# S. C. Mumford.

## Burring and Cleaning Wool.

No. 3,516. Patented Mar. 28, 1844.

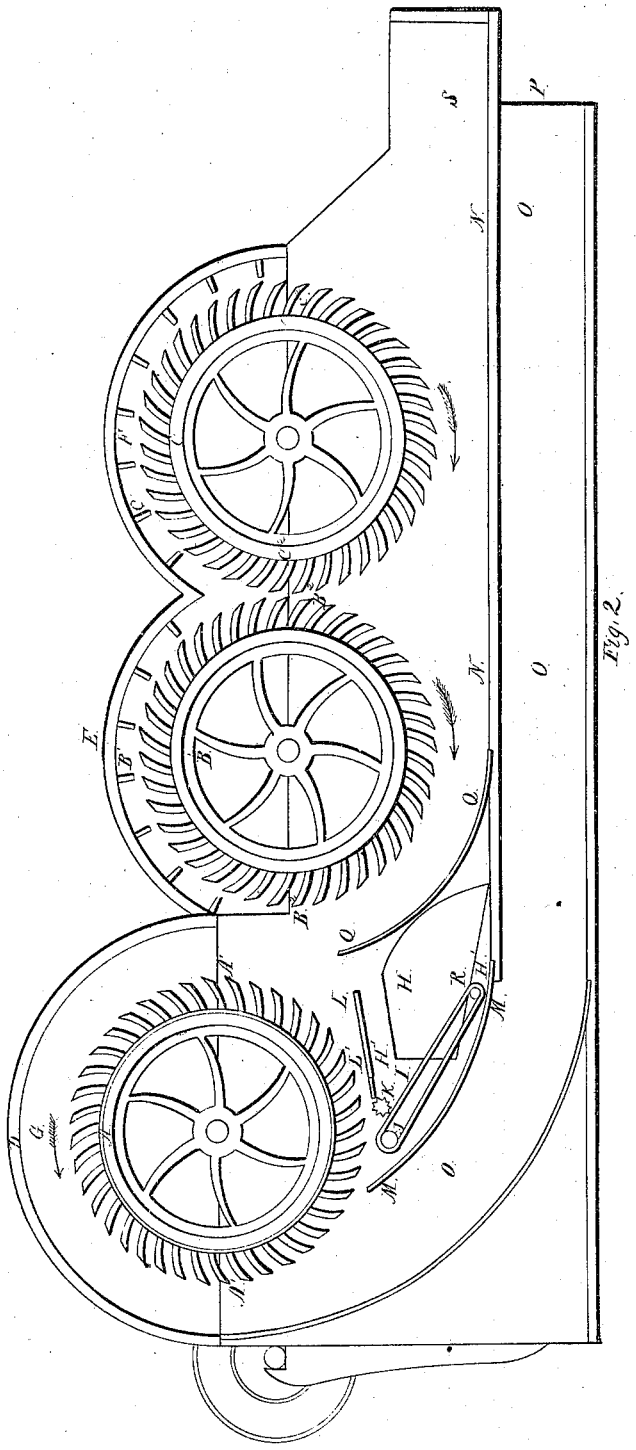

Fig. 2.

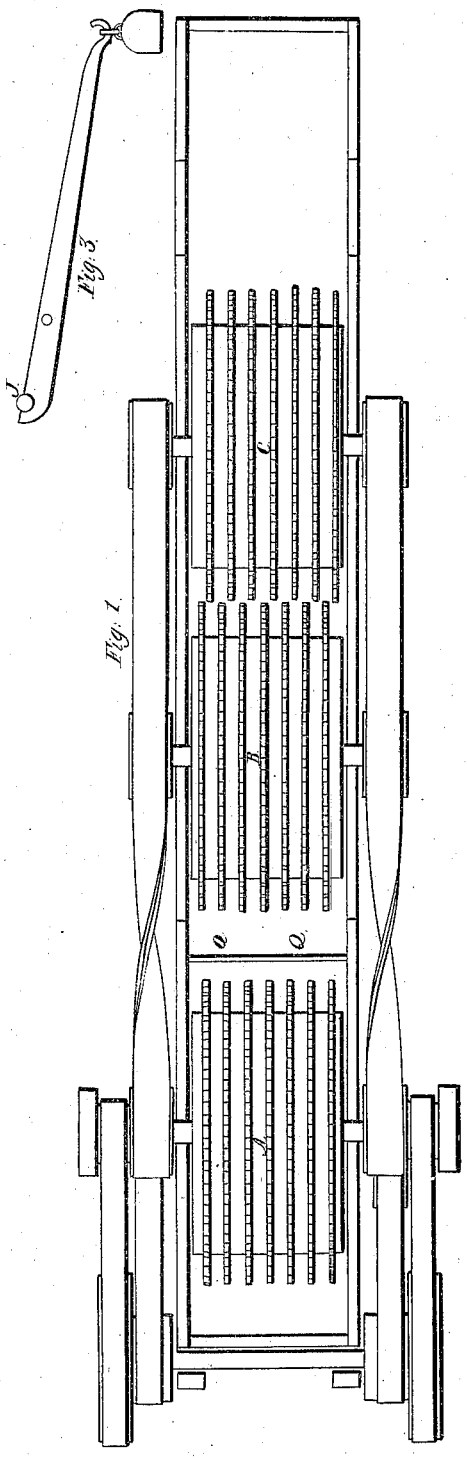

Fig. 3.

Fig. 1.

# UNITED STATES PATENT OFFICE.

SILAS G. MUMFORD, OF NORTH PROVIDENCE, RHODE ISLAND.

## MACHINE FOR BURRING AND CLEANING WOOL, COTTON, &c.

Specification of Letters Patent No. 3,516, dated March 28, 1844.

*To all whom it may concern:*

Be it known that I, SILAS G. MUMFORD, of North Providence, in the State of Rhode Island, have invented a new and useful machine for the purpose of cleaning wool by separating therefrom the burs and other foreign substances frequently contained in it and which may also be applied to the cleaning of cotton and other fibrous substances; and I do hereby declare that the following is a full and exact description thereof.

In the accompanying drawing Figure 1, is a top view of my machine, the covers of the toothed cylinders which are to operate upon the wool, being removed for the purpose of exhibiting their arrangement. Fig. 2, is a vertical section through the middle of the machine, from end to end.

In each of these figures, where the same parts are shown they are designated by the same letters of reference.

The picking, or cleaning, of the wool is to be effected, principally by means of a revolving cylinder, or revolving cylinders, set with teeth, and which may be covered with sheet-iron; in the drawing, I have represented three such cylinders, but the machine may be made with one only, the additional, or auxiliary, cylinders being intended to operate upon such portions of the wool as, from its knotted condition, may escape the action of the first cylinder; such wool may, however, if preferred, be subjected a second time to the operation of a one-cylinder machine.

I usually make the cylinder, or cylinders, about eighteen inches long, and twenty-eight inches in diameter; and into each of them I insert teeth about four inches long, making their whole diameter about three feet. In the drawing, these cylinders are lettered A, B, and C. That marked A, is to be considered as the principal cylinder, and as essential to the machine, those marked B, and C, being auxiliary only; but I prefer, in general, to use them in combination with the principal cylinder, and shall, therefore, describe the machine as containing them. The cylinder A, I usually elevate so as to stand above B, and C, the latter being on the same range with each other. By thus elevating the cylinder A, I obtain room for the feeding apron and its appendages. I allow a space of eight inches, more or less, clear of the teeth, between the cylinders A, and B; the cylinders B, and C, are placed so near to each other as just to allow them to revolve without their teeth coming into contact.

D, E, and F, Fig. 2, are the concaves, or covers, which are placed above, and inclose, the cylinders. The cover D, is left without teeth on its interior, and there is a clear space, G, say of six inches, between it and the teeth of the cylinder; the covers E, and F, are provided with teeth, B′, and C′, the points of which nearly touch those on the cylinders; they may be about three inches long.

The wool to be cleaned is to be fed in through an opening on the side of the machine, so as to pass on to an endless apron, which carries it to a pair of feed rollers between which it is gripped, and by which it is presented to the action of the teeth A′, A′, of the cylinder A. The feed opening is seen at H; and I, is the endless apron which carries the wool up to the feed rollers J, and K; these, being small, say from two to three inches in diameter, are made of iron. The roller K, should be fluted from end to end, to enable it to take hold of the wool. As this is passed up between the feeding rollers, it is presented to the action of the teeth A′, on the cylinder A; these teeth, in their revolution, coming nearly into contact with said feeding rollers.

L, L′, is a partition extending from side to side of the machine, separating the feeding chamber H′, containing the endless apron, from the space in which the cylinder, A, revolves; the edge L′, of this partition, which is nearly in contact with the feed roller, K, should be armed with iron, as it is intended to sustain the wool while it is being acted upon by the teeth of the cylinder.

M, M, is a partition, which may be of sheet-iron, extending from side to side of the machine; at its lower edge it joins the floor N, N, which extends along under the cylinders, B, and C, to the rear end of the machine, forming the upper side of a hollow trunk, O, O, O, which is open at the end, P, to allow the picked wool to pass out.

Q, Q, is also a partition which may be of sheet-iron, and is to extend from side to side of the machine. This partition serves to form a channel dividing the space in which the cylinder, B, revolves, from the feeding chamber H′.

The respective cylinders and rollers are

made to revolve by means of whirls and bands, and in the direction indicated by the arrows. The cylinders should revolve with great velocity, say one thousand times per minute. This may be effected by any adequate power, and does not require further description. The feeding roller, J, is borne up by weighted levers acting upon its gudgeons at either side of the machine, as shown at Fig. 3. The tension of the feeding apron may likewise be governed in a similar manner, or by springs acting on its lower roller, R; but, instead of this roller, I sometimes allow the apron to pass around a stationary iron rod, the tension of which is preserved by a spring.

When the cylinder, A, is made to revolve with the speed above indicated, it will create a current of wind which will be directed through the hollow trunk O, O, toward its opening at P; and as its teeth A′, are brought into contact with the wool presented to them by the feeding rollers, they will beat the burs, motes, and other foreign matter, out from the wool, toward the rear of the machine, as at S, where, when one cylinder only is used, they will be allowed to escape. The wool, from its lightness, will be carried up by the current of air between the cylinder, A, and its concave cover, and through the trunk, O, which in this case will not be carried so far back as when three cylinders are used. With the burs and motes, the more matted knots of wool will be thrown out; and when three cylinders are employed, as represented in the drawing, these will be thrown on to the teeth of the cylinder, B, will be carried around by them, and be acted upon by the teeth B′, of the concave, and $B^2$, of the cylinders; and they will, in like manner, be acted upon by the teeth $C^2$ of the third cylinder and its concave, by which the foreign matter will be finally thrown out, while the wool which has been separated from it, will, by the current of air, be carried forward under the rollers, B, and C, will ascend with the wool separated by the first roller, through the space G, and be carried out through the trunk O, O.

Having thus fully described the nature of my improvements in the machine for burring, or cleaning, wool, and other fibrous substances, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The manner in which I have arranged and combined the cylinder A, with its concave; the feeding apron and rollers by which the wool is presented to the action of the teeth on the cylinder; and the hollow trunk through which the cleaned wool is passed and delivered by the current of air created by the revolution of the cylinder.

2. I claim, also, the combining with the above claimed machine, the auxiliary cylinders, B, and C, with their appendages, operating in the manner, and for the purpose, herein fully made known.

3. I do not claim the use of tooth cylinders, or of a feeding apron, or of either of the parts of the said machine, when taken individually, but I limit my claim to the combination and arrangement of the said parts so as to constitute a machine constructed substantially as described.

SILAS G. MUMFORD.

Witnesses:
BENJAMIN POTTER, JR.,
OTIS D. POTTER.