Oct. 6, 1953 A. SOUTHWAY 2,654,314

MOISTENING MEANS FOR PLANOGRAPHIC PRINTING MACHINES

Filed Aug. 8, 1950 3 Sheets-Sheet 1

FIG. 1.

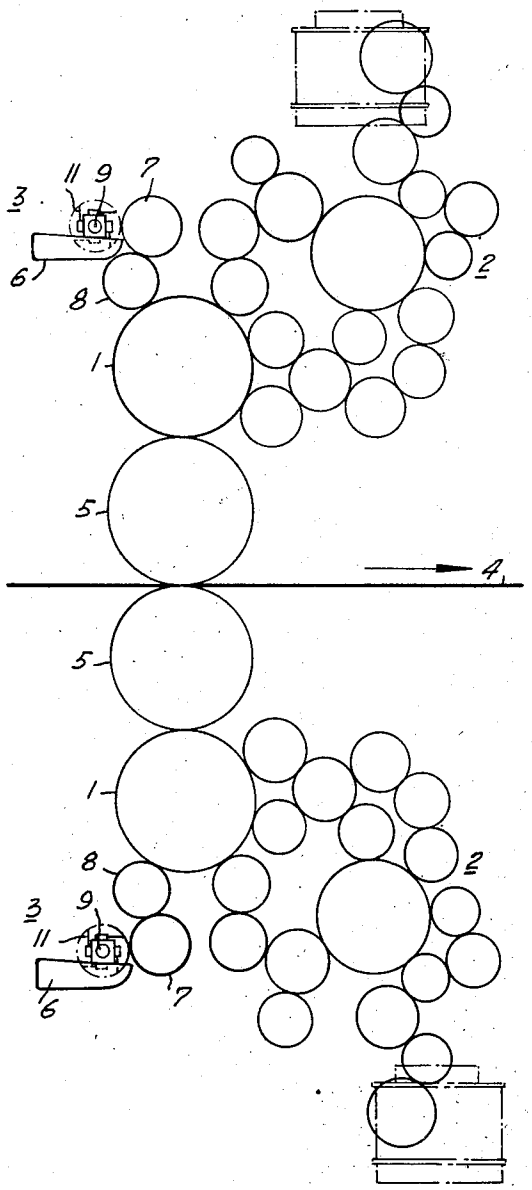
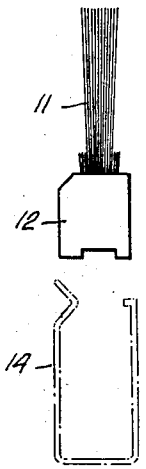


FIG. 5.



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MOISTENING MEANS FOR PLANOGRAPHIC PRINTING MACHINES

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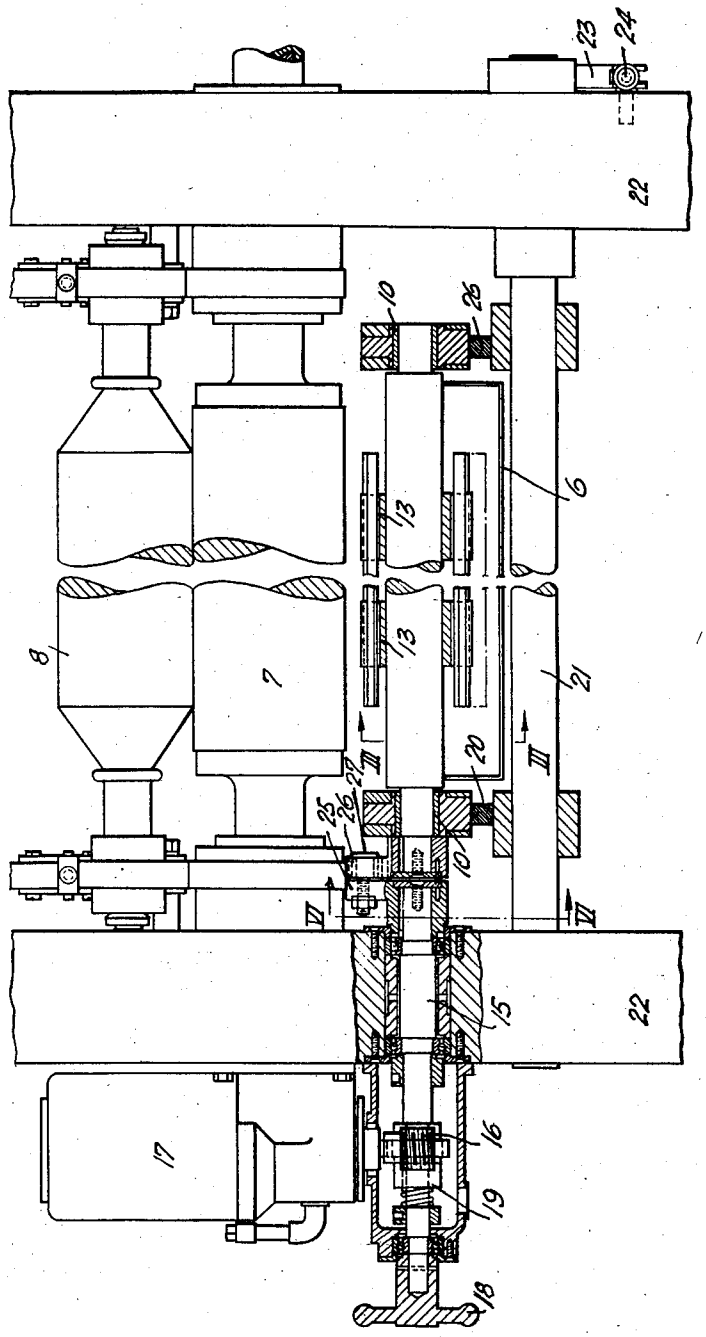


FIG. 2.

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MOISTENING MEANS FOR PLANOGRAPHIC PRINTING MACHINES

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FIG. 3.

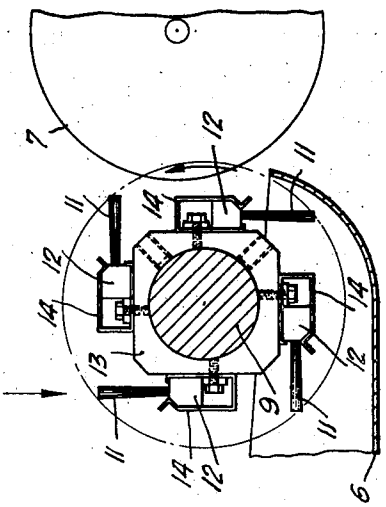


FIG. 4.

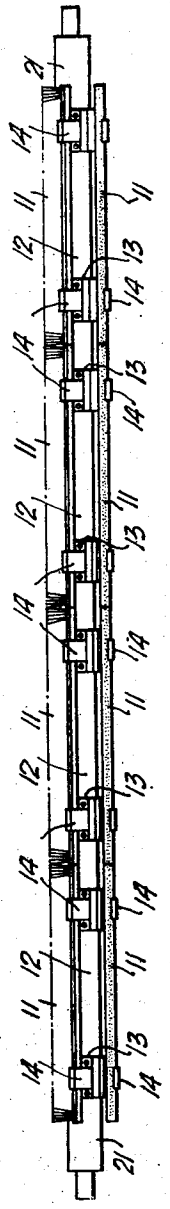
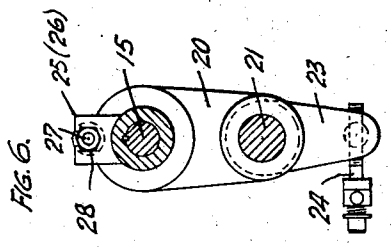


FIG. 6.



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2,654,314

UNITED STATES PATENT OFFICE

2,654,314

MOISTENING MEANS FOR PLANOGRAPHIC PRINTING MACHINES

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2 Claims. (Cl. 101—148)

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This invention relates to printing machines of the kind using planographic printing surfaces which have printing areas of such nature as to refuse to take moisture (such as an acid-treated water) but to accept ink and non-printing areas of such a nature as to accept the moisture but to refuse to accept the ink. The printing and non-printing areas of such plates are at the same or at substantially the same level as compared with relief and intaglio printing surfaces which depend on difference of level between the printing and non-printing areas.

In such planographic printing machines the moistening mechanism is arranged to apply moisture to the printing surface over the whole of its printing and non-printing areas prior to the passing of the surface to the ink applying mechanism. The main object of this invention is to provide a moistening arrangement which will enable the moistening arrangement to be readily adapted to suit printing surfaces of different extents, which will enable the moisture to be applied uniformly to the surface which, in any particular printing operation is required to be moistened, and which will also enable regulation of the quantity of moisture so applied to be readily effected to suit the different requirements which arise in such printing.

According to one feature of the present invention the moistening mechanism includes a rotatable component having spaced about its periphery a number of rows of resilient or flexible moisture pick-up strips which are secured at their inner or base ends to the component and are free at their other or tip ends, the various rows extending in the longitudinal sense of the component. These pick-up strips can be formed of an absorbent material but are preferably formed by natural or synthetic bristles so that in effect the various rows of bristles would each resemble the bristles of a long narrow brush.

According to a further feature of the invention, the various rows of strips are made up by separate removable sectional lengths so that the total effective length of the rows can be varied to suit the extent (i. e. the length) of any particular printing surface to be moistened.

This component is so disposed in relation to a moisture duct and a distribution roller that as the component is rotated it carries the rows of strips successively firstly into the trough to pick up moisture and then into contact with the periphery of a distribution roller to deposit moisture thereon.

The invention is illustrated in the accompanying drawings in which Figure 1 is a diagrammatic side elevation of the kind of machine with which the invention is concerned, and Figures 2–6 are detail views of the mechanism according to the invention,

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Figure 2 is a side elevation partly in section,

Figure 3 is a section on the line III—III Figure 2,

Figure 4 is a local plan view looking in the direction of the arrow IV Figure 3,

Figure 5 is a detail view, and

Figure 6 a detail section on the line VI—VI Figure 2.

Referring to the drawings, and considering firstly Figure 1, which shows a particular form of planographic printing machine selected to illustrate a typical application of the invention, there are employed form cylinders 1 carrying planographic printing surfaces, each cylinder having associated with it an inking mechanism 2 of any conventional form and a moisture motion 3. The moisture motion applies moisture to the form on the cylinder 1 before the form is carried by rotation of the cylinder to the inking mechanism 2 in a manner well understood in the printing art. The inked image on the form is then transferred to the surface to be printed, this surface as shown being in the form of a web 4. The transfer of the image to the web can be direct from the form on the cylinder 1 or as shown the off-set method can be employed by which the images are applied to a transfer cylinder 5 which takes the inked image from the cylinder 1 and transfers it to the web 4. In the particular arrangement shown the web 4 passes between the two transfer cylinders 5 so that the web is printed simultaneously on its two sides, one cylinder 5 acting as an impression cylinder to the other cylinder 5.

The present invention is concerned with the construction of the moisture motion 3 by which moisture is taken from a trough or fountain 6 and applied to a roller 7 whence it passes to a roller 8 applying the moisture to the form on the cylinder 3.

Reference will now be made to Figures 2–6 which illustrate the moisture motion of this invention. This motion comprises a supporting body in the form of a spindle 9 supported to rotate in bearings 10. This body forms a mounting for resilient and flexible water pick-up strips 11.

In the preferred form shown, the strips 11 are constituted by bristles and in whatever form, the spindle 9 is disposed so that, as the spindle rotates, the strips pass successively firstly into the

fountain 6 to pick up moisture and then into contact with the roller 7 to deposit moisture thereon, the moisture so deposited being taken through the distribution consisting of the rollers 7 and 8 to the form on the cylinder 1.

The setting of the spindle 9 with respect to the roller 7 would be such that (as the bristles 11 sweep into engagement with its periphery) they are sprung or flexed back along their length and shape themselves to the shape of the roller. Thus the bristles 11 have a wiping engagement with the periphery of the distributing roller 7 and it is thought that this exerts a spreading action on the moisture applied and so tends to promote uniformity in the application of moisture.

The various strips can be disposed radially of the spindle 9, but inorder to minimize any tendency for the strips to spring and to fling moisture as their ends leave the roller, it may be desirable to arrange the strips as shown most clearly in Figure 3 so that they are tangential to a circle of rotation of the spindle, the root ends of the strips leading the free ends as they sweep round with the rotation of the spindle 9.

In general the rows of bristles or other strips would extend lengthwise parallel with the axis of rotation of the spindle 9 but they could if desired extend helically with respect to that axis.

The bristles or other strips would be carried by supporting bars 12 which are themselves detachably mounted on the spindle 9 so that the bars can be readily removed for the cleaning of the strips or for replacement by other bars having it may be strips of different characteristics.

Preferably and as shown the bars 12 are made up in sectional lengths each having its own strips. By this means the total length of a composite bar could be built-up to correspond to the size of printing surface to be moistened. This avoids the difficulties commonly encountered in supplying an excess of moisture which is not absorbed in the printing operation where the printing surface is smaller in length than the maximum for which the moistening arrangement is designed.

The various bar sections 12 could be arranged to be sprung individually into position for which purpose the spindle 9 has fitted to its spaced blocks or carrying members 13 to which are secured open spring clips 14 dimensioned to enable the ends of the sectional bars 12 to be sprung into position.

It will be clear that the removal of sectional lengths enables the moistening mechanism to be rendered inactive over a corresponding length in picking up moisture and consequently provides in effect a simple variable length arrangement readily adaptable to printing surfaces of different lengths.

The construction of the present invention enables variation in the quantity of moisture applied for any given length of printing surface to be effected in a number of ways to suit requirements. One variable factor consists in the extent of immersion of the strips in the moisture-supply fountin 6 and this factor can be varied easily by variation in the level in the duct or by varying the height of the duct relative to the axis of the spindle 9 and both adjustments would be governed by selection of the length of the bristles 11 or other strips employed. Another variable factor is the speed at which the spindle 9 is driven and this can

be varied by a number of methods of which a variable speed electric motor is the most convenient, this motor driving the strip-carrying component either independently of press-speed or at a speed which is related to but capable of a variation proportional or otherwise of the press-speed.

Such a variable speed drive is shown in the drawings in which the spindle 9 is coupled to a shaft 15 driven through gearings 16 by an electric motor 17 of the variable speed type by control of which the speed of rotation of the spindle 9 (and hence the rate of pick up of moisture by the bristles 11) can be varied.

As is shown in the drawings, the shaft 15 can be turned by a hand-wheel 18 which is connected to the shaft by a ratchet drive 19 so that the shaft 15 can over-run the coupling to the motor 17 when the hand-wheel is turned.

Again, the setting of the axis of rotation of the spindle 9 with respect to the axis of rotation of the roller 7 can be varied to regulate the amount to which the bristles 11 or other strips wrap themselves about the periphery of the roller and this again would depend upon the length of the bristles.

An arrangement to effect this is shown in the drawing wherein the bearings 10 of the spindle 9 are carried at the outer ends of arms 20 mounted on a shaft 21 supported for angular movement in the main frames 22 of the machine. This shaft 21 has at one end an adjustment arm 23 which can be rocked by an adjusting screw 24, the resulting movement of the arm 23 regulating the distance between the axis of the spindle 9 and the axis of the roller 7.

In order to enable drive to be transmitted to the spindle 9 from the shaft 15 despite the various positions to which the spindle 9 can be moved, the drive connection between the spindle and shaft is established by securing an arm 25 to the shaft 15, by securing a similar arm 26 to the spindle 9 and by providing one of the arms with a driving pin 27 which enters a driving slot 28 in the other arm.

The roller 7 referred to can be the usual metal roller which is reciprocated and the form roller 8 which runs in engagement with the actual planographic printing surface would be covered with an absorbent fabric. In some cases however it may be desirable to interpose between the pick-up spindle 9 (or more precisely the bristles 11) and the metal roller 7 an additional fabric-covered roller which receives moisture from the bristles and transfers it to the roller 7.

The invention is obviously capable of application for use with a planographic printing machine having a flat printing plate as well as with one as shown having a printing plate curved about a printing cylinder.

I claim:

1. In a planographic printing machine a moistening mechanism comprising in combination a fountain for moisture, a distributing roller and a moisture pick-up device comprising a spindle rotatable about an axis parallel with that of the roller, a series of rows of bristles secured at their root ends to supporting bars detachably held on members secured on the spindle, means adjustably supporting the spindle so that its rotation carries the rows of bristles through the fountain and into wiping engagement with the roller and permitting movement of the spindle transversely of its axis, and a coupling device drivingly connecting the spindle with a variable speed

driving device secured in fixed position on the machine.

2. A moistening mechanism for a planographic printing machine including in combination a fountain, a distributing roller, and a moisture pick up device comprising a spindle rotatable about an axis parallel to that of the roller, carrying members secured to the spindle, supporting bars each holding a row of bristles, spring clips secured to the carrying members and shaped to detachably hold the bars and position the bristles to engage the distributing roller when the spindle is rotated, movable bearings for adjusting the spindle toward and away from the distributing roller, and means for driving the spindle including a shaft supported generally in alignment with the spindle, a bearing for the shaft mounted in a fixed position and a coupling device associated with the shaft and providing means for driving the spindle by rotating the shaft.

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