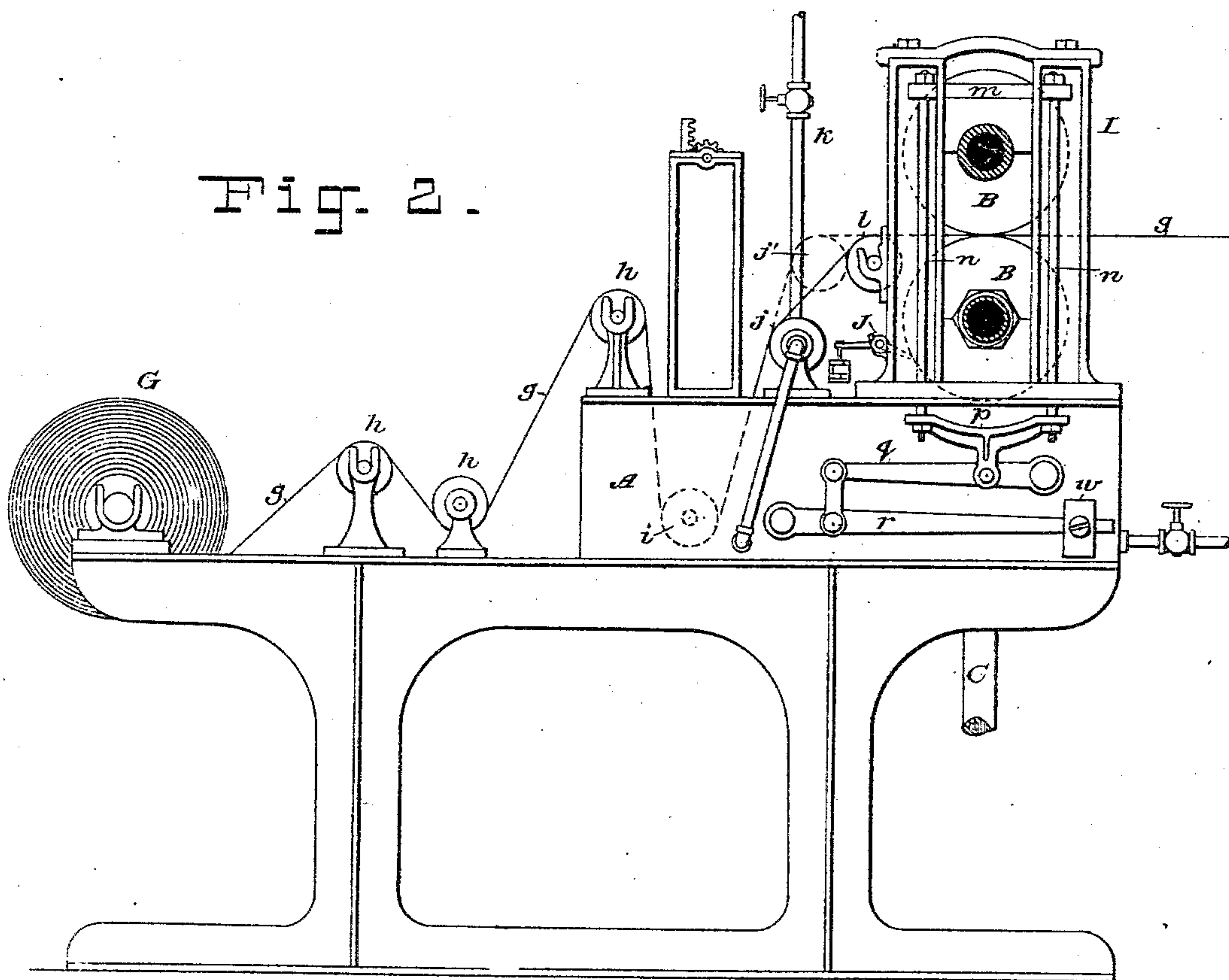
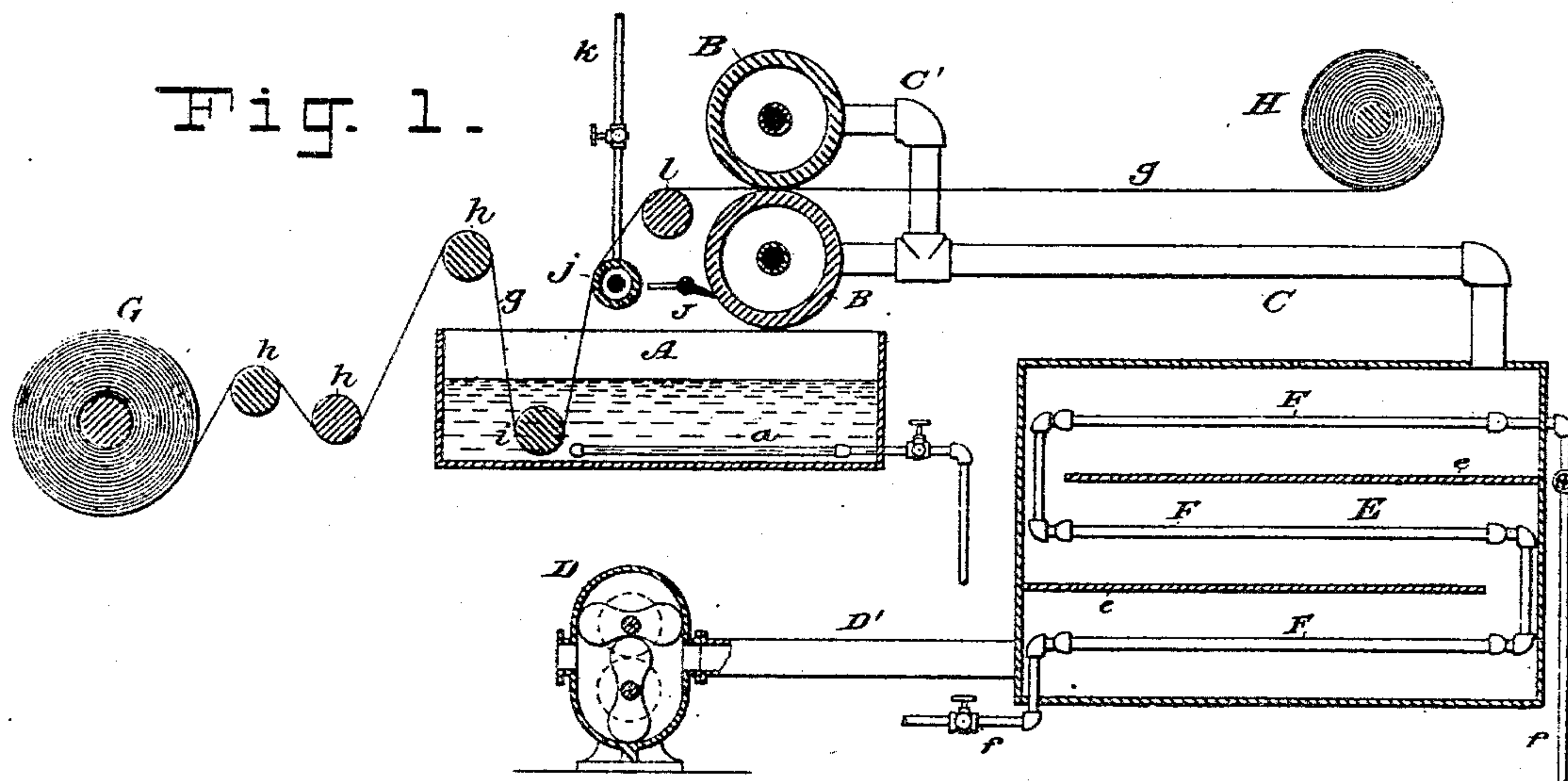


J. JOWITT.
WAXING PAPER.

No. 318,911.

Patented May 26, 1885.



WITNESSES:

E. B. Bolton
Geo. H. Fraser

INVENTOR:

Josiah Jowitt
By his Attorneys,

Burly Fraser & Co.

(No Model.)

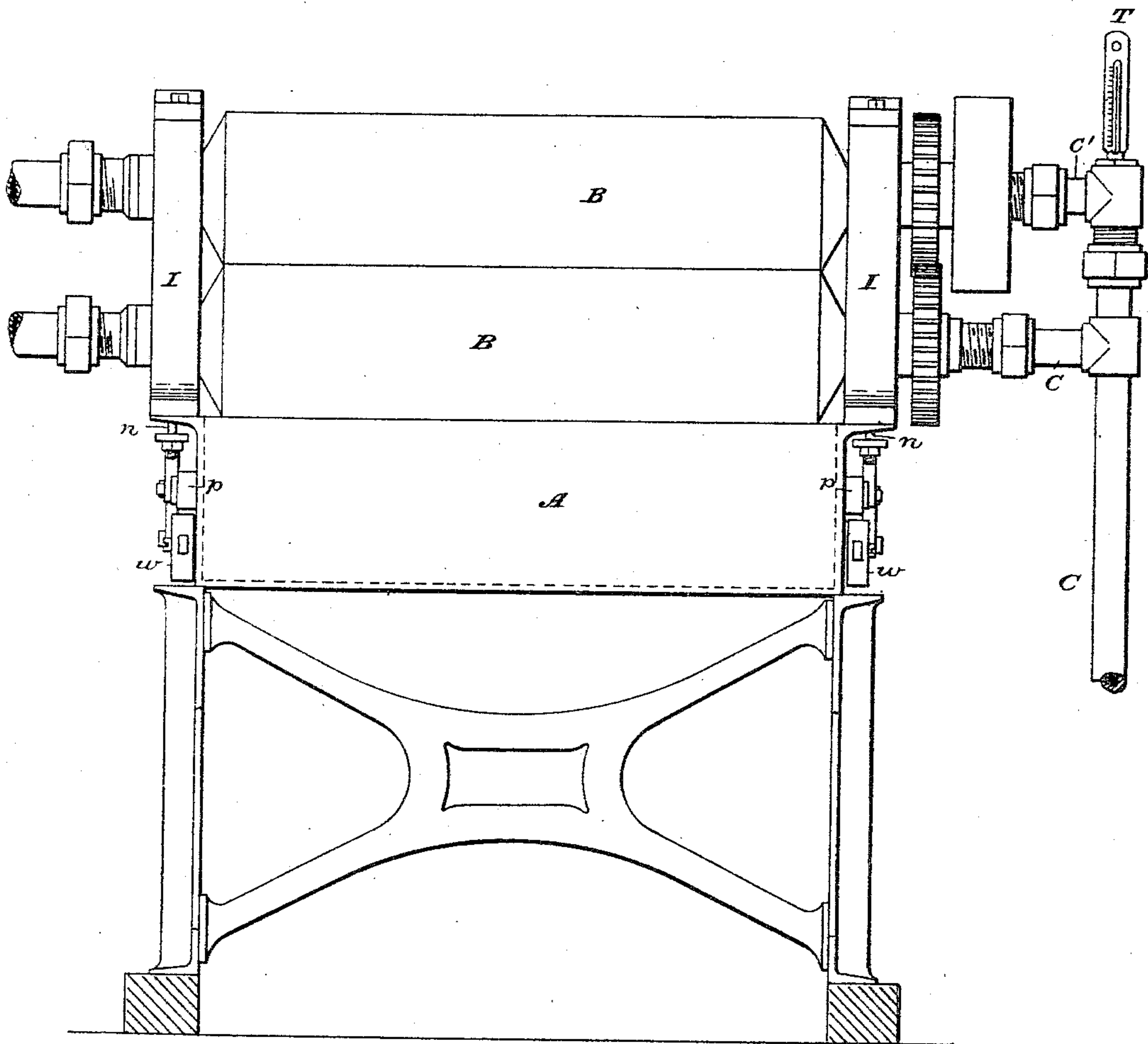
2 Sheets—Sheet 2.

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Fig. 3.



WITNESSES.

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INVENTOR:

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UNITED STATES PATENT OFFICE.

JOSIAH JOWITT, OF STANLEY, NEW JERSEY.

WAXING PAPER.

SPECIFICATION forming part of Letters Patent No. 318,911, dated May 26, 1885.

Application filed October 6, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOSIAH JOWITT, a citizen of the United States, residing at Stanley, in the county of Morris and State of New Jersey, have invented certain new and useful Improvements in the Art of and Apparatus for Waxing Paper, of which the following is a specification.

This invention involves a method and apparatus for the manufacture of waxed paper, or most commonly paraffine-coated paper, although the apparatus is applicable to coating or saturating paper and other thin extended fabrics with other substances than wax.

My improved method of waxing paper consists in passing a continuous web of paper into a bath of melted paraffine or other wax, draining the same of superfluous wax and passing it between opposite cold surfaces, whereby the wax is chilled and set.

My invention also consists of other features in connection with the method and apparatus, all of which will be fully hereinafter set forth.

Figure 1 of the accompanying drawings is a vertical longitudinal section of the entire apparatus for practicing my invention. Fig. 2 is a side elevation of the waxing-machine alone, and Fig. 3 is an end elevation thereof.

Let A designate a tank for containing the melted wax, and *a* a steam-coil therein for heating the wax.

B B are two hollow pressure-rollers, arranged, preferably, above the tank, and C C' are air-pipes leading to said rollers and communicating with their interiors through their hollow journals.

Referring to Fig. 1, D is a blower, which forces air through a pipe, D', into a refrigerating-chamber, E, of any suitable construction, and from this chamber the pipe C leads to the rollers B B. Thus the air set in motion by the blower is cooled to a sufficiently low temperature and is passed through the rollers B B, thereby cooling them and keeping them cool. A temperature of about 40° Fahrenheit is preferable for these rollers. In order to test the temperature of the air, I apply a thermometer, T, to the pipes, as seen in Fig. 3.

The refrigerating chamber or device E may be made in many different ways. The construction shown consists of a box or chamber

divided by alternate partitions *e e* into a circuitous passage, through which the air flows back and forth in passing through the chamber, and in each compartment is arranged a flat coil of pipe, F, the three coils being connected by short pipes and the terminals of the upper and lower coils connecting with pipes *f f*, which pass out of the chamber and are fitted with suitable valves. These pipes *f f* will be arranged in connection with any suitable ice-machine, whereby a current of refrigerating vapor or gas will be caused to flow through them in much the same manner as is commonly employed for cooling the vaults of breweries.

The means shown for cooling the air is only one of various means that may be employed for that purpose, and obviously forms in itself no essential part of my invention. Any other suitable and practicable means may be used.

Referring to Figs. 1 and 2, G is the roll of paper to be treated, which is mounted on rotative bearings. *g* is the web of paper from this roll, and *h h* are tension-rollers, around which in succession the web of paper passes.

In the tank A is an immersed roller, *i*, beneath which the web of paper is carried in order to pass it through the melted wax. Above the tank is a hollow roller, *j*, which is heated by steam entering it through the pipe *k*. The paper passes over this roller, and is heated to cause the wax to permeate it thoroughly, and to cause any excess of wax to be melted and to run back down the web of paper into the tank. From this roller the paper passes over another roller, *l*, and thence between the cold-pressure rolls B B. The roller *l* serves to lift the paper to the level of the entrance to the rolls and guide it into them, so that both rolls shall come in contact with it simultaneously on the instant of its compression by them. Thus I avoid the cooling of the paper on one side first and before compression, as would occur were the paper to enter the rolls diagonally, and so touch one roller before coming between the two. These cold rollers act to compact the paper, to chill and harden its coating of wax, and to impart to it a burnished or polished surface. The chilling of the wax sets it and enables the paper to be immediately rolled up without further cooling or drying, and with-

out any liability of the layers to adhere together in the roll.

H is the winding roll on which the waxed paper is wound. This roll is rotated to wind the paper on it by means of a loose belt or other frictional gearing.

The rollers B B have bearings in frames I I, and may be pressed together by screws, springs, weights, or otherwise; but I prefer to press them together by compound weighted levers, as shown in Fig. 2. The bearings of the lower roller are fixed, and over each bearing of the upper roller is placed a cross-head, *m*, from which two rods, *n n*, extend down beneath the frame I, and are joined by a yoke, *p*, to the middle of which is connected a lever, *q*, and the extremity of this lever is connected through links to another lever, *r*, bearing on its extremity a weight, *w*. This weight is greatly multiplied in its effect by the levers, and exerts a heavy and steady downward pressure on the upper roller.

In order to allow for some movement of the rolls B B toward and from each other I provide an expansion-joint, E, in the pipe C, between the branches leading to the rolls. A scraper, J, is applied to the lower roll, B, and pressed up against the latter by a weight or spring. It serves to scrape off any particles of wax that may be squeezed out of the paper by the rolls, and to cause them to drop back into the tank and be remelted.

The heated roller *j* may be omitted entirely, although it is preferable to employ it, or the functions of the rollers *j* and *i* may be combined by omitting the latter roller and elevating the former to the position shown in dotted lines at *j'* in Fig. 2.

The manipulation to which the paper is subjected in this machine consists in first causing it to pass into and out of a bath of melted wax; second, (by preference,) passing it over a heated surface to expel the superfluous wax and more thoroughly incorporate what remains; third, passing it between cooled pressure-rolls, thereby chilling and hardening the

wax, and, finally, rolling the waxed paper on a winding-roll.

Instead of rolling the finished paper it may be carried off in a flat web and cut into sheets.

The rollers B B may be cooled by other means than by passing cooled air through them. For instance, the refrigerating-pipes *f* may pass axially through them, or the refrigerating vapor or gas may be admitted into them, or cold water may be caused to flow through them instead of air.

I make no broad claim to artificially cooling the waxed paper after it has received its coating of wax and before it is wound up or cut into sheets, because I am well aware that waxed paper has been so cooled prior to my invention by means of currents of air; and I am also aware that roofing fabrics have been cooled by being passed through water or having water showered upon them.

I claim as my invention—

1. The improved method of making waxed paper, which consists in passing a web of paper in contact with melted wax, and thence in contact with smooth cold surfaces, where by the wax is simultaneously hardened and burnished, substantially as set forth.

2. The improved method of making waxed paper, which consists in passing a web of paper through a bath of melted wax, then over a heated surface, and then between cold pressure-rolls, substantially as set forth.

3. The improved apparatus for waxing paper, which consists of the combination of a tank, A, for containing the melted wax, hollow pressure-rolls B B, and suitable means, substantially as described, for cooling said rolls by passing a cold fluid therethrough, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOSIAH JOWITT.

Witnesses:

ARTHUR C. FRASER,
HENRY CONNETT.