May 13, 1958 E. E. CRIST 2,834,265

APPARATUS FOR FOLDING CORRUGATED CARDBOARD SHIELDS FOR PACKING CASES

Filed Nov. 4, 1955 2 Sheets-Sheet 1

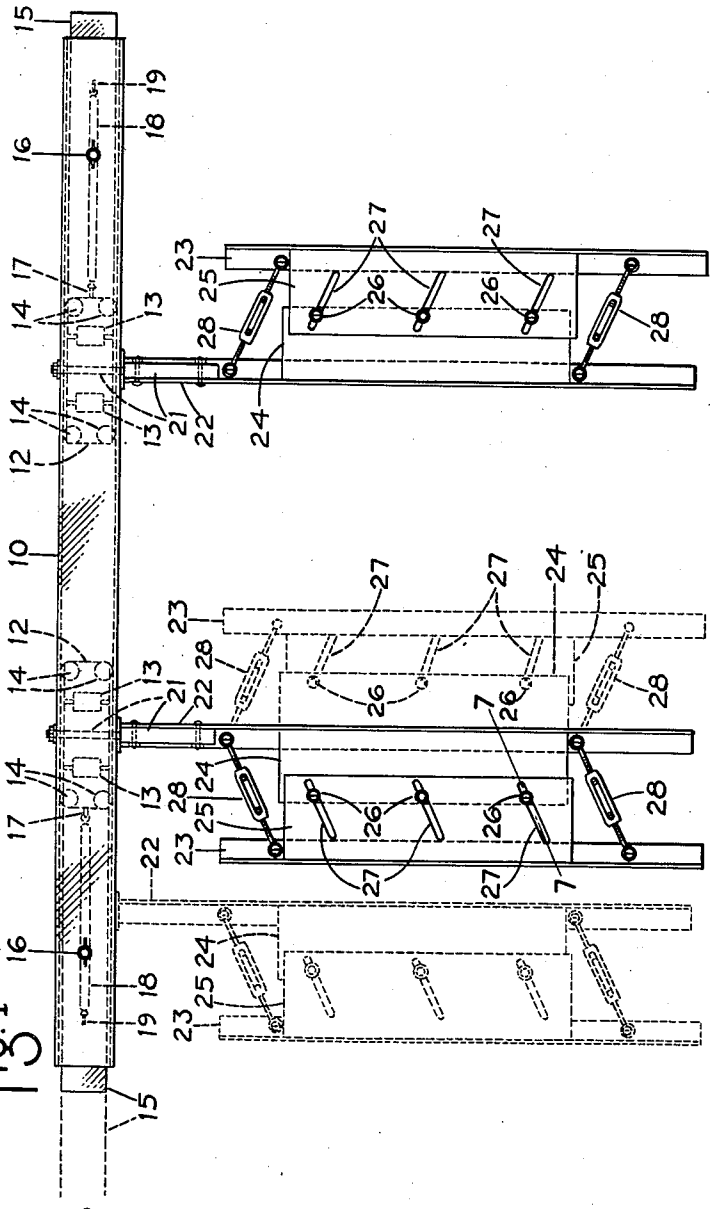


Fig. 1

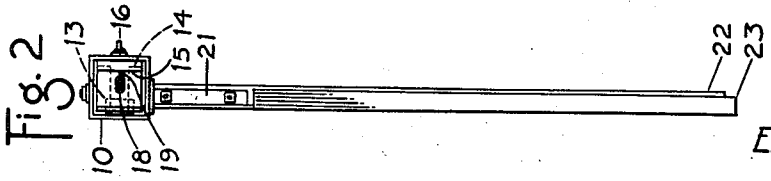


Fig. 2

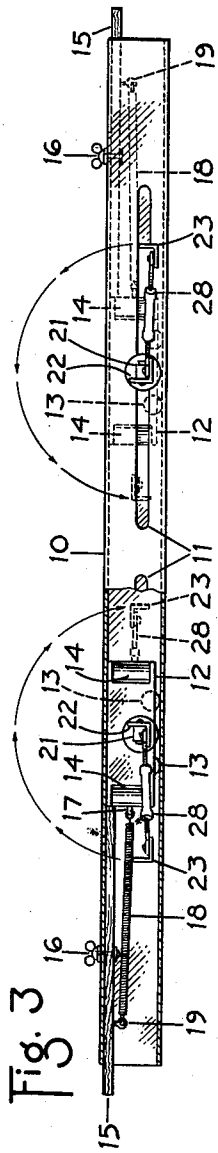


Fig. 3

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Fig. 5

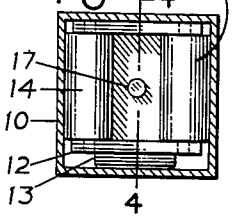


Fig. 4

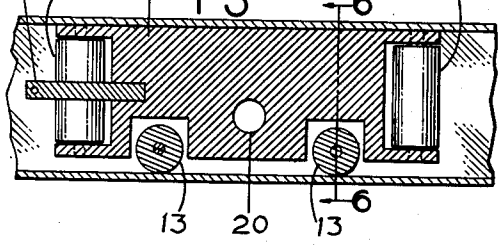


Fig. 6

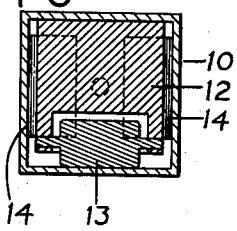


Fig. 7

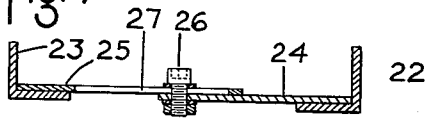


Fig. 8

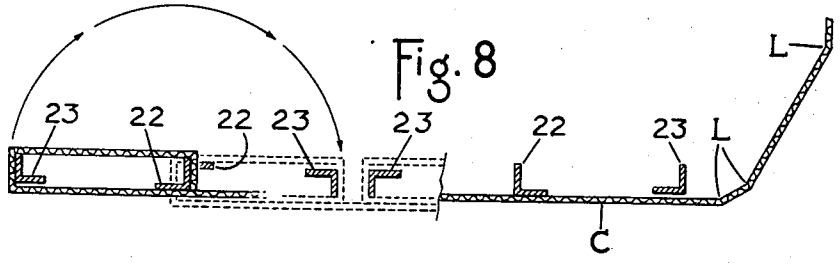


Fig. 9



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APPARATUS FOR FOLDING CORRUGATED CARDBOARD SHIELDS FOR PACKING CASES

Earl E. Crist, Decatur, Ill.

Application November 4, 1955, Serial No. 544,883

4 Claims. (Cl. 93—84)

This invention relates to apparatus for folding corrugated cardboard shields for packing cases.

The invention is more particularly concerned with apparatus for folding pre-scored sheets of cardboard in the provision of shields for use in packing cases.

The invention is particularly characterized in relatively simple apparatus adapted to be used on a work bench or other suitable support, and which is readily adjustable for different size shields as well as for different size folds.

A further feature of the invention is the provision of apparatus for folding scored sheets of cardboard and wherein the apparatus includes a pair of members rotatable about adjustable axes and wherein the opposite ends of a sheet of scored cardboard are initially folded about said members, after which the members are rotated about their axes in the completion of the folding operation.

Other features and advantages of the invention will become apparent in the course of the following detailed description, taken in connection with the accompanying drawings, wherein:

Fig. 1 is a top plan view of the folding apparatus in accordance with a preferred structural embodiment thereof.

Fig. 2 is an end elevational view as observed from the left side of Fig. 1.

Fig. 3 is a front elevational view of the apparatus with the left hand portion thereof broken away for observation of certain interior elements.

Fig. 4 is a fragmentary vertical sectional view as observed in the plane of line 4—4 on Fig. 5.

Fig. 5 is an end view of one of the movable bearing blocks with the supporting casing shown in section.

Fig. 6 is a vertical sectional view as observed in the plane of line 6—6 on Fig. 4.

Fig. 7 is a vertical sectional view as observed in the plane of line 7—7 on Fig. 1.

Fig. 8 is a more or less diagrammatic vertical sectional view showing successive steps in the folding of a sheet of cardboard by the improved apparatus.

Fig. 9 is an edge elevational view of a completed shield.

Referring now in detail to the drawing, the improved apparatus comprises an elongated casing **10** which is rectangular in cross section and whose forward vertical side wall is provided with a pair of relatively widely spaced elongated and horizontally aligned slots **11**.

Disposed within the casing **10** are a pair of bearing blocks **12** each of which is provided with a pair of horizontal axis rollers **13** which contact the bottom wall of the casing and a pair of vertical axis rollers **14** at each end thereof and which contact the opposite vertical side walls of the casing, the said rollers **13** and **14** providing for easy longitudinal movement of the bearing blocks lengthwise of the casing.

A longitudinally slotted stop bar **15** is supported immediately beneath the top wall of the casing at each end thereof for longitudinal adjustment by means of a wing nut bolt **16** which extends through said wall and the slot in the bar.

Each bearing block **12** is provided with a longitudinal pin **17** projecting from its outer end and an elongated coil spring **18** has one end thereof secured to the pin and the opposite end thereof secured to the respective stop bar, as by means of an eye member **19**, the spring yieldingly drawing the respective bearing block into contact with the inner end of the respective stop bar **15**.

From the above, it will be apparent that the two bearing blocks **12** are maintained in engagement with the stop bars **15** in any longitudinal position thereof. Each block **12** is provided with a transverse aperture **20** in which is rotatably supported the inner end of a spindle **21** extending through a slot **11** and whose outer end is connected to an end of an angle bar **22** which extends from and at right angles to the casing **10**.

Each of the two angle bars **22** constitute one side of a folding assembly whose opposite side comprises a second angle bar **23** of less length than angle bar **22**. An elongated rectangular plate **24** has one edge thereof rigidly secured to each angle bar **22** and a second similar plate **25** has one edge thereof secured to each angle bar **23** and the adjacent edges of the plates are disposed in overlapping relation. The plates **24** are provided with a plurality of socket head bolts **26** adjacent their free edges and which bolts extend through elongated slots **27** in the plates **25**. The slot and bolt structure provides for lateral expansion of each folding assembly for variation of the widths of the folds in a sheet of cardboard.

Furthermore, the slots **27** are disposed obliquely to the bars **22** and **23** thereby making provision for the folding of different widths of sheet cardboard.

In order to stabilize the folding assemblies and prevent maladjustment thereof, each assembly is provided with a pair of turn-buckles **28**, one adjacent each of the opposite ends of plates **24** and **25** and which turnbuckles have their opposite ends secured to the angle bars **22** and **23**.

In Fig. 8 is illustrated the operation of the apparatus in the folding of a sheet of corrugated cardboard C which is provided with spaced parallel fold defining score lines L.

With the folding assemblies disposed in such laterally spaced relation as to provide desired width folds, the assemblies are disposed on a sheet of cardboard adjacent opposite ends thereof and the end portions of the sheet outwardly of the assembly are folded over same, as indicated at the left in Fig. 8, and thereafter the two assemblies are rotated about the axes of spindles **21**, as indicated by the arrows, with a resulting folded shields, as indicated in Fig. 9 and which may be readily withdrawn from the assemblies in a direction outwardly of the casing **10**.

The springs **19** hold the bearing blocks **12** against the stop bars **15** with a resulting predetermined spacing of the folding assemblies.

Such assemblies may however be disposed at other positions, as is indicated by dotted lines to the left in Fig. 1, by corresponding adjustment of the stop bars **15**.

Fig. 1 also discloses the left hand folding assembly in its rotated folding position in dotted lines.

Having set forth my invention in accordance with a preferred structural embodiment thereof, what I claim and desire to secure by U. S. Letters Patent is:

1. An apparatus for folding sheets of cardboard comprising an elongated casing, said casing being rectangular in cross section and being provided with a pair of aligned slots, a pair of folding assemblies projecting from said casing through said slots in spaced parallel relation, a pair of bearing blocks disposed within the casing, means for adjusting said blocks lengthwise of the casing, said foldable assemblies being rotatably supported by spindles projecting in each of said blocks, said block adjusting means comprising a stop bar adjustably supported within said casing adjacent each end thereof, and a spring interconnecting each bearing block and stop bar whereby the bear-

ing blocks engage the stop bars in any adjusted position thereof.

2. The structure according to claim 1, wherein each of said folding assemblies further include an elongated angle bar having one end thereof rigidly secured to a spindle, a second angle bar disposed in parallel relation to said first angle bar, a pair of elongated rectangular plates having opposed edges thereof secured to said angle bars and having their adjacent free edges in overlapping relation, and adjustable means supported by said plates for varying the spacing of said angle bars.

3. The structure according to claim 2, wherein said adjustable means comprise a plurality of elongated slots in one of said plates disposed at an angle to the length thereof, and a plurality of socket head bolts supported by the other plate and extending through said slots.

4. The structure according to claim 1, wherein said blocks are provided with rollers engaging the bottom and opposite side walls of said casing for facilitating movement of the blocks in said casing.

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