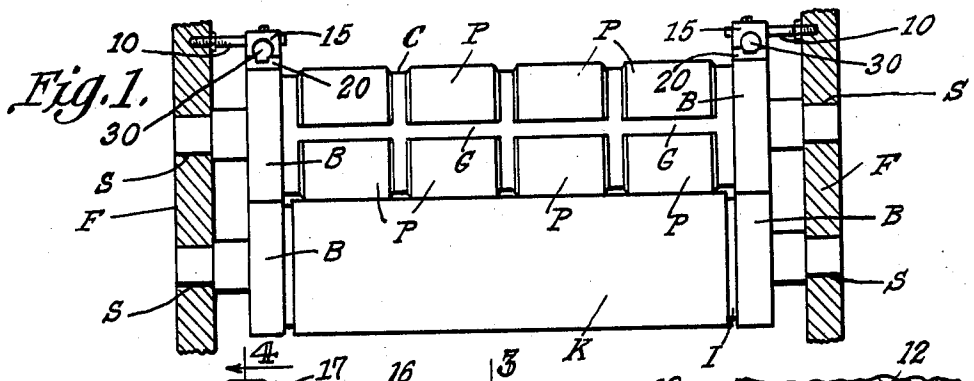
Sept. 28, 1943. W. F. HUCK 2,330,491

CYLINDER BEARER LUBRICATOR

Filed June 4, 1942

Fig. 1.



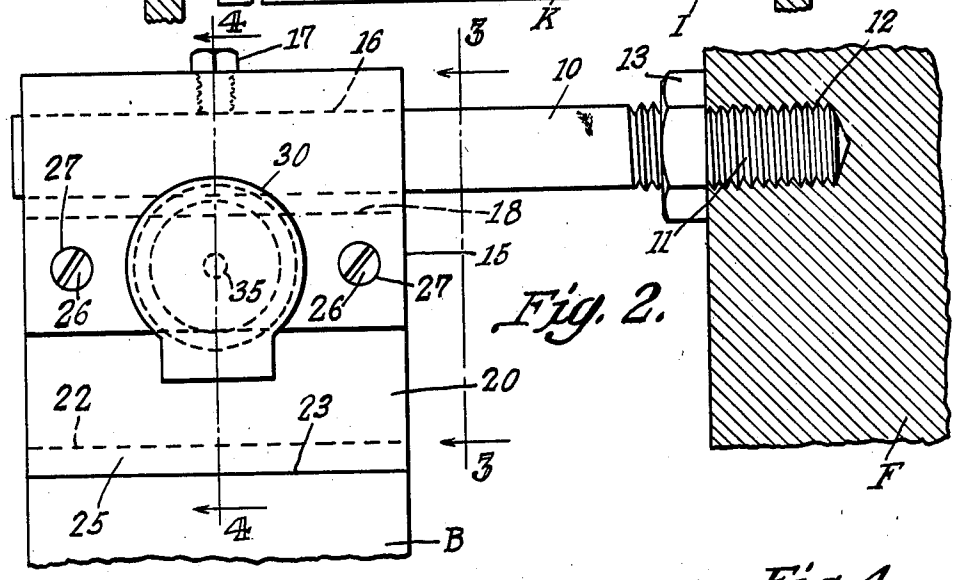


Fig. 2.

Fig. 4.

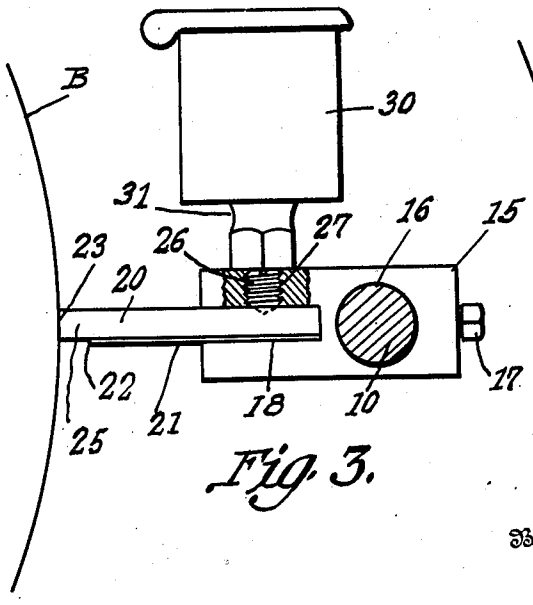
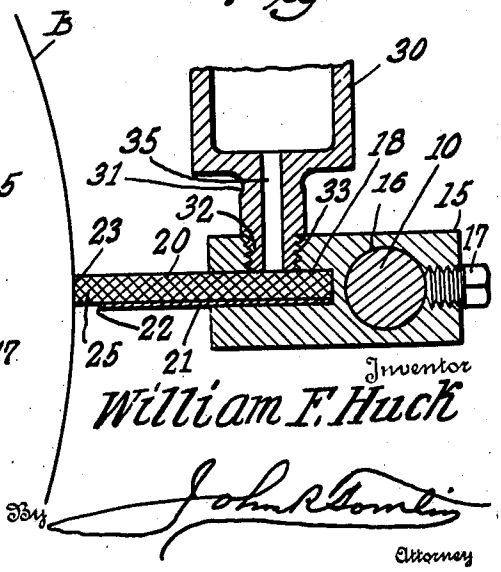


Fig. 3.



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CYLINDER BEARER LUBRICATOR

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Application June 4, 1942, Serial No. 445,826

4 Claims. (Cl. 101—216)

This invention relates to lubricators for cooperating cylinder bearers, and more particularly to lubricators for cooperating printing cylinder bearers which operate in rolling engagement under printing impression pressure.

In the operation of the cooperating printing cylinders of a printing couple, such as employed in newspaper, magazine, lithographic, and other printing machines, printing plates or forms of predetermined thickness are secured to the plate or form cylinder of each couple, and suitable impression members, such as blankets or the like, are secured to the impression cylinder of the couple in such relation that a web or sheet is printed between the plates and impression blanket.

To secure the best results, the impression blanket should press the material being printed against the printing faces of the plates or forms with relatively great pressure. Furthermore, this pressure should be maintained at a constant value throughout each rotation of the printing cylinders, and in order to constantly maintain this printing relationship, bearers are provided at the extremities of each cylinder. These bearers are usually rings which are shrunk or otherwise secured on the ends of the cooperating plate and impression cylinders, and positioned so that the peripheral portion of one bearer has rolling engagement with the periphery of the other, when the printing cylinders are in proper printing relation.

To produce this relation, the coacting bearers are pressed towards each other under heavy stress, which stress is sufficient to slightly distort or flatten the contacting portions of the bearers. In machines having relatively long printing cylinders, the pressure between the cylinders is sufficient to bow them away from each other to some extent, and with the cylinder bearings adjusted to produce the required pressure on the bearers, the areas of contact of cooperating bearers are shifted toward their outside edges adjacent the ends of the cylinders. Although this bowing or cylinder deflection is very slight, it is nevertheless sufficient to cause the outer edges of cylindrical bearers to be placed under much greater stress than their inner edges. This unequal stress tends to overload the metal of the bearers, so that in time the metal will fatigue and crack at the outer edges of the bearers, and after continued use, these cracks or breaks extend or spread sufficiently to cause failure of the bearers. In relatively short printing cylinders, the deflection of the cylinders may not be sufficient to produce appreciably greater stress at the outer edges of the bearers than elsewhere, but even under ideal conditions, the bearers are pressed together under stress that is sufficient to flatten or deform the bearers at their areas of contact, so that cracks or ruptures usually start at these places.

It has been found that prolonged operation of printing cylinders which have bearers running together under printing impression pressure, tends to pit and flake the metal of which the bearers are made and that it finally cracks, resulting in necessity for the replacement of the bearers. This result appears to be due to a displacement, or deformation of the metal at the contacting areas of the cooperating bearers, and its replacement or return to normal shape when the pressure passes beyond those areas. This repeated displacement and return to normal, causes fatigue and ultimate failure of the bearers.

Lubrication of bearers operating under these conditions allows the surface metal of each of a pair of cooperating bearers to better accommodate itself to the surface metal of the other bearer and reduces the tendency toward deterioration of the metallic structure, thereby prolonging the life of the bearers. Lubrication also prevents corrosion and keeps the bearer surface in better condition to withstanding the compressive stresses to which it is normally subjected.

In addition to these advantages, lubrication of the bearers has been found efficacious on certain printing machines doing high class printing, where it is desired to eliminate backlash due to clearance between the teeth of the gears on the plate and impression cylinders. In these machines, the bearer on the cylinder having the driven gear may be purposely made of slightly larger diameter than the bearer on the cylinder having the gear, in order to maintain the driving gears in contact at all times and thereby prevent any clearance present in the gearing developing into a backlash that would affect the printing. Under this condition, although there is but a very slight difference in speed between the peripheral surfaces of the coacting bearers, lubrication will prolong the life of the bearers.

It is an object of this invention to protect the engaging peripheral surfaces of cooperating cylinder bearers by providing a bearer lubricator which is constructed and arranged to deposit the requisite quantity of lubricant on the peripheral surface of a bearer.

Another object of the invention is to provide a lubricator for cooperating printing cylinder

bearers, in which a component of the lubricator yieldingly engages the peripheral portion of a bearer and deposits the requisite quantity of suitable lubricant on the surface in the form of a film.

A specific object of the invention is to provide a lubricator for cooperating printing cylinder bearers running in rolling engagement, the lubricator having a wick which yieldingly engages and conforms to the contour of a peripheral portion of the bearer to convey lubricant from a receptacle through the wick to the bearer periphery.

A more specific object of the invention is to provide a lubricator for cooperating printing cylinder bearers running with their peripheral surfaces in rolling engagement, the lubricator being supported at a location adjacent the peripheral portion of a bearer and arranged to support a wick member in a position to yieldingly engage the peripheral portion of the bearer to convey lubricant to the peripheral surface of the bearer from a lubricant receptacle which is arranged for communication with the wick.

It is also an object of this invention to provide a cylinder bearer lubricator of generally improved construction, whereby the device will be simple, durable and inexpensive in construction, as well as convenient, practical, serviceable and efficient in its use.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that various changes in form, proportion, and minor details of construction may be made within the scope of the claims without departing from the spirit or sacrificing any advantages of the invention.

For a complete disclosure of the invention, a detailed description of it will be given in connection with the accompanying drawing forming a part of the specification, wherein:

Figure 1 is an elevation of a conventional printing couple, showing the improved lubricator applied thereto, the frame of the machine being shown in section;

Figure 2 is a plan view of the lubricator and its support, a portion of the machine frame being shown in section;

Figure 3 is a vertical sectional view taken on the line 3—3 of Figure 2; and

Figure 4 is a vertical sectional view taken on the line 4—4 of Figure 2.

Referring to the drawing, in which similar reference characters designate corresponding parts, C indicates a plate or form cylinder which cooperates with an impression cylinder I of a conventional printing couple. The plate cylinder indicated is the type employed in magazine presses, although it is to be understood that this invention is applicable to all types of printing machines in which cylinder bearers are employed. Each cylinder is rotatably mounted in bearings S formed in the machine frame F.

The plate cylinder C is provided with printing plates P which cooperate with a conventional blanket K carried by the impression cylinder I to produce printing impressions between the plates P and the blanket K. The plates P do not extend sufficiently around the cylinder C to cause their axial edges to abut, consequently an axially-disposed gap G is left between the adjacent plates P. While the printing faces of the plate P are in engagement with the blanket K, the cylinders may rotate with their axes in uniform radial spaced relation, but when the gaps G engage the blanket K, the impression pressure is momentarily released and the faces of the cylinders tend to approach each other until the gap G has passed the bite of the cylinders, when the normal impression pressure is again established.

This objectionable relative radial movement of the printing cylinders of a printing couple is usually prevented by locating a conventional cylinder bearer B at each end of each cylinder of a printing couple, so that the bearers run in rolling engagement.

To produce the requisite printing impression pressure between the cooperating plate and form cylinders of a printing couple, sufficient pressure is exerted on the peripheral portions of the cooperating bearers B to deform these bearers at their bite portions, and this deformation frequently produces cracks or breaks in the bearer surfaces which finally result in bearer failure.

In order to reduce or eliminate such failures, applicant proposes to lubricate the peripheral portions of the cooperating bearers, and, to this end, there is provided a lubricator for each pair of cooperating bearers B in a printing couple, but in an arrangement where more than two bearers run in cooperable relation, then one or more lubricators may be provided for each cooperating set of bearers. Each lubricator includes a supporting rod 10, which has a threaded terminal 11 received within a threaded aperture 12 formed in a side member of the machine frame F, as best seen in Figures 1 and 2. A lock or jamb nut 13 is threadedly secured to the threaded terminal portion 11 of each supporting rod 10, and this nut engages the inner face of the side member of the machine frame F in order to rigidly secure the supporting rod 10 to the machine frame.

A rectangular supporting member or block 15 is provided for each lubricator, and each block has a longitudinally-extending cylindrical recess 16 formed therein for the reception of a supporting rod 10, and this supporting block is secured to its supporting rod 10 by a set screw 17, or other suitable securing member. A longitudinally-extending rectangular recess 18 is formed in each block 15, and this recess extends inwardly from one longitudinal edge of the block for the reception of a rectangular lubricator wick or strip 20, which is preferably formed of wicking, felt or other suitable material. The lower face of the lubricator strip 20 is engaged and supported by a strip 21 preferably formed of resilient metal, and this supporting strip 21 is of the same rectangular configuration as the lubricator strip 20 except it is narrower in order that its outer axially-extending edge 22 terminates short of the outer axially-extending edge 23 of the lubricator strip 20, so that a relatively narrow unsupported axially-extending portion 25 of the lubricator wick or strip 20 projects beyond the supporting strip 21. The lubricator strip or wick 20 is secured to the supporting block 15 within its receiving recess 18 by screws 26, which are received within threaded apertures 27 formed in the upper portion of the block 15, and the lower terminal of each screw 26 engages the upper face of the lubricator strip 20, as best seen in Figure 3.

A lubricator cup 30 is provided, and this cup has a neck 31 which extends from the lower terminal of the cup, and this neck is provided with a threaded lower terminal 32 (Figure 4),

which is received within a threaded aperture 33 formed in the upper portion of the supporting block 15 intermediate its longitudinal terminals. The neck 31 is provided with a feed aperture or conduit 35 which extends longitudinally through the neck and communicates the interior of the lubricator cup 30 with the lubricator wick 20.

In operation, a lubricator is located at each side of the machine adjacent one of the cooperating bearers of a printing couple in order that the outer longitudinal edge 23 of each lubricator strip or wick 20 engages the peripheral face of one of the bearers B of a pair of cooperating bearers of a printing couple. Each lubricator is preferably located so that its wick or strip 20 engages the bearer along a horizontal plane that passes through the axis of the bearer and its supporting cylinder. Although this is a preferred arrangement, it is to be understood, of course, that the lubricator strip may engage any accessible portion of the bearer periphery. When the bearer supporting cylinders are disposed in horizontal arrangement, as depicted in Figure 1, each lubricator strip 20 may engage either bearer of a cooperating pair, but when the cooperating bearers are arranged so that one bearer is located above the other, the lubricator is preferably located to engage the upper bearer.

The lubricant from the lubricator receptacle 30 is conveyed through the conduit 35 to the upper surface of the lubricator wick 20, and the characteristics of this wick are such that the lubricant will be fed through its outer longitudinal edge 23 in a uniform film over the peripheral portion of the engaging bearer B, and this bearer, in turn, conveys the lubricant to the cooperating bearer, so that the contact portions of the cooperating bearers are lubricated to thereby aid in preventing bearer failure.

When lubricating the conventional cylindrical bearers B, as shown in Figure 1, the outer edge 23 of each lubricator strip or wick is made straight, as shown, in order to properly engage the cylindrical peripheral face of the bearer. If, however, the periphery of the bearer is shaped otherwise, the end of the lubricator strip may be correspondingly shaped.

It will be understood that the invention herein disclosed may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and it is therefore desired that the present embodiment be considered in all respects as illustrative and not restrictive, reference being had to the claims rather than to the foregoing description to indicate the scope of the invention.

What I claim is:

1. In a printing machine, the combination with cooperating cylinder bearers having peripheral faces and adapted to rotate with their peripheral faces in rolling engagement under pressure, of a yieldable lubricating wick supported in wiping engagement with the peripheral face of a bearer, and means for supplying lubricant to the wick whereby the wick deposits the requisite quantity of lubricant on the peripheral face of the bearer to provide a lubricant cushion and to reduce friction at the contacting areas of the cooperating bearers.

2. In a printing machine, the combination with cooperating cylinder bearers having peripheral faces and adapted to rotate with their peripheral faces in rolling engagement under pressure, of a yieldable lubricating wick, means for supporting the wick in wiping engagement with the peripheral face of a bearer, and means for supplying lubricant to the wick whereby the wick deposits the requisite quantity of lubricant on the peripheral face of the bearer to provide a lubricant cushion and to reduce friction at the contacting areas of the cooperating bearers.

3. In a printing machine, the combination with cooperating cylinder bearers having peripheral faces and adapted to rotate with their peripheral faces in rolling engagement under pressure, of a yieldable lubricating wick, a resilient strip for supporting the wick in wiping engagement with the peripheral face of a bearer, and means for supplying lubricant to the wick whereby the wick deposits the requisite quantity of lubricant on the peripheral face of the bearer to provide a lubricant cushion and to reduce friction at the contacting areas of the cooperating bearers.

4. In a printing machine, cooperating cylinder bearers having peripheral faces and adapted to rotate with their peripheral faces in rolling engagement, a fixed supporting member, a yieldable lubricating wick secured to the supporting member and supported in wiping engagement with the peripheral face of the bearer, a lubricant receptacle rigidly secured to the fixed supporting member and communicated with the wick whereby the wick deposits the requisite quantity of lubricant on the peripheral face of the bearer to provide a lubricant cushion and to reduce friction at the contacting areas of the cooperating bearers.

WILLIAM F. HUCK.