

Oct. 19, 1937.

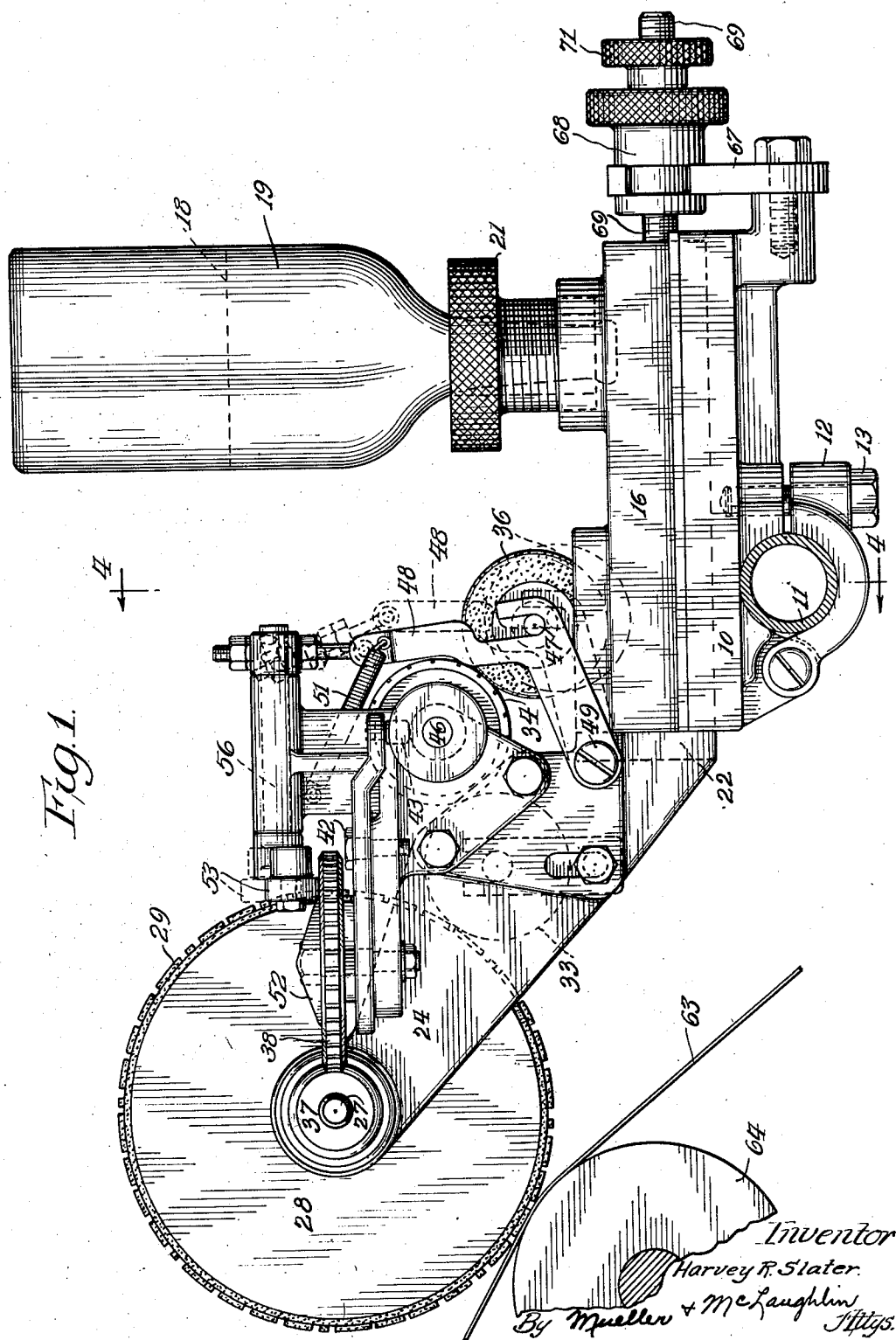
H. R. SLATER

2,096,385

PRINTING DEVICE

Filed Nov. 25, 1933

4 Sheets-Sheet 1



Oct. 19, 1937.

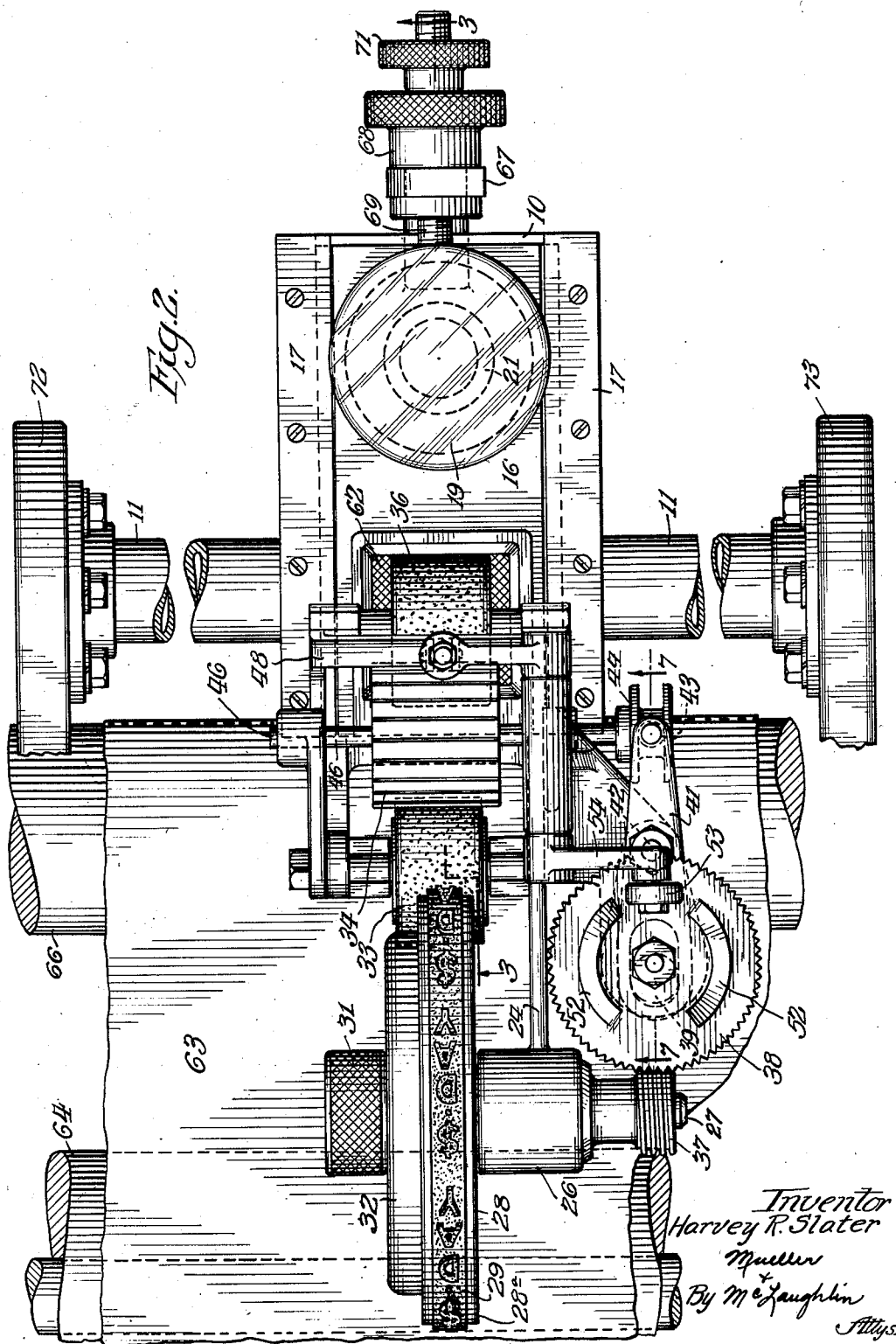
H. R. SLATER

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PRINTING DEVICE

Filed Nov. 25, 1933

4 Sheets-Sheet 2



Oct. 19, 1937.

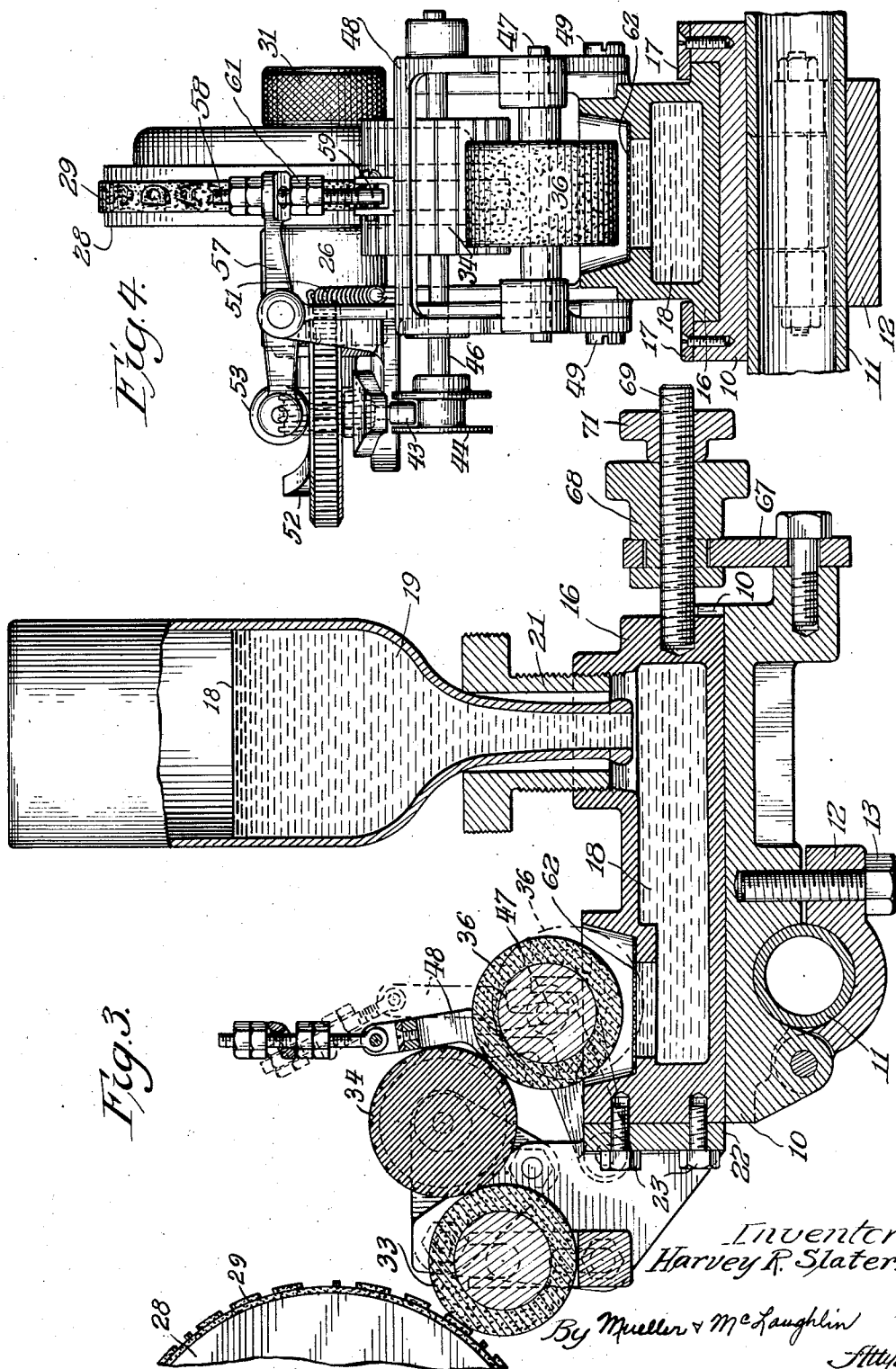
H. R. SLATER

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PRINTING DEVICE

Filed Nov. 25, 1933

4 Sheets-Sheet 3



Oct. 19, 1937.

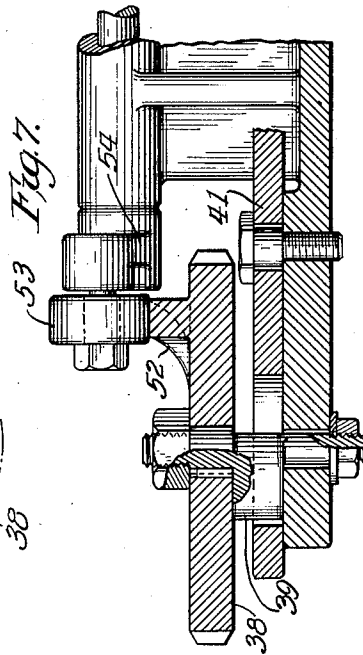
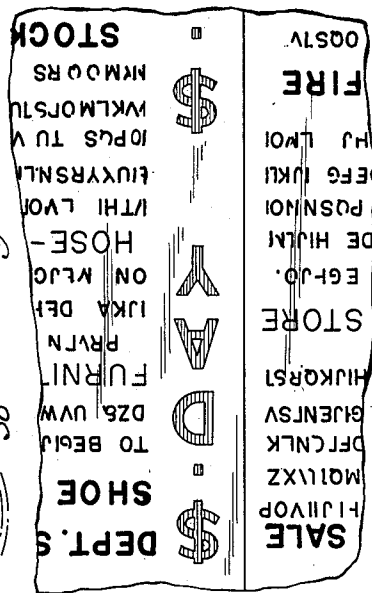
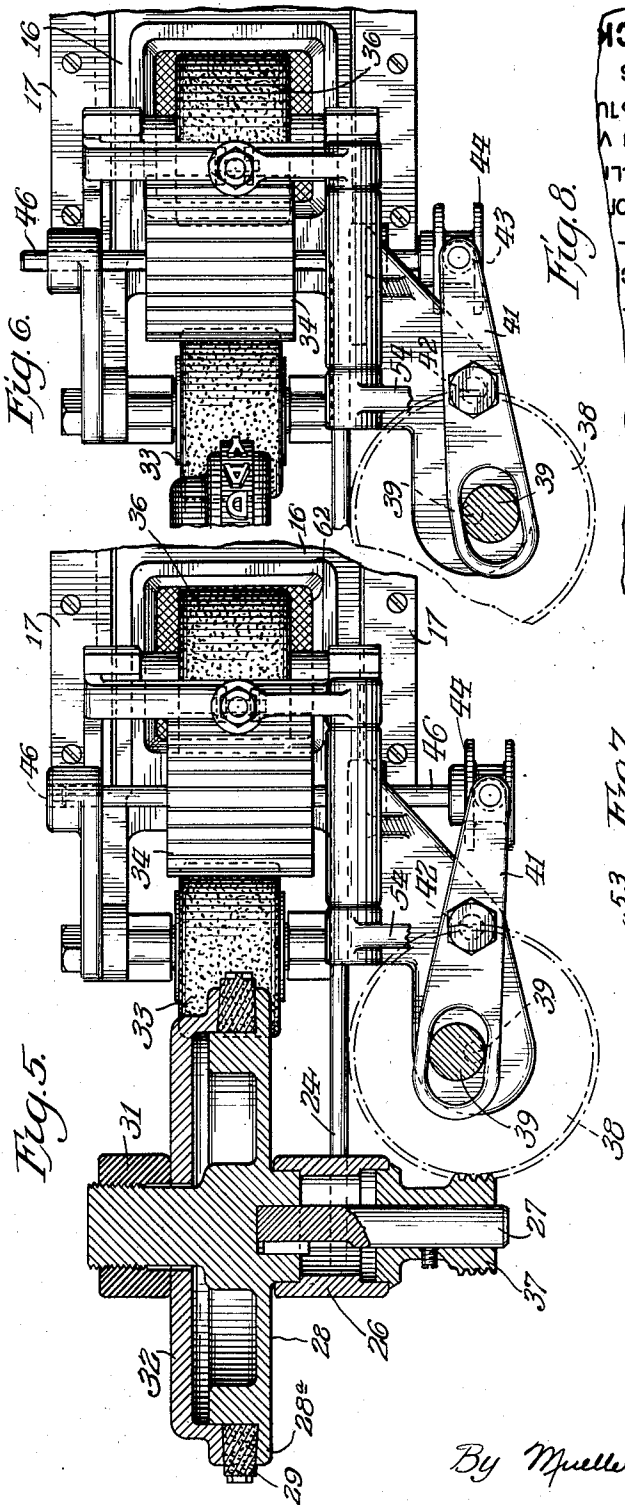
H. R. SLATER

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PRINTING DEVICE

Filed Nov. 25, 1933

4 Sheets-Sheet 4



Inventor
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Attys

UNITED STATES PATENT OFFICE

2,096,385

PRINTING DEVICE

Harvey R. Slater, Chicago, Ill.

Application November 25, 1933, Serial No. 699,645

14 Claims. (Cl. 101—221)

My invention relates in general to printing devices. It relates more in particular to a printing attachment adapted to supplement a conventional type of printing press to secure a color effect.

Recently there has been a great demand on the part of advertisers for color in newspapers. Some newspapers have installed full color equipment and others have modified existing presses to make it possible to print in color. I have found, however, that printing an entire advertisement in color is not necessary to make the advertisement stand out, but any type of color may be used which will have the effect of attracting attention of the reader. The color may be employed either in the margin, down the center of the page, or in any other place on the page, depending upon the set up, which will have the desired attracting property.

The principal object of my present invention is the provision of mechanism which can be used for this purpose.

Another object is the provision of a printing attachment which can be used as an adjunct with substantially any type of printing equipment in which the paper is moved linearly.

Another object is the provision of improved inking means in auxiliary printing apparatus.

Another object is the provision of an improved type of printing roller particularly adapted for use in auxiliary press equipment.

Another object is the provision of an auxiliary printing device which will be of substantially universal adjustment.

Other objects and features of the invention will be apparent from a consideration of the following detailed description taken with the accompanying drawings, wherein

Fig. 1 is an elevational view showing one embodiment of the device of my invention;

Fig. 2 is a plan view thereof;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2;

Fig. 4 is a transverse sectional view taken on the line 4—4 of Fig. 1;

Fig. 5 is a fragmentary sectional view partly shown in plan to illustrate features of construction;

Fig. 6 is a fragmentary plan view;

Fig. 7 is a slightly enlarged sectional view taken on the line 7—7 of Fig. 2; and

Fig. 8 shows a fragmentary section of a newspaper illustrating one manner of using the device of my invention.

According to the general features of my invention, I provide a roller having a composition to engage a moving article such as a moving strip of paper with suitable friction. Composition rubber with the printing indicia in relief is very satisfactory for the purpose. Ink supplying mechanism

is provided, and the ink supplying mechanism is operated by power derived from the movement of the printing roller by the paper. The roller and ink supplying mechanism are preferably provided as a single unit and the unit itself is designed to be mounted in any position on any type of press or equipment over which the paper is moved. Lateral adjustment is provided to control the position on the paper at which the roller will print, and a further adjustment is provided to control the impression against the paper. By means of this latter adjustment, the roller may be taken out of contact with the paper or the firmness of the impression adjusted as desired.

The main purpose of the mechanism is to print indicia running longitudinally of the paper. The position is conveniently along one or both margins, along the center of the page, or in any other suitable position depending upon the character of the advertisement. In Fig. 8, the term "\$-Day" would be printed by the mechanism of my invention, while the remaining portion of the page would, for example, be the ordinary newspaper print. As an example, the newspaper print would be in the conventional black while the print "\$-Day" might conveniently be in red. Any type of indicia can, of course, be used. In an automobile advertisement, for example, the indicia printed by my mechanism might be a series of small automobiles. Naturally, it is impossible to give even a representative number of illustrations, as the particular advertisement or advertisements being featured would determine the character of indicia to be used to attract the reader. While usually the mechanism of my invention would be adjusted to print a strip running vertically on the page, by proper positioning of the printing roller it may under some conditions be made to print laterally of the page. In bringing this about, the mechanism of my invention may, for example, be mounted on a folder, that is, the type of machine used in some plants for folding.

Referring now to the drawings, the embodiment of the invention there shown comprises a main frame 10 which is adjustable along a rod 11. The frame with the hinge portion 12 is adapted to engage around the rod 11 and at any selected position to be clamped thereon by means of a cap screw 13. The rod 11 is made out of round to prevent the frame from tipping. In the present form, I show a key 14 engaging in a keyway of the frame portion 11.

Above the main frame I support a vessel 16 which also comprises part of the frame. This vessel is disposed in a channel formed in the top of the main frame, and a pair of strips 17 (Fig. 4) screwed to the main frame engage over the top of shoulders provided on the vessel 16. This vessel is adapted to carry ink 18 which is

fed thereto from an inverted bottle 19. The ink is supported in the bottle 19 on the principle of the cup barometer and in a manner well understood the level of ink in the vessel 18 is maintained by this arrangement. The neck of the bottle 19 extends into a support 21 which is threaded into a boss formed in the vessel to provide for adjustment by means of which the height of the ink in the open portion of the vessel can be controlled.

A roller supporting frame 22 is secured to one end of the vessel 16 by cap screws 23. This frame has one arm 24 which carries an integral housing 26 (Fig. 5) within which housing a shaft 27 is rotatably journaled. Preferably I employ a ball bearing support for the shaft 27, the ball race being indicated generally in the drawing. The shaft 27 has keyed thereto a wheel 28, and the wheel 28 is shaped to receive a printing band 29 on its outer periphery. The hub of the wheel 28 extends axially and is adapted to receive a nut 31 by means of which a plate 32 is clamped against the printing band. The wheel 28 has an annular flange 28a which co-operates with the plate 32 to hold the printing band in fixed position. The entire assembly including the wheel 28, the printing band 29, and plate 32 comprises the printing roller.

Ink is delivered to the printing roller from a transfer roller 33. This transfer roller in turn receives ink from an oscillating ink drum 34 and the latter is supplied by a ductor roller 36 which picks the ink up from the vessel 16. These rollers are operated by the printing roller through mechanism which will now be described.

The shaft 27 has secured thereto a worm 37 meshing with a worm gear 38 carried on a vertical shaft 39 journaled in a portion of the frame. An eccentric boss 39 carried by the worm gear 38 engages in a slot in an arm 41 pivoted intermediate its ends at 42. This arm 41 has a pin 43 at its free end engaging in an annular slot in a roller 44. This roller is pinned to shaft 45 which carries the ink drum 34. It is, moreover, journaled and slidably supported in the frame so that the resulting oscillating motion imparted to it through the eccentric 39 and the arm 41 will be effective to distribute the ink uniformly and evenly over the transfer roller 33.

The ductor roll 36 is carried on a shaft 47 loosely carried on the ends of a generally U-shaped member 48 pivoted to the frame by cap screws 49. This member is normally held upwardly by a tension spring 51. It is adapted, however, to be moved downwardly about its pivot so as to project the ductor roller into an open portion of the vessel 16 to pick up the ink. For imparting the necessary movement to the U-shaped member 48 to obtain this function, I provide a face cam 52 on the worm gear 38. This engages under a roller 53 to raise it, and the roller is journaled on an arm 54 pinned to a shaft 56 journaled in a portion of the frame. The opposite end of the shaft 56 carries an arm 57. The arms 54 and 57 taken together function somewhat as a bell crank in that when arm 54 is raised through the cam and roller, the arm 57 is lowered. The outer end of arm 57 is apertured to receive a toggle link 58 pivoted to the U-shaped frame at 59. Nuts 61 above and below the arm 57 are employed to regulate the position of the U-shaped member with respect to the arm 57 and so control the movement of the U-shaped arm.

As shown particularly in Fig. 3, the transfer roller and ink drum are driven from the print-

ing roller through friction. In the position which the ductor has in full lines, which is its normal raised position, it is also driven by friction from the ink drum. However, as soon as it starts to its lowermost position, shown in dotted lines in Fig. 3; it is out of contact with the ink drum and its rotation is either slowed down or stopped entirely. Accordingly, there is no possibility of throwing the ink by centrifugal force when the ductor roller projects into the ink. This is further prevented by a screen 62 which sets over the top of the open space in the vessel 16. This screen has the function of arresting any rotary movement which the ductor roller may still have and also of limiting the insertion of the ductor roller into the ink. This makes it unnecessary to adjust the movement of the ductor roller and height of the ink within extremely close limits. Since the ductor roller shaft is only loosely carried in the vertical slots in the U-shaped member, the movement of the ductor roller can be arrested by the screen independent of how far the U-shaped member itself will move.

As previously described, the printing roller is adapted to engage a moving article in order to print onto such moving article the indicia carried in relief on the periphery of the printing roller. In the drawings, I show a strip of paper 63 running between a pair of idler rollers 64 and 66. The position of the printing roller is such that it can engage the paper and still have the roller 64 to bear against. It will be understood that this is a more or less schematic showing for the purpose of illustration. The printing roller may engage the paper at any position and any type of bearing surface may be provided at the point of contact. For example, a flat, stationary surface over which the paper moves can be used with satisfaction.

In order to adjust the impression of the printing roller, I provide an arbor 67 secured to the main frame 10 and having a forked portion adapted to engage in an annular groove or channel in an adjusting nut 68. This adjusting nut is threaded on a bolt 69 secured to the vessel portion 16. By turning the adjusting nut 68, the vessel portion with the attached frame members and apparatus mounted thereon can be moved toward or away from the paper. A lock nut 71 is also provided to maintain the impression constant.

I have previously noted that the device of my invention may be mounted to operate on the moving paper at substantially any point and on any type of printing device in which the paper is moved continuously. Accordingly, I show portions of the press frame 72 and 73 broken away to conserve space. The rod 11 which is also broken away to conserve space is shown attached by suitable means to the frame members. It will be understood that this is merely an illustrative mounting arrangement and that particular conditions will require some slight modifications in supporting structure readily made by a skilled mechanic.

What I claim as new and desire to protect by Letters Patent of the United States is:

1. In a printing device for printing a strip of indicia onto a moving article, a rod, means for attaching said rod to a frame of a printing appliance so as to run transversely of the direction of movement of the article, a printing device frame, means for moving said printing device frame longitudinally of said rod, a printing roller journaled in a portion of said frame, means for sup-

plying ink to said printing roller, and means for adjusting the printing roller with respect to said moving article.

2. A device as defined in claim 1 wherein the ink supplying means is operated by the roller from energy supplied to the printing roller by movement of said article.

3. In a printing device for printing a strip of indicia onto a moving article, a rod, means for attaching said rod to a frame of a printing appliance so as to run transversely of the direction of movement of the article, a printing device frame, means for adjustably supporting said frame on said rod, a second frame portion including an ink vessel slidably supported on said printing device frame, a printing roller journaled in an extension of said second frame, means for withdrawing ink from said vessel and supplying the same to said roller, and means for positioning said second frame to control the impression of the printing roller against the moving article.

4. The combination defined in claim 3, wherein said inking mechanism includes a transfer roller in contact with said printing roller, an ink drum in contact with said transfer roller, a ductor roller, and means utilizing movement of the printing roller for taking said ductor roller out of contact with the ink drum and projecting the same into the ink in said vessel.

5. The combination defined in claim 3, wherein said inking mechanism includes a transfer roller in contact with said printing roller, an ink drum in contact with said transfer roller, a ductor roller, means utilizing movement of the printing roller for taking said ductor roller out of contact with the ink drum and projecting the same into the ink in said vessel, and means for utilizing movement of the printing roller for causing a longitudinal oscillating movement of said ink drum.

6. In a printing device for printing a strip of indicia onto a moving sheet of paper, a roller having a periphery in the form of a printing surface with a relatively high component of friction whereby said roller is turned by movement of the paper, and inking mechanism operated by movement of said printing roller, said inking mechanism including an ink reservoir and a ductor roller, the ductor roller being periodically moved into and out of contact with ink in said ink reservoir by operation of said printing roller.

7. In a printing device for printing a strip of indicia onto a moving sheet of paper, a roller having a periphery in the form of a printing surface with a relatively high component of friction whereby said roller is turned by movement of the paper, inking mechanism operated by movement of said printing roller, and means for adjusting said printing roller laterally of said strip of paper, said inking mechanism including an ink reservoir and a ductor roller, the ductor roller being periodically moved into and out of contact with ink in said ink reservoir by operation of said printing roller.

8. In a printing device for printing a strip of indicia onto a moving sheet of paper when said paper is being handled by print shop apparatus, said device comprising a support extending transversely of said print shop apparatus, a frame, means for adjusting said frame longitudinally of the support so as to position said frame transversely with respect to the moving paper, a print-

ing roller rotatably supported on said frame and adapted to engage the paper, the printing roller being rotated by frictional engagement with said moving sheet of paper, a printing fountain carried on said frame, and inking mechanism driven by the movement of said roller for conveying ink from said fountain to the periphery of said roller.

9. A printing device including, in combination, a printing roller, an inking roller and a ductor roller, an ink transfer roller between said ductor and inking rollers, an ink reservoir, the ductor roller being resiliently mounted and movable periodically into and out of contact with the ink disposed within said ink reservoir, and means for feeding a web of paper in contact with the surface of said printing roller, the movement of said paper effecting the periodic movement of the ductor roller into and out of contact with the ink in said ink reservoir.

10. In a printing device, a rod, a frame mounted on said rod and movable longitudinally of said rod, an ink reservoir movably mounted in said frame, a ductor roller, an associated ink transfer roller, inking roller and printing roller, all of said rollers being so mounted as to be movable as a unit with said ink reservoir, and means for moving said ink reservoir in said frame member in a direction at right angles to the axis of said printing roller to adjust the impression of said printing roller.

11. In a printing device for printing a strip of indicia onto a moving article, a rod, a frame mounted on said rod and slidable longitudinally of said rod, a shaft journaled in said frame, a printing roller fixedly mounted on said shaft and being caused to be rotated by contact with said moving article, and means for adjusting the impression of the roller against the article.

12. In a printing device for printing a strip of indicia onto a moving article, a rod, a frame mounted on said rod and slidable longitudinally of said rod, a shaft journaled in said frame, a printing roller fixedly mounted on said shaft, said roller including a rubber composition band having indicia in relief thereon and a rotatably mounted support for said band, said support being caused to rotate due to contact between the moving article and said rubber composition roller.

13. In a printing device for printing a strip of indicia on to a moving article, a rod, a frame mounted on said rod and slidable longitudinally of said rod, a shaft journaled in said frame, a printing roller fixedly mounted on said shaft, said roller including a rubber composition band having indicia in relief thereon and a rotatably mounted support for said band, and means for supplying ink to said indicia, said support being caused to rotate due to contact between the moving article and said rubber composition roller.

14. In a printing device for printing a strip of indicia onto a moving article, a rod, a frame mounted on said rod and slidable longitudinally of said rod, a shaft journaled in said frame, a band of rubber composition having indicia on its periphery, a printing roller wheel, and means for fastening said band to the periphery of said wheel, said printing roller wheel being mounted on said shaft and being caused to rotate due to contact between the moving article and said rubber composition roller.

HARVEY R. SLATER.