

March 20, 1962

L. F. ABIUSO

3,025,792

METHOD FOR AVOIDING PAPER STRETCHING IN OFFSET PRINTING

Filed May 18, 1961

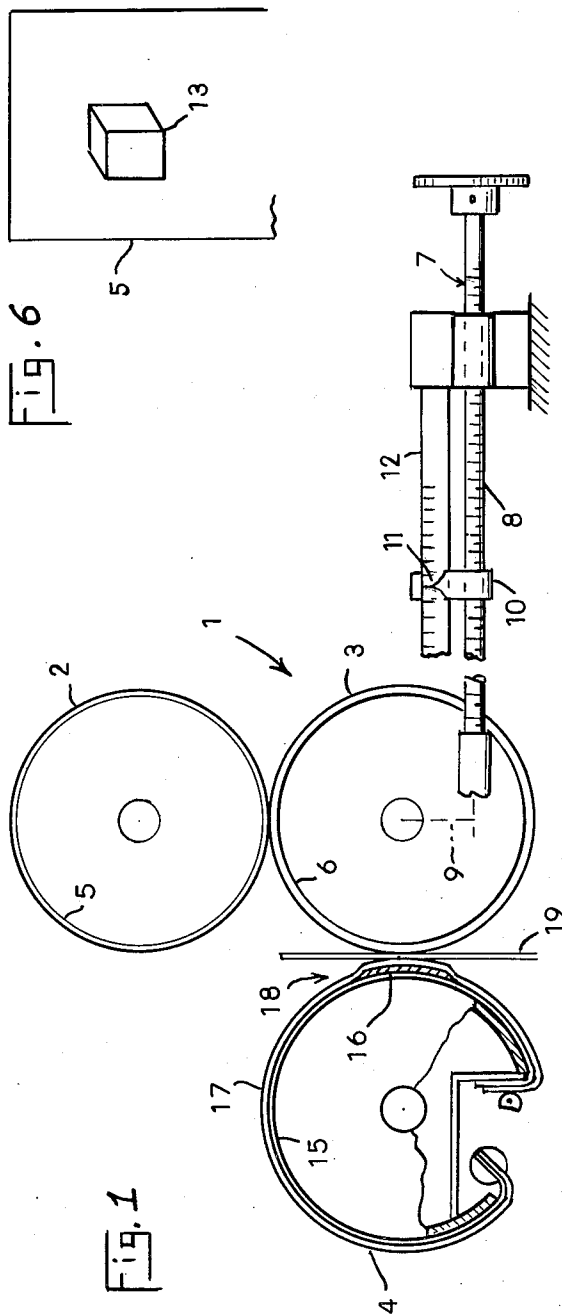


FIG. 1

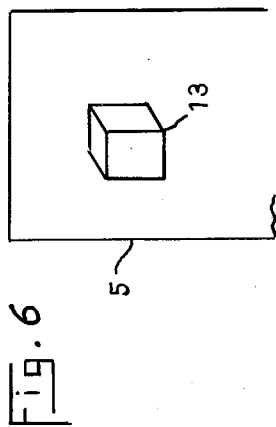


FIG. 6

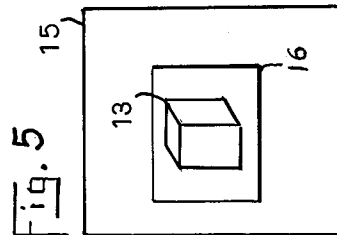


Fig. 5

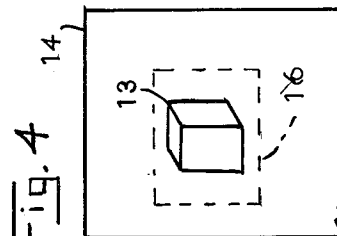


Fig. 4

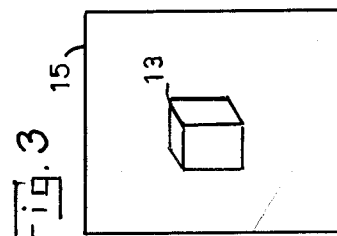


Fig. 3

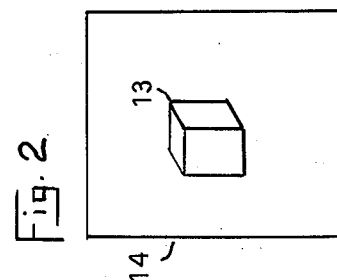


Fig. 2

INVENTOR.
LEONARD F ABIUSO
BY
Nicholas J. Garofalo
Attorney

1

3,025,792 METHOD FOR AVOIDING PAPER STRETCHING IN OFFSET PRINTING

Leonard F. Abiuso, 312 E. 2nd St., Brooklyn, N.Y.
Filed May 18, 1961, Ser. No. 110,926
5 Claims. (Cl. 101-217)

This invention is concerned with offset printing. The general purpose of the invention is to avoid stretching of the sheet of paper on which an impression is taken in an offset printing operation.

In general, offset printing presses include a plate roller, a rubber-blanketed roller, and an impression roller, all of which rotate in parallel relation to one another. In an offset printing operation an impression of an image on the plate roller is impressed by the latter upon the blanket roller, and the latter in turn acts to produce the impression upon a sheet of paper pulled between it and the impression roller. It is essential during the printing process that the blanket and impression rollers exert sufficient squeeze pressure upon the sheet pulled in order to produce a suitable impression on the latter. Under conventional methods this squeeze pressure is applied progressively and uniformly over the entire face of the sheet as the latter is pulled through the rollers; and, as a result the sheet pulled is caused to stretch both laterally and longitudinally. This stretching is a common and undesirable fault that occurs in offset printing operations under conventional methods of operation. The fault occasioned by stretching of the paper becomes particularly noticeable when the sheet is repeatedly pulled through the press to acquire different color impressions. It will then be noticed that the colors are out of alignment and overlap one another.

The general object of this invention is to provide means for avoiding this fault of stretching of the sheet pulled in an offset printing operation.

A further object of this invention is to improve the conventional method of preparing an offset printing press for operation, so that by such improved method of operation the stretching that occurs in the sheet pulled under conventional methods of operation is avoided.

A still further object of this invention is to prepare the impression roller with packing in such manner that the squeeze pressure conventionally exerted by the blanket and impression rollers on the sheet pulled will be applied only over that portion of the sheet where printing is to be effected.

The invention further lies in the particular steps of the method provided by this invention for preparing the impression roller for an offset printing operation; and it also lies in the particular nature of the packing used in preparing the impression roller.

The foregoing and other objects and advantages of this invention will appear more fully hereinafter from a consideration of the detailed description which follows, taken together with the accompanying drawings wherein an embodiment of the invention is illustrated. It is to be expressly understood, however, that the drawings are for purposes of illustration and description, and they are not to be construed as defining the limits of the invention.

In the accompanying drawings:

FIG. 1 is a schematic illustration of an offset printing press;

FIG. 2 is a plan view of the first sheet of oiled tympan paper pulled through the rollers;

FIG. 3 is a plan view of a second pulled sheet;

FIG. 4 is a plan view in which the impression formed on the sheet shown in FIG. 2 has been marked off by a broken line;

2

FIG. 5 is a plan view showing the portion marked off in FIG. 4 as having been cut out and pasted on the second pulled sheet; and

FIG. 6 is a fragmentary plan view of the plate showing the image from which an impression will be taken by a pulled sheet.

There is schematically illustrated in the drawing a conventional offset printing press, generally designated 1. It includes the usual plate roller 2, the blanket roller 3, and the impression roller 4. These rollers are arranged in parallel relation to each other; and they rotate relative to one another during the operation of the press. The plate roller 2 rotates in contact with the blanket roller 3 in such manner that an impression of an image formed on a plate 5 of the plate roller is impressed upon the usual rubber blanket 6 wrapped about the blanket roller. The impression roller 4 has a smooth metal peripheral surface, and it rotates relative to the blanket roller. An impression is taken from the blanket roller by a sheet of paper as the latter is pulled between the blanket and impression rollers.

Prior to the operation of the press, the blanket roller is adjusted or spaced in conventional manner by means of conventional spacing mechanism, generally designated 7, a distance from the impression roller as may be required to cause these rollers to exert a suitable squeeze pressure upon the sheet pulled. This squeeze pressure is essential to the production of a suitable or perfect impression upon the pulled sheet.

The spacing mechanism 7 includes a jack screw 8 having a suitable connection, indicated by the broken line 9, the blanket roller to cause the latter to move closer to or further away from the impression roller accordingly as the jack screw is manually rotated in one direction or the other. A travel nut 10 carrying a pointer 11 moves along the jack screw relative to a stationary scale 12 as the jack screw is rotated, whereby the extent of the spacing of the blanket roller relative to the impression roller is visibly indicated.

Under conventional methods of using the offset press the required squeeze pressure exerted by the rollers upon the pulled sheet causes the latter to stretch. This stretching is due to the fact that under conventional methods of operation the squeeze pressure is applied progressively and uniformly over the entire sheet, from one end to the other as the sheet is pulled. The progressiveness and uniformity of application of the squeeze pressure over the entire area of the sheet causes the sheet to stretch laterally and longitudinally. This stretching of the pulled sheet, as earlier mentioned herein, is an undesirable problem in offset printing.

This invention is directed to providing practical and efficient means which will avoid this undesirable stretching of the pulled sheet. This is accomplished by preparing the impression roller, and by adjusting the position of the blanket roller relative to the impression roller in such manner that the squeeze pressure will be applied only over the area of the sheet being pulled on which the impression is to be produced, and will not be applied over the remaining area of the sheet.

The impression roller is prepared in accordance with this invention by packing or building up an area on the surface of the roller corresponding to that portion or area of the sheet to be pulled on which the impression is to be produced. The area is built up sufficiently to allow the squeeze pressure of the blanket and impression rollers to be applied over such built up area and not over the remaining area of the sheet being pulled.

Before preparing the impression roller, it will be assumed that a plate 5 bearing an image to be impressed upon the sheets to be pulled has been first mounted to

the plate roller. For convenience of illustration and description, it will be assumed that this image on the plate is the box design 13 shown in FIG. 6.

In preparing the impression roller in accordance with this invention so as to avoid stretching of the sheets to be pulled, a first sheet of paper, preferably one having water repellent properties, such as oiled tympan paper, is pulled between the blanket and impression roller after the blanket roller has been adjusted in its position relative to the impression roller in conventional manner. This first pulled sheet is shown in FIG. 2, and is designated by the numeral 14. A second oiled tympan sheet is similarly pulled; and it is shown in FIG. 3 having the reference numeral 15. Next, the impression 13 formed on sheet 14 is marked off, as indicated by the broken line 16 in FIG. 4. The marked off area 16 is then cut out along the broken line, it being understood that the broken line 16 is merely used as a guide in the cutting step. The cut out portion 16 is then pasted upon sheet 15 in such manner that the impression of the one registers with the impression of the other, as in FIG. 5. A clean oiled tympan sheet 17 having the dimensions of sheet 15 is next placed on top of the pasted sheet formed in FIG. 5. In the resultant structure, sheet 15 will be the bottom sheet, sheet 17 will be the top or outer sheet, and the pasted cutout section 16 will be sandwiched between the two. This sandwich structure is next wrapped tightly about the impression roller, and clamped thereon, the ends of sheets 15 and 17 being clamped to the impression roller by the usual bale elements. The surface of the packing structure on the impression roller will be taut, smooth, and without wrinkles; and it will appear as in FIG. 1 in end elevation.

Next, the blanket roller is spaced away from the impression roller by means of the usual adjusting mechanism 7 a distance corresponding to the thickness of the built up impression area at 18, or the thickness of the bottom sheet 15, the pasted cutout or impression portion 16, and the top sheet 17. This thickness will be .018 of an inch, each of the elements 15, 16, and 17 being .006 of an inch. Next, the blanket roller is backed away from the impression roller an additional .006 of an inch, this being the thickness of a sheet of paper 19 to be pulled. Finally, the blanket roller is adjusted or drawn slightly closer to the impression roller to obtain a desired squeeze pressure of the blanket and impression rollers over the built up area 18 upon the sheet to be pulled. Printing of the impression 13 will be produced on the pulled sheet opposite the built up area 18. Several trial sheets are pulled until the proper squeeze pressure of the blanket roller at the built up area is produced on the pulled sheet and a perfect or suitable impression is obtained.

After the impression roller 4 is prepared or packed as above in accordance with the invention, and after the blanket roller 3 is properly adjusted relative to the built up area 18 to obtain a desired squeeze pressure upon a pulled sheet it will be noted that the squeeze pressure exerted by the rollers 3 and 4 upon a pulled sheet will be only over that area of the latter where printing is effected. This area will be opposite to the built up area 18 of the impression roller. It will also be noticed upon examination that the stretching, that would otherwise or normally occur under conventional methods of offset printing, does not now occur in sheets 19 pulled after the press has been prepared in accordance with the present invention. It will also be noticed that if a sheet 19 is pulled and re-pulled several times for different color impressions, the colors will align with the bounds of the impression 13 and the colors will not overlap the latter.

It is to be understood that the order of the steps herein may be varied without departing from the invention.

Although the invention has been illustrated and described in detail, it is to be expressly understood that the invention is not limited thereto, and that some changes might be made without departing from the spirit and scope of the invention. Accordingly, it is my intent to

claim the invention not only as set forth and described above, but also in all such forms and modifications thereof as may be construed to be within the spirit of the invention and the scope of the appended claims.

The plate, blanket, and impression rollers, may also be referred to as the plate, blanket, and impression cylinders.

I claim:

1. For an offset printing press including in parallel relation a plate roller having an image thereon, a rubber-blanketed roller rotatable in contact with the plate roller for receiving an impression from the image of the latter roller, an impression roller rotatable relative to the blanketed roller, and means for adjusting the blanketed roller relative to the impression roller so as to enable the blanketed and impression rollers to exert a squeeze pressure upon a sheet of paper pulled between them in order to produce upon the pulled sheet an impression received by the blanketed roller from the plate roller; a method for preventing said squeeze pressure from stretching the pulled sheet, comprising wrapping a first sheet of oiled tympan paper about the surface of the impression roller; cutting from a second sheet of oiled tympan paper a section conforming in area to an impression taken from the blanket roller; pasting the cut out section upon the first sheet of tympan paper exactly in the location where an impression would appear if an impression were taken on the first sheet from the blanketed roller; wrapping a third sheet of oiled tympan paper over and coextensively with the first sheet of tympan paper so as to overlies the cut out section pasted on the latter; and adjusting the blanketed roller relative to the impression roller so as to obtain a squeeze pressure between the two rollers upon a sheet pulled between them only over the area of the pasted section.

2. The method according to claim 1, wherein the thickness of the three tympan sheets totals .018 of an inch, each sheet being .006 of an inch.

3. The method according to claim 1, wherein the projection of that portion of the third sheet overlying the pasted section corresponds to the thickness of the pasted section beyond the adjacent surface area of the third sheet.

4. The method according to claim 3, wherein the extent of such projection is substantially .006 of an inch.

5. In an offset printing press including in parallel relation a plate roller having an image thereon, a rubber-blanketed roller rotatable in contact with the plate roller for receiving an impression from the image, an impression roller rotatable relative to the blanketed roller, and means for adjusting the blanketed roller relative to the impression roller so as to enable the blanketed and impression rollers to exert a squeeze pressure upon a sheet of paper pulled between them in order to produce upon the pulled sheet an impression received by the blanketed roller from the plate roller; a packing structure mounted on the impression roller so as to cause the squeeze pressure to be applied only over that area of the pulled sheet upon which an impression from the blanketed roller is to be received; wherein the packing structure comprises a first sheet of oiled tympan paper mounted about the surface of the impression roller, a section cut out from a second oiled tympan sheet and conforming to an impression taken from the blanketed roller upon the said second sheet, the said section being pasted on the first sheet where an impression would appear if an impression were taken on the first sheet from the blanketed roller, and a third sheet of oiled tympan paper wrapped about the impression roller in overlying relation to the first sheet and the pasted section.

References Cited in the file of this patent

UNITED STATES PATENTS

640,447	Corbin	Jan. 2, 1900
1,471,895	Huebner	Oct. 23, 1923
2,981,181	Levien	Apr. 25, 1961