

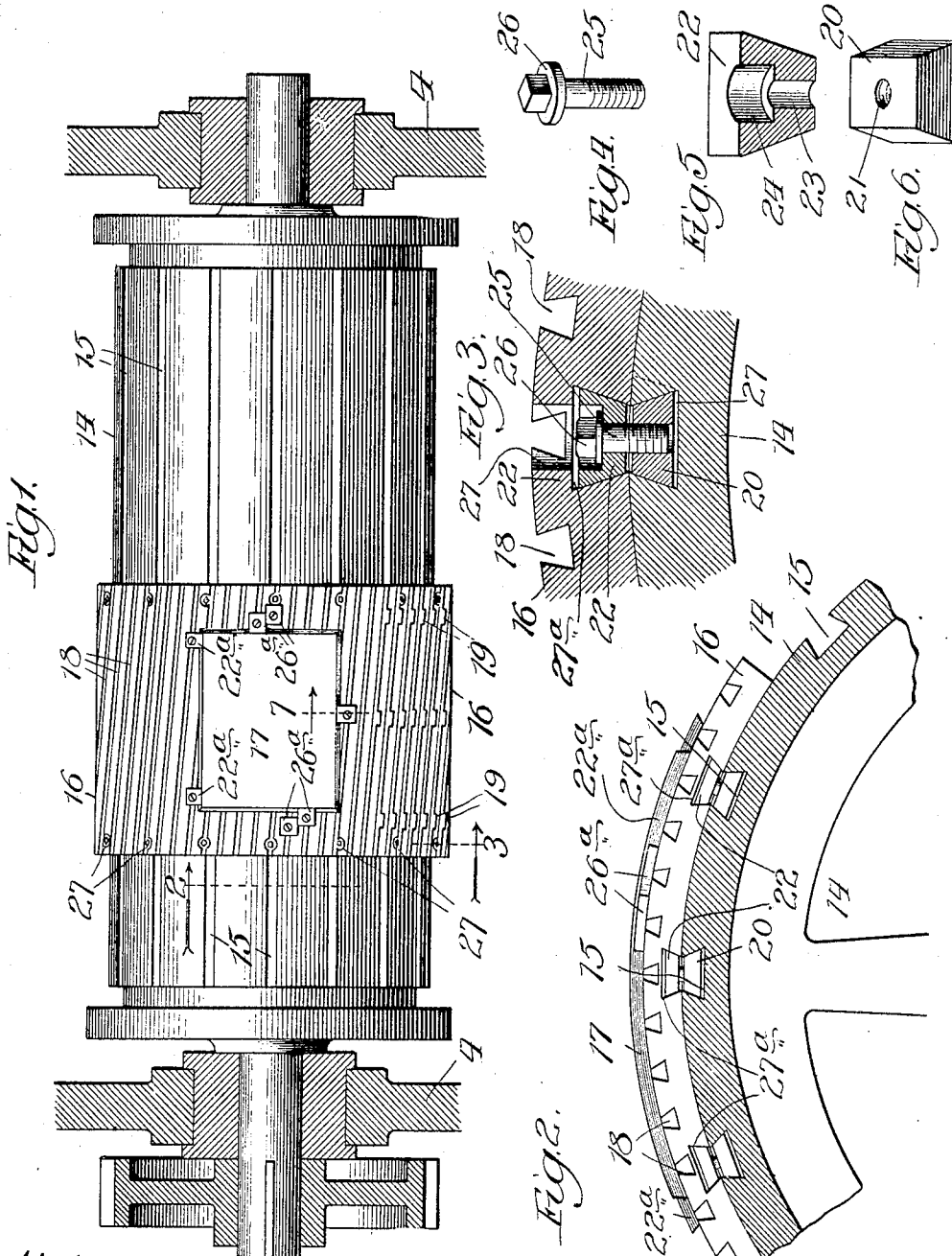
No. 872,004.

PATENTED NOV. 26, 1907.

C. A. McCAIN & C. HENDERSON.
PRINTING PRESS.

APPLICATION FILED JAN. 21, 1907.

2 SHEETS—SHEET 1.



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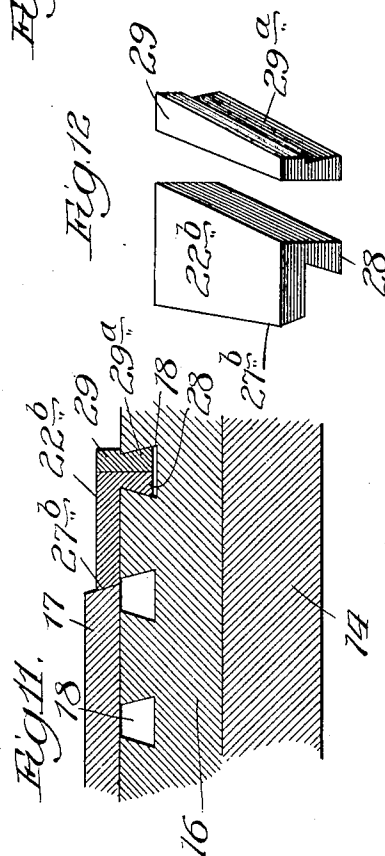
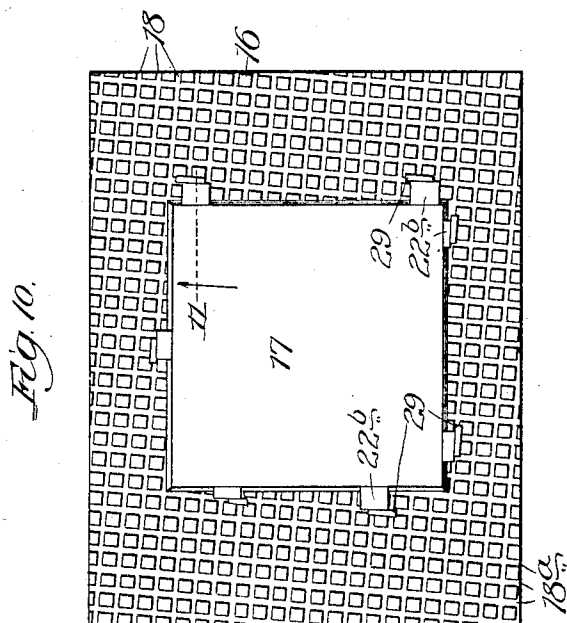
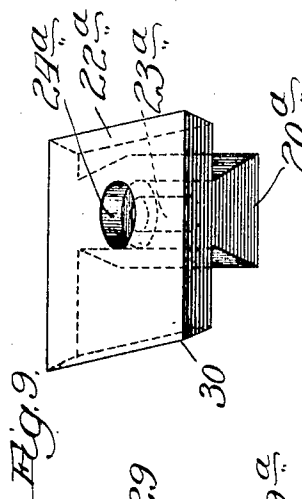
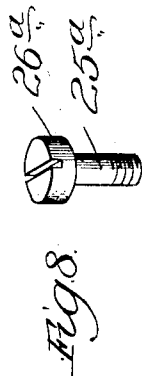
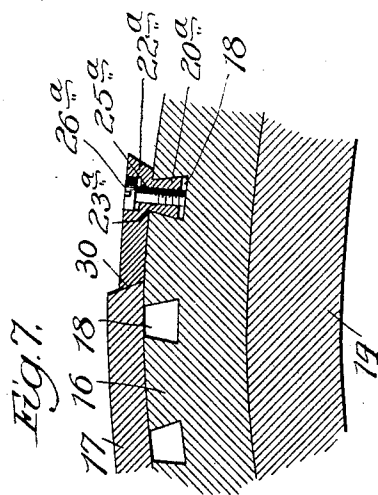
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C. A. McCAIN & C. HENDERSON.

PRINTING PRESS.

APPLICATION FILED JAN. 21, 1907.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

CYRUS A. MCCAIN AND CARL HENDERSON, OF CHICAGO, ILLINOIS.

PRINTING-PRESS.

No. 872,004.

Specification of Letters Patent.

Patented Nov. 26, 1907.

Application filed January 21, 1907. Serial No. 353,290.

To all whom it may concern:

Be it known that we, CYRUS A. MCCAIN and CARL HENDERSON, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Printing-Presses, of which the following is a specification.

Our invention relates to improved means for quickly attaching, removably, and adjusting to any desired position on the form-carrier (flat bed or cylinder) of a printing-press, the electrotype, stereotype and other plates used for printing. These plates are, owing to their nature, only adapted to be fastened in place by clamping means engaging with their edges, which are commonly beveled for the purpose. In "making ready" these plates for printing, they are subjected to frequent removing and replacing, and also in shifting them to different positions to secure proper registration relative to each other or to margins (produced by the distance between plates) desired on the sheet printed from them, which margins are sometimes very narrow, leaving little room for fastening devices. It is the more usual practice to attach these plates, as to the form-cylinder of a rotary printing-press, by means of clamps or hooks with screws, but because of the small space in which fastening devices must be inserted, they are necessarily weak and insecure and, from the nature of the printing press, difficult of access. These defects are so great that the rotary press employing curved plates can not be profitably operated for printing short editions or "runs."

The object of our invention is to overcome the defects referred to by providing means of quick and easy removal and adjustment for fastening registered plates in place on the bed or cylinder with absolute security against slipping under the great strains to which they are subjected in the operation of the press. To these ends we provide the means hereinafter described and illustrated in the accompanying drawings, in which—

Figure 1 is a broken view showing, in elevation, the form-cylinder of a rotary printing-press provided with our improvements; Fig. 2, a broken section taken at the line 2 on Fig. 1, viewed in the direction of the arrow and enlarged; Fig. 3, a similar section taken at the line 3 on Fig. 1, viewed in the direction of the arrow and enlarged; Figs. 4, 5 and

6, are perspective views (of which Fig. 5 is sectional) of the three parts of the form of our improved clamp employed for fastening the plate-reinforcing base to the longitudinally grooved cylinder; Fig. 7 is a broken section taken at the line 7 on Fig. 1, viewed in the direction of the arrow and enlarged; Figs. 8 and 9 are perspective views of the two parts of a clamp employed for fastening an impression-plate on its slantingly grooved reinforcing base; Fig. 10 is a plan view of a plate fastened, in accordance with our invention, on its grooved reinforcing base, showing a modified construction; Fig. 11, a section taken at the line 11 on Fig. 10, viewed in the direction of the arrow and enlarged, and Fig. 12, a perspective view of a two-part clamp adapted to be used with the modified construction illustrated in Figs. 10 and 11.

At 14 is represented the form-cylinder of a rotary printing-press, which may be in all particulars like any ordinary such press except that the cylinder is provided with a circumferential series of longitudinal grooves of the preferred dovetail shape represented and extending parallel with the axis of the cylinder. Bases 16, curved to conform to the surface of the cylinder to which they are fastened as hereinafter described, are provided for reinforcingly supporting the impression-plates, of which one is represented at 17. Each base, which is best formed of cast-steel and rigid, has provided in its outer surface a series of grooves 18, also, by preference, of the dovetail-shape illustrated and which may, for the purpose hereinafter stated, be provided at intervals with recesses, such as are shown in one base at 19 (Fig. 1). The grooves 18 are parallel and extend diagonally of the plate, as represented.

To fasten a base 16 in the position in which it is placed on the cylinder (or other form-carrier), we employ the clamping means clearly illustrated in Figs. 3 to 6, inclusive. Each clamping device consists of a quoin 20, or block, containing a central threaded opening 21 and shaped to conform to and fit movably in a groove 15; a head 22 containing an opening 23 terminating in an enlargement 24 in the under part of the head; and a clamping screw 25 adapted to pass through the head into engagement with the threaded opening in the member 20 and seat at its collar or head 26, to countersink it, in the enlargement 24. To fasten a base

16 in position on the cylinder, the desired number of blocks in the grooves 15 covered by such base are slid along the grooves into registration with holes 27 provided at intervals in the base near its edge-portions coincident with recesses 27^a in the bottom of the base extending inwardly from its edges, and conforming to the shape of the head 22, one of which is introduced into each recess.

10 As a block and head are brought coincident with a hole 27, a screw 25 is inserted through the respective head and screwed into the block 20, when by further driving the screw it draws the block and head wedgingly toward each other, thereby securely fastening the base at that point to the cylinder.

A construction of clamping device for fastening a plate 17 on a base 16 is shown in detail in Figs. 7 to 9, inclusive: It comprises a block 20^a and a head 22^a, integral with each other, the block conforming in shape to that of the grooves 18 and having a beveled edge 30 to conform to the bevel on the plate-edges. With a plate 17 in position on a base 16, blocks 20^a, which have been inserted at recesses 19 into grooves 18 that extend adjacent and inclinedly to the upper and lower straight beveled edges of the plate are moved into proximity to such edges.

30 Thus the head of each block is moved into engagement at its beveled edge with the respective edge of the plate to be fastened, and is then driven along a groove 18, whereby, owing to the relative inclination of the latter, the head becomes wedged against that edge to tighten and hold it down with extreme firmness upon the base. It is desirable to provide a threaded opening 23^a through the block 20^a and head 22^a of this clamping device, with an enlargement 24^a in the part of the opening contained in the head, to receive a screw 25^a and counter-sink its head 26^a in the enlargement. By this last-described provision, when a fastened plate is clamped in the manner described only, say at its upper and lower edges, leaving the lateral edges unclamped, it may be withdrawn without disturbing the already set clamps; but then it is desirable to retain these clamps accurately in their same positions, for the re-insertion, by sliding, of the plate between them, and this may be done by tightening down the screws 25^a against the bases of the grooves 18, to bind the blocks 20^a in them, as represented of the clamping device in Fig. 7, which is shown to be so held while in engagement with a plate 17, though the screw-feature is not indispensable for that purpose. The lateral edges of the plate are similarly fastened upon the base, though the wedging action of the inclined grooves 18 has to be taken advantage of in a somewhat different manner, since they are crossed by those edges. We therefore apply, in the manner just described

of the clamping-device, Figs. 8 and 9, (except as to the wedging) similar clamping devices to the lateral beveled edges of the plate and exert a wedging effect upon the head 22^a of each device through the medium of the head of a similar clamping device working in an adjacent groove 18, by driving that head along the groove, to thereby wedge the straight edge of the head being so driven along the corresponding edge of the head of the clamping device previously set to immediately engage the plate.

The modification illustrated in Fig. 10 consists in providing the base 16 with parallel grooves 18^a inclined relative to its lateral edges, in addition to the similar grooves 18, to intersect the latter. This construction affords the advantage of enabling the clamping devices, such as the one illustrated in Figs. 8 and 9, to be used singly against the lateral edges of the plate 17 the same as they are used against the upper and lower edges thereof (Fig. 1) since the grooves 18^a incline along the lateral edges of the plate in the same way that the grooves 18 incline along its other edges. This construction avoids the need of a pair of the clamping devices for wedging their heads one against the other to fasten them for the purpose described. In connection with the modified construction, however, still another form of suitable fastening device for the plate is illustrated in Figs. 11 and 12, by way of suggesting that still other forms may be employed in the use of our invention. This last-named form involves, by preference, two members and consists of a head 22^b having a beveled edge 27^b, to conform to and engage with a beveled edge of a plate 17, and provided on its opposite edge with a depending inwardly widening flange 28 of the shape of the longitudinal half of a groove 18 or 18^a; and a wedge-like key 29, flat and tapering on one side, to adapt it to be driven against the adjacent flat side of the head 22^b and flange 28, this key having on its opposite side an outwardly flaring base 29^a, to conform to the other half of a groove. To use this clamping device, its flange 28 is inserted into a groove and moved to engage the edge 27^b with an edge of the plate, against which the head becomes wedged by driving it along the groove, when the key 29 is inserted into the groove and driven to wedge it against the head for the purpose of further locking it in position against loosening under the strains and jars to which it is subjected in the operation of the printing-press. While the two parts 28 and 29 may be formed as one integral with the head 22^b, the advantage of the keying action of the part 29 would thereby be dispensed with.

Our invention obviates the use of clamps or hooks with screws in the securing of electrotypes, stereotype and other plates used

for printing in position on the form-carrier of a printing-press, and the plate is held in position on the base solely by the wedging action of the clamping devices in the inclined grooves in such base.

What we claim as new and desire to secure by Letters Patent is—

1. In a printing-press, the combination of a form-carrier, a base provided with parallel inclinedly extending grooves, a printing plate on said base crossing the grooves therein, the grooves inclining but slightly with relation to the edges of said plate, and clamping means confined and longitudinally movable in said grooves and actuated by said inclination to wedge said clamping means by their movement along the same, against the plate edges, whereby the plate may be held in position on the base solely by the wedging action.

2. In a printing press, the combination with a form-carrier, a base provided with parallel inclinedly extending dovetail-grooves, a printing plate on said base with relation to the edges of which said grooves incline but slightly, and a headed clamping device confined in the grooves and movable longitudinally therein to be actuated by their said inclination to wedge the clamping devices by their movement along the same against the plate edges, whereby the plate may be held in position on the base solely by the wedging action.

3. In a printing press, the combination of a form-carrier, a base provided with parallel grooves extending inclinedly between its lateral edges and with similar grooves extending inclinedly between its top and bottom edges and intersecting said first-named grooves, a printing plate on said base with relation to the edges of which said grooves incline but slightly, and headed clamping devices confined in the grooves and movable longitudinally therein to be actuated by said inclina-

tion to wedge the heads, by movement of the clamping devices along said grooves against the plate edges, whereby the plate may be held in position on the base solely by the wedging action.

4. In a printing press, the combination of a form-carrier, a base provided with parallel inclinedly extending dovetail-grooves, a printing plate on said base with relation to the edges of which said grooves incline but slightly, and clamping devices releasably fastening the plate on the base, each comprising a block confined and movable longitudinally in a base groove, and a head adapted to engage the plate wedgingly at an edge thereof by moving the clamping device along said groove, whereby the plate may be held in position on the base solely by the wedging action.

5. In a printing press, the combination of a form-carrier, a base provided with parallel extending dovetail-grooves, a printing plate on said base with relation to the edges of which said grooves incline but slightly, and clamping devices releasably fastening the plate on the base, each comprising a block conforming in shape to that of the grooves, and movable longitudinally in a base-groove, a head adapted to engage the plate wedgingly at an edge thereof, by moving the clamping device along said groove, whereby the plate may be held in position on the base solely by the wedging action, said head containing an opening provided with an enlargement, and a screw passing through said opening and working in said block with its head countersunk in said enlargement, for the purpose set forth.

CYRUS A. McCAIN.
CARL HENDERSON.

In presence of—

W. B. DAVIES,
C. W. WASHBURN.