July 22, 1941. B. I. KAYE 2,250,266

METHOD AND DEVICE FOR REGISTERING FORMS FOR MULTICOLORED PRINTING

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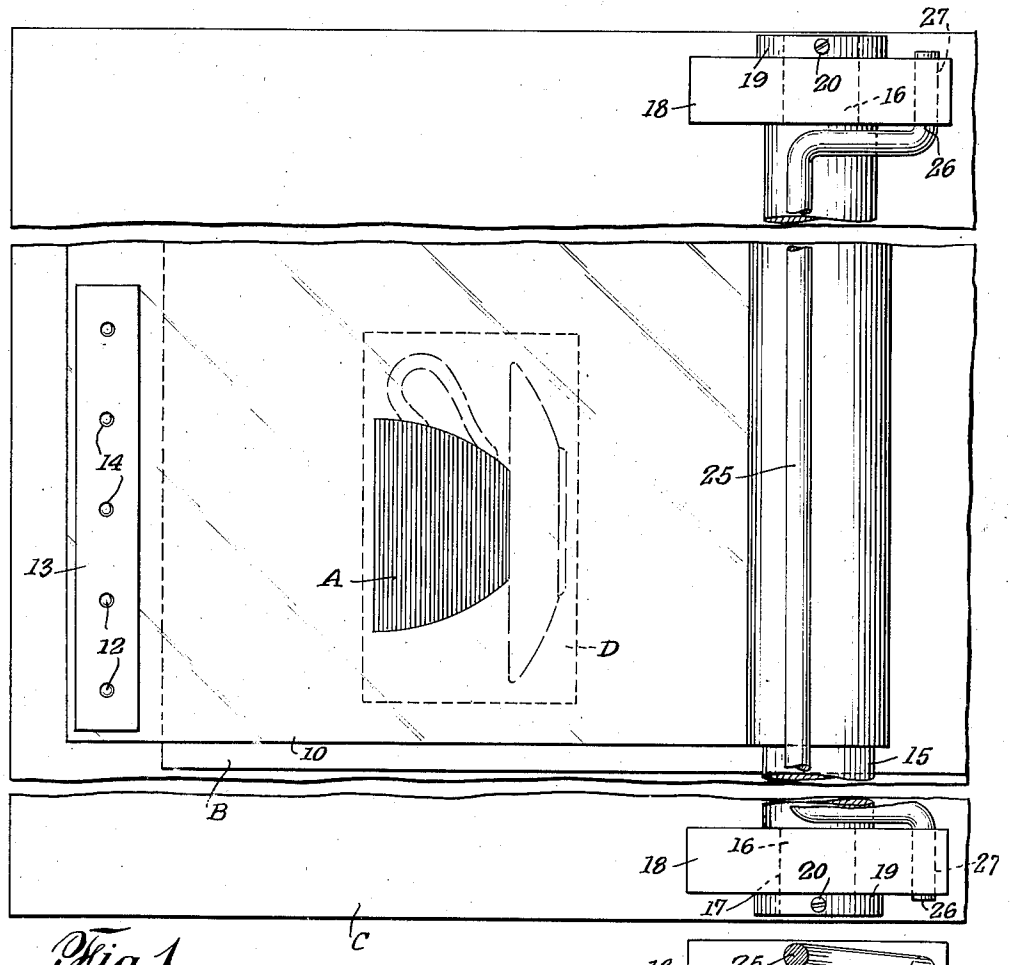


Fig. 1.

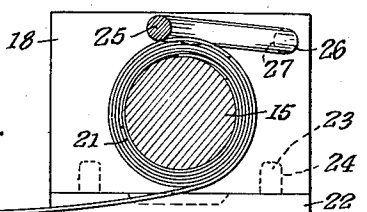


Fig. 2.

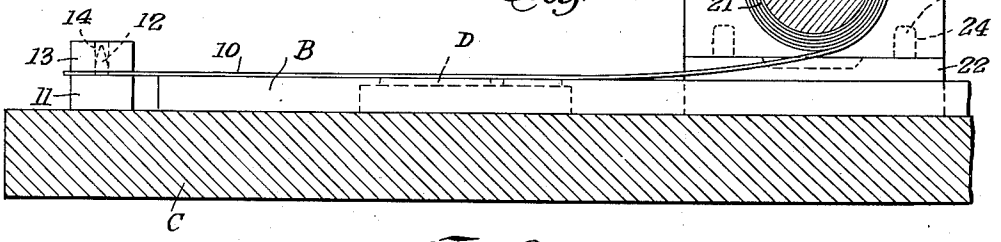


Fig. 3.



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METHOD AND DEVICE FOR REGISTERING FORMS FOR MULTICOLORED PRINTING

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16 Claims. (Cl. 101—211)

This invention relates to the art of multicolor printing and is directed to the provision of methods and apparatus for facilitating the fitting and alignment of successive printing elements, forms or plates with the key form to obtain their proper and accurate arrangement with respect to one another.

The methods heretofore used for the purpose relied, in the main, upon the procedure of trial and error to obtain alignment and were laborious, time-consuming and did not always yield results that were entirely satisfactory.

The present invention, therefore, has for its object to devise methods for the purpose described which are simple and easy to practice, which are rapid and time-saving, and by which accurate results may be obtained without undue efforts.

This invention also has for its object the provision of devices by means of which the methods may be practiced, which are of simple construction, easy and convenient to operate and which are of relatively low cost.

Broadly speaking, the method of the present invention involves the use of a transparency upon which the key image form or plate is printed in one color and which is placed above a chase or stone or an imposing table to guide the aligning of successive printing elements or plates.

More comprehensively stated, the invention contemplates the utilization, in association with such transparency, of anchoring means whereby the printed key image on the transparency is put in register with the key form or plate at one end, and with a roller mounted on movable supports on which the other end of the transparency may be wound up and from which it may be gradually unwound as the successive printing elements are aligned and locked by the guidance of the printed image on the transparency.

As an illustration of its principle and practice, one embodiment of a device of the present invention is shown in the accompanying drawing. As it will be quite readily apparent that many variations and modifications of the invention, particularly with respect to the anchoring means for the transparency, the type of roller and its mounting and supporting means, may be made, within the spirit and scope of the invention and without the use of the inventive faculty, it will be understood that I do not intend to limit my invention to the details of the embodiment shown.

In the drawing:

Figure 1 is a broken, partly fragmentary plan view of one embodiment of the apparatus of the present invention arranged over a working surface for operation; and showing a printing element guided into position by the image printed on the transparency.

Fig. 2 is a section taken on line 2—2 of Fig. 1, and

Fig. 3 is a view in side elevation of one form of clip for securing an edge of the transparency to the roller.

Referring more specifically to the drawing, a transparency which may be of Cellophane or of similar transparent, sufficiently tough and sufficiently flexible sheet material, generally designated as 10, has imprinted thereon the primary or key image A, from the key printing element, which may consist of a bank of type, plate or form.

A chase B may thereafter be placed upon an imposition table or stone C or on the bed of a press. The transparency 10 is rolled up and one of its edges is then anchored in position to have the image thereon in suitable position, relative the chase B, in a manner which will be readily understood by those skilled in the art. While any suitable device may be utilized for anchoring the transparency, I have devised weight anchors consisting of a lower metal bar, 11, having a plurality of upstanding teeth 12, upon which the edge of the transparency 10, may be engaged, and an upper bar 13, having apertures 14, corresponding to the teeth, 12, and adapted to receive them so that the edge of the transparency is engaged upon the teeth and is clasped between the two bars. One or more of such sets of bars may be provided. The bar 11, is preferably of a height sufficient to maintain the transparency 10, spaced above chase B, or imposing table and stone C, so as to enable working under the transparency for the purpose of inserting and locking the printing elements, such as the plate D.

In order to facilitate working with the transparency 10, its free end may first be rolled up and gradually unrolled as the work progresses. To leave the operator's hands free to work as well as to retain the transparency in spaced relation from imposing surface, I provide a roller mounted by its ends upon slidable supports, upon which the transparency may be rolled and from which it may be unrolled as the supports are moved.

Any type of roller and any suitable type of supports therefor that may be moved or slid along the edge of the chase or directly on the imposition table or stone, or on the bed of a

press, may be utilized. In the embodiment illustrated a rod 15, is used as the roller, and is journalled by its reduced ends 16, within openings 17, in slidable bearings or blocks 18, which are retained upon the rod 15, by means of collars 19, fixed on the projecting ends of the rod by set screws 20. If desired, ball or roller bearings may be provided within the openings 17, to make easier the rotation of the rod 15 therewithin.

Where a wooden rod is used for the roller 15, different rollers may have to be used for different sizes of printing jobs. It will readily be understood however, without the need of illustration, that a telescoping or otherwise adjustable rod may be used to avoid the necessity for a multiplicity of devices.

To hold the end of the transparency safely upon the roller 15, one or more suitable clips, such as the circular spring clips 21, may be used.

In order to compensate for the differences in height encountered when a chase is not used, separable build up blocks 22, the height of a chase, may be provided for the blocks 18, which may be held on the blocks 18, by means of teeth 23, on their upper surfaces, which are frictionally received and held within correspondingly disposed openings 24, in the underside of the blocks 18.

In the illustrating drawing, the apparatus is shown in use in conjunction with a chase, but with the supports including the build up blocks 22, resting directly upon the imposition surface to illustrate the manner of using the apparatus upon a relatively smaller printing job.

It may here be stated that while the roller supports have been shown as slidable blocks, wheels or rollers may be used in lieu of the blocks or may be provided on the blocks in a manner believed to be readily understood and not thought necessary to be illustrated.

Similarly, the rod 15, instead of being journalled on the supports 18, may be fixed therein and a tube rotatably mounted on the rod to receive the transparency.

To avoid too ready rotation of the roller rod 15, within the bearing openings 17, so as to prevent inadvertent unrolling and buckling of the transparency 10, during work, I provided means, such as the U-shaped rod 25, having outwardly directed ends, 26, by which it is pivoted in openings 27, in blocks 18, arranged at a point above and to one side of the bearing openings 17, so that the weight of the rod 25, will fall against the roller rod 15, and the portion of the transparency rolled thereon, and retard their rotation.

Many other variations and modifications will readily suggest themselves to any one skilled in the art who understands the principles of my invention, and I therefore desire the protection of the patent laws for all such modifications and variations that are within the spirit and scope of the invention and of the claims hereto appended.

What I claim as my invention is:

1. In the process of multi-color printing, the steps of printing the image of the printing elements for the printing of one color upon a transparent sheet, arranging the sheet in a roll, arranging the said rolled up sheet over a working surface. anchoring the free end of the sheet on the working surface and arranging printing elements for succeeding colors under the said transparent sheet by guiding on the said image as the said sheet is gradually unrolled.

2. Apparatus for the purpose described comprising, a transparent sheet having an image of a printing element printed thereon, a roller engaging one end of the sheet and having the said sheet rolled thereon, movable supports for the said roller adapted to movably straddle the roller over work arranged on a working surface, means for anchoring the free end of the sheet on the working surface and means for pressing the rolled up portion of the sheet against the roller to retard the unrolling thereof.

3. In apparatus for guiding the arrangement of printing elements for printing succeeding colors in multi-color printing, a pair of spaced apart supporting members adapted to be moved along a working surface, a shaft rotatably supported intermediate the said supporting members in position to straddle work arranged on the working surface in spaced relation to the working surface and means for retarding the rotation of the said shaft.

4. In apparatus for guiding the arrangement of printing elements for printing succeeding colors in multi-color printing, a pair of spaced apart supporting members adapted to be moved along a working surface, and a rotary member supported intermediate the said supporting members in position to straddle work arranged on the working surface.

5. Apparatus for guiding the arrangement of printing elements for printing succeeding colors in multi-color printing, comprising a transparent sheet having the image of one color printing element printed thereon, a roller, means for movably supporting the roller in spaced relation over a working surface, and in position to straddle work arranged on the surface and means for securing the end of the sheet upon the roller.

6. Apparatus for guiding the arrangement of printing elements for printing succeeding colors in multi-color printing comprising, a transparent sheet having the image of one color printing element printed thereon, a roller adapted to have the said sheet rolled thereon and means for anchoring the free end of the sheet on a working surface.

7. Apparatus for guiding the arrangement of printing elements for printing succeeding colors in multi-color printing comprising, a transparent sheet, means for anchoring one end of the sheet on a working surface and means movable along the working surface for rolling up and unrolling the said transparent sheet over work arranged on the working surface.

8. Apparatus for guiding the arrangement of printing elements for printing succeeding colors in multi-color printing comprising, a transparent sheet having the image of one color printing elements printed thereon, a roller, means for movably supporting the roller over a working surface in position to straddle work arranged thereon, means for securing one end of the sheet to the roller and means for anchoring the opposed end of the sheet on the working surface.

9. Apparatus for guiding the arrangement of printing elements for printing succeeding colors in multi-color printing comprising a transparent sheet having the image of one color printing elements printed thereon, a roller, means for supporting the said roller in spaced relation over a working surface in position to straddle work arranged thereon and adapted to be moved on the said surface, means for securing one end of the sheet to the roller to permit the rolling of the sheet thereon and means for retarding the movement of the roller in sheet unrolling direction.

10. In apparatus of the character described

having a roller, supporting means for the roller comprising a block having a bearing opening adapted to have the end of the roller journalled therein, said block having a surface on which it is adapted to be slid on a working surface.

11. In apparatus of the character described having a rotary shaft, supporting means for the shaft comprising a pair of blocks each having a bearing opening adapted to have the end of the shaft journalled therein, a surface on which the block may be moved on a working surface and a build up block having a sliding surface and means for frictionally engaging the build up block on the said bearing block.

12. In the process of multi-color printing, the steps of printing the image of the printing elements for the printing of one color upon a transparent sheet, arranging the sheet on a roll, arranging the said rolled up sheet over a working surface with the image arranged to face the working surface as the sheet is unrolled, anchoring the free end of the sheet on the working surface and arranging the printing elements for printing each succeeding color under the said transparent sheet by guiding on the said image as the said sheet is gradually unrolled.

13. In apparatus for guiding the arrangement of printing elements for printing succeeding colors in multi-color printing, a pair of spaced apart supporting members adapted to be freely moved along a working surface, a shaft rotatably supported intermediate the said members in position to straddle work arranged on the working surface and in spaced relation to the working surface, and a transparent sheet having the image of the first color printing elements imprinted thereon rolled on the said shaft in position to have the said image face the working surface as the sheet is unrolled from the said shaft.

14. In apparatus for guiding the arrangement of printing elements relative separately set printing elements comprising a transparent sheet having the image of the set printing elements imprinted thereon, a roller having one edge of the said sheet attached thereto, a pair of movable supports for the roller adapted to support the roller in straddling position over work arranged intermediate the supports and means for adjusting the height of the roller relative a work supporting surface.

15. Apparatus for guiding the arrangement of printing elements in a chase including a movable roller, a transparent sheet secured by one edge to the said roller and means for tensioning said sheet as the said roller is moved to roll the sheet up and unroll it from the said roller.

16. Apparatus for guiding the arrangement of printing elements in a chase including a movable roller, a transparent sheet secured by one edge to the said roller and means for keeping the said sheet taut as it is rolled up and unrolled from the said roller.

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