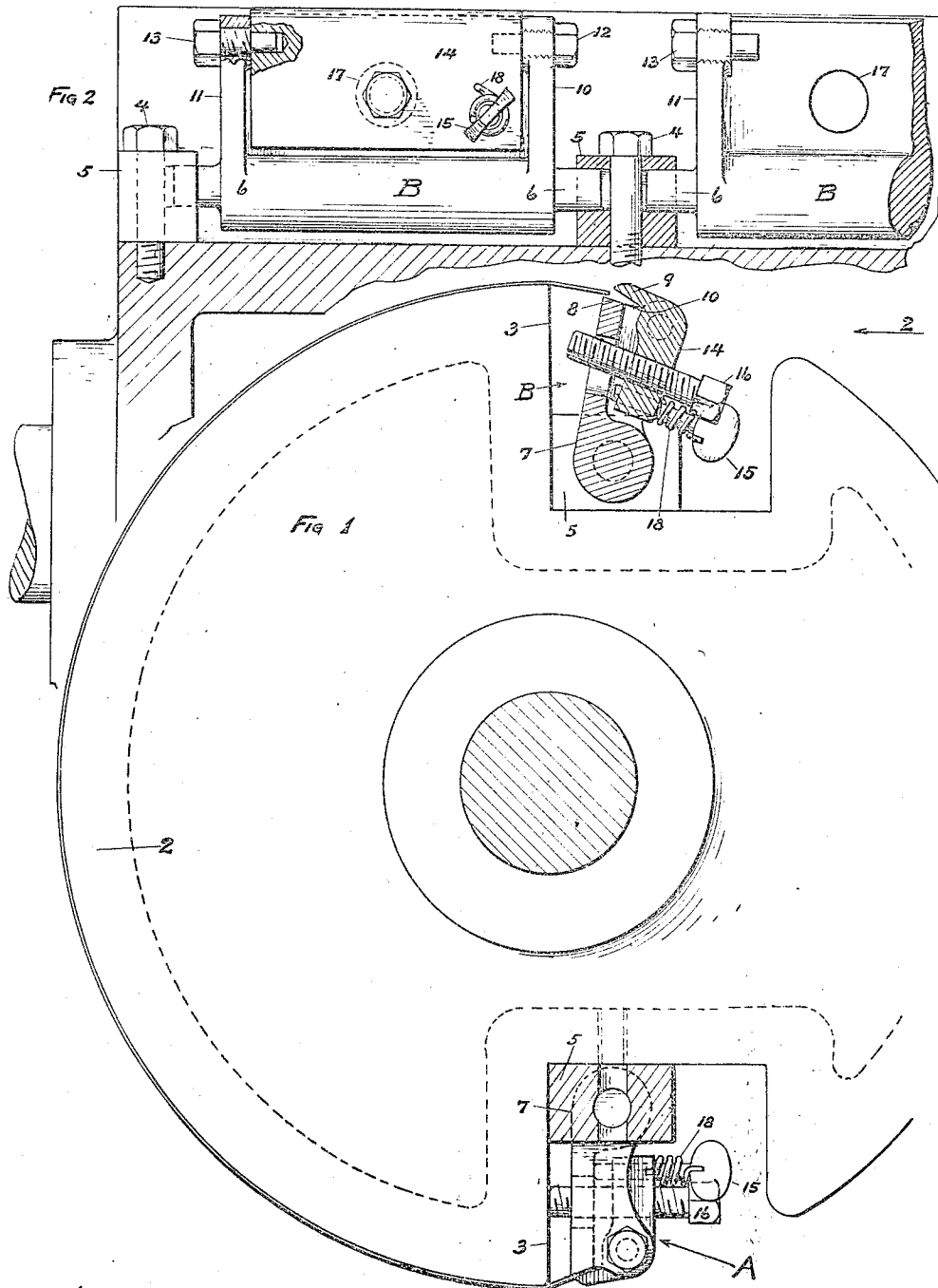


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CLAMP FOR FLEXIBLE PRINTING PLATES.
APPLICATION FILED MAY 17, 1909.

935,439.

Patented Sept. 28, 1909.



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CLAMP FOR FLEXIBLE PRINTING-PLATES.

935,439.

Specification of Letters Patent. Patented Sept. 28, 1909.

Application filed May 17, 1909. Serial No. 496,587.

To all whom it may concern:

Be it known that I, JOSEPH WHITE, citizen of the United States, residing at Boundbrook, Somerset county, State of New Jersey, have invented certain new and useful Improvements in Clamps for Flexible Printing-Plates, fully described and illustrated in the following specification and accompanying drawing.

The object of this invention is to simplify the mechanism for clamping and adjusting the plates to a bed or supporting surface, and to facilitate the manipulation of the parts so that a plate may be more quickly put in, adjusted to or removed from a printing machine than has been hitherto possible; and while the device is primarily intended to hold flexible printing forms in a printing machine, it also will be used for holding a printing blanket of rubber or other material.

Referring to the drawing in which like characters of reference indicate the same parts, Figure 1 is an end view of a printing cylinder showing a pair of the clamps to hold a flexible printing plate, one of said clamps being in section. Fig. 2 is a view taken in the direction of the arrow 2 of Fig. 1, some of the parts being shown in section.

Referring to Fig. 1 a printing plate 1 of zinc or aluminum is stretched and adjusted onto the bed 2 by means of the clamps to be hereafter described; this bed is shown in the form of a segment 2 of a cylinder (although the device might be employed in connection with a flat surface) and has bearing faces 3 formed at its sides against which the clamps react in order to stretch the plate on the bed. These bearing faces are formed on one side of the gaps reaching across cylinder which have fastened in them by means of a series of screws 4, the bearing blocks 5, in which the trunnions 6, of the plate clamps find their bearings.

A plurality of clamps is preferably employed on each end of the plate, although under certain conditions one pair of clamps could be used or one clamp could hold one side of the plate, the other side being held to the cylinder by any other means. These clamps as illustrated, consist of a member on which the trunnions 6 are formed, part of which member consists of a web 7 (on the end of which is a face 8,) which forms the rigid jaw between which and the movable

jaw 9, the plate is gripped. The wing of the clamp has a pair of flanges 10 and 11, in which are screwed a pair of pivot bolts 12 and 13 upon which is pivoted a member in the form of an angle plate, one wing 9 of which extends over the face 8 of the rigid jaw and acts as the movable jaw of the clamp, the other wing 14 which lies approximately parallel with the web 7, has a thumb screw 15, which bears against the web 7 of the clamp and tends to rock the movable jaw on the pivots 12 and 13, thus gripping the sheet between the jaws 8 and 9. The function of this screw 15 is to cause the jaws to close as described, but it can be seen that various devices might be employed to cause reaction between the movable jaw and the fixed jaw, whereby the jaws will close to grip the sheet, but the device illustrated and described is the preferable one. When the sheet is gripped between the jaws, it is then necessary to adjust and strain the plate on the supporting bed.

The clamp "A" at the bottom of Fig. 1 is shown in the position of gripping the sheet, the clamp "B" in section in Fig. 1 is shown open; this clamp will now be rocked forward so that the plate will be between the jaws of the clamp "B", the thumb screw will then be manipulated, temporarily clamping the jaw 9 over the plate.

In order to properly strain the plate to its supporting bed, a device for causing a reaction between the bearing face 3 and the movable jaw is used, which might be constructed in various ways but the preferred form is shown; the pivoted jaw has mounted in it the bolt 16 which passes through the clearance hole 17 in the fixed jaw and which when turned will bear against the face 3 of the printing bed, and force the clamp away from it and strain the plate to its surface.

By the peculiar construction, illustrated and shown, it is only necessary to lightly set the jaws of the clamp by means of the wing screws 15, which form an auxiliary means for clamping the plate. The primary means is applied by the bolt 16, which when turned to force the clamp away from the bearing face 3, in addition to rotating the clamp on its trunnion, tends to rock the movable jaw on its pivots 12 and 13, thus causing the jaws to take a stronger grip upon the plate, for the initial friction between the

jaws and the plate (due to the tension applied by the thumb screw 15) is sufficient to hold the plate from slipping in the jaws.

It can be seen that the thumb screw 16 has coiled around its stem, a spiral spring 18, which is wound up by the thumb screw when a plate is clamped between the movable jaw and the lower jaw; the friction of the screw against the body of the clamp is sufficient to prevent it being unscrewed by the coil spring, but when the bolt 16 is tightened and the sheet strained to its surface, the stress of the plate in tension causes the jaw 9 to be rocked slightly on its pivots, and the thumb screw 16 in the wing 14, which has been lightly pressing against web 7 of the clamp, is released from contact with web 7, and the spring 18 unwinds to unscrew the thumb screw.

When screws 15 are released from pressure against the fixed jaws both sets of clamps "A" and "B" will still hold the plates tightly and securely by means of the primary clamping and straining stress described, and when it is time to remove the plate when a job is finished, it is only necessary to loosen the screws 16 of the clamps in one of the gaps to release the grip of all the jaws holding the sheet, thus releasing the plate for removal from the press.

The devices shown in the drawings and described herein are the preferable forms embodying the features of this invention; the elements embodying it may be widely varied in construction without departing from the principles specifically mentioned in the following claims.

The claims:

1. The combination with a supporting surface for a flexible sheet, of a clamp to grip said sheet and strain it to the supporting surface, and a member in connection with said clamp operating to cause the clamp to grip and strain the sheet; said clamp so arranged that when said member is operated to release the strain of the sheet upon the supporting surface the grip of the clamp on the sheet will also be released.

2. The combination with a cylindrical supporting surface for a flexible sheet, of a clamp to grip said sheet and strain it to the supporting surface, and a member in connection with said clamp operating to cause the clamp to grip and strain the sheet; said clamp so arranged that when said member is operated to release the strain upon the supporting surface the grip of the clamp on the sheet will also be released.

3. The combination with a supporting surface for a flexible sheet, of a pivoted clamp having a pair of jaws to grip the sheet and strain it to the supporting surface, a member in connection with said clamp operating to rock the clamp to strain the sheet, and close the jaws to grip the sheet; said clamp

so arranged that when said member is operated to release the strain of the sheet upon the supporting surface the grip of the jaws on the sheet will also be released.

4. The combination with a supporting surface for a flexible sheet, of a pivoted clamp to hold said sheet and strain it to the supporting surface, said clamp having a rigid jaw and a movable jaw; means applied to the movable jaw whereby a stress exerted to strain said sheet to the supporting surface, will also grip the sheet in the jaws of the clamp.

5. The combination with a supporting surface for a flexible sheet, of a pair of opposing clamps, each having a pair of sheet gripping jaws, means on each of the clamps for causing the jaws to grip the sheet, said means also moving the clamps to strain the sheet to the supporting surface and said means so arranged that when they are operated to release the strain of the sheet upon the supporting bed the grip of the jaws will also be relaxed.

6. The combination with a supporting bed for a flexible sheet, of a movable clamp to hold said sheet and strain it to the supporting bed, a bearing face at the end of the bed; said clamp having a rigid jaw and a movable jaw, means applied to the movable jaw of the clamp and acting against the bearing face, to clamp the jaws and move the clamp to hold and strain the sheet.

7. The combination with a supporting bed for a flexible sheet, of a pair of opposing clamps to hold said sheet and strain it to the supporting bed, and bearing faces on each end of the bed; said clamps each having a movable jaw and a rigid jaw, means applied to the movable jaws of each clamp and acting against the bearing faces of the bed, whereby the sheet is gripped between the clamp jaws and the clamp is moved to strain the sheet to the bed.

8. The combination with a supporting bed having bearing faces on its opposite sides, of a pair of opposing clamps each having a pair of gripping jaws, actuating means applied to one of the jaws of each of the opposing clamps and acting against the bearing faces for causing the jaws to grip the sheet and also strain the sheet to the supporting surface; said clamps so arranged that when the actuating means of one of the clamps is operated to release the strain of the plate on the bed, the grip of the jaws in both clamps will be released.

9. The combination with a supporting bed for a flexible sheet, said bed having a bearing surface in its end, of a movable clamp, having a rigid jaw and a movable jaw, auxiliary means acting between the movable jaw and the rigid jaw to hold said sheet in the grip of said jaw and primary means acting between the movable jaw and bearing face of the bed,

whereby the stress exerted to strain said sheet to the supporting bed, will also hold the sheet in the clamp.

10. The combination with a supporting bed for a flexible sheet, said bed having bearing faces at either end, of a pair of opposing clamps each having a rigid jaw and a movable jaw, auxiliary means acting between the movable jaw and each rigid jaw of each clamp, to hold said sheet in the grip of said jaws and primary means acting between the movable jaws and bearing faces of the bed, whereby a stress exerted to strain said sheet to the supporting bed will also hold the sheet in the clamp.

11. The combination of a supporting bed for a flexible sheet, of a movable clamp to hold said sheet and strain it to the supporting bed, said bed having a bearing face, said clamp having a rigid jaw and a pivoted jaw, a screw in the pivoted jaw moving said jaw to the sheet, another screw in the pivoted jaw, acting against the bearing face for moving the clamps to strain the sheet to its supporting bed.

12. The combination with a supporting bed for a flexible sheet, of pivoted clamp having a rigid jaw and a movable jaw, said supporting bed having a bearing face at its end, said clamp having a screw acting between the rigid jaw and the movable jaw to grip the sheet, and another screw on the movable jaw acting against the bearing face

to rock said clamp, to strain said sheet to the supporting bed and also hold the sheet in the clamp.

13. The combination with a supporting surface for a flexible sheet, of a clamp to grip said sheet and strain it to the supporting surface, primary and auxiliary means on said clamp for actuating the sheet gripping means and operating means for the auxiliary means, said operating means arranged to release the auxiliary means on the application of the primary means.

14. The combination with a supporting bed for a flexible sheet, of a movable clamp to hold said sheet and to strain it to the supporting bed and a bearing face at the end of the bed; said clamp having a movable jaw and a fixed jaw, auxiliary means acting between the movable jaw and the fixed jaw to cause the jaws to grip the sheet, and primary means acting between the movable jaw and the bearing face to cause the jaws to grip the sheet, and means arranged to release the auxiliary means on the application of the primary means.

In witness whereof, I have hereunto set my hand in the presence of two subscribing witnesses.

JOSEPH WHITE.

Witnesses:

LEWIS R. SCHOFIELD,
PHILIP W. HALL.