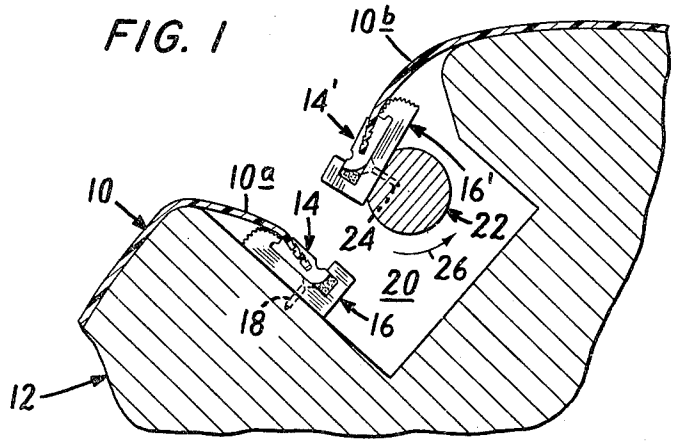
Jan. 13, 1970 A. D. KIRKPATRICK 3,489,085

PRINTING BLANKET EDGING AND ANCHORING MEANS

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FIG. 1



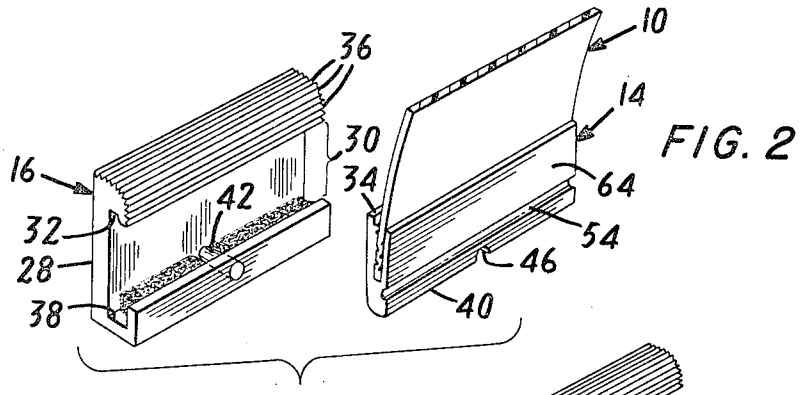


FIG. 2

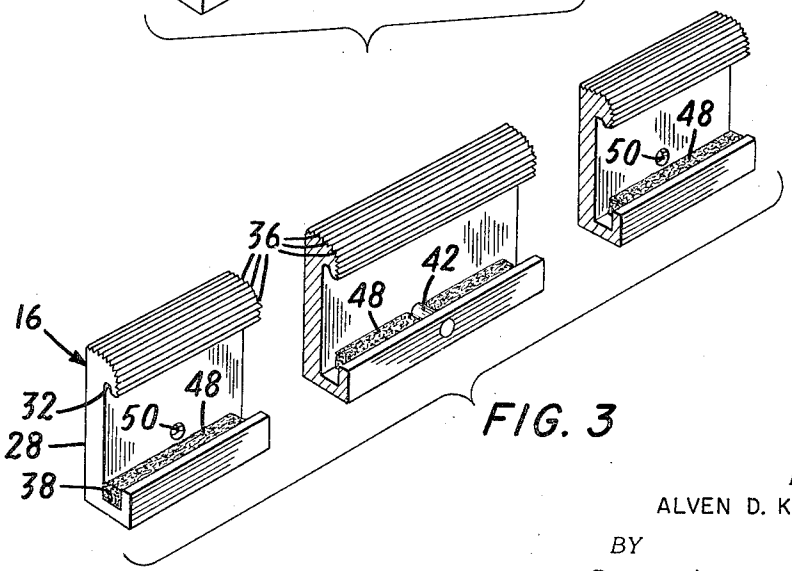


FIG. 3

INVENTOR.
ALVEN D. KIRKPATRICK

BY

Brumbaugh, Graves, Donohue & Raymond

his ATTORNEYS

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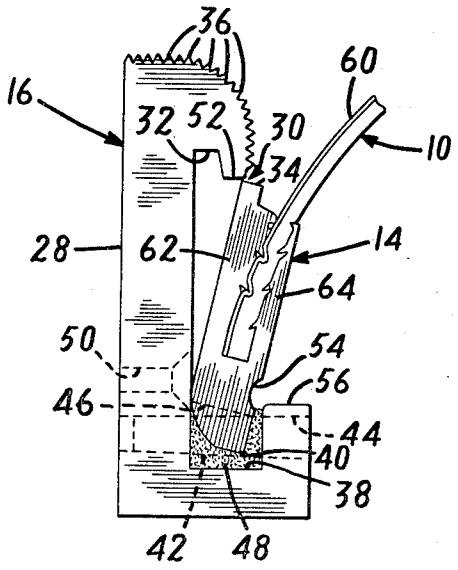


FIG. 4

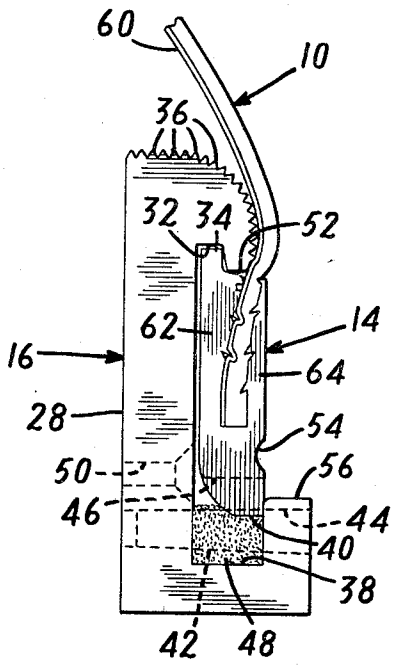


FIG. 5

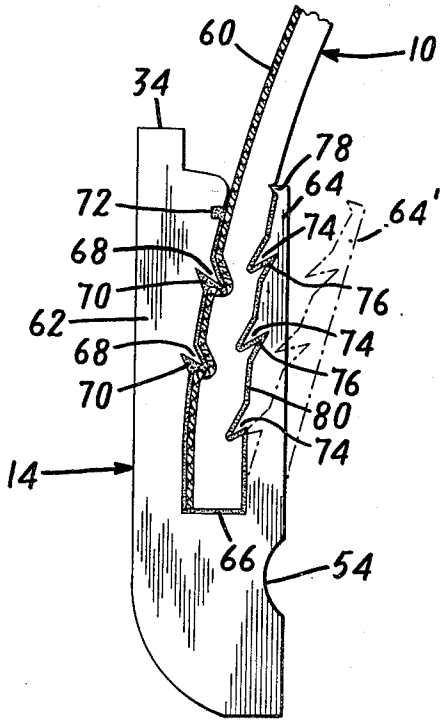


FIG. 6

INVENTOR.
ALVEN D. KIRKPATRICK

BY

his ATTORNEYS

United States Patent Office 3,489,085 Patented Jan. 13, 1970

3,489,085

PRINTING BLANKET EDGING AND ANCHORING MEANS

Alven D. Kirkpatrick, Morristown, N.J., assignor to David M Company, Hato Rey, Puerto Rico, a corporation of Delaware

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Int. Cl. B41f 7/22
U.S. Cl. 101—415.1 10 Claims

ABSTRACT OF THE DISCLOSURE

An anchor for holding the edging of a printing blanket by biasing an abutting surface of the edging into engagement with a retaining groove formed in a channel member. Provision is made for locating the edging in a predetermined longitudinal position in the channel member.

This invention relates to printing blanket edging and anchoring means and, more particularly, to a new and improved apparatus for anchoring the edge of a printing blanket to a cylinder of a printing press.

Offset printing presses, such as those used for planographic printing, employ a rubber sheet known as a blanket, which is a heavy cotton backing coated with rubber, or preferably several plies of alternating layers of fabric and rubber. The blanket is fastened around the machined periphery of the offset cylinder to pick up the ink design or image deposited thereon by the inked printing plate for transfer onto the paper to be printed. The offset cylinder, on which the blanket is fastened, is provided with a gap or opening in its periphery into which the ends of the blanket are inserted and anchored. The leading edge of the blanket is provided with a strip or edging which is inserted and held in the cylinder opening. The blanket is then wrapped around the cylinder, and the tail end of the blanket is inserted in the gap of a reel rod disposed within the cylinder opening, after which the reel rod is wound to take up the slack so as to insure a tight fit of the blanket against the surface of the cylinder.

My Patent No. 3,296,673, which issued Jan. 10, 1967, discloses an edging for the leading and tail edges of a printing blanket, as well as an anchoring clamp for securing the edging to the cylinder and the reel rod. In particular, the anchor clamp comprises a body portion which receives the edging, the edging being retained in engagement with the body portion by means of a locking plate screwed thereto.

In accordance with the present invention, I have provided an improved edging which may be rapidly inserted into, or withdrawn from, locking engagement with an anchor clamp, provision being made to insure that the edging is in a predetermined longitudinal position in the clamp. More particularly, the clamp and the edging are provided with cooperating registration elements, and means are disposed in the clamp for biasing an abutting surface of the edging into engagement with a cooperating retaining surface of the clamp.

All of the above is more fully explained in the following detailed description of a preferred embodiment of the invention, this description being illustrated by the accompanying drawings wherein:

FIG. 1 is a partial view in section of a conventional offset cylinder to which a rubber blanket is mounted by means of typical blanket edging and anchoring apparatus embodying the present invention;

FIG. 2 is an enlarged view in perspective of the central portion of the edging and anchoring apparatus of FIG. 1;

FIG. 3 is an enlarged perspective view of the edging of FIG. 1;

FIG. 4 is an enlarged end view of the edging and anchoring apparatus of FIG. 1 as the edging is being inserted into or withdrawn from the anchor clamp;

FIG. 5 shows the edging fully seated in the anchor clamp; and

FIG. 6 shows an enlarged end view of the edging of FIGS. 1–5.

As shown in FIG. 1, a rubber blanket **10** is mounted to a typical offset cylinder **12** by means of typical edging and anchoring apparatus according to the invention. The leading edge **10***a* of the blanket is provided with an edging **14** which is received in an anchor clamp **16**. The anchor clamp **16** is mounted by a plurality of screws **18** to the cylinder **12** in an axially disposed opening **20** thereof. After the leading edge of the blanket is so secured, the blanket is wrapped tightly around the cylinder **12**, and the tail edge **10***b* of the blanket, which is provided with an edging **14'** identical to the edging **14**, is secured to a reel rod **22** by means of an anchor clamp **16'**, which is identical to the anchor clamp **16**. The anchor clamp **16'** is secured to the reel rod **22** by a plurality of screws **24**. After the edging **14'** is inserted into the anchor clamp **16'**, the reel rod **22** is turned in the direction of the arrow **26** until the blanket is tightly wound around the cylinder **12**.

Referring now to FIGS. 2 and 3, the anchor clamp **16** comprises a channel, preferably of anodized extruded aluminum or steel, having an exterior rear portion **28** contoured to fit the contour of the machine surface on which it is mounted. Thus, the exterior rear surface **28** could be formed with a shoulder which engages a cooperating shoulder of the cylinder or reel rod. The clamp **16** is a channel member, generally C-shaped in cross section, having an opening **30** through which the edging **14** may be inserted or withdrawn. The clamp **16** is formed with an upper groove **32** which is shaped to receive a retaining rib **34** comprising the upper abutting surface of the edging **14**.

The exterior upper surface of the anchor clamp **16** is preferably generally curved in cross section and is formed with a plurality of spaced pointed ridges **36** which extend longitudinally of the clamp in substantially parallel relation with the upper groove **32** thereof. The sharp ridges or teeth **36** are adapted to bite into, but not through, the blanket **10** when the blanket is mounted on the cylinder **12** (see FIGS. 1 and 5). The teeth **36** thus assist the edging **14** in securely gripping the leading and tail edges of the blanket. Furthermore, by making the upper exterior surface of the clamp generally curved in cross section, the gripping force provided by the teeth **36** of the clamp **16** on the leading edge **10***a* of the blanket is distributed over a large number of the teeth, and more teeth of the clamp **16'** grip the tail edge **10***b* of the blanket as the reel rod is rotated to wind the blanket tighter around the cylinder **12**.

The anchor clamp **16** is provided with a lower groove **38** which is adapted to receive the lower edge **40** of the edging **14**. A single registration pin **42** is disposed in the lower groove **38** transversely thereof, and is preferably located at the center of the longitudinal length of the anchor clamp **16**. The registration pin **42** is preferably a tapered pin which is secured by a force fit in a hole **44** bored in the anchor clamp (see FIGS. 4 and 5). The registration pin **42** is adapted to mate with a groove **46** formed in the lower edge **40** of the edging **14** when the edging is in a predetermined longitudinal position in the lower groove **38** of the anchor clamp **16**. Thus, when the edging **14** is inserted into locking engagement with the anchor clamp **16**, the rubber blanket **10** is axially registered with respect to the offset cylinder **12**.

A plurality of elastomeric elements **48** are disposed in the lower groove **38** of the anchor clamp **16**, the elas-

tomeric elements being adapted to bias the retaining rib **34** of the edging **14** into engagement with the upper groove **32** of the anchor clamp **16** (see FIG. 5). The elastomeric elements are preferably made of a material such as rubber, although one or more flat or coil springs could be used if desired. There are preferably three elastomeric elements **48**, an elastomeric element being located at each end of the anchor clamp and the third one being disposed generally at the center thereof (see FIG. 3).

The anchor clamp **16** is bored with a hole **50** near each end thereof to accommodate the screws **18** and **24** by means of which the clamp is secured to the cylinder **12** or the reel rod **22**. If desired, one or more additional holes **50** may be provided in the clamp.

FIGS. 4 and 5 show how the edging **14** may be rapidly inserted into, or withdrawn from, locking engagement with the anchor clamp **16**, the registration pin **42** cooperating with the registration groove **46** of the edging to insure that the edging is longitudinally registered when it is anchored by the anchor clamp. Thus, unless the registration pin and the registration groove are aligned, the lower edge **40** of the edging cannot be inserted sufficiently far into the lower groove **38** of the clamp to permit the retaining rib **34** of the edging to clear the upper retaining rib **52** of the anchor clamp. When the registration pin and the registration groove are properly aligned, the edging is forced into the lower groove **38** against the biasing action of the elastomeric elements **48**, and then the edging is pushed completely through the opening **30** of the anchor clamp and released. (The edging **14** is provided with a longitudinal groove **54** to enable the edging to clear the lower retaining rib **56** of the anchor clamp.) The elastomeric elements **48** then drive the retaining rib **34** of the edging into locking engagement with the upper groove **32**, so that the edging is securely held by the anchor clamp.

The blanket **10** may then be wrapped around the offset cylinder **12** and tightened by the reel rod **22**, and during this operation the edging will not slide in, or become disengaged from, the anchor clamp, due to the biasing action of the elastomeric elements **48** and to the registration provided by the registration pin **42** in cooperation with the registration groove **46**. When the edging **14** is anchored by the clamp **16** and tension is put on the blanket **10**, the retaining rib **34** of the edging is pulled into engagement with the upper groove **32** of the anchor clamp, and the lower portion of the edging is prevented from being pulled out of the lower groove **38** by the lower retaining rib **56** of the anchor clamp.

FIG. 6 shows how the edging **14** is secured to the edge of the rubber blanket **10**. The rubber blanket **10** comprises a heavy cotton backing **60** coated with rubber, and preferably comprises 3 or 4 plies of alternating layers of fabric and rubber, although only one ply is shown in the drawings for simplicity. The edging is preferably a channel of anodized extruded aluminum or steel, for example, and is generally U-shaped in cross section. One side **62** of the edging is thicker than the other side **64**, and the side **62** is thicker at its outer end forming the retaining rib **34** than at its end adjacent the interior bottom surface **66** of the blanket-receiving cavity of the edging. The interior bottom surface **66** of the cavity has a width at least that of the thickness of the edge of the blanket **10**.

The interior surface of the side **62** is provided with a plurality of pointed ridges **68** which are adapted to bite into, but not through, the fabric **60** to grip the blanket **10** securely. The interior surface of the side **62** is also formed with a plurality of recesses **70** and an outer groove **72** for purposes to be discussed hereinbelow. Similarly, the interior surface of the side **64** is provided with a plurality of pointed ridges **74** and recesses **76**, the ridges **74** being disposed out of register with the ridges **68**. Also, a sharp longitudinal ridge **78** extends inwardly at the outer edge of the side **64**.

In order to secure the edge of the blanket **10** to the edging **14**, the side **64** is first bent outwardly to the position shown in phantom at **64'** in FIG. 6. Then the interior surfaces of the sides **62** and **64** are coated with an adhesive or a cement **80**, and the cement is also applied to the fabric **60** along the edge of the blanket. The cemented edging is then slipped over the edge of the blanket **10**, so that the side **62** is adjacent the fabric **60**. The assembly is placed in a press and the side **64** is pressed to the position shown in full in FIG. 6, so that the outer surface of the side **64** is parallel with the outer surface of the side **62** and the interior surfaces of the two sides are also generally parallel.

The overflow groove **72** formed in the interior surface of the side **62** adjacent the outer edge thereof carries off any excess cement resulting when the side **64** is pressed to its final position, thereby preventing the cement from reaching the fabric **60** outside of the edging **14**. Similarly, the sharp longitudinal ridge **78** extending inwardly at the outer edge of the side **64** prevents the escape of any excess cement from the space between the side **64** and the adjacent surface of the blanket **10**. If cement were to harden on the fabric or the opposite side of the blanket outside of the edging, it might prevent the blanket from being laid evently across the teeth **36** and might result in unequal tension being applied along the blanket.

When the cement hardens, it not only bonds the blanket to the edging, but it also forms hardened cement projections which are received in the recesses **70** and **76**. Accordingly, the blanket **10** is gripped by the anchor clamp **16** directly by the teeth **36** thereof. In addition, the blanket is gripped by the edging **14** by means of the sharp ridges **68**, **74** and **78** which bite into the blanket, and because of the hardened cement projections bonded to the blanket which engage the recesses **70** and **76** of the edging. Additional gripping is provided by the cement bond between the interior surfaces of the sides **62** and **64** and the adjacent surfaces of the blanket.

Various substitutions, changes and modifications in the form and details of the apparatus illustrated may be made. For example, the upper abutting surface of the edging and the upper groove **32** of the anchor clamp could be formed in the sloped configuration disclosed in the above-mentioned Patent No. 3,296,673. Furthermore, the edging and anchoring apparatus of the present invention could also be used to secure flexible metallic printing plates used in planographic, gravure and flexographic processes, appropriate modifications being made in the interior side surfaces of the edging, if necessary, to provide a secure bond between the edging and the metallic plate.

I claim:

1. Apparatus for anchoring the edging on the edge of a printing blanket comprising:

a channel member having an opening through which the edging is adapted to be inserted and withdrawn, the channel member being formed with an upper groove and a lower groove, the upper groove being shaped to receive the upper abutting surface of the edging, and

means disposed in the lower groove for biasing the upper abutting surface of the edging into engagement with the upper groove.

2. Apparatus according to claim **1** wherein the biasing means includes at least one elastomeric element mounted in the lower groove.

3. Apparatus according to claim **1** wherein the channel member mounts means for positioning the edging longitudinally in the upper and lower grooves.

4. Apparatus according to claim **3** wherein the positioning means includes a registration pin disposed in and transversely of the lower groove, the registration pin being adapted to mate with a corresponding groove formed in the lower edge of the edging when the edging is in a predetermined longitudinal position in the lower groove of the channel member.

5. Apparatus according to claim 1 wherein a plurality of teeth project from the exterior upper surface of the channel member, the teeth being adapted to bite into but not through the printing blanket.

6. Apparatus according to claim 5 wherein the teeth include a plurality of spaced pointed ridges extending in substantially parallel relation with the upper groove of the channel member.

7. Apparatus according to claim 1 wherein the edging is generally U-shaped and has a plurality of pointed ridges projecting from at least one of the interior side surfaces thereof, the pointed ridges being adapted to bite into but not through the printing blanket.

8. Apparatus according to claim 7 wherein at least one recess is formed in at least one of the interior side surfaces, and a projection of hardened cement is bonded to the printing blanket surface and extends into the recess, whereby the pointed ridges of the edging grip the printing blanket and the cement projection bonded to the printing blanket engages the recess of the edging to anchor the edge of the printing blanket.

9. Apparatus for anchoring the edge of a printing blanket comprising:

a generally U-shaped edging having a plurality of pointed ridges projecting from at least one of the interior side surfaces thereof, the pointed ridges being adapted to bite into but not through the printing blanket, one of the sides of the edging having an upper abutting surface,

a channel member having an opening through which the edging is adapted to be inserted and withdrawn, the channel member being formed with an upper groove and a lower groove, the upper groove being shaped to receive the upper abutting surface of the edging,

means mounted on the channel member for positioning the edging longitudinally in the upper and lower grooves, and

means disposed in the lower groove for biasing the upper abutting surface of the edging into engagement with the upper groove.

10. Apparatus for anchoring the edging on the edge of a printing blanket comprising:

a channel member formed with an interior upper abutting surface and a lower groove, the interior upper abutting surface being shaped to receive the upper abutting surface of the edging, the lower groove being formed by a retaining rib, the retaining rib being spaced from the interior upper abutting surface forming portion of the channel member to define an opening through which the edging is adapted to be inserted and withdrawn, the retaining rib being disposed so as to retain the lower portion of the edging in the lower groove when the edging is inserted through the opening and the upper abutting surface of the edging engages the interior upper abutting surface of the channel member, and

means disposed in the lower groove for engaging the lower groove forming portion of the channel member and the lower edge of the edging to drive the upper abutting surface of the edging against the interior upper abutting surface of the channel member.

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ROBERT E. PULFREY, Primary Examiner

C. D. CROWDER, Assistant Examiner

U.S. Cl. X.R.

160—395, 398; 161—149