No. 860,385. PATENTED JULY 16, 1907.

C. F. JENKINS.

METHOD OF MAKING PAPER TUBE CAPS.

APPLICATION FILED APR. 6, 1907.

Fig. 3.

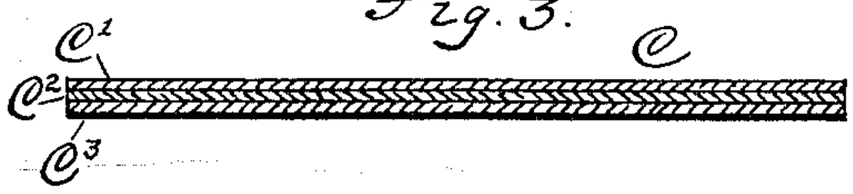


Fig. 4.

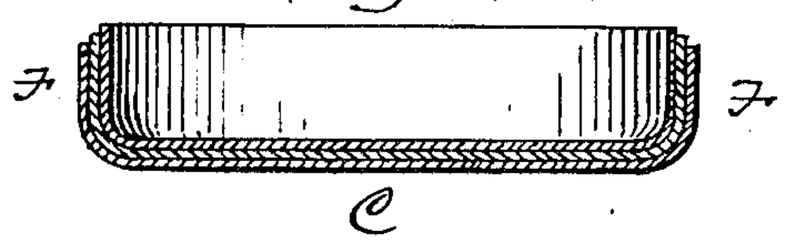


Fig. 2.

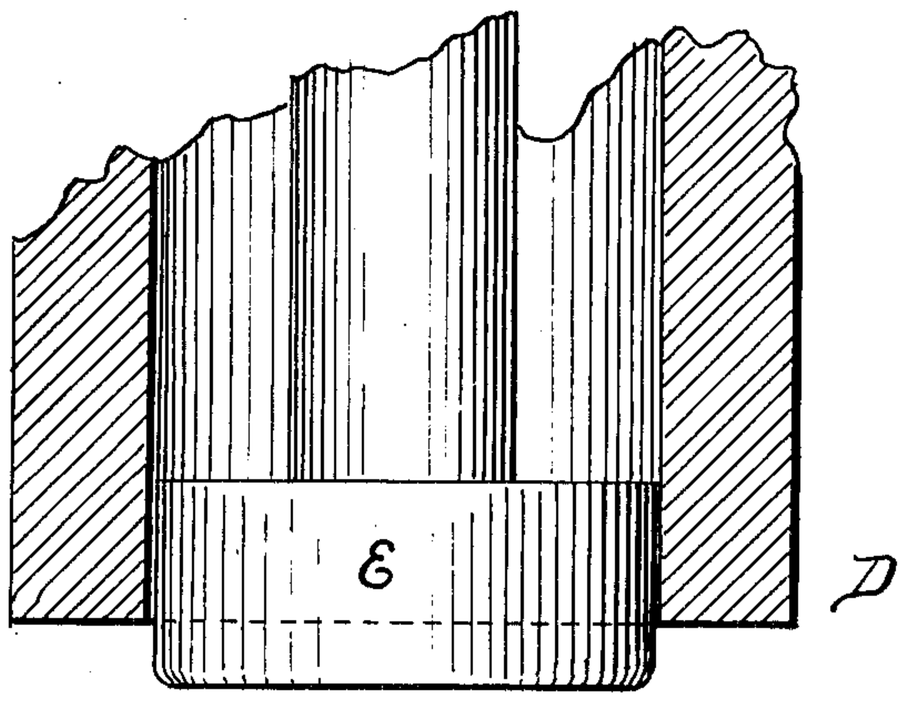
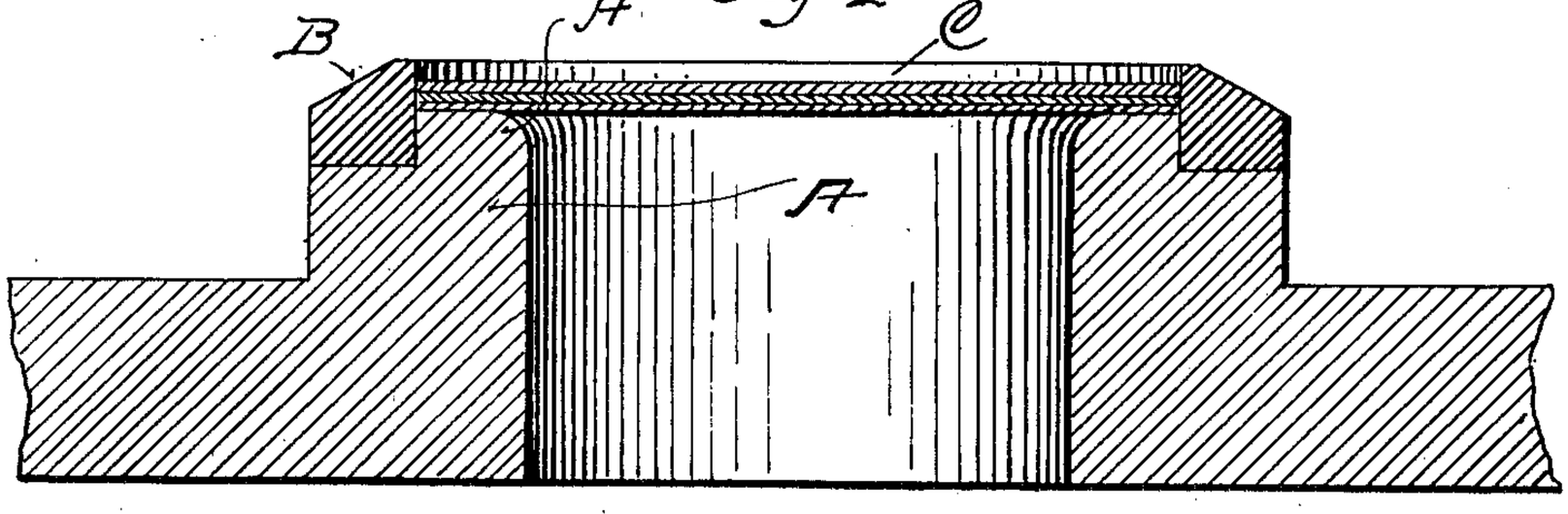


Fig 1



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METHOD OF MAKING PAPER-TUBE CAPS.

No. 860,385. Specification of Letters Patent. Patented July 16, 1907.

Application filed April 6, 1907. Serial No. 366,809.

To all whom it may concern:

Be it known that I, CHARLES FRANCIS JENKINS, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Methods of Making Paper-Tube Caps, of which the following is a specification, reference being had therein to the accompanying drawing.

In forming paper end-caps for tubes and the like it is usual to moisten the paper disks and then subject them to the action of forming dies which "draw" them into the desired form. When thus formed it is necessary that the caps should be dried before they are removed from the forming devices, or adjuncts thereto, which hold them in shape. This is a serious drawback in making such caps and the evil rapidly increases with the thickness of the stock used. To avoid this evil, even when very heavy caps are made, is the object of this invention.

The method employed may be explained in connection with the accompanying drawings, wherein

Figure 1 shows in axial section a hollow forming die, Fig. 2 a double plunger to coact with said die, Fig. 3 a diametrical section of the disk from which the cap is to be made, and Fig. 4 a like section of a completed cap.

In these figures, A represents a tubular die block having its upper portion rounded at A′, and B an annular guide which may also serve as one member of a shear or cutter and which is mounted upon the die block concentric with the opening therein and projecting above the block's upper surface. The internal diameter of the guide exceeds that of the die opening by an amount depending upon the width of the flange to be formed on the cap. Within this ring is placed the disk C from which the cup is to be formed. This disk consists of a plurality of layers C′, C², C³ of dry stock, having their meeting faces supplied with glue or the like, and this compound disk is placed over the opening in the die block before the adhesive has become fully set, and an annular plunger D is moved downward, immediately, cutting the disk to exact form, if it be not already formed, and then holding its marginal portion down upon the die block. The descent of the annular plunger D is followed by that of a forming plunger E which presses the central portion of the disk downward drawing the marginal portion from beneath the member D and forming it into a flange F. The difference between the diameter of the die and plunger is calculated with reference to the stock to be used, and is such that the flange is strongly compressed in the space in which it is formed. Were the disk used a single sheet of the same thickness, it would be broken or torn if that thickness were such as is desired for many caps, but the inner of the thin layers bends and takes shape as easily as if the others were not present, and the succeeding layers are even less strained. Each layer slips upon the one next within it, the glue at the moment of the forming being yet plastic or not fully hardened, and the margin of each falls a little short of the margin of the layer next within it, as appears in Fig. 4 where the result is somewhat exaggerated.

Under the heavy pressure of the plunger, the contact is very intimate and the glue sets almost instantly, so far as to hold the formed cap in shape. No drying is necessary ordinarily, and caps of any desired weight may by this method be formed from dry stock with great rapidity. Obviously applying the adhesive may be automatic, and the operative parts may be actuated properly by apparatus well known in the art.

What I claim is:

The method of forming cup-like bodies of paper or the like which consists of superposing dry disks of thin stock coated with adhesive, and subjecting the compound disk to the drawing action of dies, while the adhesive is yet plastic, to turn up a marginal flange; whereby the marginal portions slip upon each other to independently take shape.

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

CHARLES FRANCIS JENKINS.

Witnesses:
CHAS. E. RIORDON,
R. CRAIG GREENE.