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CYLINDER MOUNTING FOR PRINTING PRESSES

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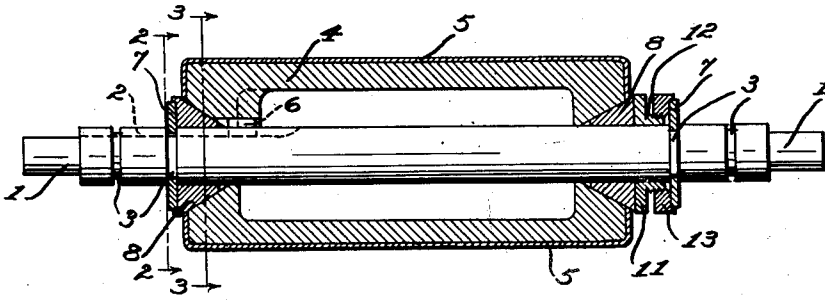


Fig. 1

Fig. 2

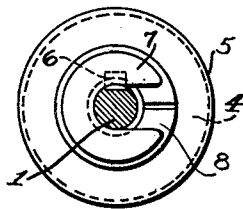
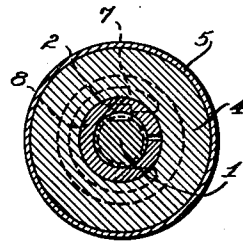


Fig. 3



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UNITED STATES PATENT OFFICE

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CYLINDER MOUNTING FOR PRINTING PRESSES

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This invention pertains to the mounting of the printing rolls of a printing press, and more especially to the mounting for such printing rolls on their arbor. More particularly, the invention relates to the mounting of the printing cylinders of intaglio presses.

In intaglio printing presses it is necessary that the printing cylinders be mounted on the mandrels or arbors in the same longitudinal position particularly when color work is being done, since if the cylinders are not located in precisely the same position exact registry of the superposed printed matter will not be secured. These cylinders must also be readily removable from the mandrels or arbors, and must, when in position, be rigidly mounted on the arbors for rotation therewith.

Various expedients have been resorted to by the manufacturers of printing presses for mounting the cylinders on the arbors. One form of such mounting which is in common use, especially in textile and wall paper printing machines, consists of a tapered mandrel with a key-way therein and a solid copper cylinder with a tapered bore and a key for said key-way. This copper roll is pressed onto and removed from the tapered mandrel by a hydraulic press. The taper of the mandrel is very slight so that after the mandrel has been pressed into position on the cylinder several times, the copper cylinder wears slightly and it is very difficult to get the mandrel and cylinder tightly united with the parts occupying exactly the same relative longitudinal position each time. This brings about non-registry of the printing impressions in color work. Furthermore, where larger cylinders are used, in order not to have too heavy copper cylinders, the arbors are increased in diameter, although the journals of the press are the same. This makes excessively heavy arbors and of course a different set of arbors for different diameter cylinders is necessary, resulting in considerable expense in the initial equipment, and causing serious delays in the operation of the machine in changing over from one size arbor to another.

One object of this invention, therefore, is

to provide a novel mounting for the cylinders of an intaglio printing press, whereby the cylinders may be invariably accurately positioned on the arbors of the press with a minimum of labor.

Another object of this invention is to provide a mounting for the cylinder on its arbor of an intaglio printing press in which the cylinder is automatically positioned in correct longitudinal alignment when the mounting means is secured in position.

Another object of this invention is to provide a mounting for the cylinders of an intaglio printing press in which the parts may be readily assembled and disassembled by hand, without the use of machines such as hydraulic presses or the like.

These and various other objects of my invention will be apparent from the following description and appended claims, when taken in connection with the accompanying drawing, wherein

Figure 1 is a longitudinal section through one mandrel of an intaglio press with the printing cylinder mounted thereon.

Figure 2 is a section on line 2—2 of Figure 1.

Figure 3 is a section on line 3—3 of Figure 1.

Referring to the drawing in detail, the arbor 1 is of such size as to fit the smallest diameter cylinder to be used on the press. This arbor 1 has a key-way 2 adjacent one end thereof and has one or more grooves 3 therein adjacent each end. The printing cylinders for mounting on the arbor consist of an iron or aluminum cylinder 4 having a plating 5 of copper on the external surface thereof. Preferably the cylinders are of the type in which the copper plate 5 containing the printing image may be stripped from cylinder 4 to be replaced by another plate 5 after use. The cylinder 4 has a key 6 adapted for slidable engagement in the key-way 2 of arbor 1 for securing the arbor and the cylinder against relative rotation.

The grooves 3 in the arbor 1 are adapted to receive the slotted washers 7 which washers may be removably positioned in any of the grooves 3 to provide stops on the arbor. Any

number of such grooves may be provided. Each end of the cylinder 4 has a sharply tapered opening therein and correspondingly tapered split cones 8 are provided, said cones
 5 being slidably received on the arbor 1. One of the split cones 8 is positioned directly against the removable washer 7 at one end of the arbor 1, while at the other end of the arbor a tightening member is provided, said
 10 member comprising a ring 11 slidably received on the arbor 1 and having a threaded hub 12. A nut 13 is threaded on the hub 12 of the collar 11.

Assembly and disassembly of the printing
 15 cylinder on its arbor is accomplished as follows. The grooves 3 in the arbor 1 are so positioned that they will accommodate any of the various sizes of printing cylinders used. The printing cylinder 4 to be used is
 20 slipped on the arbor 1 and the two split cones 8 are then slipped on from opposite ends. The slotted washer 7 at the left side of Figure 1 is then positioned in the proper groove 3 of the arbor 1 and the cylinder 4
 25 is moved to the left so that the cone 8 enters the conical opening in the cylinder and bears against the washer 7. The ring member 11 carrying the threaded nut 13 is then slipped on the right hand end of the arbor 1 and the
 30 second split washer 7 is positioned in its corresponding groove 3. By means of two spanner wrenches the nut 13 is then turned on the threaded hub 12 of the ring 11 to engage against the slotted washer 7. Thus the right
 35 hand conical member 8 is forced into the cylinder 4 and said cylinder 4 is forced to the left against the stop provided by the washer 7 and the split cone. Since the cones 8 are split they will contract into firm en-
 40 gagement with the arbor 1 and they will accurately position the cylinder 4 on said arbor. It will be noted that the left hand slotted washer 7 and its cone 8 will always occupy the same relative position on the arbor. Due
 45 partly to the fact that the cylinder 4 is made of relatively hard metal, and due partly to the fact that the conical opening in said cylinder is of relatively great taper, there is very little wear between the parts in assem-
 50 bling and disassembling. Therefore continual use of the cylinder and the arbor will not change the longitudinal alinement of the parts.

It is unnecessary to use a press to assemble
 55 or disassemble the cylinder and the arbor, since the tapering surfaces of the cylinder and the cones 8 are of such a sharp angle that when the pressure is relieved by unscrewing the nut 12, the split cones 8 will
 60 readily spring outwardly from the cylinder.

With this construction the same size of arbor can be used regardless of the diameter of the printing cylinders without increasing the thickness of the walls of the cylinders,
 65 and the same cones, locknuts, and washers

can also be used. Thus it will only be necessary for the users of this type of cylinder and mandrel to have one set of arbors for the press instead of several sets as needed for the types wherein the cylinder slides directly
 70 on a tapered mandrel and engages therewith.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is therefore to be
 75 considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning
 80 and range of equivalency of the claims are therefore intended to be embraced therein.

What I claim and desire to secure by United States Letters Patent is:—

1. In a mounting for the printing cylin-
 85 ders of a printing press, an arbor, a printing cylinder on said arbor, a plurality of grooves in said arbor beyond each end of said cylinder, stop members selectively engageable
 90 in said grooves for securing various sizes of cylinders to said arbor, split cones between each stop member and the cylinder, and engageable in conical openings in said cylinder, and a slidable collar on said arbor between
 95 one of said cones and the adjacent stop, and means longitudinally adjustable on said collar for simultaneously wedging said cones in said conical openings and for clamping the same between said cylinder and said stop
 100 means.

2. In a printing press, an untapered arbor provided with a pair of grooves disposed at points along the length thereof, a cylinder provided at each end with conical recesses
 105 that are sharply inclined with respect to the axis thereof, cones slidably disposed on said arbor and fitting in said recesses, at least one of said cones being split for resilient contraction and expansion, laterally removable stops
 110 positioned in said grooves, and means arranged between one of said stops and one of said cones to apply pressure along the length of said arbor to simultaneously wedge both cones in said recesses and to properly locate said cylinder with respect to the other
 115 of said stops, said means being substantially freely movable axially when it is not applying pressure.

In testimony whereof I affix my signature.
 EMIL ERICKSSON.