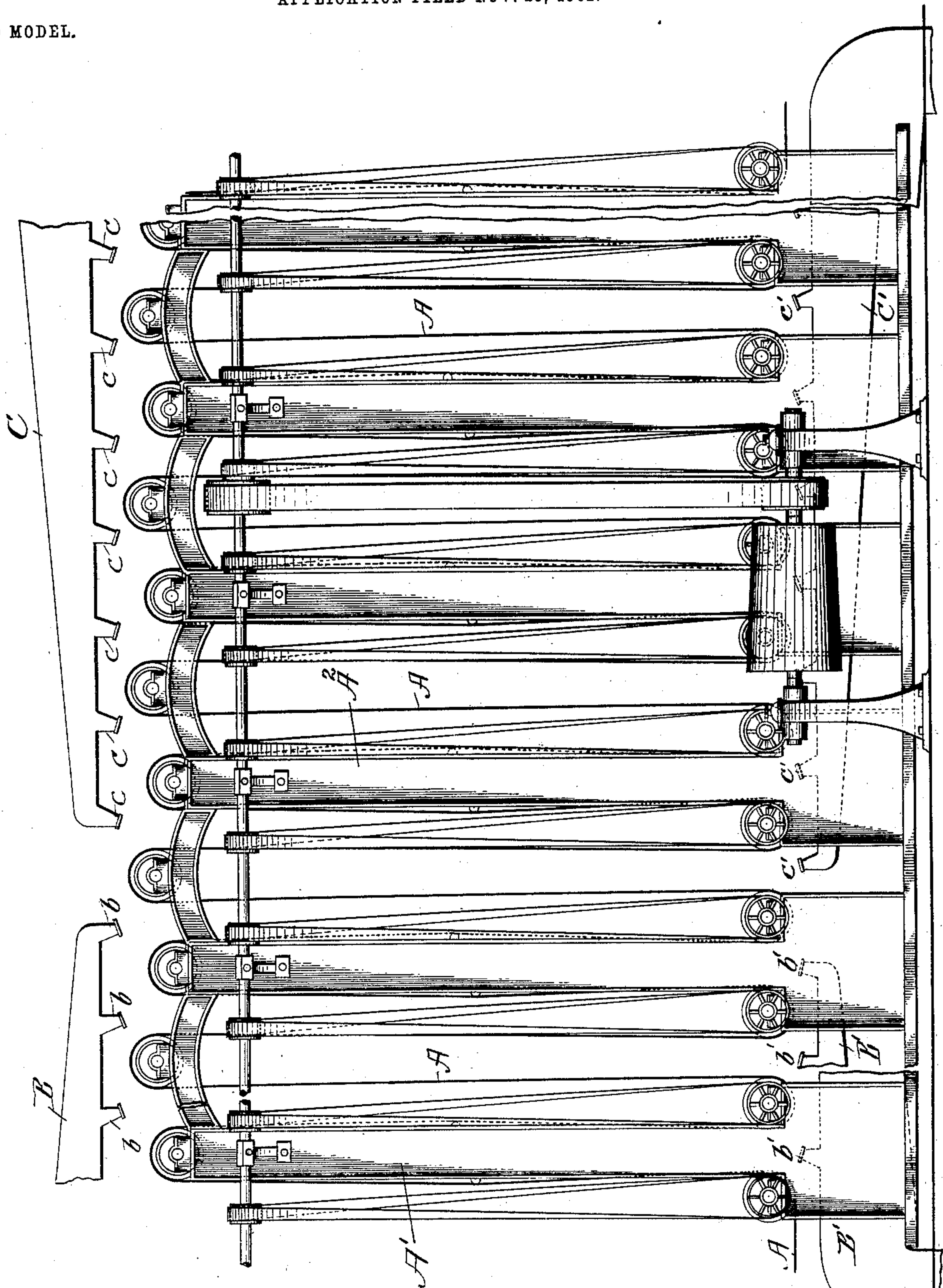


No. 737,817.

PATENTED SEPT. 1, 1903.

W. M. BARBER.
MECHANISM FOR DRYING PAPER.
APPLICATION FILED NOV. 20, 1901.

NO MODEL.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM M. BARBER, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO SMITH AND ANTHONY COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

MECHANISM FOR DRYING PAPER.

SPECIFICATION forming part of Letters Patent No. 737,817, dated September 1, 1903.

Application filed November 20, 1901. Serial No. 83,007. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. BARBER, of Somerville, in the county of Middlesex and State of Massachusetts, a citizen of the United States, have invented a new and useful Improvement in the Mechanism for Drying Paper, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention is an improvement upon that described in my application for Letters Patent of the United States filed October 22, 1900, Serial No. 33,946. In said application I described an apparatus or means for drying paper while in the continuous web made by the paper-forming portion of the machine and while said web is passing from it to calender-rolls or to winding-rolls, the web then being subjected to currents or blasts of heated air. I have since found that while this method answers for drying certain grades of paper it is not always expedient to subject the web immediately to the drying action of the heated air. This is especially true of the sized papers of good quality in which it is desirable to thoroughly set the size, and my present invention includes not only means whereby the web of paper is subjected to the drying action of the currents of hot air, but also to means whereby the size is first thoroughly set in the web by subjecting it to currents of cool air.

I have employed for subjecting the sized web to the size-setting blasts of air an apparatus similar in every respect to that described in my said application for drying the web by heated air, and my present invention varies from that of the application in that there is between the sizing-tub and the drying apparatus a size-setting apparatus for subjecting the passing web to cool air. The product is superior to that obtained where the size-setting air is not used and is one that resembles the superior grades of paper now cured by what is known as the "loft-drying" process.

The invention will now be described in connection with the drawing forming a part of

this specification, where I have shown, principally in elevation, portions of the size-setting apparatus and portions of the paper-drying apparatus.

The mechanism for feeding the web and for disposing it in the form of a grid—the form which I prefer for both the size-setting and the drying apparatus—is like the mechanism of my said application.

A represents the web of paper in both apparatuses. A' is the size-setting apparatus and A² the paper-drying apparatus, which is like in every respect that of my said application.

The paper-sizing apparatus comprises, in addition to the mechanism above referred to, means for forcing currents of cool air against the surfaces of the web. This means is like that employed for directing heated air against the surfaces of the web and comprises an upper duct or passage B, through which the cool air is forced and which has suitable directing nozzles or outlets b and the duct or passage B', having the directing outlets or nozzles b'.

C C' are ducts or passages having nozzles or outlets c c', respectively, through which heated air is directed upon the surfaces of the web, and they form a part of the paper-drying apparatus.

For setting the size I prefer to use cool air between 40° and 70° Fahrenheit. For drying the web I prefer to use dry air heated to from 80° to 130° Fahrenheit. The air may be cooled by being passed through a condenser or in any other desired way and is fed under pressure through the ducts or passages.

The operation of the device is as follows: The web from the sizing-tub passes through the size-setting grid and is there subjected to blasts of cool air, which cause the sizing to set in the manner most approved. The web with the sizing thus set passes on through the drying-grid and is then subjected to the action of drying-currents of air, which serve to dry the sized web.

The method of drying paper which is incidentally referred to herein has been made the subject-matter of a separate application.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a paper-drying machine, a grid having two sections one of which is combined with means for first directing cool air against a web of paper passing through it, and the other of which is combined with means for then directing heated air against the web of paper passing through it.

2. In a paper-making machine, a size-setting grid and web-drying grid, means for directing cool air against the web while in the size-setting grid and means for directing heated air against the sized web while in the web-drying grid.

3. In a paper-drying apparatus, a grid, one section of which is used for setting size in a web of paper and the other section of which is used for drying the sized web, an air-duct at each end of the size-setting section of the grid and means for feeding from said first-named ducts currents or blasts of cool air against both surfaces of the passing web and further means for feeding from said second-named ducts currents or blasts of drying-air against both surfaces of the passing web.

WILLIAM M. BARBER.

In presence of—

J. M. DOLAN,

F. F. RAYMOND, 2d.