

Feb. 21, 1939.

O. D. KING

2,147,653

DECORATING APPARATUS

Filed April 17, 1936

3 Sheets-Sheet 1

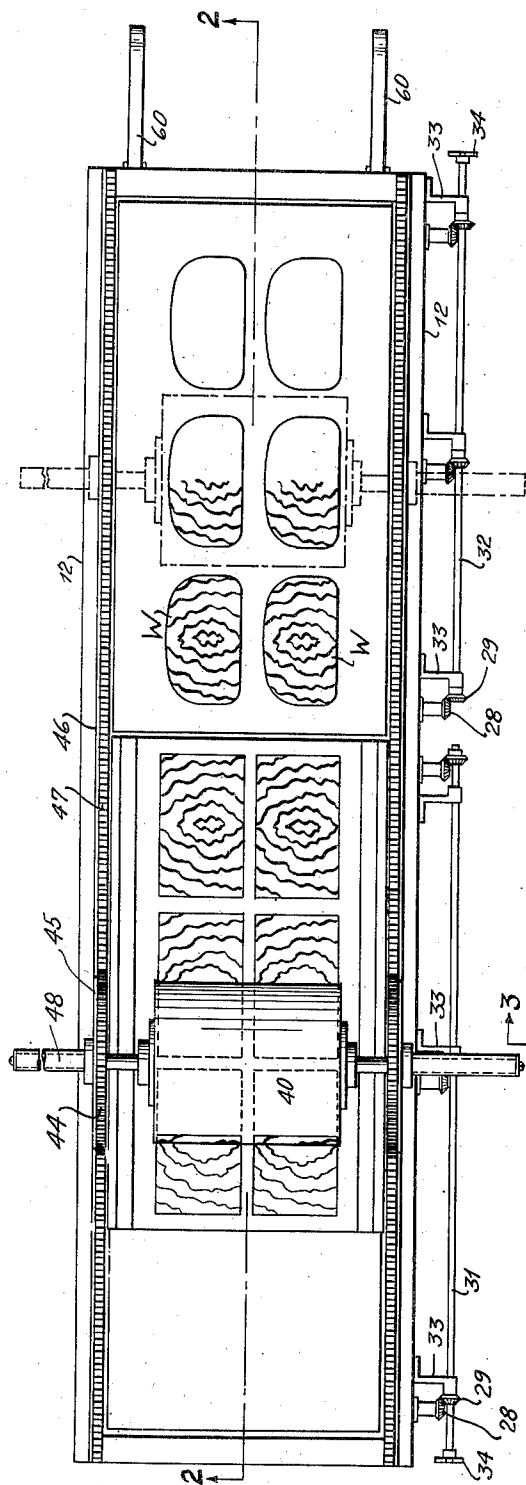


FIG. 1

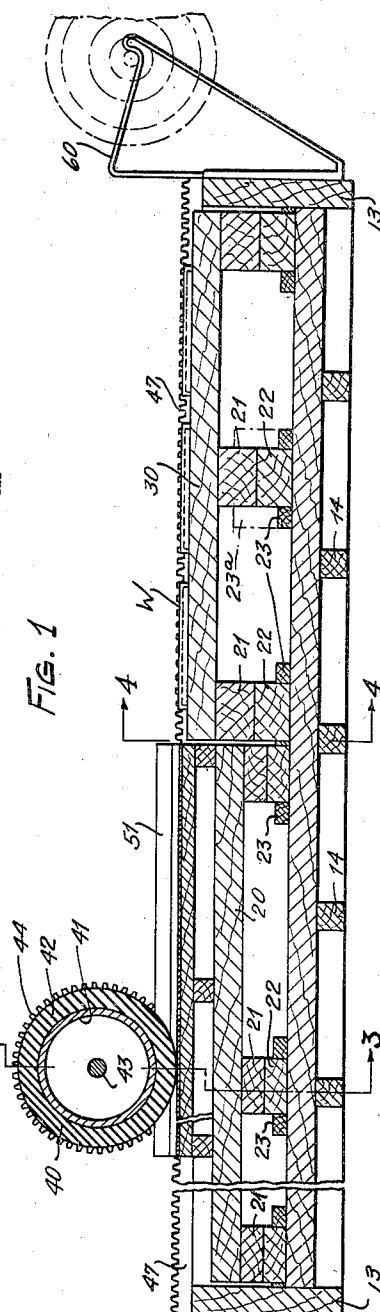


FIG. 2

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3 Sheets-Sheet 2

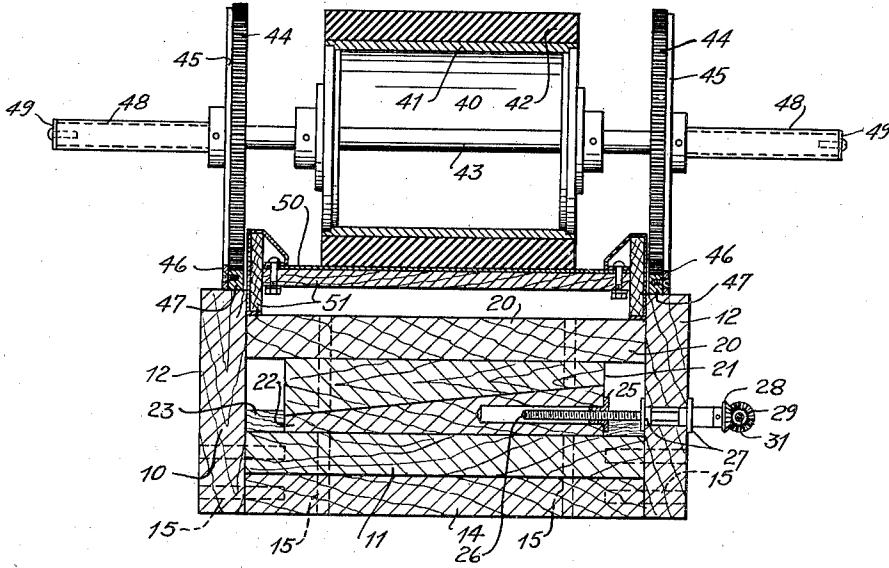


FIG. 3

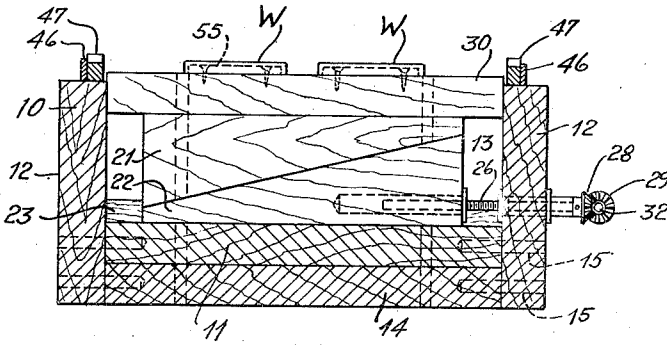


FIG. 4

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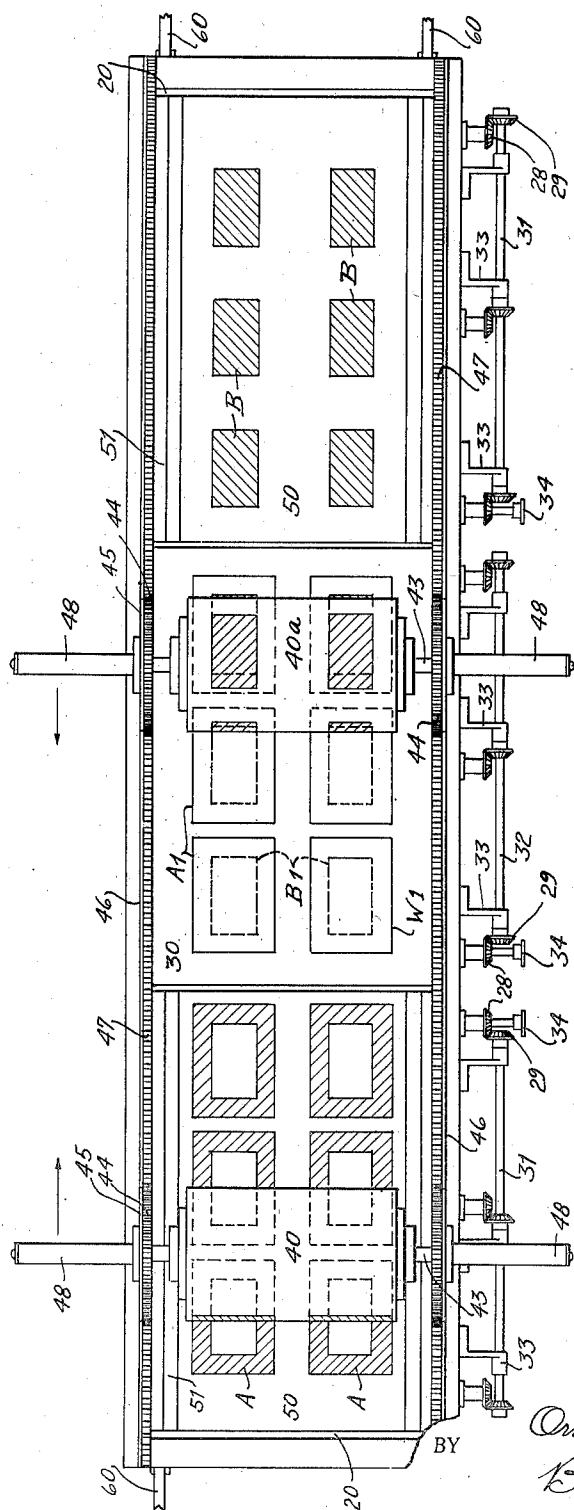
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,147,653

DECORATING APPARATUS

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Application April 17, 1936, Serial No. 74,850

4 Claims. (Cl. 101—252)

This invention relates to a decorating apparatus, and especially for a device for insuring the registration of a design, such as an imitation wood grain, on an article or articles to be decorated. This, therefore, is the general object of the present invention.

A more specific object of this invention is to provide a device for supporting an inked pattern, and one or more workpieces in definite relation, one to the other, to thereby enable the registration of the pattern with the workpieces, consequent of the rolling of a transfer roll from one to the other.

A further object of this invention is to provide a registering device, which will not only support a pattern and one or more workpieces in definite relation to each other, but which will also support a transfer roll for rolling action, first across the pattern and then across the workpiece, and wherein the contact pressure between the roll and the pattern, as well as the contact pressure between the roll and the workpiece, may be readily adjusted, each independent of the other.

Another object of the present invention is the provision of a manually operable graining device, which will withstand hard usage, and which, at the same time, may be manufactured at comparatively low cost, and will afford a device in which a design in color may be transferred by an offset printing roll, from a pattern supported by the device to an article or articles, to be decorated, in such a manner that accurate registration of the design will be made on the work, and wherein the adjustment of the contact pressure between the offset printing roll and the pattern, as well as between the roll and the workpieces, may be provided, so that the impression made on the workpiece may be true and clear in detail.

A further object of this invention is to provide a graining or like device which will insure the registration of a plurality of designs on the same workpiece.

Other objects of the present invention will become more apparent from the following description, reference being had to a preferred embodiment of the invention illustrated in the accompanying drawings. The essential and novel features of the invention will be set forth more fully in the claims.

Referring now to the drawings, I have illustrated in Fig. 1 a plan view of a graining device, embodying one form of my invention; Fig. 2 is a longitudinal vertical section of the device illustrated in Fig. 1, the plane of the section being indicated by the line 2—2 on Fig. 1; Figs. 3 and 4 are substantially vertical, transverse sections, on a scale somewhat larger than Figs. 1 and 2, the planes of the sections being illustrated by the lines 3—3 and 4—4, respectively, on Fig. 2; Fig. 5 is a plan view of another form of my invention.

In general, my improved graining device comprises an elongated base which either may rest on a suitable supporting surface or may be provided with the usual supporting legs. The opposite sides of the base are each provided with a guide rail and a toothed rack, which coact respectively with discs and gears secured to a transfer roller to accurately support such roller above the base, and to insure a true rolling action between the periphery of the roller and articles placed on the base.

At one end and between the guide rails the base carries a table which supports a pattern adapted to be inked in the usual manner, and adjacent this table, in an end-to-end relation, is a second table which supports the workpiece or workpieces to be decorated. The gear and rack connection between the transfer roll and the base insures an accurate registration of the pattern or design on the work, when the transfer roll is rolled across the pattern and work.

Both the work table and the pattern table are supported for independent vertical adjustment relative to the base, to enable workpieces of various thicknesses to be decorated, but still more particularly to enable the pressure between the transfer roll and the pattern, as well as the pressure to the transfer roll and the work to be adjusted, one adjustment being made independent of the other.

Referring to the drawings, and especially Figs. 1 to 4, the device comprises an open top, a box-like member 10, having a flat bottom wall 11, together with side and end walls 12 and 13, respectively. The bottom wall may be reinforced, as shown in Fig. 1, by a series of transversely extending reinforcing members 14, while the side and end walls may extend downwardly so as to provide a flush lower surface which may rest on a suitable supporting member or may be provided with the supporting legs, (not shown). As indicated in the drawings, I preferably make the base of a material such as wood, so that the device may be economically manufactured. The various members of the base may readily be held together by dowel pins 15, or by any other well-known means.

The base 10 supports a pattern table 20, a work table 30, and an offset or transfer printing roll 40, the latter being adapted to be rolled across first the pattern table and then the work table, in one continuous movement, to transfer a design from an inked pattern carried by the pattern table to a workpiece or plurality of workpieces carried by the work table.

The offset or transfer roll 40 comprises a cylinder 41, provided with a gum or similar transfer surface 42, and is secured to a shaft 43. Rigidly secured to the shaft 43, at either end of the transfer cylinder, are gears 44 and discs or rollers 45, arranged to engage toothed racks 47 and guide rails 46, respectively, which are secured to the

upper surfaces of the side walls 12. The external diameter of the rollers and the pitch diameter of the gears are substantially the same as the diameter of the transfer cylinder. Thus, a true rolling action of the roll across the base is insured. Likewise, by positioning each gear adjacent a roller 45, the teeth of the gears serve as flanges for the rollers, and materially aid in maintaining the axis of the transfer cylinder in a direction normal to the direction of travel of the roll across the pattern and work. The ends of the shaft 43 project beyond the roll 45 and are there provided with suitable sleeves or handles 46 which are rotatably mounted on the shaft and retained in place by washers 49 secured to the shaft by suitable screws.

The pattern and the work supporting tables are both mounted in the base frame, so that they may be raised and lowered relative to the transfer roll 40. Each table rests on a plurality of pairs of wedge-like supporting members. As shown in Figs. 3 and 4, one member of each pair of wedge members, as, for instance, the member 21, is secured to its respective table 20 or 30, while the other member 22 thereof is mounted for transverse sliding movement in the base 10 between suitable guides 23 which, if desired, may be of sufficient height, as indicated by the reference numeral 23a in Fig. 2, to also restrain the respective table against movement longitudinally of the base 10. This construction is such that consequent upon the movement of the wedge members 22, their respective tables will be raised or lowered, as desired, thus the pressure between the offset rolls and the tables may be readily adjusted.

It may be mentioned here that the offset roll 40 is of sufficient weight to normally engage either the workpiece or the pattern with more than sufficient pressure to enable a clear reproduction or transfer of the design. The guide rail 47, however, normally supports the roll. Therefore, the pressure of the roll on the work or pattern is readily adjusted by the vertical movement of the respective supporting tables.

The movable wedge members 22 which support each table, are so connected that they may be simultaneously adjusted. The wedges of one table, however, being adjustable, independent of the wedges of the other table. As indicated in Fig. 3, I have secured to each wedge member 22 a threaded sleeves 25, arranged to be engaged by a screw 26, which is rotatably mounted in one side wall 12 of the base 10. Axial movement of the screws 26, relative to the base, is prevented by collars 27 carried by the base. Hence, consequent upon the rotation of a screw, its wedge will move transversely of the base.

Each screw 26 is provided with a bevelled gear 28, which meshes with a corresponding bevel gear 29, carried, either by a shaft 31 or by a shaft 32, which are journaled in suitable bearings 33, carried by the side walls 12 of the base. The shaft 31 carries only those gears 29 which operate the wedge members 22 disposed beneath the pattern table 20, while the shaft 32 carries those gears 29 which operate the wedge members 22 disposed beneath the work-supporting table 30. Both shafts 31 and 32 are preferably provided with suitable hand wheels 34, so that they may be turned to enable comparatively fine vertical adjustment of their tables and, consequently of the resulting pressure between the roll 40 and the pattern and work, respectively.

In the drawings, I have indicated a pattern at

50. Generally, the pattern comprises a copper plate having a design formed thereon by a photo engraving process. Such plate may be secured as is illustrated in the drawings to a plate-mounting member 51, constructed substantially in accordance with Patent No. 1,786,002, to Lloyd V. Casto, and issued to my assignee, Oxford Varnish Corporation, December 23rd, 1930. Reference to such patent may be had for a more complete description of such mounting. Suffice it here to say that the mounting member 51 is substantially the same width as its supporting table 20, so that it may be restrained against sidewise movement by the side walls 12 of the base 10.

When a plurality of workpieces are decorated at one time, the pattern either may comprise a plurality of small pattern members or one pattern, having a plurality of designs etched in predetermined positions thereon.

The work, as heretofore mentioned, is supported by the work table 30. Workpieces W are laid by the operator on the table 30, which may be marked so as to enable the operator to properly locate the work. However, the work table may be provided with work positioning fixtures, to enable rapid and accurate positioning of the work. In Figs. 2 and 4 I have indicated such fixtures as raised blocks 55 on which flanged workpieces W are positioned. These fixtures may take various forms to accommodate various workpieces and may be secured to the work table 30 in any well-known manner.

When the transfer roll is not in use, it is desirable that it be supported with its transfer surface 42 out of contact with any object. For this purpose I secure a pair of brackets 60 to one end of the base 10, which engage the roll shaft 43 between the gears 44 and the cylinder 41.

The operation of my device is as follows: The operator positions the pattern or photogravure plate on the table 20, and places a workpiece on the table 30 the proper distances apart. That is, with that portion of the design, to be transferred, spaced from the work a distance equivalent to the circumference of the roll to be used. The height of the tables are then adjusted to obtain the desired printing pressure. The pattern plate is then inked, the ink distributed over the plate and the surplus ink removed therefrom by a suitable scraper and distributing mechanism, such as, for instance, that shown in Patent No. 1,934,750, issued to my assignee, Oxford Varnish Corporation, November 14th, 1933. The operator then takes a previously cleaned offset or transfer roll 40 and positions it with its gears and rollers in contact with the racks and guide rails of the base and rolls it across first the pattern and then the work in one continuous movement. After the roll passes from the work, it is placed on the brackets 60 from where it may be removed, cleaned to remove residue color. Such cleaning may readily be accomplished by use of a roll-cleaning machine, such as that shown, described and claimed in Patent No. 2,027,407 issued to my assignee January 14th, 1936. The decorated work is then removed and a piece to be decorated substituted therefor and the operation repeated.

In Fig. 5 I have illustrated a modified form of my invention, especially adapted to register two designs on the same workpiece. The same reference numerals have been applied to this modified form as have been applied to corresponding parts in the form illustrated in Figs. 1 to 4, and heretofore described. The base 10 of the modified form is provided with a work table 30 and two pattern

tables 20, positioned at opposite ends of the work table. Each table is supported by adjustable wedge members as illustrated in Figs. 3 and 4, and heretofore described.

In the modified form, the left-hand pattern table 20 is provided with a pattern indicated by the hatched areas A while the right-hand pattern table is supplied with a pattern indicated by the hatched areas B. These patterns are inked in the usual manner, (preferably with different colors), and transferred by transfer rolls 40 and 40a respectively, to the work W1, on the work table 30. The pattern A is transferred to the area A1 of the work and the pattern B is transferred to the area B1 of the work. The rack 47 extends the full length of the base and is engaged by gears 44 of both pattern rolls, thereby insuring accurate registration of the patterns on the work.

The operation of the form of my invention shown in Fig. 5 is as follows: The operator positions a pair of complementary or other patterns on the pattern tables 20 and a workpiece on the table 30. The area of the portion of each pattern to be transferred to the workpiece is spaced from the corresponding area of the workpiece a distance equivalent to the circumference of the respective transfer roll. The height of both patterns and the work is then adjusted to obtain the proper printing pressure. The patterns are next inked, and the surplus scraped therefrom. Preferably, the ink used comprises a quick-drying ink, the ink applied to one pattern being adapted to dry quicker than the ink applied to the other pattern, so that it may be transferred to the work by an offset roll, as heretofore described, and dry while the operator is disposing of its transfer roll and rolling a clean roll across the other pattern. The slower drying ink of the second pattern permits it to be removed from its pattern and applied to the work after the first applied ink has dried. The decorated work is then removed, the rolls cleaned, and the operation repeated.

If desired, inks may be used which have substantially the same drying time. In such instances, it is preferable to ink one pattern and transfer it to the work before inking the other pattern.

While I have described and illustrated the use of the modified form of device with complementary patterns, it will be obvious to one skilled in the art that the patterns may be such that the design of one will overlies portions of or even the entire design of the other pattern to thus obtain the desired color or tonal effects on the workpiece.

In both forms of the invention, the distance between the center of a pattern and a corresponding workpiece is substantially the same as the circumference of the offset roll or rolls used therewith. Obviously, rolls of various sizes may be used, but in each instance the distance from the pattern to the work will be controlled accordingly, as when a true rolling action is to be had between the transfer roll and the pattern and between the transfer roll and the workpieces. I may, however, as indicated on the dotted lines 23a in Fig. 2, extend the wedge guides 23 upwardly a distance sufficient to enable them to prevent longitudinal movement of their respective tables, and may likewise provide a similar guide to restrict the movement of the pattern mounting on its table.

The foregoing description will show that I have provided a graining machine which may be economically manufactured, manually operated, and wherein accurate registration between a pattern or patterns and a workpiece is readily accom-

plished. Thus, I enable the economical production of a great number of workpieces bearing identical designs.

I claim:

1. A graining device having a frame adapted to support a transfer roll for the rolling movement thereacross, a table mounted on said frame and adapted to support a workpiece, a pair of tables mounted on said frame at opposite ends of the first-named table and in substantial alignment therewith, each of said last-named tables being adapted to support a pattern, each of said tables being independently movable in a vertical direction relative to the base, and means to adjust the vertical position of each table independent of the vertical position of the other table.

2. A graining device, comprising a frame, a pair of tables mounted on said frame, each adapted to support a pattern, a third table mounted on said frame intermediate and in end-to-end relationship with the first-named tables, and adapted to support a workpiece, a plurality of movable wedge blocks interposed between each table and the frame, and arranged to raise or lower their respective tables, means to move the wedge blocks of each table simultaneously and independently of the wedge blocks of the other table, a trackway on said frame parallel with the surface of said tables, and a transfer roller adapted to be supported by said trackway and adapted to be manually moved therealong, first across one pattern and then the workpiece in one direction and then in the opposite direction across the other pattern and then the last-named workpiece.

3. A graining device having a frame, a work table mounted on said frame and adapted to support the work-piece, a pair of pattern tables mounted on said frame at opposite ends of the first-named tables in alignment therewith, each table being adapted to support a pattern, a trackway rigidly mounted on the frame and parallel with the surface of said tables, a transfer roller mounted on the trackway and adapted to be rolled therealong first across the pattern carried by one of the pattern tables and then across a workpiece carried by the work table to transfer design in color from such pattern to the work, and subsequently across the pattern carried by the other pattern table and then across the same workpiece to transfer a second design in color from such last-named pattern to the workpiece carrying the design of the first-named pattern.

4. A graining device having a frame adapted to support a transfer roll, a table mounted on said frame and adapted to support a workpiece, a pair of tables mounted on the frame at opposite ends of the first-named table and in substantial alignment therewith, each table being adapted to support a pattern, a trackway rigidly mounted on the frame parallel with the surface of said table and a pair of transfer rollers mounted on said trackway and adapted to be rolled therealong, one of said rollers being adapted and arranged to roll first across one pattern table and then across the workpiece to transfer a design in color from the pattern carried thereby to the workpiece, and the other transfer roller being mounted on the trackway and arranged and adapted to be rolled therealong first across the other pattern table and then across the workpiece, to transfer a design in color from the pattern carried by such other pattern table to the workpiece bearing the design transferred by the first-named transfer roller.

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