Oct. 3, 1939. F. J. KOTZICH 2,174,585

CUTTER FOR QUADRUPLE STAYER

Filed Nov. 8, 1937

Fig. 1

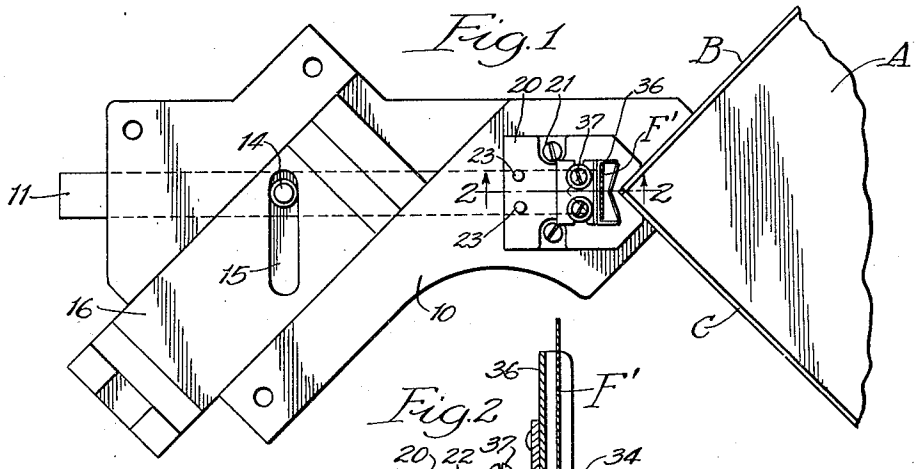


Fig. 2

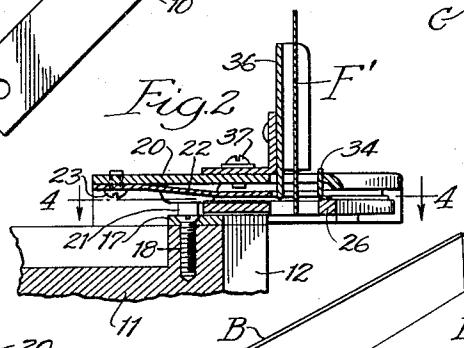


Fig. 3

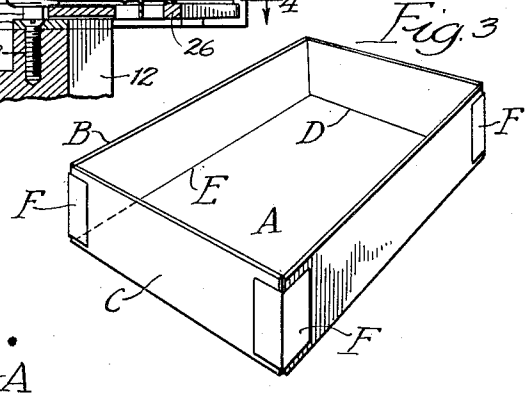


Fig. 4

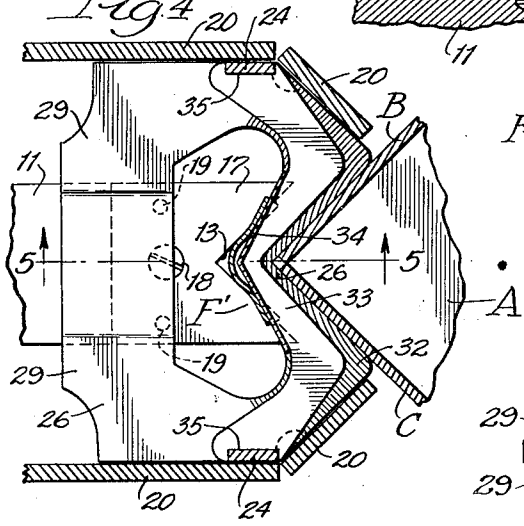


Fig. 5

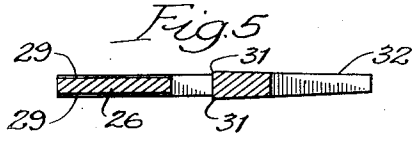
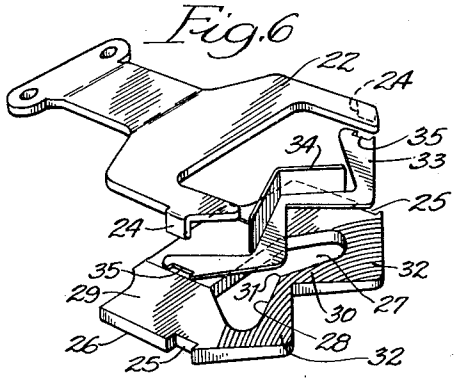


Fig. 6



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CUTTER FOR QUADRUPLE STAYER

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Application November 8, 1937, Serial No. 173,329

4 Claims. (Cl. 164—58)

An object of this invention is to provide an improved form of cutter for a machine for cutting and applying a stay consisting of a moistened gum strip to the meeting corners of a pasteboard box. Heretofore, these cutters have been made rigid so that they must be set with great accuracy by a trained operator, otherwise, if set too loosely, the gummed strip will not be properly severed and if too closely, the cutter and knife will strike and breakage will occur.

Another object is to provide such a cutter which can be quickly and easily applied to the stayer without the necessity for close and accurate adjustment by a skilled mechanic.

Another object is to provide a knife and cutter both of which can be revised so that each can give double service.

Still another object is to provide a cutter which is so mounted that it automatically aligns itself with respect to the knife carried by the corner plunger with which it engages.

These and other objects, as will hereinafter appear, are accomplished by this invention which is fully described in the following specification and shown in the accompanying drawing, in which—

Figure 1 is a top plan view of one corner of an automatic quadruple stayer to which it is attached;

Fig. 2 is a partial enlarged section on the line 2—2 of Fig. 1;

Fig. 3 is a perspective view of a box with the corner stays applied thereto;

Fig. 4 is a partial enlarged horizontal section on the line 4—4 of Fig. 2;

Fig. 5 is a partial section on the line 5—5 of Fig. 4; and

Fig. 6 is a perspective view showing the cutter, strip guide and spring for yieldably mounting the cutter within the housing.

The apparatus shown in Fig. 1 is mounted on a large machine (not shown), one of the devices being mounted at each of four corners of a paper box A having sides B and C which are bent about fold lines as D and E. The purpose of the apparatus is to apply to each corner of a box formed thereby a gummed paper stay F which is gummed on the inner surface and moistened, and after being severed, is pressed against the sides of the box to render it self-supporting as shown in Fig. 3.

The apparatus consists of a bearing block 10, one of which is supported on the staying machine at each of the four corners of the box A to be formed, the rest of the machine being omitted as it forms no part of the present invention. A plunger 11 is slidably mounted in the block 10 and terminates in a V-shaped presser block 12, the sides of which stand at an angle of 90°. The plunger has an upwardly extending pin 14 which is adapted to engage a slot 15 in a reciprocating member 16 which is guided in a groove in the block 10. The member 16 is connected to the operating mechanism of the machine by means not shown, and, as the member 16 slides back and forth, causes the plunger 11 to reciprocate toward and from the box A. At the forward end of the plunger 11 is a knife 17 which is secured to the plunger by means of a counter-sunk screw 18 and suitable dowel pins 19.

Above the plunger is mounted a housing 20, preferably made of pressed sheet metal, the same being secured to the top of the bearing block 10 by means of two screws 21.

This housing carries on its under surface a spring 22 which is secured to the housing by means of two screws 23. The outer end of the spring 22 has two downwardly extending ears 24 which are adapted to lie in slots 25 in a hardened steel cutter 26. This cutter is made symmetrical so that it can be reversed. The same is true of the knife 17 with which it cooperates to form a shear. Thus by reversing either the knife 17 or the cutter 26, the life of these shearing members is doubled.

A kidney-shaped opening 27 provides a cutting edge 28 which is adapted to cooperate with the cutting edge of the knife 17, the cutting edges 28, however, being considerably wider than 90° so that as the knife advances, as shown in Fig. 4, cutting starts at the outer edges of the gummed strip and proceeds toward the center.

The side portions 29 are ground flat to bear upon the knife 17 while the shaded forward portion 30 is ground preferably on a circular grinder so that the central portion 31 is higher than the points 32 and preferably slightly higher than the flat portion 29. At the same time, the forward ends of the knife 17 are made slightly thinner at the points so as to insure the cutter riding up over the ends of the knife and also insuring that the shearing surfaces are always in contact with each other thereby providing a distinct shearing action since the cutter is held in contact with the knife by means of the spring 22.

Between the spring and the cutter I have placed a brass guide plate 33 which has an upwardly extending apron 34 lying closely inside the cutting edge 28. This is provided with notches 35 which engage the ears 24. The plate 33 also acts as a

pivot about which the cutter 26 may move so as to insure its proper contact with the knife 17.

An adjustable guide 36 is secured to the top of the housing by means of screws 37. It will be understood that a strip of gummed paper F', Fig. 2, is fed from a suitable roll on the machine through the guide 36 to each of the cutters and that following each cutting operation the strip is advanced a distance equal to the desired length of the stay F, Fig. 3. On the next cutting operation, which is proceeded with, as shown in Fig. 4, the stay is caught by the presser block 12 as it is severed and forced forward against the sides B and C, thereby causing the stay to adhere to the sides to form a corner, the gummed strip having previously been moistened.

From the foregoing it will be understood that this cutter is yieldably held in contact with the knife 17 over which it rides and that the knife and cutter are so formed and mounted that while they are always yieldably in contact they will always ride over each other so that neither can get caught on the other. It will also be apparent that because of this yieldable connection, no close adjustment of the cutter with respect to the knife is required as in the cutter now commonly used on these machines since the old cutter was rigidly mounted with respect to the block 10. The apron 34 lies inside the cutting edge and causes the paper to spring back after each cut and also prevents the paper from getting between the cutter and housing. By my arrangement, a clean cut of the stay is always assured.

This cutter requires no close adjustment and any mechanic can assemble it on the machine by the simple process of inserting the two screws 21.

I claim:

1. A box corner stayer comprising a cutter frame, a cutter housing secured thereto, a plunger slidable in the frame and carrying a V-shaped knife, a cutter, a spring secured in the housing having downturned ears by means of which it engages the cutter so that the cutter is yieldably held in contact with the knife, and means for guiding a strip of gummed paper through the cutter housing and cutter.

2. A box corner stayer comprising a cutter frame, a cutter housing secured thereto, a plunger slidable in the frame and carrying a V-shaped knife, a cutter, a spring secured in the housing having downturned ears by means of which it engages the cutter so that the cutter is yieldably held in contact with the knife, and a guide for a strip of gummed paper carried between the cutter and spring.

3. A box corner stayer comprising a cutter frame, a cutter housing secured thereto, a plunger slidable in the frame and carrying a V-shaped knife, a cutter, a spring secured in the housing having downturned ears by means of which it engages the cutter so that the cutter is yieldably held in contact with the knife, and a guide for a strip of gummed paper carried between the cutter and spring, said guide having an upwardly extending apron, the inner faces of which are substantially coincident with the cutting edges of the cutter.

4. A box corner stayer comprising a cutter frame, a cutter housing secured thereto, a plunger slidable in the frame and carrying a V-shaped knife, a cutter, a spring secured in the housing having downturned ears by means of which it engages the cutter, and a guide for a strip of gummed paper carried between the cutter and spring, the cutter being balanced to rock about the guide to enable the cutter to adjust itself to the knife.

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