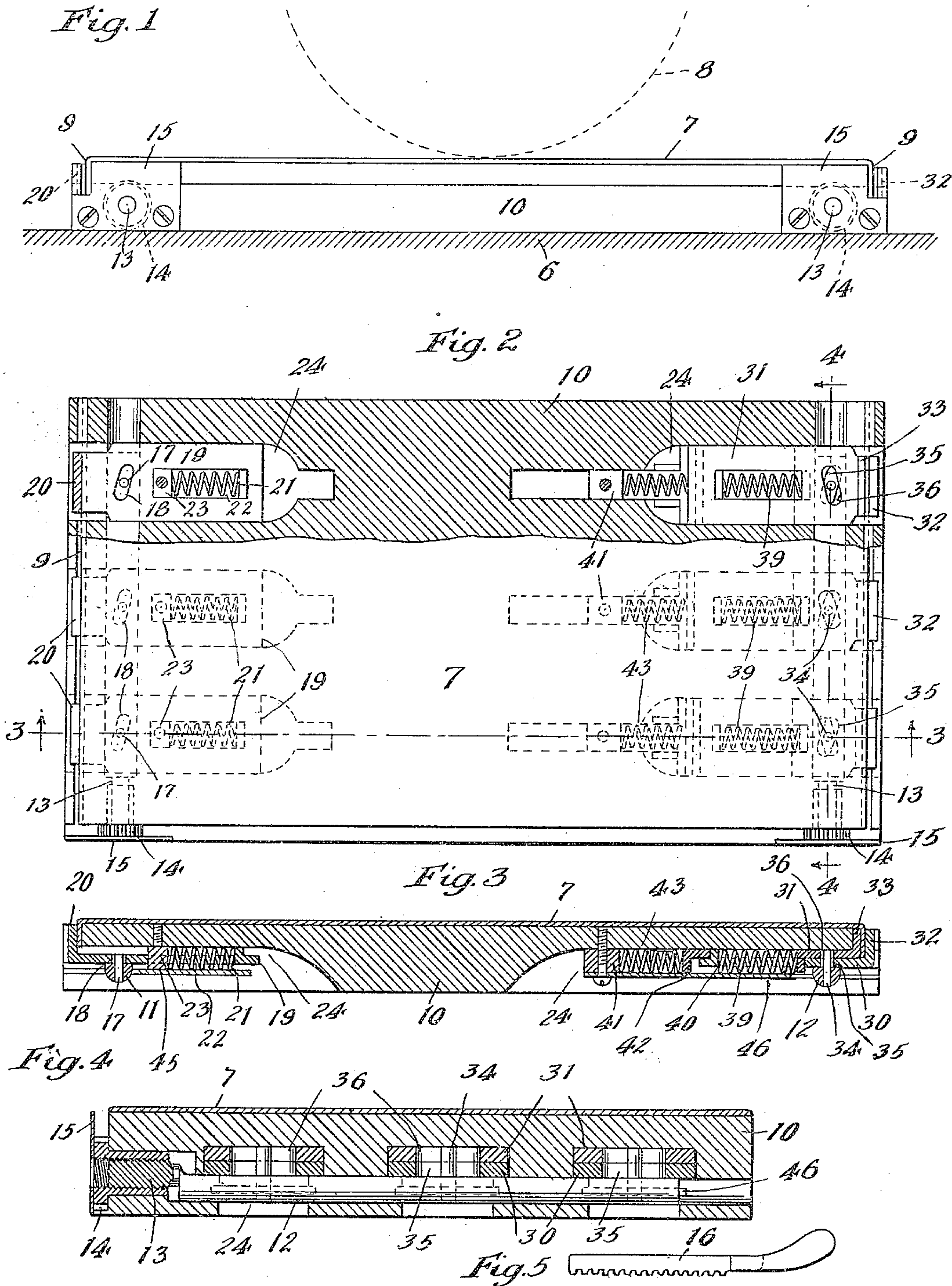


M. A. DROITCOUR.
 FLEXIBLE PRINTING PLATE AND MEANS FOR SECURING THE SAME.
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960,218. Patented May 31, 1910.



Witnesses

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UNITED STATES PATENT OFFICE.

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FLEXIBLE PRINTING-PLATE AND MEANS FOR SECURING THE SAME.

960,218.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, MICHAEL A. DROITCOUR, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Flexible Printing-Plates and Means for Securing the Same, of which the following is a specification.

Flexible printing plates while in the press are subjected to what might appropriately be termed repeated ironing operations during the taking of impressions. In other words, each time the impression cylinder passes over the plates while printing, it tends to produce in them a slight wave which moves with the cylinder from end to end of the plate and if not prevented eventually elongates the plate slightly and produces a fullness or gathering in the plate at its final end due to the plate not being in actual contact with its supporting block or bed throughout its entire length, and this in time is liable to cause buckling or a breaking down of the plate and injury commonly known as slurring to the impressions at that point. My endeavor in the invention has been to overcome this evil, and I accomplish it by the means described below, and illustrated in the accompanying drawing.

In the drawing, Figure 1 is a longitudinal detail elevation of a press embodying my invention. Fig. 2 is a plan of one of the plates and the devices whereby it is attached to the type bed. Figs. 3 and 4 are sections on the lines 3—3 and 4—4 respectively of Fig. 2, Fig. 4 being enlarged. Fig. 5 shows a hand rack for operating the pinions by which the clamping devices are tightened and released.

In said drawing, 6 represents the bed of a printing press, which may be reciprocated in the usual manner, and upon which the flexible printing plate 7 is secured, and 8 is the usual impression cylinder which is rotated and is in contact with the plate 7 during the movement of the bed in one direction and is lifted out of contact therewith during the return movement. The plate 7 may be of any desired suitable material and it is provided at its ends with flexible or depending margins 9 whereby it may be secured upon the bed. Any suitable means may be employed to engage these margins,

and I show in the drawing what I deem a suitable construction thereof, but, of course, I do not wish to be limited thereto as other constructions may be substituted.

As will be noticed from the drawing, the plate 7 is supported upon the bed of the printing press at the proper height to bring its surface to the printing plane, by means of a bed plate 10. This plate is provided with means for clamping both the depending end margins 9 of the printing plate, and these clamping means are adapted to produce and maintain the tension upon the plate to which I have referred. At each end of the bed plate is a transverse rod, that at the front end being indicated at 11 and that at the rear end at 12. These rods are preferably flattened upon the top but at one end they are each made integral with a short screw 13 upon which is fitted an adjusting gear wheel 14 having a long threaded hub engaging said screw. The wheels 14 are confined between the bed plate and the front plates 15, attached to the bed plate so that each is adapted to move the rod upon which it is threaded longitudinally in both directions. The necessary rotation of the wheels 14 whereby this movement of the rods is caused, is obtained by using the hand tool 16 (Fig. 5) whose teeth are adapted to mesh with those of the wheels. The rod 11 is provided with fixed pins 17 which extend upward into slots 18 formed in movable clamping devices 19 having upturned ends 20 adapted to force the turned down margin at the front end of the plate against the bed plate as seen at Fig. 3. The slots 18 are inclined across the rod so that when the rod is moved longitudinally as described, it will move the pins in the slots and either force the clamps 19 in a direction which will cause pressure upon the margin of the printing plate, or it will force the clamps in the opposite direction and loosen the pressure existing at the time. The clamps are constantly pressed toward the bed plate by springs 21 confined in slots 22 formed in the clamps between the ends of such slots and an abutment 23 upon the end of a screw entered in the bed plate. The bed plate is provided with recesses 24 in which the clamps are fitted with the necessary freedom of movement. The clamps described are all located at the front end of the bed plate,

and they are adapted to hold the front end of the printing plate firmly and immovably.

At the rear end of the bed plate the construction is somewhat different. It is
 5 necessary at this end to provide clamps which will seize the rear margin of the printing plate upon both its front and back faces, and I therefore provide a series of
 10 pairs of clamps 30 and 31, one of each pair below the other and with upturned end 32 bearing against the rear face of the margin
 of the printing plate, and the other with an upturned end 33 bearing against the front face of said margin. These clamps are in-
 15 serted in similar recesses 24 in the bed plate and are adjusted therein to tighten their hold on the printing plate or to release it by the transverse rod 12, which is similar in all respects to the rod 11, and is provided with
 20 pins 34 similar to pins 17 which pass through slots 35 and 36 in the clamps 30 and 31, the slots being inclined similarly to the slots 18 so that the longitudinal movement of the rod 12 will adjust the clamps. The slots
 25 35 and 36 are inclined in opposite directions as seen at Fig. 2, and consequently the same movement of the rod will adjust one clamp in one direction and the other clamp in the other direction.

30 When the rod 12 is in normal position (see Fig. 2) the pins 34 stand at the centers of the slots 35 and 36 and said slots are made so wide that the pins 34 will not contact with the edges of either slot 35 or 36 in their nor-
 35 mal position, and pins 34 will not then prevent the clamps being moved bodily outward by the springs sufficiently to tension the plate, as indicated in Fig. 2, a very slight outward movement of such clamps being
 40 sufficient for this purpose. The rod 12 can be moved in the same manner as rod 11.

The clamps 30 and 31 are kept in gripping action upon the margin of the printing plate by springs 39 which are inserted in slots 40
 45 formed in the clamps 30 and bear at one end against the inner end of clamps 31 and at the other end against the rear end of the slots in clamps 30 so that said springs act in opposite directions on the two clamps,
 50 and constantly urge them against the printing plate. At 41 is an abutment block in each of the rear series of recesses 24, and such abutments are bolted to the bed plate, and between each such abutment and a de-
 55 pending lip 42 of the clamp 31 is a second spring 43. The expansive force of this spring forces the lip 42 against the rear of the clamp 30 and carries it and its companion clamp 31 toward the rear, and thus
 60 takes up any elongation occurring in the printing plate, and maintains a constant tension thereon.

I am aware that in sand papering machines, the cylinders carrying the sand paper
 65 have been provided with spring actuated

tension producing devices for automatically taking up the stretch which occurs in the paper during the operation of the cylinders. In such machines, however, the cylinders are
 70 rotated with extreme rapidity and the paper is very forcibly rubbed against and along the surface of the material being sand papered while the latter is being moved very slowly and the effect on the paper is very
 75 different from the mere ironing out which occurs in the case of my printing plate.

Plates 45 and 46 support the springs and clamps in the recesses of bed block.

I claim:—

1. In combination, a support for a print- 80
 ing plate, a series of plate clamps at the end thereof, springs for closing said clamps, a longitudinally movable rod beside said clamps having a threaded end, means where-
 85 by the longitudinal movement of said rod causes said clamps to open, and a rotatably threaded sleeve engaging the threaded end of the rod.

2. In combination, a support for a print- 90
 ing plate, a series of plate clamps at the end thereof, springs for closing said clamps, said clamps being provided with diagonal slots, a longitudinally movable rod beside said clamps having a threaded end, pins on
 95 said rod engaging the slots whereby said clamps may be simultaneously opened, and a rotatably threaded sleeve engaging the threaded end of the rod.

3. In combination, a support for printing 100
 plates, a series of plate clamps on said support each comprising a pair of members adapted to bite the edge of a plate between them, and a spring connected with said
 105 members for causing them to bite the plate, said members being provided with oppositely inclined slots, a transverse rod having pins engaging the slots in the members and adapted to be longitudinally moved to open
 110 the clamps, and springs for forcing said clamps bodily outward so as to put the plates under tension.

4. In combination, a support for a flexible 115
 printing plate, spring pressed clamps at the end thereof having diagonal slots, a transverse longitudinally movable rod beside the clamps, and pins on said rod engaging said
 slots and adapted upon longitudinal movement of said rod to open the clamps.

5. In combination, a support for a flexible 120
 printing plate, two-part spring pressed clamps at the end thereof, the parts of the clamps having intersecting diagonal slots, and a transverse longitudinally movable rod having pins engaging said slots and adapted
 125 upon longitudinal movement of said rod to open the clamps.

6. In combination, a support for printing 130
 plates, a series of plate clamps on said support each comprising a pair of slidable slotted members adapted to bite the edge of

a plate between them, and a clamp closing spring connected with said members and located in the slots thereof, said members being provided with oppositely inclined slots; with a transverse rod having pins engaging the inclined slots in its members and adapted to open the clamps.

7. In combination, a flat supporting surface, a flexible printing plate thereon, means for fastening one end of said plate to one end of said surface, a series of longitudinally movable plate clamps at the other end of said support engaging the other end of said plate, springs for closing the said clamps on the plate, and springs for forcing said clamps bodily outward to keep the plate under constant tension and prevent buckling thereof during impression, substantially as described.

8. In a printing press, the combination with the impression cylinder and a flat printing surface support, said cylinder exerting pressure upon said printing surface

as it passes over it; of a flexible printing plate on said support, spring clamps securing one end of the plate to said support, longitudinally movable clamps at the other end of the support engaging the other end of the plate, and springs for forcing said movable clamps to exert a constant tension on the plate and take up any buckling of the plate in advance of the impression cylinder during the printing operation.

9. In combination, a support for printing plates, a plate clamp on said support comprising a pair of superposed sliding plates having opposed upturned flanges at one end adapted to bite the edge of a plate between them, and a spring connected with said plates and adapted to move them in opposite directions and cause the flanges to bite a plate between them.

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Witnesses:

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