

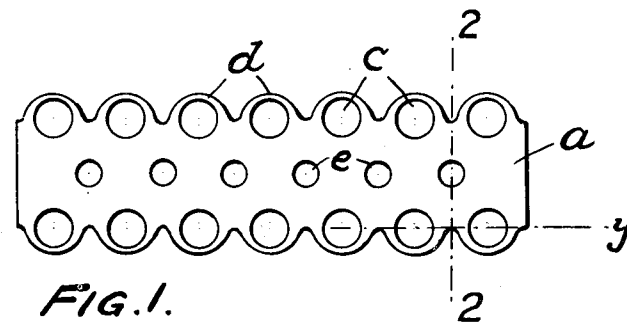
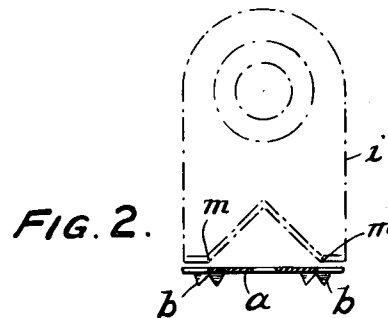
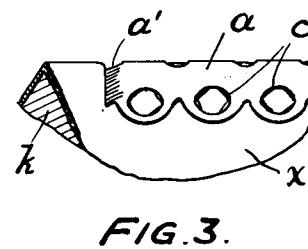
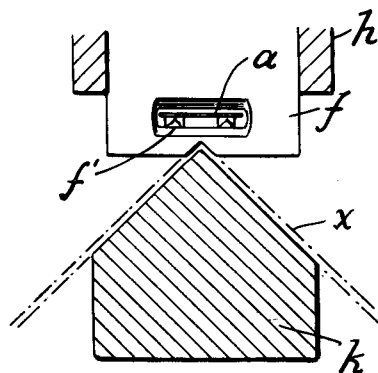
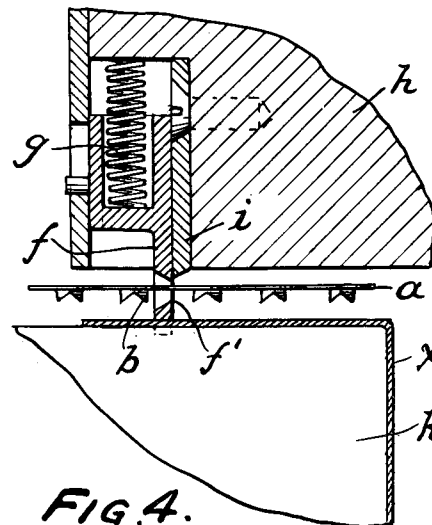
July 18, 1933.

W. D. STANGER

1,918,992

METAL BOX STAYING STRIP

Filed Sept. 30, 1930



WITNESS:

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METAL BOX STAYING STRIP

Application filed September 30, 1930. Serial No. 485,399.

My invention is an improvement on the ordinary metal stay for joining the meeting edges of a box of pasteboard or other similar material.

It is customary to feed to a box staying machine a continuous flat strip of metal which has formed along its edges spaced-apart holes around which the metal has been upset to form prongs. The machine cuts off a suitable length of strip to form a stay, along a transverse line about midway between two adjacent pairs of opposing holes, bends the strip into a shape suitable for application to the box, and clinches the prongs in the walls of a box which the operator has placed into the machine. The cutting is always done by the only practical knife in general use to cut and crimp, which is a shearing blade having a V-shaped notch therein, which notch has sharpened sides and cooperates with a straight ledger blade to sever the strip. Because of the shape of the cutting blade the outer portions of the strip are cut first and the cut proceeds inwardly, the vertex of the notch accomplishing the last part of the cutting at a point intermediate the longitudinal edges of the strip. In the final shearing and bending operation the extremity of the severed strip is bent at an angle to the plane of the strip and forced into the material of the box in order that no raw edge shall be exposed, with the object of eliminating the danger of scratching the hand of the user of the completed box, and the prongs are forced into the box material.

Heretofore an incidental effect of the cutting, bending and clinching operation described is to distort and damage, not merely usually, but practically invariably, one or both, usually both, of the sets of prongs adjacent the severed and bent-in end. These prongs, therefore, cease to effectively perform their securing function. It is well recognized that the only part of the length of the strip that is insecurely held is that part adjacent the severed end. Obviously this is just the part of the length of the strip which it is most important to hold securely.

Another objection arises from the fact that

the length of the transverse line of severance is greater than the distance between the corners at the outer ends of the V-blade, so that those corners engage the metal of the strip within its opposite longitudinal edges and such edge portions are, therefore, not subjected to a clean shearing action. It is not practicable to avoid this by changing the shape of the knife, since the V must be of the shape required to form the proper angle.

One object of the invention is to so modify the construction of the old metal strip or stay that the two holes and accompanying sets of prongs adjacent the severed transverse edge will not be damaged or distorted in the cutting operation and will perform their intended holding function in the same way and with the same certainty as the other sets of prongs. Another object of the invention is to so form the strip that it will be subjected, entirely along its line of severance, to a clean or true shearing action, thereby not only avoiding mutilation of the strip adjacent its end corners, but also prolonging the life of the shearing blade.

In order to fully explain my invention, it is necessary to illustrate, in addition to the improved stay, the part of the machine that performs the customary operations above described.

Fig. 1 is a plan view of the flat strip before it is bent into an angular stay.

Fig. 2 is an edge view of the strip on the line 2—2 of Fig. 1 together with an end view of the die.

Fig. 3 is a fragmentary view of the end of the strip after the cutting and securing operation.

Fig. 4 is an elevation, partly sectional, of the die carrying the cutting blade and the ledger blade and a side edge view of the metal strip, associated with the anvil between which and the die and strip the adjacent walls of the box are confined at the conclusion of the operation.

Fig. 5 is an end view of a portion of Fig. 4.

The metal strip *a* is inserted through an orifice in the ledger blade *f*, which is vertically slidable in the die *h* and is normally held in the position shown in Fig. 4 by means

of a spring *g*. The die *h* and anvil *k* have complementary V-shaped faces. When the adjacent box walls *x* and the strip *a* are positioned as shown in Fig. 5, the downward movement of the die *h* carries with it the shearing blade *i*, which, by its cooperation with the edge *f'* of the ledger blade, severs the strip on a transverse line. In the same downward movement of the die the strip is bent into a V-shape conforming to the opposing faces of the die and anvil, the prongs *b* are forced into the box material, and the extremity of the strip adjacent the transverse severed edge is bent down and forced into the box material, as shown at *a'* in Fig. 3.

The strip *a* is provided, as shown in Fig. 1 with holes *c* adjacent its edges, the prongs *b* being formed by upsetting the metal in the hole-punching operation. A strip of the prior art is shown in the Escobales Patent No. 1,703,522, issued February 26, 1929. In such strips the end holes and prongs adjacent the bent-in severed end are so distorted and damaged that their securing function is impaired or destroyed.

In my improved strip adjacent holes *c* along each longitudinal edge are spaced apart a distance approximating the diameter of a hole. As in the old strip, each longitudinal edge comprises a series of arcuate (approximately semi-circular) scallops *d* corresponding to, and approximately concentric with, the respective holes, but the indentations between scallops, instead of extending inward to a line tangential, or nearly so, to the outer edges of the holes, as in the old strip, extend inward to a line *y* approximately passing through the centers of the holes.

By so modifying the old strip it is found that in the staying operation hereinbefore described, when the strip is cut transversely along a line about midway between two adjacent pairs of holes *c* (for example, the line 2—2 of Fig. 1) the two sets of prongs *b* adjacent to the severed edge are not damaged by the shearing and bending-in operations and perform the described securing function to the same degree that it is performed by the other sets of prongs.

It is also of importance that the described modification of the old strip affords a shorter transverse shearing line so that, in the described operation of the shearing blade, the corners in Fig. 2 at the outer ends of the V-blade are outside the longitudinal edges of the strip, which is thus subjected, entirely across its severed end, to a true and clean shearing action, thereby prolonging the life of the shearing blade as well as avoiding mutilation of the strip adjacent its end corners.

The central series of holes *e* have the advantages set forth in the above mentioned Patent No. 1,703,522, but they are no part of the present invention and may be omitted.

The depth of the scallops should not be substantially less than that described, but the depth may be greater than that described without departing from the invention. The approximate depth described, however, is preferred in order that the strength of the strip and the securing function of the prongs may not be impaired.

Having now fully described my invention, what I claim and desire to protect by Letters Patent is:

A metallic strip for staying boxes having near its longitudinal edges substantially straight rows of holes and prongs extending from the peripheries of the holes, the holes of one row being respectively opposite the holes of the other row, the edges being scalloped approximately concentric to the holes, the indentations formed by the scallops extending inward to a longitudinal line which is approximately not less distant than the centers of the holes from lines tangential to the crests of the scallops, whereby the strip may be transversely severed between adjacent pairs of opposing holes, bent along its longitudinal center line against adjacent box walls and the extremity of the severed strip bent into engagement with the box material without mutilating the end corners of the severed strip or impairing the securing function of the adjacent prongs, and prolonging the life of the shearing blade.

WILLIAM D. STANGER.