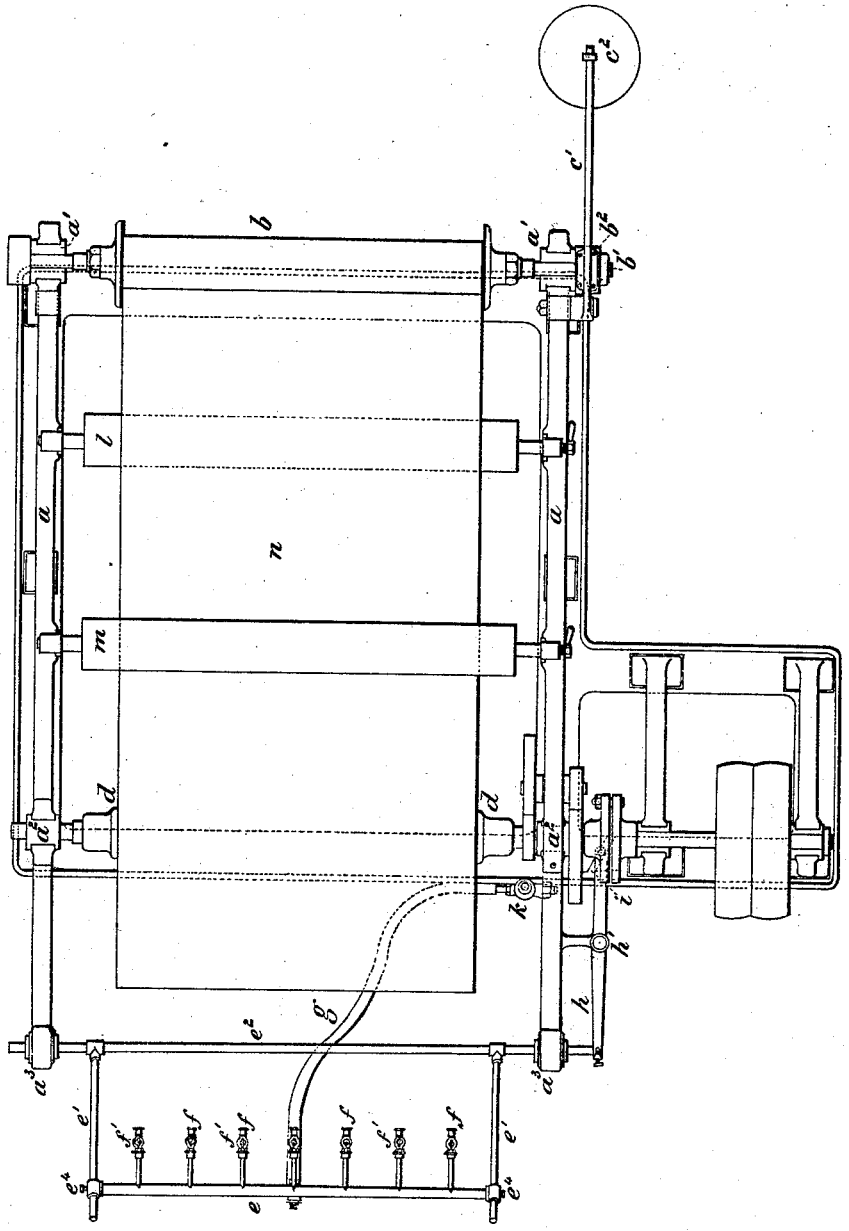
2 Sheets—Sheet 1.

E. WALKER.

MACHINES FOR DAMPING PAPER FOR PRINTING.

No. 184,025. Patented Nov. 7, 1876.

Fig. 1.



Witnesses
Harry G. Clark
Charles G. Reese

Inventor,
Edmund Walker
By K. W. Beadle & Co.
Attys.

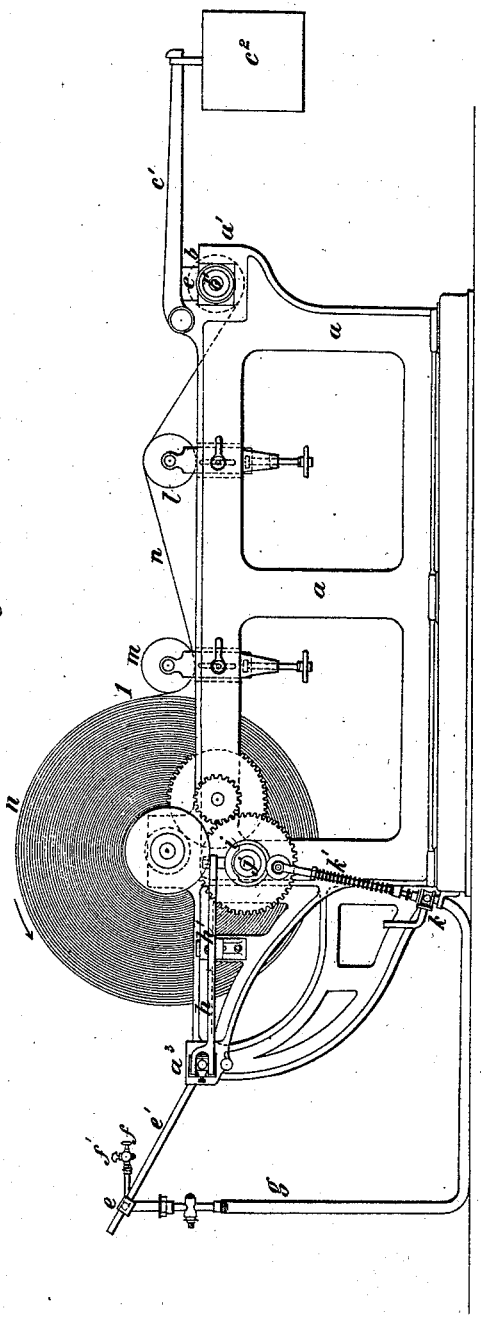
2 Sheets—Sheet 2.

E. WALKER.

MACHINES FOR DAMPING PAPER FOR PRINTING.

No. 184,025. Patented Nov. 7, 1876.

Fig. 2.



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UNITED STATES PATENT OFFICE.

EDMUND WALKER, OF LONDON, ENGLAND.

IMPROVEMENT IN MACHINES FOR DAMPING PAPER FOR PRINTING.

Specification forming part of Letters Patent No. **184,025**, dated November 7, 1876; application filed February 5, 1875.

To all whom it may concern:

Be it known that I, EDMUND WALKER, of London, England, engineer, have invented an Improved Method of and Machinery for Damping Paper for Printing Purposes, of which the following is a specification:

This invention consists in the combination of a reciprocating bar with a pipe carrying jets and certain connecting-arms, as will be fully described hereinafter.

Figure 1 is a plan or top view of the said machine. Fig. 2 is a side elevation of the same, with a portion removed to show more clearly the essential parts of my invention.

Like letters indicate the same parts in both of the figures.

The said machine has a frame, *a*, of cast-iron or other suitable material, and which has at one end suitable bearings a^1 for the first reel or roller *b*. To the shaft b^1 I apply a brake of any suitable construction. The brake shown in the drawing consists of a shoe, *c*, of wood or other material, which bears on the wheel or roller b^2 and is secured to a weighted lever, c^1. The pressure of this brake is regulated by adjusting the weight c^2 on the said lever. The said machine also carries near its other end the second or receiving reel or roller *d*, whose journals are fitted to turn freely in bearings a^2. In front of this roller *d* I arrange a pipe or tube, *e*, provided with nozzles *f* or jet pipes or apertures, and connected, by a flexible pipe, *g*, with a cistern or pump for supplying it with water, or with a steam-boiler for supplying it with steam or vapor. The water or steam issuing from the said nozzles or jets will damp or wet the paper as it is coiled on the roller. The pipe *e* may be fixed immovably to the frame; but I prefer that it should be movable, and it is therefore attached, by the arms or bars e^1, to a rod or bar, e^2, which is fitted to slide endwise in bearings a^3 in the sides of the frame *a*, and is moved to and fro therein by the lever *h*, which has its fulcrum at h^1, and is actuated by a cam, *i*, on the shaft *j*, which is geared, in connection with the roller-journals, by toothed wheels, as shown in Fig. 1. By moving the pipe *e* to and fro while the water or vapor is being discharged from its nozzles or any required number of them upon the paper, the entire surface of the paper will be uniformly damped or wetted. The said nozzles have cocks f^1, by which the discharge of any of them is controlled or stopped, and a greater or lesser number of them may be opened, as may be found necessary or desirable. The pipe *e* may also be adjusted upon the arms e^1, nearer to or farther from the roller *d*, for the purpose of adjusting it to the exact distance required from the roller, and is made fast on the said arms by set-screws e^4.

As it will sometimes not be necessary that the wetting or damping should be continuous along the entire length of the paper, I provide the supply-pipe to which the flexible pipe *g* is attached with a valve or cock, *k*, which is opened and closed alternately by a rod, *k'*, actuated by a cam or other device geared in connection with the roller *d*. This cam is so formed and operated that the opening of the said valve will be stopped intermittently during a number of revolutions of the roller, so that the damping or wetting of the paper will be intermittent, and by having a number of these cams, which may be changed as desired, I may adapt the apparatus to damp or wet the paper more or less, according to its class or quality, some classes of paper requiring considerably more damping than others. *l m* are adjustable smoothing-rollers, which support and guide the paper between the reels *b d*.

In using the machine represented in the drawing, a reel, *b*, with the continuous paper coiled upon it, is placed in the bearings a^1, and is conducted over the roller *l* and under the roller *m* to the reel *d*, its end being coiled upon the said reel. Then the machine is set in motion by power applied to the driving-pulley, and the reel *d* turns rapidly in the proper direction to coil the paper *n* upon it, as indicated by the arrow. The cocks of the nozzles *f* being opened, the water in a state of fine spray (or the steam or vapor) is ejected from the said nozzle upon that portion of the paper which is nearly opposite the part 1 where it is received upon the said reel, as clearly shown in Fig. 2. Therefore, as will be clearly understood by referring to this figure and by the above description, there will always be between this part 1, when the paper is being received and coiled on the reel, and the part

thereof wetted by the spray of water, a large area, in proportion to size of reel, of dry or unwetted paper, which, binding closely and tightly upon the preceding coil, will, at any moment during the process of reeling, take the whole or nearly the whole strain caused by the application of the brake, and therefore the damped or wetted portion will be protected from such strain, and consequently the reeling and damping for the entire length of paper may be accomplished with great rapidity, and the paper will be uniformly damped or wetted; and as a great pressure may be applied to the brake without tearing the paper, it will be free from creases or wrinkles and in the most favorable condition for the printing. As the reels are emptied and filled they are removed from the machine, and others put in their place. The said reels may be supplied with the continuous paper in any required length. For newspaper printing it is preferable to use lengths of from three to four miles.

It is obvious that the position of the nozzles *f* is not necessarily that shown in the drawing. They may be placed opposite the circumference of the reel *d* at any point which will leave between it and the part 1, where the paper is received upon the said reel, a sufficient area of dry or unwetted paper to keep the strain or pressure caused by the brake from the damped or wetted portion. But I prefer to have these nozzles in the position shown, as when so arranged they are easily accessible and in the most convenient position to be controlled by the operator or attendant.

I claim as my invention—

The combination of the reciprocating bar e^2 with the pipe *e*, having jets *f* and connecting-arms e^1, as described.

EDMUND WALKER.

Witnesses:

WM. ROBT. LAKE,

HY. JAS. NOON.