Sept. 26, 1933. M. M. HARDING 1,928,223

STENCILING MACHINE

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Fig. 1

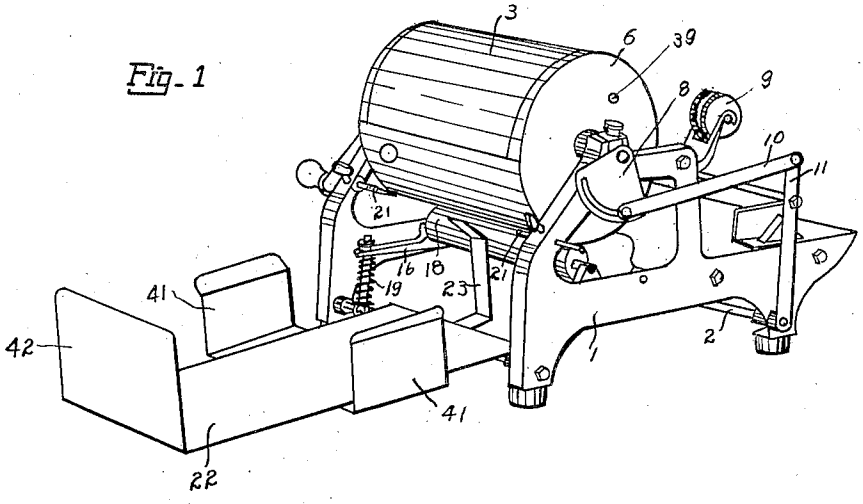
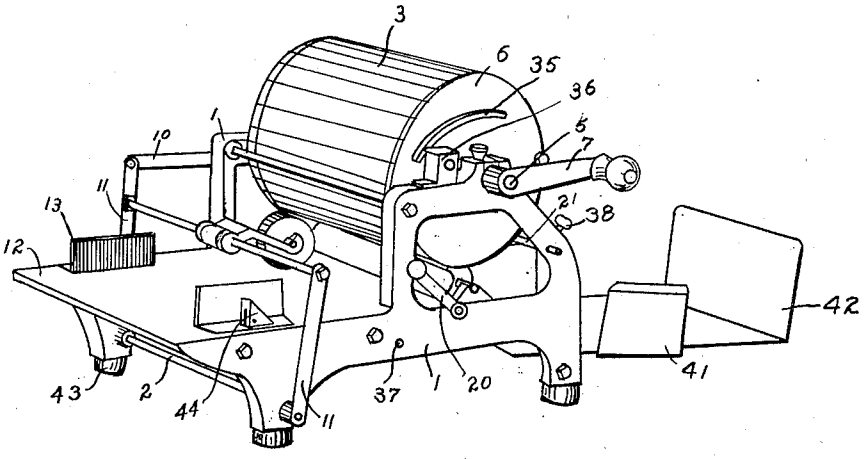


Fig. 2



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Fig. 3

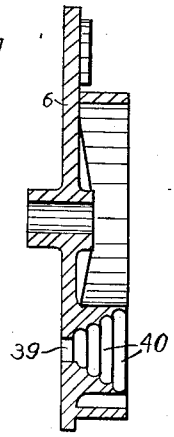


Fig. 4

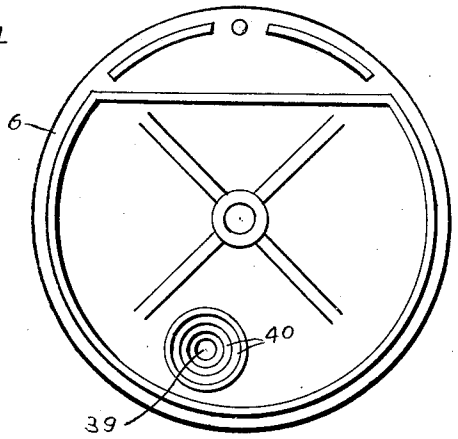
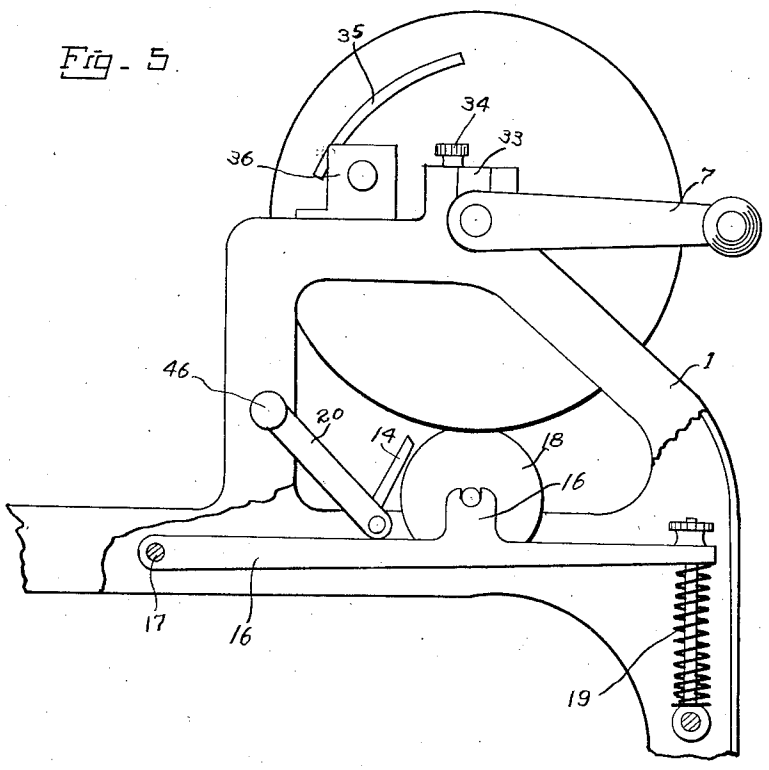


Fig. 5



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Fig. 7

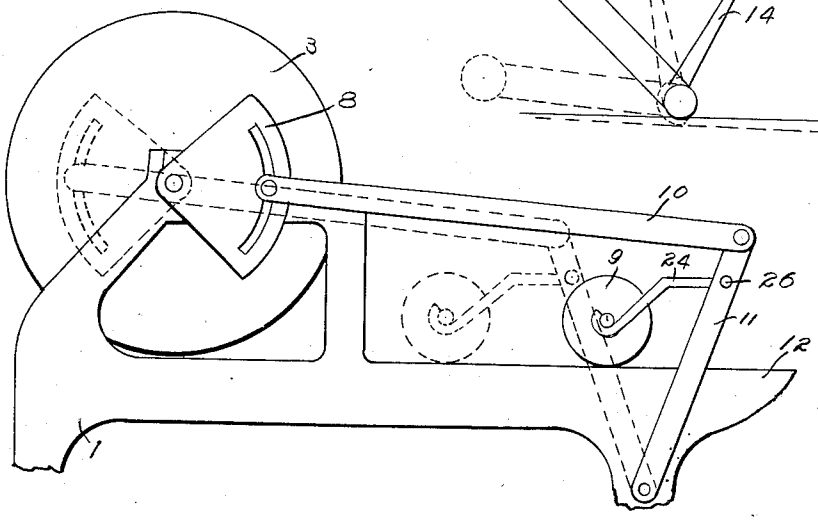


Fig. 6

Fig. 8

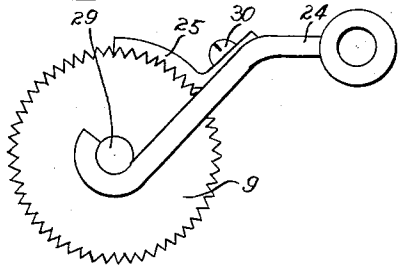


Fig. 9

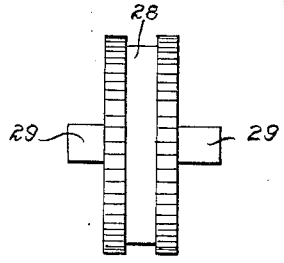


Fig. 10

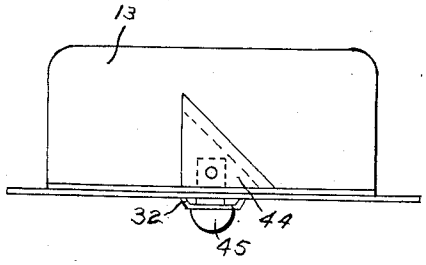
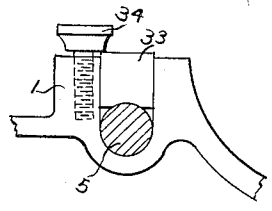


Fig. 11



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Patented Sept. 26, 1933 1,928,223

UNITED STATES PATENT OFFICE

1,928,223

STENCILING MACHINE

Milo Murray Harding, Los Angeles, Calif.

Application December 15, 1930
Serial No. 502,495

5 Claims. (Cl. 101—118)

My invention relates to duplicating or stenciling machines in which a perforated hollow drum is covered with an ink-pad and a stencil-sheet is laid upon the blanket, the paper to be stenciled being run between the stencil-sheet and pressure roll, ink is applied to the interior of the cylinder and absorbed by the ink pad upon the exterior of said drum.

The primary object of my invention is to produce a rapid accurate and quiet stenciling machine, that the layman may successfully operate.

A further object of my invention is to provide an automatic paper feeder that will function properly under all weather conditions, such as are experienced when the paper is statically charged.

A further object of my invention is to provide a paper alignment plate to obtain the correct timing of the paper with the stencil sheet, thus compensating for difference in distance traveled by the sheet of paper, on top of the stack and the one adjacent the table.

A further object of my invention is to provide a means of receiving the stenciled sheet and stacking it without smearing the same.

A further object of my invention is to provide a vertically removable drum that the drum may readily be replaced by one loaded with ink of another color.

With these and incidental objects in view the invention consists in certain novel features of construction and combination of parts, a preferred form of embodiment of which is hereinafter shown with references to the drawings, which accompany and form a part of the specifications.

Fig. 1 is a perspective view showing the automatic feed drive means and the delivery end of the stenciling machine.

Fig. 2 is also a perspective view of the other side disclosing the feed table, the automatic feed roller, the crank or the driving means.

Fig. 3 is a fragmentary cross sectional view of the drum, drum end, and adjusting segment.

Fig. 4 is a cross sectional view of the drum showing the inner side of the drum end.

Fig. 5 is a partial side elevation of the machine showing the relative position of the working parts.

Fig. 6 is a diagrammatical view of the paper alignment plate and integral cams.

Fig. 7 is a diagrammatical side view showing the automatic feeding features.

Fig. 8 is a side elevation of the feeder roller bearings and brake.

Fig. 9 is a front elevation of the feeder roller in Fig. 8.

Fig. 10 is a front elevation of a paper clamp showing the triangle locking and releasing eccentrics.

Fig. 11 is a fragmentary cross sectional view of the drumshaft bearings and frame.

Like reference characters refer to like parts throughout the several views.

My device consists primarily of frame members 1, held in position by frame rods 2, a perforated drum 3, is journaled at bearings 4. The drum shaft 5 is securely attached to drum ends 6, one extreme end of said shaft having a crank 7 secured thereto, the other extreme end having an adjusting segment 8 secured thereto. Said segment imparts motion to feeder roll 9 through the connecting rod 10 and links 11. A paper table 12 is provided on which the paper to be stenciled is placed. The adjustable paper clamps 13 are disposed at the extreme side edges of said clamps, having vertical rubber teeth which contact with the edges of the paper. The inner edges of the paper abuts the alignment plate 14 which has the integral cams 15 in communication with roller pressure arms 16, said arms having their point of fulcrum at 17. The pressure arms 16 which are located on either side of pressure roller 18, received their pressure from two coil springs 19. The pressure roll 18 may be disengaged from the drum 3 by moving the arm 20 as shown in Fig. 6, causing the cams to impart motion to the roller pressure arms and thus compress the springs above mentioned. Two strippers 21 are provided to separate the stenciled sheet from the drum 3 and directing it to the paper tray 22, which is made up of the side elements 41 and the end element 42. Heretofore, in machines of this type the leading edge of the stenciled sheet of paper when delivered from the machine will droop and drag the stenciled surface of the preceding sheet which is stacked in the tray 22, thus smearing the fresh ink. One of the features of the invention is in obviating this condition. This is accomplished by the bracket 23 being secured to the inner end of the paper and centrally located in relation to the stencil drum. The highest point on said bracket being slightly higher than the strippers 21. The strippers forming a guide for the upper margins and the bracket supporting the sheet from below in a central position. Hence, the stenciled sheet upon leaving the machine takes a curved form, thus increasing its sectional modulus to the extent that the leading edge of the sheet will not droop or drag. The sheet falls to the paper tray after it is released from the drum, coming to rest lightly on the

previous sheet, thus eliminating the possible smearing of fresh ink by dragging.

The novelty of the automatic paper feeder is disclosed in Figs. 7, 8 and 9. The feeder roller link 24 is hinged on shaft 26 which connect the links 11. A set collar 27 is provided that may be moved along the shaft thus adjusting the location of said feeder roller. The feeder roller 9 is made of rubber having teeth on its periphery and a channel 28 in which brake 25 operates. It is obvious that when roller 9 is raised to accommodate a stack of paper, that the distance between said roller and a given point on the stencil drum varies due to the angularity of link 24. Here the applicant overcomes the necessity of using a movable or adjustable cross shaft by aid of the adjustable alignment plate 14 set at a predetermined angle as shown in Fig. 9, thus compensating for the angularity of feeder roller link 24. The cross shaft 26 is securely fastened to the links 11, thus any weave caused by the location of the feeder roller on said shaft is eliminated, hence rendering a more accurate feeding means. On the beginning of the stroke the roller link 25 is caused to move toward the stencil drum 3, the brake 25 engaged with the roller at 28 holding the roller stationary in regard to rotation, causing the roller's teeth to be in frictional contact with the paper and in this manner the sheet to be stenciled is conveyed to the stencil drum. On the return stroke the brake is released, the bearing 26 now coming in contact with shaft 29 and the roller is now free to turn thus completing the cycle. The brake 25 is adjustable at the screw 30.

Fig. 11 shows a partial cross section of the vertical bearing 32, the drum shaft 5, the square bushing 33, and the adjusting thumb screw 34. This arrangement provides a rapid means of removing the drum as well as adjusting the bearing clearance without the aid of tools.

The ink inlet 39 is shown in Figs. 3 and 4. It consists of an inwardly extending boss being an integral part of the drum end. This inlet is open at all times and is designed to prevent ink from dripping or overflowing. The size of the inlet increases toward the inside of the drum. The shape of this inlet may be described as a series of curved steps producing the sharp edges 40—Fig. 4, and a continuous curved pocket between said edges. Any ink lodged in the inlet is held in these pockets and when the drum is revolved the centrifugal force causes it to flow into the drum and when at rest gravity causes it to flow in the same direction. There is an inlet at each end of the drum, thus preventing any air locks, also allowing free circulation of air keeping the temperatures the same on the inside as that on the outside of said drum.

While the above mechanism herein shown and described is admirably adapted to fulfil the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form of embodiment herein shown and described, as it is susceptible of embodiment in various forms all coming within the scope of the claims which follow.

I claim:

1. In a machine of the class described, in combination, a pair of substantially vertical links, the lower end of the links being hinged at the frame, a cross shaft securely connecting their upper ends, a feeder link and roller disposed upon and hinged to the shaft, means for adjusting the feeder link and roller on the shaft, an adjustable paper alignment plate having a pair of integral pressure roller disengagement cams, manual means for operating the cams, a pair of stripper elements, a paper tray having a bracket on its inner end central of and interposing the stripper elements, said bracket being slightly higher than the strippers.

2. In a device of the class described, an automatic paper feeder comprising, a pair of vertical links hinged at their lower ends, a cross shaft connecting and secured to the upper end of the vertical links, a feeder roller link adjustably hinged on said cross shaft, a rubber roller having a channel interposing two rows of teeth about its periphery, a shaft passing through the roller, the roller is journaled at lower end of the roller link, a brake disposed within the channel of the roller, being adjustably secured to the roller link, a paper alignment plate adjustably disposed and adjacent to the pressure roller, and constituting uniform paper feeding means.

3. In a stenciling machine, in combination, a stencil drum, a pair of paper stripper elements, a paper tray having a bottom, two sides and end element, an upwardly extending element having its highest point slightly higher and interposing the strippers cambering the stenciled sheet as delivered from the drum.

4. In a machine of the class described, comprising a revolving drum, a pair of paper stripping elements disposed near each edge of the drum, a bracket element disposed between the paper strippers, said bracket extending above the strippers and constituting means for bending the sheet delivered from the drum.

5. In a device of the class described, the combination with a stenciling drum, a pair of drum ends having ink inlets, therein, comprising an inwardly extending boss, a hole through the center of the boss, the hole increasing in size inwardly forming a series of continuous step pockets and thereby causing ink to flow inwardly.

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