Dec. 12, 1939. H. J. LUEHRS 2,183,222

INTAGLIO PRINTING PRESS

Original Filed May 27, 1937 2 Sheets-Sheet 1

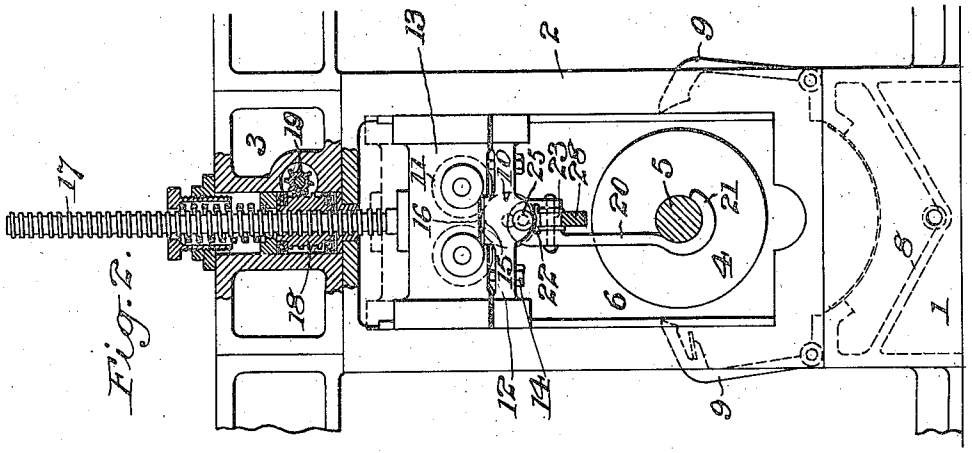


Fig. 2.

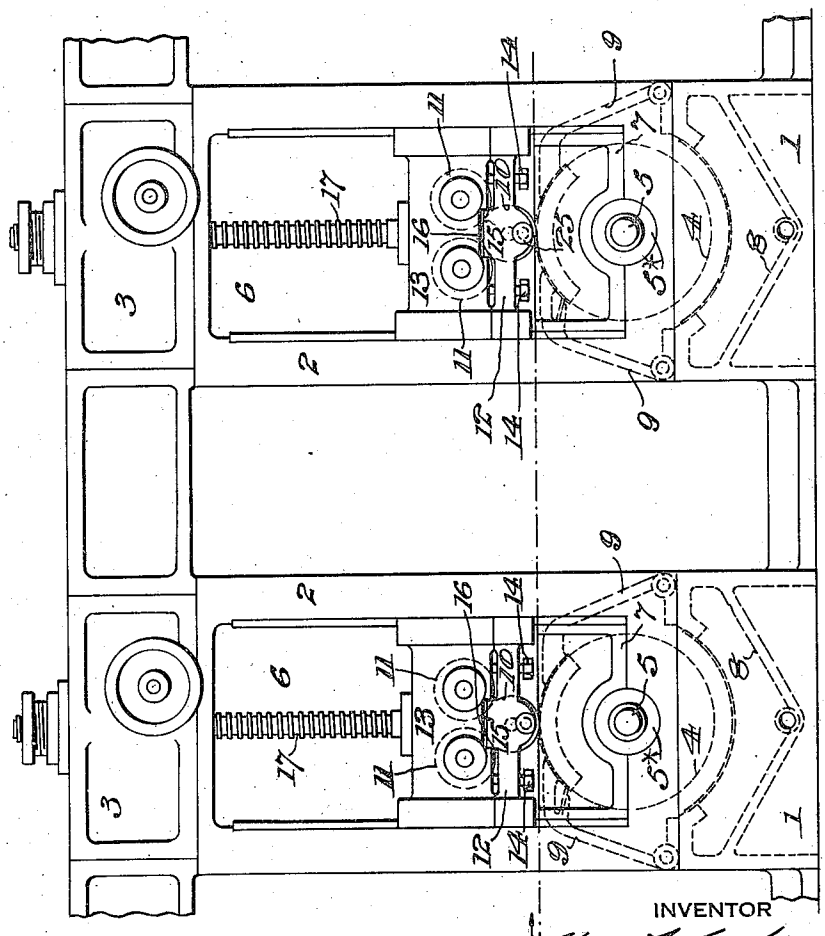


Fig. 1.

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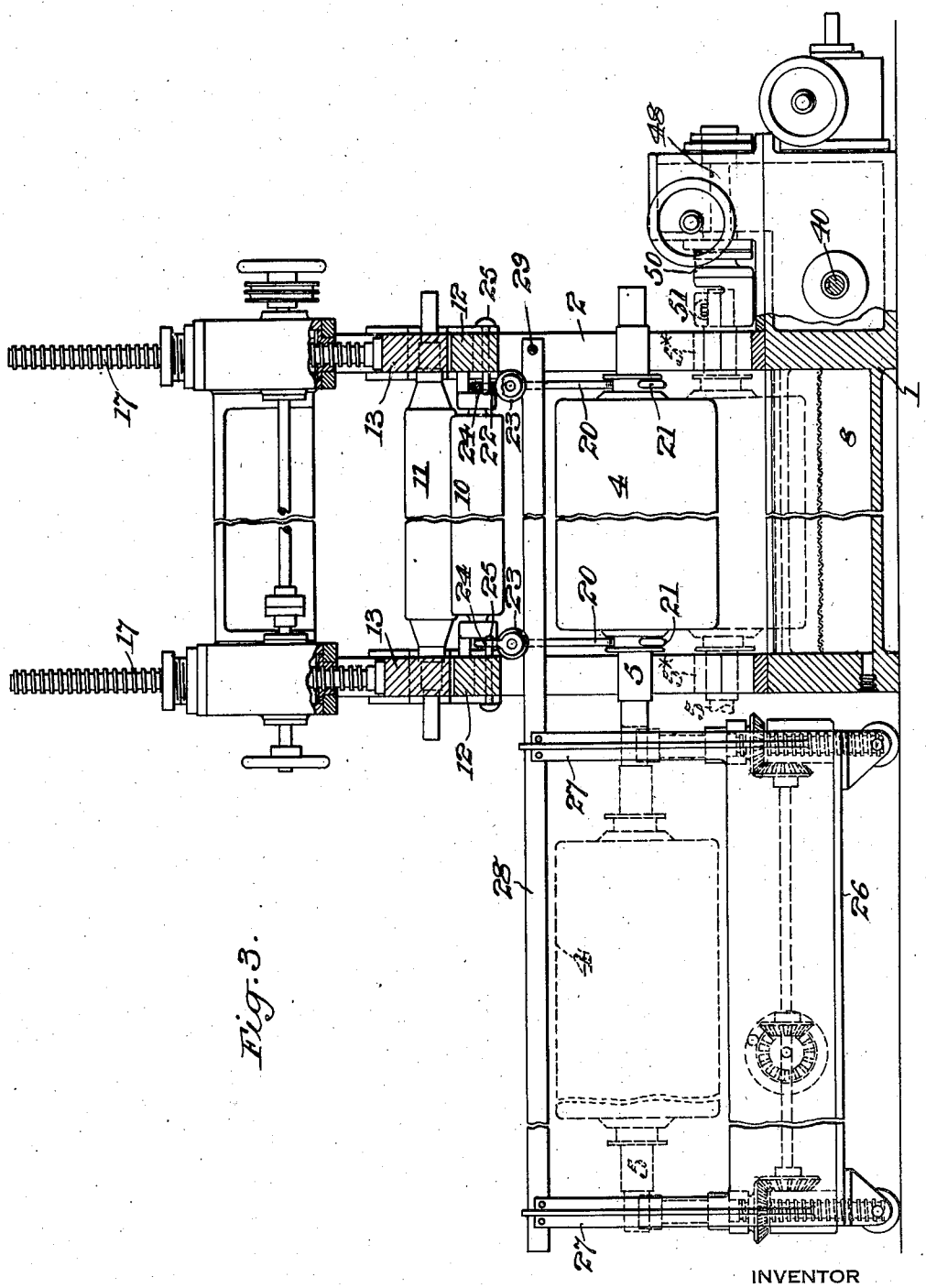


Fig. 3.

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UNITED STATES PATENT OFFICE

2,183,222

INTAGLIO PRINTING PRESS

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Original application May 27, 1937, Serial No. 145,111. Divided and this application October 8, 1937, Serial No. 168,017

2 Claims. (Cl. 101—153)

My invention comprises an intaglio printing press unit in which the design cylinder may be moved vertically out of and into the ink fountain.

My invention also comprises a printing press unit in which the ink fountain bowl is formed in the base, which bowl is provided with end members and cover members coacting with the design cylinder to close the fountain, both of the cover members being opened to permit the insertion and removal of the design cylinder by a vertical movement thereof.

My invention also comprises a printing press unit in which the suspension means are provided for removably connecting the design cylinder to the impression heads whereby the means for imparting vertical movement to the said heads also imparts a vertical movement to the design cylinder.

My invention also comprises certain improvements in the construction, form and arrangement of the several parts of the press as will be hereinafter described and claimed.

A practical embodiment of my invention is represented in the accompanying drawings, in which:

Fig. 1 represents two adjacent intaglio printing press units in side elevation, with the parts in their printing position;

Fig. 2 represents a printing press unit in side elevation, partly in section, with the cover members of the ink fountain shown swung back to their opened position and the end sealing members of the ink fountain removed, the design cylinder being shown in its raised position suspended from the loading truck rail;

Fig. 3 represents a printing press unit in cross section, the parts being in the positions shown in Fig. 2, the design cylinder being shown in dotted lines in its operative position within the unit, and also in dotted lines in its position when carried by the truck.

The intaglio printing press may consist of any desired number of printing press units. In the present instance I have shown two printing press units of corresponding construction.

Each printing press unit comprises a base 1, two interchangeable side frames 2, 2 and a top 3. The design cylinder is denoted by 4 and its shaft by 5, which shaft is mounted in removable bearings 5*, 5* in the side frames 2, 2 at the lower ends of corresponding windows 6, 6 therethrough, said windows being sufficiently large to permit the endwise removal and insertion therethrough of the design cylinder when in its raised position. End sealing members 7, 7 are removably placed in the lower portions of the windows 6, 6 and form the upper half bearings for the design cylinder shaft 5.

The ink fountain bowl 8 is formed in the base 1 integral therewith, which bowl is surmounted by swinging cover members 9, 9, hinged at the top of the base. These cover members coact with the design cylinder 4 and the end members 7, 7, to effectively close the ink fountain when the design cylinder is in its lowered operative position therein. These cover members 9, 9 respectively carry the inking and wiping mechanisms, not shown herein, of any well known or approved form and are interchangeable.

The impression and back-up rolls 10 and 11 are provided respectively, with pairs of heads 12, 12 and 13, 13, which heads are slidably mounted along their respective side walls of the windows 6, 6 in the side frames 2, 2. Each impression roll head 12 is secured, with a slight lost motion, to its back-up roll head 13, by bolts 14, 14 with the back-up and impression rolls in their proper rolling contact when the heads are lowered. When the heads are raised the impression roll 10 drops slightly away from its contacts with the back-up rolls 11. A tongue and groove connection 15, 16 is provided between the back-up and impression roll heads to properly guide the rolls into their proper coactive position.

The mechanism mounted in the top 3 of the frame for raising and lowering the impression and back-up rolls, and, when required, the design cylinder 4, may be of any well known or approved construction, that illustrated herein being shown, described and claimed in United States Letters Patent No. 2,076,241, dated April 6, 1937. In this raising and lowering mechanism the non-rotatable screws 17, 17 which extend upwardly from the back-up roll heads 13, 13 carry wide faced helical gears 18, 18 which are rotated in either direction by worm gears 19, 19 driven from a suitable source of power not shown herein.

The suspension means which I have shown for moving the design cylinder by means of the impression and back-up rolls vertically into and out of the ink fountain when both of the cover members are thrown back out of the way, comprises, in the present instance, a pair of hook bars 20, 20, adapted to be removably engaged with the impression roll heads and the design cylinder. The lower end of each of these bars is provided with a hook 21 for receiving and retaining the shaft 5 of the design cylinder at the opposite

ends of the cylinder. The upper end of this hook bar is provided with an open recess 22 within which there is mounted a traction wheel 23. This upper end is also provided with a hole 24 for receiving the inner end of a removable locking pin 25 carried by the impression roll head 12.

A wheeled truck 26 has overhanging arms 27, 27 uprising from the ends of the truck, which arms form a support for a horizontally disposed design cylinder carrying track rail 28, one portion of which projects a considerable distance beyond the end of the truck. The free end of this track rail 28 is adapted to be inserted into and removed from the printing press unit through the window 6 in a side frame 2, by the movement of the truck toward and away from the said side frame. Means are provided for removably supporting the free end of the track rail 28 at the far side frame when the rail is inserted into the printing press unit, which means is herein shown as a removable crossbar 29 spanning the upper end of the window 6 and passing through the free end of the said track rail 28.

The design cylinder is driven in either direction from a main drive shaft 40 through suitable intermediate mechanism including a shaft 48. This shaft 48 is removably connected to the shaft 5 of the design cylinder through a two-part coupling 50, 51.

In operation, it will be assumed that the parts are in their operative positions shown in Fig. 1 and it is desired to remove the design cylinder 4 from the printing press unit. The web is broken to permit the cover members 9, 9 of the ink fountain to be swung back out of the way of the design cylinder, the design cylinder shaft 5 may then be uncoupled from its driving shaft 48 and the end sealing members 7, 7 and the bearings 5*, 5* are removed. The pair of hook bars 20, 20 are then engaged at their lower ends with the design cylinder shaft and at their upper ends with the impression cylinder heads 12, 12. The raising and lowering mechanism is then operated through the non-rotatable screws 17, 17, the back-up cylinder heads 13, 13, the impression cylinder heads 12, 12 and the hook bars 20, 20 to raise the back-up roll, impression roll and the design cylinder.

It will be seen that the press may be readily reversed because of the interchangeability of the cover members with their inking and wiping mechanisms.

It will also be seen that the entire press is materially lowered by the location of the ink fountain bowl entirely within the base and that also the tendency to vibrate the parts is materially lessened by mounting the drive housing on the base.

The parts shown and described herein but not claimed constitute the subject matter of my copending applications Serial No. 145,111 filed May 27, 1937 (of which this is a division), Serial No. 168,016 filed October 8, 1937 and Serial No. 168,018 filed October 8, 1937.

It is evident that various changes may be resorted to in the construction, form and arrangement of the several parts without departing from the spirit and scope of my invention, and hence I do not intend to be limited to the particular embodiment herein shown and described.

What I claim is:

1. In an intaglio printing press unit, a base, an ink fountain therein, side frames uprising from the base, bearings in said frames, a design cylinder, its shaft removably mounted in said bearings, ink fountain cover members hinged on said base and coacting with the cylinder to close the fountain, and means imparting a vertical movement to the cylinder shaft for removing from or inserting the shaft in said bearings when the cover members are opened.

2. In an intaglio printing press unit, a base, an ink fountain therein, side frames uprising from the base, bearings in said frames, a design cylinder, its shaft removably mounted in said bearings, ink fountain cover members hinged on said base, removable end sealing members forming the upper half of the side frame bearings for said design cylinder shaft, said members coacting with the side frames, with the design cylinder and with the said cover members to close the ink fountain, and means imparting a vertical movement to the cylinder shaft for removing from or inserting the shaft in said bearings when the cover members are opened.

HANS J. LUEHRS.