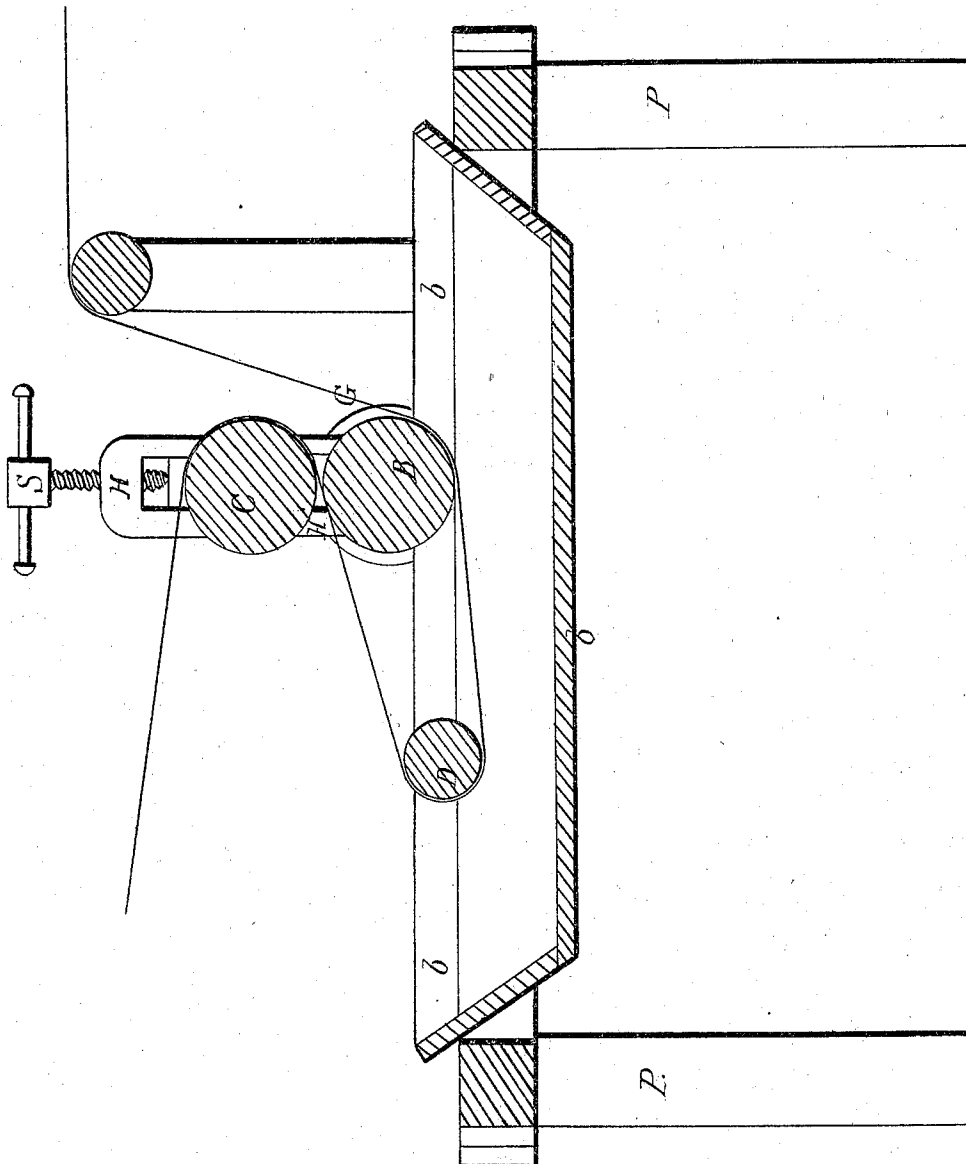


L. D. Brown.
Sizing Paper.

N^o 2,479. Patented Mar. 4, 1842.



UNITED STATES PATENT OFFICE.

LORENZO D. BROWN, OF LEE, MASSACHUSETTS.

MACHINE FOR SIZING PAPER.

Specification of Letters Patent No. 2,479, dated March 4, 1842; Antedated September 4, 1841.

To all whom it may concern:

Be it known that I, LORENZO D. BROWN, of Lee, in the county of Berkshire and State of Massachusetts, have invented a new and useful Improvement in the Manufacture of Paper, called a "Vat Sizing Machine;" and I do hereby declare that the following is a full and exact description of the construction and operation of the said machine, the annexed drawing being a part of said description and this specification and showing a section of the machine.

This sizing machine consists of two parallel timbers framed together by two girths, or cross pieces of timber, standing on four posts, designated in the drawing by the letters P, P, in which frame, is placed a vat, as shown in the drawing, marked *b, b, b*. This vat should be about four feet in length, about ten inches deep, and should be wide enough to correspond with the width of the making cylinder in the vat of the making machine. Four or five inches is considered large enough for the frame timber, and the frame will be found most convenient at the height of about two feet from the foot of the post to the top of the parallel timber, or plate; and should be large enough, each way, to receive the vat.

A stirrup is placed on each end of the plates, or parallel timbers of the frame, about eighteen inches from the back end of the vat, and opposite each other. These stirrups are designated in the drawing and marked H, H. The stirrups should be made of iron, or some other strong metal. These stirrups support two press rollers, marked in the drawing B, and C, (and made of wood). These rolls should be about ten to twelve inches in diameter, and should be turned smooth and even on their surface, so as to come to a tight joint along their line of contact when placed, and resting in their position in the stirrups as designated in the drawing. Iron or wooden boxes of sufficient size to fit the gudgeons or bearings of the rolls, must be placed in the stirrups to keep the press rollers B, and C, in their proper places which is one directly above the other, so that roller C, will rest upon roller B, and lie pressed down on to it, by means of the screws passing through the tops of the stirrups marked S, S. Levers may be used for this purpose instead of screws, if thought preferable by the operator.

The shaft of roller B, is extended, and should be so far, as may be necessary to receive the pulley G, which is represented in the drawing, over which a belt is to pass to give the machine, motion. A small stationary wood roller, with smooth surface, is placed across the vat in front of press roller B, and, in a parallel line with it; and should be placed about four inches from the front side of the surface of said roller B. This small roll is indicated in the drawing, marked D. This distance, however, may be varied by the operator, according to the strength of the paper he is making, or, according to his notions of the distance which it may be necessary for the paper to pass in the sizing in the vat, in order to become thoroughly saturated.

The design of the vat is to receive and contain the size after it is prepared (in the usual way for hand sizing) for use, into which, a sufficient quantity is to be put, and may be introduced into the same, by use of buckets, or in such other manner, as the operator may choose to adopt. The press roller B, is so placed as to touch the size in the vat or descend a small distance into it when the vat is filled to its proper height for sizing, and the stationary roll D, should be placed so low in the vat, as to be one half of its diameter immersed in the size.

This sizing machine may be used in connection with the drying machines, now in use in the manufacture of paper, and should be so placed, as to receive the paper as it comes from the drying machine, or from intermediate reels, which may be used, or not, at the option of the manufacturer; but should the operator choose to dispense with the use of reels in the line of machinery, to which this sizing machine is attached, then the motion of press roll B, must correspond exactly with the motion of the drying cylinders. If the paper be taken by the sizing machine from intermediate reels; a motion somewhat quicker is recommended for the press roller B.

The paper, whether taken from the drying machine, or from the intermediate reels by the sizer, should enter the size in the vat behind the press roller B, at a point from one to two inches back from the line of contact, formed by the backside surface of press roller B, and the surrounding size in the vat, and, proceeding in a continuous sheet, pass under the under surface of said

roller B, in the size on, to and under stationary roll D, and coming out of the size, and passing over stationary roller D, thence between press rollers B, and C, the action
5 of which draws the paper from the drier or reels through the size in the vat, by which means, the paper becomes thoroughly saturated with the sizing, and is, at the same time, pressed between the rollers B, and C,
10 and rising upon the upper surface of roller C, is then taken off in a state sufficiently dry, to be cut into sheets by the cutting machine. The course of the paper through the sizing machine, as taken from the drier
15 without reels is indicated by the red lines in the drawing. The press rollers B, and C, and the stationary roller D, may be made of wood, or metal, according to the disposition of the manufacturer. The press rollers
20 B, and C, should be about four inches shorter than the width of the vat, and the press roller B, may be raised above the surface of the size in the vat, if thought advisable by the operator; but I deem it best
25 to have it immersed in the size as heretofore described.

This vat sizing machine differs from others in the following points and particulars; viz: in that it is much more simple in
30 the nature of its construction, there being employed only three rollers; whereas other machines are complicated in their structure, generally embracing from 4 to 6 rollers and bars and less perfect in their operation and
35 the manner of producing the results. It is

also essentially different, by causing the paper to pass through a more extended body of size, it being from three to four feet, thereby securing the object of perfectly sizing thick paper as well as thin, and also
40 from the less number of rollers and bars and cylinders, over and under which the paper has to pass in other machines; it is sized without loss by being broken and destroyed in the sizing operation. This also varies from
45 all others, with respect to the position and advantages of the stationary roll D, by the use of which, in a stationary position, all wrinkles, folds and other imperfections of this kind, made in the paper by drying, or in
50 any stage before sizing, are effectually and completely removed;—consequently a great saving is made, which otherwise would be lost and broken.

What I claim as my invention and desire
55 to secure by Letters Patent is—

The additional roller D located as herein described in combination with the rollers B, C, by which arrangement the paper passes
60 through the size, and the size has free access to both sides of the sheet between the rollers B and D, and by which also the wrinkles or folds formed by its expansion in passing through the size are removed before it reaches the press rollers, all as herein
65 described.

LORENZO D. BROWN.

Witnesses:

CHAS. D. W. V. ALLEN,
H. M. BRADLEY.