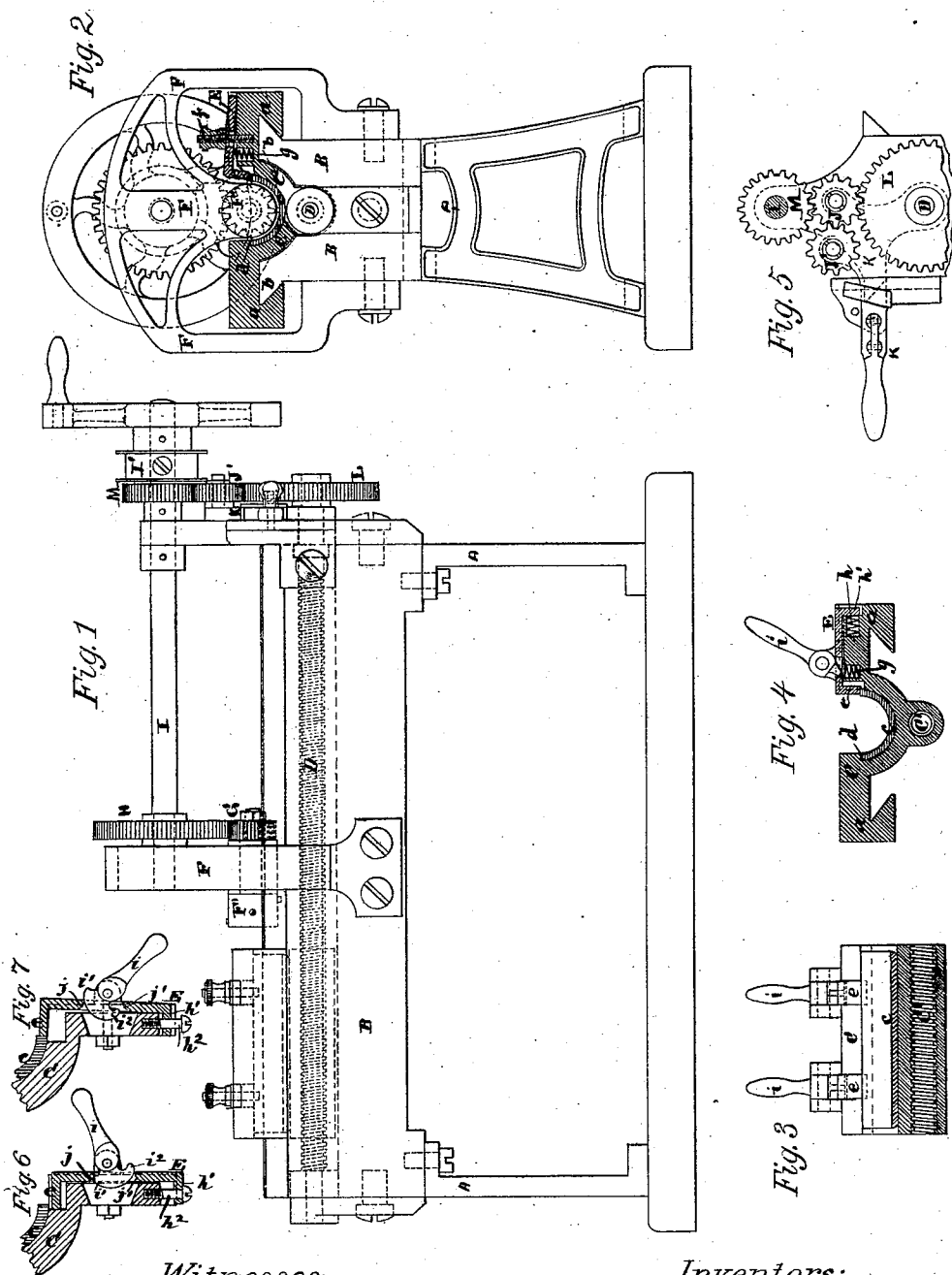


T. J. MAYALL & R. W. HARTNETT.
Machine for Shaving the Backs of Curved Stereotype-
Plates.

No. 159,946.

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UNITED STATES PATENT OFFICE.

THOMAS J. MAYALL AND RICHARD W. HARTNETT, OF BOSTON, MASSACHUSETTS, ASSIGNORS TO MAYALL POWER PRINTING-PRESS COMPANY, OF NEW YORK, N. Y.

IMPROVEMENT IN MACHINES FOR SHAVING THE BACKS OF CURVED STEREOTYPE-PLATES.

Specification forming part of Letters Patent No. **159,946**, dated February 16, 1875; application filed November 28, 1874.

To all whom it may concern:

Be it known that we, THOMAS J. MAYALL and RICHARD W. HARTNETT, both of Boston, Suffolk county, Massachusetts, have invented certain new and useful Improvements in Machinery for Shaving the Backs of Curved Stereotype-Plates, of which the following is a specification:

This invention relates to the preparation of curved stereotype-plates used on the cylinders of rotary printing-presses. After these plates come from the mold it is necessary to plane or shave their backs or concave faces, in order that said faces may be perfectly even and uniform, and fit exactly their seats on the type or printing cylinder. It is equally necessary that the shaving or planing operation should consume as little time as possible, and that the time required to adjust the plates in place in the shaving-machine should be reduced to a minimum. In newspaper-printing establishments every minute saved in the preparation of the plates is of a very great value, and to this end the effort now is, in every improvement in this branch of industry, to economize and shorten the time required for the preliminary manipulations of the plates.

A further object we have in view is to avoid liability of crushing or breaking down the side edges of the plates, which is of frequent occurrence under the present system of clamping the plate, and which results in defacing the edges of the type-column or the margins, and consequently causes the plate at those points to give the printed sheet a blurred appearance.

The nature of our invention, and the manner in which the same is or may be carried into effect will be understood with reference to the accompanying drawing, in which—

Figure 1 is a side elevation of a machine embodying our improvement. Fig. 2 is an end elevation, partly in transverse vertical section, in the plane of one of the clamps of the traveling carriage that carries the stereotype-plate. Fig. 3 is a longitudinal vertical central section of the plate-carriage detached. Fig. 4 is a transverse vertical section of the

same, with a modification of the clamp device shown in Fig. 2. Fig. 5 is an end elevation of the head-stock and mechanism for reversing the movement of the carriage. Figs. 6 and 7 are transverse vertical sections of a portion of the carriage designed to illustrate still another modification of the clamping device.

The supporting-frame of the machine is shown at A. At its upper part it is formed of a bed, B, the upper face of which is concave to receive the lower or outer convex face of the carriage C. Extending centrally and longitudinally of the bed is a recess, formed in the lower portion of the bed to receive the feed-screw D, that is supported and turns in proper end bearings. The carriage C is formed with overhanging dovetailed side pieces *a*, that fit and slide upon corresponding dovetailed ways or guides *b* on bed B. The part of the carriage in which the stereotype-plate (indicated at *c*) is seated is concave, of a curvature to receive and fit accurately against the type-face of the plate. One of the straight edges of the plate fits under a permanent overhanging shoulder, *d*, on the carriage. The opposite edge is held by clamps, which exert a direct downward pressure on this edge of the plate, so as to force the other edge tightly up against the permanent shoulder *d*. Each clamp is composed of a sliding plate, E, which is capable of an up-and-down motion, as well as a to-and-fro horizontal motion.

The object of the horizontal sliding movement is to permit the stereotype-plate to be put into its seat from above the carriage, instead of sliding it in from the end of the carriage, which would be otherwise necessary. The sliding the plate endwise into its seat is the occasion of the defacing of its edges before alluded to, these edges, as the plate is pushed in, rubbing against the shoulder, under which they are to be seated. Under our arrangement this difficulty is obviated, and the operation of adjusting the plates in position can also be performed more rapidly.

The sliding plate E has a vertical lip, *e*, on its inner end, which overhangs the edge of the stereotype-plate when the clamp is pushed for-

ward. It is desirable that this sliding movement of the plate should take place while the clamping-lip is out of contact with the edge of the stereotype-plate, and to this end the up-and-down movement of the clamp is provided for.

A simple form of clamp is shown in Fig. 2. The clamp-plate is slotted longitudinally to the proper extent required for the sliding movement. Through this slot passes the binding-screw *f*. Beneath the front end of the clamp is a spring, *g*, compressed between the clamp and the top of bed B. The clamp, in this figure, is represented as bearing on the stereotype-plate. To release the plate the binding-screw is unscrewed. The spring *g*, being now free to act, throws up the clamp out of contact with the plate; and the clamp can then be moved back from over said plate. This arrangement requires from the operator two movements—one to loosen or tighten the screw, the other to slide the clamp.

To effect these movements at one operation, we can employ a clamp device, such as shown in Fig. 4. Here, in addition to the spring *g*, we employ a horizontal spring, *h*, which tends to slide the clamp back from over the edge of the stereotype-plate. This spring bears against a vertical lip, *h'*, on the outer end of the clamp. The movement of the clamp is controlled by lever *i*, the shorter arm of which enters the slot in the clamp, and bears against the front end of the slot in throwing the clamp forward, and at the completion of this forward movement said shorter arm is thrown past the center, and, by its wedge-like action on the part of the clamp against which it bears, it holds the clamp in place, and forces it down onto the plate, where the lever is moved in the opposite direction.

The two springs are free to act, and throw the clamp up and back.

An arrangement for effecting the same result positively, and without the aid of springs, is shown in Figs. 6 and 7. There the shorter arm of the vibratory lever *i* is a cam, terminating at each end in a hook or beak, *i*¹ *i*². The ends of the slot in the clamp in which the cam works are undercut or beveled in opposite directions, as shown at *j j*. In Fig. 6 the clamp is retracted, and to push forward the clamp the lever-handle *i* must be drawn back. This movement of the lever causes the beak *i*¹, which lies under the bevel *j*, to move upwardly as well as forward, and to lift the front end of the clamp. By the time the beak *i*¹ has cleared the bevel *j*, the clamp has moved forward so as to overhang the edge of the plate. The motion of the lever being continued, its cam or eccentric surface acts against the upper terminal edge of the bevel *j*, and by this action forces the clamp down tightly upon the stereotype-plate, as indicated in Fig. 7. In drawing back the clamp the beak *i*² and bevel *j'* act in the same way as do the beak *i*¹ and bevel *j*, but in the reverse

direction, of course. The outer lip *h'* of the clamp, in this instance, moves freely on a guide-pin, *h*².

The clamps in all instances are held between suitable side guides. Two or more clamps are provided for the carriage. We prefer to use three.

The lower part of the carriage C is formed with a nut, C', through which the feed-screw D passes. Midway between the ends of the bed is fixed a bracket, F, in which is hung the rotating shaving or planing tool stock F', driven by gears G H, the latter of which is mounted on the driving-shaft I, provided with driving-pulley I'. The feed-screw is driven from the shaft by means of shifting loosely-revolving pinions J J', carried by a rocking frame, K, moving on the axis of screw-shaft D. Pinions J J' engage one another, and pinion J is, when the machine is in operation, always in mesh with gear L on the end of screw D. By rocking the frame K in one direction or the other, either pinion J or J' can be thrown into mesh with gear M on the main shaft I, and thus the movement of the carriage can be reversed at pleasure.

The bed A on each side of the center bracket F is entirely open, so that the stereotype-plate can be slipped into the carriage, no matter on which side of the bracket the latter may happen to be.

In operating the machine the plate is secured in the carriage, and the latter is then run under the cutter and past the center bracket. The machine is then stopped, the plate is taken out, a new one put in, and the carriage is driven in the reverse direction to effect the planing of this second plate.

By the mechanism described we are enabled to shave two stereotype-plates in about the same time that is now required to shave one.

It is not necessary that the driving-shaft I should be employed. All the driving-gear can be arranged on the bracket F, at the center of the machine, and the feed-screw D can be placed on the exterior and alongside of the bed B, power being communicated to it by intermediate gears, as will be readily understood.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In machinery for shaving the backs of curved stereotype-plates, the fixed center bracket and power-driven cutter and the carriage-bed, open on each side of the bracket, for the purposes specified, in combination with the concave traveling plate-carriage and plate-clamping mechanism, constructed to permit the plate to be inserted in place from the side, said parts being organized for joint operation, as shown and set forth, so that the plate may be placed in the carriage on either side of the center bracket, and from the side of the machine.

2. In combination with the concave stereo-type-plate carriage, provided on one side with a shoulder or projection, up against which one of the edges of the plate bears, the clamps, having a combined up-and-down and to-and-fro horizontal motion, substantially as shown and set forth.

In testimony whereof we have hereunto

signed our names this 25th day of November, A. D. 1874.

THOS. J. MAYALL.
RICHD. W. HARTNETT.

Witnesses:

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