine in which the impression roller is kept continuously rotating prior to and during the printing operation thereby preventing smearing of the printed surface.

Another object of the invention resides in the provision of a device of this character which is so constructed as to hold the impression roller at all times practically on a level with the type face to permit the roller to be easily moved thereacross during the printing operation.

Another object of the invention resides in the provision of a printing machine which is provided with a pair of longitudinally extending side rails one positioned adjacent each side edge of the bed plate, and the side rails being held upwardly by spring pressure to maintain the impression roller at its correct height to perform the printing operation.

These objects and the several novel features of the invention are hereinafter more fully described and claimed and the preferred form of construction by which these objects are attained is shown in the accompanying drawings in which—

Fig. 1 is a top plan view of my improved printing machine.

Fig. 2 is a side elevational view thereof.

Fig. 3 is an enlarged transverse sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is an enlarged detail sectional view taken on line 4—4 of Fig. 1.

Fig. 5 is an enlarged detail sectional view showing the impression rollers out of printing engagement.

Fig. 6 is a similar view showing the rollers during the printing operation.

Fig. 7 is a view similar to Fig. 4 showing a modified form of construction.

In the usual type of hand operated printing machines the impression member is normally supported on the side frames and the portion of the upper roll immediately adjacent the type as the roll engages the same is below the type face and is not rotating when brought into contact with the card being printed therefore necessitating the roller being lifted by the type before the roller starts to rotate. Inasmuch as considerable amount of pressure is exerted to make an impression the operator must exert a considerable pull when the pressure roller comes in alignment with the type and since the roller is not rotating the first part of the impression is often blurred and the poster is not properly printed. With my improved structure the upper roller of the impression member is always contacted by the side rails so that the roller is rotated at all times as it is drawn across from one end of the machine to the other.

Since the rails have at all times an upward spring pressure exerted thereon the same will hold the lower edge of the upper roll at a predetermined distance above the bed plate to permit the impression member to be easily moved from one end of the machine to the other and to perform the printing operation.

The device comprises the bed plate 1 which is arched, as more clearly shown in Fig. 2, and has the channel members 2 suitably secured one to each side edge of the bed plate. The side rails 3 are preferably formed of wood or some flexible material and one is positioned in each of the channel members 2. A plurality of leaf springs 4 are suitably secured to the lower edge of each side rail 3 such as by the screws 5 and tend to lift the side rails 3 upwardly and away from the base of the respective channel members 2. The screws 6 extending through the apertures 7 in the base of the channel members 2 and the bed plate 1 limit the upward movement of the rails 3. By referring to Fig. 3 it will be seen that the screws 6 are so adjusted as to permit the upper edge of the rails 3 to extend slightly above the type faces of the type 8. The impression member 9 comprises the upper roller 10 and the lower roller 11 suitably carried in the end brackets 12. The upper roller 10 is adjustable toward or from the roller 11 by movement of the handle 13 to secure the desired pressure during the printing operation.

The means for securing this adjustable relationship is more clearly shown and described in my co-pending application on Printing machine, Serial No. 439,794. The rod 14 extends between the side frames 12 and permits the operator to grip the same to draw the impression member 9 from one end of the machine to the other. The roller 10 rides on the upper edge of each of the side rails 3 and the springs 4 are sufficiently strong to support the weight of the impression member without appreciably de-

flecting the springs. The lower roller 11 normally rides against the lower face of the bed plate 1 and as the impression member 9 is moved from one end of the machine to the other the side rails 3 will be deflected downwardly against the action of the springs 4 and when the distance between the rollers 10 and 11 has been properly set the impression member 9 may be easily pulled from one end of the machine to the other to perform the printing operation.

It has been found that it is not essential to have a cover over the card which is being printed but ordinarily a loose pad 15, such as heavy paper or cardboard, is placed over the poster 16 during the printing operation. It will thus be seen that there is no sudden upward jerk of the impression member when the impression rollers come in alignment with the edge of the type as the spring pressed side rails 3 always hold the impression member 9 up so that the roller 11 engages the lower face of the bed plate 1 and the roller 10 is always correctly positioned for the printing operation.

It will be further noted that since the roller 10 is always engaged by the side rails 3 that the same will be continuously rotated as the impression member is drawn from one end of the machine to the other so that there is no tendency for the roller to smear the poster being printed as the roller comes in alignment with the type. It will be further noted that due to the arching of the side frames and base that any tendency of the bed plate to sag is prevented.

Referring to Fig. 7, I have shown a modified form of construction in which the springs 4 are free so that the same are not weakened by the screws 5. In this form of construction the springs are not weakened by the screws 5 and will consequently have a longer life. The springs will be held against longitudinal displacement by the screws 6, one screw being placed between the adjacent ends of the springs but far enough apart to permit the springs to completely compress.

From the foregoing description it becomes evident that I have provided a printing machine for printing long streamers or posters which is extremely easy to operate and which will provide a very legible impression on the streamer or poster when the type is properly inked.

Having thus fully described my invention, its utility and mode of operation, what I claim and desire to secure by Letters Patent of the United States is—

1. In a printing machine, a flexible sheet metal bed plate for supporting type thereon, a pair of rigid side frames of channel form in cross section, one secured adjacent each side edge of the bed plate, the bed plate and the side frames arched from end to end to prevent sagging of the bed plate, an impression member movable over the bed plate and type positioned thereon, said impression member including a roller positioned over and in spaced relation with the bed plate, a second roller in adjustably spaced relation therewith and riding the under surface of the plate, and spring-supported strips in each of the said channel members engaged by the upper roller in its traverse of the bed plate and type holding the lower roller in contact with the under surface of the bed plate to thereby maintain the lowermost surface of the upper roller a fixed distance above the bed plate.

2. In a printing machine, a bed plate formed of flexible sheet metal, a rigid member of channel form attached to the bed plate adjacent each longitudinal edge, a spring pressed strip in each channel member tending to project the strip upwardly from the bed plate, means limiting the extent of such projection, an impression member comprising an upper roller riding the strips and a lower roller riding the under surface of the bed plate, a frame for supporting the rollers, and means for adjusting the distance apart of the said rollers, means on the impression member traversing the outer side face of the said channel members of a character permitting variation in vertical position of the impression member but preventing material displacement thereof laterally of the bed plate, a handle means for drawing the impression member across the bed plate and printing elements positioned thereon, said strips providing a means for maintaining the lowermost point of the upper roller a fixed distance above the bed plate in its traverse thereof in the printing operation.

3. In a printing machine, a metal bed plate of sheet form for supporting type, a pair of rigid side frames of U shape channel form in cross section, one secured adjacent each side edge of the bed plate, a rail in each of said channel members, a series of spring members in spaced relation along the channel members and tending to raise the rail upwardly to above the edges of the channel members, a series of elements secured in spaced relation to the under side of the rail and extending through apertures in the channel and bed plate in which the same is reciprocable, said elements having portions thereof engageable with the under side of the plate by action of the springs on the rails and limiting the upward movement of the rails, an impression member movable over the bed plate and type positioned therein, the said member including a roller positioned over and in spaced relation with the bed plate and riding the rails, a second roller member in adjustably spaced relation therewith and riding the under surface of the plate, and means for adjusting the distance apart of the rollers to thereby vary the pressure of the roller on the sheet being printed, said spring pressed rails acting on the upper roller and thereby holding the lower roller in contact with the under surface of the bed plate.

4. In a printing machine, a metal bed plate of sheet form for supporting type, a pair of side frames consisting of the U channel members having the open side upward and the base thereof secured to the bed plate adjacent each side edge thereof, a spring supported rail in each of the channel members, an impression member movable over the bed plate and type positioned therein, the said impression member including end frames, a roller supported in the end frames and positioned over and in spaced relation with the bed plate and riding the rails, and a second roller fixedly supported in the end frames and riding the under surface of the plate, means for adjusting the distances apart of the rollers, said end frames being roller supported from lateral movement of the bed plate and being movable in a direction at a right angle to the surface of the bed plate, the spring pressed rails on which the upper roller rides providing a means for raising the end frames to bring the lower roller to contact with the under surface of the bed plate and thereby determine

the position of the lowermost surface of the upper roller above the bed plate.

5. In a printing machine, a sheet metal bed plate for supporting type, said plate being arched in form from end to end, the side edges of the plate having channels extending longitudinally thereof, an impression member movable over the bed plate and type positioned therein, said impression member including end frames and rollers carried by the end frames, one extending transversely of the upper face of the bed plate and the other extending transversely of the under side, the upper roller being rotatable initially in its traverse of the bed plate through contact with the rails and secondarily through contact with the surface of the sheet being printed and the other roller being independently rotatable by contact with the under surface of the bed plate, anti-friction elements on each end plate for supporting the impression member from material movement transversely of the bed plate, a spring supported rail element in each of the channel portions of the bed plate on which the upper roller member rides thereby tending to lift the end frames in a direction vertically of the bed plate to cause the lower roller to ride the under surface of the bed plate, the said roller members supporting the impression member from displacement in a direction vertically of the bed plate, and means for adjusting the distance apart of the rollers to thereby vary the pressure of the upper roller on the element being printed.

6. In a printing machine, a sheet metal bed plate for supporting type thereon, an impression member movable longitudinally of the bed plate to engagement with the type in performing a printing operation, said member including an upper roller positioned transversely of the bed plate, a support therefor, a lower roller carried by the support and engageable with the under surface of the plate, means for adjusting the distance apart of the rollers, spring supported rails at each side of the bed plate on which the upper roller rides thereby tending to raise the said support and hold the lower roller in contact with the under surface of the bed plate thereby maintaining the lower edge of the upper roller at a predetermined type-engaging distance from the type supporting face of the bed plate, the said rollers being independently rotatable in the said support, the upper roller being rotated solely through contact with the rails and the type surface when moved to contact therewith and the lower roller being rotated solely by contact with the under surface of the bed plate and supporting the same from deflection through pressure contact of the upper roller with the type.

CHARLES M. LAMB.