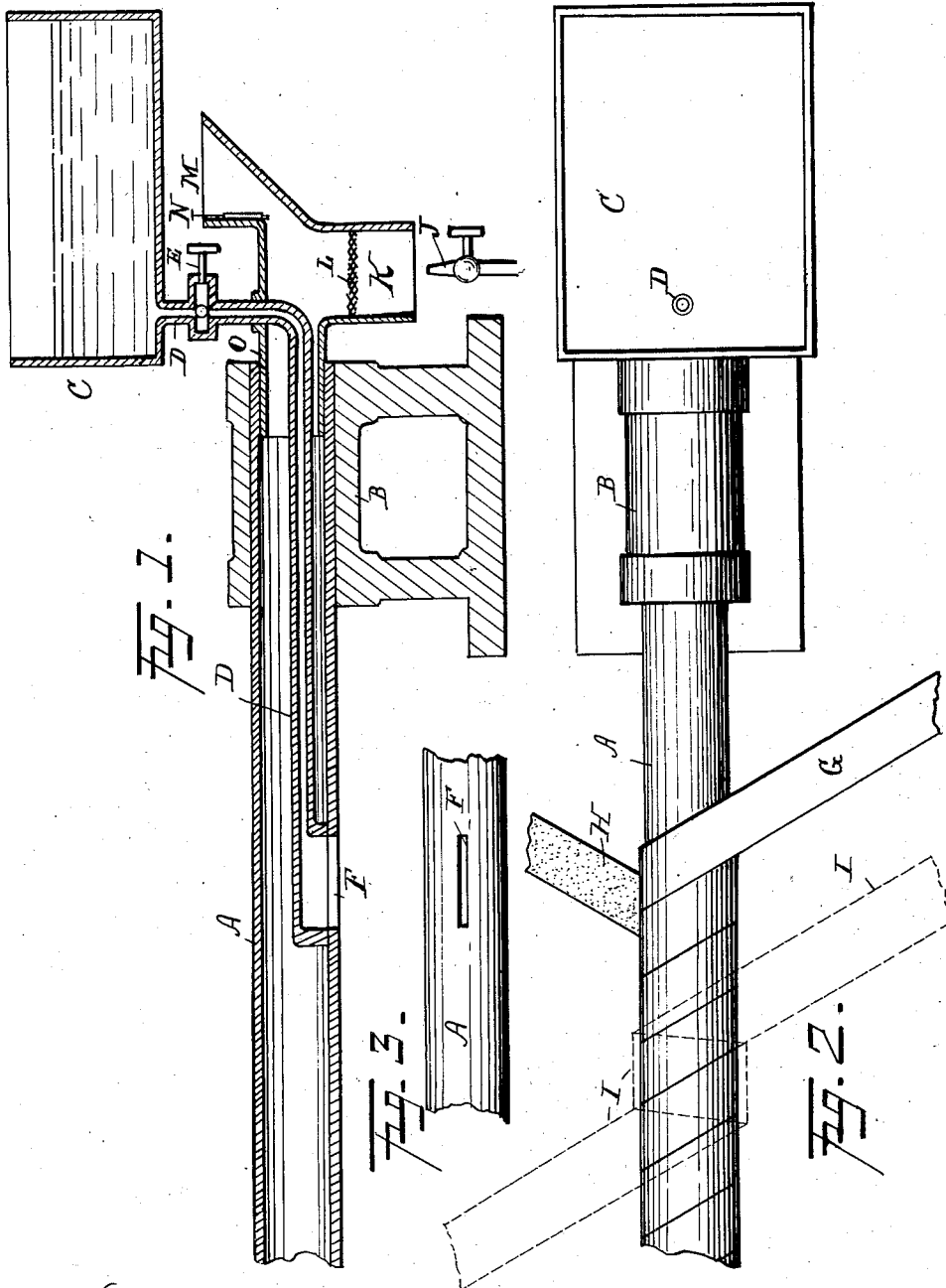


C. F. JENKINS.
 APPARATUS FOR MAKING PAPER TUBES.
 APPLICATION FILED MAY 18, 1909.

1,047,946.

Patented Dec. 24, 1912.



Witnesses:
 Wm. M. Birney,
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Inventor:
 Charles Francis Jenkins
 by
 Nathaniel M. Allen,
 atty.

UNITED STATES PATENT OFFICE.

CHARLES FRANCIS JENKINS, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO SINGLE SERVICE PACKAGE CORPORATION OF AMERICA, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

APPARATUS FOR MAKING PAPER TUBES.

1,047,946.

Specification of Letters Patent.

Patented Dec. 24, 1912.

Application filed May 18, 1909. Serial No. 496,743.

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 Apparatus for Making Paper Tubes, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to making paper tubes by winding superposed strips spirally, and particularly to coating or impregnating the interior of such tubes with waterproofing material or the like while the tube is being formed and at the same time constantly lubricating the surface of the mandrel. The material usually employed is liquid paraffin, the same being ordinarily, but not necessarily, liquefied by heat. Such tubes are commonly formed by winding strips upon a hollow mandrel, and in accordance with this invention the treating liquid is supplied to the interior of the tube through one or more openings in the wall of the hollow mandrel.

In the accompanying drawings, Figure 1 is an axial sectional elevation of a portion of a hollow mandrel with its support and with my devices in operative position. Fig. 2 is a plan view of the same devices. Fig. 3 is a bottom plan-view of a portion of the mandrel seen in the other figures.

In these views, A represents a tubular mandrel fixed in a rigid frame or support B.

C designates a suitable tank, preferably above the plane of the mandrel, for containing paraffin, for example. From the tank a pipe D controlled by a valve E leads into the interior of the mandrel and delivers the contents of the tank through a slot F in that portion of the mandrel wall upon which strips G, H of paper are wound, the slot F being materially longer than the width of a strip, so that the entire inner surface of the inclined strip must pass over the slot. The strips are usually wound by a belt, shown in dotted lines I, which draws the strips forward around the tube, presses them together and continuously slides the formed tube along the mandrel as is well understood by those familiar with this art. From the construction it is evident that if the valve be opened, liquid will flow through the pipe and be discharged continuously against the internal surface of the winding strips, and

as these slip around as well as along the mandrel constantly presenting new surface to the slot the whole surface will be progressively supplied with the liquid, and the material so supplied will be rubbed in under high pressure and forced into every pore and crevice as it will not be by simply dipping the article after it is formed, nor even by carefully and thoroughly applying the material with a brush. Another very material advantage is that when paraffin is used it serves as a lubricant, eliminating a large part of the friction between the paper and the mandrel and preventing the tearing of any thin or fragile paper which could not otherwise be used with the belt-winding machine.

In order to secure the best results, with most materials, it is desirable that the liquid shall be hot, and with many materials that the pipe shall be heated to prevent clogging, or to liquefy material which may cool in the pipe when the apparatus is inactive. A heating burner J is therefore placed at some distance below the tank and below the open side of a chamber K provided with a foraminous air deflecting diaphragm L and having an outlet M immediately below the tank and controlled by any suitable device at N, and also having an open branch O inclosing a portion of the pipe and preferably fitting the interior of the mandrel. The burner, being lighted, heats the surrounding air which rises into the chamber and escapes through the mandrel and also immediately below the tank, the total heat being controlled, as usual, by the burner valve. Both the mandrel and the tank are thus heated, and when desired all or an abnormal portion of the hot air may be discharged through the mandrel.

What I claim is:

1. The combination with a hollow mandrel having a lateral opening, of a tank for paraffin, a valve controlled conduit leading from the tank to said opening, an air heating burner, means for discharging air heated by the burner through said mandrel and against said tank, means for controlling the total heat, and means for varying the heat delivered to the tank.

2. The combination with a hollow, terminally open mandrel having a lateral aperture between its ends, of a tank for paraf-

fin, a pipe, of less diameter than the interior of the mandrel, leading from said tank to said aperture, an air heating device, means for directing air heated by said device into the mandrel, and means for at will varying the amount of heated air entering the mandrel.

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

CHARLES FRANCIS JENKINS.

Witnesses:

JAMES S. CRAWFORD,
WM. M. BIRNEY.