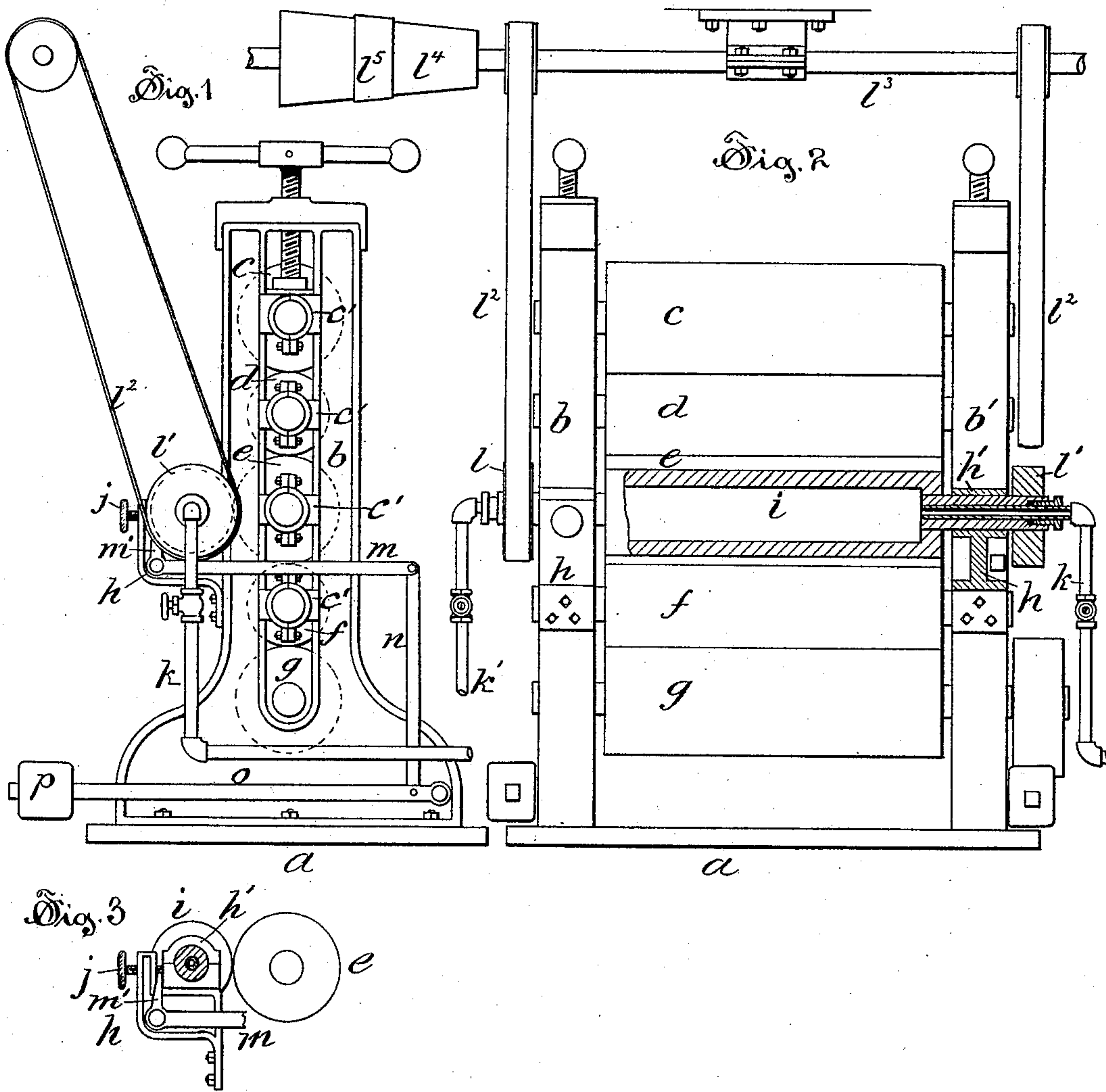


(No Model.)

J. D. PICKLES.  
PAPER FINISHING ROLL.

No. 387,693.

Patented Aug. 14, 1888.



Witnesses:  
H. R. Williams.  
A. B. Jenkins.

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attys.



# UNITED STATES PATENT OFFICE.

JAMES D. PICKLES, OF MANCHESTER, CONNECTICUT, ASSIGNOR OF TWO-THIRDS TO PETER ADAMS, OF PATERSON, NEW JERSEY, AND JAMES SYMINGTON, OF LANCASTER, PENNSYLVANIA.

## PAPER-FINISHING ROLL.

SPECIFICATION forming part of Letters Patent No. 387,693, dated August 14, 1888.

Application filed December 14, 1887. Serial No. 257,864. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES D. PICKLES, of Manchester, in the county of Hartford and State of Connecticut, have invented certain  
5 new and useful Improvements in Paper-Finishing Rolls, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

The object of my improvement is to provide  
10 a machine by means of which the surface of paper may be more or less highly polished in the finishing operation and while the paper is passing through the calender-rolls; and to this end my improvement consists in the combination of a stack of calender-rolls with an adjustable rotary polishing-roll arranged opposite one of the intermediate rolls of the stack,  
15 and adapted to be held in contact with paper passing over said roll; and it further consists in details of the several parts and their combination, as more particularly hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a view in end elevation of a stack of calender-rolls and embodying my improvement. Fig.  
25 2 is a view in vertical section of the machine, showing the position of the polishing-roll, and in view beyond the system of levers and weights by means of which the polishing-roll  
30 is held against the paper. Fig. 3 is a detail side view of the polishing-roll, showing the bearing for the roll and one of the rolls of the stack of rolls in contact with the polishing-roll.

In prior machines of this class that most  
35 nearly resemble my improved paper-polishing machine a polishing-roll has been mounted directly over and arranged to operate with the top roll of a stack of calenders; but it has been found that such a polishing-roll can be  
40 used with only one class of papers, that require a particularly high degree of polish, and other grades and kinds of paper are torn and otherwise damaged by the operation of the machine. I have discovered, however, that by  
45 locating the polishing-roll opposite to one of the intermediate rolls of a stack and arranging the polishing-roll to operate in connection with such intermediate roll all of the faults and defects of old and prior devices are overcome, and I am enabled to operate the ma-

chine on all grades and kind of paper, and to obtain, without loss by reason of damage, the necessary degree of polish and finish.

In the accompanying drawings, the letter *a* denotes the frame of the stack; *b* and *b'*, vertical standards rising from the bed and adapted  
55 to support the roll-bearing *c'*; and *c*, *d*, *e*, *f*, and *g* denote a series of rolls mounted one above the other and making up a series of what is commonly known as a "stack." These  
60 rolls, the supporting-frame, and the bearings for the rolls are of ordinary construction. To such a frame, and on one side thereof, is secured a bracket, *h*, that supports the bearings  
65 *h'* for a roll, *i*, that extends across the frame in such position that its surface may be brought in rubbing contact with the surface of an intermediate roll, *e*, of the stack of rolls. The  
70 bearings *h'* for this polishing-roll *i* are adjustable in a horizontal plane toward the roll *e*, and may be held against movement away from the roll *e* by means of the set-screws *j*, that  
75 pass through threaded sockets in an upright arm of the bracket, and have a handle by means of which the screws may be turned. The polishing-roll *i* is made hollow, so that  
80 steam or hot water may be passed through it by means of pipes *k k'*, that are connected to opposite ends of the hollow shaft, on which each roll turns in the bearings. In order to  
85 drive this polishing-roll, the pulleys *l l'* on the opposite ends of this shaft are connected by belts *l''* with a counter-shaft, *l'''*, on which is a cone-pulley, *l''''*, that serves as a means for adjusting the rate of speed of the polishing-roll. In order to hold the polishing-roll against the  
90 paper with a yielding pressure while the paper is passing over the roll *e*, the upright arm *m'* of the bent lever *m* is arranged to press inward against the sliding bearing *h'* of the roll, and the longer arm of this bent lever is connected by the rod *n* with the lever *o*, that bears  
95 a weight, *p*, the arrangement of this system being such that a comparatively small weight may be used to exert a pressure upon the roll equal to many times its weight.

This polishing-roll is driven at a greater rate of speed than the paper has as it passes over the roll *e*, and the surface of the roll rubbing on the paper finishes and polishes it to any

degree desired, and, owing to the fact that the paper is wrapped upon the roll *e* and is firmly held between the rolls *d*, *e*, and *f* as it passes over the roll *e*, there is no liability to tear the  
5 paper.

I claim as my invention—

1. The combination, with a stack of calender-rolls, of an adjustable polishing-roll supported in bearings with its surface in rubbing con-  
10 tact with paper borne on one of the intermediate rolls of the stack, the polishing-roll bearings, and means for yieldingly pressing said bearings, all substantially as described.

2. The combination, with the intermediate

roll, *e*, of a stack of calender-rolls, the roll-sup- 15  
porting brackets *h*, secured to the frame of the stack, the polishing-roll *i*, supported on the brackets, the set-screws borne in the brackets and by means of which the outward movement of the roll is limited, and the system of levers 20  
and weight, by means of which the roll is held inward with a yielding pressure, all substantially as described.

JAMES D. PICKLES.

Witnesses:

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