J. A. SOUTHMAYD.

Machine for Separating Fibers.

No. 213,950. Patented April 1, 1879.

Fig. 1.

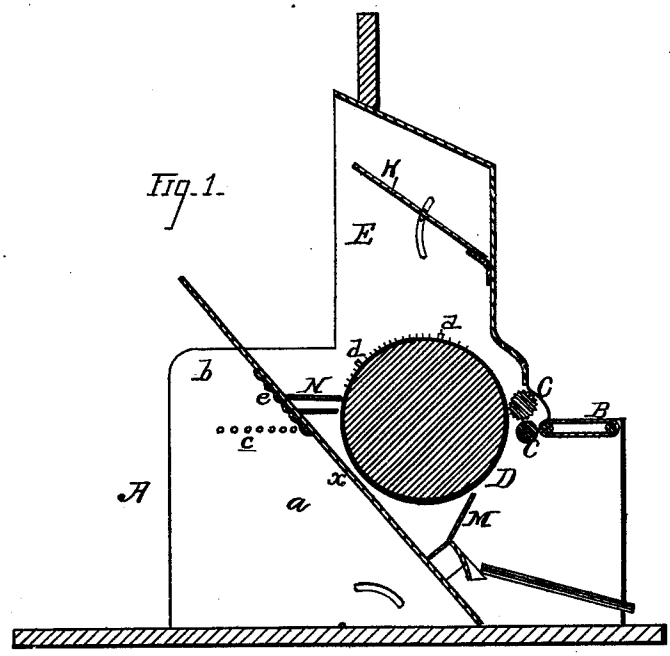

Fig. 3

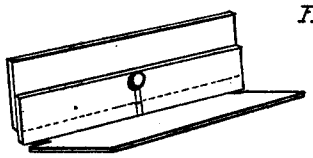

Fig. 4.

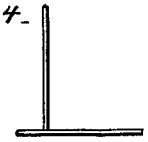

Fig. 2.

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UNITED STATES PATENT OFFICE.

JOHN A. SOUTHMAYD, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO WILLIAM S. ARCHER, OF YONKERS, NEW YORK.

IMPROVEMENT IN MACHINES FOR SEPARATING FIBERS.

Specification forming part of Letters Patent No. **213,950**, dated April 1, 1879; application filed March 1, 1879.

To all whom it may concern:

Be it known that I, JOHN A. SOUTHMAYD, of Elizabeth, in the county of Union and State of New Jersey, have invented a new and useful Improvement in Machines for the Separation or Disintegration of Fibers, of which the following is a specification, reference being had to the accompanying drawings.

The invention relates to improvements in machines for the separation or disintegration of fibers. It may be used with good results in the separation or disintegration of fibers of all kinds, but is chiefly designed for the treatment of material composed of hair and fur. It is especially valuable in the separation of the hair and fur of the bison, for which purpose I have most successfully employed it, having been enabled to produce by its use a fur, or material analogous to fur, having in a marked degree the characteristic qualities of a superior fur or wool, and capable of use for many of the purposes for which the higher grades of fur and wool are employed. It is for the separation of this material that I recommend the use of my machine; and while other analogous materials may be treated successfully with it, to effect an entirely satisfactory result, it will be essential that the operator have an accurate knowledge of the nature of fibers, and that great care be exercised in the adjustment of the stops and other parts, so as to regulate the action of the currents of air to produce the particular result demanded. The exact adjustment of the stops, however, will, in all instances, necessarily depend in some degree upon the character of the "stock" or material to be treated, and will be arrived at, as is customary in the art to which the invention relates, by preliminary operations, from the results of which the adjustments may be satisfactorily made.

My invention consists of a picker, of usual construction, mounted in a frame, and operated by belt-wheels or otherwise toward the feed-rolls, the material being fed to it by means of an apron and feed-rollers or otherwise, in any convenient manner. The frame, which is suitably secured to the floor, is inclosed at its sides to prevent the lateral escape or entrance of air, the side inclosures being carried above the edge of the frame a little more than half the diameter of the picker. Directly over the picker is a hood or bonnet, opening toward the rear of the machine, within which a screen or damper, hinged to the back of the hood, and capable of horizontal adjustment, is placed. The rear of the machine, including the mouth of the hood or bonnet, opens into a blow-room, into which, as hereinafter more fully explained, the fur or material analogous thereto is thrown.

Below the picker are arranged appropriate stops, which serve, when the machine is being operated, to catch the heavier fibers of hair, causing them to fall or be thrown upon the floor under the feed-apron, from whence they are removed by hand. Thus the fur and hair are effectually separated, the former being thrown out of one end of the machine into the blow-room, while the latter is delivered on the floor at the other.

The picker is rotated with great velocity—about, say, thirty-five hundred revolutions or more a minute—turning toward the feed-rolls. The effect of the actuation of the picker, the frame being inclosed as it is, will be to create a strong current of air both above and below it. The action of the picker in loosening the heavier and coarser hair from the lighter fur is almost instantaneous. As a consequence, the superior specific gravity of the heavier hair causes it at once to move farther from the teeth of the picker than the lighter fur, which will be more positively affected. The two will be so nearly divorced from each other that the weight of the hair, aided by the current below the picker, will cause it to travel sufficiently far from the picker to make it practicable to catch it, while the fur is permitted to be moved by the picker until it is acted upon by the current above the picker, which carries the fur away from and clear of the machine in a different direction.

To catch the hair, a stop is placed at a point below that where the picker receives the stock, being so located and adjusted that it will arrest the progress of the hair and cause it to fall to the floor. Other stops in other places,

and nearer to the picker, adjusted upon the same theory, and to catch such hair as may pass the main stop, are also provided.

The fur, being lighter, clings to or follows the picker until it is thrown by the current above the picker into the blow-room, beyond the influence of the machine.

The details of construction and operation are specifically described hereinafter.

In the drawings filed herewith, Figure 1 is a central vertical longitudinal section of a device embodying the elements of the invention. Fig. 2 is a similar view of a machine in which different forms of stops are used. Figs. 3 and 4 are detached views of the stops shown in Fig. 2.

In the accompanying drawings, A denotes the frame of the machine, at the front end of which the feed-apron B and feed-rolls C are provided, arranged, in respect to the picker D, in the customary way, the rolls and picker being actuated in any convenient manner. The picker D is of usual construction, provided, by preference, with fans *d*, to assist in the production of the currents of air utilized in the operation of the machine. The sides of the frame *a a* are inclosed, to prevent the entrance or escape of air, and are carried up to form the extensions *b b*, the object of the extensions being to assist in the direction of the working currents. Above the picker is the hood or bonnet E, the shape and relative size and proportions of which are shown with sufficient accuracy in Figs. 1 and 2. Within the hood or bonnet E is the damper or screen H, which consists of a flat piece of material hinged to the rear side of the hood, or otherwise arranged so that its outer edge can be elevated or depressed, and secured in place at any desired angle.

The chief function of the damper is to control the current created by the picker, which is accomplished by raising or lowering the outer edge, its elevation having the effect of increasing, and its depression the effect of decreasing, the current. Its use and adjustment will be determined by circumstances and by preliminary operations of the machine.

I employ stops of several different constructions, examples of which are shown in Figs. 1 and 2. In all of these instances the theory of stopping the hair and throwing it down without interfering with the movement of the fur is carried out. Below the picker, near the point where it takes the stock, I place the principal stop, the office of which, as hereinbefore recited, is to catch the hair, or the coarser hair or parts thereof, and throw or cause them to fall upon the floor in proximity to the forward part of the machine. The stop consists of a board or flat piece of material, its edge being inclined toward the picker, as shown in Fig. 1. On the other side of the picker I place the stop N, the construction of which is substantially similar to the principal stop, its edge, however, being inclined at a different angle, so as to arrest the progress of the hairs that follow, or are moved by, the picker to the rear side thereof. The stops are, by preference, attached to a board or carrier, *x*, which is inclined toward the front of the machine, as shown in Fig. 1. The hairs caught by both of the stops travel on the board, the whole falling upon the floor in proximity to the front of the machine, from whence they are removed by hand.

In the upper part of the rear portion of the sides of the frame, I provide a series of apertures, *c*, in a horizontal line, in connection with which a rod is employed to elevate or depress the rear end of the board *x*, the loops *e* being provided upon the lower side of the board, as shown in Fig. 1. The rod is passed through any aperture and loop at will, thus serving to elevate or depress the upper edge of the board, and carry the stops toward or away from the picker, thereby regulating their operation.

Figs. 3 and 4 show other forms of stops, the adjustment of which is illustrated in Fig. 2. These last-mentioned stops operate in a manner substantially similar to those shown in Fig. 1. They may be secured in place by means of attachments to the interior sides of the frame and upon the floor, or in any other convenient manner. The form shown in Fig. 3 I prefer to construct in two sections, with a means of adjusting its upper part, thus facilitating its application and operation.

I particularly recommend that the greatest care be exercised in the adjustment of the stops, and in the employment of such as are adapted to the particular service to be performed. The constructions described are suited to the separation of average material of all usual sizes; but it will not always be practicable to make use of them in the exact forms I have shown and described. These forms will be modified by the skilled operator without difficulty, and thus made to perform their offices under any conditions that can be foreseen. The forms I have shown, however, may be successfully employed without change in the effectuation of the chief object for which I contemplate their use—the separation of the hair and fur of the bison.

In practice, in separating the hair of the buffalo, it will be expedient to have the coarser wisps or locks, which are usually sold as part of the stock, removed by hand before the material is delivered at the apron. It will also be expedient to wash the stock, and generally to observe the steps which are customary in the preparation of wool or fur for the picker.

I am aware that machines of different kinds have been employed for separating furs and wool, such as are illustrated in the English patents of Barker and Harris, No. 4,574 of 1821, for "machinery for clearing furs and wool from kemps and hairs," and that of Birch and Bradbury, No. 2,106 of 1857, for "apparatus for clearing and mixing hatters' furs." I do not claim these machines.

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

1. A machine for disintegrating fibers in which the finer and coarser fibers are separated by means of a picker and a stop or stops, and carried off in different directions, substantially as set forth.

2. In combination with a current or currents of air, the screen H, picker D, and a stop or stops, substantially as and for the purposes set forth.

3. In combination with a current or currents of air, the picker D, carrier *x*, and stop N, substantially as set forth.

4. In combination with a current or currents of air, the picker D, carrier *x*, stop N, and stop M, substantially as set forth.

5. In combination with a current or currents of air, the adjustable carrier *x*, provided with the loops *e*, the apertures *c*, and a rod, substantially as set forth.

In testimony that I claim the foregoing improvement in machines for the separation or disintegration of fibers, as above described, I have hereunto set my hand this 27th day of February, 1879.

JOHN A. SOUTHMAYD.

Witnesses:

WM. BRO. SMITH,

CHAS. C. GILL.