Aug. 4, 1931. H. A. W. WOOD 1,816,945

MATRIX SETTING MECHANISM

Original Filed Jan. 24, 1927 2 Sheets-Sheet 1

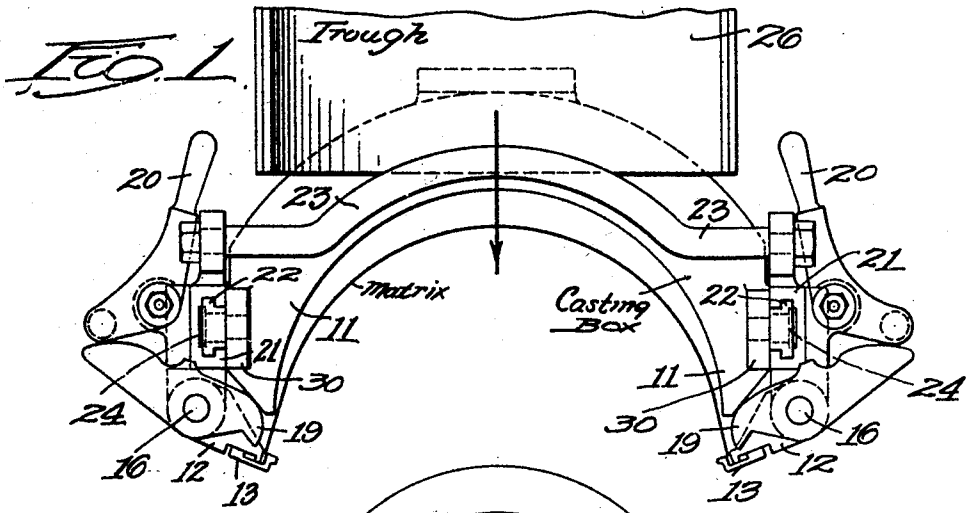


FIG. 1.

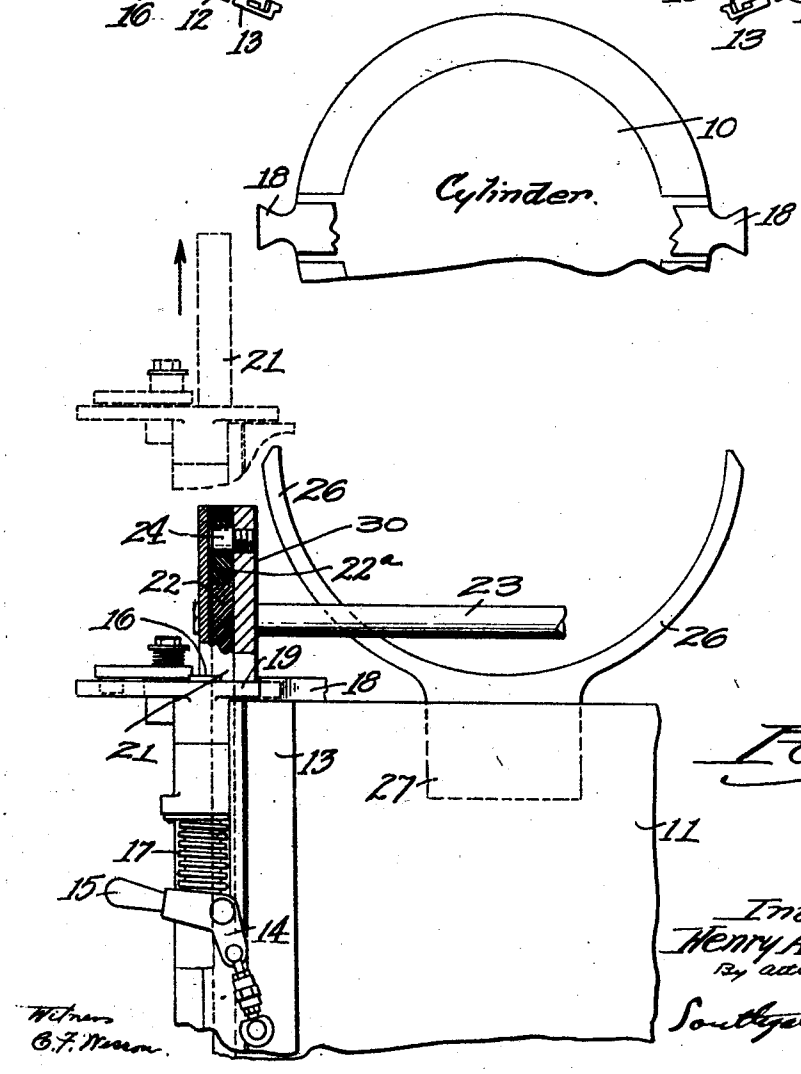


FIG. 2.

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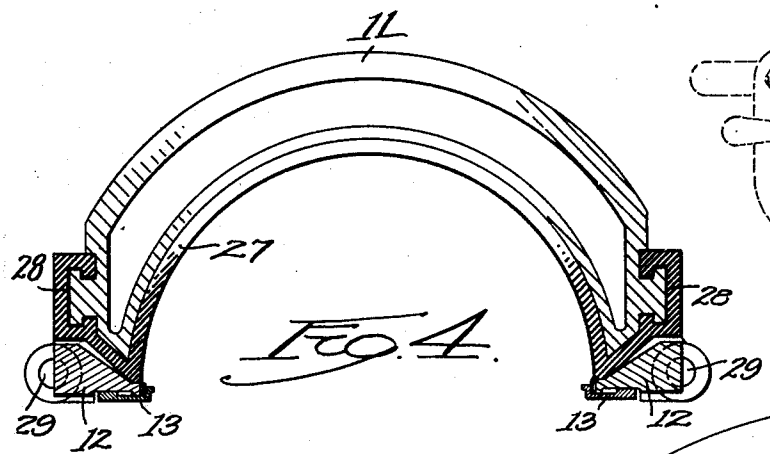


Fig. 4.

Fig. 3.

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UNITED STATES PATENT OFFICE

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MATRIX SETTING MECHANISM

Application filed January 24, 1927, Serial No. 163,183. Renewed August 7, 1930.

This invention relates to the matrix clip mechanism of a stereotype plate casting box.

The principal objects of the invention are to provide means for loading the matrix into the clips so as to avoid the present awkward method of introducing the matrix into the mold and then securing it into the clips therein; to provide means for supporting and guiding the clips so that they can be raised out of the casting box and the matrix secured to them and then returned into the casting box with the matrix in proper position, requiring no further manipulation, and to provide means whereby the clips are made accessible from the outside of the mold so that the matrix can be loaded without reaching down into the narrow space between the back and core. Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which

Fig. 1 is a plan of a casting box constructed in accordance with this invention and with the back and cylinder separated;

Fig. 2 is a fragmentary front view of the casting box showing in dotted lines the clips partially raised out of the box;

Fig. 3 is a side elevation showing in dotted lines the clip pulled up to its extreme position and ready to be laid over from a vertical to a horizontal position; and

Fig. 4 is a horizontal cross section of a modified form of this invention.

The loading of the matrix in the side clips of a casting box is an awkward operation as ordinarily performed. It is necessary for the operator to stand directly over the casting box and reach down into the narrow space between the back and cylinder where it is hardly possible to see whether the matrix is in proper position or not. The operator has to be guided largely by feeling.

In showing this invention I have illustrated the usual cylinder 10 and back 11 and shown the back as provided with the conventional matrix holding clips 12. This clip as usual is equipped with a matrix bar 13 adapted to be slid in a vertical direction by a toggle 14 operated by a handle 15 attached to the clip. When so operated the matrix bar 13 moves toward and from the clip for pinching or releasing the edge of the matrix. The whole clip assembled is pivoted on a vertical shaft 16 in the case of a vertical mold. This shaft is mounted in brackets which are usually attached to the side of the back in a rigid manner. On this shaft is a coil spring 17 arranged to cause the clip to turn normally to the position shown in Fig. 1. When the casting box 11 approaches the cylinder 10 for closing the mold, two lugs 18 on the opposite sides of the cylinder at the top engage with the two toes 19 on the upper ends of the two clips on the opposite sides of the box. This causes the latter to swing, as the box closes, against the resistance of the springs 17, to force the matrix into proper position.

When the casting box or back recedes from the cylinder, the springs 17 resume their normal position and pull the matrix away from the inner face of the back and strip it from the surface of the printing plate. The toes 19 are mounted on levers which are operated by handles 20 on the opposite sides of the box when it is desired to move these parts by hand. These parts are all well known as so far described.

In accordance with this invention, I substitute for the clip brackets rigidly attached to the casting box a pair of opposite T-bars 22. These are fastened to the sides of the casting box by several screws and constitute guides for the whole clip mechanism. The latter comprises slides 21 each having a vertical T-slot fitting the T-bars to guide them in a straight vertical direction. The two slides can be pulled upwardly by a connecting rod 23 which connects them and extends across the casting box. Each T-bar 22 consists of two parts, the lower portion of which is attached rigidly to the casting box while the upper portion 22*a* is hinged at the point 24 to the top of the rigid bracket 30.

In operation the cross bar 23 is grasped and pulled up as shown in Figs. 2 and 3. When it reaches the dotted line position shown in Fig. 3 the structure comprising the two clips is entirely out of the mold and can be turned over about the horizontal pivot 24 into a

trough 26 lying horizontally on a concave bracket 27 fixed rigidly to the back of the casting box. In this way the matrix holding device as a whole is laid out flat in this trough and the matrix can be removed, replaced, adjusted or manipulated if necessary to get it into the proper position.

Then it is swung back into the position shown in Fig. 3, in dotted lines and lowered back down into the mold where it is in its final position and is accurately located therein. On account of the trough 26 being curved to the same shape and size as the mold, the matrix will be accurately located if it is held back against the surface thereof when it is clamped by the clips. This constitutes an accurate way of holding the matrix in the clips and provides means readily accessible and exposed to the light of the room for holding the matrix while it is being loaded. The matrix is necessarily guided into the right position and the time of the operator materially conserved as he is never likely to have to reach down into the back or to readjust the matrix after he has once put it in the clips in the trough 26.

In the form shown in Fig. 4 the casting box is provided with a rigid member 27 shaped to the same curvature as the box and extending throughout its entire length. At each edge it is equipped with a T-slot 28 for guiding it on vertical guides of the same shape carried on the outside of the box. On each edge also it is provided with vertical hinge rods 29 on which the matrix bars 12 are hinged in the usual manner. The guides on the top of the casting box are the same as in the form shown in the other figures and the hinge 24 is the same. The operation is the same but the matrix is shaped against the member 27, laid out in horizontal position, which then serves the same purpose as the trough 26. Incidentally it is a part of the casting box when in the position shown. The same general results are secured as in the form illustrated in the first three figures.

Although I have illustrated and described only two forms of the invention I am aware of the fact that other modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited to all the details of construction herein shown and described, but what I do claim is:—

1. The combination with a stereotype plate casting mold, of means for holding the edges of the matrix in place in the mold, said means being movable with the matrix to a position outside and clear of the mold cavity, whereby the matrix may be removed and a new matrix secured in position and the matrix holding means with the new matrix secured thereto returned to position in the mold.

2. In a stereotype plate casting mold, the combination with means for holding the opposite longitudinal edges of the matrix in position in the mold and means for guiding said holding means so that it with the matrix secured in position can be drawn entirely outside of the area of the mold to expose the entire matrix and its holding means.

3. The combination with a stereotype plate casting mold, of means for holding the opposite edges of the matrix in place in the mold, said means being movable longitudinally with the matrix to a position at the outer end of the mold.

4. In a vertical stereotype plate casting mold, the combination with means for holding the opposite longitudinal edges of the matrix in position in the mold, and means for guiding said holding means so that it can be drawn vertically out of the mold to expose the entire matrix and its holding means at the top of the mold.

5. In a mold for casting stereotype printing plates, the combination with a curved back, of guides extending longitudinally along the opposite sides of the back, and means connected with and slidable along said guides for clamping and holding the opposite straight edges of the curved matrix, whereby the matrix and its clamping means can be moved straight out of the mold longitudinally and exposed at the end of the mold.

6. In a stereotype printing plate mold, the combination with a back having a pair of guides along its opposite edges, of a pair of slides in said guides, means extending across the mold for securing the slides together so that they can be moved simultaneously, and means carried by the slides for clamping and holding the opposite edges of the matrix.

7. In a curved stereotype printing plate mold, the combination with a concave back having a pair of longitudinal guides along its opposite straight edges, a pair of slides in said guides, means extending across the mold for securing the slides together so that they can be moved simultaneously, and matrix clips carried by the slides for the opposite straight edges of the matrix, of a core cooperating with the back, said core having projections thereon for engaging the matrix clips when the mold is closed and forcing the matrix into its place against the back.

8. The combination with a stereotype plate casting mold, of clips for holding the edges of the matrix in place in the mold, said clips being movable with the matrix to a position outside the mold, and means on the other half of the mold for engaging the matrix clips and forcing the matrix into the back when the mold closes.

9. In a mold for casting stereotype printing plates, the combination with a curved back, of guides extending longitudinally along the opposite sides of the back, slides movable along the guides, matrix clips con-

nected with said slides whereby the matrix can be moved straight out of the mold longitudinally and exposed at the end of the mold, the guides being pivotally jointed, and a trough arranged in horizontal position on the back of the mold for receiving the matrix therein when turned about the pivot.

10. In a stereotype plate casting mold, the combination with means for holding the opposite longitudinal edges of the matrix in position in the mold and means for guiding said holding means so that it can be drawn out of the mold to expose the entire matrix and its holding means, of a bracket on the back of the mold, a trough carried by the bracket in horizontal position of a size to receive and shape the matrix, and means whereby the matrix holding means can be lifted out of the mold and turned over into said trough for inspection.

11. In a stereotype plate casting mold, the combination with a vertical back, of means for holding the opposite longitudinal edges of a matrix therein and means for turning the matrix into a substantially horizontal position for charging and discharging the matrix, while the back remains in vertical position.

12. In a stereotype plate casting mold, the combination with a stationary vertical back, of a slide movable upwardly in the back to a position outside the back, clip mechanism carried by the slide, a trough fixed to the back and extending horizontally and pivotal means for mounting the slide, whereby it can be turned from a vertical position after it is lifted out of the back into a horizontal position in the trough.

13. In a stereotype plate casting mold, the combination of a back and a trough fixed to the back, of a pair of slides guided by the back and movable along the guides into a position entirely outside the back, and means for pivotally connecting the slides with the back on such an axis that the slides can be swung into said trough and matrix clips carried by the slide for holding the matrix until it is moved into the trough.

14. In a stereotype plate casting mold, the combination with a back and slides guided in the back to move into the back and out of it, matrix clips carried by said slides, and means for manipulating the matrix clips to release the matrix held thereby from the back inwardly, whereby when the slides are moved out of the back they will take the matrix with it.

15. In a stereotype plate casting mold, the combination with a back and slides guided in the back to move into the back and out of it, matrix clips carried by said slides, means for manipulating the matrix clips to release the matrix held thereby from the back inwardly whereby when the slides are moved out of the back they will take the matrix with it, a trough fixed to the back for receiving the matrix and means whereby the slides can be moved into a position at the edges of said trough to bring the matrix into the trough for inspection and replacement.

16. In a stereotype plate casting mold, the combination with the concave back and a pair of matrix clips extending along the opposite edges thereof, of a rigid member adapted to be located in the back fitting the concavity thereof, against the inner surface of which the matrix is held by said clips, and means along the back for guiding said rigid member into and out of the back to expose the matrix outside and locate the matrix in casting position inside.

17. In a stereotype plate casting mold, the combination with a concave back and a pair of slidable matrix clips extending along the opposite edges thereof, of a member adapted to be located in the back fitting the concavity thereof and slidable with the matrix clips out of the back to expose the matrix.

In testimony whereof I have hereunto affixed my signature.

HENRY A. WISE WOOD.