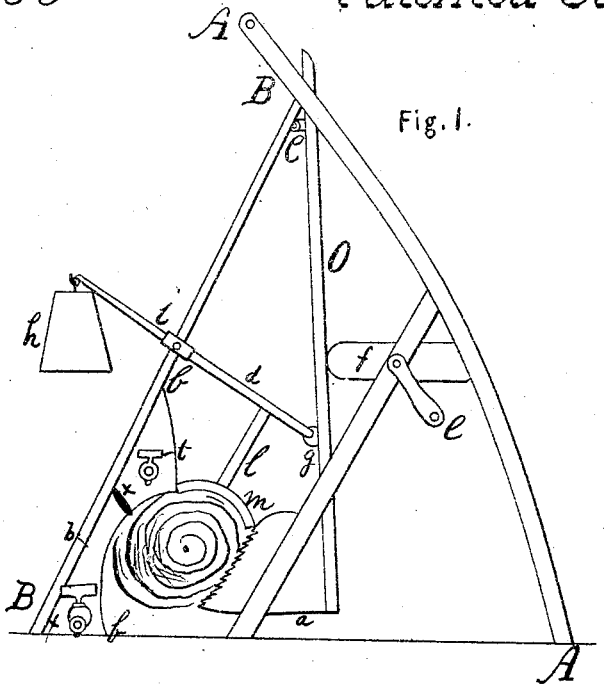
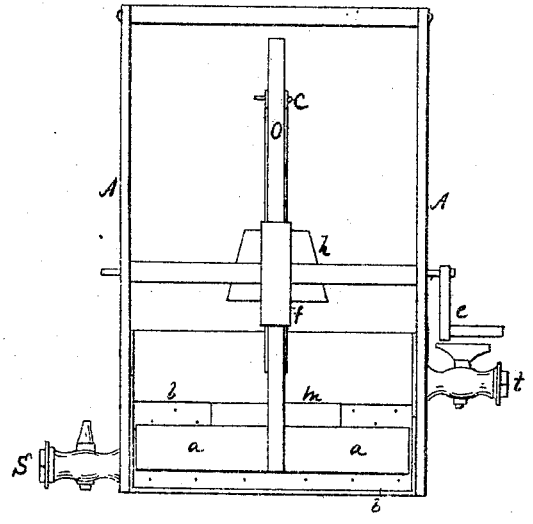
H. A. Wells.

Fulling Machine.

No. 2255 Patented Sep. 18, 1841.

Fig. 1.





UNITED STATES PATENT OFFICE.

HENRY A. WELLS, OF NEW YORK, N. Y.

MACHINE FOR FULLING, MILLING, OR PLANKING FELT-CLOTHS, &c.

Specification of Letters Patent No. 2,255, dated September 18, 1841.

To all whom it may concern:

Be it known that I, HENRY AUGUSTUS WELLS, of the city, county, and State of New York, have invented a new machine for felting fabrics made of wool, fur, hair, or cotton, called a "milling," "fulling," or "planking" machine, and which machine I use in my method of manufacturing cloth or other fabrics, as described in my specification bearing even date herewith; and I hereby declare that the following is a full and exact description thereof.

Figure 1, Plate I, is an end view of the machine and Fig. 2 a front view of the same.

A, A, B, is a triangular frame of which there are two—one at each end of the machine and placed about eight feet apart.

A horizontal cross piece D, is supported on B, B having journals which pass through B, at C. On this cross piece a long ribbed hammer nearly as long as the space between the frames and of which *a* is an end view is supported by a long handle O so as to be swung freely toward and from B B. This hammer has a slightly curved face. *b* is the end view of a metallic or wooden box as long or longer than the hammer with a partition *r* running the length of the box so as to make two entirely separate compartments. The lower one of these is perforated at small intervals on the side nearest to *a* while the upper one is tight. Steam is admitted into the lower one by the stop cock S and into the upper one by the stop cock *t* and the steam and water arising from condensation are drawn off from the upper compartment by another stop cock on the other end of the machine.

A cam *f* is supported as represented in the drawing or in any other convenient manner and is moved on its axis by the crank *e* or by other convenient means and thus made to pass against and recede from the handle *o* of the hammer. A lever *d* whose fulcrum is at *i* is connected with the handle *o* of the hammer by a point at *q* or in any other convenient manner so as to allow the lever *d* to oscillate on its fulcrum when the hammer is moved, the point *q* being at a greater distance from C than the fulcrum *i* is; *h* is a weight placed on the lever for the purpose of forcing back the hammer when relieved from the pressure of the cam *f*. A bearer of which *m* is an end view in form of a segment of a circle and of equal length with the hammer is connected with and suspended from the lever *d* by the standard or brace *l*.

In order to use this machine the article or bat *c* to be planked, milled or fulled is rolled up covered with canvas or any cotton material and placed between hammer *a* and the box *b*, the hammer being drawn away from the box *b* sufficiently to admit the article *c*. The hammer is then set in motion by turning the crank *e* so as to present the cam *f* lengthwise to or parallel with the handle *o* of the hammer which is forced back and away from the article *c* by the operation of the weight *h* acting upon the lever *d*. The crank is then turned the cam *f* presses the handle and the hammer is driven against the article or bat *c*. At the instant that the blow is struck the bearer *m* is pressed down upon the article or bat *c* which is prevented from escaping the blows of the hammer by this bearer and the curved face of the box *b* the blows of the hammer are given in rapid succession and while the hammer is forced back the article or bat *c* rolls for a short space down the curved face *b* so as to change a little the part exposed to the blow of the hammer which having a curved face and striking partly under the article or bat *c* forces it again back, up and against the bearer *m* and box *b*. By a series of strokes a complete revolution or several revolutions of the article or bat *c* is accomplished thus exposing every part of it to many blows.

As soon as the machine is set in motion steam is admitted through the stop cock *s* which leads into the perforated part of the box and thus a moist heat is imparted to the fabric or bat *c* when the article has been sufficiently acted upon in this way the stop cock *t* is opened by which steam is admitted into that part of the box which is tight and the article is submitted to the action of the hammer. While under the influence of a dry heat the blows of the hammer may be increased in severity by the addition of a shifting weight or weights. In the course of the operation as well while submitted to the influence of any as of moist heat, the article, fabric or bat *c* must be frequently taken out and the folds or rolls changed. When the operation has been continued the required time the machine is stopped and the steam (and water arising from its condensation) in the tight part of the box *b* is allowed to escape through the stop cock

corresponding with *t* and the machine is ready for further use.

The machine may be fitted with side hammers (one on each side) whose faces are so shaped as to strike the ends of the article, fabric or bat *c* squarely. These hammers will get their motion by means similar to those by which the main hammer is moved and make their blows at the instant the main hammer begins to recede from the article *c* and are of great use in equalizing the fulling, milling or planking of the goods.

This machine is used to felt and contract the material still more closely than may be done by my improvement in the fulling machine the specification of which bears even date herewith the material being placed in the casting between the hammer and the curved face in part perforated with steam holes as aforesaid and the machine put in action it is manifest that the hammer the face, the bottom and the top *m* forms a box sufficiently tight to retain the steam thrown in during the pressure and that as every operation the steam or heat has opportunity to perforate the material which it does alternately with every close pressure that is given to the material which is made to revolve as aforesaid by slow degrees till the fulling and felting is completed.

It is obvious that different forms and dimensions may be used in the construction of this machine and yet the principle remain the same.

What I claim as my invention and desire to secure by Letters Patent is—

The method herein described of subjecting the material or bat to the action of moist and dry heat in combination with the method above described of applying pressure.

Witness my hand this 24th day of August, one thousand eight hundred and forty one.

H. A. WELLS.

Witnesses:
S. H. MORSELL,
A. WILLIAMS.