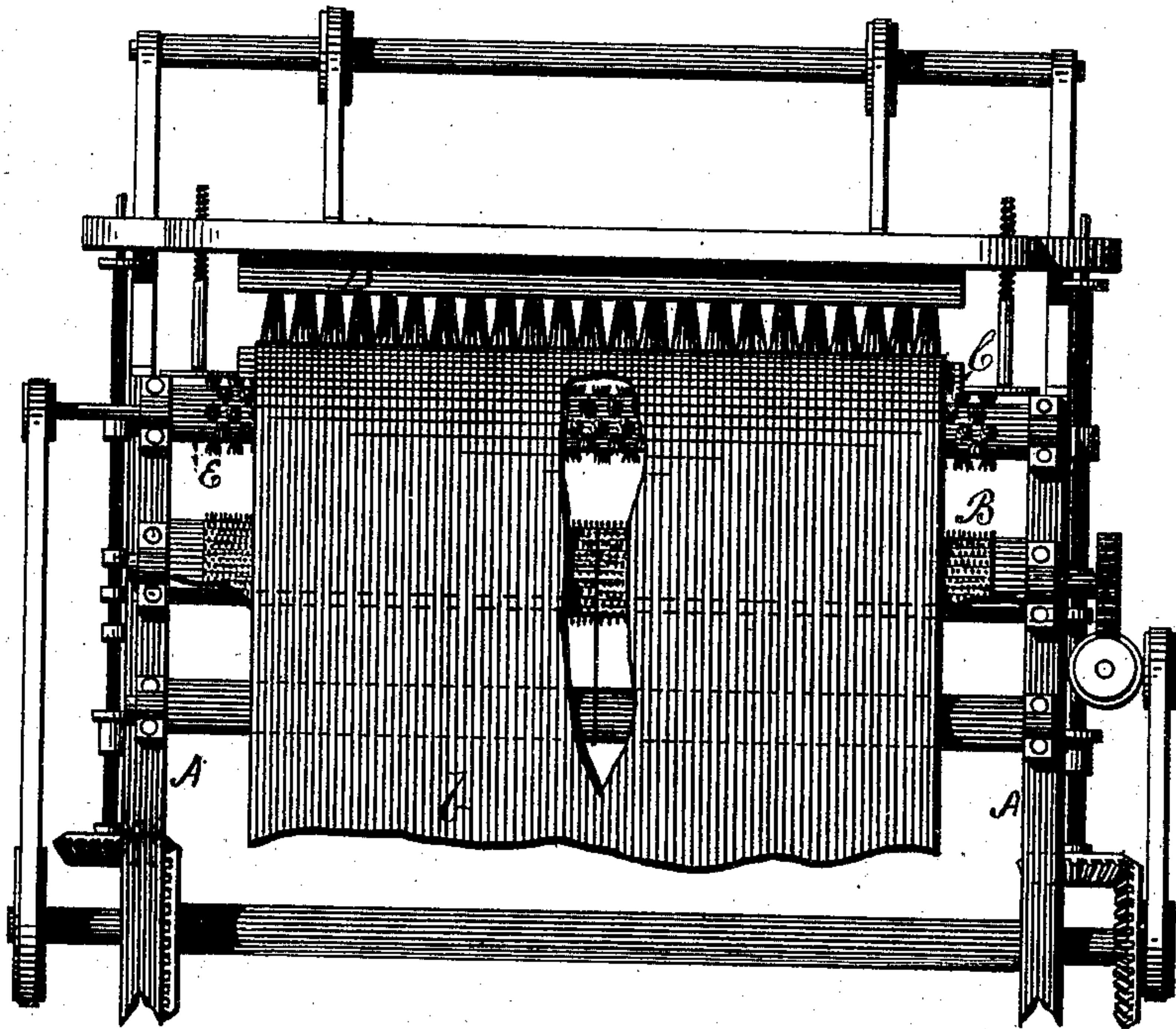
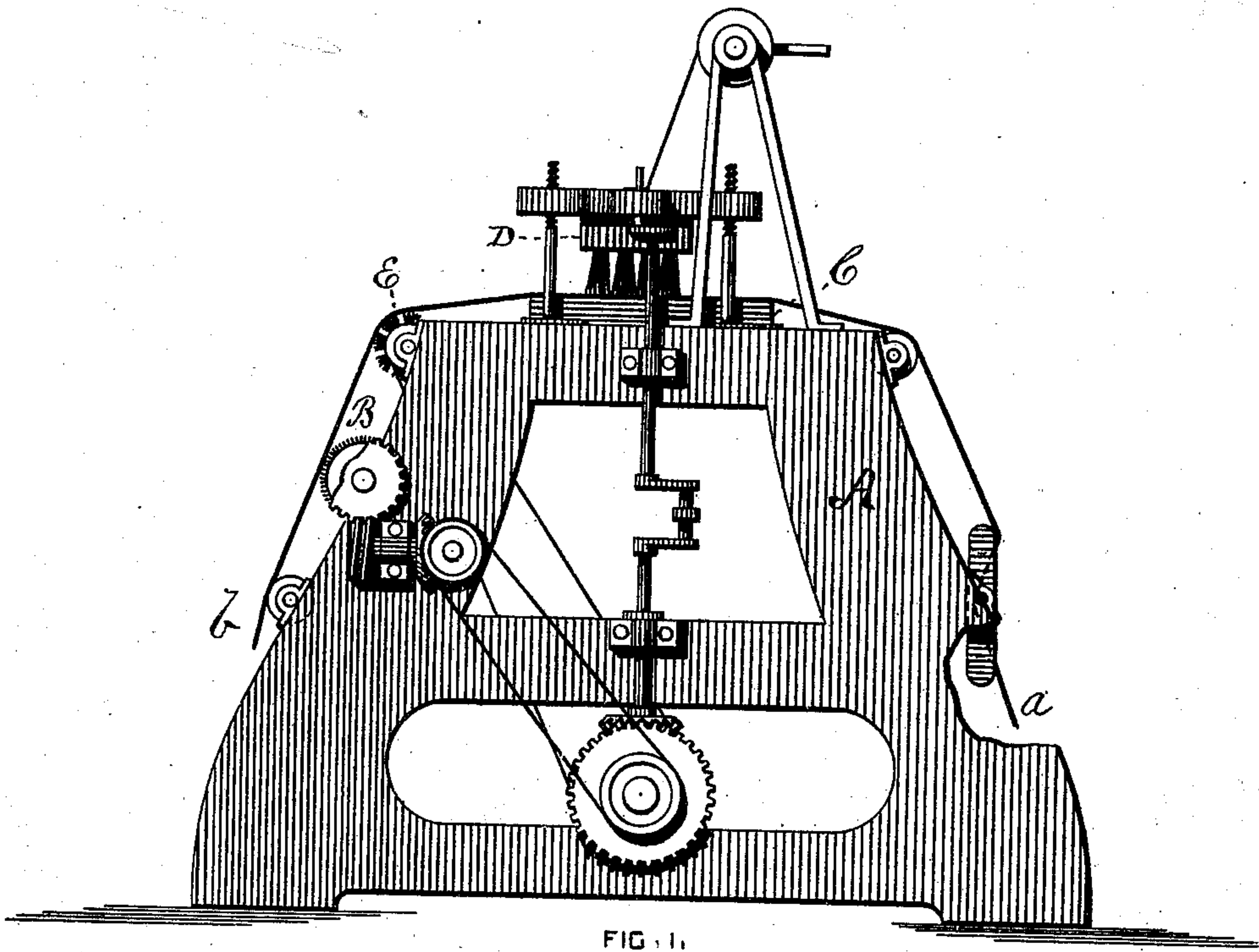


A. J. ELWELL.
MACHINE FOR SURFACE-FINISHING WOOLEN FABRICS.
No. 173,398. Patented Feb. 15, 1876.



WITNESSES.

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IMPROVEMENT IN MACHINES FOR SURFACE-FINISHING WOOLEN FABRICS.

Specification forming part of Letters Patent No. **173,398**, dated February 15, 1876; application filed November 4, 1875.

To all whom it may concern:

Be it known that I, ALBERT J. ELWELL, of Woonsocket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Finishing the Surface of Heavy Woolen Fabrics, and in machines for performing that service; and I do hereby declare that the following specification, taken in connection with the drawings making a part of the same, is a full, clear, and exact description thereof.

Figure 1 is an end view. Fig. 2 is a front elevation.

The main feature of my invention is an improvement in the art of surface-finishing heavy woolen goods of that general class which embraces the goods well known in the trade as "chinchillas" and "elysian beavers;" and my said improvement consists in the development of the tufts or knots of fiber constituting the surface-finish by subjecting the wearing-surface of said goods to the action of brushes, whereby, also, said surface is brightened, and the woven effects in the fabric clearly developed.

Another feature of my invention consists in the combination, with a platform for sustaining the fabric, of a brush and mechanism for imparting thereto a rapid vibratory longitudinal and lateral motion in a plane parallel with the platform, whereby the surface of the goods, while on the platform, is brightened and the woven effects developed.

Another feature of my invention consists in the combination, with a platform for sustaining the fabric, of feeding and conducting rolls for passing said fabric along said platform, and a rapidly-reciprocating brush arranged to operate on the surface of the fabric while on the platform.

Another feature of my invention consists in the combination, in a chinchilla or petersham finishing machine, of a rear surfacing revolving brush with the front finishing "rubber" or brush and the platform, for purposes hereafter fully described.

The mechanical portion of my invention, as hereinafter described, is embodied in a modification upon the well-known petersham or chinchilla machine used in the art of manu-

facture of woolen coatings and other heavy woolen goods. After a piece of woolen goods of the character described has passed through the gigging-machine, it has been customary to dress and smooth its face side by subjecting the piece of cloth, as it is passing over a table, to the action of a rubber, which has usually consisted of a board from four to six inches in width, and of a length somewhat greater than the width of the piece of goods to be dressed. This board has been covered with cloth, carpeting, india-rubber, and various other materials suitable for rubbing down and smoothing the surface of the cloth, and is applied under pressure to the surface of the piece of goods as the latter is running at a slow rate of speed from one side of the machine to the other over a narrow table or platform on the top of the machine, the rubber having a quick vibratory motion given to it, and, pressing upon the cloth while the latter is passing over the table, curls the fiber and renders uniform its surface.

While the petersham-machine is admirably adapted for the general purpose for which it is intended, and is indispensable in the proper surfacing of heavy woolen goods, the rubbers which have been heretofore employed, so far as I have any knowledge, have the effect to mat the surface of the cloth, and render cloudy or confuse the outline of the figure which is woven in the cloth. This is particularly true in finishing that description of goods used for heavy over-coatings, and known to the trade under the name of "elysian beavers." These goods are woven on a Grompton or Jacquard loom in various-figured patterns. The surface nap of the cloth is not shaven closely, and the result is that, after the cloth has been passed through the surfacing-machine referred to, the figure has lost much of its distinctness, thereby materially injuring the pleasing effect, which, if the figure were clean, would otherwise be retained by the cloth.

For practicing my invention I provide a machine which embodies certain novel characteristics, and is suitable to be employed in the process of finishing woolen fabrics of the character described, in connection with the above-referred-to petersham-machines, and by

means of which the figured pattern of the goods can be brought out clearly, notwithstanding that the same piece of goods has previously been subjected to the action of the above-mentioned surfacing-rubber; and this part of the invention consists in the combination, with the platform and conducting and guiding rolls, as in a petersham-machine, of a brush to be applied to the surface of the cloth, similarly to the manner in which the rubber is applied, the bristles of which brush are of a proper degree of flexibility and stiffness to render the surface of the brush yielding and capable of searching out and developing the figures of the woven pattern by brushing the recesses and depressed parts in said figures, as well as the raised portions, in distinction from matting or flattening the surface of the cloth by the dead pressure of a non-bristling surface, like carpeting, plush, rubber, or the like.

I use in my machine a feature not heretofore used in the petersham-machine, which consists in a revolving brush applied to the back side of the piece of cloth as it is passing through the machine, to remove the small irregular rolls of fiber which are occasioned by the movement of the cloth on the platform, incident to the action of the rubber in the petersham-machine, or by the surfacing-brush in my improved machine.

I am aware that, in shearing and other similar machines, rotary brushes have been employed to operate on both surfaces of fabrics; but it will be seen that these rear surfacing-brushes, as employed by me for the first time in combination with the rubber, or the front surface-finishing brush, perform a valuable service, in that, although the fabrics may have had their rear sides previously operated upon by brushes in the shearing-machine, the movement of the fabric on the platform, incident to the action of the finishing brush or rubber on the front surface, develops rolls or knots of fiber on the rear surface of the fabric, which the rear surface brush removes; and, therefore, the said rear brush, in combination with the rubber or reciprocating finishing-brush, constitutes one portion of my invention.

The drawings represent, except in the particulars above mentioned, the ordinary chinchilla or petersham machine. A A are the standards of the machine, suitably united by cross-rails or girts. The piece of cloth is represented by the line *a b*, which is conducted from one side of the machine to the other over friction-rollers, as shown, and is drawn along by the revolving porcupine roller B, over the flat surface of a table or platform, C. D is a bar, whose length is greater than the width of the piece of cloth, the under surface of which is armed with hair, bristles, or other equivalent material—as, for instance, split whalebone or rattan fiber, having the quality of a brush. To this brush a constant reciprocating or an eccentric movement is given;

and of a greater or less extent, depending upon the general character of the figured pattern of the cloth, the object being to have the movement of the brush approximate as nearly as possible to the general outline of the woven figure. As the piece of cloth is drawn along, face uppermost, over the surface of the table C, the action of the vibrating brush, which is made to bear with any desired degree of pressure upon the cloth supported by the table, is to search out the woven figure and clearly develop its outline, from the capacity which a yielding bristling surface composed of an aggregation of individually flexible and elastic components possesses of reaching the recesses and depressions of a figured pattern, and at the same time working upon the more elevated portions of the surface without crushing or matting it. The result is, that the figure is brought out clearly, thereby exhibiting on the surface of the cloth that contrast of light and shade due to the elevations and depressions in the pattern which gives the most pleasing effect to the fabric.

The effect of the brush described, as well as the effect of the rubber heretofore used in these machines, is to produce irregular rolls of fiber on the back side of the cloth. In order to remove such and give a smooth surface to the wrong side of the goods, I have located a revolving brush, E, as shown in the drawings, which may be driven in any convenient way, and is made to brush the back side of the cloth and lay smooth the fibers of the cloth upon that side, after the cloth has passed from under the action of the vibrating brush D. This improvement serves as valuable a purpose upon machines which employ the old form of rubber described as upon machines provided with my improvement hereinbefore described.

I am aware that machines for scouring and cleaning cloths or wearing apparel have heretofore been devised which embodied a platform with suitable devices for clamping the cloth or apparel thereon, and a pair of alternately-reciprocating brushes, which were arranged to sweep across the fabric from side to side, and thereby to scour and clean the fabrics. Such machines have never, however, to my knowledge, been employed for surface-finishing goods of the character herein named, nor have they been provided with rolls for guiding and conducting the fabrics across the platform.

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

1. The improvement in the art of surface-finishing chinchillas, beavers, and other similar heavy woolen fabrics, which consists in developing the tufts or knots of fiber on the surface, by subjecting said surface to the action of a reciprocating brush, operating substantially in the manner described.

2. In a machine for finishing the front surface of heavy woolen goods, the combination,

with a platform for sustaining the fabrics, of a brush and mechanism for imparting thereto a vibratory longitudinal and lateral motion in a plane parallel with the platform, substantially as described.

3. In a machine for finishing the front surface of heavy woolen fabrics, the combination, with a platform for sustaining the fabrics, and feeding and conducting rolls for passing the fabric along the platform, of a reciprocating brush arranged to operate on the front surface of the fabric, substantially as described.

4. The combination, in a chinchilla or petersham finishing machine, with the platform

and the reciprocating surface-finishing device, of a rear surface-brush, substantially as described, for the purpose of removing the rolls or tufts of fiber developed on the rear surface of the fabric by reason of its movement on the platform, incident to the action of the rubber or other reciprocating finishing device, as set forth.

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Witnesses:

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