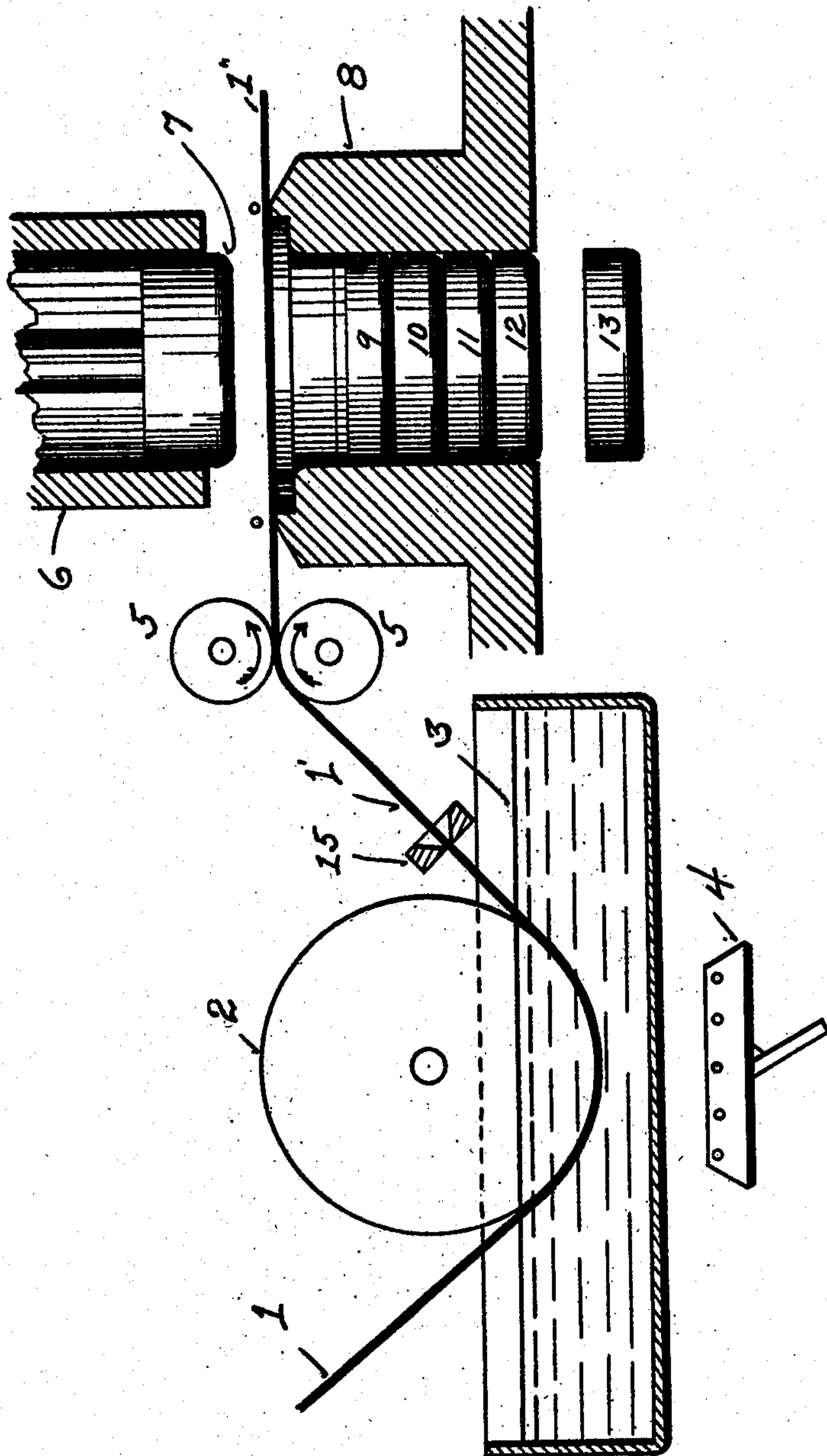


C. F. JENKINS.  
 METHOD OF MAKING PAPER BOTTLE CLOSURES.  
 APPLICATION FILED OCT. 22, 1907.

924,555.

Patented June 8, 1909.



WITNESSES:

S. B. Selby  
 Charles B. Kendrick

INVENTOR

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 BY W. A. [Signature]  
 ATTORNEY



# UNITED STATES PATENT OFFICE.

CHARLES FRANCIS JENKINS, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR, BY  
MESNE ASSIGNMENTS, TO SINGLE SERVICE PACKAGE CORPORATION OF AMERICA,  
A CORPORATION OF NEW JERSEY.

## METHOD OF MAKING PAPER BOTTLE-CLOSURES.

No. 924,555.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed October 22, 1907. Serial No. 398,596.

*To all whom it may concern:*

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

In forming liquid proof closures of paper or the like, such, for example, as those of Patent No. 838,416, ordinary methods have proved unsatisfactory. It is desirable in many cases and indispensable in others, that the closing cap, or the like, should be waterproof and entirely unaffected by ordinary liquids, such as milk, for example. Paraffin as a waterproofing agent, is found to answer the requirements perfectly. Applying liquefied paraffin to formed caps softens the stock and causes the caps to lose their perfect shape making insertion difficult and hermetic closure uncertain. If paraffined stock be used, it is often broken by the forming dies and perfect closure is thus made uncertain or impossible. The difficulties are all avoided by my novel method which consists, essentially, in forming the caps from paraffined material while the paraffin is softened or liquefied by heat. This method may be carried out in various ways, but for illustration I have chosen the plan of passing the stock through hot paraffin and then forming the caps, before the paraffined stock loses its heat, by means of non-heated dies, and holding the formed caps until the material becomes set by cooling.

In the accompanying drawing, 1 represents the paper stock, 2 a roller which submerges the advancing stock in a paraffin bath 3, kept hot by burner 4.

5, 5 represent intermittently rotated feed rollers which advance the paraffined stock 1' matrix and patrix members shown as a blank-forming plunger 6 and a drawing plunger 7, the former having a relatively short path while the latter moves far enough in the drawing die 8 to leave the cap, which it shapes, approximately in the position indicated at 9, previously formed caps 10, 11, 12 being pushed down step by step by those formed above and finally discharged in suc-

cession as perfect and permanently set caps 13. The length of the channel in which the caps are held until sufficiently cooled should vary, obviously, with the temperature, the character of the stock, and rapidity of the machine's action.

The apparatus, as such, whether the dies be specially cooled or not, has no novelty herein claimed; but I do not confine myself to liquefying the paraffin by heat since a volatile solvent may be used without heat.

It may be observed that applicant embosses or draws the stock in such manner that its particles and fibers slip upon each other in close analogy to that which occurs in drawing, spinning or die-shaping metal, and that the liquid paraffin greatly facilitates this slipping, while in a few seconds, by a slight reduction of temperature, it solidifies and prevents counter slipping; and further that the agent employed for these ends is precisely the one most desirable for waterproofing; and still further, that the paraffin, hot or cold, instead of gumming the dies like shellac or the like, affords a desirable lubrication.

What I claim is:

1. The method of forming paper objects which consists in treating paper with liquefied paraffin adapted to solidify quickly in air at ordinary temperature and embossing or drawing it into the desired form before the paraffin is solidified; whereby the paper fibers are first aided in slipping and later held against slipping.

2. The method of forming paper objects which consists in treating paper with heated paraffin, embossing or drawing it into the desired form while the paraffin is above the temperature at which it may be readily broken, and allowing it to fall below such temperature, to prevent counter-slipping.

3. The method of forming cup-like bodies of paper, which consists in saturating paper with heated paraffin, embossing or drawing it into desired form, and allowing it to cool below the solidifying point of paraffin, while in such form.

4. The method of forming hollow paper objects from plane paper, without folding, which consists in saturating the paper with hot paraffin, embossing or drawing it into

concavo-convex form, and holding it in such form until the paraffin sets by cooling.

5. The method of forming cup-like bottle closures, which consists in passing paper through hot paraffin, immediately drawing it into the desired form, and holding it in such form until the paraffin sets by cooling.

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

CHARLES FRANCIS JENKINS.

Witnesses:

WALLACE GRUM;  
FRANCIS S. MAGUIRE.