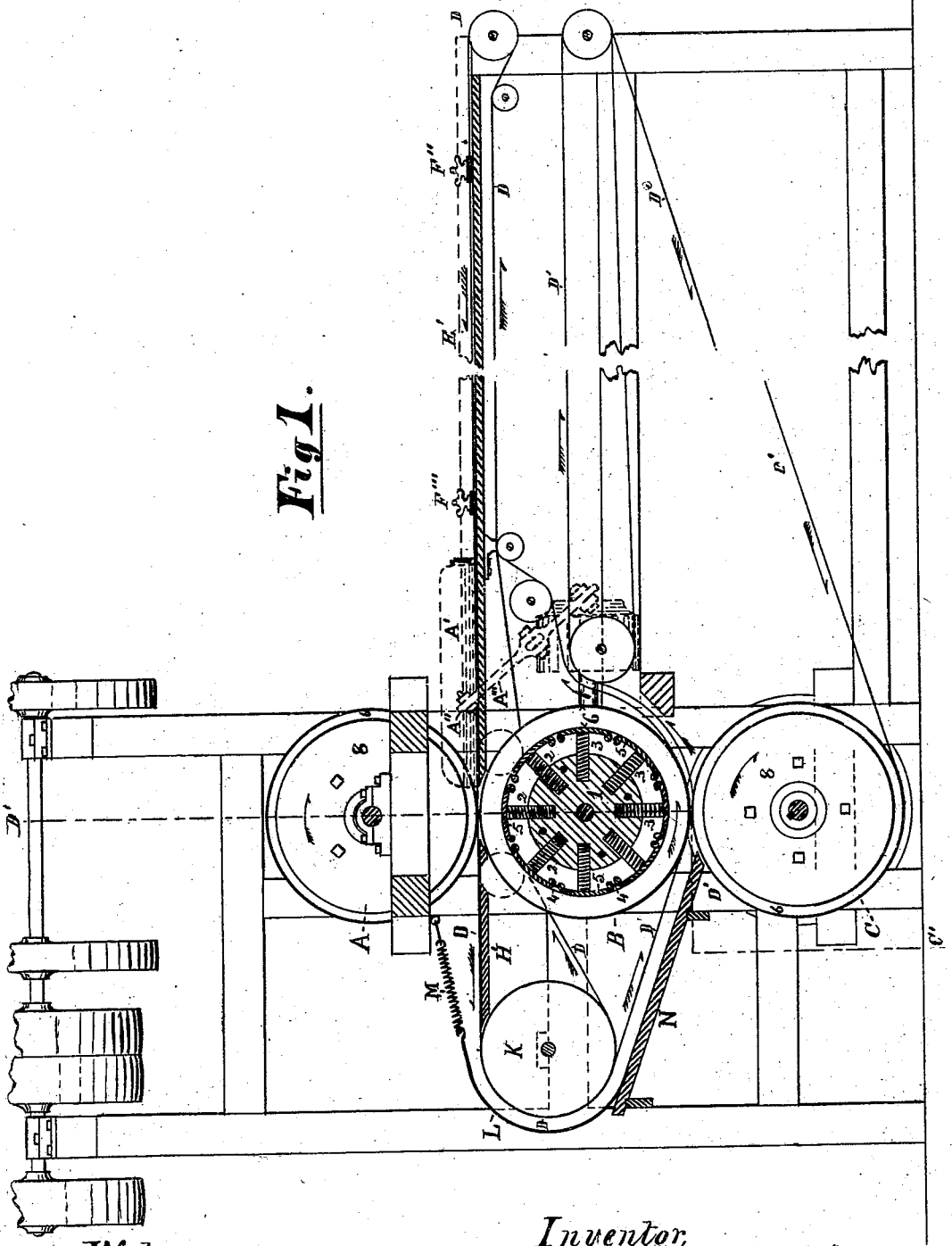
4 Sheets—Sheet 1.

E. B. WHITING.

MACHINE FOR DRESSING AND COMBING TAMPICO AND BRISTLES.

No. 184,940. Patented Nov. 28, 1876.

Fig 1.



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4 Sheets—Sheet 2.

E. B. WHITING.

MACHINE FOR DRESSING AND COMBING TAMPICO AND BRISTLES.

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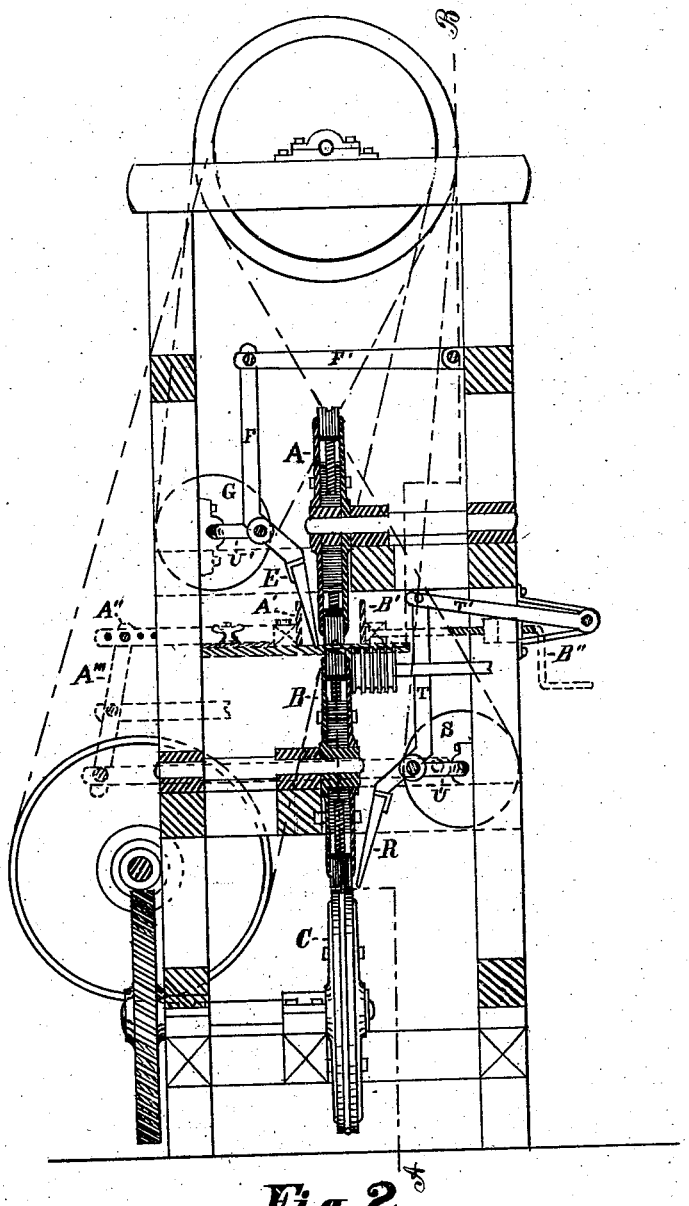

Fig. 2

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MACHINE FOR DRESSING AND COMBING TAMPICO AND BRISTLES.

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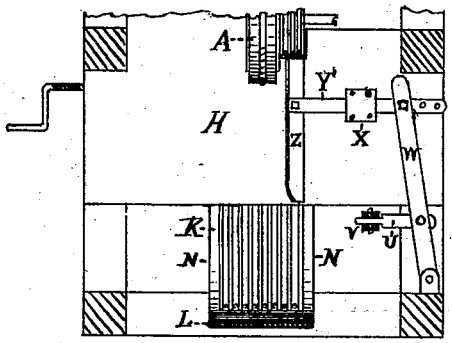
Fig. 3



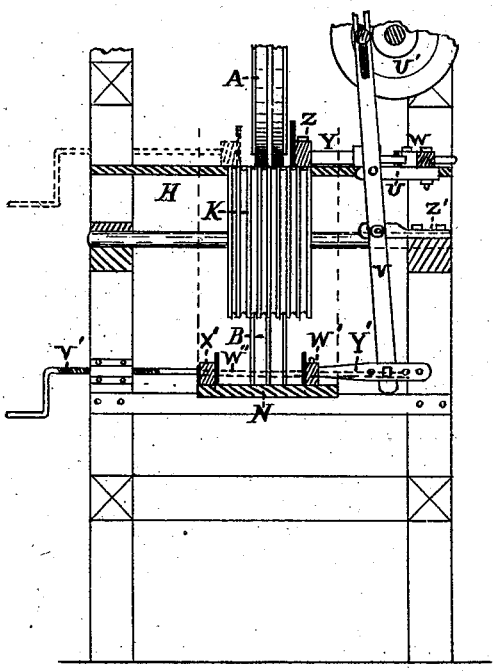


Fig. 4

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E. B. WHITING.

MACHINE FOR DRESSING AND COMBING TAMPICO AND BRISTLES.

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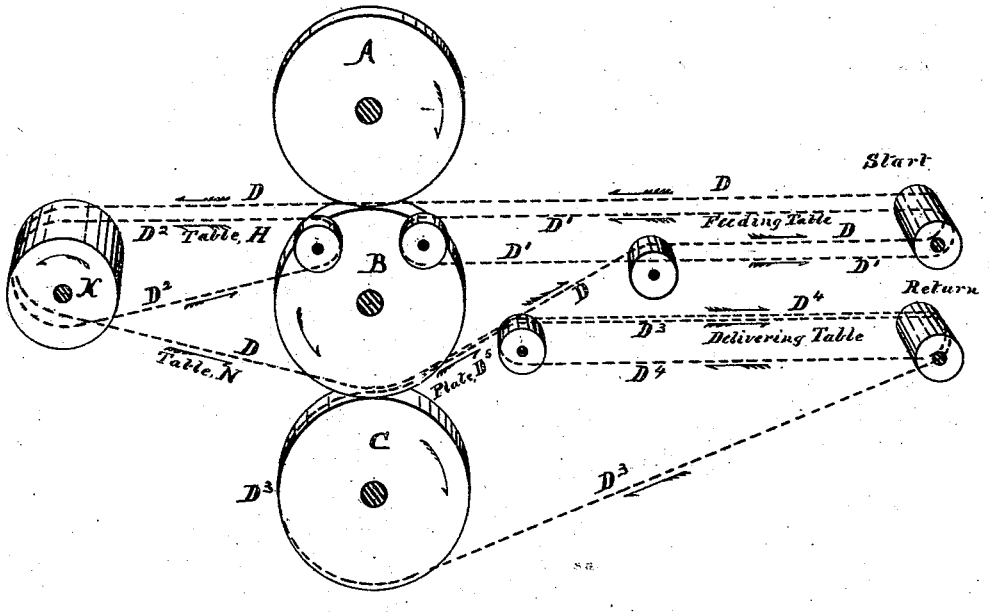

Fig. 5

Witnesses:
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UNITED STATES PATENT OFFICE.

ENOCH B. WHITING, OF ST. ALBANS, VERMONT.

IMPROVEMENT IN MACHINES FOR DRESSING AND COMBING TAMPICO AND BRISTLES.

Specification forming part of Letters Patent No. **184,940**, dated November 28, 1876; application filed August 14, 1875.

To all whom it may concern:

Be it known that I, ENOCH B. WHITING, of St. Albans, county of Franklin, and State of Vermont, have invented certain Improvements in Machines for Dressing Tampico and Bristles, of which the following is a specification:

This invention relates to a class of machines which are used for preparing stock (usually tampico or bristles) used in the manufacture of brushes.

My invention or improvements consist in a set of three rotating friction-holders, placed one above the other, the surfaces of which are flexible, and placed over a series of radiating springs. The peripheries of these holders are placed close enough together to force their flexible surfaces to form flat friction-surfaces about six inches long by the width of the face of the holder, to which flat surfaces the stock (cut to any desired length, say four to ten inches) is carried from a feeding-point by endless belts or cords, and so presented to and passed between the holders aforesaid that half to three-fourths its length projects therefrom, to be acted upon by broad metallic combs, making about two hundred revolutions or strokes per minute, which mixes and cleans the stock.

My invention further consists in a combination, in one machine, of two or more of these combs, with the holders aforesaid, with a transferring-wheel and a self-adjusting metallic band, as also a series of adjustable "butters" and gages, all of which are so arranged that the stock, after leaving the feeding-point, is passed between an adjustable gage and a butter, which latter forces the fibers of the stock into line against the gage, from whence it passes to and between the upper two of the friction-holders, half to three-fourths its length being combed in its passage. It is then passed over a transferring-wheel from between the two upper holders, down between said transferring-wheel and an adjustable metallic band, to and between the two lower holders, to be combed at the other end, having been acted upon between the transferring-wheel and upper holders by a second butter and gage, which throws the stock half its length to the right of its former line of movement. In passing between the lower holders it is acted upon again by a second comb, which straightens and cleans the uncombed end, from whence it is passed by a series of endless belts to the feeding-point, to again go through the machine until completed.

Figure 1 is a longitudinal vertical section of the machine on line A B, Fig. 2. Fig. 2 is a transverse vertical section from front of machine on line C D, Fig. 1. Fig. 3 is a horizontal section of rear end of the machine, showing the upper rear butting device and holder A. Fig. 4 is a transverse vertical section from rear of machine, showing upper and lower rear butting devices and gages. Fig. 5 is a perspective view of the holders and pulleys, showing the arrangement and operation of the feeding and delivering belts.

Similar letters of reference indicate corresponding parts in all of the figures.

A, B, and C represent a set of three rotating friction disks or holders, arranged one above the other upon suitable shafts. Said holders run close enough together to form flat friction-surfaces, as hereinbefore described, and rotate in opposite directions, that the portion flattened and holding the stock may move in the same direction horizontally. The flexible surfaces of these holders are prevented collapsing by metallic flanges, as hereinafter described.

D, D^1, D^2, D^3, and D^4 represent a series of endless carrier-belts running from the front and back of the machine to the holders A B C, a part of which belts, D, pass between the holders A B C, part D^3 around the holder C, part D^1 D^4 around pulleys located at front and center of the machine, and part D^2 around pulleys at back and center of the machine. These belts carry the stock from the feeding-point at front of the machine to and through the holders and combs, and back to the starting-point. E represents a metallic comb loosely working upon a rotating crank, U′. The comb has at its upper part a long arm, F, which is loosely pivoted to a horizontal arm, F′, which changes the stroke of the comb from a circle to that of an ellipse, the long diameter being horizontal, and thereby making a drawing stroke in passing through the stock. The comb E is suspended at the left hand of

the two upper holders A B, and is actuated by the pulley G, combing, mixing, and cleaning the stock passing slowly past it (the comb) and projecting from the holders A B.

The carrier-belts D D^1 are placed upon the feeding-table in such position that in their width they are about equal to the length of the stock to be combed. The stock, cut to the desired length, is placed upon said carrier-belts crosswise, and is carried by them to and between the upper holders A B, between which holders one-third the length of the stock is held, the other portion projecting from the holders, to be acted upon by the comb E. After going through between the holders A B the stock passes to a table, H, or rather bridge, being kept in motion by the belts D D^2, the butter Z forcing the stock to the right about two-thirds its length from its original line of travel, that it may be in proper position to be acted upon by a second comb, R. The stock passes over the bridge H to the transferring-wheel K and metallic belt L. This belt is made adjustable, and is perfectly elastic by reason of the spiral or other springs M, down between which it is carried to the inclined bridge N, to the two lower holders B C, (being straightened and trued by the lower rear butters W′ and gage X′ just before entering between the holders,) to be acted upon by the second comb R, which latter is actuated by pulley S and crank U, its action being the same as comb E. From this latter comb the stock is carried by belts D^3 and D^4—former passing around the lower holder C, and a pulley at front of the machine, passing over a pulley at front of holders, latter around pulley at front of the machine, and one at or near the holders B C, being first carried from the holders B C and comb R up the incline plate D^5 by the pressure and movement of the belts D and D^3, to the front of the machine at feeding-point, (passing under the feeding-table,) to be again passed through the machine, which operation is repeated until the stock is sufficiently dressed for use.

Power is applied to the different gears and pulleys from a shaft at top of the machine, turning the upper part of the lower holder C toward the feeder, who stands at the front of the machine, the middle holder B turning in the opposite direction, and the upper holder A in the same direction as the lower one C. Power is transmitted to the worm-gear at left-hand side of machine by a belt passing to an upper shaft The combs R and E are driven by bands from pulleys on the upper shaft, the combs making the elliptic stroke, as before mentioned, by means of the rotary disks and cranks S U and G U′, to which they are hung, and the action of the arms T T′ and F F′. The feeding-belt D is driven by being passed between the holders A B C, the pressure of the holders and the stock being sufficient to keep it in motion. This belt passes between the holders A B, around the grooved wheel K, rotating same; thence between the holders B C, up to and over a small pulley at under side of feeding-table, and back to pulley at starting-point. The belt D^1 derives its power from, and by passing over, the pulley at front of the machine, from whence it passes to a pulley at or near the front of the holders A B. The belt D^2 is moved by passing around the wheel K, passing from thence to a small pulley at or near the back of the holders B C. The delivering-belt D^3 is driven by passing directly around the lower holder C, thence over a pulley located at the front and near the holders B C, and to a pulley at front or delivering-point of machine. Belt D^4 takes its movement from the pulley at or near the holders B C, and the pulley at delivering-point of the machine.

The frame to receive the above mechanism can be of wood or metal, and in form substantially as is shown.

The holders A B C I construct as follows: A wooden or other hub or core, 1, in size about half the diameter of the entire holder, is bored from the periphery toward its center in about eight equidistant places, 2 2 2 2, to a depth about one-third its diameter. In these holes I place suitable spiral or other springs 3 3 3, projecting them half their length from the hub 1. On the outer end of these springs 3 3 3 I fasten their elastic metallic plates 5 5 5, properly secured, and of such length that they may not strike or lap when the surfaces of the holders are depressed by the stock passing between them. Over the plates, or rather over the ends of them, to prevent their canting and to secure uniform action, I place loose links 4 4 4, held in position by turning back the ends of the plates 5 5 5 in hook form. Over the plates 5 5 5 I place a rubber or other flexible tire, 6, of proper thickness—say two to four inches—and in the face of which is a groove for the belts D to run in. The springs and tires are prevented from collapsing by putting on the outside metallic flanges 8 8, which are in diameter some two to three inches less than the total diameter of the holder, but sufficiently large to cover about one-half the thickness of the flexible tire 6. These flanges 8 8 are fixed and firmly held in position by being bolted or screwed to or through the wooden hubs 1. The entire holder is to be secured to its shaft by a key or in other suitable manner.

The front butter A′ is so presented to one end of the stock as to butt it up to an adjustable gage, B′, which gage is adjusted to any length of stock by means of screw-crank B″. The butter A′ is made adjustable at A″, so as to meet the variation in the length of the stock used. The butter-board is acted upon by a rocking arm or lever, A‴, and may be made subject wholly to the rocking motion; or one end may be adjusted to a hinge at end of gage E′, (which latter in itself is adjustable by means of clamps and set-screws F″ and F‴,) and the other end used as a clapper. A rear butter, Z, moves the stock, after it has passed the holders A B and comb E, so as to present the uncombed ends to the second

comb R as it passes between the holders B C. The rear butter is arranged to work on the table H, (see Figs. 3 and 4,) and is composed of an elongated head, Z, (faced with metal,) a driving-arm, Y, working through a guide, X. The arm Y is operated by a vibrating pivoted lever, W, which is connected with an upright rocking lever, V, by a link, U. This rocking lever V is hung at about its center by an arm, Z′. The lower end of the lever V is connected with an adjustable driving-arm, Y′, which drives the lower rear butter W′, working on the inclined table or bridge N. On this table N, and opposite the butter W′, is an adjustable gage, X′, operated (turned in or out) by a screw-crank, V′. The upper and lower rear butters Z and W′ are driven by a pulley, U′, having on its face a stud, which is connected with a slot in the upper end of the rocking lever V. The forward end of lower rear butter W′ is made adjustable from the opposite side of the machine by means of a screw-crank, W″, similar in construction and operation to the screw-crank V′.

I claim as my invention—

1. In a machine for dressing bristles and tampico, the revolving holders A, B, and C, the faces of which are india-rubber resting upon yielding section-plates 5 5, that are supported by springs 3 3, all constructed and operating substantially as and for the purposes described.

2. In a machine for dressing bristles and tampico, the combination of a butter, A′, with a gage, B′, as and for the purpose substantially as described.

3. In a tampico and bristle dressing machine, the combination of the feeding-belts D, D^1, and D^2 with the flexible holders A B C, combs R E, bridges H N, grooved wheel K, metallic elastic and adjustable belt or band L, having spiral or other spring M, butting devices A′ Z W′, gages B′ E′ X′, and delivering-belts D^3 and D^4, when constructed, combined, and operating substantially as and for the purposes set forth.

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