

May 10, 1927.

S. W. MARVIN

1,628,384

CLAMPING DEVICE FOR PRINTING PLATES

Filed Dec. 9, 1926

Fig. 1.

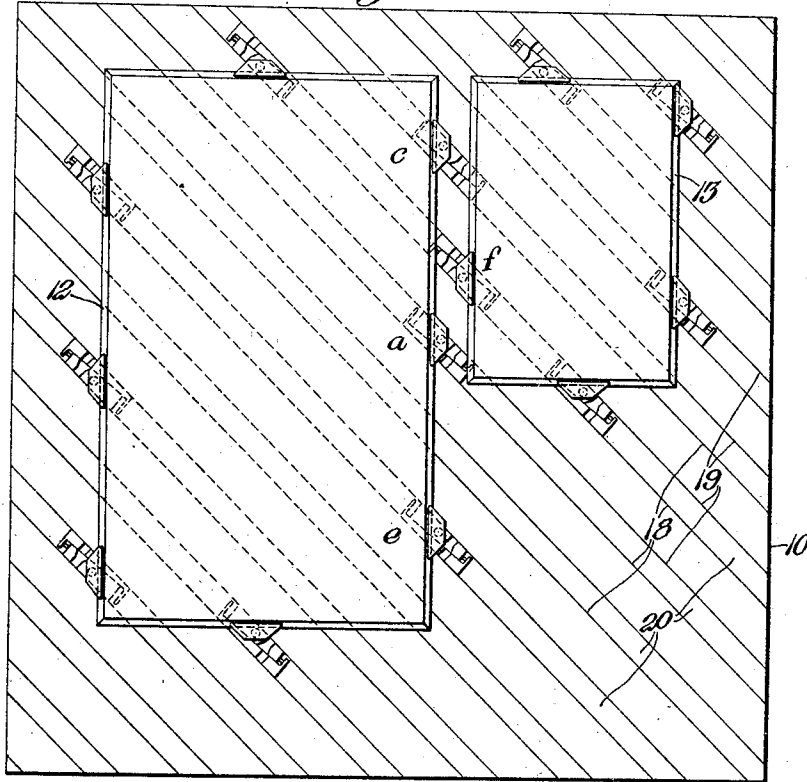


Fig. 2.

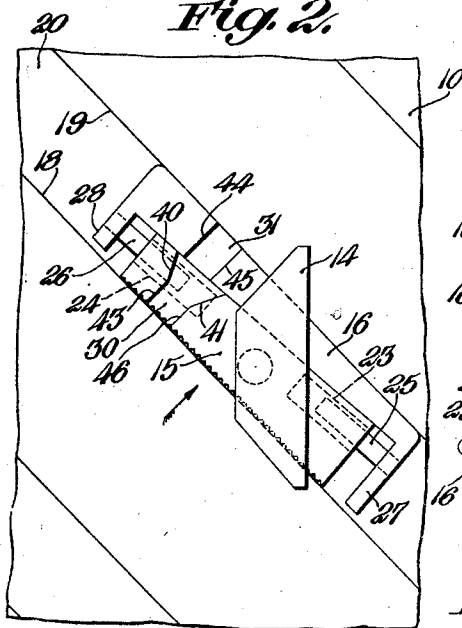


Fig. 3.

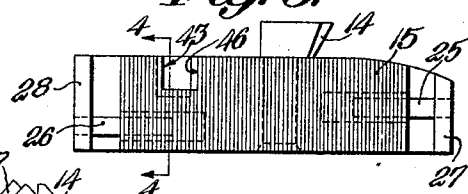


Fig. 5.

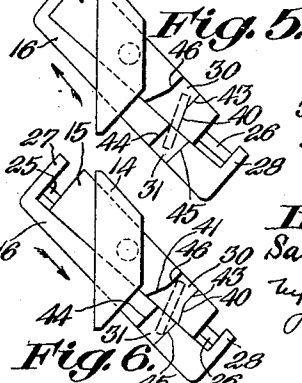
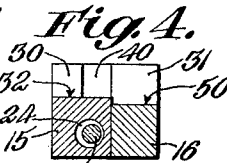


Fig. 4.



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CLAMPING DEVICE FOR PRINTING PLATES.

Application filed December 9, 1926. Serial No. 153,559.

This invention relates to a clamp or gripping device for use with the bed blocks of printing presses and is an improvement upon the clamp or gripping device shown and described in U. S. Patent No. 1,147,334 granted to me July 20, 1915.

The present invention has for one of its objects to provide a superior clamping device of the character described, in which a maximum length of travel of one of the clamping members with relation to the other is provided in a clamping device of minimum length.

Another object of the invention is to provide a clamping device which is positioned and locked by means of a tool, and is of such construction as will be described as to enable adjacent printing plates to be set closer together for obtaining a narrow margin on the printed sheet without interfering with the operation of the clamping device by the tool.

A further object of the invention is to prevent backing off of the catch from the plate when the tool is turned to lock the clamp to the block.

These and other features of the invention will be pointed out in the claims at the end of this specification.

Fig. 1 is a plan of a bed block of a printing press with two printing plates secured thereto by clamping devices embodying this invention, one of said devices being shown in its unlocked position;

Fig. 2, a plan on a larger scale of a portion of the bed block and one of the clamping devices;

Fig. 3, a side elevation of the clamping device shown in Fig. 2, looking in the direction of the arrow thereon;

Fig. 4, a cross section on the line 4—4, Fig. 3, and

Figs. 5 and 6, details on an enlarged scale to show the relation of the slots in the members of the clamping device in the unlocked and locked positions of the latter.

Referring to the drawing, 10 represents the bed block of a printing press, and 12, 13 printing plates secured thereon by clamping devices embodying the present invention.

The clamping devices are provided with

catches or members 14 adapted to engage the marginal portions of the printing plates in the manner now commonly practiced.

The clamping devices comprise members 15, 16 having their adjacent surfaces inclined, which operate as cam surfaces to cause the members to be moved laterally with relation to each other and into frictional engagement with the opposed walls 18, 19 of the usual slots 20 in the bed block 10.

The catch or plate-engaging member 14 is pivotally secured to the member 15, and provision is made for permitting the member 16 to be made of minimum length and have a maximum length of travel with relation to the member 15.

To this end, the member 15 is provided at its opposite ends with bores or sockets 23, 24 into which are extended stationary pins 25, 26 secured to arms 27, 28 on the member 16 at the opposite ends thereof and projecting inwardly therefrom (see Fig. 2).

The pins 25, 26 are secured to the arms 27, 28 with their outer ends flush or substantially flush with the outer surfaces of the arms, so that two or more of the clamping devices may be placed in the slots 20 with their adjacent arms abutting, and thereby enable adjacent printing plates to be secured on the bed block and relatively widely separated to obtain a relatively wide margin on the printed sheet under some conditions of use.

The clamping members 15, 16 are provided with transverse slots 30, 31, which enable the clamping device to be moved in the slots 20 of the block 10 toward and from a printing plate thereon by a screw-driver or like tool in the hands of the operator.

The slots 30, 31 are designed to receive an operating tool, such as a screw-driver, and by moving the tool bodily toward the printing plate, the clamping device is moved as a unit so as to engage the catch 14 with the printing plate.

When thus positioned, the tool is pressed down on the bottom wall 32 of the slot 30 in the catch-carrying member 15 and is turned so as to move the other member 16 toward the printing plate and thereby cause it to

move the member 15 laterally and wedge it between the member 16 and a side wall of the slot 20 in the bed block 10, thus securing the clamping plate to the bed block.

5 After one printing plate has been clamped to the block, an adjacent printing plate as 13 is positioned by hand with relation to the clamped plate 12, and in practical operation frequent fine adjustments of the plates are
10 necessary before they are properly positioned on the block.

These adjustments require the locking and unlocking of the clamping devices which co-operate with the plate being adjusted.

15 To enable the clamping devices to be unlocked by a tool after the plates have been locked with their adjacent marginal edges in close proximity to each other and overlapping the opposite ends of the clamping device, the slot 30 in the member 15 is provided
20 at its end adjacent the member 16, with an enlarged portion having beveled side walls 40, 41 which extend from approximately the center of the slot 30 to the inclined side
25 thereof, which construction and arrangement provides a space between one of the side walls of the slot 31 in the member 16, and one of the beveled side walls of the slot 30 in the member 15, for the entrance of the
30 screw-driver or other tool.

This is illustrated by the topmost clamping device located between the plates 12, 13, and in Fig. 5.

35 In Fig. 1, three clamping devices are represented as co-operating with the edge of the plate 12 adjacent to the plate 13, and are marked *c*, *d*, and *e*.

40 Another clamping device, marked *f*, is located between the devices *c*, *d*, and its catch engages the plate 13.

Of these clamping devices, *c*, *d* and *f* are located between the plates 12, 13, and their ends are overlapped by said plates. The clamping devices *d*, *f* are represented in
45 their locked position while the device *c* is represented as unlocked but with its catch 14 engaged with the plate 12.

It will be observed that the straight portion 43 of the rear wall of the slot 30 is in the same plane as the front wall 44 of the slot 31 in the member 16, so that if said
50 straight wall 43 were continued for the width of the member 15, it would cut off the slot 30 from the slot 31, and thereby prevent the blade of the screw-driver being
55 entered into both slots.

By providing the beveled side wall 40, a space is left between it and the front wall 44 of the slot 31, (see Fig. 5), which is
60 sufficiently wide for the passage of the blade of the screw-driver into the slots 30, 31, which enables the operator to turn the screw-driver or tool, so as to move the member 16 lengthwise and into wedging position to lock the
65 clamping device to the bed block, in which

position, the arm 27 is removed from the member 15 as represented in the case of the clamping devices *d*, *e* and *f*.

The beveled wall 40 functions also to permit the wedging member 16 to be moved in the opposite direction by the operating tool inserted into the slots 30, 31 in the locked position of the clamping device, as shown in Fig. 6.

75 The plates 12, 13 in some cases require fine adjustments, which require unlocking of the clamping devices which co-operate with the plate being adjusted and which are located between the plates.

For instance, assume that it is desired to
80 unlock the clamp *f*. In this case, the operator inserts the tool into the slots 30, 31 and engages the straight portion 46 of the slot 30 with one end of the blade and the wall 45 of the slot 31 with the other end
85 of the blade and then turns the tool so as to move the member 16 rearwardly. (See Fig. 6.)

It will be observed that the beveled wall 40 in this case permits the member 16 to be moved until the blade of the tool engages the beveled wall 40, at which time the clamping device is unlocked from the block and free to be moved in the slot 20 sufficiently
90 to release the catch of the clamping device *f* and permit the plate 13 to be adjusted.

The sockets 23, 24 in the wedge member 15 are of larger diameter than the stationary pins 25, 26 to provide for lateral movement of the member 15 when the co-operating
100 member 16 is moved into wedging position.

It will be observed that the mounting of the member 15 on the stationary pins 25, 26 secured to the arms 27, 28 of the wedging member 16 co-operates with the enlarged
105 end of the slot 30 in the member 15, to enable the printing plates to be set in close proximity to each other for narrow marginal purposes and be locked and unlocked by means of a tool in the hands of the opera-
110 tor.

In practice, the operator inserts the clamping device in the slot in the bed block with the clamping device in condition to be freely moved lengthwise in said slot, and he then
115 places the screw-driver in the slots and moves the clamping device as a unit toward the printing plate until the catch is firmly pressed against the printing plate. He holds the catch-carrying member against the plate by downward pressure of the tool, and then turns the tool so as to expand the clamping member by movement of the wedge
120 member 16.

It is highly desirable that the operator
125 should be able to rapidly manipulate the clamping devices and lock the printing plate to the bed block in the least possible time, and to this end, provision is made for ensuring the catch of the clamping device be-
130

ing firmly held against the printing plate and of not being disengaged or backed off therefrom when the operating tool is turned to move the wedging member into its locking position.

To this end, the slot 31 in the wedging member 16 is made deeper than the slot 30 in the catch-carrying member, so that the bottom wall 50 of the slot 31 is lower than the bottom wall 32 of the slot 30, as represented in Fig. 4.

It will thus be seen that when the operating tool is inserted down into the slots 30, 31, with the tool vertical or substantially so, it will engage the bottom wall 32 and will not engage the bottom wall 50, unless the tool is canted or inclined abnormally from a vertical position.

When therefore under normal conditions of use the clamping device is moved by the tool to engage the catch with the plate, the tool engages only the bottom wall of the slot 30.

When the catch is engaged with the plate it will be held in firm engagement therewith by the operator pressing the catch member firmly against the bottom of the slot 20 in the bed block.

While the catch member is thus held immovable, the tool can be turned or pivoted thereon without effecting movement of said catch member, and at the same time, effecting movement of the wedge member into wedging or locking position.

This construction enables the operator to engage the catch with the plate and lock it in this position quickly and with one effort.

A preferred embodiment of the invention is herein shown, but it is not desired to limit the invention to the particular construction shown.

Claims.

1. A clamping device of the character described, comprising a member having an inclined inner surface and provided at its opposite ends with arms extended substantially at right angles from said inclined surface and having a transverse slot in its upper surface, stationary pins attached to said arms with their outer ends substantially flush with the outer surfaces of said arms, a shorter co-operating member interposed between said arms and provided at its ends with sockets of larger diameter than said pins and into which the latter are extended and having in its upper surface a transverse slot provided with a wall having a straight portion and a beveled portion forming an enlargement of said slot at its end adjacent the inclined surface of said shorter member to leave a space for the entrance of an operating tool in the locked position of said members, and a plate-engaging member carried by said shorter member.

2. A clamping device of the character de-

scribed, comprising co-operating wedge-shaped members, one of which is longer than the other and provided at its ends with arms extended substantially at right angles thereto and carrying stationary pins extended toward each other, and the shorter member having end sockets of larger diameter than said pins and into which the latter are extended to support said shorter member and permit movement of one member with relation to the other, said wedge members having in their upper surfaces transverse co-operating slots for the reception of an operating tool, the slot in the shorter member being of greater width at its inner end than the slot in the longer member and being of less depth than the slot in the longer member.

3. A clamping device of the character described, comprising co-operating wedge-shaped members, one of which is longer than the other and provided at its ends with arms extended substantially at right angles thereto and carrying stationary pins extended toward each other, and the shorter member having end sockets of larger diameter than said pins and into which the latter are extended to support said shorter member and permit movement of one member with relation to the other, said wedge members having in their upper surfaces transverse co-operating slots for the reception of an operating tool, the slot in the shorter member having one wall thereof provided with a straight portion and with a beveled portion extended away from the inner end of said straight portion to enlarge the end of the slot adjacent the longer member and provide a space for the insertion of the operating tool into both slots with the straight portion of the slot in the shorter member substantially in the plane of a wall of the slot in the longer member when the said wedge members are in their locked position.

4. A clamping device of the character described, comprising wedge-shaped members of unequal length and connected together to be moved as a unit and to be moved individually with relation to each other, said wedge members having in their upper surfaces transverse co-operating slots for the reception of an operating tool, the slot in the shorter member being of greater width at its end adjacent the slot in the longer member to provide a space for the insertion of an operating tool into both slots when said members are in their locked position.

5. A clamping device of the character described, comprising wedge-shaped members of unequal length and connected together to be moved as a unit and to be moved individually with relation to each other, said wedge members having in their upper surfaces transverse co-operating slots for the reception of an operating tool, the slot in the

shorter member being of greater width at its
end adjacent the slot in the longer member
to provide a space for the insertion of an
operating tool into both slots when the
5 wedge members are in their locked position,
and the slot in the longer member being of
greater depth than the slot in the shorter
member to enable the operating tool to en-

gage the bottom wall of the slot in the
shorter member and be turned thereon to 10
move the longer member in one direction
without moving the shorter member in the
opposite direction.

In testimony whereof, I have signed my
name to this specification.

SAMUEL W. MARVIN.