PRINTING PLATE LOCKING

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7 Claims. (Cl. 101—385)

This invention relates to improvements in printing equipment and more particularly to an improved arrangement for locking printing plates, for example, electrotypes in predetermined position on a bed plate, and more particularly, but not exclusively, to means for locking such printing plates in predetermined position on a printing cylinder.

The main objects of the invention are to provide a locking arrangement of the character indicated which will be relatively inexpensive as compared with present practical and conventional devices and arrangements for accomplishing the same purpose; to provide means of the character indicated which will be universal in its adaptability to various types and sizes of printing plates and printing rolls or cylinders; and in general it is the object of the invention to provide an improved printing plate locking arrangement.

Other objects and advantages of the invention will be understood by reference to the following specification and accompanying drawings, wherein there is illustrated a printing plate locking arrangement embodying a selected form of the invention.

In the drawing:

Figure 1 is an elevation illustrating the improved method of locking an electrotype on the surface of a printing cylinder;

Figure 2 is a cross section on an enlarged scale on the line 2—2 of Figure 1; and

Figure 3 is an elevation on the plane indicated by the line 3—3 of Figure 2.

Referring now to the drawing, a printing roller or cylinder is designated in its entirety by the reference numeral 5 and a printing plate or electrotype 6 is shown positioned and locked in place on the surface of the cylinder by means of a series of locks respectively designated 7. Each of the locks 7 may be of identical construction and they may be used in such number and in such location with reference to the periphery of the printing plate as may be deemed best suited to effectively lock the plate in place.

The locks 7 may be of any of the commercially available types, the one shown herein embodying a head 8, a shank 9 and an inner end portion 10. The head 8 is preferably provided with a beveled or undercut side 11 which is adapted to cooperate as best shown in Figure 2, with edge portions of the printing plate for holding the same in fixed position on the cylinder 5. The shank 9 is equipped with the device indicated at 12 which is adapted to be adjusted by means of a screw 13 for expanding the effective cross-sectional dimension of the shank for locking purposes, and the end portion 10 of the shank is provided with a shoulder or hook formation 14.

According to the present invention, the desired position of a printing plate on a bed plate, either flat or cylindrical, is first determined and the bed plate thereupon drilled out to provide openings such as indicated at 15 in predetermined relationship to the periphery of the printing plate. Such openings 15 are then tapped as indicated at 16.

An externally threaded bushing 17 is fitted into the tapped opening, the bushing being provided with a flange 18 which is adapted to be seated in an appropriate counter-bore 19 at the outer end of the opening 15. The bushing 17 has its internal diameter tapered from the outer or flange end of the bushing to its inner end for most effective cooperation with the locking device shown, and the inner end 20 of the bushing supplies a shoulder for engagement with the hook or shoulder 14 of the locking device. In other words, the bushing 17 is of such length as to be adapted to receive the expandable stem portion 9 of the lock, with the head part 8 thereof exposed in the operative position and with the inner end hook 14 of the lock anchored against the inner end of the bushing. By means of a suitable key inserted in an opening, such as indicated at 21 in the lock, the screw 13 may be rotated to effect adjustment of the expanding element 12, so as to urge the head 8 against the adjacent edge portion of the printing plate 6. As shown in Figure 2, the lock 7 at the left hand side of the printing plate has been adjusted towards the right nearly to its limits of adjustment in that direction, whereas, the lock shown at the right hand side of the printing plate, although tightly engaging the edge of the printing plate remains spaced as indicated at 22 from the wall of the bushing so that it could, except for its engagement with the printing plate, be adjusted still further towards the left. Thus it will be apparent that although the bushings 17 are seated in fixed position, the locking members 7 are nevertheless capable of sufficient adjustment to permit minor adjustment of the plate position to be made, so that the arrangement of the fixed bushings imposes no objectionable limitations in respect of required adjustability of the plate position.

The described construction is particularly advantageous where a very large volume of like printing is to be done, for example, in connec-
tion with the making of cartons or boxes for food or other products which are distributed in large volume. Under such circumstances, the box maker who also prints the boxes or cartons may effect substantial savings in cost of printing equipment by eliminating the relatively expensive conventional bed plates or cylinders and substituting the plain bed plates or cylinders which may be drilled and tapped as required for the particular job in mind.

Changes may be made in the described construction without departing from the spirit of the invention, the scope of which should be determined by reference to the following claims, the same being construed as broadly as possible consistent with the state of the art.

I claim:

1. In printing equipment, the combination of a cylindrical bed plate having an aperture therein, a lock having a hook adjacent its lower end, a head adjacent its upper end and an expandable means intermediate its ends, and a bushing in said aperture, said bushing being adapted to receive said lock, having its inner end provided with a shoulder for cooperating with said hook to prevent withdrawal of said lock, said bushing having a wall portion adapted to be engaged by said expandable means, and said lock head projecting beyond the outer end of said bushing and being adapted to engage a portion of the printing plate to position the same on said bed.

2. In the art of printing, means for locking a printing plate to a bed plate comprising the combination of an expandable lock having a headed outer end for engaging the printing plate and a hooked inner end for anchoring the lock, and a bushing for receiving the expandable portion of said lock and having an internal diameter suitable for cooperating with said portion, said bed plate having an opening for receiving said bushing and the latter being of such length that the hooked inner end of said lock is adapted to engage the inner end of the bushing to prevent outward withdrawal of the lock from the bushing while said head projects beyond the outer end of the bushing so as to be engageable with a printing plate.

3. In the art of printing, means for locking a printing plate to a bed plate comprising the combination of an expandable lock having a headed outer end for engaging the printing plate and a hooked inner end for anchoring the lock, and an externally screw threaded bushing adapted to be threaded into a tapped opening in the bed plate and having an internal diameter suitable for cooperating with the expandable portion of said lock, said bushing being of such length that the hooked inner end of said lock is adapted to engage the inner end of the bushing to prevent outward withdrawal of the lock from the bushing while said head clears the outer end of the bushing so as to be engageable with a printing plate.

4. In printing equipment, the combination of a hollow printing cylinder having an aperture extending radially thereinto, a lock having a hook adjacent its lower end, a head adjacent its upper end and expandable means intermediate its ends, and a cylindrical bushing in said aperture and secured to said cylinder, said bushing being adapted to receive the expandable portion of said lock and having its inner end provided with a shoulder for cooperating with said hook to position the lock in operative position on the surface of said cylinder.

5. In printing equipment, the combination of a cylindrical bed plate having an aperture therein, said aperture being counter-bored at its outer end, a lock having a hook adjacent its lower end, a head adjacent its upper end and an expandable means intermediate its ends, and a bushing in said aperture adapted to receive the expandable portion of said lock, said bushing having a flange at its upper or outer end adapted to be seated in the counter-bore of said opening so as to position the bushing with its outer and inner ends in predetermined relation to the surface of said bed plate, the inner end of said bushing providing a locking aperture for cooperation with said hook to operatively position the head of said lock on the surface of the bed plate and to prevent outward endwise displacement of said lock, said expandable means being adapted to engage the interior of said bushing for urging said lock into position and thereby preventing endwise displacement.

6. In printing equipment, the combination of a bed plate having a tapped hole therein, said hole being counter-bored at its outer end to provide an outwardly facing shoulder, an internally threaded bushing screwed into said hole, and provided with a flange at its upper or outer end seated on said outwardly facing shoulder so as to position the bushing with its outer and inner ends in predetermined relation to the surface of said bed plate, the inner end of said bushing being formed to provide an inwardly facing shoulder for cooperation with the inner end hook of a locking device having a head at its outer end, expandable means intermediate its ends and a hook at its inner end, the bushing being adapted to receive and cooperate with the expandable means of the lock for urging the head thereof in printing plate clamping direction while the inner end hook and inner end shoulder of the bushing cooperate to prevent endwise displacement of the lock from the bushing.

7. In printing equipment, the combination of a bed plate having a tapped hole therein, an externally threaded bushing screwed into said hole, the inner end of said bushing being formed to provide an inwardly facing shoulder for cooperation with the inner end hook of a locking device having a head at its outer end, expandable means intermediate its ends and a hook at its inner end, the bushing being adapted to receive and cooperate with the expandable means of the lock for urging the head thereof in printing plate clamping direction while the inner end hook and inner end shoulder of the bushing cooperate to prevent endwise displacement of the lock from the bushing.

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