G. M. RICHMOND.

FEATHER DUSTER.

No. 385,070. Patented June 26, 1888.

*Fig. 1.*

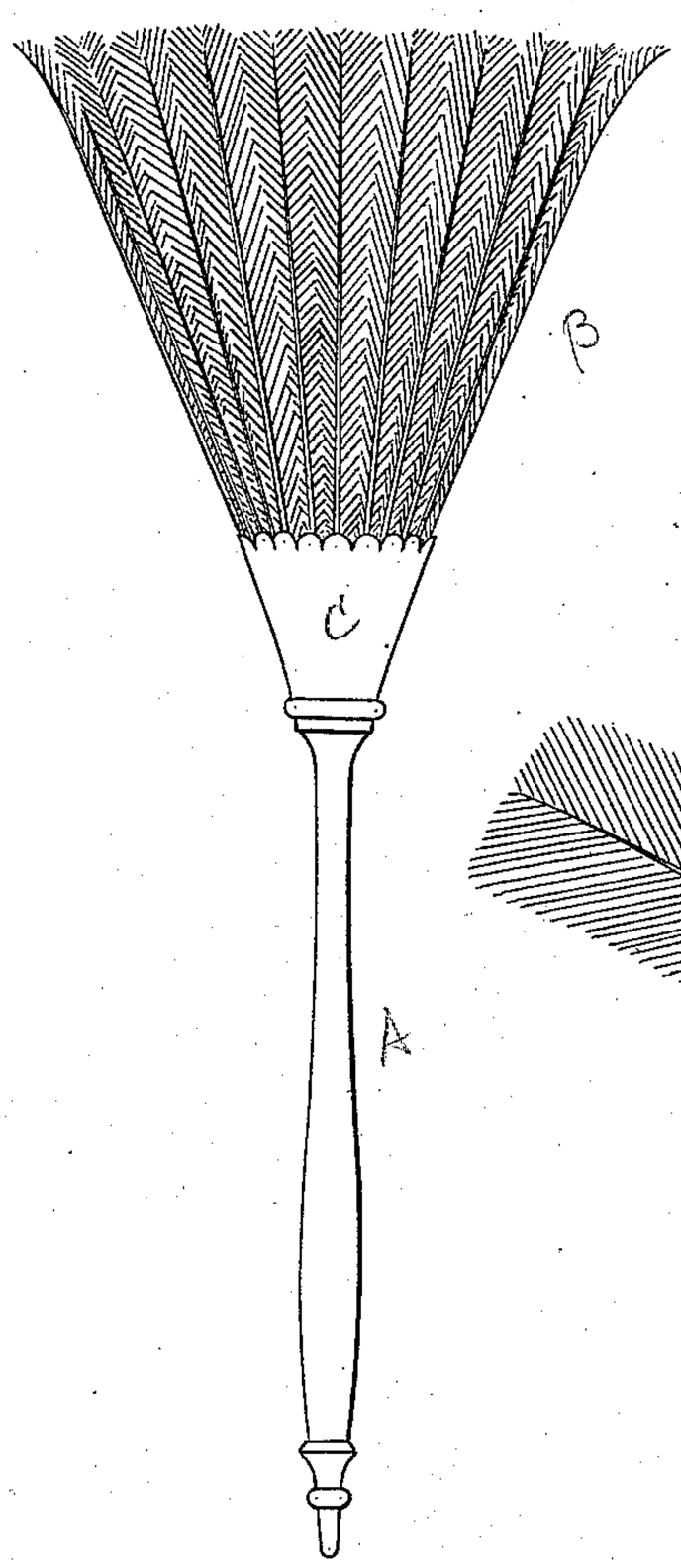



*Fig. 2.*

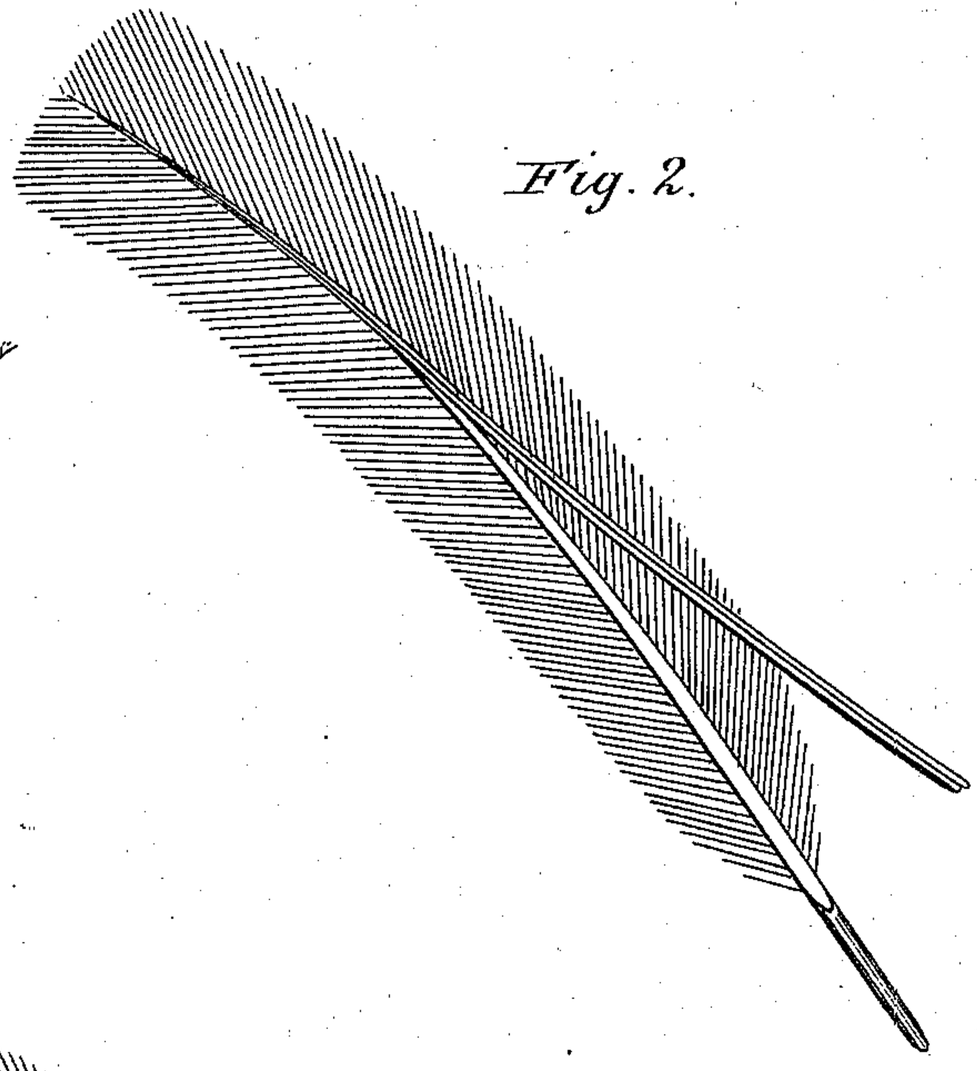
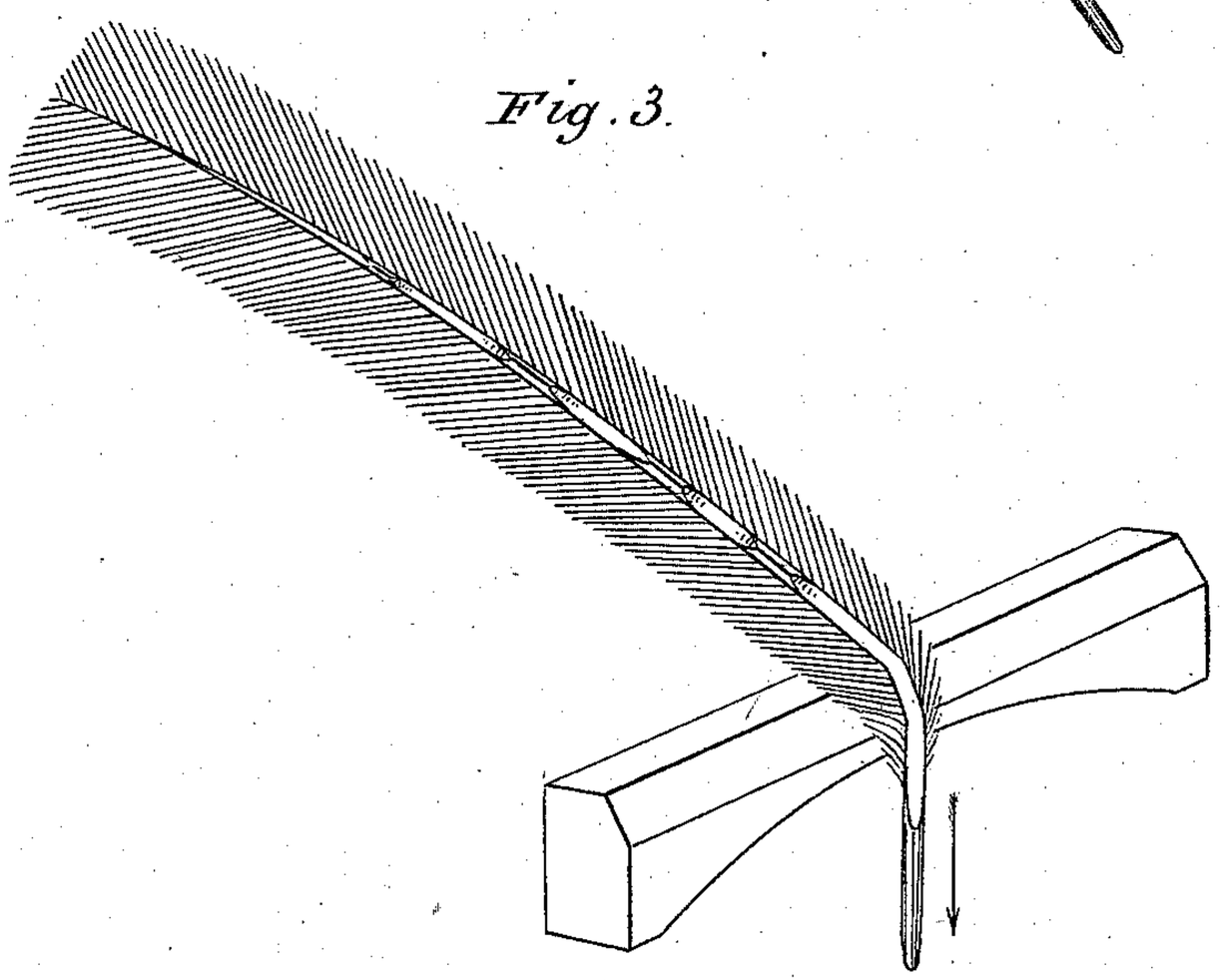


*Fig. 3.*



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# UNITED STATES PATENT OFFICE.

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## FEATHER DUSTER.

SPECIFICATION forming part of Letters Patent No. 385,070, dated June 26, 1888.

Application filed September 17, 1874.

*To all whom it may concern:*

Be it known that I, GILBERT M. RICHMOND, formerly of Geneva, in the county of Walworth and State of Wisconsin, now of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Feather Duster, of which the following is a specification, reference being had to the accompanying drawings, making part of said specification, and in which—

Figure 1 represents, in elevation, a split-feather duster, A being the handle, to the end of which a tuft of split feathers, B, to form the brush or duster is attached, and C being a finishing-band of leather to cover the fastening and quill ends of the shafts of the feathers. Fig. 2 represents, in perspective, a feather with its rib partially removed by splitting; and Fig. 3 represents, in perspective, a feather from which the rib has been imperfectly removed in process of being withed.

Heretofore the large stiff and heavy wing and tail feathers of turkeys, and similar feathers of other birds, have been produced in constantly-increasing quantities, and generally have been thrown away as a waste product. While the large and comparatively light, pliable, and soft feathers employed in making the so-called "ostrich-feather dusters" have constantly become more scarce, the demand for such dusters has been increasing and their price has been rising.

To supply a cheap feather duster, fit to take the place, for most purposes, of the costly ostrich-feather duster, by utilizing for that purpose the waste product before mentioned, is a desideratum which it is a principal object of my invention to supply.

It has often been attempted to introduce into use feather dusters made of such stiff and heavy feathers in their natural state; but in using such dusters the outer ends of the shafts soon broke off, leaving the broken ends hard and sharp, like so many claws, among the plumes; and the paint and varnish of rooms and furniture brushed with such dusters were defaced by scratching, which rendered the dusters worse than useless and defeated all attempts to introduce them into general use. By a new process, which I discovered, of making such large, stiff, and heavy feathers into soft, pliable, and springy feather dusters I have produced a new soft duster more durable than the ostrich-feather duster, and capable of replacing it for most uses, while for some uses it is superior, and particularly where whipping out somewhat as well as brushing off dust is required—as, for example, in removing dust from plush-covered furniture in dwellings, railway-cars, &c.

The shaft of a large wing or tail feather of the turkey may be regarded as a stiff tapering beam, which, outside of the cylindrical quill portion, is of quadrangular cross-section. The horny back, which carries on its edges the vane or plume of the feather, forms the outer and principal side or upper cord of the beam, the fluted enameled rib or under side of the shaft forms the lower cord of the beam, and the two thin horny tapering side plates unite the rib and back at the distance apart which determines the depth and taper of the beam, thus forming a four-sided tapering tube of horn filled with pith, which connects the sides of the tube in every direction and causes each side to support all the rest. In such a shaft the material is well distributed for securing both strength and stiffness; but I discovered that wherever the continuity of the rib and side plates of this beam with the back was interrupted, the back was thereby released from the stiffening action and became pliable, and I have utilized this discovery in my new process, whereby I am enabled to make a soft, light, flexible duster of stiff heavy feathers, which process consists, first, in splitting, shaving, or stripping off the rib, or that part of the shaft of the feather which projects beyond the plane of the under side of the vane, to diminish the weight of the feather and render its shaft more pliable; but the back of the stripped shaft, with the vane spreading out from its edges, if bent beyond its limit of elasticity, as frequently happens in use, suddenly creases at the weakest point and breaks down, the pendent end swinging on the crease, as if on a hinge, giving to a duster made of such split feathers, after some use, a ragged appearance and impairing its efficiency.

A second step of my improved process con-

sists in withing the horny back of the shaft of the feather after being stripped of its rib. This is done by subjecting the back to bending, stretching, pressure, and rubbing, or some of them, which has the effect of loosening its fibers, so as to destroy its tendency to brittleness, render it more pliable and elastic, and to free it from liability to break down, as it will not be overstrained by bending at an acute angle, but will have sufficient resilience to rise up again. The withing of the stripped shafts of these feathers imparts to dusters made of them a peculiar softness and springiness and a wavy flexibility which gives them a marked superiority over dusters made of such feathers with their stripped shafts unwithed, although the last-named dusters are highly useful and the two kinds represent merely different degrees of completeness and efficiency.

The details of the mechanism and mode of working required for carrying into practical effect the two steps aforesaid of my new process of making soft, light, and pliable feather dusters of hard, heavy, stiff feathers are the subject of a separate patent, No. 158,128, granted to me on the 22d day of December, A. D. 1874, the petition for which patent was filed in the Patent Office at the same time with the petition for Letters Patent for the invention herein claimed, and to which patent therefore reference is made for a description of said mechanism and mode of working.

The remaining steps of the process consists in assorting the prepared feathers according to their length, the preparation of a suitable handle and the securing upon such handle of the prepared feathers, the skirt-feathers, when skirts are used, and a finishing-band of leather or other suitable material. The feathers, prepared by splitting or by splitting and withing, as the case may be, may be secured to their place at the lower end of the handle with suitable binding-wire—such as corn-broom makers use—or by other convenient means known in the art, the shorter of the split feathers being secured in one or more layers to the foremost place at the lower end of the handle to form the center of the duster, and longer feathers being secured in like manner immediately above the shorter layers, and so on, overlapping layer after layer of progressively-longer feathers being added until the duster becomes as large as desired. By thus securing the longer feathers to the handle outside of those which are shorter the brushing-face of the duster can be kept nearly flat, which is a desirable shape. The skirt-feathers, if any are used, are next bound on, usually in two layers. They are short feathers taken from the body of the turkey and of the length required to cover the naked quill ends of the stems and the fastenings of the split feathers, and these skirt-feathers, being unsplit, are stiff and strong and support the outer layer of split feathers and protect them against violence from rough knocks in the careless use of the duster. The quills and wire binding of the skirt-feathers are in turn covered by a finishing band of leather or other decorative device.

If in the preparation of the feathers their ribs should be imperfectly removed or disconnected from the back of the shaft, yet if the withing be properly done a very serviceable duster could be made of them; but as such a duster would be inferior to those made of feathers from which the ribs had been more perfectly removed I deem further description of such dusters unnecessary.

In the operation of binding the feathers to the head of the handle a machine such as is commonly used for binding broom-corn to the handles in manufacturing common sweeping-brooms is employed; but the construction and mode of working that machine are too well known to need description here.

I claim—

1. As a new and useful article of manufacture, a soft, light, feather duster made of stiff heavy feathers reduced in weight and rendered more pliable by splitting or shaving off their ribs, substantially as described.

2. As a new and more useful and perfect article of manufacture, a soft, light, and flexible feather duster made of stiff heavy feathers, rendered soft, light, pliable, and elastic by the removal of the ribs of their shafts and withing the backs thereof, substantially as described.

GILBERT M. RICHMOND.

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