

No. 742,383.

PATENTED OCT. 27, 1903.

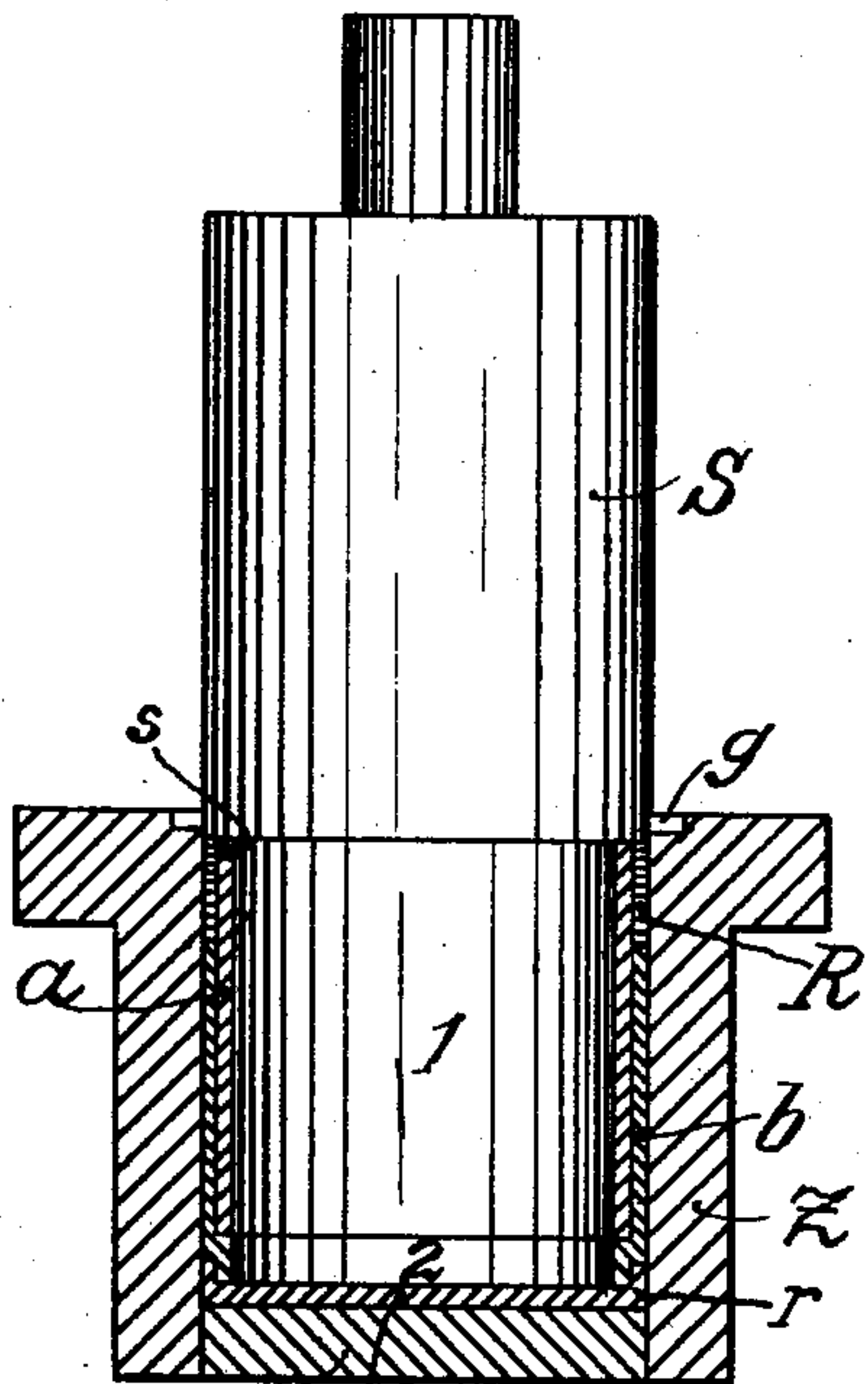
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APPARATUS FOR THE MANUFACTURE OF CARDBOARD BOXES.

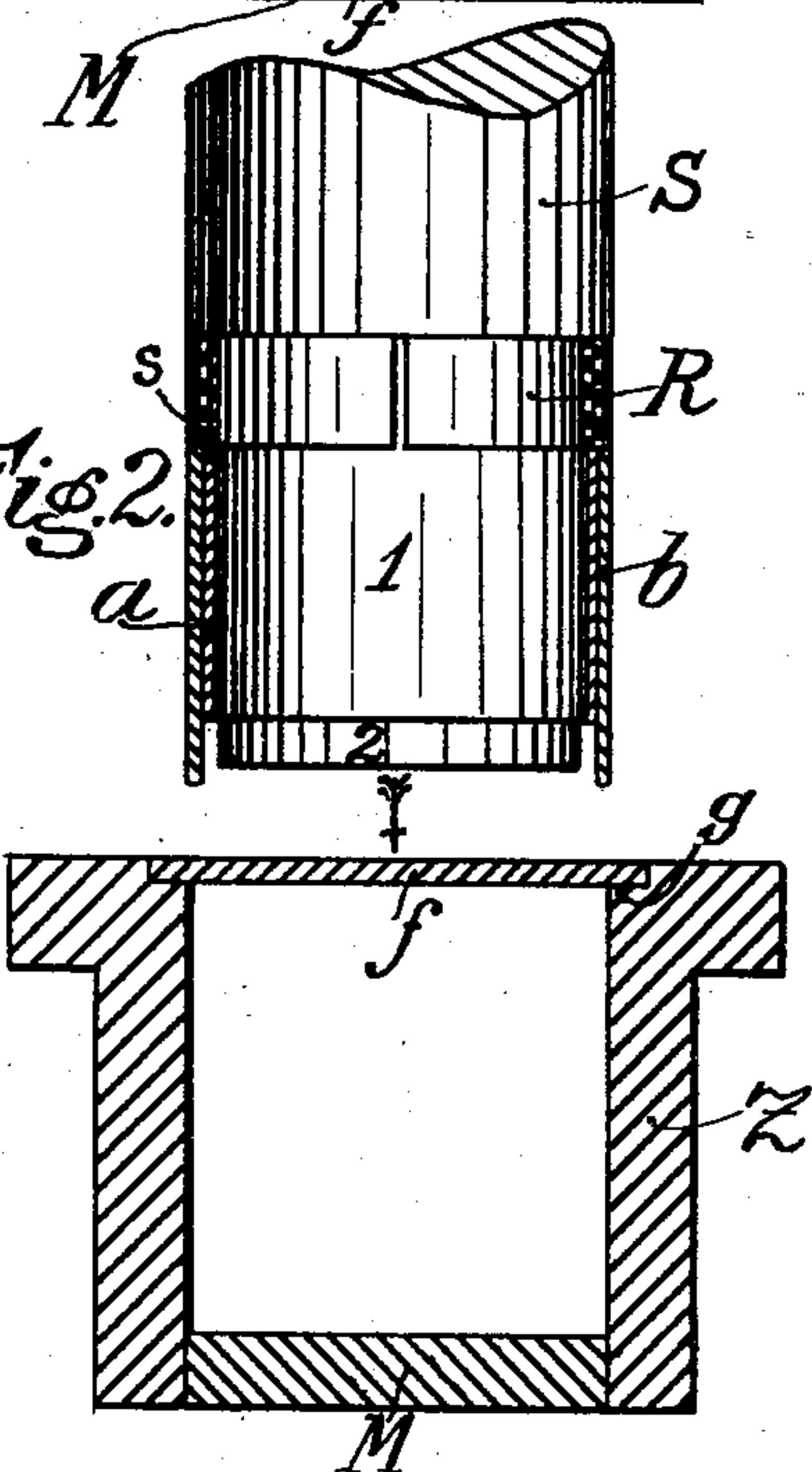
APPLICATION FILED JAN. 10, 1902.

NO MODEL.

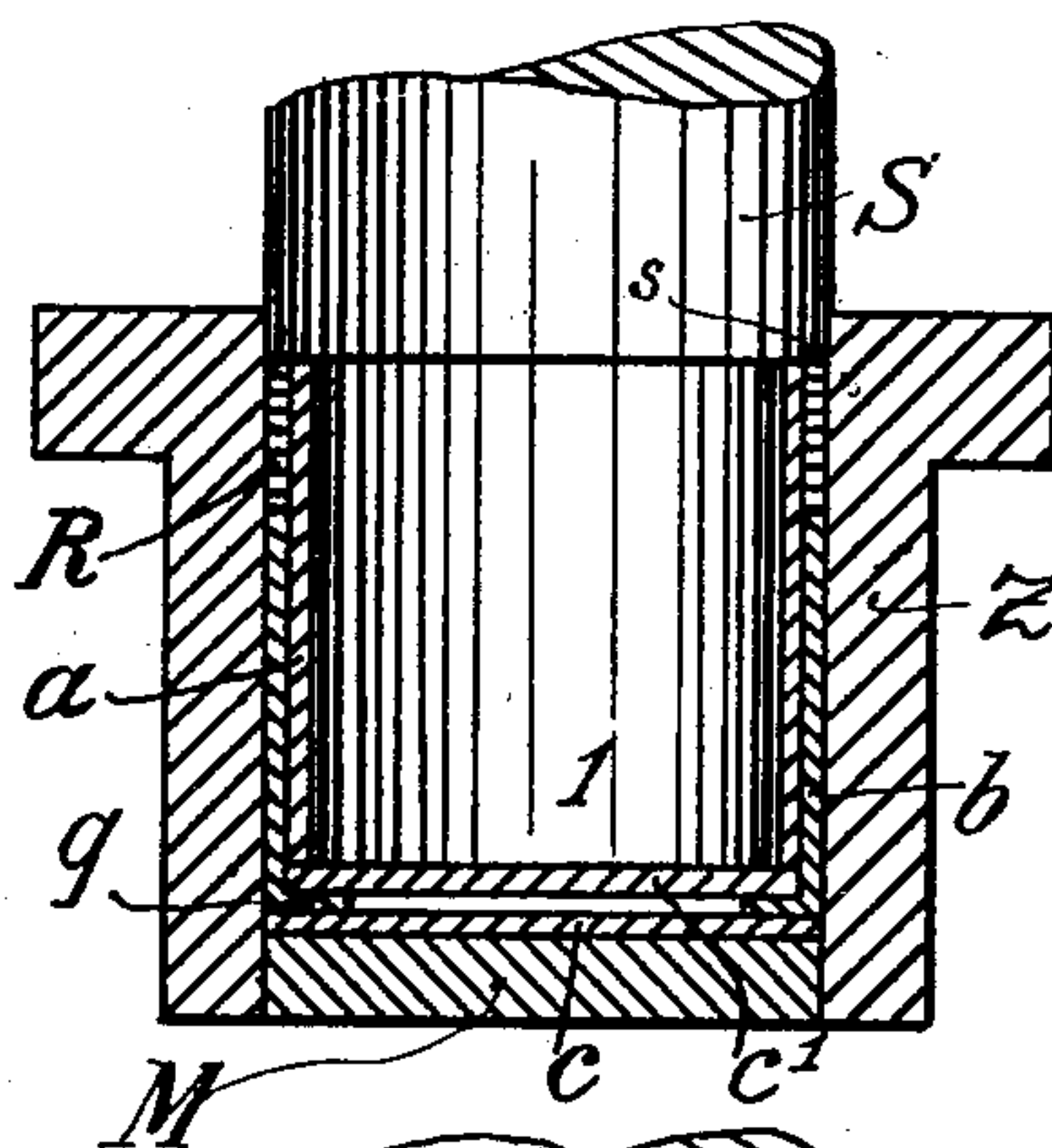
*Fig. 1.*



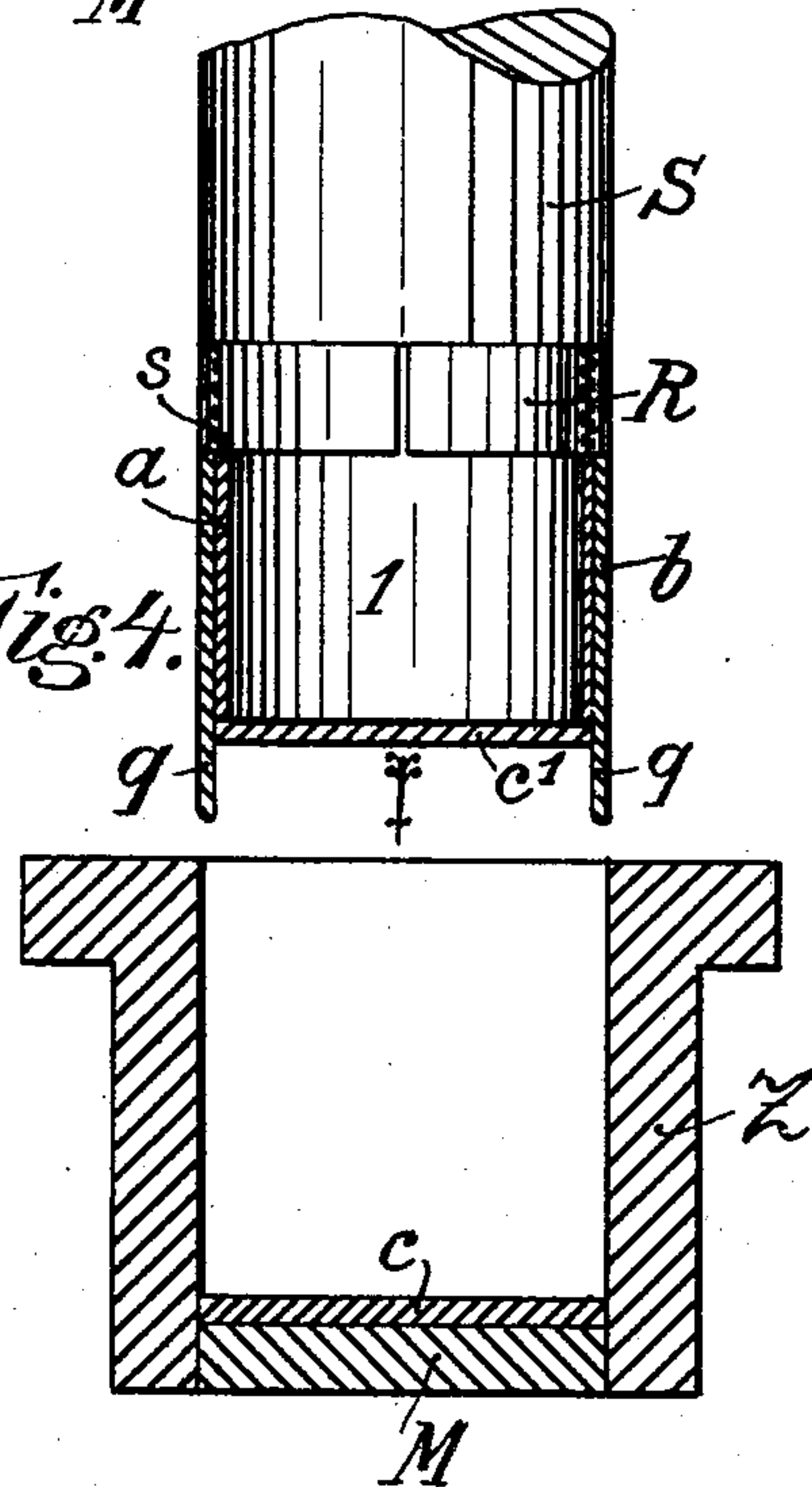
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



Witnesses.  
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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR THE MANUFACTURE OF CARDBOARD BOXES.

SPECIFICATION forming part of Letters Patent No. 742,383, dated October 27, 1903.

Application filed January 10, 1902. Serial No. 89,101. (No model.)

*To all whom it may concern:*

Be it known that I, KARL EDMUND BESCHORNER, workmaster, residing at Hauptstrasse No. 13, Bad Soden-on-the-Taunus, in the German Empire, have invented new and useful Improvements in Apparatus for the Manufacture of Cardboard Boxes, of which the following is a specification.

This invention relates to the manufacture of boxes of cardboard and the like material of all shapes and sizes by means of male and female dies; and it has for its object to produce the boxes in the completely-finished state by a single operation.

The invention relates especially to such boxes wherein the body of the box consists of two cardboard cylinders—a shorter one surrounding a longer one and pasted to it—the protruding part or neck of the interior cylinder forming the seat for the superimposed lid.

According to my invention one piece of the cardboard is cut in proper size and shape, then rolled to form a cylinder, then the edges coated with paste and placed on each other. Then the cylinder is placed on a male die or punch and held thereon by a clamping device. Then an outer cylinder is placed on the interior cylinder in the same manner.

The head or bottom of the box may be formed in two ways. Either a flange connecting the cylindrical part of the box with the bottom is generated by turning up the edge of the bottom to surround in cylindrical form the end of the body of the box, or the edge of the cylindrical body of the box is turned inward to form a flange which lies against the flange portion of the bottom. In either case the male die carrying the cylindrical body of the box is driven into a cylindrical matrix. Hereby, in the first place, a pressure is exerted on the seam or seams of this body whereby they are firmly united. In the second place, the flange is formed in either of the described manners and pressed against the corresponding part, so that they are united firmly the same way by means of adhesive material previously applied to the same.

The accompanying drawings illustrate the apparatus employed for carrying the invention into effect.

Figure 1 is a sectional elevation of an ap-

paratus for forming a box-body in accordance with my invention. Fig. 2 shows the position of the parts while the punch or die and the matrix are separated. Figs. 3 and 4 are views corresponding to Figs. 1 and 2, respectively, of another apparatus for making the box-body.

In Figs. 1 and 2 S is the male die or punch, and Z the matrix. *a* is the inner cardboard cylinder, and *b* the outer cylinder, forming the body of the box. *f* is the bottom the edge of which is to be upturned.

The pieces *a* and *b*, of paper, cardboard, or other suitable material, are first cut to shape and size, and after their meeting edges have been coated with adhesive substance the pieces are placed around the lower part 1 of the punch S, which is of circular or other suitable form in cross-section. The inner part *a* is first placed on the die S against a shoulder *s* and is fastened to it by a split clamping-ring R. This ring is placed on the upper end of said part *a*, which is to form the neck of the box, and thus prevents any shifting of it when the die is driven into the matrix. The outer part *b* is then placed on the die in such way that its under end protrudes over the edge of the part *a*. The punch S has a bottom part 2 of reduced diameter, forming a recess, and the cylinder *a* is placed with its lower edge at the so-formed shoulder, whereas the outer cylinder projects over it. The piece *f*, forming the bottom of the box, is then placed upon the mouth of the matrix in a recess *g* and is forced, together with the side or wall of the box which has been placed on the punch, into the matrix and against the bottom M of the latter, thereby connecting the side or wall to the bottom of the box by turning the edge of the bottom piece *f* upward and pressing the projecting part of the cylinder *b* into the recess formed on the punch S under the shoulder. This connecting of the side or wall to the bottom of the box or head of the lid is effected, according to the procedure illustrated in Figs. 1 and 2, by making the bottom piece of a slightly-greater diameter than the diameter of the matrix Z and inserting the said bottom into a corresponding circular rabbet *g* in the top of the matrix. In this case a punch S is employed, which in addition to having the reduced part 1 for the



reception of the side or wall of the lid (or of the parts which form the combined neck and wall of the box) has also at its lower end a still further reduced portion 2, into which  
5 when the punch is forced into the matrix first the lower, preferably beveled, edge of the side or wall of the box and then the upwardly-turned edge *r* of the bottom *b* is pressed, thereby forming a secure connection  
10 of the bottom of the box with the side or wall of the box and, if necessary, with that portion or layer of the combined neck and wall whose upper end forms the neck of the box.

Figs. 3 and 4 illustrate the manufacture  
15 of a box-body with a double bottom. The matrix *Z* is the same as before described except that it has no groove or rabbet *g* and the punch *S* has a reduced portion 1 and a shoulder *s*, as set forth with reference to Figs.  
20 1 and 2, but is not provided with the reduced end portion 2. The clamping device or ring *R* is employed as previously set forth. One piece of cardboard *c* is placed at the bottom of the matrix *Z*, whereas another piece *c'* of  
25 slightly-smaller diameter is placed against the bottom face of the punch *S*, whereas the cardboards forming the side wall of the box are placed as above described. If the punch is driven into the matrix, a flange *q* is formed  
30 and fastened between the edges of the bottoms *c* and *c'*, which are united to each other also by the pressure exerted by the punch.

By the procedure last described, although it is substantially the same as that before described, there is produced a stronger box, 35 which presents the further advantage of neatly-finished edges.

It is well known to make lids or very shallow boxes out of one piece of cardboarding by punches and dies. The present invention 40 relates only to the manufacture of boxes in which a wall and an end part are united by paste or the like and a smooth unfolded wall is obtained.

Now what I claim, and desire to secure by 45 Letters Patent, is the following:

1. In an apparatus for making boxes and the like, the combination of a die stepped to form a shoulder, a matrix of uniform interior width, and a clamping device arranged to be 50 fitted upon the die against the shoulder thereof, to hold the material on the die.

2. In an apparatus for making boxes and the like by uniting the seams of the wall and uniting the wall with the end part, the combination of a matrix, a punch and a clamping-ring, substantially as described. 55

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

KARL EDMUND BESCHORNER.

Witnesses:

KARL MERZ,

ROBERT BÜHL.