

J. R. BLAINE.
 PLATE CLAMP FOR PRINTING PRESSES.
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1,304,732.

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 2 SHEETS—SHEET 2.

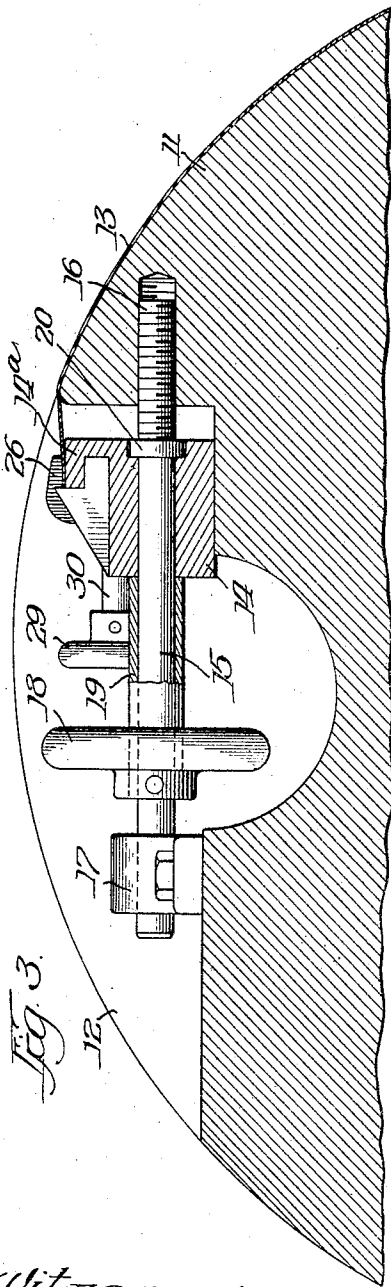


Fig. 3.

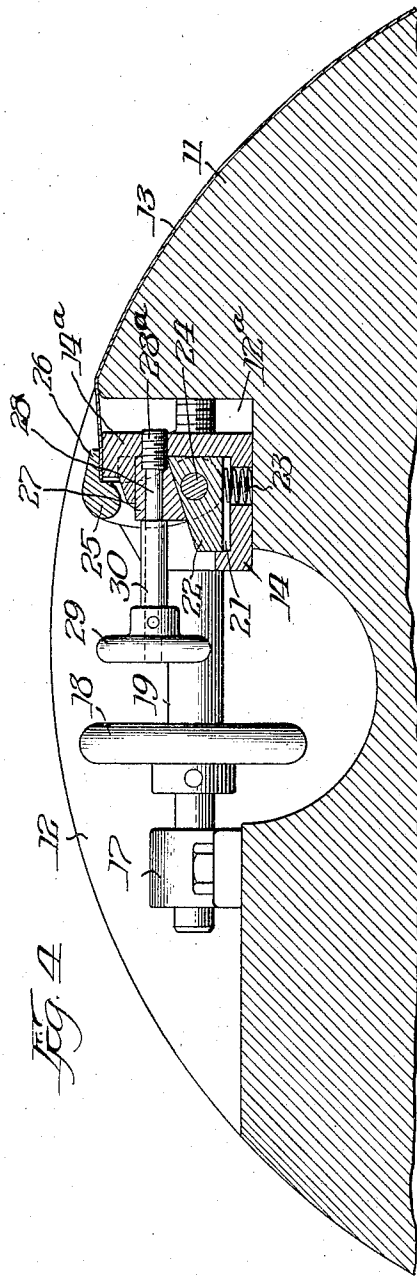


Fig. 4.

Witnesses:
 J. C. Brown
 Louis F. Geist

Inventor:
 Joseph R. Blaine.
 By C. C. Hutchinson
 Atty.

UNITED STATES PATENT OFFICE.

JOSEPH R. BLAINE, OF OAK PARK, ILLINOIS, ASSIGNOR TO MIEHLE PRINTING PRESS & MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

PLATE-CLAMP FOR PRINTING-PRESSES.

1,304,732.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSEPH R. BLAINE, a citizen of the United States, residing at Oak Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Plate-Clamps for Printing-Presses, of which the following is a specification.

The object of the invention is the provision of means for tensioning and clamping the plates or the like of a printing press, as for instance, the plate of an offset press, said means comprising a series of local quick-release clamping and tensioning devices arranged at intervals longitudinally of the plate cylinder whereby to place the plate under tension throughout the length of the cylinder, and to increase or diminish or quickly release the tension on the same as may be required.

In order that the invention may be readily understood a preferred embodiment of the same is set forth in the accompanying drawings and in the description based thereon. As, however, the invention is susceptible of embodiment in other and varied constructional forms without departure from the essence of the invention, the drawings and description are to be taken in an illustrative and not in an unnecessarily limiting sense. In the drawings—

Figure 1 is a partial transverse section through a printing cylinder showing the plate clamp in side elevation;

Fig. 2 is a fragmentary view taken on the line 2—2 of Fig. 1 and showing the plate clamp in front elevation;

Figs. 3 and 4 are views similar to Fig. 1 but taken on the lines 3—3 and 4—4 respectively of Fig. 2.

In the drawings the cylinder is indicated at 11 and cut away at 12 to provide in the usual way for the mounting of the means for clamping the plate 13 which latter is to be tightly stretched over the operative surface of the cylinder.

It is desirable in printing presses to form the printing surface, whether in a bed press or a cylinder press, convex in order that the printing plate or blanket may be stretched tightly in contact with the same at all points. It is always important after the plate is applied to its support, that the same should be tensioned throughout its extent and then securely held in order that there

shall be no movement or unequal stretching of the same and consequent impairment of the impression secured therefrom, and also that it shall be so held as to be capable of quick release from tension. It is to the provision of improved and particularly efficient means for clamping, tensioning and adjusting the tension and quickly releasing the plate that the present invention is directed.

In the embodiment shown, the clamping devices are arranged in pairs, the pairs being disposed at intervals longitudinally of the cylinder to act upon the edge of the plates or blanket. Within the angle 12° of the cut away portion 12 of the cylinder is mounted a slidable block 14 in which is journaled a screw spindle 15, the inner end of which is threaded into the cylinder at 16 while the opposite end is mounted within the bearing bracket 17. The spindle 15 is provided with a hand wheel 18 and with a sleeve 19 which bears upon the outer face of the block 14 and a shoulder 20 which bears upon the inner face of said block.

The block 14 at each side of the screw spindle 15 is recessed as indicated at 21 for the reception of a wedge member 22 in the form of an oblique-faced block, which is guided in the block and is upwardly pressed by means of a coiled spring 23. The wedge member 22 has hinged thereto at 24 a clamping latch member 25 the jaw or nose 26 of which is operatively disposed inwardly of a perpendicular line passing through the pivot or hinge 24, and is adapted to take over the edge of the blanket or plate 13 clamping the same between said jaw 26 and the upper edge 14^a of the block 14. The clamping action of the latch 25 is effected by means of a second wedge block 27 the oblique lower face of which is arranged to cooperate with the upper oblique face of the wedge block 22 whereby to move the latter in a direction at an obtuse angle to the plate. The wedge member 27 has journaled therein a screw spindle 28 the inner end of which is threaded in the block 14, as indicated at 28^a, while its outer end is provided with a hand wheel 29 and with a sleeve 30 which bears against the outer face of the wedge member 27 while the inner threaded end of the spindle is enlarged to bear against the inner face of the said wedge member. A compression spring 31 is disposed between the

rear wall of the block 14 and the clamping latch 25 so as to normally exert outward pressure thereon to press the same away from engagement with the edge of the blanket or plate 13.

It is thought that from the above description the operation of the device will be obvious. The block 14 having been disposed adjacent the edge wall of the cut away portion 12 by means of the screw spindle 15 and the wedge member 27 having been withdrawn outwardly with reference to the wedge member 22 by means of its screw spindle 28, clamping latch 25 will be retracted by means of the spring 31 so as to withdraw its jaw 26 from the upper edge 14^a of the block 14. The plate or blanket 13 having been positioned upon the cylinder its edge is laid upon the upper edge 14^a of the block 14, the clamp 25 is by hand thrown forward to a position with its jaw 26 overlying the edge of the blanket or plate. By turning the hand wheel 29 the wedge member 27 is caused to ride up on the wedge member 22 forcing the latter downward in a direction at an obtuse angle to the plate against the action of its spring 23, said wedge member 22 carrying with it by means of the hinged connection 24, the clamping latch 25 so as to grip the edge of the blanket or plate firmly between the jaw 26 and the upper edge 14^a of the block. By suitable manipulation of the hand wheel 18 the engagement of the screw spindle 15 with the block 14 moves the latter bodily backward carrying with it the wedge members and clamping latch thus exerting a pull upon the edge of the plate 13 and causing the tensioning of the latter to the degree required. The release of the tension upon the plate or blanket will be accomplished by a reversal of the operation just described, that is to say, the pull upon the plate or blanket will be released by the operation of the hand wheel 18 and the screw spindle 15 to move the block 14 inwardly, and the clamping of the blanket will be released by a retrograde turning of the hand wheel 29, whereby the wedge member 22 will be permitted under the influence of its spring 23 to move upwardly thus loosening the clamp 25 whereupon the spring 31 will throw the same outwardly and thus disengage the edge of the blanket from the jaw 26.

An important feature of the invention is the provision of the springs 23 and 31, the former of which, upon the retraction of the screw spindle 30 will force the wedge 22 and the clamp 25 upwardly away from the edge 14^a of the block while the latter spring 31 will force the clamp 25 backward on its hinge 24 to a position with its jaw 26 free of engagement with the plate 13 and the edge 14^a, thus effecting an instan-

taneous release of the plate from the clamp upon a slight manipulation of the hand wheel 29.

A further important feature is the hinging of the clamp 25 at a point in a line which is beyond the point of engagement of the jaw 26 with the edge of the plate, whereby the pull of the clamped plate serves to cause the clamping jaw to more tightly grip the plate.

It will be understood that for the purposes of the present application the blanket of an offset press is the equivalent of the form plate of a press, and the terminology of the specification and claims should be interpreted in the light of such fact.

I claim:

1. The combination with the plate carrying member of a printing press or the like, and a plate superposed thereon, of a block, means to move said block in a direction at but a small angle to the plate, cooperating wedge members carried by said block, a plate clamp hinged to one of said wedge members for engaging the edge of the plate, the clamp carrying wedge member guided in the block for movement at an obtuse angle to the plate, the other member transversely movable relative to the clamp-carrying wedge member, and adjustable means to move the last mentioned member.
2. The combination with the cylinder of a printing press or the like, and a plate superposed thereon, of a block, means to move said block along a chord of said cylinder, cooperating wedge members carried by said block and acting to exert force in a general radial direction and transversely of the block movement, a plate clamp hinged to the inner one of said members, and means to impart relative transverse movement to the wedge members.
3. The combination with the cylinder of a printing press or the like, and a plate superposed thereon, of a block, means to move said block along a chord of said cylinder, cooperating wedge members carried by said block, a plate clamp hinged to the inner one of said wedge members and arranged to engage the plate edge, the clamp carrying wedge member movable radially and the other wedge member transversely movable, and a screw spindle traversing the last mentioned member and threaded in the block.
4. The combination with the cylinder of a printing press or the like, and a plate superposed thereon, of a block, means to move said block along a chord of said cylinder, cooperating wedge members carried by said block, a plate clamp hinged to the inner one of said wedge members and arranged to engage the plate edge, the clamp carrying wedge member movable radially and the other wedge member transversely

movable, a screw spindle traversing the last mentioned member and threaded in the block, a spring pressing the clamp carrying member outwardly, and a spring pressing the clamp rearwardly.

5 5. The combination with the plate carrying member of a printing press or the like, and a plate superposed thereon, of a block, means to move said block in a direction at
10 but a small angle to the plate, coöperating wedge members carried by said block, a plate clamp hinged to the inner one of said wedge members, the clamp carrying wedge member guided in the block for movement
15 at an obtuse angle to the plate, the other member transversely movable, adjustable means to move the last mentioned member, spring means pressing the clamp out of engagement with the plate and other spring
20 means tending to swing the clamp on its hinge away from the plate.

6. The combination with the plate-carrying element of a printing press, and the plate carried thereby, of plate-clamping
25 means comprising a block movable in a direction generally parallel to the terminal portion of the plate, a clamp hingedly and slidably mounted in the block, a spring pressing the clamp out of clamping position,
30 a wedge member acting in opposition to the spring to press the clamp into clamping relation to the plate, and a second spring tending to swing the clamp on its hinge clear of the plate.

35 7. The combination with the plate-carrying element of a printing press, and the plate carried thereby, of plate-clamping means comprising a block, a clamp-carrying member guided for movement in the
40 block along a line substantially perpendicular to the plate, a clamp hinged to the clamp-carrying member in a line which

if extended perpendicularly of the plate would clear the plate-edge, and provided with a laterally extending jaw overlying
45 the plate-edge, a spring acting on the clamp-carrying member to bring the clamp out of clamping position, means acting in opposition to said spring to press the clamp
50 into clamping relation with the plate, and a second spring tending to swing the clamp on its hinge clear of the plate.

8. The combination with the plate-carrying element of a printing press, and the plate carried thereby, of plate-clamping
55 means comprising a block movable in a direction generally parallel to the terminal portion of the plate, a clamp-carrying wedge member guided for movement in the block
60 along a line substantially perpendicular to the plate and to the bodily movement of the block, a clamp hinged to the clamp-carrying member in a line which if extended perpendicularly of the plate would clear the plate-edge and provided with a laterally extend-
65 ing jaw overlying the plate-edge and block, a spring acting upon the clamp-carrying member to normally hold the clamp clear of engagement with the plate, another wedge member acting in opposition to the spring
70 and coöperating with the clamp-carrying wedge member to press the clamp into clamping relation to the plate, and a second spring bearing against the clamp and tending to swing the same on its hinge clear of
75 the plate.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOSEPH R. BLAINE.

Witnesses:

ALVIN G. FISCHER,
EDWARD F. DUDLEY.