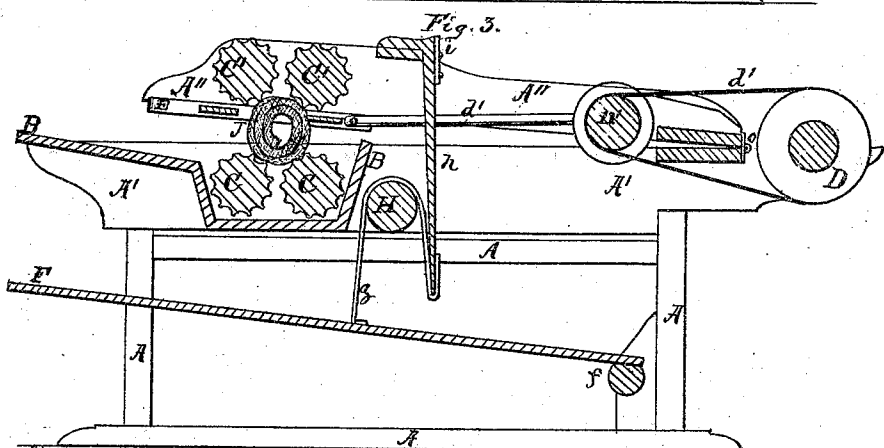
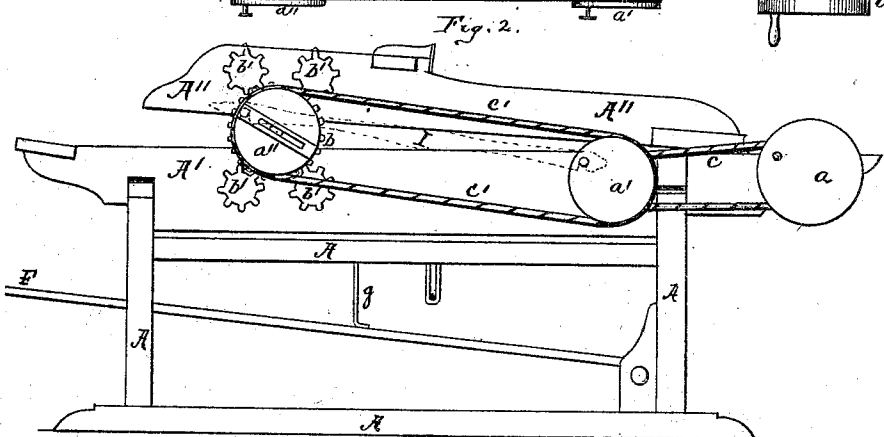
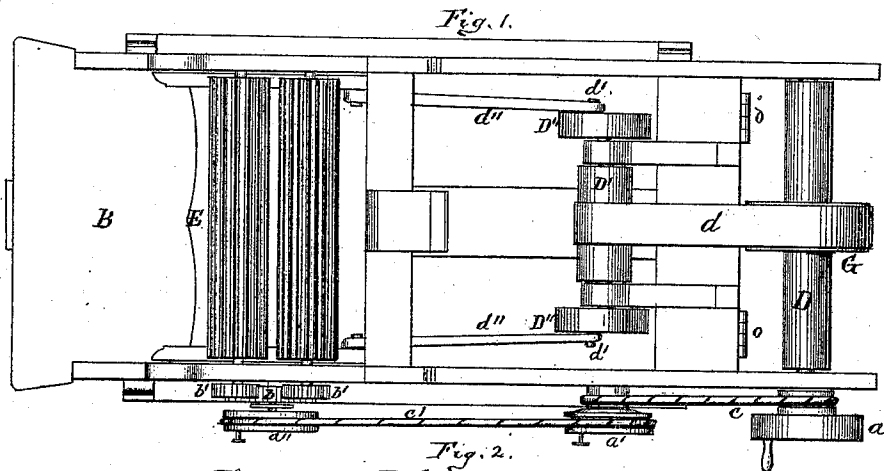


*F. S. Jennings,
Felting Machine.*

No. 98871.

Patented Jan. 18. 1870.



Witnesses.
*John F. Semell,
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United States Patent Office.

FREDERICK S. JENNINGS, OF DANBURY, CONNECTICUT, ASSIGNOR TO HIMSELF, MORGAN CHITTENDEN, AND HENRY W. DURYEE.

Letters Patent No. 98,871, dated January 18, 1870.

IMPROVEMENT IN FELTING-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

To whom it may concern:

Be it known that I, FREDERICK S. JENNINGS, of Danbury, in the county of Fairfield, and State of Connecticut, have invented certain Improvements in Felting or Fulling-Machines, of which the following is a specification.

Nature and Objects of my Invention.

The first part of my invention consists in having four rollers, more or less, so arranged as to form a chamber between them, and in having the rollers all roll one way, so as to keep the goods being felted or fulled, continually rolling between the rollers, and in having the upper roll or rollers attached to a hinged frame, capable of being raised by a treadle worked by the foot, or other means, at any time during the progress of the work, and admit the operator to inspect the goods and give the proper attention, or to remove them when necessary.

The second part consists in having a jigger, reciprocating between the upper and lower rollers, and coming in contact with the goods in the machine, being felted or fulled, on the front and back parts alternately, and giving the goods a rolling motion, so that while the goods are rolling between the rollers, the jigger is brought in contact with the goods at a different point at every reciprocation, which will give uniformity of action upon the goods throughout the entire surface brought in contact with the rollers and jigger.

The third part of the invention consists in changing the continuous revolving motion of the rollers, to an intermitting vibratory motion, with the means of adjusting the vibratory motion of the rollers, without disturbing the movements of the jigger which reciprocates between the rollers.

Description of the Accompanying Drawings.

Figure 1 is a plan view of the machine containing my invention;

Figure 2 is a side view of the same; and

Figure 3 is a sectional view of all the parts, when cut longitudinally and vertically through the centre.

General Description.

A, in the drawings, represents the supporting-frame, made in any convenient manner or form for the purpose.

A' is a frame, resting on the supporting-frame, and contains and supports the driving-shaft of the machine, and the necessary gear-wheels, pulleys, and bands, to give motion to the operating-rollers.

B is an inclined table and vat, sustained by frame A'. Transversely to the frame A', and within the vat B, are arranged two or more longitudinally-corrugated or fluted rollers, C C, and immediately above rollers C

C are two or more similar rollers, C' C', arranged in frame A', which is hinged to frame A' at *o*.

A continuous revolving motion, in the same direction, is given these rollers, by means of belt *d*, from driving-shaft D, to pulley *a*, and belt *c* to pulley *a'*, on the shaft of which is a gear-wheel, *b*, which gears into pinions *b' b' b' b'*, on the rollers C C and C' C'.

When an intermitting vibratory motion is wanted upon the rollers, the band *c* is removed from the pulleys, and connecting-rod I is placed upon crank or wrist-pins in pulleys *a* and *a'*, which will, as pulley *a* continues to revolve, give the pulley *a'* an intermitting vibratory motion, which is transmitted through gear-wheels *b* and *b' b' b' b'* to the rollers C C and C' C'.

The crank-pin or pulley *a'* is attached to a slide, which allows the crank-pin to be adjusted to any given distance from the centre of pulley *a'*, which will give a greater or less vibration to the rollers, as may be desired, when the slide having the crank-pin attached is adjusted for such change.

Frame A' is hinged to frame A' at *o*, which allows frame A' to be raised, so that the goods or cloth J can readily be placed between the operating-rollers, and, when fully acted upon, to be removed from the machine.

In order to have a convenient means of raising the frame A', foot-treadle F, having band *g* going over pulley H, and around the lower end of arm *h*, that is hinged, at *i*, to the frame A', is employed, which arrangement is always sure to raise the frame whenever the operator's foot is borne upon the treadle F.

Upon the driving-shaft D is a pulley, G.

Around said pulley G, and over pulley D', is a driving-belt, *d*, giving motion to shaft D' and crank-wheels D' D', having crank-pins *d' d'* and connecting-rods *d' d'*, that connect with and give a reciprocating motion to jigger E, which has two cross-bars, one of which is upon either side of the goods J to be acted upon, as seen in fig. 3.

Jigger E is kept in its line of reciprocation by means of its sides working in grooves in the sides of frame A'.

J is the roll of goods to be felted, and is acted upon by the rollers and the jigger.

Vat B, in which rollers C C revolve, is filled with water or size, and can be kept, while the operation of felting or fulling is going on, full of water or size, even to the submerging of the rollers, if necessary, and the water or size can be kept at any temperature desired, by applying steam through a steam-pipe to the vat.

By this arrangement of devices, as above described, double the amount of work can be done on the goods to be felted or fulled in a given time, than by any known method heretofore used, for the reason that the corrugated rollers are simultaneously operating on four sides, or at four different points, while the

jigger is alternately giving its blows upon opposite sides of the goods, attacking nearly the entire surface of the goods at every instant of time, and thus effect the object of producing felted goods for hat-bodies or other purposes, in a less space of time, with less injury to the fibre, and at a less cost.

In the process of felting or shrinking the goods to the proper size, the intermitting vibratory motion is first used upon the goods, as by this motion the fabric is caused to shrink faster than by a continuous rotary motion, while a continuous rotary motion upon the fabric, which may be a roll of hats or other goods, is apt to set, or to cease shrinking or felting before the fabric comes to the proper size; but after the vibratory motion of the rollers has been applied a sufficient time, then the continuous revolving or rotary motion is given the rollers, which will give a hard, firm, and smooth felt, and the fabric or goods are ready for the next process.

Having thus fully described my invention,

What I claim, and desire to secure by Letters Patent, is—

1. The revolving longitudinally-fluted or corrugated

rollers C C and C' C', when constructed and arranged to operate in the manner and for the purposes substantially as described.

2. The reciprocating jigger E, constructed with the two cross-bars, and operating in the manner and for the purpose substantially as described.

3. The revolving rollers C C and C' C', in combination with the reciprocating jigger E, all constructed and arranged to operate together in the manner and for the purpose substantially as specified.

4. The pulley *a'*, connecting-rod I, pulley *a''*, with sliding crank-pin, gear-wheels *b b' b' b'*, in combination with the rollers C C and C' C', when arranged to operate in the manner and for the purpose substantially as described.

5. The pulley *a'* connecting-rod I, pulley *a''*, with sliding crank-pin, gear-wheels *b b' b' b'*, rollers C C and C' C', in combination with the reciprocating jigger E, when arranged to operate in the manner and for the purpose substantially as described.

Witnesses: FREDERICK S. JENNINGS.

A. DIETRICHUS,
GEO. C. FRICKE.