United States Patent

[11] 3,603,255

[72] Inventor **Ellwood J. Horner**
Armonk, N.Y.

[21] Appl. No. **739,450**
[22] Filed **June 24, 1968**
[45] Patented **Sept. 7, 1971**

[73] Assignee **Wood Industries, Inc.**
Plainfield, N.J.

[54] **SADDLE CLAMPING DEVICE**
7 Claims, 7 Drawing Figs.

[52] **U.S. Cl.** **101/378,** 101/415.1
[51] **Int. Cl.** **B41f 27/06**
[50] **Field of Search** 101/415.1, 378

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Primary Examiner—Robert E. Pulfrey
Assistant Examiner—Clifford D. Crowder
Attorney—Pennie, Edmonds, Mortor, Taylor and Adams

ABSTRACT: A device for clamping a semicylindrical saddle which supports flexible wraparound plates onto a printing cylinder of a printing press having hook means for engaging an undercut groove at one end of the saddle and biasing means to engage the saddle at the other end so as to tension it about the cylinder. The device is adapted for use in a printing cylinder originally having means for clamping stereotype or electrotype plates and is interchangeable with the stereotype or electrotype clamping means so that the cylinder can be used for printing with either the stereotype means or electrotype plates or the flexible wraparound plates.

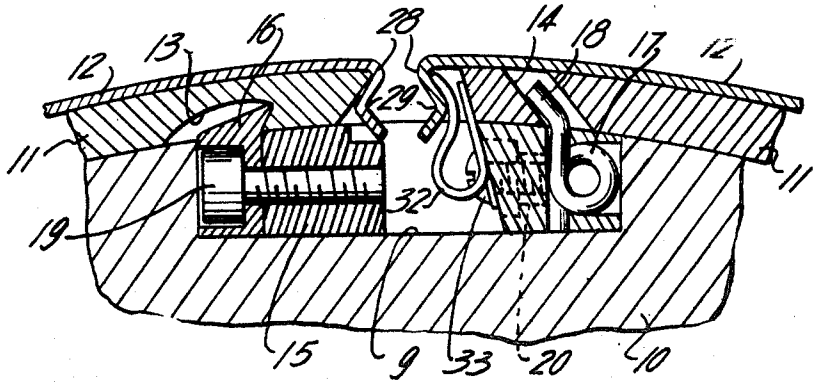


FIG. 1

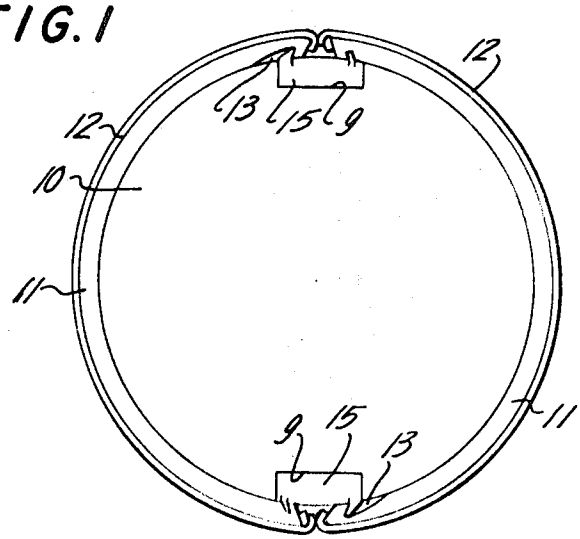


FIG. 2

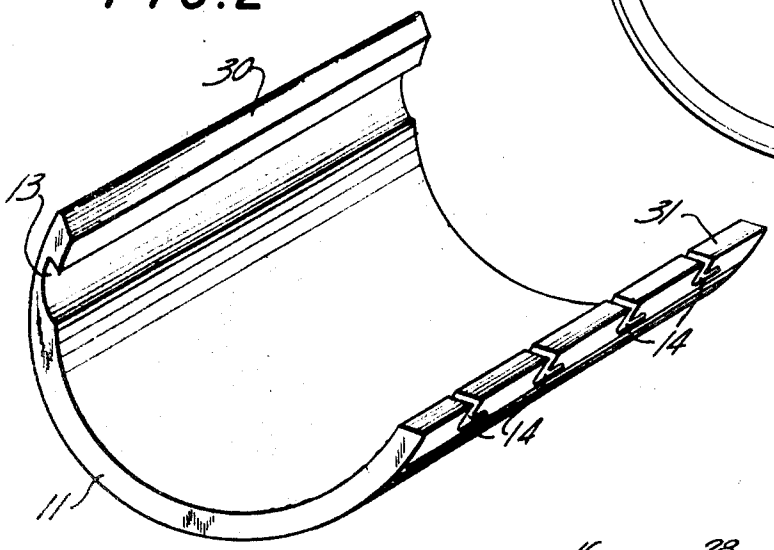
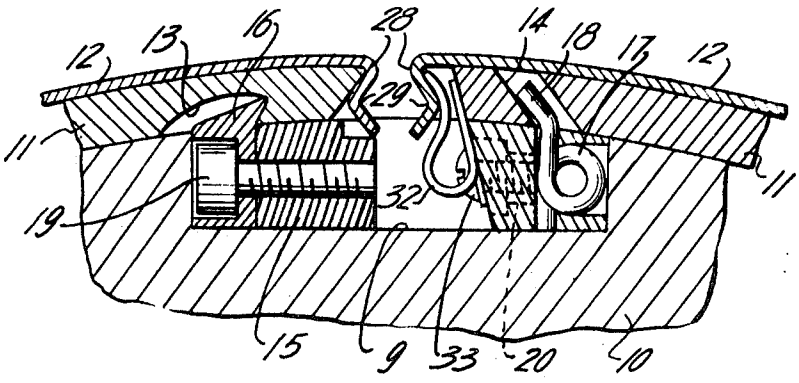


FIG. 3



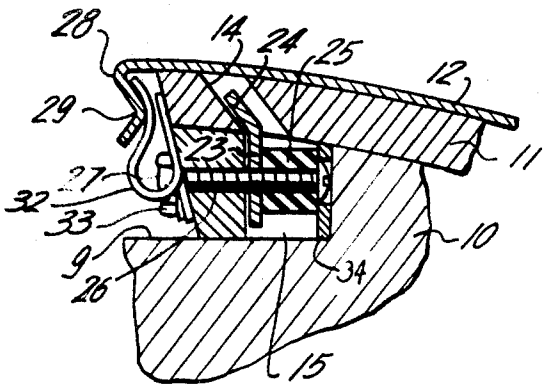


FIG. 4

INVENTOR.
ELLWOOD J. HORNER

BY

ATTORNEY

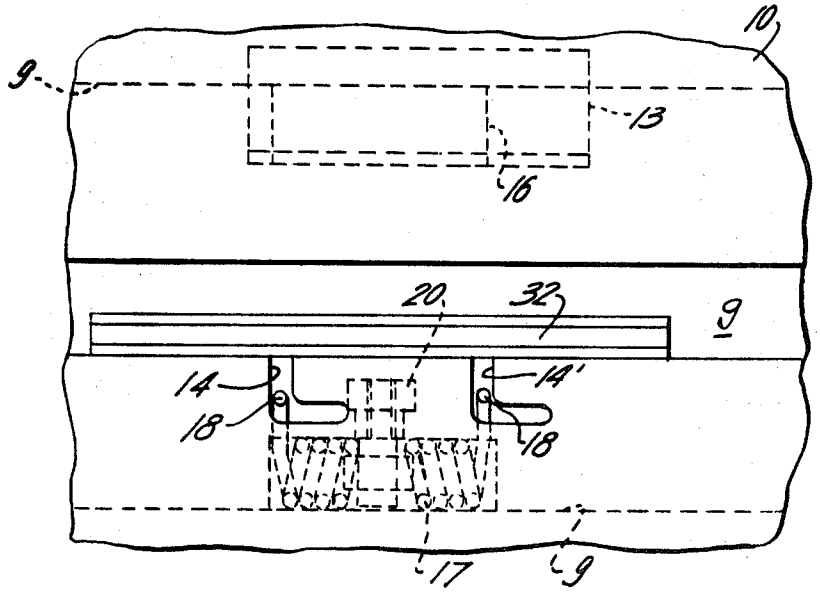


FIG. 5

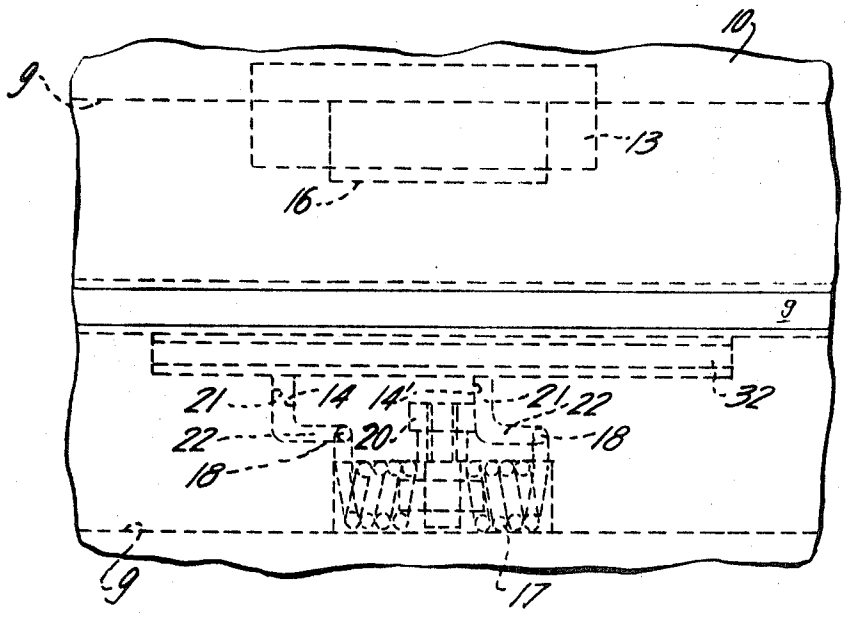


FIG. 6

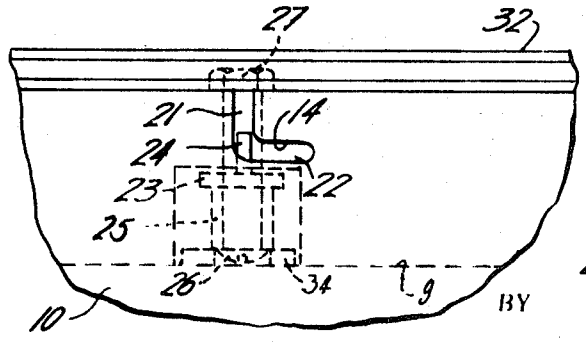


FIG. 7

INVENTOR.
ELLWOOD J. HORNER

BY

ATTORNEY

SADDLE CLAMPING DEVICE

BACKGROUND OF THE INVENTION

This invention relates generally to printing machines and more particularly to means for adapting printing cylinders to use for printing with flexible wraparound plates.

It has long been the accepted practice in the production of newspapers, magazines and the like to use a heavy cast metal (typically a lead-antimony alloy) stereotype plate for the reproduction of text material. For this purpose the relatively thick lead cast stereotype plates have been quite adequate. However, it has been found that the quality of reproduction of photographs, pictures and the like, particularly color reproduction of pictures, has not been as good as might have been desired with the cast stereo plates.

To meet the demand for quality reproduction of color images a variety of thin wraparound plates having a surface on which the image to be printed is etched rather than cast were developed. These have ranged from a metal-on-metal combination such as shown and described in my copending application Ser. No. 672,929 filed Oct. 4, 1967, now abandoned to other compositions using plastic combinations as shown in U.S. Pat. No. 2,760,863 (Dycril-printing plates). These plates, and many others of similar design and composition, have all, to one degree or another, met with significant success in producing high quality reproductions of detailed images and have become widely accepted to meet the demand of quality color printing.

Because of the design of the thin wraparound plate it is necessary to mount the plate on a saddle which is then secured to the printing cylinder. Accordingly, if a user wants to use the wraparound plate for a particular purpose it has been necessary to provide him with a redesigned cylinder which is adapted for use with the wraparound plates, i.e. provided with proper means for securely holding the saddle on the cylinder. One disadvantage of changing over an existing machine using stereo plates to use with the wraparound plate is the large expense involved in obtaining the new cylinders. This cost might be justified if the change is to be permanent, however, the need for the wraparound plate is often only occasional. Another disadvantage is the problem of replacing the existing cylinder with the new one, a difficult time consuming and expensive procedure.

There are many machines presently in existence having cylinders with lockup devices for stereo plates commonly referred to as "compression lockup" and shown for example in U.S. Pat. Nos. 1,717,391, 1,779,882 and 1,873,233. Many of the users of these machines would like to be able to use the wraparound plate but hesitate to do so because of the difficulties and expenses involved in obtaining a new cylinder. It is accordingly an object of the present invention to provide a simple device by which a cylinder having the compression lockup for stereo plates can be quickly, easily and inexpensively converted to a cylinder having a lockup for a saddle so that it can support a wraparound plate. This changeover is simply accomplished by removing the old locking means from the longitudinal grooves and inserting into the same grooves the present device for clamping the saddle. The cylinder can be easily reconverted to use with stereo plates by reversing the exchange.

Other objects, advantages and features of the present invention will become more apparent from the following detailed description in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is an end view of a cylinder supporting two sets of saddles and wraparound plates by means of the present invention;

FIG. 2 is a perspective view of the saddle designed for use with the present invention;

FIG. 3 is a partial section view of the cylinder showing a cross section of one embodiment of the saddle clamping means;

FIG. 4 is a partial section of the cylinder showing a cross section of another embodiment of the saddle clamping means;

FIG. 5 is a partial plan view of the cylinder showing the saddle clamping means of the embodiment of FIG. 3 in the unlocked position;

FIG. 6 is a partial plan view of the cylinder showing the saddle clamping means of the embodiment of FIG. 3 in the locked position; and

FIG. 7 is a partial plan view of the cylinder showing the saddle clamping means of the embodiment of FIG. 4 in the unlocked position.

DESCRIPTION OF THE INVENTION

FIG. 1 shows a printing cylinder 10 having longitudinally extending grooves 9 (corresponding to grooves 8 of U.S. Pat. No. 1,717,391) for holding either the compression lockup means for the stereo plate or the saddle lockup as provided in the present invention. Mounted about the cylinder are a pair of semicylindrical saddles 11 made of hard phenolic material, preferably Bakelite for supporting the wraparound plate 12. The saddle is provided at one end with an undercut groove 13 and L-shaped cutouts 14 at the other end. When changing over from stereo plates to wraparound the compression lockups are removed from two of the grooves 9 which are spaced 180° apart and replaced with blocks 15. Where the existing cylinder is provided with lockup devices in-between the two just mentioned (i.e. the cylinder is provided with lockup devices at 90° intervals about the cylinder) theses are also removed but are replaced with filler bars rather than the blocks 15. At one side of the block 15 is located a hook 16 for engaging groove 13 on the saddle 11. The hook 16 is secured in block 15 by bolt 19. The saddle is tensioned about the cylinder so as to be held snugly against the cylinder by biasing means mounted in the block 15 for engaging the series of L-shaped cutouts at the other end of the saddle. In the embodiment shown in FIGS. 3, 5 and 6 the other end of the saddle is provided with a pair of the L-shaped cutouts 14 and 14', which are engaged by an extended finger 18 of a spring 17 held in place in block 15 by bolt 20. Each saddle is provided with approximately four sets of cutouts. Block 15 is accordingly fitted with an equal number of springs for each saddle which will engage the cutouts. Each cylinder can hold up to four saddles abreast so the block should be fitted with an appropriate number of springs.

In order to secure the saddle on the cylinder one end thereof is first laid over hook 16 so that it engages groove 13. It is then wrapped around the cylinder until it is lying flat on the surface of the cylinder so the fingers 18 protrude into leg 21 of cutouts 14, 14'. The saddle is locked onto the cylinder by moving the saddle to the left a distance of approximately three-sixteenths inch so that fingers 18 are in leg 22 of the cutout 14 thereby preventing the saddle from coming loose.

In the embodiment shown in FIGS. 4 and 7 the saddle need be provided with only four cutouts as shown in FIG. 2, rather than four pair of cutouts. The block 15 is fitted with an insert 23 having an extended finger 24 and biased forward by a resilient plug 25, preferably made of rubber held in place against the wall of groove 9 by spacer 34, both insert and plug being secured in place by nut and bolt 27, 26. The procedure for securing the saddle on the cylinder is the same as that described above with reference to the spring. Both embodiments have worked out well and neither seems to be preferable to the other. Both structures adequately tension the saddle about the cylinder and neither have presented any danger of loosing the saddle.

Once the saddle is securely held in place the wraparound plate 12 can be secured to it by the method and means shown and described in U.S. Pat. No. 3,387,559. As described therein the plate ends are bent first in a 45° bend 28 and then

back in a 90° bend 29 so that one end of the plate can be clipped over the end of the saddle having the slanted end 30 and the other end of the plate can be clipped over leaf spring 32 abutting against end 31 of the saddle and mounted in block 15 by screws 33. The spring 32 is of the configuration shown in the last above mentioned patent and operates to tension the plate about the cylinder. As distinguished from U.S. Pat. No. 3,387,559, wherein the spring 32 is secured directly to the end of the saddle, the spring 32 is here secured to the block 15 and merely extends upwardly to engage the bent end of the overhanging plate 12.

The means for securing the plate on the saddle, as shown and described herein, is only by way of example and it is to be understood that any, suitable means for securing the plate to the saddle can be used satisfactorily with the present invention of securing the saddle to the existing cylinder.

If it is desired to use the stereotype plates, the flexible plate and saddle can be removed from the cylinder by simply reversing the procedure for attaching them. Block 15 can be removed from the grooves 9 and the compression lockup for the stereo plates can be replaced.

It can be seen from the foregoing description that a very simple, relatively inexpensive and easy to use device has been provided whereby a printing cylinder, originally adapted for use with cast stereotype plates, can be quickly and easily converted for use with thin etched wraparound plates.

It will be understood by those skilled in the art after understanding the purpose of the invention that various changes and modifications may be made without departing from the spirit and scope of the invention, and it is therefore intended to cover all such changes and modifications in the appended claims.

What is claimed is:

1. A saddle clamping device for clamping semicylindrical saddles on a plate cylinder of a printing machine where said saddles are adapted to each support a thin wraparound printing plate, said device comprising in combination, longitudinally extending cutouts on the surface of said plate cylinder spaced 180° apart with each said cutout adapted to receive plate clamping means movable longitudinally therein to clamp the edges of thick cast metal printing plates, two saddles each having a longitudinally extending groove on the undersurface and near one peripheral end thereof and a plurality of L-shaped cutouts on the opposite peripheral end thereof with one leg of each L-shaped cutout extending circumferentially of the saddle and the other leg of each L-shaped cutout extending axially of the saddle, and interchangeable blocks in each cutout of the cylinder with each said block comprising a hook means on one side thereon extending beyond the surface of the cylinder for engaging the groove of one saddle and tensioning means on the opposite side thereon and extending beyond the surface of the cylinder for engaging the L-shaped cutouts of another saddle, and means on each said block for holding one end of a thin flexible wraparound printing plate.

2. The device according to claim 1 wherein said tensioning means comprises a torsion spring mounted in each said block with its axis parallel to the axis of said cylinder and where an end of said torsion spring protrudes into a L-shaped cutout of a saddle to tension and lock the saddle in place on said cylinder.

3. The device according to claim 1 wherein said tensioning means comprises an insert secured in each block having a finger thereof protruding into an L-shaped cutout for locking a saddle in place and biasing means for urging said insert toward the center of the block in which it is secured to tension a saddle on said cylinder said saddle on said cylinder.

4. The device according to claim 3 wherein said biasing means comprises a rubber plug inserted into said block between said insert and an outer wall of said block.

5. The device according to claim 1 wherein said saddle is made of a phenolic material.

6. A device for adapting a printing cylinder originally designed and used for supporting thick cast metal printing plates to use for supporting thin etched flexible wraparound printing plates comprising the combination with a semicylindrical saddle for supporting said thin flexible plates, a longitudinally cut groove on the underside of said saddle located adjacent one of its ends, a plurality of L-shaped cutouts along the longitudinally extending edge of the other end of said saddle wherein one leg of said L-shaped cutouts extends circumferentially of said cylinder and the other leg of said L-shaped cutouts extends axially of said cylinder, a pair of blocks for securely holding said saddle on said cylinder, said blocks removably located in a pair of grooves longitudinally extending along the surface of said cylinder, said cylinder grooves spaced 180° apart, said blocks being interchangeable with compression lockup means for holding the thick cast metal plates on said cylinder, means comprising a hook mounted in each one of said blocks protruding above the cylinder surface for engaging said groove on the underside of said saddle, tensioning means mounted on the other of said pair of blocks for engaging said cutouts on said cylinder so as to tension and securely hold said saddle on said cylinder, means for holding said thin etched flexible wraparound printing plate on said saddle, each of said blocks comprising both said hook means and tensioning means wherein the hook means of one of said blocks engages said groove on said undersurface of one saddle and wherein said tensioning means of the same block engages the cutouts on a different saddle whereby the grooved end of a first saddle and said cutout end of a second saddle are supported by one of said pair of blocks and said cutout end of said first saddle and grooved end and said second saddle are supported by the other block of said pair of blocks spaced 180° apart such that said pair of blocks supports a pair of saddles about said cylinder and whereby said tensioning means is enabled to be inserted in one leg of an L-shaped cutout for locating said saddle on said cylinder and to enable said saddle to be axially shifted along the surface of said cylinder whereby said tensioning means engages the other leg of an L-shaped cutout for locking said saddle on said cylinder.

7. The device according to claim 6 wherein said means for holding said flexible plate on said saddle comprises said saddle having one of its ends slanted inwardly from its outer surface towards its undersurface so as to engage a peripheral end of said plate and a longitudinally extending leaf spring having a U-shaped cross section having one straight leg mounted in said block adjacent to the other end of said saddle and having the other leg thereof bent in an S-shaped configuration, said bent other leg disposed to engage the other end of said flexible plate whereby said flexible plate is tensioned to said saddle.

PO-1050
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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,603,255 Dated September 7, 1971

Inventor(s) Ellwood J. Horner

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Claim 3, line 6, after "cylinder" first occurrence, insert a period (.) and delete --said saddle on said cylinder.--

Signed and sealed this 14th day of March 1972.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents