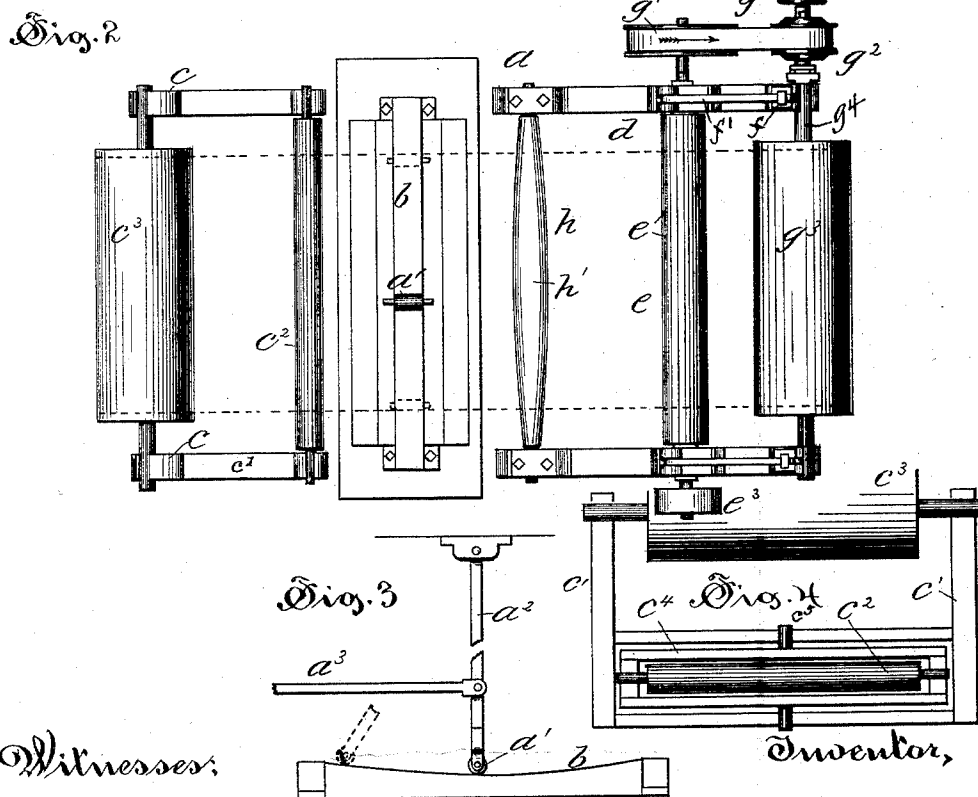
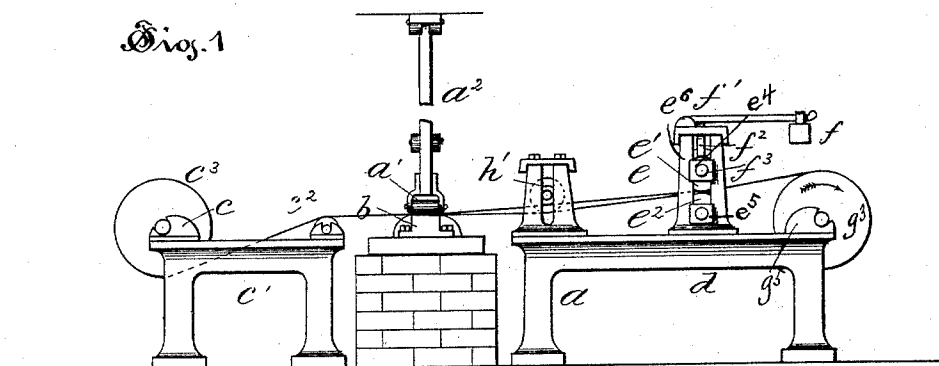


(No Model.)

A. W. CASE.
PAPER POLISHING MACHINE.

No. 468,436.

Patented Feb. 9, 1892.



Witnesses:
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UNITED STATES PATENT OFFICE.

ALBERT WILLARD CASE, OF SOUTH MANCHESTER, CONNECTICUT.

PAPER-POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 468,436, dated February 9, 1892.

Application filed September 30, 1889. Serial No. 325,469. (No model.)

To all whom it may concern:

Be it known that I, ALBERT WILLARD CASE, a citizen of the United States of America, residing at South Manchester, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Paper-Polishing Machines, of which the following is a specification.

My invention has relation to a machine for finishing and polishing paper, the object being to provide simple and effective mechanism for polishing paper when it is fed from a continuous strip or roll.

The invention consists in the combination, with a transversely-operating polishing-roller, of mechanism hereinafter fully described and claimed, whereby due provision is made for preventing undue tension upon the paper and for insuring a steady and regular feed or movement of the same.

In the drawings, Figure 1 is a side elevation of a machine embodying my invention. Fig. 2 is a top or plan view thereof. Fig. 3 is a view of the polishing-roll and its connections, looking from the front end of the machine. Fig. 4 is a detail plan of a preferred form of paper-roll with swinging guide-roll.

a designates a paper-polishing machine, *b* the bed-plate thereof, and *a'* the polishing-roll. This roll *a'* is mounted in the lower end of a swinging arm or lever *a²*, the upper end of which is pivoted to a suitable support over the machine. This arm *a²* is connected by a pitman *a³* to a crank or like device, by means of which a reciprocating transverse motion is given to the arm and polishing-roll. The latter moves in the arc of a circle, the center of which is the pivot of the arm *a²*. On one side of the polishing-roll is arranged a paper roll *c³*, the shaft of which is supported in suitable bearings *c* in the frame or bed *c'*. A guide-roll *c²* is also provided between the paper-roll and the polisher. On the rear side of the polisher are arranged the devices for drawing the paper rearward, consisting of rolls *e' e²*, supported in bearings *e³ e⁴*, which are held in slotted standards *e⁶*, arranged on the bed *d*. The upper drawing-roll *e'* rests with its full weight upon the lower roll *e²*. The pressure of the upper roll upon the lower one is increased by means of weights *f*, suspended from levers *f'*, fulcrumed to the top

of the slotted standards *e⁶*, as shown. These levers are each provided with a depending arm *f²*, which rests upon the bearing *e⁴* of the upper roller. The degree of pressure may be varied by changing the weight *f* or sliding it upon the lever *f'*.

In the rear of the rolls *e' e²* is arranged a paper-roll *g³*, upon which the paper rolls or winds after passing through the rolls *e' e²*. This roll *g³* is driven by a belt *g*, passing from a pulley *g'*, fast to the spindle of the roll *e²*, to a pulley *g²*, arranged upon the shaft of the roll *g³*. The roll *e²* is provided with a belt-pulley *e³* for driving the rolls. The shaft *g¹* of the paper-roll *g³* is loosely mounted in bearings *g²*, and said roll is so arranged upon its shaft as to permit the roll to slip or turn upon its shaft when undue strain is exerted upon the paper in its rearward movement. The roll is not keyed or otherwise permanently secured to its shaft, but is held by frictional contact to normally turn therewith; but, as above stated, will slip upon the shaft when it encounters a certain resistance, and by this means provision is made for the required variation in the motion of said roll as the size of the roll of paper wound thereon increases.

In connection with the drawing-rolls *e' e²* I employ a vibratory or yielding roll *h'*, mounted in slotted bearings *h²* on the bed *d* between the drawing-rolls and the polisher. This roll *h'* is of irregular outline, its periphery being curved, as shown, the curve, preferably, being struck with the same radius as the curved bearing-surface *b* of the polishing-bed.

The polishing-roll holds the paper between it and the bed while it is in contact with the paper in passing from edge to edge of the latter. When the polishing-roll is at or near one edge of the paper, the weight of the roll *h'* draws the opposite edge of the paper slightly, and upon the return movement of the polishing-roll the opposite end of the roll *h'* draws the freed edge of the paper, so that the paper is drawn rearwardly from each edge alternately. The movement of the roll *h'* is a rocking movement, first one end and then the other being lowered and then raised. This movement is permitted by the slotted bearings of said roll *h'*. The progress of the paper through the drawing-rolls being regular and the strain thereon uniform, the action of

the polishing-roll and the yielding roll h' on opposite edges of the sheet is rendered so slight as to produce but little slack therein, the paper being so slightly displaced or disturbed that no wrinkling results in the sheet.

It may be desirable to allow the guide-roll c^2 a yielding movement at its ends. For this purpose I employ a frame c^4 , formed at its ends with bearings for the shaft of the roll c^2 and provided with pivot-arms c^5 , supported in bearings in the frame, as shown in Fig. 4. This construction affords a yielding support for the roll c^2 , so that any undue strain upon the edge of the paper will be compensated for by the tilting of the frame c^4 carrying the roll c^2 .

Having thus described my invention as required by the statute, what I claim as my invention, and desire to secure by Letters Patent, is—

1. In a paper-polishing machine, the combination, with a bed-plate and a polishing device arranged to reciprocate thereon, of drawing-rolls and a yielding roll between the polishing device and the drawing-rolls for effecting an alternating feed, substantially as specified.

2. The combination, with the reciprocating polisher, the drawing-rolls, and a yielding roll, of a guide-roll supported in a swinging frame, substantially as described.

3. The combination, with the front and rear paper-rolls, of the drawing-rolls, a yielding feed device, a reciprocating polishing-roll, and a guide-roll supported in a swinging frame, substantially as described.

ALBERT WILLARD CASE.

Witnesses:

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