(No Model.)

2 Sheets—Sheet 1.

J. T. HAWKINS & R. PRESTON.

APPARATUS FOR SETTING LITHOGRAPHIC STONES.

No. 323,932. Patented Aug. 11, 1885.

Fig. 2.

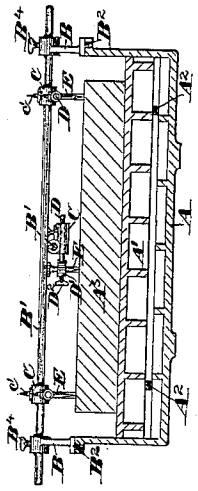


Fig. 4.

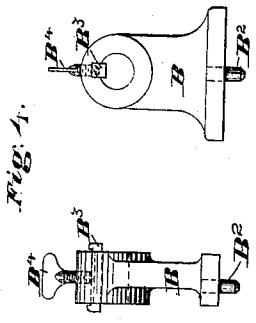


Fig. 5.

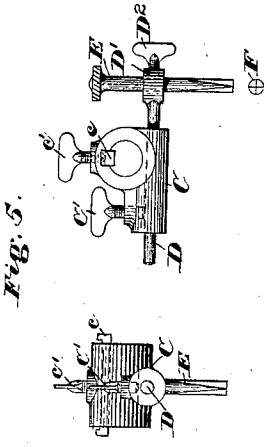


Fig. 1.

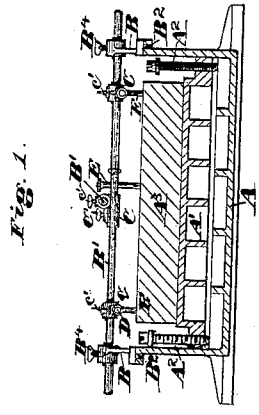
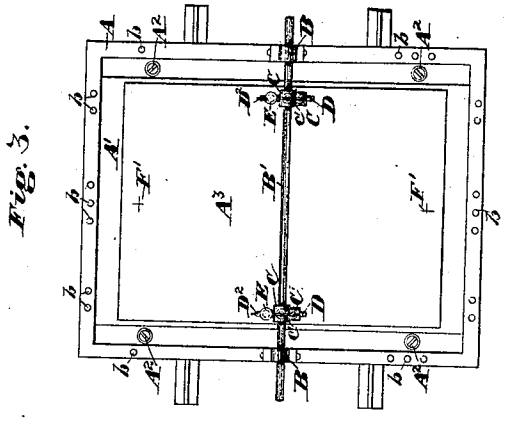


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

J. T. HAWKINS & R. PRESTON.

APPARATUS FOR SETTING LITHOGRAPHIC STONES.

No. 323,932. Patented Aug. 11, 1885.

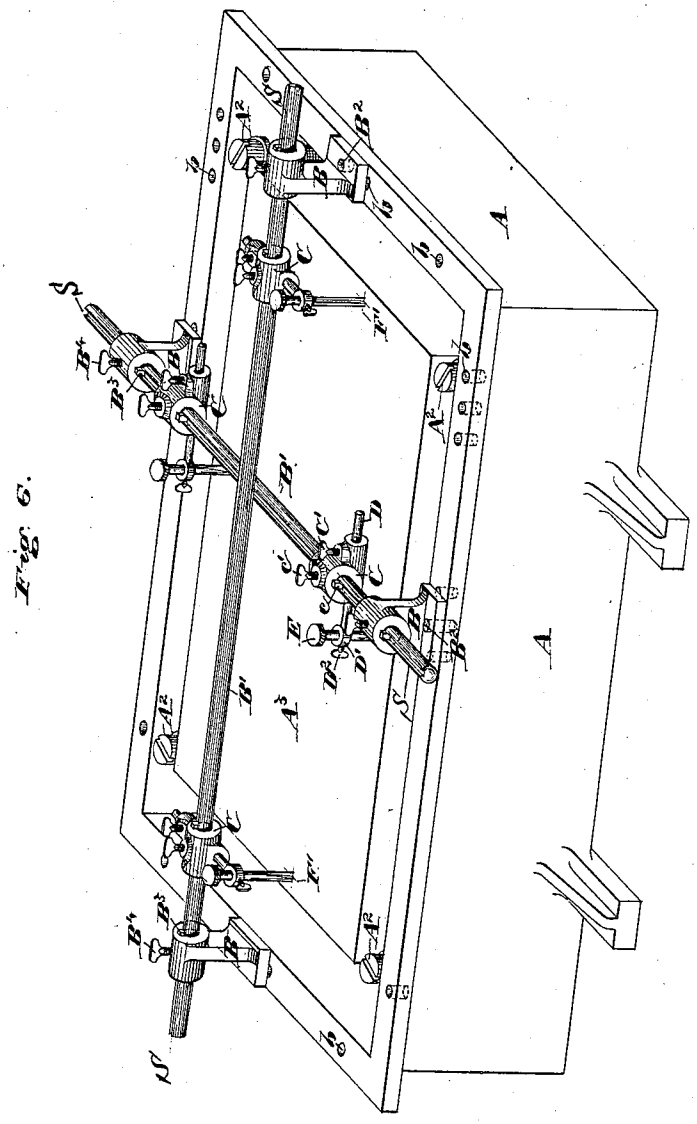


Fig. 6.

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UNITED STATES PATENT OFFICE.

JOHN T. HAWKINS, OF TAUNTON, MASSACHUSETTS, AND RICHARD PRESTON, OF BROOKLYN, NEW YORK.

APPARATUS FOR SETTING LITHOGRAPHIC STONES.

SPECIFICATION forming part of Letters Patent No. 323,932, dated August 11, 1885.

Application filed March 20, 1885. (No model.)

To all whom it may concern:

Be it known that we, JOHN T. HAWKINS, of Taunton, in the county of Bristol and State of Massachusetts, and RICHARD PRESTON, of Brooklyn, in the county of Kings and State of New York, have jointly invented a new and useful Apparatus for Setting Stones and Forms in Lithographic and other Printing Presses, which invention is fully set forth and illustrated in the following specification and accompanying drawings.

The object of this invention is to provide an easy means of leveling and setting to register the stones in lithographic printing-presses, where more than one color is used to print the same piece of work; and it consists in a certain apparatus or series of devices, as hereinafter described and claimed.

In the printing of multicolor work by the lithographic process it is customary to successively use as many different stones as there are separate colors used on the work, that portion of each design only belonging to a given color being made upon a single stone. To insure the placing of the various colors in proper juxtaposition upon the sheet, certain marks, called "register-marks," are also commonly made upon each stone—from which all measurements are made for this purpose—generally in the form of two fine lines crossing each other at a right angle, like a cross, four of such crosses being placed on each stone, near the margins and about in the center of the width and length of the stone, so that if the series of stones are so placed in the press that these register-marks shall come at some definite position with reference to the reciprocating bed of the press the sheets fed to the machine upon the second or any succeeding stone will be just in accord with each other. The series of stones used for a multicolor piece of work in the lithographic printing-press will almost invariably be of different thicknesses, and as the height of the upper surface of each of these stones must be brought to exactly the same level, in order that the pressure of the impression-cylinder shall be exactly the same upon every part of each stone, each stone must be leveled up as it is placed in the press. Heretofore the leveling has been done by placing a straight-edge across the stone, with its ends resting upon the sides of the stone-bed, the stone being then brought up to the straight-edge; but the setting of the several stones to register has only been done by running sheets through the press, and thus by repeated trials bringing the stones to their proper position, the register-marks being used only for the placing of designs or parts of designs upon the stones in register with each other, and not utilized for the placing of the stones in register in the press. This invention is intended to utilize the register-marks for setting the stone to register in the press, and to use the same apparatus for the leveling of the stone, thus saving the time usually occupied in setting the stone by trial-sheets, and also saving the sheets wasted in the process. Where fifteen or twenty colors are printed upon one sheet, as is often done, the waste of time and paper in the old method becomes a very considerable item, which this invention is intended to save.

In the accompanying drawings, Figure 1 is a transverse vertical section through the stone-bed or box of the lithographic press with the stone-setting apparatus in place as used. Fig. 2 is a longitudinal vertical section through the same, at right angles to the section shown in Fig. 1. Fig. 3 is a view of the same apparatus in plan, having one of the rods and its adjuncts constituting the stone-setting appartus omitted in order to show the register-marks on the stone. Fig. 4 shows two elevations of the detachable standards carrying the rods upon which the adjustable gages or pointers (shown in two views in Fig. 5) are secured. Fig. 6 is a perspective view of the complete apparatus.

In said figures the several parts are indicated by letters as follows: A is the bed or bed-box; A′, the elevating stone-plate within the same. A^2 are the elevating-screws for adjusting the height of the stone-plate A′. A^3 is the stone resting upon the elevating-plate A′. B are standards arranged to carry in their upper ends rods B′. In the bases of the standards B are inserted short dowel or guide pins B^2. The upper ends of the standards B are furnished with feathers B^3 and set-screws B^4 im-

pinging upon them. The rods B′ have splines S, Fig. 6, planed in their whole length for the reception of the feathers B^3. In the upper edges of the bed-box A there are bored a series of holes, *b*, for the reception of the dowel or guide pins B^2, so divided and located as to permit of the standards B being placed in different positions upon the bed-box A. Adjustably secured to the rods B′, by means of feathers *c* and set-screws *c′*, are two or more carriers, C. Adjustably secured in each carrier C by means of set screws C′ is a rod, D, having formed on one end an eye, D′, in which is adjustably secured, by means of a set-screw, D^2, a short gage or pointer, E, having formed on one end a milled head, and the other end formed to present two lines of metal crossing each other at right angles, as seen in the end view given at F, Fig. 5. The gages or pointers E are adjustable vertically in the eyes D′ of the rods D, and of course may be set angularly in any position desired, so as to bring the cross-lines F, Fig. 5, to correspond with the register-marks on the stone, (shown at F′, Fig. 3,) but hidden from view on the other two edges of the stone by the apparatus in place as used. Two rods, B′, are used—one pair of standards B and carriers C to each of said rods—and one pair of standards B are made higher than the other, sufficiently to allow the rods B′ to cross each other without touching, as shown in Figs. 1 and 2. One rod only is shown in place in Fig. 3.

This apparatus is applied and operated as follows: Having adjusted the first stone of a series to be used in printing a piece of multicolor work, and having printed the entire edition therefrom before the stone is disturbed, the stone-setting apparatus is placed upon the bed-box with the pins B^2 in such of the holes *b* as will allow the gages or pointers E to fall upon the register-marks F, afterward making a closer adjustment by sliding the carriers C on the rods B′, the rods D in the carriers C, and the gages or pointers E vertically in the eyes D′ of the rods D. Having brought the four pointers or gages, E, so as to correspond exactly with the position of the four sets of register-marks F, said pointers are then adjusted vertically so as to just hold a piece of thin paper between their lower ends and the face of the stone, and all parts are secured by the several set-screws in this position, the particular set of holes *b* in which the pins B^2 have been inserted being marked for recognition, so that said pins may be replaced therein for setting the succeeding stone. The stone-setting apparatus is then removed, another stone placed in the press and so leveled that the same piece of thin paper will just be held between the ends of the gages or pointers E and the register-marks F, said marks being brought to the position indicated by said pointers after placing the apparatus in the same position in which it was adjusted to the first stone. Similarly for as many stones as may be successively employed on the work in hand the one adjustment of the stone setting apparatus to the primary stone is all the adjustment required in it. In this way every succeeding stone will be placed not only at the same level but in exact register with the first stone used, and the work may be proceeded with without trial, and consequently waste of trial-sheets and time.

It is obvious that the principles herein employed may be applied to the setting of type or plate forms in typographic or plate presses, so far as the setting of forms to register is concerned, where multicolor or any other kind of work requires change in the setting of forms for the same piece of work. We therefore do not confine ourselves to the employment of this apparatus upon the lithographic press alone; nor do we confine ourselves to the methods herein shown for locating the standards B by means of the pins B^2 and holes *b* in the bed of the press, as this may be accomplished in many other mechanical ways without departing from the general principles employed in this invention; nor do we confine ourselves to the methods herein shown for adjusting the various parts of the apparatus so as to permit of the pointers or gages being universally adjustable, as these methods of adjustment may all be varied to suit different tastes and ideas of printers by other well-known mechanical methods.

Having thus fully described our said apparatus as of our invention, we claim—

A stone or form setting apparatus for lithographic or other printing presses, consisting of supporting-standards, as B, adjustably and detachably located upon the type or stone bed of the press, and carrying a bar, as B′, adjustably secured thereto, said bar having mounted thereon pointing or indicating rods, as E, arranged to be adjustable longitudinally, laterally, and vertically, and to be secured in any such adjusted position, whereby each of a series of stones or forms may be successively adjusted, as to level and register, to conform to the position of its preceding form or stone, or to that of a primary form or stone, substantially as and for the purposes set forth.

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