J. L. WILLIAMS.

MACHINES FOR FINISHING KNITTED GOODS.

No. 181,232. Patented Aug. 15, 1876.

Fig: 1.

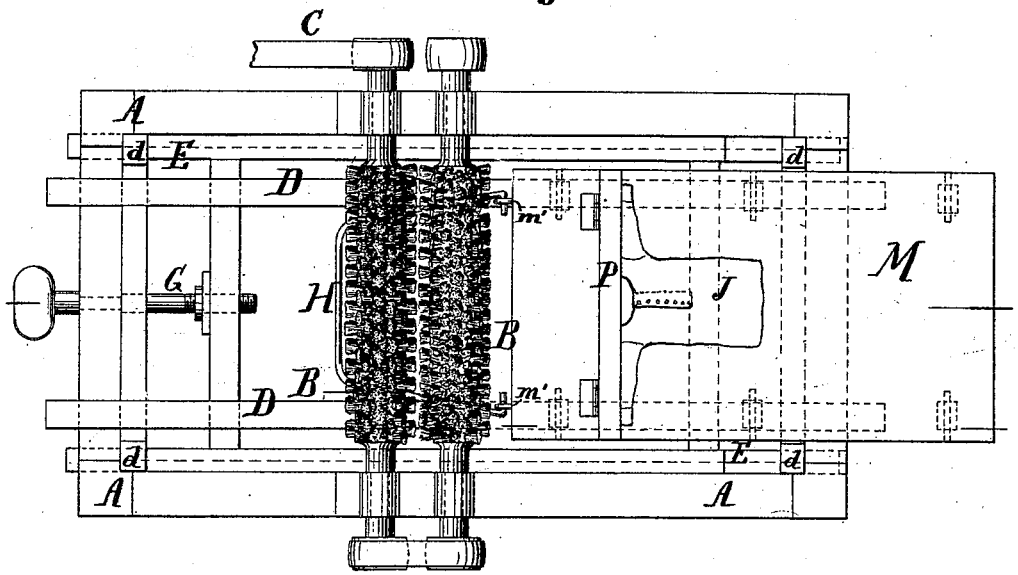


Fig: 2.

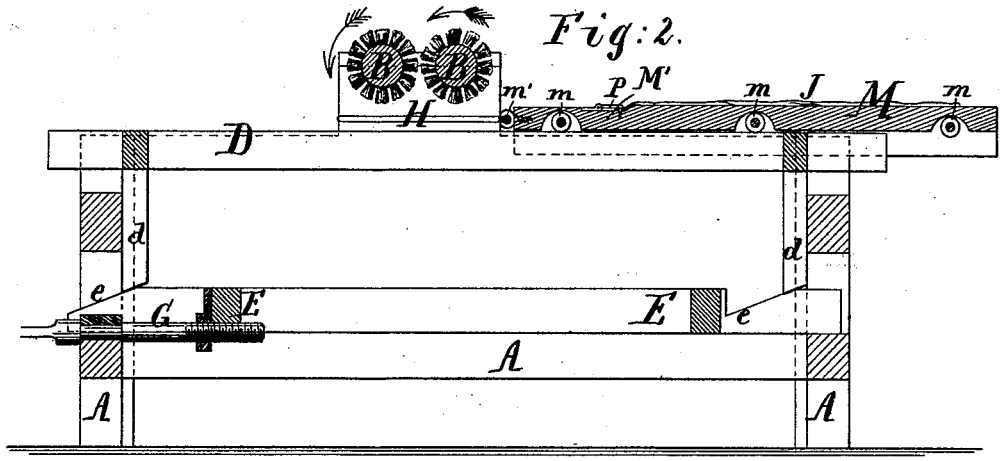
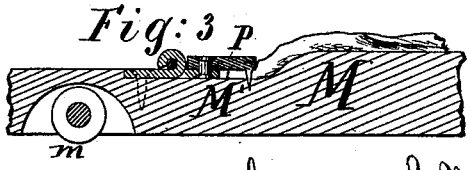


Fig: 3



Witnesses:

A. Henry Gentner
Harold G. Underwood,

Inventor:

James L. Williams
by his attorney
Thomas S. Stetson

UNITED STATES PATENT OFFICE.

JAMES L. WILLIAMS, OF UTICA, NEW YORK, ASSIGNOR TO HIMSELF AND SAMUEL S. LOWERY, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR FINISHING KNITTED GOODS.

Specification forming part of Letters Patent No. **181,232**, dated August 15, 1876; application filed April 7, 1876.

To all whom it may concern:

Be it known that I, JAMES L. WILLIAMS, of Utica, in the county of Oneida, State of New York, have invented certain new and useful Improvements relating to Machinery for Brushing and Completing the Finish on Knitted Goods, of which the following is a specification:

I take under-shirts, drawers, and analogous knitted goods, and after subjecting them first to a high and then to a low temperature while under pressure, and removing them from between the press-boards in the severely flattened and hard condition which results, extend them on a traversing carriage, and confine them along their entire upper edge by a sunk clamp, and then slowly traverse the carriage backward and forward under revolving brushes. Having sufficiently treated one side I turn the goods over, and after clamping them anew, similarly dress the other side. The result is not only the production of a surface analogous to nap, which may be subsequently sheared, if desired, to make the pile or nap more uniform, but the entire knitted fabric is, by this treatment of the surface, changed in its character, and made just sufficiently yielding and flexible.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 is a plan view. Fig. 2 is a central longitudinal section through the entire machine. Fig. 3 is a section of a portion on a larger scale.

Similar letters of reference indicate like parts in all the figures.

A is a fixed frame-work supporting the shafts of revolving brushes B, driven by a belt, C, from a steam-engine or other suitable power. D D are longitudinal ways supported on legs *d*, which rest on an adjustable framing, E, which presents inclined or wedge-like bearings *e*, on which the legs *d* rest. G is a screw, by turning which the framing E is adjusted longitudinally in the frame A. By drawing it to the left the ways D are raised, and, by moving it to the right, the ways D are lowered. M is a carriage supported on wheels *m*, and guided on the ways D. It may be controlled in its position longitudinally by means of a bail or loop, H, which engages in eyes *m'*. The carriage M and its connections may thus be readily moved longitudinally in either direction by hand or by other suitable force. P is a clamping-bar, sunk flush with or a little below the main bearing-surface of the carriage M, and turning on hinges correspondingly sunk, so that the clamp and the hinges may be both below the action of the brushes, while any garment held by the clamp and lying on the general surface of the carriage may be subjected to the full force thereof. The clamp acts in a sunk space, M', and either the clamp or the sunk space in the carriage, or both, may be provided with sharp points or spurs adapted to take a firm hold on the goods, and aid the clamp in maintaining a firm gripe. It is important that the spurs be so small and so numerous that neither the fact of their perforating the garment or the force of a considerable pull, due to the brushing, may disfigure the garment by the production of any considerable holes. The machine should be of such size that an undershirt may be held in the clamp P, with the arms extended, as indicated by J. Having been pressed, in that condition they are clamped in the position shown in Fig. 1, and the carriage M is moved slowly backward and forward several times, subjecting all the upper face of the shirt to the action of the brushes. Then, after releasing and reclamping the shirt in the reverse position, and repeating the operation, both sides are thoroughly dressed, and the garment is found not only with a much improved surface, but also with a radical change in the feeling of the entire body, a pliable and reasonably soft and velvety condition being found to have taken the place of the previous hard and boardlike feeling. The goods may be subjected to any further finishing, such as shearing, if desired. By turning the screw G, and thus moving the inclined bearings *e* under the legs *d*, I raise or lower the ways D, and, consequently, the clamp P, so as to subject the garment to a more or less severe action of the brushes, as

desired. A stout spring, screw, or other ordinary operating means (not represented) may be employed to operate the clamp P, and to insure a firm gripe and free release of the goods. Neither ordinary brushing machinery adapted for treating goods in the piece, nor any ordinary hat-brushing machinery, can be made available. I esteem it essential that the clamp P shall extend quite across the whole width of the garment, and that it shall be sunk nearly or quite out of contact with the brushes. I propose, in cases where the expense will be warranted, to provide special clamps and special sunk spaces M′ therefor, which, instead of being straight, as here shown, may be variously curved to correspond to the contour of the upper edge or any edge of the goods. I can, by such clamps, hold the garments successively by different edges, and finish by dressing at several operations, brushing first in one direction and then in the opposite direction, or cross-wise of the first brushing, as may be preferred in any case. The brushing-cylinders have pulleys on each end, so that they can be reversed every day, and thus always present the sharp edge of the bristles to the work.

I claim as my invention—

1. The carriage M M′ and clamp P, in combination with one or more revolving brushes, B, as herein specified.

2. The adjusting means G E *e*, in combination with the ways D, carriage M M′, clamp P, and brushes B, as herein specified.

3. The process of treating knitted fabrics by first compressing and hardening in an extended condition, and afterward brushing the surface, so as to obtain both firmness and smoothness, as herein specified.

In testimony whereof I have hereunto set my hand this 5th day of April, 1876, in the presence of two subscribing witnesses.

JAMES L. WILLIAMS.

Witnesses:

C. E. WILLIAMS,

W. J. WALTERS.