Jan. 9, 1940. F. SHURLEY 2,186,914

MULTIPLE PRINTING PLATE AND ACTUATING MEANS THEREFOR

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FIG. 2.

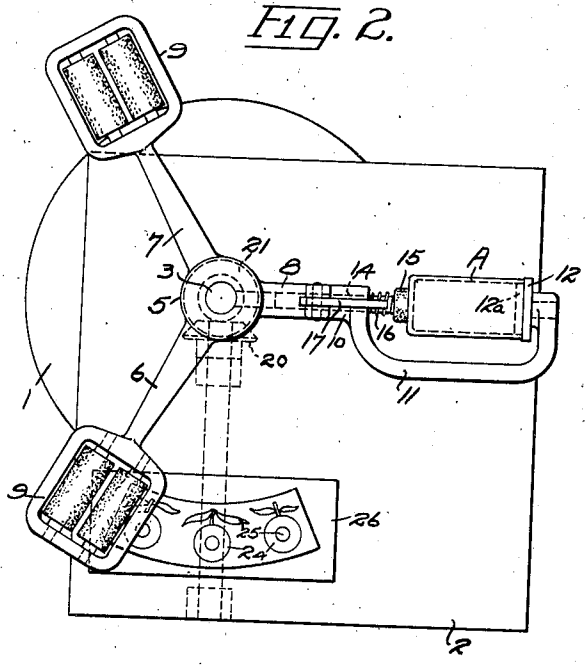


FIG. 3.

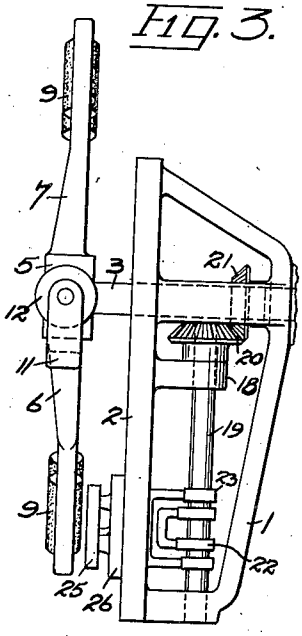
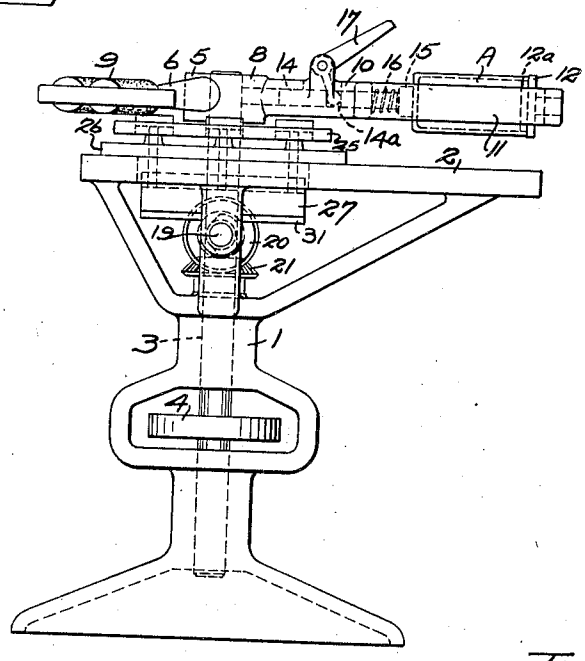


FIG. 1.



INVENTOR.

BY Frederick Shurley

Gerard S. Baldwin

ATTORNEY.

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FIG. 4.

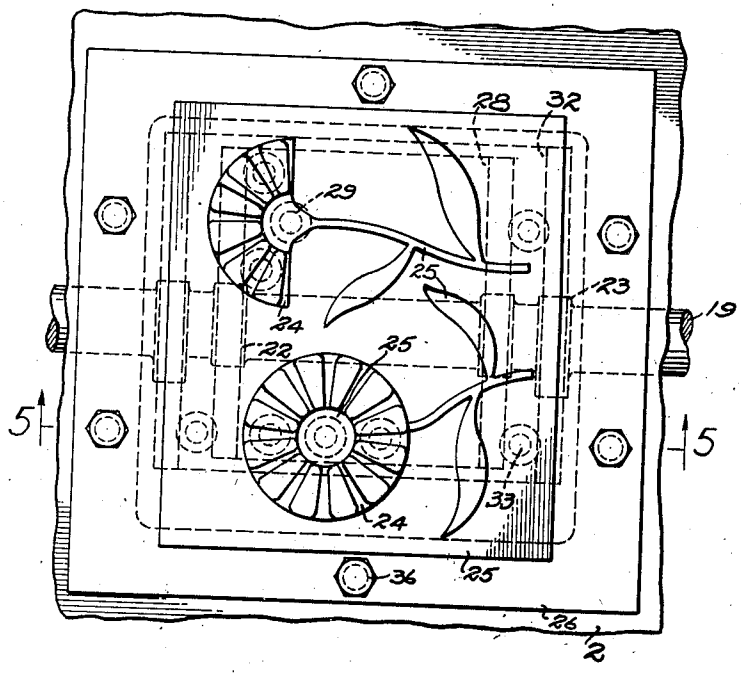


FIG. 5.

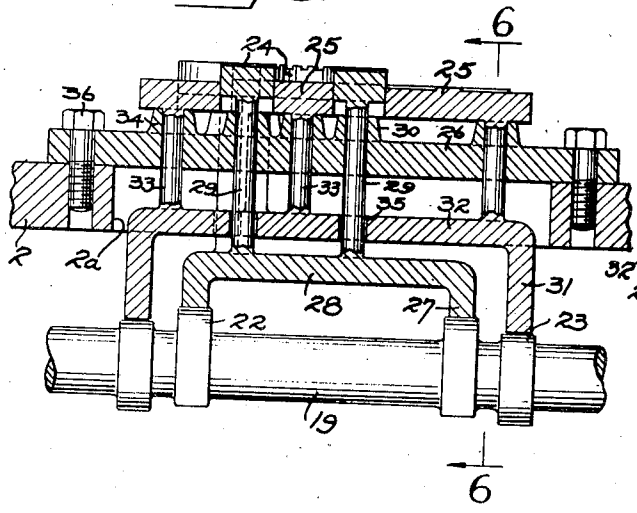
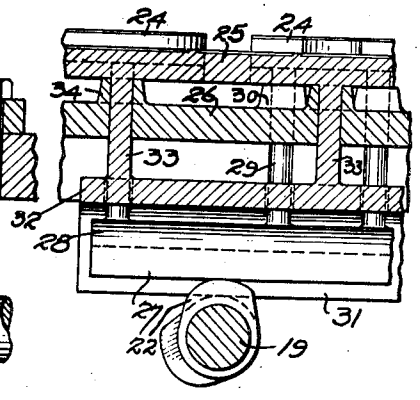


FIG. 6.



INVENTOR.
Frederick Shurley

BY Gerard F. Baldwin

ATTORNEY.

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UNITED STATES PATENT OFFICE

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MULTIPLE PRINTING PLATE AND ACTUATING MEANS THEREFOR

Frederick Shurley, Windsor, Ontario, Canada, assignor, by mesne assignments, to Guthrie Ceramic Labelling & Machinery Co., Inc., Dover, Del., a corporation of Delaware

Application June 27, 1938, Serial No. 215,961

11 Claims. (Cl. 101—201)

This invention relates to improvements in multiple printing plates and actuating means therefor, and aims, among other things, to provide means whereby work may be printed in a plurality of colors in a single operation.

Another object of the invention is to provide a multiple printing plate consisting of a plurality of separate cuts, and actuating means for moving all the cuts which print in one color to contact one set of inking rolls, and all the cuts which print in another color to contact another set of inking rolls, and to return all the cuts into alignment prior to each printing operation.

A further object of the invention is to provide a multiple printing plate and actuating means therefor wherein the cuts to print in each color are mounted on movable carriers, and wherein means are provided for moving the carriers to bring each set of cuts into contact with their proper inking rolls, and to provide rests by which all the cuts are supported in alignment during each printing operation.

Yet another object of the invention is to provide a multiple printing plate and actuating means therefor including a cam shaft having one set of cams to actuate each set of cuts, whereby each set is moved in sequence into position to contact the proper set of inking rolls.

Having thus briefly stated some of the major objects and advantages of the invention I will now proceed to describe one embodiment thereof with the aid of the accompanying drawings, in which:

Figure 1 illustrates a side elevation of a single form of machine equipped with my invention;

Figure 2 is a plan view thereof, and

Figure 3 is a partial side elevation.

Figure 4 is an enlarged plan view showing the multiple printing plate in position,

Figure 5 is a section on the line 5—5 of Figure 4, and

Figure 6 is a section on the line 6—6 of Figure 5.

In Figures 1, 2 and 3 a single type of machine is shown to which my invention is applied, though it is of course understood that my multiple printing plate and its cut actuating mechanism may be arranged to operate on various types of machines.

Referring now to the machine herein illustrated, 1 designates a base having a fixed table 2 thereon, and a vertical drive shaft 3 which may be driven in any preferred manner as through a pulley 4 shown fixed thereon. Secured upon the upper extremity of the drive shaft 3 for rotation therewith is a spider 5 having radial arms 6, 7 and 8. Upon each of the arms 6 and 7 a conventional set of inking rolls 9 is provided, and the arm 8 carries a suitable work support 10. In the instance shown the work consists of a cylindrical vessel A closed at one extremity and open at the other. The arm 8 terminates in a yoke 11 which carries a disc 12 to bear against the open end of the vessel A, and an inwardly extending member 12a upon the disc 12 to seat within the open end of the said vessel. Axially movable in the arm 8 and projecting therefrom is a spindle 14 terminating in a pad 15 at its outer extremity to bear against the closed end of the vessel A. A spring 16 around the spindle 14 and extending between the arm 8 and the pad 15 urges the pad to its work engaging position. 17 denotes a finger which is pivoted upon the arm 8 and passes through a slot therein to engage a recess 14a formed in the spindle and move the latter axially inward against the tension of the spring 16 to release the work.

Supported beneath the table 2 in suitable bearings 18 is a camshaft 19 having a gear 20 thereon which meshes with a gear 21 fixed upon the drive shaft 3. The gears are so proportioned that one rotation of the drive shaft causes one rotation of the camshaft. Upon the latter are two cams 22 or 23 to actuate each set of cuts 24 or 25 respectively in the printing plate 26. In the present instance, for the sake of simplicity, only two sets of cuts are shown so that in this case printing in only two colors is contemplated. Obviously when printing is to be done in more than two colors additional sets of cams must be provided and additional sets of inking rolls are needed, one for each set of cuts. It will also be noted that all the cuts 24 which print in one color are so formed that they coact with, and are movable independently of, the cuts 25 which print in a second color.

Riding upon one pair of cams 22 are elements 27 which project from opposite sides of a carrier plate 28 having a plurality of integral carrier arms 29 upon which all the cuts 24 intended to print in one color are supported. The carrier arms 29 are slidable through openings formed in the printing plate 26 and through bosses or rests 30 formed thereon which constitute stops upon which the cuts 24 normally bear. Similarly riding upon the second pair of cams 23 are other elements 31 projecting from a second carrier plate 32 having integral arms 33 formed thereon. The latter are slidable through openings formed in the printing plate 26 and through bosses or rests

34 thereon. Since the carrier plates 28 and 32 are positioned one above the other the upper carrier plate 32 has clearance apertures 35 formed therethrough for the passage of the arms 29. The printing plate 26 is secured as by screws 36 upon the table 2, which is suitably apertured at 2a for the passage of the carrier arms 29 and 33.

Upon each revolution of the camshaft 19, first the cuts 24 supported upon the arms 29 are raised, as shown in Figure 5, by the cams 22 just prior to the passage of the set of inking rolls thereover by which the said cuts are to be inked. Continued rotation of the camshaft then permits the carrier plate 28 and the cuts 24 to drop back into printing position, after which the cuts 25 are raised by the cams 23 to contact the other inking rolls. The cuts 25 then drop back into alignment with the cuts 24 prior to the passage of the work A thereover.

While in the foregoing the preferred arrangement of the invention has been described and shown, it is understood that the construction is susceptible to such alterations and modifications as fall within the scope of the appended claims.

What I claim as my invention and desire to secure by Letters Patent is:

1. A printing plate comprising a fixed member, a plurality of cuts intended to print in different colors normally resting against said member, the cuts intended to print in one color being separated from one another by cuts intended to print in another color, carriers, means extending from the carriers to the cuts, and means actuating said carriers in sequence whereby said cuts are moved in sequence to contact their different inking means.

2. A printing plate comprising a fixed member, a plurality of coacting cuts intended to contact different inking means and print in different colors normally resting against said member, all the cuts being movable in a common plane, carriers, means extending from said carriers to said cuts, and means actuating said carriers in sequence whereby said cuts are moved in sequence to contact their different inking means.

3. A print plate comprising a fixed member having apertures therethrough, a plurality of cooperating cuts intended to contact different inking means and print in different colors, all said cuts being movable and normally resting against said member, a plurality of movable carriers, arms extending from said carriers to the rear faces of said cuts, said arms intermediately of their length being slidable through said apertures, and means moving said carriers in sequence whereby said cuts are moved in sequence to contact their different inking means.

4. A multiple printing plate comprising a fixed member having parallel apertures therethrough and rests thereon, a plurality of coacting cuts all movable in a common plane normally resting against said rests, carriers, means moving each carrier in sequence towards said member, and an arm passing through each aperture and extending from one carrier to the rear side of one cut.

5. A multiple printing plate comprising a member, a plurality of coacting cuts normally resting against said member, said cuts being adapted to contact different inking means and to print in different colors, a shaft having a plurality of cams therearound, and carriers actuated by said cams for moving said cuts in sequence to contact their different inking means.

6. A multiple printing plate comprising a fixed apertured member, a plurality of coacting cuts adapted to contact different inking means to print in different colors, said cuts normally bearing against said member, a shaft having cams therearound, a plurality of carriers each riding on different cams, and arms extending from each carrier to some of said cuts, each arm being slidable through one of the apertures, said cams being adapted to move some of the cuts to contact one inking means and subsequently to move other cuts to contact another inking means.

7. In a multiple printing plate, the combination set forth in claim 6, wherein all the apertures through the fixed member are parallel and the arms are longitudinally slidable therethrough so that all the cuts move in a common plane.

8. In a multiple printing plate the combination set forth in claim 6, wherein the carriers are positioned one above the other parallel with the camshaft, elements project from the carriers to ride on the cams, and the carrier farthest from the shaft is apertured for the passage of the arms extending from the carrier near to the shaft.

9. A multiple printing plate comprising a fixed apertured member adapted to be mounted upon a printing machine having a rotary spider carrying a plurality of sets of inking rolls and a work support, a plurality of coacting cuts normally resting in alignment upon said member, arms longitudinally movable through the member apertures, carriers, means adapted to move said carriers in sequence during the spider rotation, some of the arms extending from one carrier to some of the cuts and the other arms extending from the other carrier to other cuts, whereby the movement of one carrier moves some of the cuts into position to contact one set of the inking rolls and the other carrier then moves the other cuts into position to contact the other set of inking rolls, all said cuts resting in alignment against said member during the passage of the work support thereover.

10. A multiple printing plate comprising the combination set forth in claim 9, wherein the means adapted to move the carriers in sequence during the spider rotation consists of a camshaft driven by the spider rotating means, said carriers riding upon the cams on said shaft.

11. A multiple printing plate comprising a plurality of sets of cuts, each set being adapted to print in a different color, at least some of the cuts of one set being separated from one another by cuts of another set, a carrier plate for each set upon which the sets are rigidly mounted, a member against which the rear faces of all the cuts normally rest, and means for moving each carrier in sequence whereby all the cuts carried by each carrier are advanced to contact an inking means.

FREDERICK SHURLEY.