April 7, 1931. E. D. PUTT 1,799,620

FABRIC GUIDE FOR BIAS CUTTERS

Filed Nov. 11, 1926

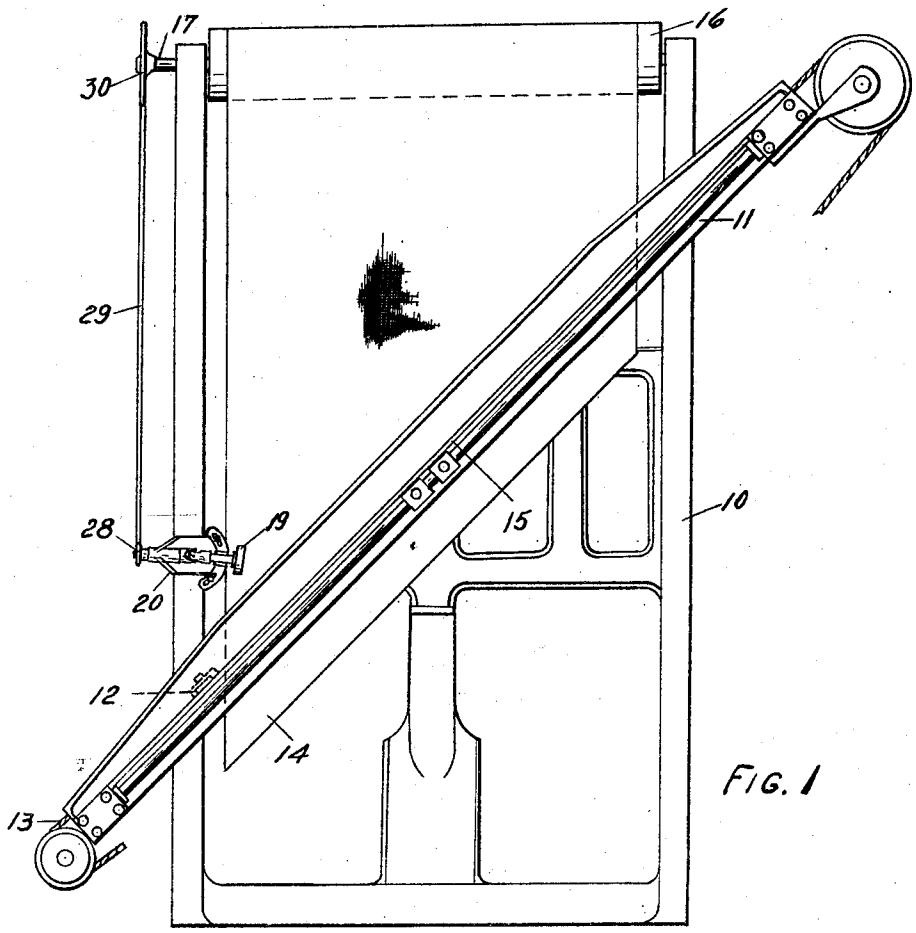


FIG. 1

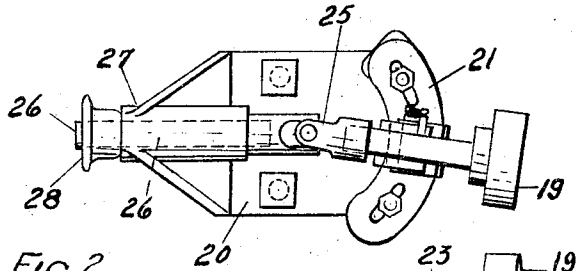


FIG. 2

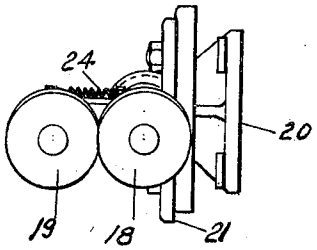


FIG. 4.

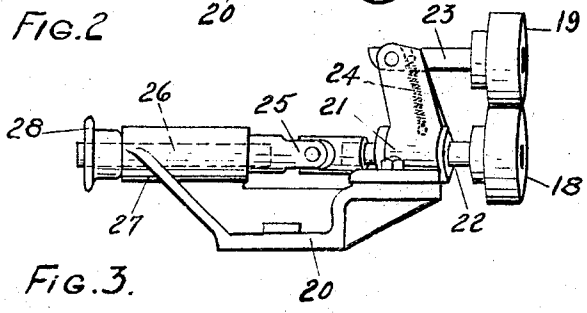


FIG. 3.

INVENTOR.
EDWARD D. PUTT.
BY Ely & Barrow
ATTORNEY.

Patented Apr. 7, 1931 1,799,620

UNITED STATES PATENT OFFICE

EDWARD D. PUTT, OF AKRON, OHIO, ASSIGNOR TO THE FIRESTONE TIRE AND RUBBER COMPANY, OF AKRON, OHIO, A CORPORATION OF OHIO

FABRIC GUIDE FOR BIAS CUTTERS

Application filed November 11, 1926. Serial No. 147,692.

This invention relates to machines for cutting fabric on the bias and particularly to devices for guiding the fabric into proper alignment while being fed into the machine and for gripping the fabric as the cutting knife passes therethrough to cut off a bias band.

In the manufacture of pneumatic automobile tires, one of the steps of preparing the fabric of which the tire casing is built, is the cutting of such fabric into bias bands. One machine which has been devised for this purpose is known as the vertical bias cutter. The cutting knife thereof is pulled along an angularly mounted track, the cutting edge of said knife passing through the fabric strip to be cut and is actuated in a direction laterally and upwardly. This motion of the knife tends to carry the fabric strip laterally so that a wedge-shaped portion of the fabric is added to the band. This must later be trimmed off and in a day's operation of the machine, amounts to a considerable quantity of waste. The purpose of this invention, therefore, is to provide means for preventing this action of the fabric and the elimination of the waste caused thereby.

One object is to provide driven rollers to grip the fabric and prevent the same from being carried laterally by the cutting knife. Another object is to guide the fabric into the cutting mechanism and provide means for compensating for any lateral shifting which may occur in the cutting of the fabric.

The foregoing and other objects are obtained by the device illustrated in the accompanying drawings and described below. It is to be understood that the invention is not limited to the specific form thereof disclosed herein.

Of the accompanying drawings:

Figure 1 is front elevation of a bias cutter illustrating the location of a guide mechanism embodying the invention;

Figure 2 is a detail side elevation of the guide mechanism;

Figure 3 is a plan thereof viewed from below; and

Figure 4 is an end view thereof.

Referring more particularly to the drawings, 10 represents the frame of a known type of vertical bias cutter. A diagonal support 11 attached to the frame is provided with a track for guiding a cutting knife 12 which is drawn along by a cable 13 to cut a bias strip or band from fabric 14. The fabric below the knife is clamped by a movable bar 15 mounted on support 11. Above the knife the fabric has been heretofore unsupported except by the feed roller 16 over which it passes, which feed roller is attached to a shaft 17 journaled on frame 10. The reciprocating knife 12, accordingly, has had a tendency to shift fabric 14 laterally, making an uneven cut and wasting material.

To obviate this faulty operation, a pair of rollers 18 and 19 tightly engaging the fabric therebetween are provided to guide and grip the fabric. A base 20 for supporting said rollers is attached to frame 10 and has mounted thereon a movable bracket 21 carrying the rollers and adapted to be swung through a slight angle downwardly for adjustably canting the same. Rollers 18 and 19 may thus rotate in a plane at a slight angle to the line of travel of the fabric in order to draw the latter laterally and compensate for the lateral shifting of the fabric in the opposite direction to that caused by the cutting knife. Bracket 21 has journaled therein a shaft 22 to which roller 18 is attached, and has pivoted thereto a stud shaft 23 upon which roller 19 is adapted to rotate. Roller 19 is forcibly urged against roller 18 by means of a spring 24 attached to shaft 23 and bracket 21, and can be swung back out of the way when a new sheet of fabric is being fed into the machine. Shaft 22 may be rotated when swung into any degree of angular adjustment, by means of a universal joint 25 attached to a shaft 26 journaled in a fixed bracket 27 projecting from base 20. Shaft 26 has keyed thereon a sprocket 28 which is rotated by means of chain 29 passing over sprocket 30 keyed to shaft 17.

In operation roller 18 is imparted an intermittent rotation by means of feed roller shaft 17 and with spring-pressed roller 19 guides the fabric downwardly and at the same time slightly laterally in a direction

opposite to the lateral shifting caused by the cutting knife. When the proper width of fabric has been fed past the knife support, the feeding is stopped and bar 15 and the rollers grip the fabric respectively below and above the line of cutting as the knife passes through the fabric.

An effective means is thus provided for properly guiding and gripping the fabric in a bias cutter, eliminating all waste caused by the cutting knife pulling the fabric out of line. Modifications of the above described invention may be resorted to without departing from the spirit thereof or the scope of the appended claims.

What is claimed is:

1. In combination with a bias cutter having a fabric feed roller and a reciprocable fabric cutting knife, a guiding mechanism comprising a driven roller and a spring pressed roller adapted to grip the fabric to be cut tightly therebetween for guiding the same, an angularly adjustable mounting for said rollers adapted to cant the latter, whereby the fabric may be drawn laterally, a universal joint for rotating said driven roller, and chain and sprocket driving means rotatably connecting the universal joint with the feed roller on said bias cutter.

2. In combination with a bias cutter having a reciprocable fabric cutting knife, rollers for gripping and guiding the fabric in proper alignment, means angularly adjusting said rollers for compensating for any lateral shifting of the fabric caused by the reciprocation of the knife therethrough, and means for rotating one of said rollers.

3. In fabric cutting apparatus of the kind described, a cutter operating upon said fabric diagonally thereof and tending to draw the same in a lateral direction, a guiding mechanism comprising a driven roller and a spring-pressed roller adapted to grip the fabric tightly therebetween for guiding the same, an angularly adjustable mounting for said rollers adapted to cant the latter, whereby the fabric may be drawn laterally to compensate for the lateral drawing tendency of the cutter.

4. In a bias cutting machine, a reciprocable cutter adapted to pass transversely from one edge through a fabric web fed through said machine, and a roller cooperating with the web during its advancing movement to deflect the web laterally to compensate for the deflection caused by the cutter.

5. In fabric cutting apparatus of the kind described, a cutter for said fabric tending to shift the same laterally during the cutting operation, rollers for gripping and guiding the fabric in proper alignment, means for angularly adjusting said rollers for compensating for any tendency toward lateral shifting of the fabric, and means for rotating one of said rollers.

6. In fabric cutting apparatus of the kind described a cutter for said fabric tending to shift the same laterally during the cutting operation, and means to grip and guide the fabric during its advancing movement for frictionally deflecting the same in the opposite direction from that of the cutter on its cutting stroke.

EDWARD D. PUTT.