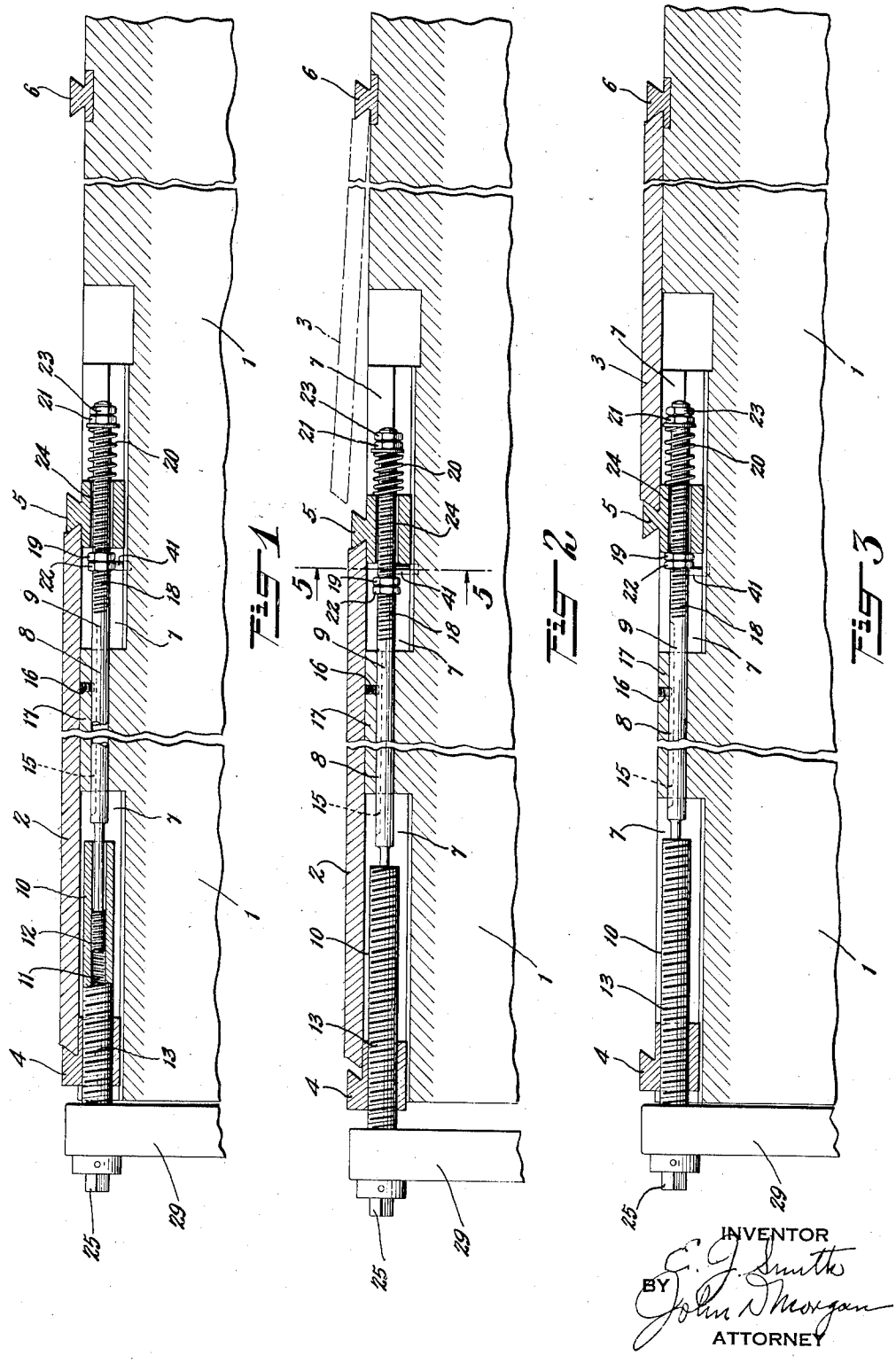
Jan. 16, 1934. E. J. SMITH 1,943,902

PRINTING PRESS

Filed March 11, 1932 2 Sheets-Sheet 1



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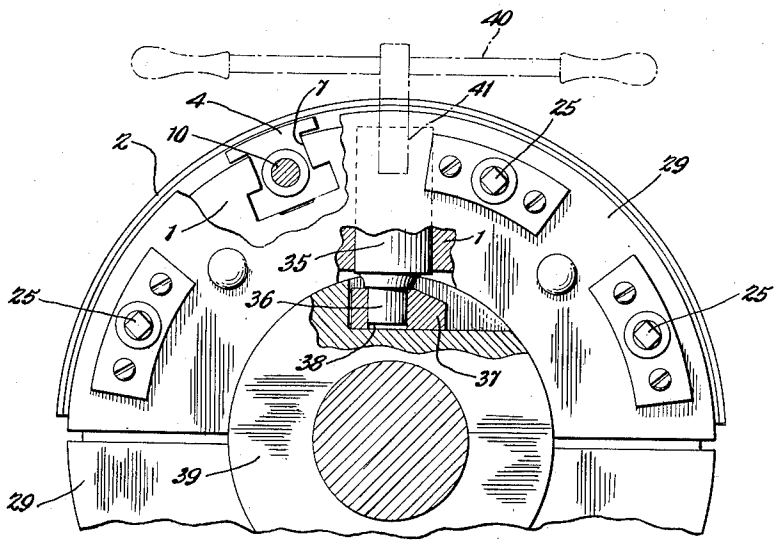


Fig 4

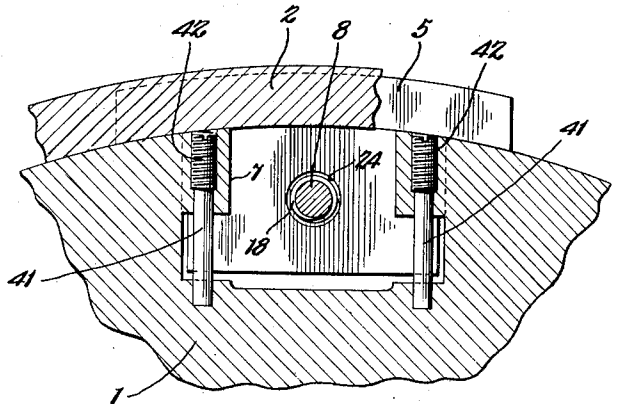


Fig 5

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UNITED STATES PATENT OFFICE

1,943,902

PRINTING PRESS

Ernest James Smith, Fleet Street, England, assignor to The Goss Printing Press Company, Chicago, Ill., a corporation of Illinois

Application March 11, 1932. Serial No. 598,133

11 Claims. (Cl. 101—378)

The present invention relates to printing presses and more particularly to a quick lock-up for plate cylinders in which the outer or inner plates of the cylinder may be secured without the other plate being on the cylinder.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawings, referred to herein and constituting a part hereof, illustrate one embodiment of the invention, and together with the description, serve to explain the principles of the invention.

Of the drawings:—

Figures 1, 2 and 3 are fragmentary radial sections illustrating various positions of the parts in one embodiment of the present invention;

Figure 4 is an end view, with certain parts broken away, of the embodiment shown in Figures 1 to 3; and

Figure 5 is a detailed fragmentary section taken on the line 5—5 of Figure 2.

With the usual form of lock-up for plate cylinders, it is not possible to secure the outer plates to the plate cylinder until after the inner plates have been placed on the cylinder, and this has prevented the pressman from finishing the plating of the cylinder or turning the cylinder until he received the inner plates.

The present invention has for its object the provision of a lock-up which facilitates and expedites the plating of the press. Another object is the provision of a lock-up by which the presence of the inner plates is not necessary for securing the outer plates on the cylinder. A further object is the provision of a lock-up for plate cylinders by which either the inner or outer plates may be secured to the plate cylinders as soon as they are received by the pressman.

In accordance with the illustrative embodiment of the invention, the inner series of plate clips are connected to the outer series and are variably positionable with respect thereto, a single operating means being provided for moving both sets of clips to plate-locking and releasing position. The inner plate clips are positively moved inwardly against the inner plate, and are resiliently moved outwardly against the outer plate, a stop being provided for limiting the outward movement of the clip. In this embodiment, after the plate clips have been set at their proper relative positions, the single operating means permits the operator to secure either the inner or the outer plates to the plate cylinder, without the other of the two plates being present.

It will be understood that the foregoing general description and the following detailed description as well are exemplary and explanatory of the invention but are not restrictive thereof.

In the form of the invention shown by way of illustration, 1 is any suitable form of a plate cylinder upon which may be secured outer printing plates 2 and inner printing plates 3 by means of the outer clips 4, inner or intermediate clips 5 and central clips 6, a plurality of said inner and outer clips being provided for engaging the edge of the plate along its circumference. It will be understood that other and similar sets of clips are provided for the other longitudinal and circumferential halves of the cylinder.

Formed in the periphery of the plate cylinder 1 are a plurality of longitudinally extending grooves 7 within each of which are slidably mounted an outer and an inner clip 4 and 5, and also a clip rod 8. This clip rod is formed in two parts, 9 and 10, and the end of portion 10 is provided with female threads 11 to cooperate with the male threads 12 on the outer end of portion 9. The exterior of portion 10 is also provided with screw threads 13 by which the clips 4 are moved longitudinally of the rod 10.

The portion 9 of the clip rod 8 is also provided with a spline 15 to receive the end of the screw 16 which is threaded in the part 17 of plate cylinder 1. The end portion of clip rod 9 is provided with male threads 18 on which is mounted a threaded stop 19 and spring 20, held between clip 5 and nut 21. Check nuts 22 and 23 may be provided to lock stop nuts 19 and 21 respectively.

The threads 11 on the inner portion of clip rod 10 are one half the pitch of the threads 13 on the exterior portion thereof. The interiors of the outer clips 4 are provided with female screw threads to cooperate with the male threads 13, and inner clips 5 have smooth bores 24 to rest loosely on the screw threads 18. The outer end 25 of the clip rod is preferably formed square, to be engaged by a wrench or other operating tool, and is secured within the lock-up plate 29 in any desired manner.

Means are provided for simultaneously releasing both the inner and outer plates on the cylinder by movement of all the clips 4 and 5, and for this purpose the usual eccentric lock-up may be provided. As embodied, a shaft 35, rotatable in the lock-up plate 29 is formed with an eccentric end 36 fitted into shoe 37, mounted in a recess 38 in the end 39 of the plate cylinder hub. By placing the key 40 in the seat 41 at the upper end of the shaft 35, the lock-up plate may be caused to move to and from the plate cylinder to actuate the clip rods and thereby lock or un-

lock the printing plates carried by the plate cylinder.

Stop means are provided, in addition to the stops 19, for limiting outward movement of the plate clips 5, and for this purpose a pair of pins are located in the groove 7, projecting radially outwardly from the bottom of the groove. These pins 41 are provided with an upper threaded portion 42, by which they are secured in position within the upper portion of the channel walls. To give added strength, their lower ends may be seated within recesses at the bottom of the channel. Pins 41 are located intermediate the extreme positions of stop 19 as it is moved by movement of the lock-up plate 29, and when the lock-up plate is moved to plate-locking position, clip 5 is engaged by stop 19. When the lock-up plate is moved away from the cylinder to release the plates, each clip 5 engages a stop 41 and is prevented from moving the full distance throughout which the clip rod moves, thereby spacing clips 4 and 5 a sufficient distance apart to permit ready removal and insertion of an outer plate 2.

Figure 1 of the drawings shows the parts in position to secure an outer plate 2 to the cylinder in the absence of an inner plate 3. The outer edge of plate 2 is engaged by clips 4, while clips 5 are moved against the inner edge of the plate by means of the springs 20.

Figure 2 illustrates the action of stop 41 as lock-up plate 29 is moved to plate-releasing position. Pins 41 prevent movement of the clips 5 beyond a predetermined point, and thereby space clips 4 and 5 to permit ready removal and insertion of an outer plate 2, while spring 20 moves the clips 5 outwardly of the cylinder to permit removal of the inner plates 3.

Figure 3 of the drawings illustrates the action of clip 5 in securing an inner plate 3 to the cylinder. When no outer plate is to be used, the stop 19 forces clips 5 inwardly and securely against the outer edge of the inner plate 3.

The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim is:—

1. A lock-up device for plate cylinders including in combination three spaced clips to clamp an inner and outer plate on the cylinder, means for simultaneously releasing both plates and means for clamping a plate between the outer pair of clips in the absence of an inner plate.

2. A lock-up device for plate cylinders including in combination three spaced clips to clamp an inner and outer plate on the cylinder, means for moving the outer pair of said clips to release both plates and means for resiliently pressing the intermediate clips towards the outer clip in the absence of an inner plate.

3. A lock-up device for plate cylinders including in combination central, inner and outer sets of clips to clamp an inner and outer plate on the cylinder, means for simultaneously moving the outer pair of sets of clips to release or lock the plates on the cylinder and means for resiliently urging the intermediate set of clips outwardly to clamp a plate between the outer pair of sets of clips.

4. A lock-up device for plate cylinders including in combination central, inner and outer clips to clamp an inner and an outer plate to the cylinder, means for moving the inner and outer clips away from the central clip to release the plates, a stop limiting movement of the inner clip and resilient means urging the inner clip outwardly of the cylinder to clamp a plate between it and the outer clip.

5. A lock-up device for plate cylinders including in combination three spaced clips to clamp an inner and outer plate on the cylinder, means for variably positioning the clips relative to each other, means for simultaneously releasing both plates and means for clamping a plate between the outer pair of clips in the absence of an inner plate.

6. A lock-up device for plate cylinders including in combination three spaced clips to clamp an inner and outer plate on the cylinder, means for moving the outer pair of said clips to release both plates, means for variably positioning the clips relative to each other and means for resiliently pressing the intermediate clips towards the outer clip in the absence of an inner plate.

7. A lock-up device for plate cylinders including in combination central, inner and outer sets of clips to clamp an inner and outer plate on the cylinder, means for simultaneously moving the outer pair of sets of clips to release or lock the plates on the cylinder, means for variably positioning the clips relative to each other and means for resiliently urging the central set of clips outwardly to clamp a plate between the outer pair of sets of clips.

8. A lock-up device for plate cylinders including in combination central, inner and outer clips to clamp an inner and an outer plate to the cylinder, means for moving the inner and outer clips away from the central clip to release the plates, means for variably positioning the clips relative to each other, a stop limiting movement of the inner clip and resilient means urging the inner clip outwardly of the cylinder to clamp a plate between it and the outer clip.

9. A lock-up device for plate cylinders including in combination central, inner and outer clips to clamp an inner and an outer plate to the cylinder, a clip rod connecting the inner and outer clips together, said inner clips being mounted on said rod between a stop and a spring.

10. A lock-up device for plate cylinders including in combination central, inner and outer clips to clamp an inner and an outer plate to the cylinder, a clip rod connecting the inner and outer clips together, a stop near one end of the clip rod, a spring pressing said inner clip against the stop and a stop mounted on said cylinder for limiting outward movement of said inner clip.

11. A lock-up device for plate cylinders including in combination central, inner and outer clips to clamp an inner and an outer plate to the cylinder, a clip rod connecting the inner and outer clips together, a stop near one end of the clip rod, a spring pressing said inner clip against the stop, a stop pin on said cylinder for limiting outward movement of the inner clip and means for simultaneously moving the outer pair of clips.

ERNEST JAMES SMITH.