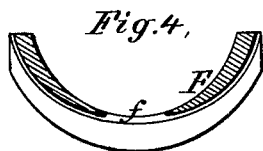
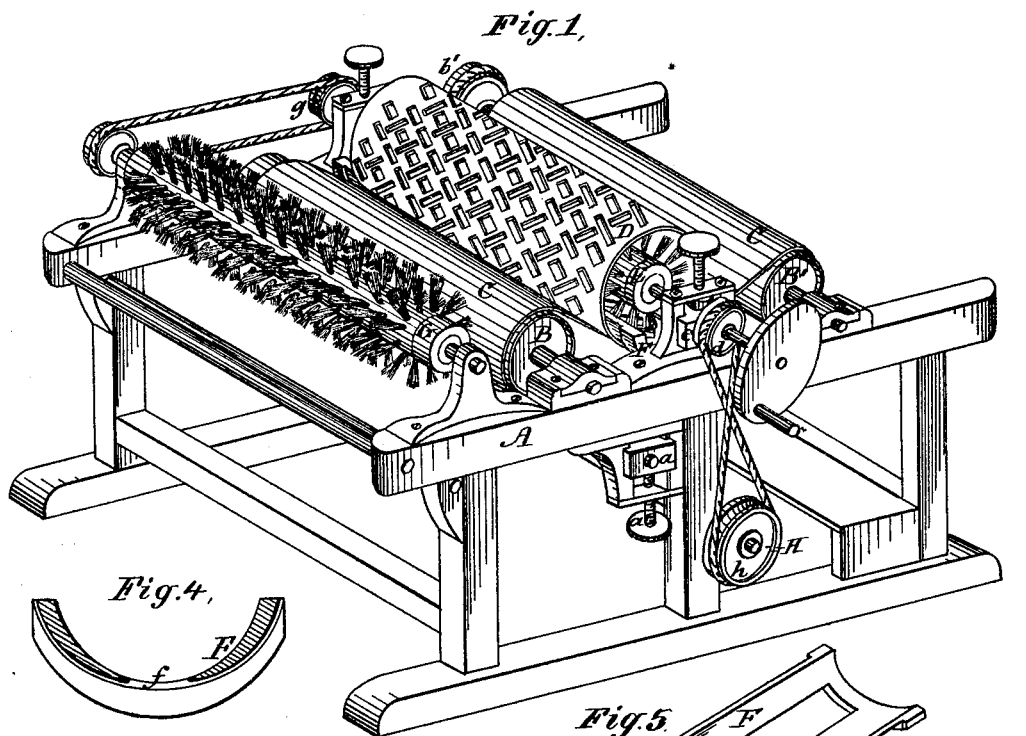


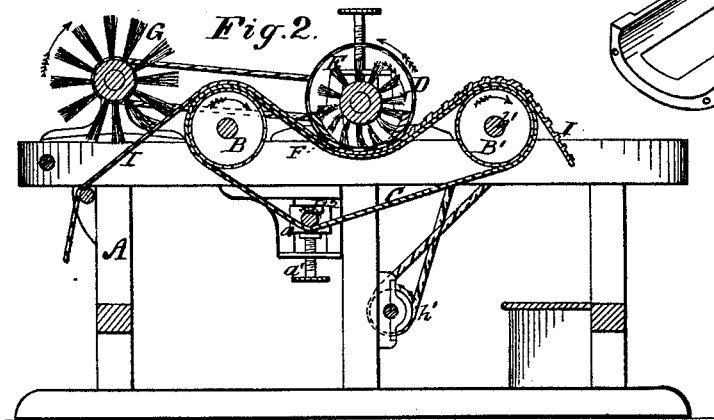
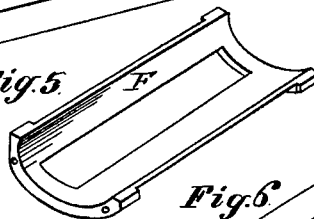
J. H. SMITH.  
CLOTH-FINISHING MACHINE.

No. 185,587.

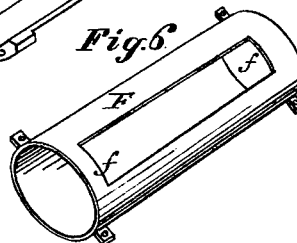
Patented Dec. 19, 1876.



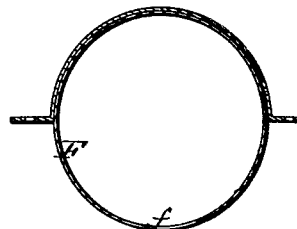
*Fig. 5.*



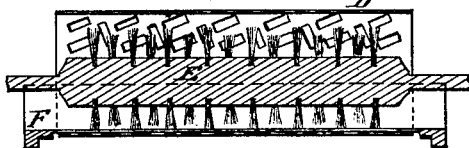
*Fig. 6.*



*Fig. 7.*



*Fig. 3.*



Witnesses  
*Excella Dick*  
*M. R. Edelen.*

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# UNITED STATES PATENT OFFICE

JAMES HARPER SMITH, OF RARITAN, NEW JERSEY.

## IMPROVEMENT IN CLOTH-FINISHING MACHINES.

Specification forming part of Letters Patent No. 185,587, dated December 19, 1876; application filed October 3, 1876.

*To all whom it may concern:*

Be it known that I, JAMES HARPER SMITH, of Raritan, in the county of Somerset and State of New Jersey, have invented certain new and useful Improvements in Cloth-Finishing Machines; and that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a perspective view of the machine. Fig. 2 represents a longitudinal vertical section of the same. Fig. 3 represents a vertical section through the nap-raising brush, the pattern-cylinder, and its bearing. Fig. 4 represents a transverse section through the pattern-cylinder bearing. Fig. 5 represents the same in perspective. Fig. 6 represents in perspective, and Fig. 7 represents in transverse section, a modification of the bearing used to support the pattern-cylinder.

Similar letters of reference, where they occur, denote like parts of the machine in all the figures.

My invention consists in novel means used in connection with a hollow cylindrical revolving pattern, by which the nap of cloth can be raised according to designs previously cut out of the pattern, said means consisting in a revolving brush operating in the interior of the cylindrical pattern, upon a concave surface formed by the cloth; and in a circular or semicircular stationary bearing to support and guide the cylindrical pattern, said bearing being slotted to permit the revolving brush to operate upon the cloth. It also consists in an endless elastic belt or apron, that can be adjusted so as to regulate the pressure of the cloth against the perforated cylindrical pattern, as will be hereinafter more fully described.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

The frame A is provided with suitable journals for the shafts of the cylinders B B', that carry the endless elastic belt or apron C, said belt passing under a tension-roller, B<sup>2</sup>, the shaft of which passes through journals a, that can be depressed by screws a', so as to regu-

late the pressure of the cloth against the perforated pattern-cylinder D. This cylinder is made preferably of thin brass, with any desired configuration cut out, forming openings, through which the revolving brush E can act upon the nap of the cloth and raise it above the surface of the cloth that is protected by the unremoved parts of the pattern-cylinder D. This cylinder is kept down upon the cloth by a circular or semicircular stationary bearing, F, fastened to the frame A at each end. The bearing F has an opening or slot, f, extending nearly its whole length for the bristles of the brush E to pass through and come in contact with the pattern-cylinder or the cloth through its perforations. The metal on each side of the opening f is formed with a thin edge to bring the pattern-cylinder and the brush in close contact within the opening f. The revolving brush E, being located within the pattern-cylinder, acts upon the cloth, while it is held in a concave form for a longer period of time than if it were passing over a convex form, and a brush made out of bristles can then be used to better advantage, and produce much finer results than could be given by a metallic carding-roller acting upon a convex surface.

The shaft of the revolving brush E passes through adjustable bearings e, to allow for the wear of the bristles and regulate its operation.

At the fore end of the machine a revolving brush, G, is located, to smooth the cloth and remove any wrinkles that may be upon it before reaching the hollow pattern-cylinder.

Motion is communicated to the revolving parts from the shaft of the brush E. This shaft, carrying a pulley, d, transmits its motion, by means of a cross-belt, to the pulley h upon the counter-shaft H. This shaft carries a pulley, h', that in its turn transmits its motion, by means of a cross-belt, to the pulley b' upon the shaft of the cylinder B<sup>1</sup>, that advances the elastic belt C, and with it the cloth, the latter being brought under the pattern-cylinder by friction with the elastic belt. The brush G is revolved by a belt passing over a pulley, g, mounted upon the shaft of the brush E, by which the cloth I is smoothed after it has been dampened, and before reaching the pattern-cylinder.

Having thus described my invention, what I claim is—

1. In a cloth-finishing machine, a semicircular stationary bearing, having an opening or slot, *f*, formed with thin edges, in combination with a revolving brush inclosed within a cylindrical pattern, substantially as and for the purpose described.

2. A revolving brush, *E*, inclosed in a revolving cylindrical pattern, and operating upon its concave surface, in combination with a stationary slotted cylinder, substantially as described.

3. A revolving brush, *G*, for smoothing cloth previous to raising its nap, according to certain designs, in combination with pattern-cylinder *D* and an endless elastic apron, *C*, and a revolving brush, *E*, adapted to operate upon a concave surface of the cloth, substantially as set forth.

4. The adjustable roller *B*<sup>2</sup>, to regulate the tension or pressure of the elastic apron *C*, in combination with a pattern-roller inclosing a revolving brush, substantially as and for the purpose described.

5. In combination with a revolving brush, *E*, operating upon the concave surface of a hollow pattern-cylinder, supported by a cylindrical or semi-cylindrical stationary bearing, *F*, and an elastic apron supporting the cloth to be operated upon, the adjustable bearings *e* of said brush to regulate the operation, substantially as described.

JAMES HARPER SMITH.

Witnesses:

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