(No Model.) 2 Sheets—Sheet 1.

C. E. HAYNES.

MACHINE FOR WAXING PAPER.

No. 394,268. Patented Dec. 11, 1888.

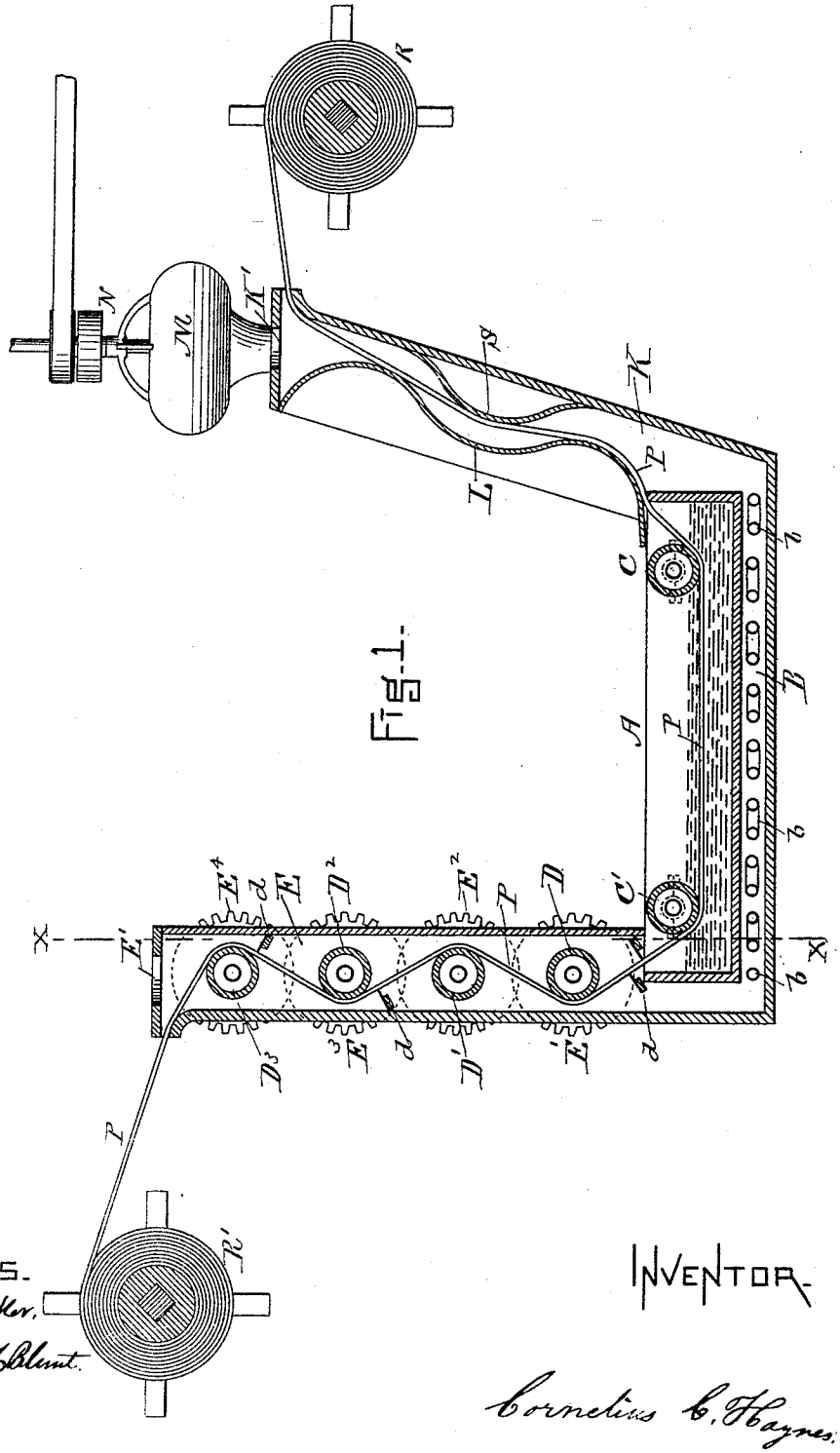


Fig. 1.

WITNESSES.
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INVENTOR.
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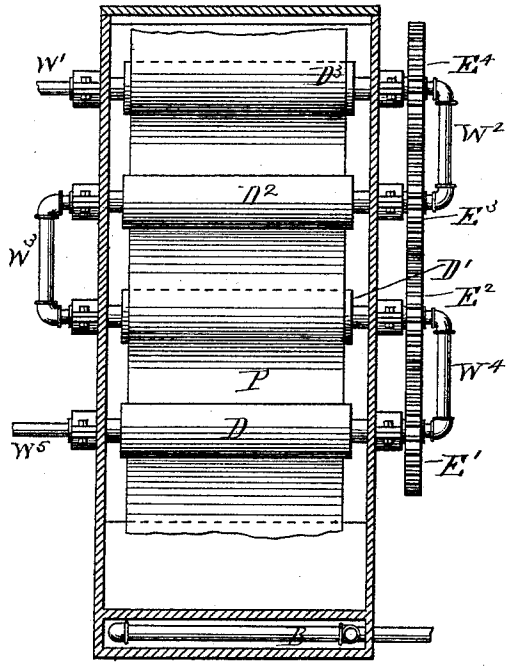


Fig. 2.

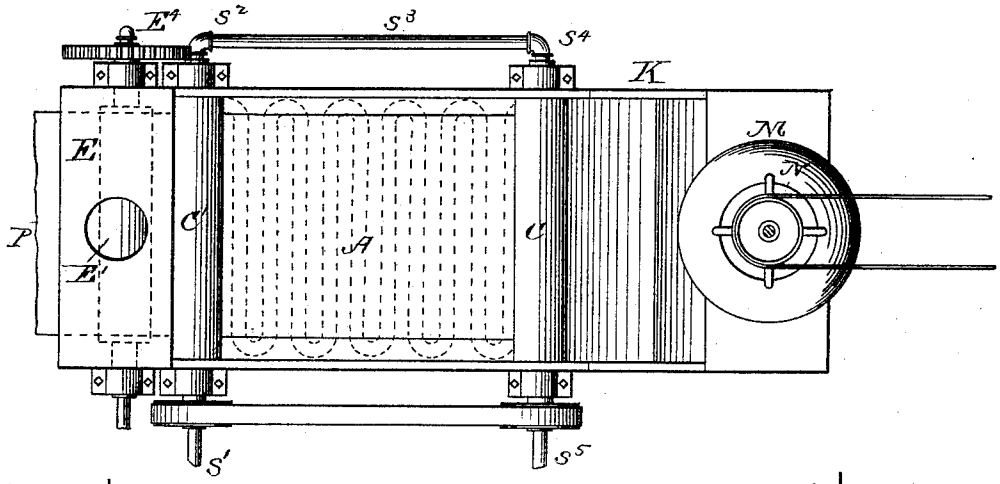


Fig. 3.

WITNESSES.

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UNITED STATES PATENT OFFICE.

CORNELIUS E. HAYNES, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO EDWARD J. HOWARD AND ANNA E. ALLEN, OF SAME PLACE.

MACHINE FOR WAXING PAPER.

SPECIFICATION forming part of Letters Patent No. 394,268, dated December 11, 1888.

Application filed August 10, 1887. Serial No. 246,630. (No model.)

To all whom it may concern:

Be it known that I, CORNELIUS E. HAYNES, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Waxing Paper, of which the following, taken in connection with the accompanying drawings, is a specification.

The object of my invention is to so construct and arrange a machine that a current of cold air shall be drawn into one end and, coming in contact with freshly-coated paper, shall assist in cooling it, and as the said current of air passes by the paper it cools and hardens it at the same time that it (the air) absorbs heat, and gradually as it passes from the hot cooling paper to other parts of the machine becomes much increased in temperature until it passes to the other end of the machine, and there, coming in contact with the entering paper, dries and heats it, thus preparing the paper for rapidly receiving the melted compound into which it is about to be immersed. This object I attain by the mechanism shown in the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section of my machine for waxing paper. Fig. 2 is a cross vertical section on line X X of Fig. 1. Fig. 3 is a plan of the same.

A represented a jacketed tank, which serves to hold the compound for waxing the paper. Heat is applied to this tank by means of coils of steam-pipe *b*, located in the space B.

C and C′ are hollow rolls partly immersed in the contents of the tank A. These rolls C C′ are provided with hollow axles, and are kept to the desired temperature by steam.

D D′ D^2 D^3 are steam-heated polishing-rolls, which are located in the chamber E, and are geared together and so driven that they will all revolve in a direction opposite to that of the passing paper, thus giving the desired polish.

The gears for operating the hot rolls D D′ D^2 D^3 are shown at E′ E^2 E^3 E^4, Fig. 1.

K, Fig. 1, is a chamber, into which the paper enters from the reel R, containing the paper to be treated. This chamber is made tortuous by the curved walls L and S, so that the paper in its passage will come in actual contact, if desirable, with the inner surfaces of these walls. At the upper end of the chamber K, I have an orifice, K′, which connects the said chamber with an exhaust-fan, M N, which may be of any of the desired styles in use.

E′ is an opening made at the upper end of the chamber E, and serves to admit a downward draft of cold air upon the waxed paper P in its outward passage from the chamber E.

R′ is a reel for receiving the wax paper P as it comes out of the machine in a completed condition.

S′ S^2 S^3 S^4 S^5 are connecting steam-pipes for heating rollers C C′.

W′ W^2 W^3 W^4 W^5, Fig. 2, are steam-pipes for heating the rolls D D′ D^2 D^3.

d d are scrapers used for removing the surplus coating from the paper.

The operation of my machine is as follows: The tank A, containing the compound to be used for coating the paper, is warmed to the desired temperature. The paper is unwound from the reel R, passed through the heating and drying chamber K, thence through the tank A under the rolls C C′, where it receives a coating of the waterproofing compound used, thence into the cooling and polishing chamber E, from which it passes in a completed condition to the receiving-reel R′. When the exhaust-fan M N is put in motion, a strong current of cold air is drawn into and downward through the chamber E, cooling the paper, and of course receiving from it heat. As the air continues to pass through the passage B under the tank A, it comes in contact with the steam-pipes *b b* and becomes very dry and of high temperature. In this condition it passes into the chamber K and in contact with the descending paper P, which it dries and heats, thus giving the paper the necessary conditions—that is, hot and dry—for readily receiving the coating as it passes into the tank A. The hot air is finally drawn out by the exhaust-fan.

The downward draft in the chamber E caused by the action of the exhaust-fan M N causes cool air to enter the chamber E at and near the point at which the waxed paper

leaves the said chamber, and impinging upon the paper cools it as it passes out toward the reel R′.

I claim—

In a machine for waxing paper, the combination of the exhaust-fan N M with the drying and heating chamber K, tank A, rolls C C′, polishing-rolls D D′ D^2 D^3 within the chamber E, the chamber E, and the reel R′, all operating together substantially as described, and for the purpose set forth.

CORNELIUS E. HAYNES.

Witnesses:
FRANK G. PARKER,
MATTHEW M. BLUNT.