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Pickard et al.

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[45] **May 1, 1973**

[54] **MAGNETIC SHEET FOR IMPRESSION CYLINDER**

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[21] Appl. No.: **121,332**

[52] **U.S. Cl.** .....**101/415.1**, 101/382 MV, 161/400

[51] **Int. Cl.** **B41f 29/04**

[58] **Field of Search** .....101/415.1, 382 MV, 101/378, 401.3; 161/400, 401

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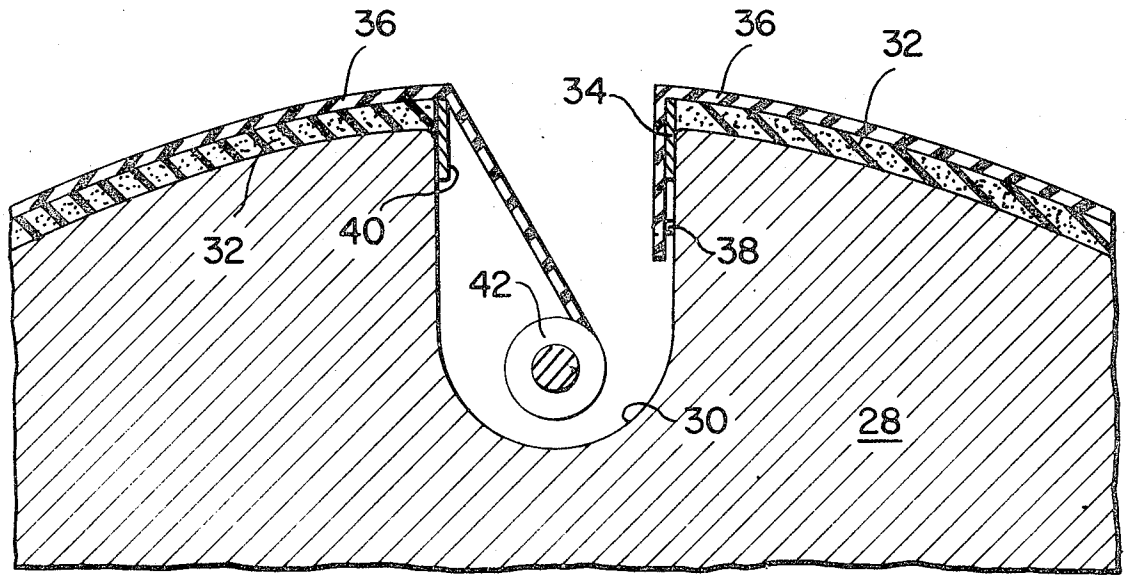
[57] **ABSTRACT**

The invention disclosed is directed to a laminated magnetic sheet which avoids known bolster problems and which provides an equalized effective printing pressure between a printing surface and a web of paper being printed. The magnetic press sheet is formed of a flexible magnetic material, is disposed over the substrate without bolster, and includes L-shaped edge members for retaining in position against the surface of an impression cylinder by contact with a depression in the substrate.

6 Claims, 4 Drawing Figures



Patented May 1, 1973 3,730,092

2 Sheets-Sheet 1

PRIOR ART

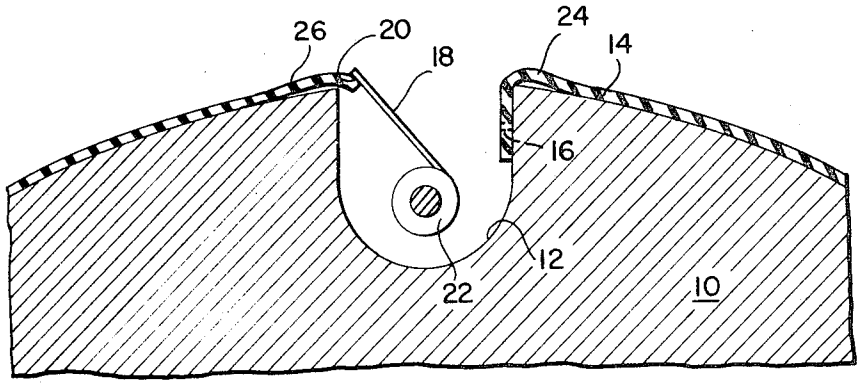


FIG. 1

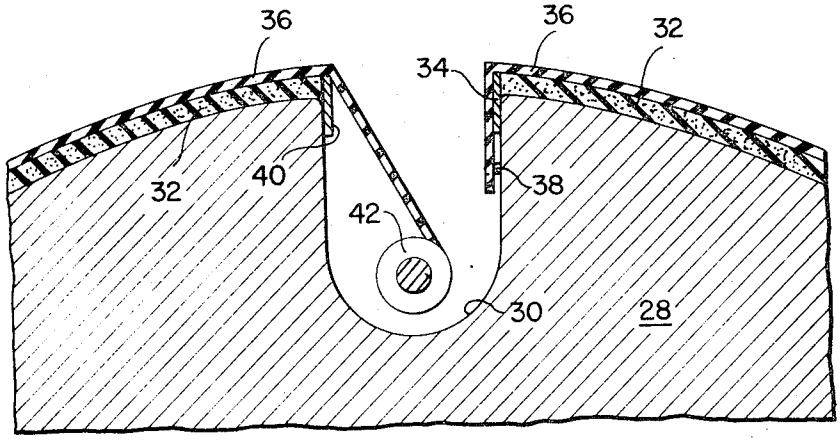


FIG. 2

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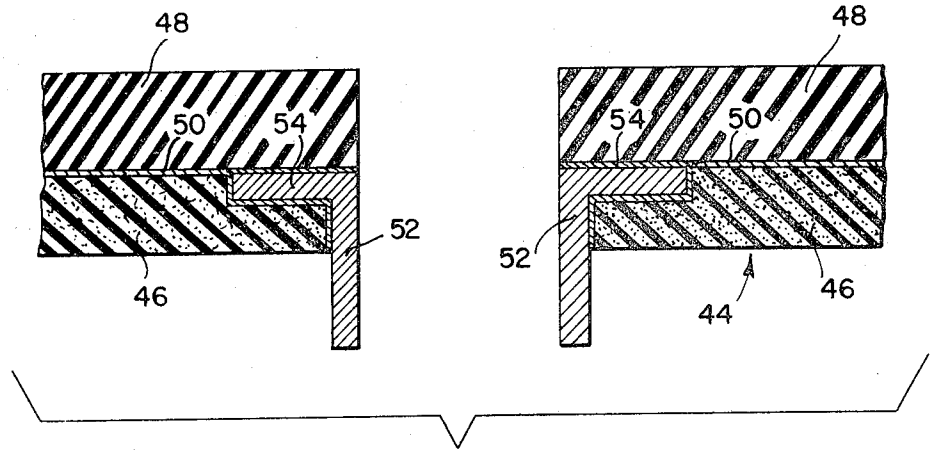

FIG.3

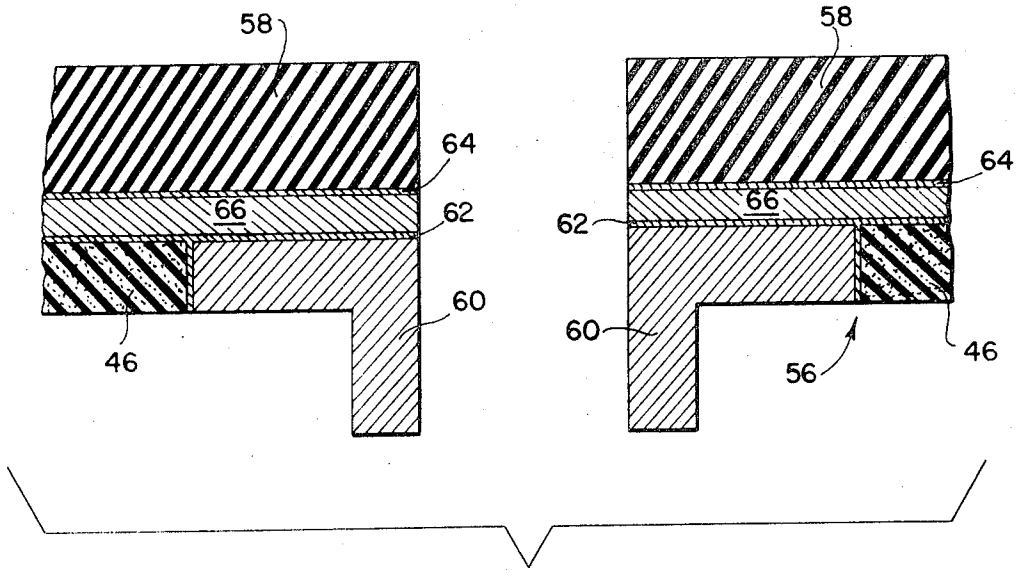

FIG.4

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MAGNETIC SHEET FOR IMPRESSION CYLINDER

This invention relates to a bolster free magnetic sheet for positioning over the surface of an impression cylinder. More particularly, the present invention provides a magnetic sheet retained in position by L-shaped edge retaining members and laminated by a flexible thin top sheet.

Numerous means have been proposed for maintaining an equalized effective printing pressure on an impression cylinder by the printing surface and the web of paper being printed. Typically, a blanket formed of a hard, resilient composition forms the packing material on the impression cylinder. Because of the nature of these materials and the means for retaining them onto the surface of an impression cylinder, a bolster problem appears near each terminal edge of the blanket. During the printing operation, the bolster or ridge of the blanket results in an impression against the plate resulting in a smudge line from the non-printing surface. It has now been found that by practicing the present invention, there is provided a laminated magnetic sheet which retains the desirable characteristics of a blanket on an impression cylinder and which avoids bolster problems.

Generally stated, the present invention provides a magnetic sheet disposed over the surface of an impression cylinder having a depression thereon for receiving L-shaped edge retaining members of the magnetic sheet. The magnetic sheet is laminated by a top flexible thin sheet which limits possible creeping or walking of the magnetic sheet during high speed printing. Positioning of the magnetic sheet using the L-shaped edge members, and further use of the flexible thin top sheet avoids bolster problems in printing and provides an equalized effect printing pressure between a printing surface and a web of paper being printed.

Practice of the present invention will become more apparent from the following detailed description taken in connection with the accompanying drawings wherein like numerals refer to similar elements throughout the several views.

FIG. 1 illustrates in partial half section and diagramatically a prior art means for securing a blanket in position on an impression roll with resulting bolster near the secured edges;

FIG. 2 is a similar view to that of FIG. 1 except illustrating the present means for avoiding bolster problems by use of a laminated magnetic sheet;

FIG. 3 illustrates a composite magnetic blanket viewed as the terminal edges thereof taken in half section; and

FIG. 4 illustrates the terminal edges taken in half section of an embodiment composite magnetic blanket of the present invention.

Referring to the drawings wherein similar elements are referred to by similar numerals throughout the several views, FIG. 1 illustrates impression cylinder **10** having a U-shaped recess **12** removed from along a length thereof over which conventional blanket **14** is positioned. Blanket **14** is generally held in position by pin **16** projecting from one surface of the U-shaped recess **12** and into a hole provided therefor in the blanket. The opposite end of blanket **14** is generally secured by a suitable means **20** to a retaining belt **18** which provides tension to blanket **14** upon being wound upon roll **22**. The tension of blanket **14** is generally insufficient to cause the blanket to negotiate the upper surface of the U-shaped recess **16** thus resulting in a bolster **24** near one end of the blanket and a related although generally smaller bolster **26** near the opposite edge of the blanket.

The bolster problem of FIG. 1 is avoided by practice of the present invention which is illustrated in greater detail in FIG. 2. Impression cylinder **28** includes a U-shaped recess **30** for retaining magnetic blanket **32** over impression cylinder **28** using plate **34** which results in a L-shaped terminal configuration projecting from the edge of magnetic blanket **32**. Over magnetic blanket **32** there appears a flexible thin top sheet **36** which may be retained in position by pin **38** designed for projecting through a hole provided therefor in sheet **36**. This configuration avoids bolster problems near the leading edge of the blanket and by using a plate **40** similar to that of plate **34** except positioned near the trailing edge of the blanket, bolster problems are similarly avoided. Flexible thin top sheet **36** may be retained in position by securing by winding to a conventional tension roll **42**. The composition of magnetic blanket **32** is desirably one of elastomeric material which includes permanent magnets disposed therein. Compositions of this type are well known to the art and are generally referred to as flexible magnets. A more detailed description for preparing flexible magnets is disclosed by Blume in U. S. Pat. No. 2,999,275. Other related flexible magnets formed of elastomeric compositions may be employed herein, provided they maintain characteristics necessary for an impression cylinder packing material.

The flexible thin top sheet **36** which is laminated over the magnetic blanket **32** may be formed of material typically employed for this purpose including, for example, cloth fabrics, plastic containing materials, manila sheets, as well as combinations thereof, all well known to the art. Lamination of the top sheet over the magnetic blanket permits more effective retaining of the terminal blanket ends onto the impression cylinder and further limits creeping or walking of the magnetic plate under high speed printing conditions.

The plate **34** employed for retaining the magnetic blanket onto the impression cylinder may be formed of most any rigid material including metal, hard plastic and the like. The length of the plate which is retained by the U-shaped recess of the impression cylinder may vary provided that a sufficient length is provided for effective contact. The plate may be secured by direct adhesion or other mechanical means to the magnetic blanket as desired. Alternatively, the plate may be L-configurated and project into a composite blanket or otherwise configurated blanket exemplified by FIGS. **3–4**.

In FIG. 3 a composite blanket **44** is illustrated having a magnetic sheet portion **46** over which is disposed blanket **48** secured by any desirable means. Impression blanket **48** may be formed of conventional materials which otherwise present bolster problems in the prior art. These materials include, for example, rubber, cork, or related specially formulated materials designed to permit advantages required for blankets used on impression cylinders. These advantages are described in greater detail by Hechtman et al. in U.S. Pat. No.

3,053,718. Blanket 48 may be adhesively secured by adhesive 50 to magnetic blanket 46. This adhesive may also be employed to secure retaining plate 52 which includes leg 54 projecting into the composite for greater adhesion to the blanket composite 44.

FIG. 4 illustrates an embodiment composite blanket 56 which includes magnetic blanket 46 over which is disposed outer blanket 58. Outer blanket 58 may be similar in composition to blanket 48 of FIG. 3. L-shaped retaining member 60 is formed as an extension of the magnetic blanket 46 and is adhesively secured by a suitable adhesive 62. Adhesive 64 in combination with adhesive 62 is illustrated retaining an intermediate flexible magnetizable metallic sheet 66 in position to form the composite blanket 56. It appears that presence of such an intermediate sheet 66 influences greater magnetic securing of magnetic blanket 46 onto the impression cylinder.

It will be recognized that the present magnetic sheet provides its great utility in situations where the impression cylinder is formed with a surfacing to which a magnetic material may adhere.

The various elements of the present invention unless otherwise indicated may be secured to adjoining elements by most any suitable means such as bolts, rivets, adhesives or the like. In addition, auxiliary support or enforcement elements may be included where required.

Although a preferred embodiment of the invention has been illustrated herein, it is to be understood that various changes and modifications may be made in the construction and arrangement of elements without departing from the spirit and scope of the invention as defined.

What is claimed is:

1. In combination, an impression printing roll having a cylindrical body and a longitudinal grooved cut-out axially disposed along the outer cylindrical surface, said cut-out having a tension roll disposed therein and a retaining means along one wall thereof, a magnetic blanket comprising an elastomeric material magnetic particle containing sheet having a retaining plate secured to a leading and a trailing edge thereof, said retaining plates retained in position within said grooved cut-out with said magnetic blanket disposed in complete contact about the outer cylindrical surface, and a flexible thin sheet having means secured at one end for engagement with said retaining means along one wall of the cut-out with opposite end having a surface for engagement with the tension roll, said flexible thin sheet laminated over the magnetic blanket.

2. The magnetic blanket-impression roll combination of claim 1, wherein said retaining plates are L-shaped rigid members.

3. The magnetic blanket-impression roll combination of claim 1 wherein a non-metallic resilient layer and substantially co-extensive is disposed over the said magnetic blanket.

4. The magnetic blanket-impression roll combination of claim 3 wherein the L-shaped retaining members include one leg thereof intermediate the magnetic and non-magnetic members.

5. The magnetic blanket-impression roll combination of claim 4 wherein an intermediate metallic sheet is disposed between the magnetic and non-magnetic members.

6. The magnetic blanket-impression roll combination of claim 5 wherein L-shaped retaining members are disposed as the leading and terminal edges of the magnetic member.

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