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BEARING CLIP FOR OFFSET PRINTING ROLLERS

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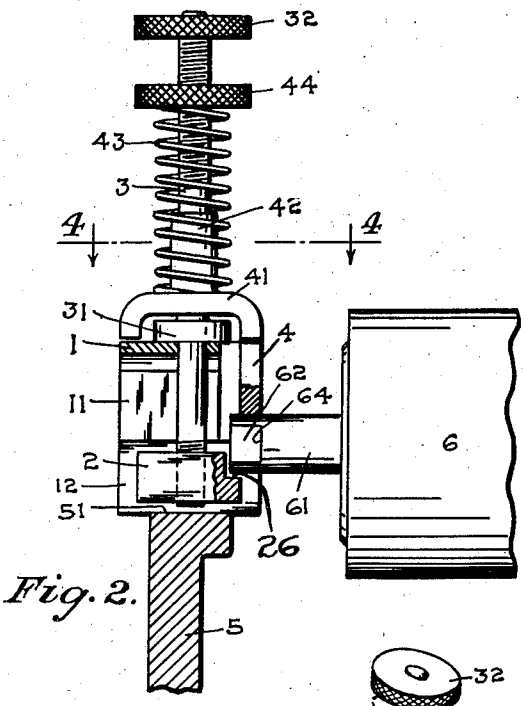

Fig. 2.

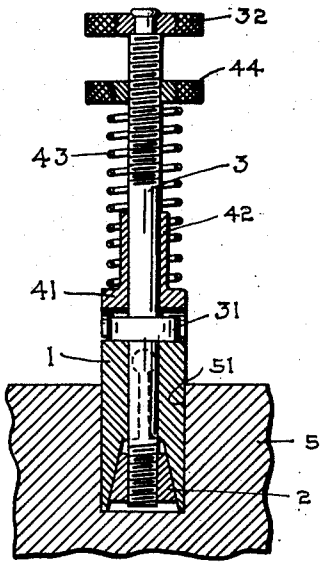

Fig. 3.

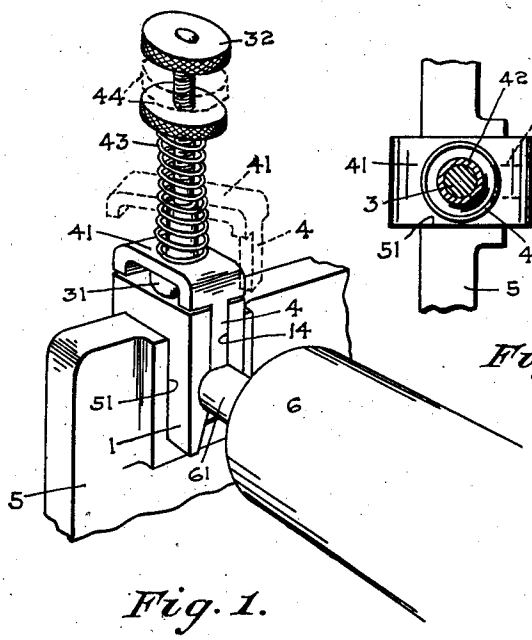

Fig. 1.

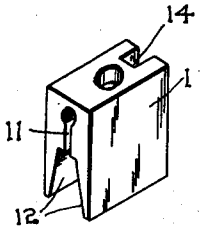

Fig. 5.

Fig. 4.

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BEARING CLIP FOR OFFSET PRINTING ROLLERS

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10 Claims. (Cl. 287—20)

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In an offset or lithographic printing press, such as is typified by the Multilith press, a roller—usually of metallic composition—serves to transfer the moistening or ink-repellent solution from the ductor roller to the plate dampener roller. The ductor roller possesses an absorbent covering to retain the moistening solution, and serves the purpose of transferring the moistening solution from the water reservoir roller to the above metal transfer roller by oscillating between these adjacent rollers. The metal transfer roller, by the introduction of oscillating mechanism, is caused to move longitudinally or axially while rotating, and thus to produce a spreading as well as a rolling effect while transferring the moistening solution to the plate dampener roller.

It is the practice in small offset presses and similar duplicating, printing or lithographic machines, to permit the metal transfer roller to ride on the surface of the cloth covered plate dampener roller by gravity, depending upon the weight of the metal roller to sustain the required even contact with the oft-times irregular or eccentric surface of the cloth-covered plate dampener roller. Since the metal transfer roller must be removed occasionally and cleaned, it has been difficult to attach any type of spring, weight or tension device for the purpose of maintaining a constant pressure between the surfaces of the metal transfer roller and the plate dampener roller, and at the same time provide an adjustable or floating type of bearing for the metal roller.

It is the purpose of this invention to solve this problem: to provide an attachable and adjustable bearing in which the ends of the shafts of printing or moistening rollers may be mounted rigidly and accurately in parallelism to the ductor and plate dampener rollers; to provide a simple means of adjusting the downward pressure of the metal roller on the plate dampener roller quickly and accurately; to provide a floating or self-aligning bearing which likewise permits quick removal of the metal roller from the bearing; and to provide self-contained locking means in this bearing whereby it may be attached quickly to a printing press or other duplicating machine without the necessity of external attaching or fastening devices such as bolts, setscrews, etc., and which will hold the bearing in its adjusted position against the effects of the varied forces tending to displace it.

It is a further object to provide a bearing clip having the capabilities indicated, which is of simple, rugged construction, and not unduly expensive.

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More particularly it is an object to provide a bearing clip for the purpose indicated which may be simply and securely wedged into position while supporting the roll shaft end, and which is formed with a presser finger to retain the shaft in position, acted on by spring pressure means which will hold the shaft with whatever force may be necessary, but which spring pressure means may be relaxed at will, and in a simple manner, and removed from holding position, to the end that the roll shaft end, held in the bearing, may be lifted out and the entire roller thereby removed for cleaning.

A further object is to provide such a bearing clip which will be of compact construction, and which, therefore, will not interfere with the operation of the machine nor the observation of its functioning.

With the above and other objects in mind, as will appear hereafter, my invention comprises the novel clip in the combination disclosed, and the novel parts thereof, as shown in the accompanying drawings, described in this specification, and as will be more particularly defined by the claims which terminate the same.

In the accompanying drawings my invention is shown embodied in a typical form, as at present preferred by me.

Figure 1 is an isometric view of the bearing clip, in position of use, and illustrating in dash lines the position which permits removal of the roll shaft end.

Figure 2 is an axial section along the plane of the axis of the roll shaft, and Figure 3 is axial section on a plane at right angles to that of Figure 2, both showing the device in position of use.

Figure 4 is a transverse section substantially on the line of 4—4 of Figure 2.

Figure 5 is an isometric view of the bifurcated and flared block which is received in the machine's notch.

Only so much of the offset printing machine has been shown as will illustrate how my invention is used therein, since such presses are well known. The machine frame is shown at 5, and this is originally provided with a notch 51 within which a bearing is normally secured, for the purpose of receiving the end of the roll shaft 61, the roll being shown at 6. The roll 6, it will be understood, rotates on the axially and rotatively fixed shaft 61, and in addition is periodically reciprocated axially therealong. The roll shaft 61 is provided with a non-circular end 62 (see Figure 2) by means of which the shaft may be held against rotation. In the illustration, the non-

circular end 62 is formed by milling off parallel faces at opposite sides of the shaft end, thereby leaving outwardly facing shoulders 64 which may serve, by abutment against the bearing, to limit axial movement of the shaft 61.

The bearing includes a block 1, shown separately in Figure 5. This block is of a size to snugly fill the machine frame notch 51, and convenient means, preferably such as are quickly applicable and quickly releasable, are provided for securing it accurately and holding it within this notch. To that end the block is nearly completely divided by a lengthwise bifurcation, as indicated at 11, and is provided with wedging faces 12, between which is received a wedge block 2. The wedge block 2 and the bearing block 1 together constitute the body of the bearing.

To wedge the wedge block 2 into place, and thereby to expand the bifurcated block 1 into firm engagement with the notch 51, a threaded post 3 is provided, threaded within the wedge block 2. This post is provided with an integral collar 31 bearing upon the top of the block 1, and with a knurled head 32 fixed upon the upper end of the post, whereby it may be rotated to secure or to release the wedge block.

The body thus constituted may be formed with a ledge, as 26 (see Figure 2) to prevent the roll shaft end from dropping, if for any reason the support of its plate dampener roller should be withdrawn. Normally the roll shaft end is supported above the ledge 26. The hold-down means comprises a finger 4 depending from a yoke 41, apertured and slidable lengthwise of the post 3. A bearing collar 42 affords greater length of bearing and therefore greater freedom to slide lengthwise without binding. The finger 4 is received in a groove 14 formed in the end of the bearing block 1, in line with and of a size to receive snugly the roll shaft end 61. Resilient means, such as the compression spring 43 surrounding the post 3 and the collar 42, reacts between a nut 44 threaded upon the upper end of the post 3 and the yoke 41. The finger 4 is therefore pressed downwardly against the roll shaft end 61 with a force corresponding to the setting of the nut 44 along the threaded post 3, which setting of course is adjustable.

The bearing block 1 is inserted within the notch 51 while the wedge block 2 is relaxed or threaded outwardly of the wedging surfaces 12. While inserting the bearing body, the shoulders 64 bear against the end face of the block 1. Thus positioned the bearing body is secured in place by rotating the head 32 and the threaded post 3 to draw the wedge block 2 into the bifurcation of the block 1. This expands the block 1 and secures it firmly and rigidly in position within the notch 51.

Now the finger 4, which normally would have been drawn upwardly and swung aside, as shown in dash lines, in Figure 1, is rotated about the post until the finger 4 may enter the groove 14, and the pressure of the spring 43 is adjusted by threading the nut 44 downwardly along the threaded post 3 until the finger presses with sufficient force against the top of the roll shaft end 61 to hold the shaft in position. The machine is now ready for use.

Whenever it is necessary to remove the roll 6, it is only necessary to draw the yoke 41 upwardly until the finger 4 is withdrawn from the groove 14, and to swing it aside to clear the upper end of the groove. This may and usually will require relaxing of the spring 43. When the finger 4 is swung aside, the roll shaft end may be lifted to the top of the groove 14 and thus removed completely from the bearing. In fact, only at one end of the roll shaft is it necessary to relax the spring pressure and to swing aside the finger 4 to enable removal of the roller complete with its roll shaft. After cleaning the roll, it is only necessary to drop the shaft ends into their respective bearing grooves, to swing the finger 4 back into its groove, and to restore the spring pressure if it was previously relaxed. At no time is it necessary, except when first inserting the bearings, to relax the grip of the bearings within their respective notches 51. The wedging action is sufficient to hold the bearing clip securely against the several forces acting upon them through the roll. By reason of the fact that the bearing clip is secured in position while in operative relationship to the roll shaft end, as fine a degree of adjustment in its position as may be desired may readily be secured.

I claim as my invention:

1. A spring bearing clip of the nature described, for reception within a frame notch to retain a shaft therein, comprising a body of thickness sufficient to substantially fill the notch, and bifurcated lengthwise of the notch, means to spread the bifurcations to retain the body within the notch, the body having a groove lengthwise its inner face, a finger received in said groove, and spring means urging said finger towards the bottom of the groove to retain a shaft end within the groove and notch, said spring means being yieldable to permit the finger to be raised sufficiently for the shaft end to be lifted from the notch.

2. A bearing clip of the nature described, including a body grooved at one end, and means to secure the same to a machine frame, with a roll shaft end received in said groove, a spring-urged finger mounted upon said body for swinging and lengthwise movement relative thereto, and slidably guided within said groove to bear at its end upon the roll shaft end, and removable from said groove by lengthwise movement in opposition to its spring and thereafter being swingable aside for release of said shaft.

3. A bearing clip of the nature described, comprising a body grooved at one end, means to secure the body to a machine frame, with a roll shaft end received within said groove, a finger mounted for movement in the direction of its own length, and for rotation relative to said body, and normally being slidably guided in said groove and thereby restrained against rotational movement, spring means normally urging said finger lengthwise to press its tip against the roll shaft end, and means adjustable to vary the spring pressure between a maximum sufficient to retain the shaft and a minimum permitting removal of the finger from the groove, and its rotation sidewise to clear the groove for removal of the shaft end.

4. A bearing clip of the nature described, comprising a body grooved at one end, means to secure the body to a machine frame, with a roll shaft end received within said groove, a threaded post upstanding from said body, a finger guided upon said post for rotation and for axial movement, and normally being slidably guided in said groove, a nut threaded upon the upper end of the post, and a compression spring bearing between the nut and the finger, to urge the latter against the roll shaft end, to retain the latter, with a force variable in accordance with the set-

ting of said nut along the post, whereby to retain the shaft within the groove by one such setting, and to permit endwise and then rotational removal of the finger from the groove, preparatory to removal of the shaft, by a different setting.

5. A bearing clip of the nature described, comprising a body formed with a groove at one end, and there being a ledge adjacent the bottom of such groove, means to secure the body to a machine frame, with a roll shaft end received within said groove and overlying said ledge, a finger slidably guided in said groove, and spring means urging said finger in the direction of its own length to press its tip into retaining engagement with the top of the roll shaft end, but yieldable to permit such withdrawal of the finger as will enable withdrawal of the shaft end.

6. A bearing clip of the nature described, comprising a laterally expansible block for reception within a machine frame notch, means so to expand the block to secure it within such notch, opposed and relatively adjustable shoulders supported from the block and spaced apart to receive between them a roll shaft end, when the block is thus secured to the machine frame, and resilient means urging said shoulders together, to retain the shaft end, but yieldable when required to separate said shoulders for removal of the roll shaft end.

7. A bearing clip of the nature described, comprising a bifurcated block, a wedge, and screw means mounting the wedge within the bifurcation of the block to spread the latter to secure it within a machine frame notch, and means carried by said block, including a presser member yieldingly urged towards a roll shaft end to retain the latter in an operative position, said presser member being mounted upon the block for movement between such retaining position and a non-retaining position wherein the shaft end may be removed from the clip.

8. A bearing clip of the nature described, comprising a slotted block of a size to substantially fill a machine frame notch, a wedge received in the slot, a screw threaded within the wedge, passing through the block, and having a head at its upper end, distant from the block, for expanding the block to secure it within said notch, said block having a groove in an end face, and said wedge having a ledge projecting within such

groove, to provide ultimate support for a roll shaft end, a finger pivotally and slidably mounted upon said screw, and guided within said groove to bear upon the top of said shaft, a nut threaded upon said screw, and a compression spring bearing between the nut and said finger, to urge the latter downwardly with a force which is variable in accordance with the setting of said nut along the screw.

9. A spring bearing clip of the nature described, for reception within a frame notch to retain a shaft floating but otherwise rigidly secured therein, and for occasional removal, comprising a notch-filling block having a groove in its inner face, means to secure the block within the notch, with the shaft end received within said groove, a presser element engageable with the upper side of the shaft end, to retain the latter within the groove, and spring means urging said presser element downwardly, said presser element being upwardly movable in opposition to said spring means, to enable removal and replacement of the shaft end.

10. A bearing clip of the nature described, comprising a body having an upright groove at one end, of a width to receive a roll shaft end, means to secure said body to a machine frame, with a roll shaft end thus confined, a post upstanding from said body, generally parallel to said groove, a presser member slidably and rotatively mounted upon said post, and guided in said groove for normal sliding movement while restrained thereby against rotative movement, but being capable of rotative movement upon withdrawal from said groove, resilient means normally urging said presser member against the roll shaft end, and pressure regulating means reacting between said post and said resilient means, and relaxable at will to permit withdrawal of said pressure member from said groove.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
730,203	Browning	June 2, 1903
2,238,009	Breman et al.	Apr. 8, 1941
557,912	Steiger	Apr. 7, 1896