United States Patent

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[54] **FABRIC PRINTING MACHINE EMPLOYING A WASHER-RECEPTACLE**
1 Claim, 4 Drawing Figs.

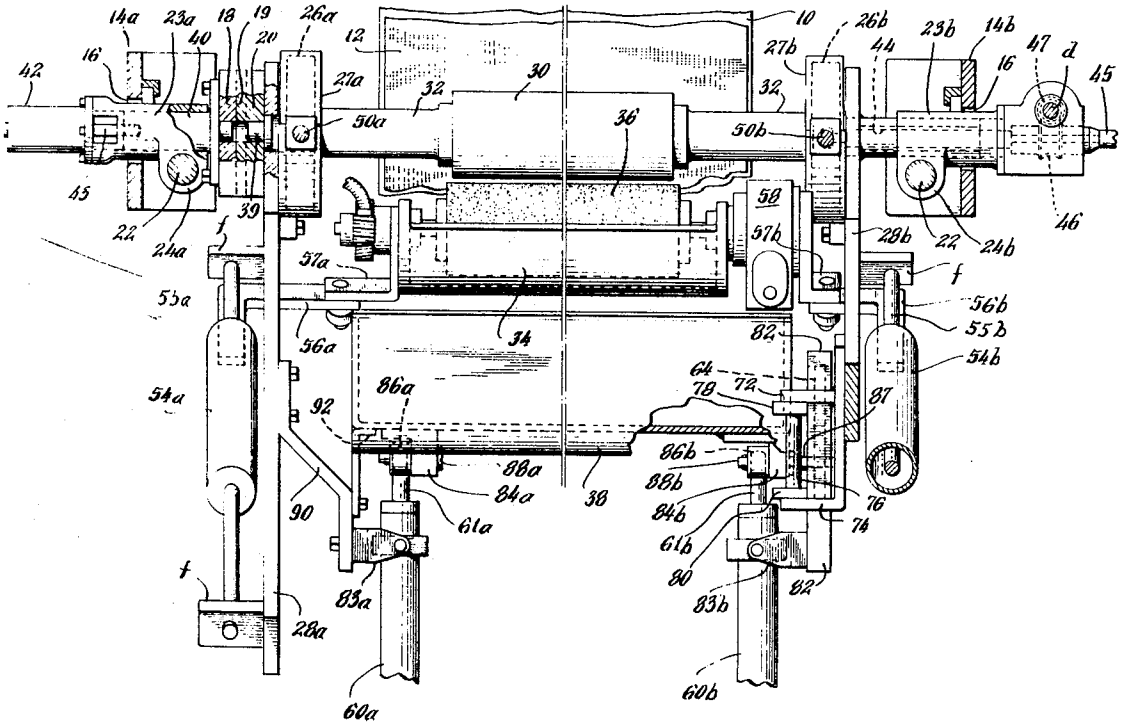
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[50] **Field of Search** 101/178, 425, 207, 208, 210, 350, 364, 350; 18/213; 118/70, 203

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ABSTRACT: In a machine for printing lengths of fabric employing a washer-receptacle in association with a color box the washer-receptacle is mounted in such a way that it is movable toward and away from a backing cylinder as part of a print roll assembly which includes the color box, and is capable of swinging movement around one end toward and away from the color box and the body of the machine, and is movable up and down, toward and away from the color box.



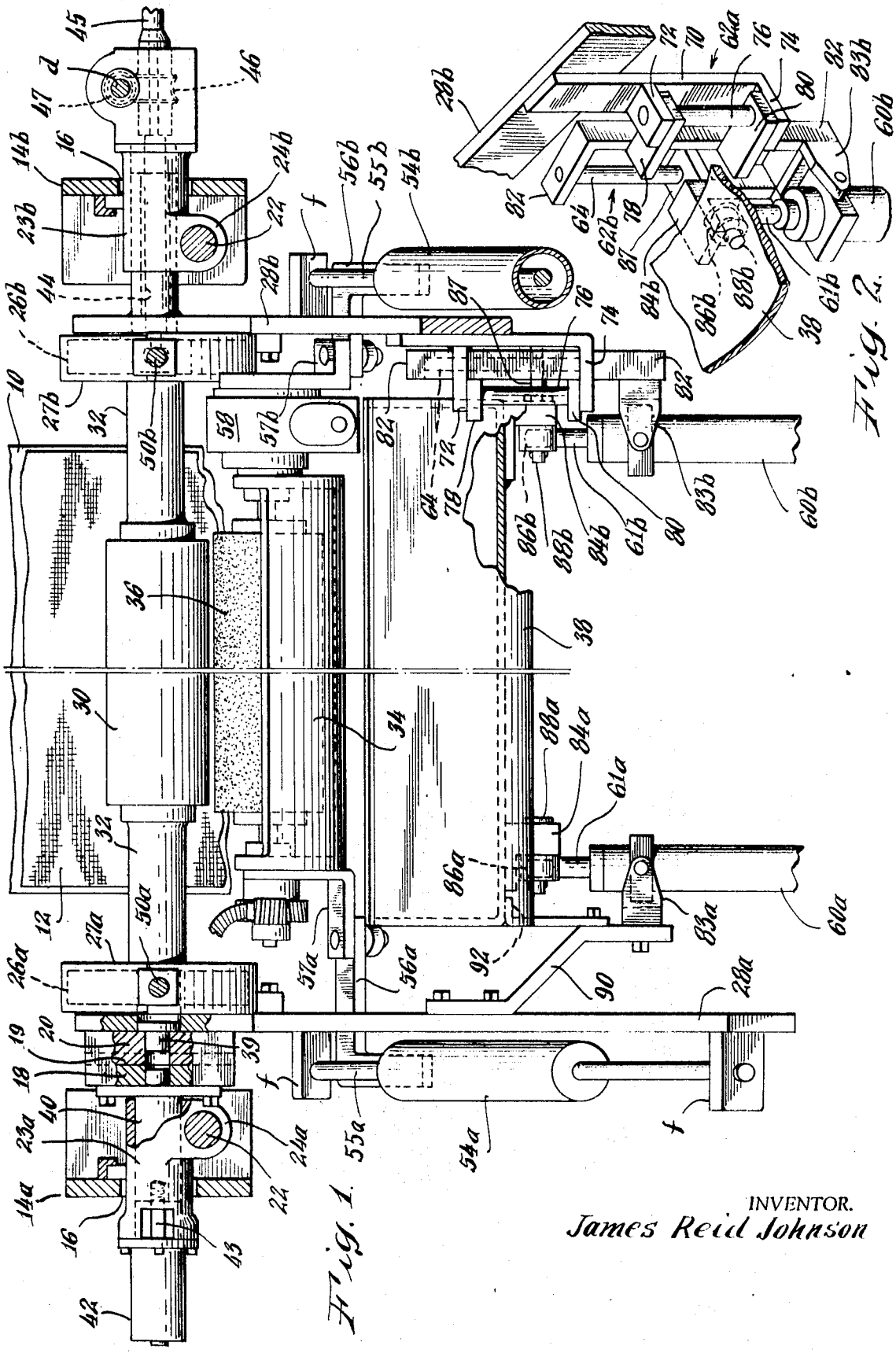
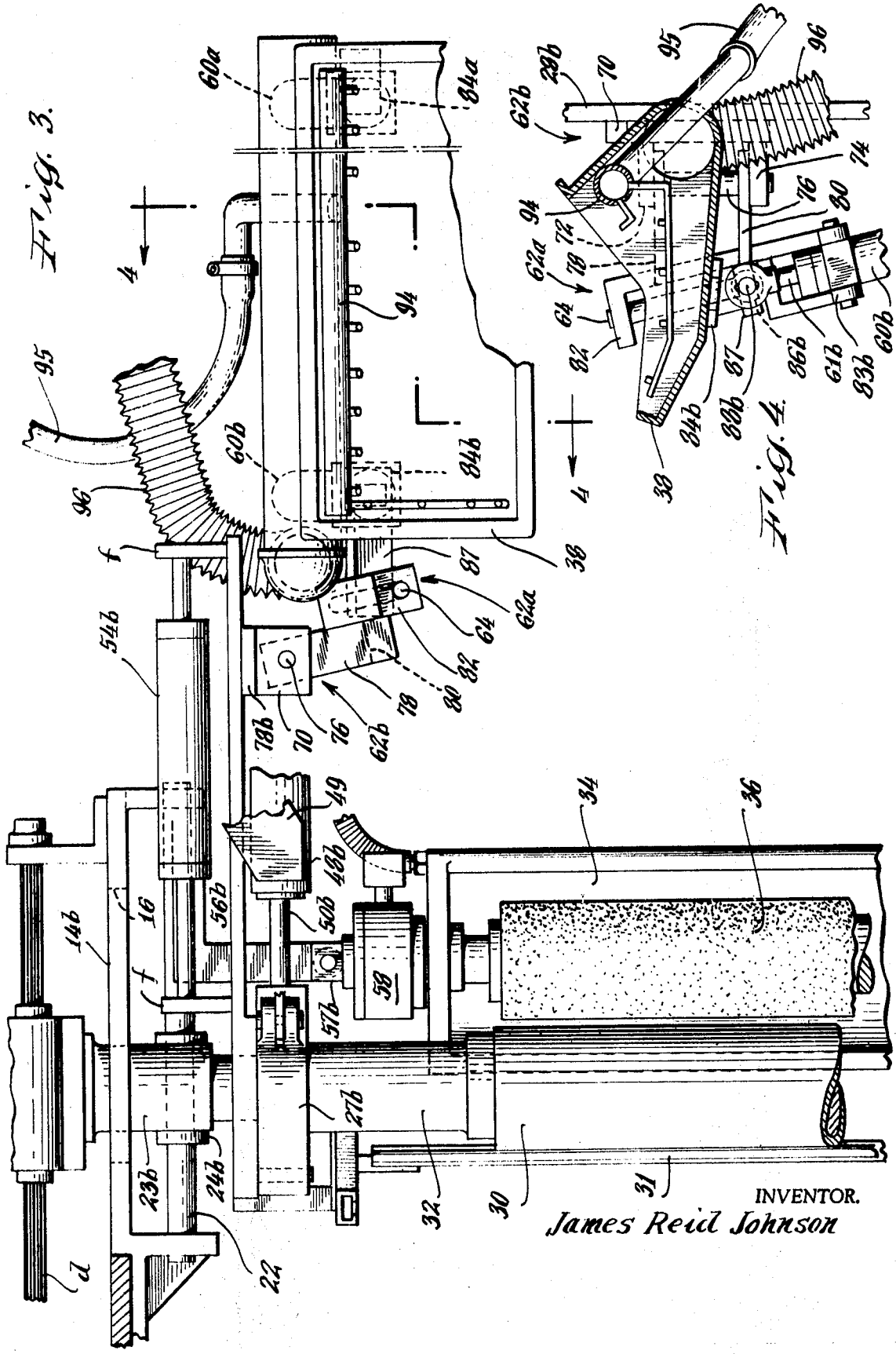


Fig. 1.

Fig. 2.

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Fig. 3.
Fig. 4.
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FABRIC PRINTING MACHINE EMPLOYING A WASHER-RECEPTACLE

This invention relates to a machine for printing a length of fabric. Specifically it relates to mounting a washer-receptacle of the kind shown in copending application Ser. No. 829,055, filed May 29, 1969 for vertical and for swinging movements relative to a color box with which it is associated.

An object of the invention is to provide mounting means such that a washer-receptacle mounted in a fabric printing machine may be swung out at a right angle to give access to the body of the machine and, when in operative position, may be moved up and down toward and away from a color box with which it coacts for washing elements of the machine and draining wash water.

FIG. 1 is a front elevation of printing apparatus of the kind described including a washer-receptacle. FIG. 2 is an isometric view of hinge means interconnected between the washer-receptacle and support means,

FIG. 3 is a detail view showing the lower right hand portion of the structure shown in FIG. 1 with the washer-receptacle swung out, and

FIG. 4 is a cross section taken on the lines 4–4 of FIG. 3. In the embodiment of the invention described herein a backing cylinder **10** is mounted for rotation between support members not shown, and extending partly around the backing cylinder is a length of fabric **12** to be printed as it passes between a print roll and the backing cylinder. A pair of support arms indicated generally as **14***a* and **14***b* are disposed beyond the ends of the backing cylinder and project outwardly, radially, or substantially radially, with respect to the backing cylinder. The support arms **14***a* and **14***b* are disposed in parallel, in the same plane, and it will be understood that in machines of the kind described for printing lengths of fabric there will ordinarily be a number of pairs of arms projecting radially with respect to the backing cylinder at different rotary angles, the number of pairs of arms corresponding to the number of print rolls employed.

As is more fully set forth in copending application Ser. No. 829,056, filed May 29, 1969 each of the support arms **14***a* and **14***b* defines a longitudinally extending slot **16** and portions not shown, serving to support a bar **22**. There is thus a support bar **22** extending in parallel relation with each of the support arms **14***a* and**14***b* and as shown the support bars **22** are spaced inwardly from the support arms **14***a* and **14***b*. Bars **22** provide means on which members **23***a* and **23***b* carrying an entire print roll assembly, are mounted for reciprocal movement toward and away from the backing cylinder. The members **23***a* and **23***b* define sleeves having the depending portions **24***a* and **24** *b* which are apertured to receive and slide on bars **22** respectively. Spaced inwardly from the sleeve portions of members **23***a* and **23***b* are the support plates **28***a* and **28***b* and fixed to the inner faces of members **28***a* and **28***b* are the lower halves of the housings **27***a* and **27***b* which receive the bearings **26***a* and **26***b*. The upper halves of the bearing housings are hinged to the lower halves and may be easily opened to permit the bearings to be placed in the cup shaped lower halves or lifted from them.

The members **23***a* and **23***b* support, and carry with them during movements toward and away from the backing cylinder on bars **22**, an assembly comprising a print roll **30** and the mandrel **32** on which it is mounted, a color box **34** and a color transfer medium, shown herein as a brush **36** mounted for rotation on journals which extend through the ends of the color box, and a washer-receptacle **38** which is at all times disposed below the color box.

Print roll **30** is shown mounted on a mandrel **32** the ends of which are supported by bearings **26***a* and **26***b*. The print roll could of course be provided with journals extending outwardly from its ends but use of a mandrel is preferred since hollow center print rolls of different outside diameters may be successively mounted on a keyed mandrel. Support plates **28***a* and **28***b* extend outwardly away from the backing cylinder and are inclined downwardly with respect to the support arms **14***a* and **14***b* and the bars **22**. The washer-receptacle **38** is supported from the support plate **28***b* and by the piston rods **61***a* and **61***b* of the power cylinders **60***a* and **60***b*. In FIG. **3** a doctor blade **31** is shown in association with the print roll **30**.

On the outer face of support plate **28***a* one-half **20** of a Gilman slide is supported. The other half **18** of the Gilman slide is bolted to the inner end of the the sleeve portion of member **23***a*. The two halves of the Gilman slide are interconnected by the dovetail **19**. A piston rod **43** from power cylinder **42** is screwed into the end of shaft **40** which extends through the sleeve portion of members **23***a* and into Gilman slide half **18**. When the piston rod **43** is actuated by power cylinder **42** the Gilman slide, the support plate **28***a*, the bearing housings **27***a* and **27***b* the bearing **26***a* the bearing **26***b* a mandrel **32** and print roll **30** supported between them, the support plate **28***b*, the driven shaft **44**, and its retracting power means **45** can all be adjusted in position axially of the print roll. The inner end of the shaft **44** and he opposed mandrel end are engageable and disengageable preferably by the spring and quick release mechanism shown and described in copending application Ser. No, 829,056, filed May 29, 1969.

Movements of the print roll and its assembly toward and away from backing cylinder **10** are provided and controlled respectively by fluid cylinders **48***b* which may be mounted, by means not shown, to the support arm **14***b*. The piston rods **50***a* and **50***b* of said cylinders are connected to the bearing housing **26***a* and **26***b* respectively. It will be understood that when the said power cylinders are actuated the whole print roll assembly including color box and brush and washer-receptacle will be moved together along the support bars **22**.

The color box and brush subassembly is not only movable with the print roll, toward and away from the backing cylinder, but is movable a short distance toward and away from the print roll, being suspended between power cylinders **54***a* and **54***b* which in turn are supported on the plates **28***a* and **28***b*. Power cylinders **54***a* and **54***b* are connected to the color box subassembly by straps **56***a* and **56***b* pivotally connected to brackets **57***a* and **57***b*. Strap **56***a* is connected to a bracket **57***a* at one end of the color box, and strap **56***b* is connected to a bracket **57***b* at the outer end of the clutch **58** by which drive means (not shown) and the color transfer brush may be connected and disconnected. The cylinders **54***a* and **54***b* have the piston rods **55***a* and **55***b* the outer ends of which are fixed to brackets *f* projecting laterally from each of the arms **28***a* and **28***b* so that it is the cylinders **54***a* and **54***b* which move while their piston rods **55***a* and **55***b* remain stationary.

The washer-receptacle **38** is movable up and down from an initial position spaced below the color box but in position to receive and drain liquid spilled from the color box, to a position in which it cooperates with the fully overturned color box to provide a closure in which a second step of washing the color box and brush is performed as is fully described in copending application Ser. No. 829,056, filed May 29, 1969. The washer-receptacle is raised and lowered on guide rod **64** by power cylinders **60***a* and **60***b*. The right-hand end of the washer-receptacle as viewed by the reader is supported by hinge means **62***a*, **62***b* which allows it to be swung outwardly at a right angle to its operative position. The left-hand end of the washer-receptacle is unsupported except by the power cylinder **60***a* and its piston rod **61***a* but a rest **92** is provided on which the left end of the washer-receptacle sits when in operative position. The rest **92** is shown extending from a bracket **90** depending from support plate **28***a*. *Bracket 90 also supports a yoke 83a* which engates the power cylinder **60***a*.

A pair of brackets **84***a* and **84***b* depend from the washer-receptacle and each define an eye and the heads **86***a* and **86***b* at the outer ends of piston rods **61***a* and **61***b* each define an eye disposed for horizontal alignment with the eye of the adjacent bracket. Self-locking pins **88***a* and **88***b* are inserted through each head and bracket combination to attach the pistons to the washer-receptacle. When the interlocking pin **88***a* is withdrawn from head **86***a* and bracket **84***a* the washer-receptacle **38** can be swung outwardly from a position parallel to the print roll to a position substantially at right angles to the print roll, by hinge means indicated generally as **62***a* and **62***b*.

One-half 62*a* of the hinge means is attached to the support member 28*b* and other half 62*b* is attached between the first half and washer-receptacle 38 and it will be noted that half 62*b* comprises a vertically extending rod 64 and that there is a member 87 slideable along rod 64 and interconnecting rod 64 and the adjacent end of the washer-receptacle through bracket 84*b*. The rod 64 thus acts as a guide rod the washer-receptacle as it is moved up and down by the power means 60*a* and 60*b*.

As shown in FIG. 2 the half 62*a* of the hinge comprises an arm 70, depending from support arm 28*b* and the two inwardly extending bracket members 72 and 74 between which pin 76 is mounted. The hinge portion 62*b* comprises the two horizontal bracket arms 78 and 80 which at one end are mounted for rotation on pin 76. Fixed to the outer side edges of bracket arms 78 and 80 by its intermediate portion is a U-shaped member 82 the end portions of which extend horizontally and support between them the rod 64 on which the washer-receptacle is mounted for movement up and down toward and away from the color box.

As is clearly shown in FIG. 3 the washer-receptacle 38 has within it a spray header 94 to which washing fluid may be supplied through conduit 95, and is discharged from the washer-receptacle through drain 96.

There is thus provided a structure in which the above mentioned object is accomplished in a dependable manner.

What I claim is:

1. In a cloth printing machine the combination of a print roll, a color box, means for mounting the color box in operative relation to the print roll for transferring color from the color box to the print roll, and a washer-receptacle disposed below and spaced from the said color box, support means for mounting the washer-receptacle, means for moving the said color box in one plane and means for raising and lowering the washer-receptacle in another plane toward and away from the color box while maintaining the washer-receptacle in upright position, hinge means one portion of which is connected to the washer-receptacle support means and the other portion of which is pivotally mounted on said one portion and is connected to the washer-receptacle and comprises a rod on which the washer-receptacle is slidable axially of the rod, the hinge portion carrying the rod being swingable to swing the washer-receptacle from a position parallel to the color box to a position in which it is angularly related to the color box.