

(No Model.)

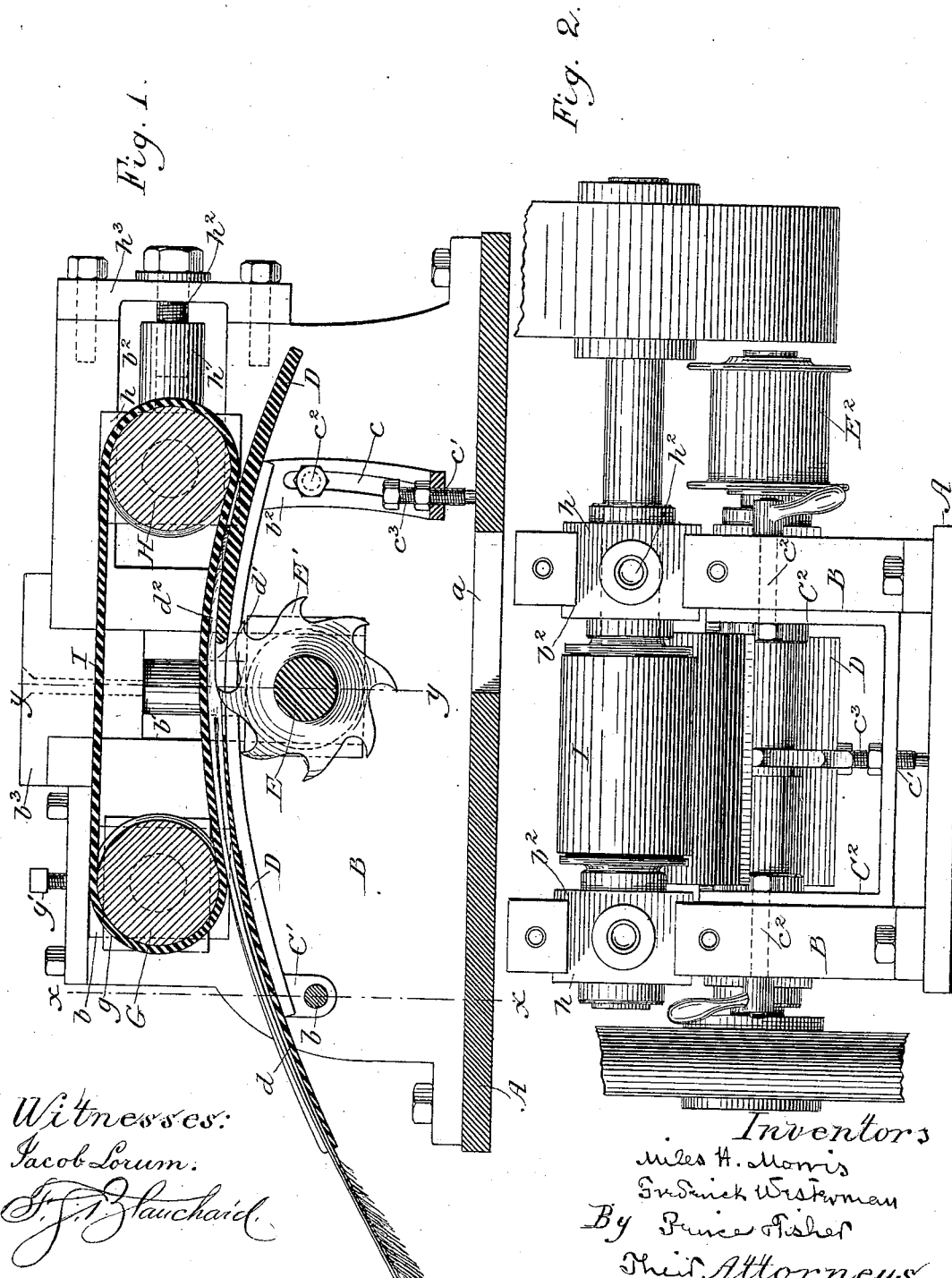
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M. H. MORRIS & F. WESTERMAN.

MACHINE FOR CUTTING THE SHAFTS OR STEMS OF FEATHERS.

No. 266,259.

Patented Oct. 17, 1882.



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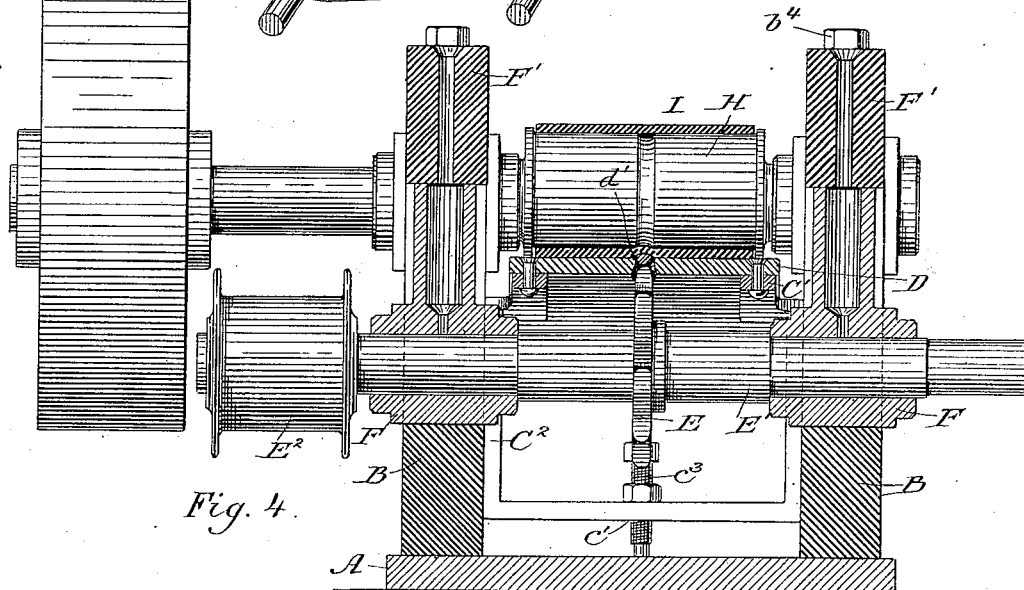
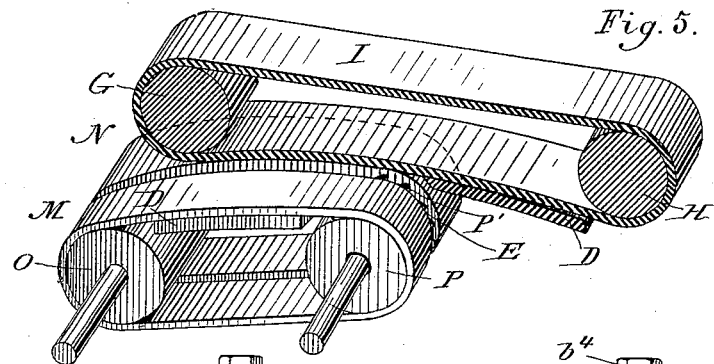
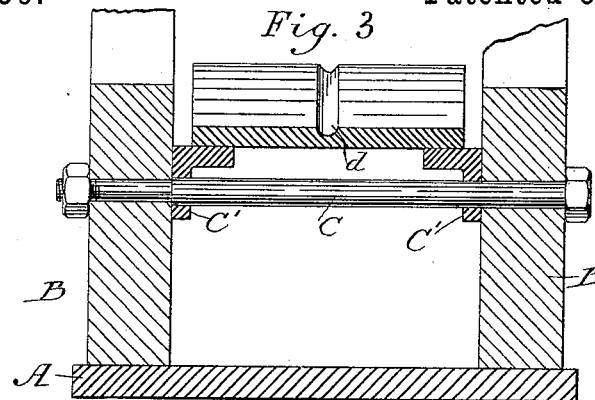
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Witnesses:

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UNITED STATES PATENT OFFICE.

MILES H. MORRIS AND FREDERICK WESTERMAN, OF CHICAGO, ILLINOIS.

MACHINE FOR CUTTING THE SHAFTS OR STEMS OF FEATHERS.

SPECIFICATION forming part of Letters Patent No. 266,259, dated October 17, 1882.

Application filed July 27, 1882. (No model.)

To all whom it may concern:

Be it known that we, MILES H. MORRIS and FREDERICK WESTERMAN, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machines for Cutting the Shafts or Stems of Feathers, of which the following is a specification.

In the manufacture of dusters from the feathers of domestic fowls it has become customary to cut away a portion of the shafts or stems of the feathers in order to render the same more pliable, and hence less liable to be broken in use or to injure the surfaces dusted. This removal of a portion of the feather-shaft is at present generally accomplished by splitting the shaft longitudinally just beneath the plume by drawing each feather by hand successively across a fixed knife set upon an incline above a gage-board. This operation is necessarily very slow, and is expensive, not only on account of the cost of labor, but for the further reason that a great many feathers are spoiled by even the most skillful workmen.

The object of our present invention is to furnish a machine which shall rapidly and effectively cut away a sufficient portion of the feather-shaft to render the same pliable, and this, too, without further manipulation of the feathers than feeding them into the machine. This object we have accomplished by the mechanism hereinafter described, illustrated in the accompanying drawings, and particularly defined in the claims at the end of this specification.

Figure 1 represents a longitudinal vertical section of the machine, and Fig. 2 is a rear elevation of the same. Fig. 3 is a view in vertical transverse section on line *x x* of Fig. 1, and Fig. 4 is a view in vertical transverse section on line *y y* of Fig. 1. Fig. 5 is a view in perspective, with the upper belt removed in part, of a modification of the feather-supporting mechanism and modified arrangement of the cutting-knife.

Like letters of reference indicate corresponding parts in the several views of the drawings.

A designates the base of the machine, which is provided with the opening *a* for the free discharge below of the cut-away or waste portion of the feather-shaft, and upon this base are firmly secured the standards B, by which the work-

ing parts are carried. Each of these standards is provided with the housings *b*, *b'*, and *b''*, and through the standards, near the front and a short distance above the base, is passed a rod, C, upon which are journaled the ends of the yoke C', which sustains the curved feather-supporting table D. The back part of this yoke is provided with the downwardly-curved portion C², having formed in the sides the slots *c* and in the bottom the threaded opening *c'*. Through suitable threaded perforations in the standards and through the slots *c* of the yoke pass the clamp-screws *c''*, having on their inner ends heads or washers to bear against the inner sides of the yoke, and on their outer ends turning heads or nuts, so that the yoke can be tightly clamped against the standards. Through the threaded opening in the portion C² of the yoke passes the adjusting-screw *c''*, the end of which bears against the base A, and by means of which the feather-supporting table D can be vertically adjusted. This table is provided centrally with the semi-ellipsoidal feather-guiding groove *d*, extending from its front to the slot *d'*, formed in the table to permit the free revolution of the cutting-knife E, and in the back edge of the slot *d'* is formed a small inclined groove or depression, *d''*, to receive and direct the feather-shaft as it passes from the cutting-knife.

The rotary knife E is provided with a series of teeth having approximately oval cutting-edges, and curved, as shown, in their plane of rotation, and is keyed to the shaft E', which is furnished with the small driving-pulley E², and is carried by the journal-boxes F, securely held in the housings *b'* of the standards. Upon the tops of the boxes F, which are suitably perforated, are fastened the lubricating-ducts F', by which oil is delivered to the journals of the knife-carrying shaft. A fly-wheel is also preferably attached to the shaft E' at the end opposite the driving-pulley. Across the top of the housings *b'* are fastened the plates *b''*, through which pass the screws *b'''*, by means of which the journal-boxes of the cutting-knife are held in place. In the housings *b* and *b''* are held respectively the rollers G and H. The roller G is carried by its journal-boxes *g*, which may be provided above and below with suitable rubber or other springs, and are acted upon by the adjusting-screws *g'*, which pass through

threaded perforations in the top plates of the housings, and serve to adjust the roller with relation to the feather-supporting table. The roller H is journaled in the boxes h , which are held in the housings h^2 . These journal-boxes are furnished at their backs with the studs h' , which are each furnished with a female screw adapted to receive the screw h^2 , which passes through the top plate, h^3 , of the housings. The several journal-boxes are provided with side flanges, as shown, to prevent their lateral displacement from the housings. The shaft of the roller H is extended beyond one of the standards, and carries a pulley, by which the revolution of the roller is effected. Over the rollers G and H passes an endless feeding-belt, I, formed of any suitable material, preferably leather or rubber, and the rollers are arranged in such relation to each other that the lower portion of the belt will bear upon the feather-supporting plate.

Our object in forming the feather-supporting plate curved, as shown, is to enable it to conform approximately to the slight natural curve of the feathers. This feature is especially important when cutting the wing or tail feathers of the fowl, the shafts of which are stiff and elastic, and would have a tendency to spring to one side, and thus escape the knife, were any effort made to flatten them. The semi-ellipsoidal shape is also given to the guide-groove of the plate to correspond with the shape of the under side of the quill and aid in preventing the feather from turning upon the side, and thus exposing the plume to the action of the cutting-knives.

The position of the cutting-knife with respect to the feather-supporting table should be such as to cut from the shaft of the feather all or substantially all of the quill and pith lying beneath the plume, which is attached to the shaft near its upper surface, and to accomplish this the yoke supporting the table is furnished with the adjusting-screw and with the clamp-screws to hold it in proper position when adjusted.

The rollers carrying the endless feeding-belt are set with respect to the feather-supporting table as shown, in order that the belt may be stretched tightly across and bear against the surface of the table a sufficient distance to effect a constant and uniform advance of the feather to the knife; and it will be noticed that when the quill of the feather, with the back up, is inserted into the guide-groove, the endless belt will press the plume upon the table, and as it is moved will advance the feather to the rapidly-revolving cutter, where the portion of the feather-shaft below the plume will be severed. The use of an endless belt we have found especially advantageous, as it affords a broad and long feeding-surface, effectively prevents the slipping of the shaft from the guide-groove, and by its elasticity avoids any breakage of the plume. It will be noticed that by means of the set-screws and threaded studs

the roller H can be adjusted and the belt kept constantly taut.

From the above description it is apparent that when a feather is placed in the guide-groove of the table and into the bite of the belt it will be advanced to the cutting-knife, where the under portion of the shaft will be cut away and fall through the opening in the base of the machine, while the feather will pass from the end of the machine into a suitable receptacle.

In Fig. 5 of the drawings is shown a modified form of our machine, in which the guide-groove of the table is dispensed with and two guide-belts, M and N, are substituted therefor. These guide-belts are carried by the roller O and the separate rollers P, which latter are loosely journaled on the shaft of the cutting-knife. The table D in this modification is divided, the front portion being placed between the rollers O and P, while the back portion is placed beyond the cutting-knife and the rollers P. Above the rollers M and N and the back portion of the table D extends the endless belt I, its function being the same as in the construction heretofore described. In operating this form of machine the shafts of the feathers are placed between the belts M and N, the outlying plume being held in the bite of the belts, and thus fed to the knife, from which it passes over the rear end of the table.

While we have set out in the foregoing description what we believe to be the most effective form of machine, it is obvious that extensive modifications of the same can be made without departing from the spirit of our invention. Thus, for example, a straight instead of a curved grooved table may in some instances be employed, and so, also, the cutting-knife may be made adjustable instead of the table, and a series of closely-placed feed-rollers might be substituted for the feeding-belt.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a machine for cutting the shafts of feathers, the combination, with the rotary cutting-knife, of a curved support for the feather, substantially as described.

2. The combination, in a machine for cutting feathers, of the cutting-knife, the curved table, and the endless feeding-belt, substantially as described.

3. In a machine for cutting feathers, the combination, with the rotary cutting-knife, of the table having a groove or its equivalent adapted to guide a feather, substantially as described.

4. In a machine for cutting feathers, the combination, with the cutting-knife, of the curved table having a groove or its equivalent to guide the feather, substantially as described.

5. In a machine for cutting feathers, the combination, with the cutting-knife, of the ta-

ble having a groove to guide the feather, and an endless feeding-belt located above the table, substantially as described.

5 6. The combination, with the cutting-knife and grooved feather-supporting table, of mechanism for adjusting said table, substantially as described.

10 7. The combination, with the cutting-knife, of the grooved feather-supporting table pivoted at one end and provided with adjusting mechanism at its opposite end, substantially as described.

15 8. The combination, with the cutting-knife, of the grooved feather-supporting table pivoted at one end and provided with clamping

mechanism at its opposite end, substantially as described.

9. The combination, with the cutting-knife, of the curved feather-supporting table, the endless belt extending above and on each side of said knife, and adapted to bear upon said curved table, and mechanism for adjusting said belt, substantially as described.

In testimony whereof, witness our hands this 24th day of July, A. D. 1882.

MILES H. MORRIS.

FREDERICK WESTERMAN.

Witnesses:

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