

No. 858,172.

PATENTED JUNE 25, 1907.

J. GODFREY.

DIES FOR FORMING BOXES FROM PASTEBOARD.

APPLICATION FILED APR. 10, 1906.

Fig. 1.

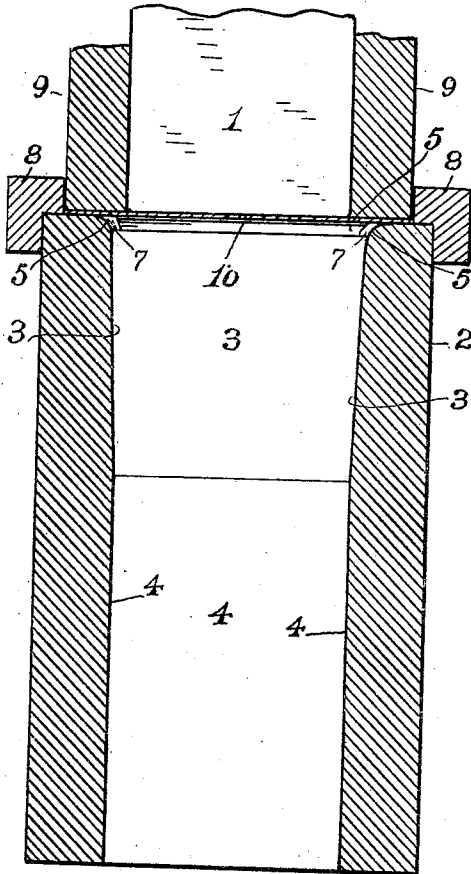


Fig. 2.

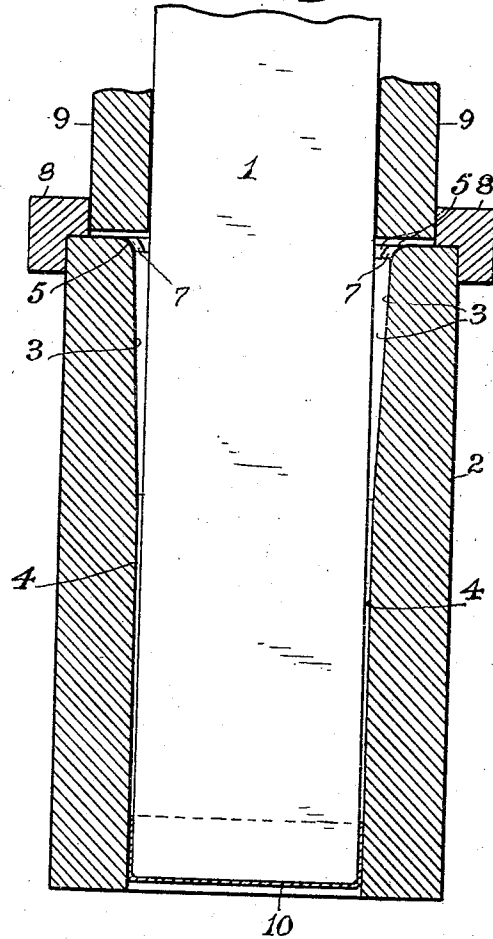


Fig. 3.

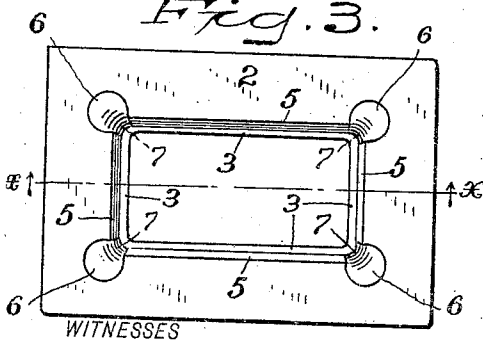
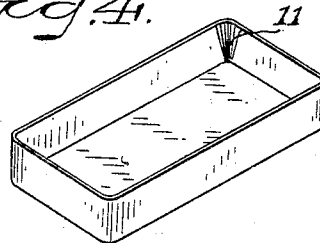


Fig. 4.



WITNESSES  
H. H. Lamb.  
M. J. Longden

INVENTOR  
J. Godfrey

BY: *J. M. Smith*  
ATTORNEY

# UNITED STATES PATENT OFFICE.

JONATHAN GODFREY, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE COMPRESSED PAPER BOX COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT.

## DIES FOR FORMING BOXES FROM PASTEBOARD.

No. 858,172.

Specification of Letters Patent.

Patented June 25, 1907.

Application filed April 10, 1906. Serial No. 310,978.

*To all whom it may concern:*

Be it known that I, JONATHAN GODFREY, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Dies for Forming Round - Cornered Rectangular-Shaped Boxes from Pasteboard; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to dies for forming round cornered rectangular shaped boxes from pasteboard, and consists in certain details of construction and arrangement of parts hereinafter fully described and then specifically pointed out in the claims which conclude this application.

The object of my invention is to so dispose of the surplus stock at the corners of the boxes that there can be no mutilation of the stock, while at the same time the corner portions of the completed boxes will be firm and will have a finished effect equal to that of the side portions.

In the accompanying drawing Figures 1 and 2 are sections at the line *x, x*, of Fig. 3, showing respectively the normal position of the parts and the position of such parts after a box has been formed—Fig. 3 a plan view of the female die, and Fig. 4 a perspective view of a completed box.

Similar numbers of reference denote like parts in the several figures of the drawings.

Heretofore it has only been practicable to draw up very shallow boxes from a single pasteboard blank, owing to the fact that the surplus stock could not be properly disposed of at the corners of the boxes. No matter how the pasteboard stock be treated, all attempts to form up boxes of a depth of three-quarters of an inch and over by the process and appliances heretofore practiced and used have resulted, in failure to bring about the result aimed at, and the surplus stock at the corners of the boxes was invariably torn out bodily by the action of the forming dies. I have succeeded, after many years of experimenting, in so constructing a set of forming dies, that they will uniformly produce, from

an integral blank of pasteboard, boxes wherein the surplus stock at the corners will be evenly disposed of in regular folds or plaits without mutilating the stock in the slightest degree, while at the same time the finish of the corners is equal to that of the sides of the boxes. The nature of my invention and the manner in which it may be practiced will be readily understood from the description thereof in which reference will be made to the drawings which I have already described.

1 is the male die and 2 the female die, the latter being stationary while the former is actuated in any suitable and ordinary manner.

The upper inside portion of the female die is flared as seen at 3 from the mouth down to the lower or straight portion 4, and the edges of said mouth are preferably rounded as shown at 5. The corner portions of said mouth are cut away and enlarged so as to form concave recesses 6 which are preferably of a circular shape and are chamfered or beveled as shown at 7.

Around the upper end of the die 2 is the usual keeper ring 8 which forms the chamber for the pasteboard blanks so that the latter may be rapidly deposited upon said die without danger of displacement. Around the male die 1 is a presser ring 9 through which said die moves freely which ring fits snugly the chamber formed by the ring 8.

The die 1 and ring 9 are operated by means of the usual power press, but it is not deemed necessary to show or describe any of the elements of such press since they are very ordinary.

The operation whereby pasteboard boxes are made by practicing my invention is as follows:—A pasteboard blank 10 is placed upon the die 2 within the chamber formed by the ring 8; the presser ring 9 now descends and pinches the blank around the edges, and finally the die 1 is operated to draw up the blank into box form. As the die 1 commences to form the box the stock will be drawn from beneath the ring 9, which latter only exerts a limited pressure, and the stock at the corners will be drawn into the recesses 6 and will be gradually forced up into folds or plaits; as the die 1 continues to descend the flaring portion 3 will cause the box to be

gradually conformed to said die so that there can be no breaking or irregular mashing of the stock such as would occur should it be essayed to strike up the box by a quick short stroke operation after the manner exemplified in the cupping up of sheet metal. After the partially formed box has been forced into the straight portion 4 said box will thereby be completed and the continued movement of the die 1 will cause said box to be firmly compressed and ironed against said die so that the shape of the box will be permanent, and when said die has carried the box out of the female die 2 the box will be stripped and the die 1 elevated to normal position.

The disposition of the stock at the corners of the box in the form of folds or plaits is shown at Fig. 4 in the instance of one of the corners, said plaits or folds being designated by the numeral 11.

I prefer to form cutting edges at the inside of the ring 8 and the outside of the ring 9 so that the pasteboard may be fed between these rings in the form of a strip and the blanks cut therefrom and deposited on the female die.

The exact shape of the recesses 6 is not material although I get the best results from the circular form and prefer to use this construction.

When very thin and pliable stock is used it is not absolutely necessary that the presser ring 9 should be employed and therefore I do not wish to be limited to the use of the same.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

In an apparatus of the type set forth, a female die composed of a long straight lower portion whose walls conform in shape to the shape of the completed box and which provide ironing surfaces, a long gradually flaring upper portion merging into said straight portion, the mouth of said upper portion being rounded and being formed at each of its corners with substantially circular recesses which gradually taper and merge into said mouth, a stationary keeper ring on said female die forming a chamber for the blank, a presser ring for operation into and out of said chamber, and a male die for operation in said presser ring.

In testimony whereof I affix my signature in presence of two witnesses.

JONATHAN GODFREY.

Witnesses:

F. W. SMITH, Jr.,  
M. T. LONGDEN.