

March 16, 1965

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3,173,363

INK AGITATOR

Filed Feb. 26, 1962

2 Sheets-Sheet 1

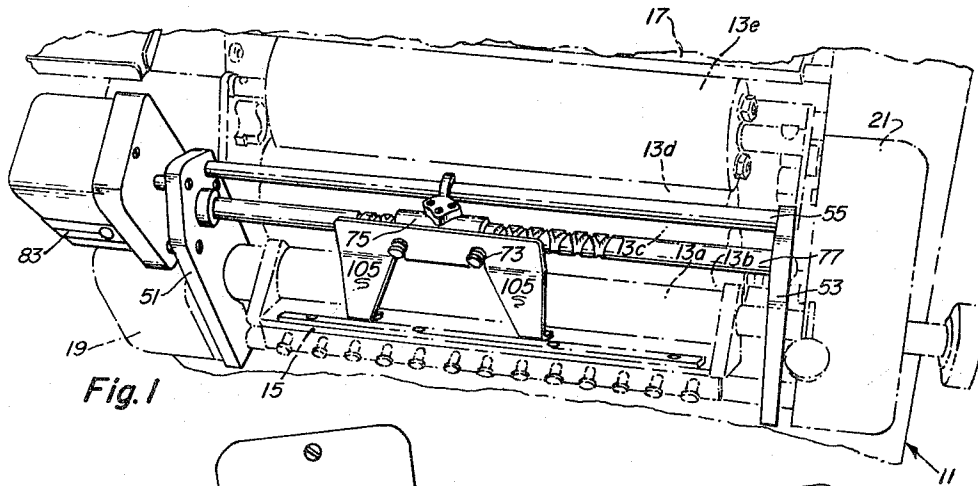


Fig. 1

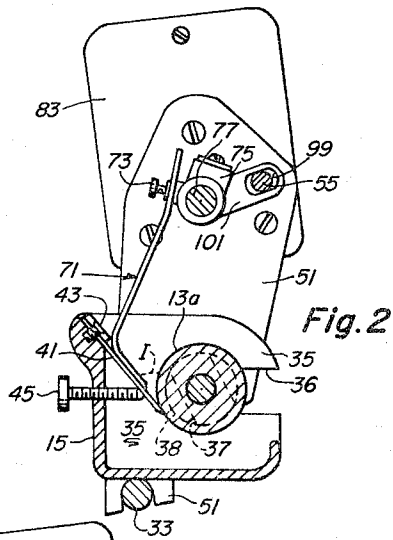


Fig. 2

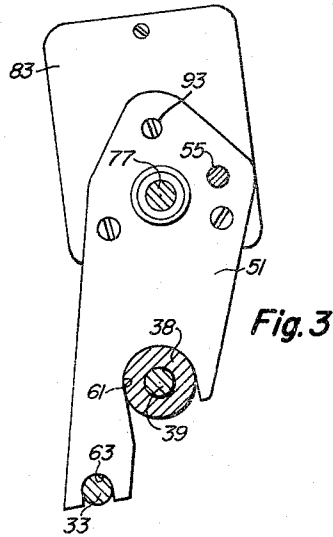


Fig. 3

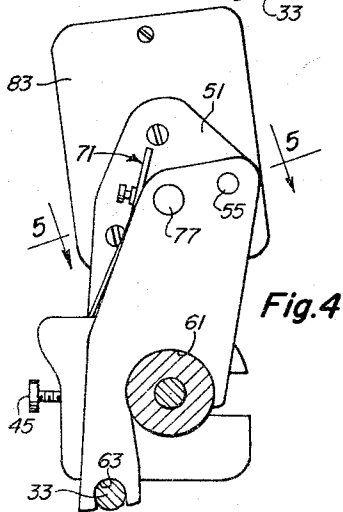


Fig. 4

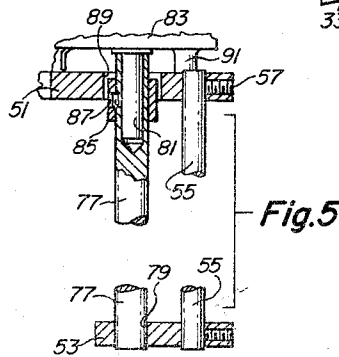


Fig. 5

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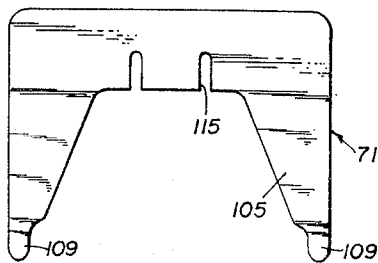
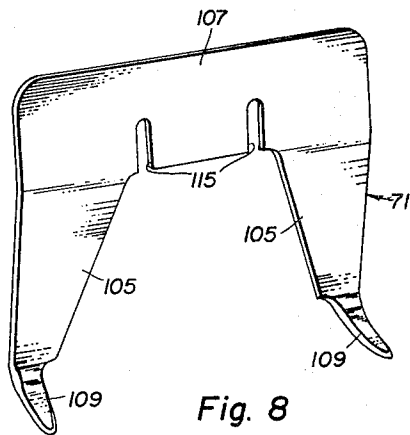
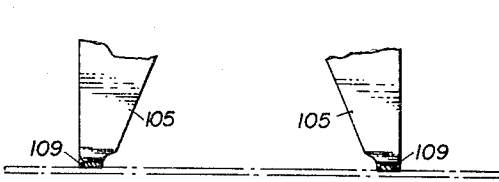
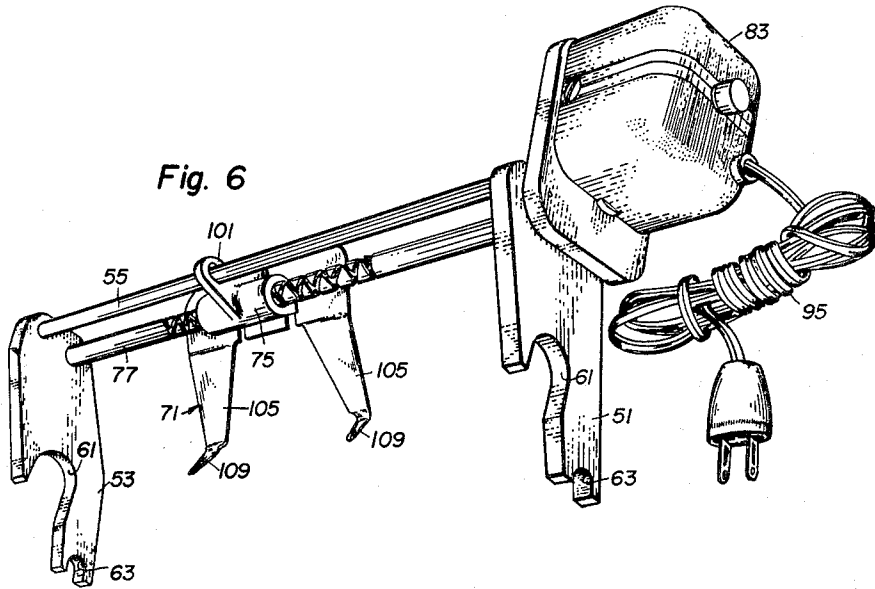
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2 Sheets-Sheet 2



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3,173,363

**INK AGITATOR**

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6 Claims. (Cl. 101-364)

This invention relates to ink agitators for printing machines and particularly for an ink agitator for a relatively small machine such as a check printing machine.

It is a main object of the invention to provide a self-powered ink agitator attachment for a small printing machine and particularly one than can be attached without modification of the machine and can be readily detached in a matter of seconds.

Various other objects of the invention will be apparent from the following description taken in connection with the accompanying drawings wherein:

FIG. 1 is a top left perspective view of a printing machine having an ink agitator attachment of the invention;

FIG. 2 is a vertical section taken along line 2-2 of FIG. 1;

FIG. 3 is a vertical section taken along line 3-3 of FIG. 1;

FIG. 4 is a vertical section taken along line 4-4 of FIG. 1;

FIG. 5 is a generally horizontal section taken along line 5-5 of FIG. 4;

FIG. 6 is a perspective view of my attachment taken from the underside thereof;

FIG. 7 is a sectional view taken along line 7-7 of FIG. 6, showing the blade in phantom lines;

FIG. 8 is a perspective view of the ink agitator member looking generally at the front thereof; and

FIG. 9 is a rear elevational view of such member.

Referring to FIG. 1, the printing machine 11 has a plurality of inking rollers some of which are shown and are identified as 13a, 13b, 13c, 13d, and 13e for picking up ink from a pan 15 and transferring a film of ink to a cylinder 17. These rollers and the cylinders are driven by means not shown and concealed by housings 19 and 21.

Referring to FIG. 2, the pan 15 is shown resting on a rod 33 supported by the frame of the machine. Each end wall 35 of the pan has a keyhole slot or recess 36 to embrace a flat portion 37 of a stationary tubular bearing 38. The bearings 38 support the ends of a shaft 39 of the roller 13a. When the pan is swung clockwise sufficiently to align the slots 36 with the flat portions 37, the pan is pulled forwardly to remove it. It is reinserted by following the reverse procedure.

The pan has a film forming blade 41 mounted by screws 43 on the front lip of the pan 15 in a position to dispose its lower edge close to the roller 13a. A series of adjustment screws 45 determine the ultimate position of the lower edge of the blade 41 with relation to the roller 13a.

The self-powered ink agitator of the invention is designed to be detachably mounted on the printing machine in a manner permitting its ready detachment. The agitator includes a pair of spaced parallel vertically elongate side members 51 and 53 (FIG. 1) of generally similar but specifically different shape (FIG. 4). A tie rod 55 (FIGS. 4 and 5) extends through holes in the upper ends of the side members and is secured in place by setscrews 57.

The lower portions of the side members 51 and 53 are similarly formed and each is formed with a downwardly facing semicircular recess 61 (FIG. 3) of a size to embrace the bearings 38 of the roller shaft 39. Each side member is also formed at a lower level with a smaller downwardly facing recess 63 of a size to embrace the

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pan-supporting rod 33. The directions in which the recesses 61 and 63 open are parallel and thus the side members may be removed by an upward force and replaced by merely fitting the recessed portions onto the bearings 38 and the rod 33.

The agitator includes an agitator member indicated by the general reference numeral 71 which is detachably mounted by a pair of thumb screws 73 (FIGS. 1 and 2) on a nut 75. The nut fits on a cross threaded reversing screw 77 fitting at one end (FIG. 5) in a hole 79 formed in the side member 53 and formed at its opposite end with a bore receiving the output shaft 81 of an electrical motor 83. A coupling sleeve 85 has a setscrew 87 passing through a hole in the wall of the screw 77 and engaging a flat on the shaft 81. The side member 51 has a suitable opening 89 to accommodate the sleeve 85.

The motor 83 has three threaded mounting pads 91 (FIG. 5) secured to the outer face of the side member 51 by screws 93 (compare FIGS. 1 and 5).

When the motor 83 is energized through a cord 95 (FIG. 6) the screw 77 is rotated to drive the nut 75 longitudinally of the screw, the nut being prevented from rotation by a guide rod 55 (FIG. 3) which passes through a slot 99 in an arm 101 extending from the body of the nut 75.

The agitator member (FIGS. 8 and 9) comprises a thin metal plate of generally inverted U-shape and including a pair of downwardly tapering fingers 105 joined by a bridging portion 107. The agitator member is bent slightly below the bridging portion so that the bodies of the fingers are at a slight angle to the bridging portion.

The lower end portions 109 of the fingers are bent almost at right angles to the remainders of the fingers. The various angles of the agitator member are chosen so that the lower faces of the lower portions 109 lie flush against the blade 41 (FIG. 2) and so that the tips of the portions 109 are disposed close to but in spaced relation with respect to the roller 13a.

The fingers are spaced apart a distance less than half the length of the pan 15 so that paths of travel of the fingers overlap to give a wiping action to the entire length of the pan. The length of the threads of the screw 77 is such as to drive the agitator member a distance just slightly less than the length of the pan 15 minus the distance between the outside edges of the portions 109.

Since the side members 51 and 53 merely rest on the bearings 38, they can slide along such bearings. Thus, there is no need to accurately locate the agitator attachment laterally relative to the pan 15, since if it is not correctly located, the agitator member 71 will be brought into engagement with an end of the pan to push the attachment into a centered position relative to the pan.

Referring to FIGS. 1 and 9, the agitator member 71 is formed with two recesses or edge slots 115 to receive the shanks of the thumb screws 73. This permits removal of the agitator member 71 from the nut 75 without removing the screws 73.

The supply of ink I is shown in FIG. 2 with the fingers portions 109 projecting into such supply to assume proper agitation and distribution of the ink along the blade 41.

While the agitator of the invention is shown attached to a particular type of printing machine, the agitator can be detachably mounted on various other types of machines.

It is apparent, for instance, that the distance between the side members 51 and 53 can be readily varied by loosening the setscrew 57 for side member 53, moving the side member relative to the screw 77 and rod 55 and retightening the setscrew. This could be done to adapt the agitator to a differently dimensioned machine.

The agitator of the present invention is particularly useful in agitating magnetic ink to keep the iron oxide

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from settling out, but the agitator is also very useful in agitating other inks, to avoid waste and to insure a uniform film of ink on the transfer rolls.

Having described the invention in what is considered to be the preferred embodiment thereof, it is desired that it be understood that the invention is not to be limited other than by the provisions of the following claims.

I claim:

1. An attachment for a printing machine of the type having a fountain which contains a roller supported by a roller shaft assembly which projects beyond the fountain, said attachment comprising a unitary assembly which is readily mounted on and removable from the machine as a unit,  
 said attachment including a pair of spaced parallel mounting plates,  
 a drive motor mounted on the outer face of one mounting plate,  
 an agitator shaft journaled in said other plate and extending toward said one plate,  
 said drive motor having an output shaft connected to said agitator shaft to provide a drive shaft assembly, said drive shaft assembly extending through said one plate,  
 an agitator having a depending agitating portion and being driven back and forth by said agitator shaft, said agitator being supported by said agitator shaft, said mounting plates having vertical notches of a size to just fit on the roller shaft assembly to enable said plates to be seated on said roller shaft assembly, said notches being oriented on said plates so that said plates are perpendicular to the axis of said roller shaft assembly,  
 said plates also abuttingly engaging other portions of said machine to prevent rocking movement of said plates about said roller shaft assembly,  
 said notches being so located that the mere seating of said plates on said roller shaft assembly will automatically locate the agitator shaft in parallel relation to said roller shaft assembly and automatically locate said depending agitator portion in correct position for agitating ink in said fountain,  
 the parts of said attachment being so located relative to said notches that the effect of gravity acting on said parts creates a downward force tending to maintain said plates seated on said roller shaft assembly, whereby said unitary assembly can be applied and removed without the aid of tools.

2. An attachment for a printing machine of the type having a fountain which contains a roller supported by a roller shaft assembly which projects beyond the fountain, said attachment comprising a unitary assembly which is readily mounted on and removable from the machine as a unit,  
 said attachment including a pair of spaced parallel mounting plates,  
 a drive motor mounted on the outer face of one mounting plate,  
 an agitator shaft journaled in said other plate and extending toward said one plate,  
 said drive motor having an output shaft connected to said agitator shaft to provide a drive shaft assembly, said drive shaft assembly extending through said one plate,  
 an agitator having a depending agitating portion and being driven back and forth by said agitator shaft, said agitator being supported by said agitator shaft, each mounting plate having a sliding inter-engaging connection with portions of said machine,  
 the portions of said plates providing for such sliding inter-engaging connections being so related to the other parts of said attachment that the force of gravity acting on said attachment tends to maintain

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said mounting plates in their inter-engaged position on said machine, whereby said unitary assembly may be applied or removed from said machine without the aid of tools,

the portions of said plates which provide for such sliding inter-engaging connection being so located that when said plates assume their final rest positions, said agitator shaft is located in parallel relation to said roller and said depending agitator portion is in correct position for agitating ink in said fountain, said plates also abuttingly engaging other portions of said machine to prevent rocking movement of said plates about said roller shaft assembly.

3. An attachment for a printing machine of the type having a fountain which contains a roller supported by a roller shaft assembly which projects beyond the fountain, said attachment comprising a unitary assembly which is readily mounted on and removable from the machine as a unit,  
 said attachment including a pair of spaced parallel mounting members,  
 a drive motor mounted on the outer face of one mounting member,  
 an agitator shaft journaled in said other member and extending toward said one member,  
 said drive motor having an output shaft connected to said agitator shaft to provide a drive shaft assembly, said drive shaft assembly extending through said one member,  
 an agitator having a depending agitating portion and being driven back and forth by said agitator shaft, said agitator being supported by said agitator shaft, said mounting members having vertical notches of a size to just fit on the roller shaft assembly to enable said members to be seated on said roller shaft assembly, said notches being oriented on said members so that said members are perpendicular to the axis of said roller shaft assembly,  
 said members also abuttingly engaging other portions of said machine to prevent rocking movement of said members about said roller shaft assembly,  
 said notches being so located that the mere seating of said members on said roller shaft assembly will automatically locate the agitator shaft in parallel relation to said roller shaft assembly and automatically locate said depending agitator portion in correct position for agitating ink in said fountain,  
 the parts of said attachment being so located relative to said notches that the effect of gravity acting on said parts creates a downward force tending to maintain said members seated on said roller shaft assembly, whereby said unitary assembly can be applied and removed without the aid of tools.

4. An attachment for a printing machine of the type having a fountain which contains a roller supported by a roller shaft assembly which projects beyond the fountain, said attachment comprising a unitary assembly which is readily mounted on and removable from the machine as a unit,  
 said attachment including a pair of spaced parallel mounting members,  
 a drive motor mounted on the outer face of one mounting member,  
 an agitator shaft journaled in said other member and extending toward said one member,  
 said drive motor having an output shaft connected to said agitator shaft to provide a drive shaft assembly, said drive shaft assembly extending through said one member,  
 an agitator having a depending agitating portion and being driven back and forth by said agitator shaft, said agitator being supported by said agitator shaft, each mounting member having a sliding inter-engaging connection with portions of said machine,

the portions of said members providing for such sliding inter-engaging connections being so related to the other parts of said attachment that the force of gravity acting on said attachment tends to maintain said mounting members in their inter-engaged position on said machine, whereby said unitary assembly may be applied or removed from said machine without the aid of tools,

the portions of said members which provide for such sliding inter-engaging connections being so located that when said members assume their final rest positions, said agitator shaft is located in parallel relation to said roller and said depending agitator portion is in correct position for agitating ink in said fountain,

said members also abuttingly engaging other portions of said machine to prevent rocking movement of said members about said roller shaft assembly.

5. An attachment for a printing machine of the type having a fountain which contains a roller supported by a roller shaft assembly which projects beyond the fountain, said attachment comprising a unitary assembly which is readily mounted on and removable from the machine as a unit,

said attachment including a pair of spaced parallel mounting plates,

a drive motor mounted on the outer face of one mounting plate,

an agitator shaft journaled in said other plate and extending toward said one plate,

said drive motor having an output shaft connected to said agitator shaft to provide a drive shaft assembly, said drive shaft assembly extending through said one plate,

an agitator having a depending agitating portion and being driven back and forth by said agitator shaft, said agitator being supported by said agitator shaft, said mounting plates having vertical notches of a size to just fit on the roller shaft assembly to enable said plates to be seated on said roller shaft assembly, said notches being oriented on said plates so that said plates are perpendicular to the axis of said roller shaft assembly,

each plate also having a second notch for engaging a cylindrical part of said machine and being so related to the first notch as to prevent rocking movement of said plates about said roller shaft assembly,

said notches being so located that the mere seating of said plates on said roller shaft assembly will automatically locate the agitator shaft in parallel relation to said roller shaft assembly and automatically locate said depending agitator portion in correct position for agitating ink in said fountain,

the parts of said attachment being so located relative to said notches that the effect of gravity acting on

said parts creates a downward force tending to maintain said plates seated on said roller shaft assembly, whereby said unitary assembly can be applied and removed without the aid of tools.

6. An attachment for a printing machine of the type having a fountain which contains a roller supported by a roller shaft assembly which projects beyond the fountain, said attachment comprising a unitary assembly which is readily mounted on and removable from the machine as a unit,

said attachment including a pair of spaced parallel mounting plates,

a drive motor mounted on the outer face of one mounting plate,

an agitator shaft journaled in said other plate and extending toward said one plate,

said drive motor having an output shaft connected to said agitator shaft to provide a drive shaft assembly, said drive shaft assembly extending through said one plate,

an agitator having a depending agitating portion and being driven back and forth by said agitator shaft, said agitator being supported by said agitator shaft, each mounting plate having an embracing sliding inter-engaging connection with said roller shaft assembly of said machine,

the portions of said plates providing for such sliding inter-engaging connections being so related to the other parts of said attachment that the force of gravity acting on said attachment tends to maintain said mounting plates in their interengaged position on said machine, whereby said unitary assembly may be applied or removed from said machine without the aid of tools,

the portions of said plates which provide for such sliding inter-engaging connection being so located that when said plates assume their final rest positions, said agitator shaft is located in parallel relation to said roller and said depending agitator portion is in correct position for agitating ink in said fountain,

said plates also abuttingly engaging other portions of said machine to prevent rocking movement of said plates about said roller shaft assembly.

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