

Nov. 6, 1928.

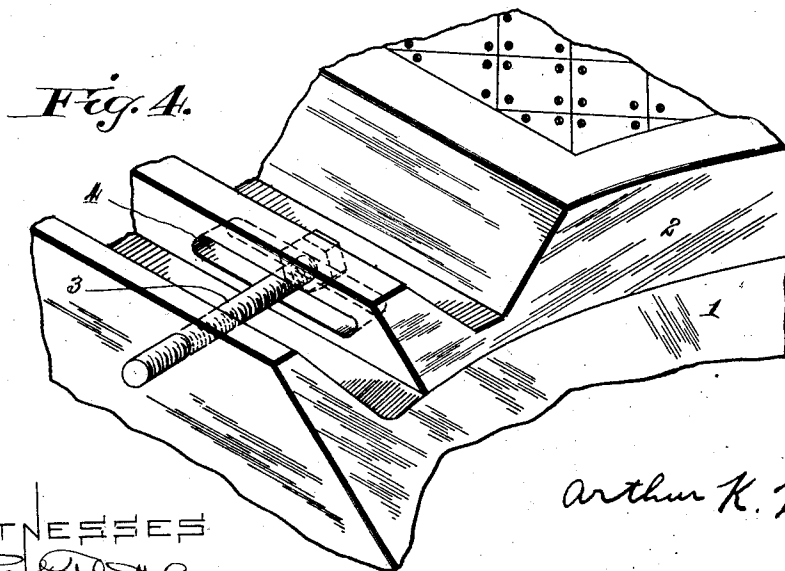
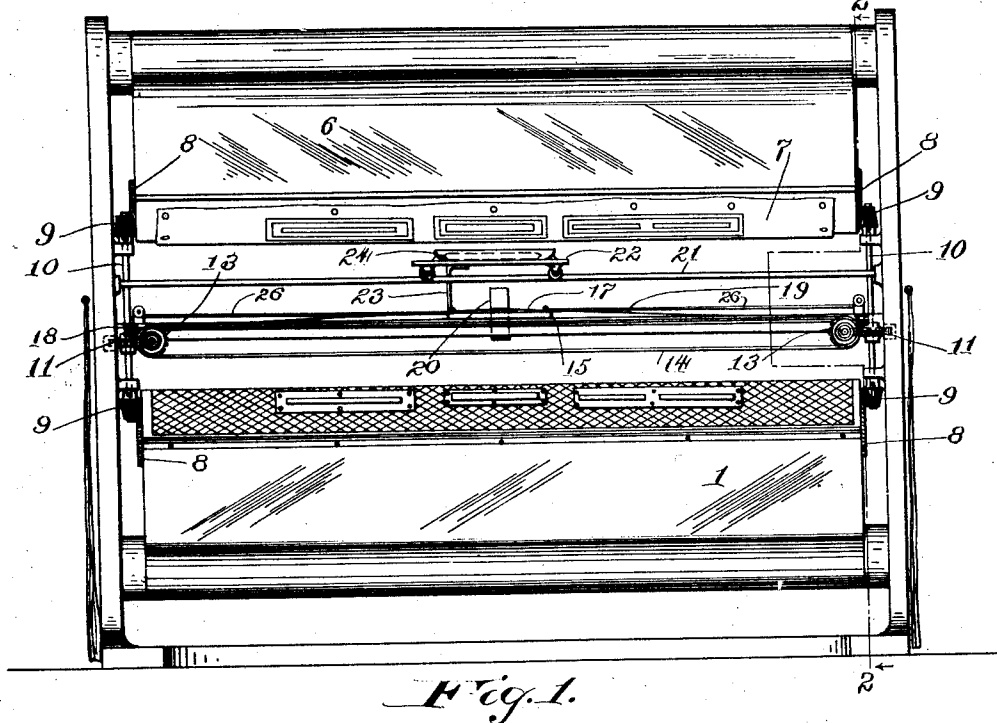
1,690,143

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METHOD OF AND APPARATUS FOR REGISTERING CYLINDRICAL FORMS

Filed May 26, 1924

2 Sheets-Sheet 1



WITNESSES
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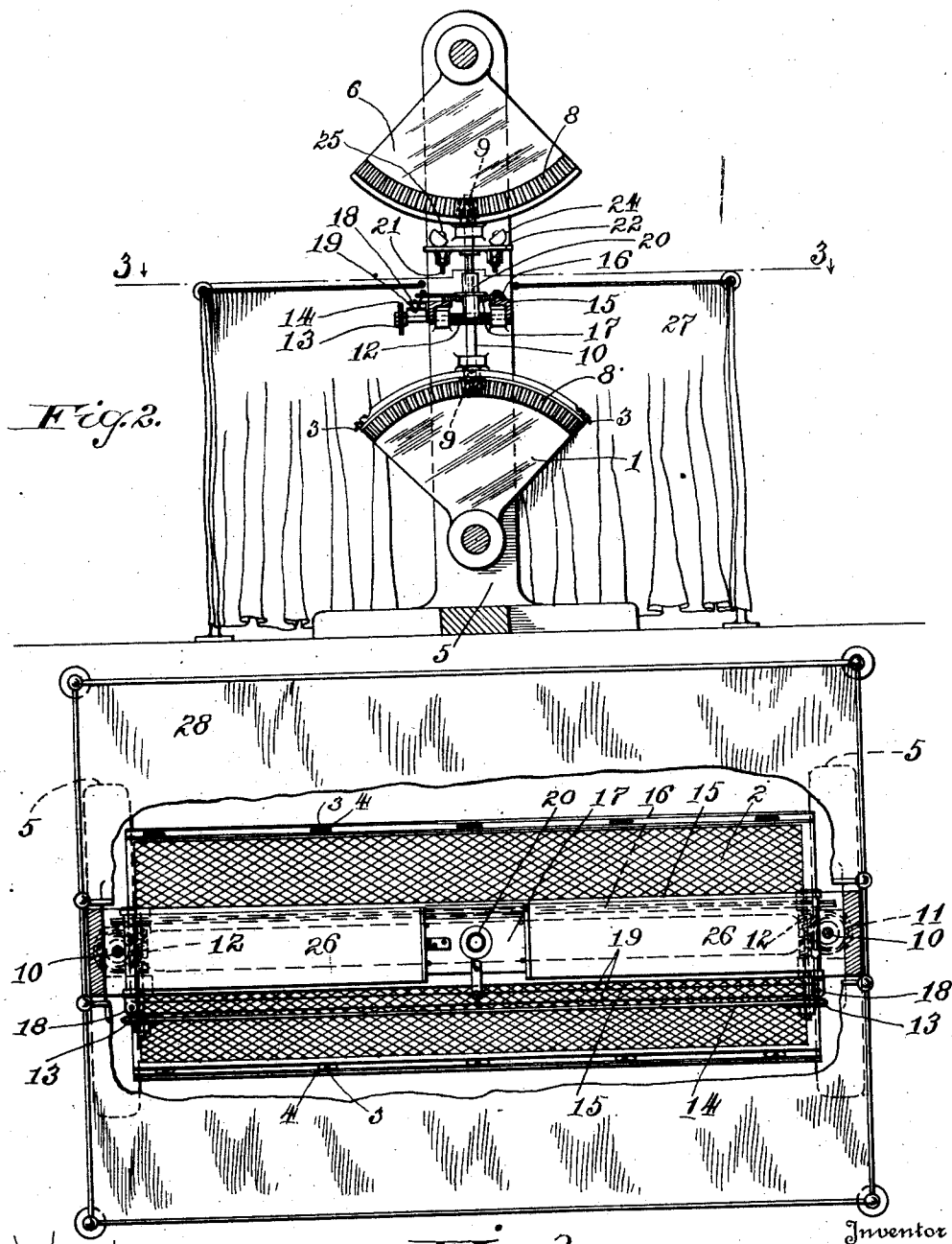


Fig. 3.

Fig. 3.

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UNITED STATES PATENT OFFICE.

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METHOD OF AND APPARATUS FOR REGISTERING CYLINDRICAL FORMS.

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This invention relates to a method and apparatus for use in registering forms on rotary presses. It is similar in some respects to the method and apparatus disclosed in the patent granted to me on October 3, 1916, numbered 1,199,942. Rotary presses are used extensively where large production is required. It has been impractical to use them for multicolor or similar work where a multiplicity of small plates or several impressions are required because of the difficulty of accurately registering the members in or on the cylindrical forms for the successive impressions with the first or primary impression. The object of the present invention is to develop a method and apparatus by the use of which the members in or on the cylindrical forms can all be accurately and quickly registered with the preceding impression or detail make-up.

In my invention the plates, cuts, dies, or transfer impressions, hereinafter called movable members, or impression members, are attached to or held in the cylindrical form or turtle. This form or turtle, when in use for making impressions, may be secured to the face of the cylinder of the press. When the impression members on it are to be registered with a primary impression, or other registering detail, the form or turtle may be removed from the cylinder and placed on an apparatus similar to that hereinafter described.

The cylindrical form or turtle may be a shell, as is customary, or it may be a solid cylindrical body or it may be a section or other part of either. The primary impression or registering detail may be a sheet printed from an original form, and onto which other matter or matter in other colors is to be placed, or it may be a drawing or a sheet on which proofs have been pasted, or any other sheet or apparatus outlining the space or spaces to be occupied by the impression members.

An advantage of my invention is that it enables the press to be used for making other impressions at the same time turtles are being made up and the members registered.

Further objects and advantages of my invention will be apparent from the following detailed description thereof.

My invention may be carried out in many

different ways, and it can be embodied in various forms of apparatus other than the one illustrated, and, except where such details are specifically described and claimed, it is not intended to limit the invention to the particular embodiment thereof illustrated. For the purpose of illustration I have shown one form of apparatus in the accompanying drawings, in which:

Figure 1 is a front elevation with the curtain partly removed. Figure 2 is a vertical view, substantially on line 2—2 of Figure 1. Figure 3 is a plan view on line 3—3 of Figure 2, with parts of the curtain cut away. Figure 4 is a perspective view of the manner of connecting a cylindrical form or turtle, to a support.

Similar numerals refer to similar parts throughout the several views. 1 is a support for a cylindrical form or turtle. The turtle is shown in Figure 4 to be held to its support by screws 3 loosely fitting in longitudinal slots 4. These slots, and the space between the turtle and the ridge on the support, permit the turtle to be properly adjusted on the support. The turtle is made of metal and in its surface are many small wooden blocks to which plates, or other impression members may be tacked or otherwise affixed.

Support 1 is rotatably mounted between standards 5.

Rotatably mounted in the top of standards 5 is a cylindrical support 6 on which registering detail may be tacked or otherwise attached, as shown at 7.

Supports 1 and 6 have on their ends beveled racks 8. Beveled pinions 9 at both ends of rods 10 coact with racks 8 and when actuated, turn the supports around in unison with each other.

Rods 10 have screw-gears 11 operated by worms 12. Rods 10 are rotatably held in standards 5, as are also the rods holding worms 12. At the end of the last mentioned rods are gears or pulleys 13, around which a chain or band 14 is passed. The operator, standing in front of the machine, by pulling chain or band 14, may turn the supports in unison to any desired position.

Between the supports, and fastened to the standards 5 are runways 15. On one of these runways is a rib 16. Slidably mounted

on these runways is a carriage 17 containing the projecting apparatus. The back lower part of this carriage has a groove in it which exactly fits over rib 16. In this way, the rib and groove cause the carriage to slide along the runways in a right line, that is, without rotation. Attached to the front of carriage 17 and reeved around pulleys 18 is a band 19. The operator, standing in front of the apparatus, may pull on the band 19 and move the carriage back and forth.

In the center of the carriage is a tubular lens holder 20 which contains a system of lenses similar to that described in my above mentioned patent, but any system of lenses or lenses and prisms which will project onto the turtle the figure on the upper support in proper position for registering will be satisfactory.

Above runways 15, and also held in standards 5 are tracks 21 on which a reflector carriage 22 runs. This carriage is connected to carriage 17 by rod 23, so that when carriage 17 is moved, carriage 22 is also. On carriage 22 are a pair of reflectors 24 and electric bulbs 25 are in the reflectors. These bulbs brightly light the part of the registering detail which is to be projected.

Attached to each side of carriage 17 are opaque curtains 26. These curtains fit between runways 15 and the spring actuated rollers of the curtains are attached to the standards 5. As the carriage 17 is moved back and forth, one curtain unrolls while the other one rolls up. Curtains 27 and 28 are supported on posts and rods, the end rods joining standards 5 just above runways 15. The top sections, 28, are held close to runways 15, so that all light may be excluded from the turtle support except that entering through the lens holder 20. The operator works inside the curtain.

As shown in Figure 1, the registering detail attached to support 6 and generally denoted by 7, has several figures thereon, or outlines, showing where it is desired to locate plates or other movable members on turtle 2. These plates are shown to have been properly placed and tacked on the turtle, both supports being turned so the plates and outlines are visible.

In using my invention it will be apparent that only a small portion of the registering detail need be projected at a time in order to properly place the impression members. The lenses project onto the turtle an image of the outline above, and the operator has only to move the impression member to the required position and secure it to the base.

Any number of movable members, or impression members, may thus be attached to the turtle, or any number of turtles can be made up from a single outline or other registering detail.

The manner of using and advantages of the invention will be understood from the foregoing description in connection with the drawings:

I claim:

1. The method of registering a cylindrical form having a movable member, which consists in providing suitable registering detail in such relation to the cylindrical form that by rotating the form, the portion to be registered will be in suitable relation to the registering detail for the detail to be displayed on the cylindrical form, rotating the form so that the portion to be registered is in suitable relation to the registering detail for the detail to be displayed on the cylindrical form, and displaying on the form an image of such portion of said registering detail as will define the proper location on said form for said movable member.

2. The method of registering cylindrical forms having movable members, which consists in providing suitable registering detail of a plurality of members of a cylindrical form in such relation to the cylindrical form that by rotating the form, the portion to be registered will be in suitable relation to the corresponding portion of the registering detail for the detail to be projected onto the cylindrical form, rotating the form so that the portion to be registered is in suitable relation to the registering detail for the detail to be projected on the cylindrical form projecting an image of a sufficient portion of said registering detail onto said form and moving the member to be registered into the proper place on said form as determined by said image.

3. The method of registering cylindrical forms having movable members, which consists in providing suitable registering detail of a plurality of members of a form, rotatably mounting the cylindrical form opposite to said registering detail, rotating said cylindrical form until the portion to be registered is in suitable relation with the corresponding portion of the registering detail for the latter to be projected onto the cylindrical form, projecting onto the form an image of a sufficient portion of said registering detail and moving the member to be registered to the proper place on said form as determined by said image.

4. The method of registering cylindrical forms having movable members, which consists in providing suitable registering detail of a plurality of members of a form, mounting said registering detail and the cylindrical form on opposite rotatable supports, rotating said supports until the portion of the cylindrical form to be registered is in suitable relation with the corresponding portion of the registering detail for the latter to be projected onto the cylindrical form, projecting onto the form an image of a sufficient

portion of said registering detail and moving the member to be registered to the proper place on said form as determined by said image.

5 5. The method of registering cylindrical forms, having movable members, which consists in providing suitable registering detail of a plurality of members of a form, rotatably mounting the cylindrical form, simultaneously moving said registering detail and rotating said cylindrical form until the portion to be registered is in suitable relation with the corresponding portion of the registering detail for the latter to be projected onto the cylindrical form, projecting an image of a sufficient portion of said registering detail onto said form, and moving the member to be registered into the proper place on said form as determined by said image.

6. The method of registering cylindrical forms having movable members, which consists in providing suitable registering detail of a plurality of members of a cylindrical form, projecting an image of a portion of said registering detail onto said form, rotating the cylindrical form relatively to the projecting means until the portion to be registered is in suitable relation with the projected image, and moving the member to be registered into the proper place on said form as determined by said image.

7. In combination, a support, a cylindrical form thereon having movable members attachable thereto, suitable registering detail supported in suitable relation to said form to be projected onto said form, means to rotate said form, and means for projecting an image of any part of said registering detail onto a corresponding part of said form to determine the proper location on said form for said movable members.

8. In combination, a support, a cylindrical form thereon having movable members attachable thereto, suitable registering detail supported opposite to said form, means to rotate said form, and means to project any part of said detail onto a corresponding

part of said form to determine the proper location on said form for said movable members. 50

9. In combination, a rotatable support, a cylindrical form thereon having movable members attachable thereto, a second rotatable support, suitable registering detail mounted on said second rotatable support, and means to project any part of said detail onto a corresponding part of said form to determine the proper location on said form for said movable members. 60

10. In combination, a rotatable support, a cylindrical form thereon, an opposite rotatable support, suitable registering detail mounted on said opposite rotatable support, and means to rotate said supports in unison, so that corresponding parts of said registering detail and said cylindrical form remain opposite to each other, and means for projecting an image of any part of said registering detail onto a corresponding part of said cylindrical form. 70

11. In combination, a rotatable support, a cylindrical form thereon having movable members attachable thereto, a support having mounted thereon suitable registering detail, means to move the supports so that any part of said cylindrical form will be opposite to the corresponding part of said registering detail, and means to project an image of any part of said registering detail onto the corresponding part of said cylindrical form to determine the proper location on said form for said movable members. 80

12. In combination, a support, a cylindrical form thereon having movable members attachable thereto, suitable registering detail supported in suitable relation to said form to be projected onto said form, means for projecting an image of a portion of said registering detail onto said form to determine the proper location on said form for said movable members, and means to rotate said cylindrical form relatively to said projecting means. 90

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