G. & T. SHAW.

Machine for Polishing Vegetable Fiber, &c.

No. 198,315. Patented Dec. 18, 1877.

Fig. 1.

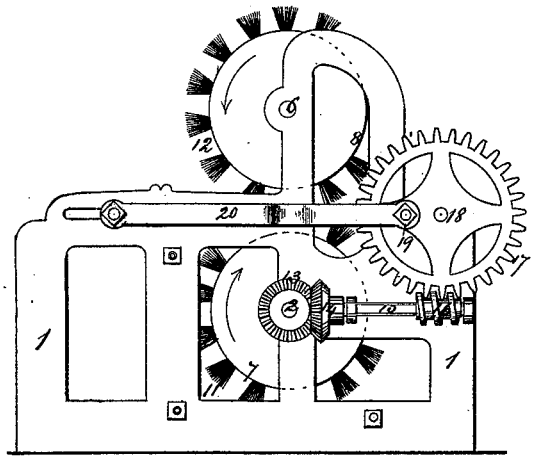


Fig. 4.

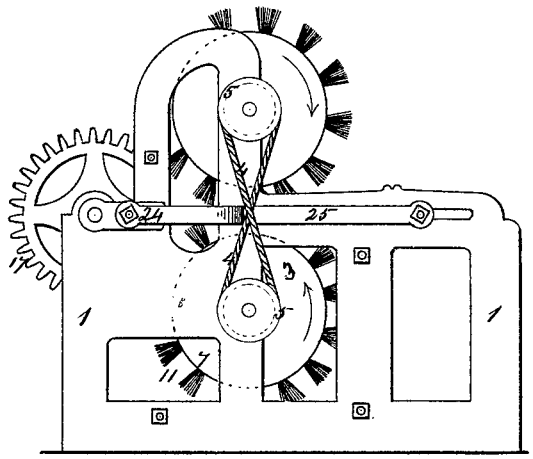


Fig. 2.

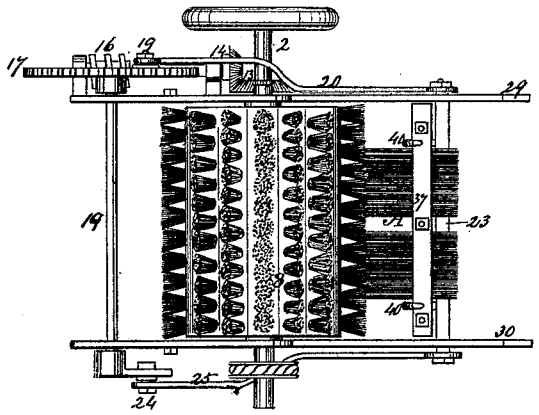
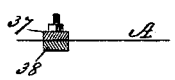


Fig. 3.



WITNESSES:

W. W. Hollingsworth

G. C. Hemon

INVENTOR:

George Shaw

Thomas Shaw

BY

ATTORNEYS.

UNITED STATES PATENT OFFICE.

GEORGE SHAW AND THOMAS SHAW, OF DUKINFIELD, GREAT BRITAIN.

IMPROVEMENT IN MACHINES FOR POLISHING VEGETABLE FIBER, &c.

Specification forming part of Letters Patent No. **198,315**, dated December 18, 1877; application filed July 11, 1877.

To all whom it may concern:

Be it known that we, GEORGE SHAW and THOMAS SHAW, of Dukinfield, in the county of Chester, Great Britain, have invented an Improved Machine for Treating Vegetable Fibers, of which the following is a specification:

Our invention relates to those fibers which are used in the manufacture of brushes, hair-seating, and for other purposes, as substitutes for horse-hair or bristles, and which, in the brush-making trade, pass by the general name of fiber. These fibers we treat with a dressing of sizing or polishing material, and then submit them to the action of brushes, whereby a luster is put upon each fiber, and to a certain extent it is rendered water-proof.

The composition of the sizing or polishing material may be varied; but the following we have found to answer the purpose: We take of white wax one and a half part, refined wax nine parts, refined paraffine one and a half parts, and spermaceti one and a half part. These substances are melted together, and allowed to cool into a cake, which may be kept for stock. When required for use, we take three and a half ounces of this stock, and dissolve it in a quart of water, to which a little soap has been added, to assist the solution. We now take twenty ounces of farina, and mix a small quantity of water therewith, so as to bring it to a pasty mass, as in starch used in the laundry, and we then add water in quantity according to the thickness which we wish the size to be, (say, eight quarts of water,) and to this we then add the dissolved cake above mentioned.

The fiber to be treated, having been drafted into lengths, as is now the practice, is steeped in the above-mentioned composition, the superfluous quantity of which is removed by passing the fibers between rollers, or by other ordinary means; and they are then ready for the mechanical polishing, an arrangement for effecting which is shown in the accompanying drawing, and to which we now refer.

Figure 1 is an end elevation of the machine; Fig. 2, a plan view; Fig. 3, a detail; and Fig. 4, an opposite end elevation.

The frame-work is shown at 1, and the driving-shaft at 2. Upon this shaft is a pulley, 3, which, by means of a crossed strap, 4, drives another pulley, 5, upon a shaft, 6. Upon the shafts 2 6 are drums 7 8, upon which are brushes 11 12, which extend throughout their whole width and circumference. Upon the shaft 2 is a bevel-pinion, 13, taking into another, 14, mounted on a shaft, 15, the other end of which carries a worm, 16, in gear with a worm-wheel, 17, mounted on a shaft, 18. Upon the face of the worm-wheel 17 is a crank-pin, 19, connected to a rod, 20, the other end of which is connected to a bar, 23. On the other side of the machine the shaft 18 is provided with a crank, 24, jointed to a rod, 25, which, at its other end, is connected to the bar 23, before referred to, which bar slides within guides 29 30, carried by the frame 1.

Fig. 3 represents, in end view, the holder for the fiber to be operated upon. It is formed of two strips, 37 38, with india-rubber on their inward surfaces, thus forming two jaws, which may be tightened together by bolts. The fibers having been prepared, as above described, are placed in a thin layer between the jaws 37 38, and these jaws being then tightened by bolts they are placed upon hooks 40, as seen in Fig. 2. Motion now being communicated to the machine, by hand or by power, and so that the wheel 17 revolves in the direction of the arrow, the cranks 19 24 will, by means of the rods 20 25, cause the bar 23 to slide forward, carrying with it the clamp 37 38, and with it the fiber A, which, being of sufficient rigidity to maintain a horizontal position, will arrive between the two sets of revolving brushes 11 12, which will, as the clamp still advances, act upon the fibers, with the exception of a certain length to be brushed, as will hereinafter be explained.

It will be seen that the tendency of the revolving brushes is to draw the fibrous material toward them, and this tendency therefore keeps the fibers distended, by drawing the clamps against the hooks 40. The cranks 19 24, having performed a half revolution, slide backward the bar 23, and thus, by means of the hooks 40, convey backward the clamp 37 38, and fibers held thereby, they being still submitted to the action of the brushes; and

this backward and forward motion of the clamp may be repeated as often as is found necessary, after which the inclosed ends of the fibers have to be operated on. To accomplish this the machine is stopped, and the workman takes another clamp, and adjusts it to the outward ends of the fibers. He then reverses the fibers, end for end, by removing the clamp now in the hooks 40, and substituting that just adapted to the fibers, and, the first clamp being taken therefrom, the operation proceeds as before, the ends of the fibers which were in the clamp being now subjected to the action of the brushes. The traverse of the bar 23 may be regulated by making its connections adjustable.

By the above-described operations the fibers have a luster put upon them, while at the same time they are rendered more or less waterproof. The fibers may, in the first place, be dyed or bleached, as is now commonly done.

We claim as our invention—

1. The combination, with a set of revolving brushes, of a clamp, 37, arranged to hold the fiber, as described, and having a to-and-fro motion between the brushes, for the purpose set forth.

2. The combination of the revolving brushes 7 8, the clamp 37, the bar 23, having hooks 40, the connecting-rods 20 and 25, and the shaft 19, connected with and deriving motion from one of the brushes through a worm and wheel, substantially as described, and for the purpose specified.

GEORGE SHAW.
THOMAS SHAW.

Witnesses:
WM. HECTOR MABLEY, *Manchester.*
W. T. CHEETHAM, *Manchester.*