

May 17, 1949.

A. J. HOERTH

2,470,437

PRINTING FORM ALIGNING APPARATUS

Filed July 26, 1946

2 Sheets-Sheet 1

Fig. 1

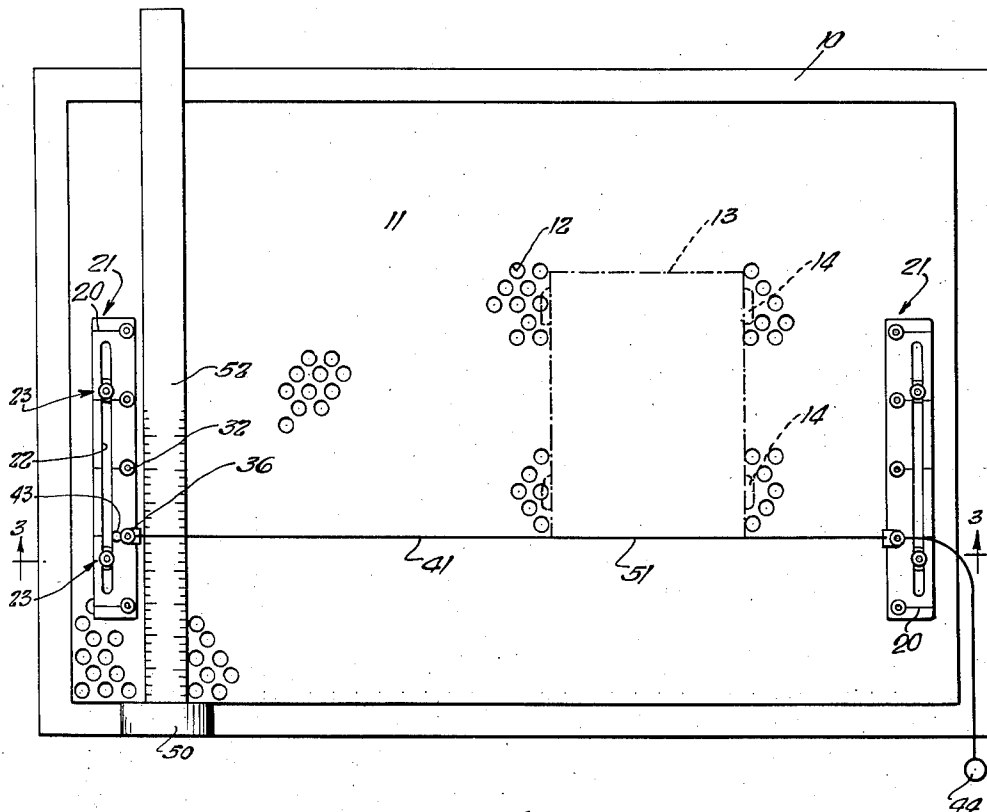
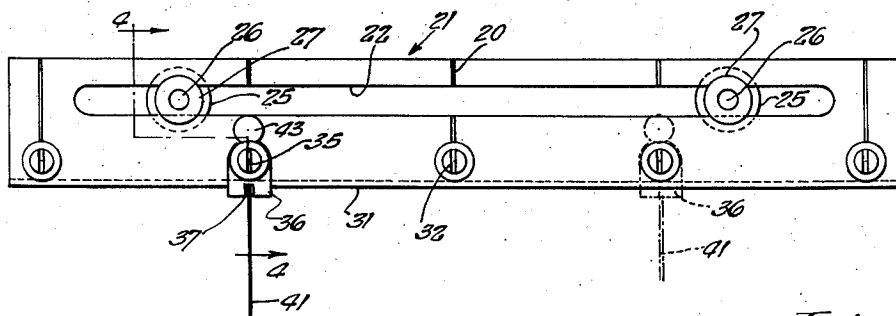


Fig. 2



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Fig. 3

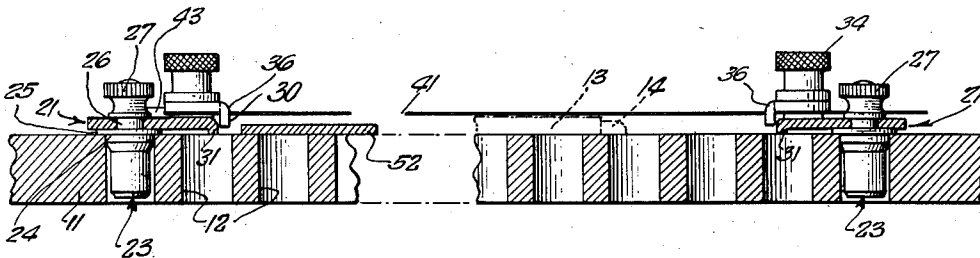


Fig. 4

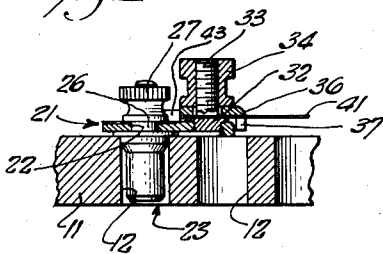


Fig. 5

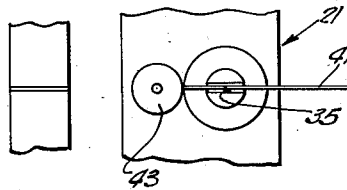


Fig. 7

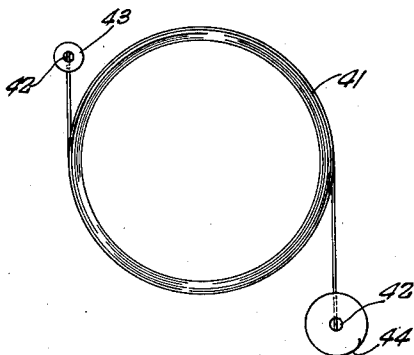
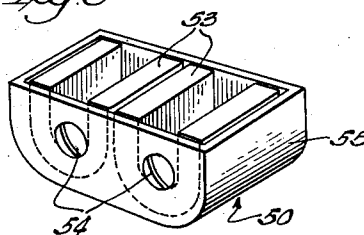


Fig. 6



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PRINTING FORM ALIGNING APPARATUS

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4 Claims. (Cl. 33—184.5)

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This invention relates to improvements in printing apparatus, and more particularly to a device for aligning unmounted electrotypes or the like on a so-called "honeycomb" base.

In the printing trade there is a decided preference for the "honeycomb" base, i. e., a rigid metallic plate of substantial thickness having a plurality of closely spaced, cylindrical apertures therethrough in the direction of its thickness. For convenience in manufacture, the base is composed of a plurality of sections assembled in edge-wise relationship, and the sections securely held by being locked up in a chase. The base is less than type-high, and upon its upper face may be detachably secured plate electrotypes or similar printing plates, the total thickness of the plates and base being type-high. When made up, the form, including the chase, base, and plates, is placed upon the bed of the press. For make-up, line-up, make-ready, and register, the means serving to secure the plates adjustably to the base comprise manually operable hooks having an expandible portion to engage an aperture and a hook portion to engage the edge of the plate, the hook portion being adjustable laterally within certain limits, and the relative spacing and positioning of the apertures in the base permitting disposition of the several hooks in a plurality of positions to accommodate the size and required position of the printing plate or plates. Briefly, the foregoing describes a well-known type of plate-holding unit known commonly in the trade as a "honeycomb" base, and further amplification thereof is deemed unnecessary.

In the use of plates in multiple, for example in book work, it is important to provide means for positioning and aligning the several plates accurately not only with respect to the chase, but with respect to other plates; and to obtain proper register, particularly in color-printing, precise alignment of the plates of the form is indispensable. For attaining such alignment many devices have been proposed, all of which suffer from the defect of relying upon means attached to or engageable with the chase. Not only do these require special types of chases costing substantially more than simple chases, but the installation thereof on the upper face of a chase occupying substantially all of the area of the bed of the press limits their use, due to interference with the grippers of the cylinder of the press.

Accordingly, the principal object of this invention is the provision of means for aligning a printing plate upon a base of the type aforesaid, which means depends solely upon the base for its

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own positioning, and which is capable of being set up at any position on the base and within the confines of the chase.

Another object is to provide aligning means for the purpose stated which comprises a set of members detachably securable to the base and including means engageable with the apertures therein, which means may be utilized for positioning the members in any desired lateral position, there being a wire engageable with the members to provide an aligning element for the printing plates.

A further object is to provide members associable with the base as aforesaid and including elongated slots engageable with pins snugly fitted in selected apertures in the base whereby the members may be moved laterally in at least one direction to obtain adjustments finer than those afforded by the spacing of the apertures in the base.

Still another object is to provide a plate aligning device which is capable of use as aforesaid, and additionally may be employed with those older types of chases having holes therein for aligning pins in lining up and positioning printing cuts of the commoner types, thereby lending increased usefulness to the device.

With these and other objects to appear in view, the invention is illustrated in one preferred embodiment in the appended drawings, in which:

Fig. 1 is a plan view showing a chase and locked-up base therein, and with the device of the invention in operative position;

Fig. 2 is a detail view of one of the members comprising the device;

Fig. 3 is a cross-sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is a cross-sectional detail view taken on the line 4—4 of Fig. 2;

Fig. 5 is a plan view in detail of one of the wire-holding pins;

Fig. 6 is a perspective view of a form of permanent magnet usable in connection with the invention; and

Fig. 7 is a detail view of the aligning wire.

Referring now to Fig. 1, a conventional printer's chase 10 is shown with a honeycomb base 11 locked up therein, the locking-up means comprising quoins or any equivalent means (not shown). Base 11 is of a well-known type consisting of a metal block or blocks slightly under type-high and having a plurality of closely spaced cylindrical or frusto-conical apertures 12 therein, the configuration and disposition of the apertures not being particularly pertinent to the pres-

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ent invention except in so far as they provide spaces for reception of certain parts of the device.

In use a printing plate 13 or plates are placed on the base 11 in substantially the intended position and the locking keys or hooks 14 inserted in selected apertures 12, as is known in the art. Then, by means of a suitable tool, the hooks 14 are slightly tightened to hold the plate 13 against accidental dislodgment. As so far described, the plate 13 is only in approximately the desired position. To locate a single plate or to align a plurality of plates precisely where required, the device of the invention is utilized and will now be described.

There is provided a pair of plate-like members 21 of elongated rectangular form, each having an elongated slot 22 extending adjacent one edge and substantially the full length thereof. Engageable in each slot 22 is a pair of pilots 23 generally cylindrical in form and comprising an aperture-engaging shoulder 24 fitting snugly but removably in a selected aperture 12, a flange 25, and a threaded stud 26. Flange 25 limits the extent of insertion of the pilot 23 in the aperture 12, and stud 26 receives a knurled thumb nut 27 by means of which the plates 21 may be secured with respect to the pilots 23. By the means just described, a plate 21 may be situated in any desired position with respect to the base 11, adjusted longitudinally to the extent permitted by the aperture 22 and there secured by the nuts 27. Assuming that pilots 23 are engaged in a pair of apertures 12 parallelly aligned with one edge of the chase 10, movement of the plate 21 upon the studs 26 will impart movement of the plate parallel to that same edge of the chase. It will be understood, however, that preliminary positioning of the plates 21 is not limited to that shown in Fig. 1, but that they may be angularly related otherwise to the edges of the chase, as for example when the printing plate or plates being aligned are correspondingly angularly situate.

In order that the plates 21 will be supported in a plane parallel to the upper surface of the base 11, one edge 31 thereof is preferably flanged downwardly in an amount equal to the flange 25 (Figs. 2 and 3).

Each plate 21 is further provided with one or a plurality of rigid posts 32, in this case five in number, riveted to the plate and having a threaded shank 33 to receive a thumb nut 34. Each shank 33 is axially slotted at 35 in a direction perpendicular to the longer axis of the plate 21 to receive the aligning wire to be described. In order to position the wire approximately with reference to any selected row of apertures 12, the plate 21 is provided with a plurality of hair-lines 20, preferably engraved into the surface thereof, which lines coincide with the axes of the posts 32. Adapted to fit over any of the posts 32 is a clamp 36, there being one associated with each plate 21. Clamp 36 is provided with a downwardly extending flange 30 slotted as at 37 to receive the wire referred to.

To provide a suitable line for aligning or positioning the edge of the printing plate or plates 13, there is provided a length of steel music wire 41 rendered convenient for use by embedding the ends in solder 42 carried in buttons 43 and 44, the latter affording easy grip by the fingers.

For purposes of this description, it will be assumed that the printing plate 13 or a plurality thereof are to occupy a position or positions on the base 11 indicated in Fig. 1. Although only

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one plate 13 is illustrated, it will be understood that a plurality thereof may be aligned, as in book printing. Moreover, assuming that that edge of the plate or plates 13, indicated by the reference number 51, is to lie in the direction shown, say 4 inches from the lower edge of the chase 10, the plates 21 will be placed in approximate position on the base 11, the pilots 23 thereof being engaged in convenient apertures 12. Then a convenient corresponding pair of posts 32 are selected and the wire 41 inserted in the slots 35 thereof, the button 43 abutting one side of one post 32 as shown. Clamps 36 are then placed over the posts 32, the slots 37 thereof receiving the wire 41, and the flange 30 of each clamp preventing mispositioning of the wire 41 as nuts 34 are tightened. Thumb nuts 34 are then put in place and tightened, whereby clamps 36 secure the wire 41 with the proper degree of tension, the button 44 being utilized to stretch the wire manually prior to tightening the nuts 34.

In order to fix the lateral position of the wire 41 with respect to the edge of the chase, any convenient abutment for the end of a scale 52 may be used. One form of such abutment 50 is shown in Fig. 6 and comprises a pair of permanent magnets 53, for example of Alnico, an alloy of aluminum, nickel, and cobalt, these being secured by screws 54 passing through the non-magnetic holder or casing 55, which may be of brass. Abutment 50 is placed on the steel chase 10 in a convenient position and located with its inner face flush with the inner edge of the chase. Scale 52 may then be laid flat on the base 11 and against abutment 50.

Now, by means of thumb nuts 27, the plates 21 may be shifted longitudinally with respect to the scale 52 until wire 41 coincides with the 4-inch graduation thereof. Abutment 50, together with scale 52, will be shifted longitudinally of the wire 41 in order that both ends of the wire may be aligned. Nuts 27 are then tightened. An accurate reference line has now been established, and the printing plate or plates 13 may be shifted, as necessary, to align the edge 51 thereof with the wire 41 and hooks 14 finally tightened.

It will be comprehended that two sets of the parts constituting the invention, except perhaps the abutment 50 and scale 52, may be used. One set will be employed as described, and the other set may be arranged with its aligning wire perpendicular to the one shown. Thus a plurality of book plates, for example, may be aligned in two perpendicular directions, the scale 52 and abutment 50 being shifted as desired.

The invention is not intended to be limited to a base 11 having cylindrical apertures as shown and described, since it is contemplated that by suitable modification of the pilots 23 the plates 21 may be secured to a so-called "diagonal block" type of base, also well known in the art, the essence of the invention residing in aligning means attachable to the form independently of the chase.

While I have shown a particular embodiment of my invention, it will be understood, of course, that I do not wish to be limited thereto since many modifications may be made, and I therefore contemplate by the appended claims to cover any such modifications as fall within the true spirit and scope of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A device for aligning printing plates adapted to be detachably mounted on a base having a

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plurality of apertures for receiving the mounting means comprising in combination a pair of members, means for detachably securing said members in spaced-apart position on the base, each said member having an elongated slot, said securing means including elements slidable in said slot and engageable with selected ones of the apertures, each member having means for securing the same to said elements, an upstanding post secured to each member and having a slot for receiving one end of a wire, and an aligning wire adapted to extend from the post of one member to the post of the other, whereby a predetermined edge of a printing plate may be placed into register with the wire prior to mounting thereof.

2. A device for aligning printing plates adapted to be detachably mounted on a base having a plurality of apertures for receiving the mounting means comprising in combination a plurality of pairs of plug elements each snugly engageable in an aperture of the base, a member associated with each said pair of elements, each said member and the elements individual thereto having mutually engaging means to permit the member to be adjusted laterally with respect to the base and secured in adjusted position, a post secured in each said member, an aligning wire, each said post including means for securing the ends of the wire in tensioned condition, whereby the wire serves as a reference line for locating an edge of a printing plate.

3. A device for aligning printing plates adapted to be detachably mounted on a base having a plurality of apertures for receiving the mounting means comprising in combination a plurality of pairs of plug elements each snugly engageable in an aperture of the base, a member associated with each said pair of elements, each said member and the elements individual thereto having mutually engaging means to permit the member to be adjusted laterally with respect to the base and secured in adjusted position, a post secured in each said member, each said post having a threaded portion and a thumb nut engage-

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able therewith, an aligning wire, a clamping plate underlying said nut and having an aperture to engage the post and adapted to pinch the wire against said member, and the clamping plate having a slot for maintaining a straight position of the wire upon tightening of the thumb nut, the wire extending under tension between the posts to provide a reference line for positioning and aligning a printing plate.

4. A device for aligning printing plates adapted to be detachably mounted on a base having a plurality of apertures for receiving the mounting means comprising in combination a plurality of pairs of elements each having a plug portion snugly engageable with individual apertures in the base, a peripherally disposed flanged portion to limit the degree of entry of said plug portion into the base, and a threaded portion, a thumb nut engageable with the threaded portion, a pair of members each having an elongated slot engageable over the threaded portion of a pair of elements and adjustably securable thereto by said thumb nut, a post secured to each member, a wire, and means co-operative with the posts and wire for maintaining said wire in tensioned condition intermediate said posts, whereby said wire provides a reference line for positioning and aligning a selected edge of a printing plate.

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