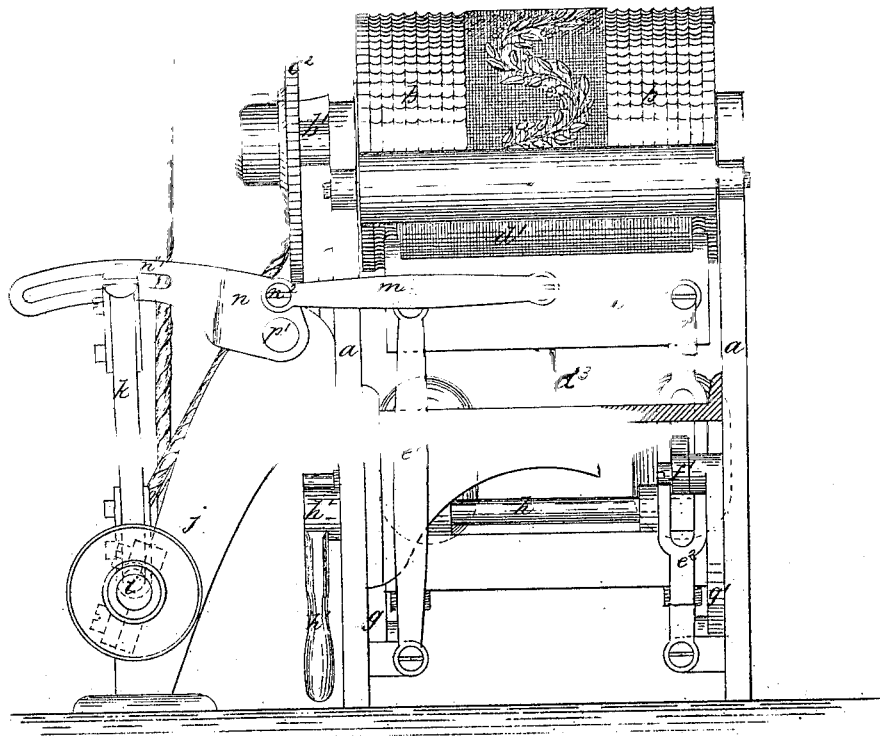
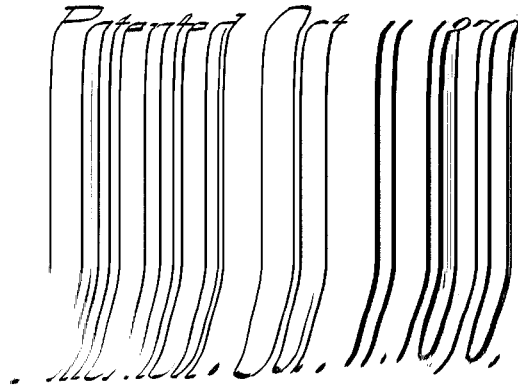


R. Eickemeyer,
Felting Machine.

4 Sheets, Sheet 1.

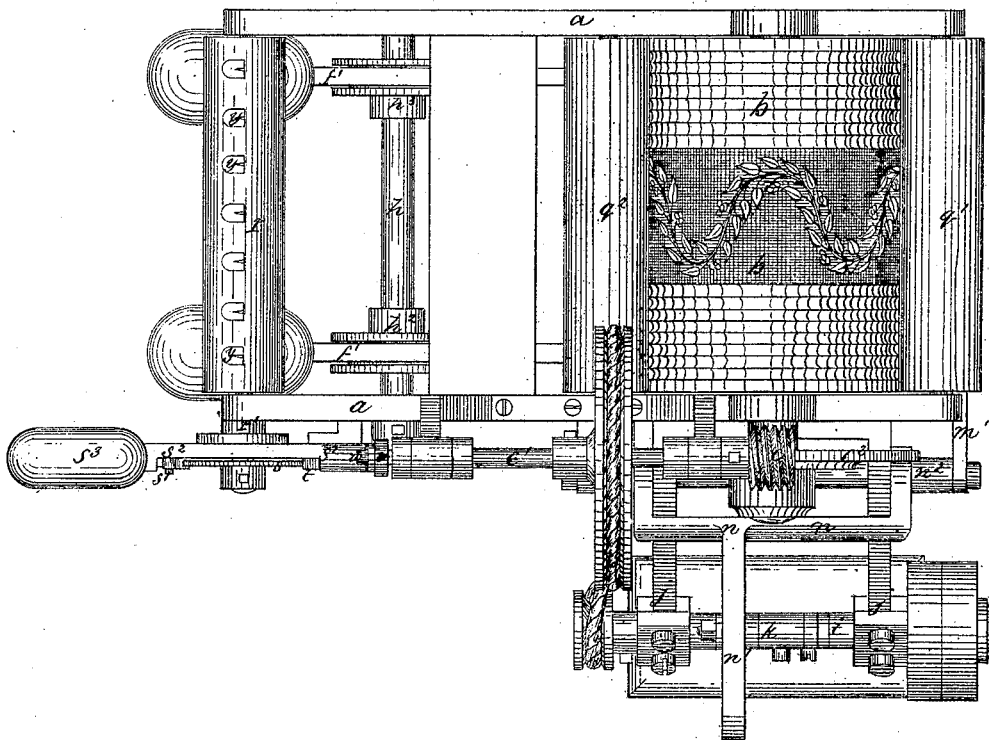


R. Eickemeyer,
Felting Machine.

No. 108,121.

Patented. Oct. 11. 1870.

Fig. 3



Witnesses
M. R. Carzins
Geo. Rayner }

R. Eickemeyer
3

R. Eickemeyer,
Felting Machine

No. 108,121.

Patented Oct. 11, 1870.

Fig. 4

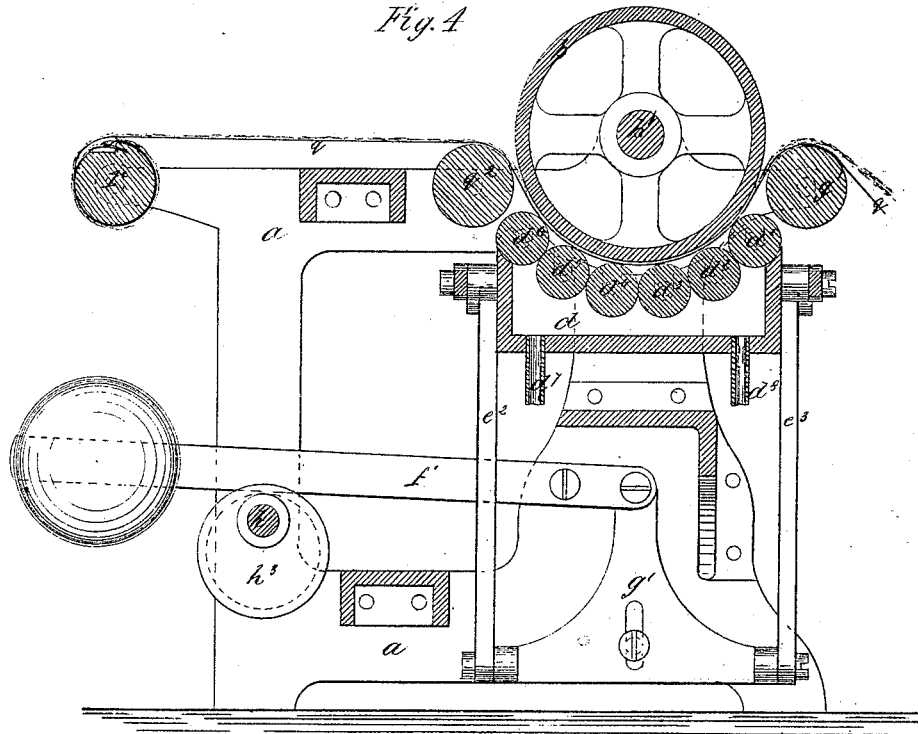


Fig. 5



Witnesses.
M. H. Cozens
Geo. Rayner }

R. Eickemeyer

UNITED STATES PATENT OFFICE.

RUDOLF EICKEMEYER, OF YONKERS, NEW YORK, ASSIGNOR TO JOHN T. WARING, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR FELTING.

Specification forming part of Letters Patent No. 108,121, dated October 11, 1870.

To all whom it may concern:

Be it known that I, RUDOLF EICKEMEYER, of Yonkers, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Machinery for Felting Felt-Cloths; and I do hereby declare that the following is a full and correct description thereof, reference being had to the accompanying drawings, and to the letters of reference thereon.

The machine herein described may be used to felt and finish felt-cloths without subsequent fulling, or it may be used simply for hardening.

My invention consists—

First, in combining with the felting-cylinder of a felting-machine a concave jigger composed of rollers properly roughened or scored to take hold of the felt or hardening cloth.

Second, in an arrangement of a rocking cam-shaft operated by a lever, in combination with the weighted levers combined with the jigger, whereby the jigger is relieved from the action of the weights when it is necessary to stop the machine.

Third, in combining with the concave jigger a rocking frame interposed between the pitman of the crank-shaft, which gives motion to the jigger and the links connected with the jigger, the connection with the pitman being made by an arm upon the rocking frame, which is longer than the arms connected with the links measuring from the axis of vibration of the rocking frame. This part of my invention is not limited to a concave jigger of rollers, but is applicable to the plain concave jigger which I have described in a former specification.

Fourth, by giving to the crank a greater throw than required for the jigger, and reducing the throw by means of the rocking frame, a very short motion can be given with certainty to the jigger, which, if directly connected with a crank of the required throw, would be more or less uncertain, from the wear of bearings and the spring of the frame of the machine.

Fifth, in combining with the felting-cylinder and concave jigger a take-up motion for conducting the felt-cloth from the felting-cylinder, which take-up motion consists in a

ratchet connected with the take-up drum, combined with a pawl operated by a weighted lever, the weighted lever being lifted, as required, by a wiper, as hereinafter described.

Figure 1 of the drawings represents a front elevation of the machine, Fig. 2 a side elevation, Fig. 3 a plan view, and Fig. 4 a vertical longitudinal section, of the same. Fig. 5 is a detached plan view of one of the rollers of the concave jigger.

Letter *a* represents the frame of the machine, and *b* the felting-cylinder, which may be scored with fine lines, or may have figures or other devices engraved or formed in any manner on its surface. The felting-cylinder may be heated by steam introduced through the shaft, which may be made hollow for that purpose. A worm, *c*, upon a shaft, *c'*, gears into a worm-wheel, *c''*, upon the shaft *b'* of the felting-cylinder, imparting to it a slow continuous motion.

The jigger consists of a steam box or frame, *d*, in which a series of roughened or scored rollers, *d' d'' d''' d'''' d''''' d''''''*, are arranged in a concave form corresponding to the cylinder. These rollers are mounted in fixed bearings in the box or frame *d*, and rotate with the cylinder to advance the cloth during the operation of felting. Steam is applied beneath the rollers, and the condensed water carried off by means of the pipes *d'' d'''*, opening into the bottom of the steam-box *d*. The steam-box *d*, with its concave of rollers, is mounted upon four rocking pillars, *e e' e'' e'''*, which are connected with the two weighted levers, *f f'*, by means of two sliding plates, *g g'*, one upon each side of the machine. A rock-shaft, *h*, operated by a hand-lever, *h'*, carries two cams or eccentrics, *h'' h'''*, arranged beneath the weighted levers, so as to lift the weighted ends of the levers and permit the jigger to descend by gravity sufficiently to be released from the felt when for any reason the machine requires to be stopped. The weights upon the levers *f f'* are adjustable, being made to slide on the levers, to which they are secured, when adjusted, by pinching-screws, as shown in the drawings. The crank-shaft *i*, which imparts the reciprocating motion to the jigger, is placed in suitable bearings in a supplemental frame, *j*, which is attached to one of the side frames of the machine, and extends downward to the floor, to

which it should be firmly secured. The crank-shaft is connected with the jigger-box by a pitman, *k*, and links *m m'*, through the intermediate rocking frame, *n*, the pitman *k*, connecting with the slotted arm *n'* of the rocking frame, and the links connecting with the rocking frame at *n''* a short distance above the bearings *p p'*, upon which the frame rocks. The effect of this arrangement is to enable the jigger to be operated with certainty by a very short positive motion when under great pressure, the variations occasioned by wear of bearings of the crank-shaft and the spring of the frame in my former patented machine being greatly reduced by reason of the difference in length of throw of the crank-shaft and the jigger, and by reason of the greater stability of the machine, due to the arrangement of the crank-shaft upon the supplemental frame near the floor.

In this machine the felt is conducted between and from the felting-surfaces by a carrying-cloth, *q*, supported by drums *q' q''*, one at each side of the felting-cylinder, the carrying-cloth, with the felt, being drawn from the felting-cylinder and wound upon a drum, *r*, actuated by a take-up mechanism.

The carrying-cloth may be of suitable material to felt to the back of the felt-cloth, if desired.

For the purpose of stripping the felt-cloth from the roughened surface of the felting-cylinder, to which it adheres after the operation of felting or hardening is completed, I have combined with the felting-cylinder a tension take-up mechanism regulated by a weight as follows, viz: The shaft *r'* of the drum *r* has a ratchet-wheel, *s*, keyed fast to it, which is operated by a pawl, *s'*, upon a lever, *s''*, which lever turns on the shaft. A weight, *s'''*, upon one end of the lever *s''*, is the force by which the ratchet is actuated to move the drum upon which the carrying-cloth and felt are wound. A click or stay pawl, *t*, holds the ratchet against the tension of the cloth when the

weighted end of the lever is lifted to enable the working-pawl to take a new hold upon the ratchet. The other end of the ratchet-lever is connected with a vertical rod, *u*, which has a slot or fork, *v*, formed in its upper end, embracing a crank-pin or wiper, *w*, upon the rotating shaft *c'*. The shaft *c'* having a constant motion during the operation of the machine, the wiper will always act to lift the weight when required for the operation of the take-up. If desired, a pressure drum or roller may be placed immediately over the drum *r* and the cloth drawn along by the grip of the rollers instead of being wound upon one of them; but I prefer the mode first described. The drum *r* is furnished with suitable hooks or pins, *y*, upon which the end of the cloth is hooked.

This machine differs from that described in a former patent granted to John T. Waring, assignee of my invention, in having a constant or continuous felting action not practicable with the use of a plain concave jigger.

I claim—

1. The concave jigger composed of roughened rollers, in combination with the felting-cylinder of a felting-machine for felting cloth, substantially as described.

2. In combination with the concave jigger and the weighted levers, the rocking cam-shaft, with its cams and lever, whereby the jigger is relieved from the action of the weights when desired.

3. The combination and arrangement of the rocking frame and connections with the jigger and the crank-shaft which imparts motion thereto, substantially as described.

4. In combination with the felting-cylinder, the take-up mechanism operated by a wiper and regulated by a weight, substantially as described.

R. EICKEMEYER.

Witnesses:

M. K. COUZENS,
GEO. RAYNER.