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DEVICE FOR CLAMPING PRINTING PLATES TO THE CYLINDERS OF PRINTING PRESSES.

APPLICATION FILED JULY 7, 1915.

1,240,247.

Patented Sept. 18, 1917.

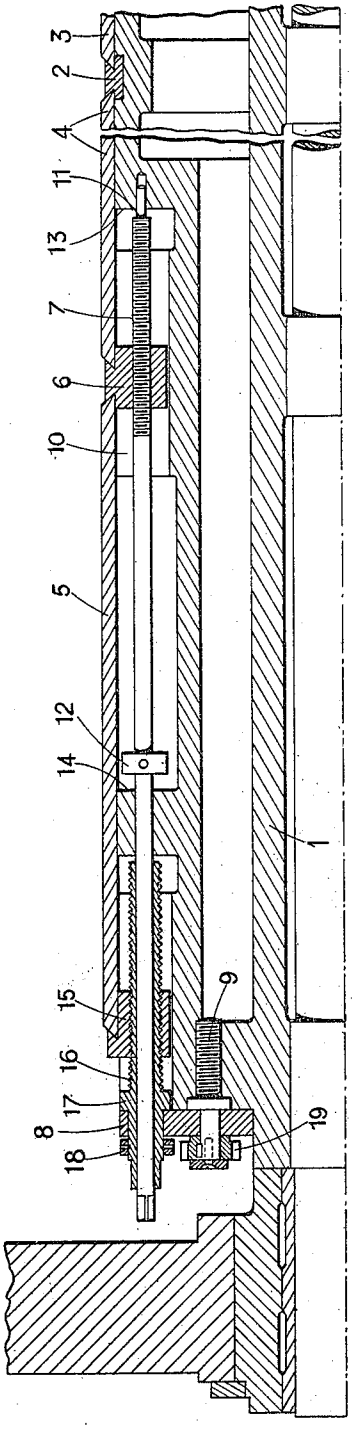


FIG. 1.

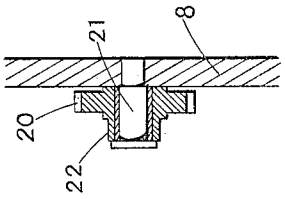


FIG. 3.

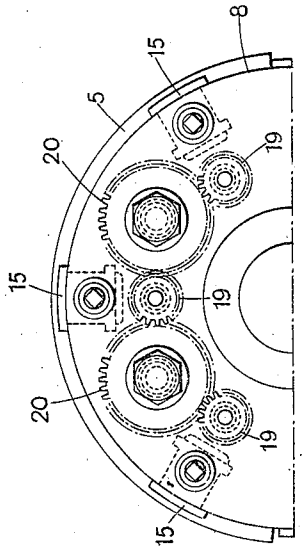


FIG. 2.

Witnesses
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UNITED STATES PATENT OFFICE.

THOMAS ROBERT GILLETT PARKER AND JOHN SHUTTLEWORTH, OF BROADHEATH, ENGLAND, ASSIGNORS TO LINOTYPE AND MACHINERY LIMITED, OF LONDON, ENGLAND.

DEVICE FOR CLAMPING PRINTING-PLATES TO THE CYLINDERS OF PRINTING-PRESSES.

1,240,247. Specification of Letters Patent. Patented Sept. 18, 1917.

Application filed July 7, 1915. Serial No. 38,599.

To all whom it may concern:

Be it known that we, THOMAS ROBERT GILLETT PARKER and JOHN SHUTTLEWORTH, subjects of the King of the United Kingdom of Great Britain and Ireland, and residing at Linotype and Machinery Works, Broadheath, in the county of Chester, England, have invented new and useful Improvements in Devices for Clamping Printing-Plates to the Cylinders of Printing-Presses, of which the following is a specification.

This invention relates to devices for clamping printing plates to the cylinders of printing presses in which two or more of such plates are adapted to be secured end to end on the same printing cylinder. Among the special objects of the present invention, there may be particularized an arrangement whereby a dog normally serving for clamping an inner printing plate (that is to say, one remote from the end of the cylinder, from which that dog is operated) or an outer printing plate, can also be operated from that same end of the cylinder for clamping only an outer or an inner plate respectively, and the provision of means whereby, when the outer printing plate is between the said dog and an outer dog, both of these dogs can be simultaneously moved for effecting the clamping of an inner printing plate to the cylinder.

The invention is hereinafter described with reference to the accompanying drawings, which show it as applied to what is known as a four-plate press, that is to say, a press having four plates secured end to end upon its printing cylinder. In these drawings,

Figure 1 is a longitudinal section of part of such a printing cylinder and a portion of one of the side frames of the press;

Fig. 2 is an elevation of the left-hand end of Fig. 1 with the side frame omitted, and

Fig. 3 is a vertical section of a detached portion of the mechanism.

In the arrangement illustrated in the accompanying drawings, the cylinder 1 is, as ordinarily, provided at or about the middle of its length with a double stationary dog or ring 2, known as a center margin ring, adapted, at each side, to engage the edge of one of the two printing plates 3, 4, upon the respectively opposite sides of the said margin ring.

The two printing plates which are secured to the plate cylinder on each side of the margin ring 2, for example the two plates marked 4 and 5 in Fig. 1, are, for convenience, herein termed respectively the inner printing plate (4) and the outer printing plate (5).

The inner printing plate 4 is secured in position by a dog 6, herein termed the inner dog, through which is threaded a screwed rod 7, whose outer end extends through a plate 8, herein for convenience termed a segmental plate, that being the shape in which, preferably, it is formed, as shown for instance in Fig. 2; this segmental plate 8 is adjustably secured to the corresponding end of the cylinder 1 so as to be capable, with its attachments, of being moved nearer to and farther from that cylinder. For this purpose the segmental plate 8 may be attached to the cylinder by a screw 9 or, as shown in Fig. 2, a plurality of such screws, these screws being freely rotatable in the segmental plate 8 and, as shown in Fig. 1, threaded in the adjacent end of the cylinder. By rotating the screws 9 the segmental plate 8 will be moved outward from, and inward toward, the end of the cylinder 1 in a direction parallel with the axis of the latter. The inner dog 6 is a double one for engaging with the outer end of the inner plate 4 and the inner end of the outer plate 5, and the outer end of the screwed rod 7, in engagement with that dog 6, is squared, as shown in the drawings, or otherwise adapted to be engaged by a key or spanner, to enable it to be easily rotated for adjusting the inner dog 6 inwardly or outwardly.

The inner dog 6 is guided in a recess or pocket 10 in the printing cylinder 1, and the screwed rod 7 which engages it, is free to move longitudinally to an extent limited by, in one direction, a shoulder 11, and, in the other direction, a collar 12 fast to the said screwed rod, the shoulder 11 and collar 12 being adapted to engage respectively with abutment surfaces 13 and 14 on the cylinder, say, for example, those constituting virtually the ends of the aforesaid pocket 10.

The outer end of the outer printing plate 5 is capable of being engaged by a dog 15, herein termed the outer dog, through which is threaded a sleeve 16 co-axial with, and

rotatable upon, the screwed rod 7 appertaining to the inner dog 6. This sleeve 16 is free to turn in, and is supported by, the segmental plate 8, in which it is prevented from moving axially independently of that plate, in one direction by a flange 17 integral with the sleeve, and in the other direction by a collar 18 secured to the said sleeve. The outer end of the sleeve 16 is preferably formed, so that it can at that part be engaged and rotated by a suitable spanner or key.

The before-mentioned screws 9 have fast on their outer ends spur pinions 19 which are geared together through intermediate spur-wheels 20 capable of being rotated about studs 21 fast in the segmental plate 8. Each of the two intermediate spur-wheels 20 is provided, on its outer face, with a hexagonal boss 22 by which, through the engagement therewith of a spanner or the like, it may be rotated in either direction, and through this rotation cause the three screws 9 to be simultaneously rotated; by turning either of the intermediate spur wheels 20 in one direction the segmental plate, together with its attachments, will be moved inward toward the cylinder 1, and by rotating the said wheel in the reverse direction, the segmental plate and its attachments will be moved outward away from the said cylinder.

Assuming that only an inner printing plate 4 is to be secured in position upon the cylinder 1, the inner dog 6 having been previously moved outward sufficiently to admit of that plate being introduced between that dog 6 and the center margin ring 2, such movement being effected either by turning the screwed rod 7 in the appropriate direction or by moving it axially outward as far as the collar 12 will admit, the said printing plate 4 is placed in position and the inner dog 6 is moved into engagement therewith by rotating the screwed rod 7 in the necessary direction, this screwed rod during this operation taking its bearing or thrust through the collar 12 thereon engaging with the abutment surface 14; this engagement, of itself, serves for securing the inner plate 4 to the cylinder without any coöperation therewith of the outer dog 15, or, without, as has heretofore generally been necessary, the introduction of a dummy plate between that dog and the inner dog 6.

Assuming now that, having an inner plate 4 secured to the cylinder 1, it is also required to secure an outer plate 5 thereon, this outer plate is placed in position between the inner dog 6 and outer dog 15, and the latter dog is screwed inward by rotating the sleeve 16 from the end of the cylinder, the said sleeve, during this operation, taking its thrust through the flange 17 against the segmental plate 8.

If it be necessary to clamp an outer plate 5 on the cylinder and no inner plate 4 thereon, without the employment of a dummy plate in the place of the said inner plate 4, then the outer plate 5 is placed between the inner dog 6 and the outer dog 15, and the outer dog 15 is forced inward by the rotation of the sleeve 16 and, through the plate 5, moves the inner dog 6 inward until such time as the shoulder 11 on the screwed rod 7 comes into contact with the abutment surface 13, after which juncture the further rotation of the sleeve will insure the tight clamping of the said outer plate 5 in position; or, if desired, the clamping of the outer plate may be effected by only the movement outward of the inner dog 6, by rotating the screwed rod 7 in the desired direction, this inner dog being thereby brought into engagement with the inner end of the outer plate 5, whose outer end is engaged with the outer dog 15, the outer movement of which is at that time restricted by the engagement of the flange 17 with the segmental plate 8.

If it is desired to effect the quick clamping of outer and inner plates of the same lengths as those last previously removed from the cylinder this may be done by inserting the new plates between the respective dogs, which had previously been moved apart for allowing these plates to be removed, and moving the segmental plate 8 inward toward the cylinder, so that, through the sleeve 16 being moved along with the said segmental plate and along with the outer printing plate 5, the inner printing plate 4 is clamped between the center margin ring 2 and inner dog 6 and the outer plate 5 is, at the same time, clamped between the inner dog 6 and outer dog 15.

Although the previous description has referred only to one set of inner and outer dogs, it is understood that there are a plurality of such sets distributed around the cylinder for engaging the ends of the plates at different parts, and further, it is to be understood that the arrangement shown in Fig. 1 is representative of merely one end of the printing cylinder 1, the other end of which, namely, that which would appear at the right-hand side of the center margin ring 2, would be a replica of that which has been hereinbefore described with reference to the actual devices illustrated in that figure.

Instead of the longitudinally movable screwed rods 7 and sleeves 16 being arranged concentrically one within another as previously described, they may be parallel with, and closely adjacent to, each other, and each may be in the form of a screwed rod extending outward, the longitudinally movable rod from the inner dog 6 and the

other rod from the outer dog 15, both to one and the same end of the cylinder, where those rods can, by suitable spanners, be rotated each about its respective axis.

Having described our invention, we declare that what we claim and desire to secure by Letters Patent is:—

1. In devices for clamping to the cylinder of a printing press a plurality of printing plates arranged end to end, the combination with a dog normally adapted to clamp an inner printing plate or an outer printing plate, of means adapted to operate the said dog from the end of the cylinder to clamp an outer printing plate thereon, means for clamping an inner printing plate thereon, and means for moving said plates axially.

2. In devices for clamping to the cylinder of a printing press a plurality of printing plates arranged end to end, the combination with a dog between the adjacent ends of two printing plates, means for operating that dog from the end of the cylinder, and a dog adjustable from the same end of the cylinder for engaging the outer end of an outer printing plate, of means including the said outer printing plate whereby both of the dogs can be simultaneously moved in direction parallel with the axis of the cylinder, and auxiliary means for adjusting said dogs and dog-adjusting means relatively to said cylinder.

3. In devices for clamping to the cylinder of a printing press a plurality of printing plates arranged end to end, the combination with an inner dog adapted to engage the adjacent ends of two printing plates, and an outer dog adapted to engage the outer end of an outer printing plate, of a screwed rod adapted to operate the inner dog and extending through one end of the cylinder, means adapted to operate the outer dog from the same end of the cylinder, and an adjustable plate adapted when adjusted to operate both of the dogs simultaneously, the said screwed rod and plate being relatively movable in a direction parallel with the axis of the cylinder.

4. In devices for clamping to the cylinder of a printing press a plurality of printing plates arranged end to end, the combination with an inner dog adapted to engage the adjacent ends of two printing plates, and an outer dog adapted to engage the outer end of an outer printing plate, of a screwed rod adapted to operate the inner dog and extending through one end of the cylinder, engaging surfaces on the said rod and abutments in the printing cylinder with which the said surfaces are respectively brought into contact by longitudinal movement of said rod in opposite directions, and auxiliary means for adjusting said dogs and dog-adjusting means relatively to said cylinder.

5. In devices for clamping to the cylinder of a printing press a plurality of printing plates arranged end to end, the combination with an inner dog adapted to engage the adjacent ends of two printing plates, an outer dog adapted to engage the outer end of an outer printing plate, a screwed rod adapted to operate the inner dog and extending through one end of the cylinder, means adapted to operate the outer dog from the same end of the cylinder, and an adjustable plate adapted when adjusted to operate both of the dogs simultaneously, the said screwed rod and plate being relatively movable in a direction parallel with the axis of the cylinder, of a shoulder and a collar on the screwed rod and abutments in the printing cylinder with which the said shoulder and collar are respectively brought into contact by longitudinal movement of the said rod in opposite directions.

In witness whereof we have hereunto set our hands in the presence of two witnesses.

THOMAS ROBERT GILLETT PARKER.
JOHN SHUTTLEWORTH.

Witnesses:
J. J. GILL,
JOSEPH ACTON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."