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W. SÄUBERLICH
DEVICE FOR TENSIONING PRINTING PLATES PARTICULARLY
STEEL ENGRAVED PLATES ON PRINTING PRESSES
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Fig. 1

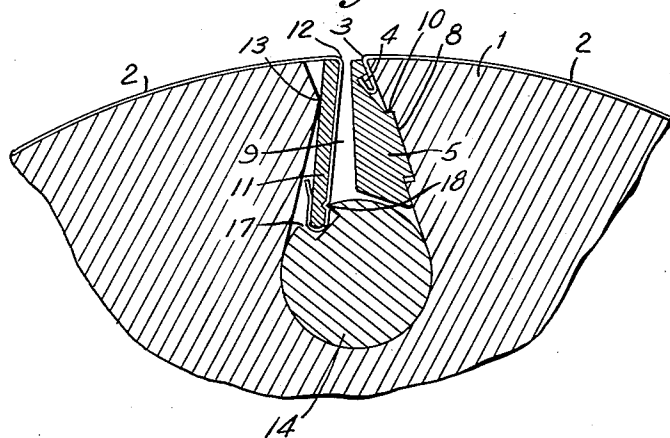
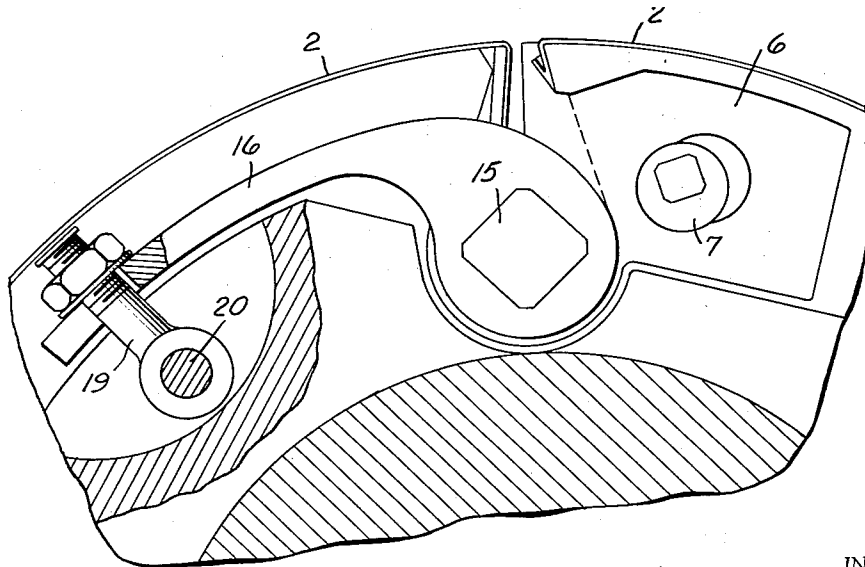


Fig. 2



INVENTOR

W. Säuberlich

BY

Watson, Cole, Grindle & Watson
ATTORNEYS

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DEVICE FOR TENSIONING PRINTING PLATES PARTICULARLY STEEL ENGRAVED PLATES ON PRINTING PRESSES

Willy Säuberlich, Darmstadt-Eberstadt, Germany, as-
signor to Maschinenfabrik Goebel G.m.b.H., Darm-
stadt, Germany

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This invention relates to devices for mounting printing plates in tensioned condition on cylinders of rotary printing machines. In order to secure steel plates on cylinders it is necessary to secure one end of the plate in a rigid securing means and the other end of the plate is secured by a tensioning means in a groove in the cylinder. The forces necessary to secure such steel plates on its cylinder are very high. In order to tension the plate and hold it in place, there is a minimum of space available to secure the plate since so much of the surface of the plate is taken up by the subject matter to be printed. It is therefore an object of the invention to provide a device for a printing cylinder in which the tension producing securing means is as small as possible and provides the high tension necessary to secure the steel plate in place. The groove in the cylinder must be quite narrow not only in its periphery but also in its internal dimensions.

Another object of the invention resides in the provision of a device in which one end of the plate is secured around a blunt edge in the side wall of a transverse groove in the cylinder and acting as a lever in which one arm is actuated by a shaft arranged parallel to the rotary axis of the cylinder and the other arm tensions the plate. The tensioning members are therefore made of spring material. A further object of the invention is to provide a shaft in the cylinder having a groove therein into which the tensioning lever with the plate end projects and engages one edge of the groove. The other tensioned holding means is in the form of a block which has eccentric means at both ends of the cylinder to hold the plate in place.

The invention is illustrated on the accompanying drawing in which:

Figure 1 is a cross section of a part of the printing cylinder at the part where the plate is secured, and

Figure 2 is a side view partly in section of the side of the cylinder where the plate is secured in place.

The cylinder 1 is surrounded by the plate 2 which has thereon the portions to be printed and is under tension around the cylinder. Adjacent one edge of the plate 2 there is provided a sharp bent edge 3, and a further sharp bent edge is provided immediately in front of edge 3. Thus the edge of the plate is secured in the lock space 4 of the ledge or block 5 and is actually secured by this ledge 5 when the latter is in the position of Fig. 1. The ledge or lock member or wedge 5 is provided at both ends with arms 6 of which one is shown in Fig. 2. These arms 6 are arranged parallel to the two side walls of the cylinder 1 and they are provided with an eccentric 7 which latter by rotation, will force the ledge 5 against a wall 8 of a space 9 in the cylinder 1. This wall is provided with a stop surface 10 which cooperates with a similar stop surface on the block 5 and which abuts against this stop. The forces created by the tension in the plate will be taken up by the stop 10.

The other end of the plate 2 is carried around the tension stop 11. For this purpose the plate 2 assumes

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a sharp bend 12 and near its end edge it is bent into a half circle formation. In the wall opposite the wall 8 of the space or open chamber 9 there is an obtuse angle edge 13. The tension stop 11 abuts against the edge 13 so that the member 11 will act as a lever and when a force is applied on its lower arm, a considerably higher force is applied on the upper arm.

The load on the lower arm of the lever 11 is achieved by the rotation of the shaft 14 which is applied and extends on the entire length of the cylinder 1 and which at one or both ends is provided with a quadrangular member 15. A lever 16 is mounted on this quadrangular element adjacent the end side of the cylinder and parallel thereto and which will impart a high rotary moment on the shaft. The shaft 14 is provided with a groove 17 into which the lower edge of the tension lever 11 projects. By the provision of the groove 17 in the shaft 14 there is provided a sharp edge 18 by which upon rotation of the shaft to the left, Fig. 1, the plate 2 being against the lever 11, the plate will be tensioned. It may be necessary to provide a small groove in the lower surface of the lever 11 opposite the edge 18. The plate 2 will be slightly pressed in at the point 18 and thus the plate 2 will be held more securely against the lever 11.

It is perfectly clear that in view of the comparatively long lever arm 16, it is possible to impart a high force on the lower arm of the lever 11. By means of the transmission of the lever 11, the forces are increased so that a very high force can be attained at the upper edge of the lever 11 in order to place the plate 2 under tension. The requisite tension force is attained when the lever arm 16 is in the position shown in Fig. 2, and this force may be maintained by means of a screw bolt 19 which latter is secured by a nut thereon which when released, the bolt 19 may swing around the axis 20 to free the lever arm 16 to release the tension in the plate. The shaft 14 need not only serve to tension the lever 11 but also to simultaneously act as guide or swing axle for the block 5 when its arm 6 is provided with eyes which surround the shaft 14.

When it is desired to change plates it is very easy to remove the tension elements. It is only necessary to rotate the shaft 14 clockwise, Fig. 1, by means of the lever 16 until the edge 18 will free the tension lever 11. The end of the plate can then be pulled out of the space 9 without hindrance. When a new plate is inserted the parts are operated in reverse order to secure the plate on the cylinder under tension. Also the block 5 may be easily loosened by operating the eccentric member 7 so that it may be removed from its grip on one end of the plate, which may then be removed.

I claim as my invention:

1. A device for tensioning and securing flexible printing plates, particularly engraved steel plates, on cylinders of printing presses comprising a groove in said cylinder, said groove having opposite sides of which one side has a projecting edge which acts as a fulcrum and the other side has a stop surface, a shaft in the cylinder mounted to rotate in the bottom of the groove and extending throughout the width of the cylinder parallel to the rotary axis of the cylinder, a wedge member cooperating with the stop surface to secure one edge of the printing plate, a lever abutting against the fulcrum in the groove and over which the printing plate is secured and bent around the upper and lower ends of the lever, said shaft cooperating with the lever to adjust the latter around the fulcrum and thus secure the plate in tensioned condition on the cylinder.

2. A device for securing a flexible printing plate under tension on a cylinder of printing machines of which the cylinder is provided with a groove, comprising a shaft

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rotatably mounted in the bottom of the groove and having an edge arranged longitudinally on the shaft with the latter arranged parallel to the longitudinal axis of the cylinder, one side of said groove having a projecting fulcrum edge, a lever in the groove abutting against the fulcrum edge, and a block member on the other side of the groove to secure one edge end of the plate with the other edge end of the plate extending on one side of the lever and bent around the bottom end of the lever, said edge on the shaft contacting the plate on the side of the lever so that when the shaft is rotated the lever will bear on the fulcrum edge to tension the plate on the cylinder.

3. A device according to claim 2, in which the lever is composed of a spring material.

4. A device according to claim 2, in which the shaft is provided with a groove extending parallel thereto and having the edge of the shaft on one side of the last-mentioned groove, said end of the lever with the plate bent therearound extending into the groove in the shaft.

5. A device for securing a flexible printing plate under tension on a cylinder of printing machines of which the cylinder is provided with a groove, comprising a shaft rotatably mounted in the bottom of the groove and having an edge arranged longitudinally on the shaft with the latter arranged parallel to the longitudinal axis of the cylinder, one side of said groove having a projecting fulcrum edge, and the other side having a wall portion with a stop surface, a lever in the groove abutting against the fulcrum edge, a block member on the other side of the groove and having a projecting portion contacting

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the wall portion and the stop surface to secure one edge end of the plate with the other edge end of the plate extending on one side of the lever and bent around the bottom end of the lever, said edge on the shaft contacting the plate on the side of the lever so that when the shaft is rotated the lever will bear on the fulcrum edge to tension the plate on the cylinder, arms for the block secured thereto and provided parallel to the side of the cylinder, and an eccentric in the cylinder cooperating with an opening in the arms to tighten the block against its side of the groove.

6. A device according to claim 5, in which a lever is provided mounted on the shaft, and in which means are provided to secure the lever in adjusted position.

7. A device according to claim 5, in which a lever is provided mounted on the shaft and having an extended end portion, and in which an eye bolt is provided connected to the extended end of the last-mentioned lever and having a nut thereon and also connected by means of an eye of the bolt to the cylinder, said shaft being adjusted by rotation of the nut.

8. A device according to claim 5, in which there is a sharp bent edge on each end of the plate where the latter enters the groove in the cylinder.

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