April 29, 1924. 1,491,977

F. W. THOMBS

COUNTER SAVER FOR DIE PRINTING PRESSES

Filed Jan. 31, 1924

FIG I

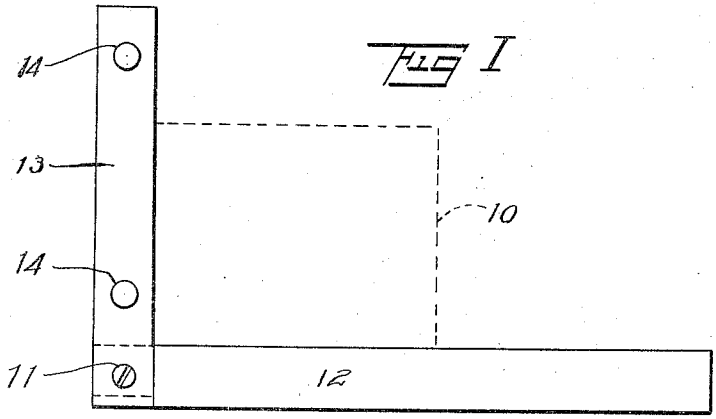


FIG I a

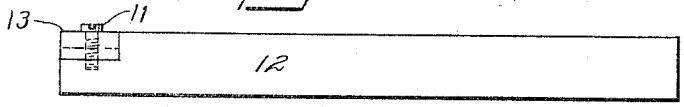


FIG II

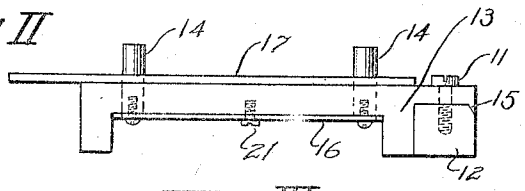


FIG II a

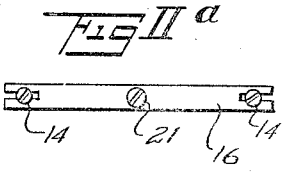
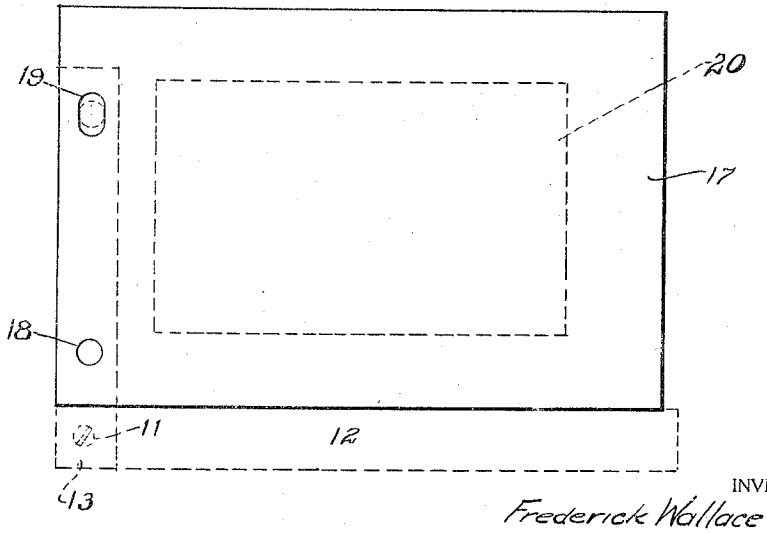


FIG III



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UNITED STATES PATENT OFFICE.

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COUNTER SAVER FOR DIE PRINTING PRESSES.

Application filed January 31, 1924. Serial No. 689,626.

To all whom it may concern:

Be it known that I, FREDERICK WALLACE THOMBS, of West Natick, county of Middlesex, Commonwealth of Massachusetts, have invented an Improvement in Counter Savers for Die Printing Presses, of which the following is a specification.

This invention relates to presses used in the operation of die-stamping, that is to say, the operation of printing and simultaneously embossing by means of an engraved die and counter die; and the object of the invention is to save the counter-die for repeated use. For, according to present practice in the art of die-printing, the counter, which is cut by hand in the surface of a sheet of cardboard, serves for only a single printing, a new counter being made each time the die is used. The reason for this is that, prior to the present invention, no practical or satisfactory means have been devised whereby the counter, after it has been removed from the press, can be replaced in exact registration with the die.

The necessary exactness of registration is secured, according to present practice, by forming the counter from an impression made from the die upon the cardboard sheet after both the die and the sheet on which the counter is to be cut have been fixed in their working positions in the press. Thus the steel die having been locked in its place in the bed of the press and given a coating of ink, the sheet of cardboard is laid upon it, the back of said sheet having been previously coated with a non-liquid glue. The plunger is then brought down upon it, thereby making upon the cardboard sheet an impression of the design or lettering engraved upon the die, and at the same time causing the sheet to adhere to the plunger. The plunger is then removed from its piston, and the cardboard is cut out by hand in such manner as to leave a counter of the engraving of the die, the counter being in relief. The plunger is then replaced, and the printing can now proceed. When the printing is finished the counter is scraped off the plunger, and is of no use thereafter, because of the practical impossibility of resetting both die and counter in the exact positions they must occupy, relative the one to the other, for successful use. Hence, whenever and as often as the die is re-used, a new counter must be made. This is an operation requiring much skill and care, and consuming much time, particularly in the case of elaborate designs. Therefore a very large part of the expense of a re-printing is the cost of making another counter; and it is the object of the present invention to save this expense by providing simple and practical means whereby the die and its counter can be removed from the press and at any time thereafter be replaced in the exact relative positions necessary for printing.

To this end, according to the present invention, the cardboard sheet wherein the counter-die is cut is not fixed directly to the plunger, but to a removable support, which may be a metal sheet or plate, and this support is provided with registration devices designed to co-operate with corresponding devices upon a die-locating frame, or equivalent mechanism, as hereinafter described in detail, and as illustrated in the accompanying drawings, which form a part of this specification.

In said drawings—

Fig. I is a top plan view of the die-locating frame, and Fig. I^a is a front elevation of the same;

Fig. II is an end view in elevation of said frame, and Fig. II^a is a detail of the underside of the pin-supporting spring;

Fig. III is a plan view of the counter-support, showing the position of the counter by dotted lines.

In the embodiment of my invention shown in the drawings, the die-locating means consists of a frame formed by the two steel bars 12, 13 fastened together at right angles. By means of this angle-frame the die-block 10 (dotted lines Fig. I) can be set always in identically the same working position. When so positioned it is locked firmly in place by the usual means.

The front bar 12 of the die-locating frame is a permanent part of the die-carrier; but the side bar 13 is detachable. It serves only for the purpose of locating the die and its counter die, and is removed during the operation of printing.

The means whereby the bars 12, 13 are attached together must be such as to insure that their relative position will be always the same. To this end they are formed at their meeting ends with flanges adapted to overlap, and fitting accurately together. Furthermore, bar 13 has a projecting lip 15, which fits a correspondingly beveled surface

on the flanged part of bar 12 (Fig. II). The overlapping ends of the two bars are fastened together, when a die is to be located, by screw 11, the lip 15 acting to draw the bar 12 tightly against the vertical end of bar 13.

Bar 13 has two vertical pins 14, which pass through holes in said bar, and are attached one at each end of a flat spring 16, which is fastened by screw 21 to the underside of the bar. Being thus spring-mounted the pins 14 can be depressed by the plunger when it descends in the act of taking an impression of the die upon the counter-sheet.

The counter-support 17 may be made of a metal sheet or plate of a thickness only sufficient to give it the proper rigidity. It is provided at one end with holes 18, 19, corresponding exactly in position with the registration pins 14 of the die-locating device. It has been found desirable to make one of these holes, as 19, slightly oblong in shape, the greater diameter being in a line drawn through the axes of the two holes. This allows for a slight variation in respect to the distance between the two holes, while insuring that the counter-support 17 will always occupy exactly the same relative position when the holes are fitted over the pins.

The operation is as follows: Side bar 13 is placed in position and fastened to front bar 12 by screw 11. By means of the right-angle frame thus formed the die 10 is located in its exact working position, and is locked in place by the devices commonly employed for that purpose. The face of the die having received a coating of ink, the counter-support 17 with the cardboard sheet 20 (dotted lines, Fig. III) attached thereto is laid face downward upon the die, holes 18, 19 fitting over pins 14, the back of support 17 having been previously coated with non-liquid glue. The plunger is now caused to descend, thereby taking an imprint of the engraving of the die upon the cardboard 20, and at the same time causing the support 17 to adhere to the plunger. The plunger is now removed, and the counter-die is formed by cutting away the cardboard sheet in the usual way. The plunger is then replaced, side bar 13 is detached and removed, and the press is ready for use. The reason for making bar 13 removable is that the pins 14 would interfere with the operation of the inking mechanism, when the die-carrier moves horizontally under the inking devices.

When the printing has been completed, both the die and the counter-support may be removed and put away; and when it is desired to print again from that die it is only necessary to locate the die by means of the bars 12, 13, to lay the counter upon it, fitting the holes 18, 19 in the counter-support 17 over the pins 14, the back of the support having been previously coated with glue, and to bring down the plunger upon it. Thus the counter-support is fixed to the plunger with the counter in its exact working position with respect to the die.

Having now described my said invention, and the preferred embodiment of it in practical form, I claim:—

1. A counter-saver for die-printing presses, comprising in combination with die-locating mechanism for setting the die always in the same position, a removable counter-support, both die-locating mechanism and counter-support being provided with registration devices, substantially as described.

2. A counter-saver for die-printing presses, comprising the combination of die-locating mechanism having a detachable member provided with registration devices, and a removable counter-support having corresponding registration devices, substantially as described.

3. The combination of a die-locating frame having depressible registration pins, and a removable counter-support having corresponding holes, substantially as described.

4. The combination of a die-locating frame having a detachable member carrying spring-supported registration pins, and a removable counter-support having corresponding registration means, substantially as described.

5. For a die-printing press, a removable counter-plate or support, having the counter-sheet attached thereto, and provided with registration devices, substantially as described.

In testimony whereof, I have signed my name to this specification.

FREDERICK WALLACE THOMBS.