

O. DEAN.

Tobacco Stripping and Booking Machines.

No. 133,420.

Patented Nov. 26, 1872.

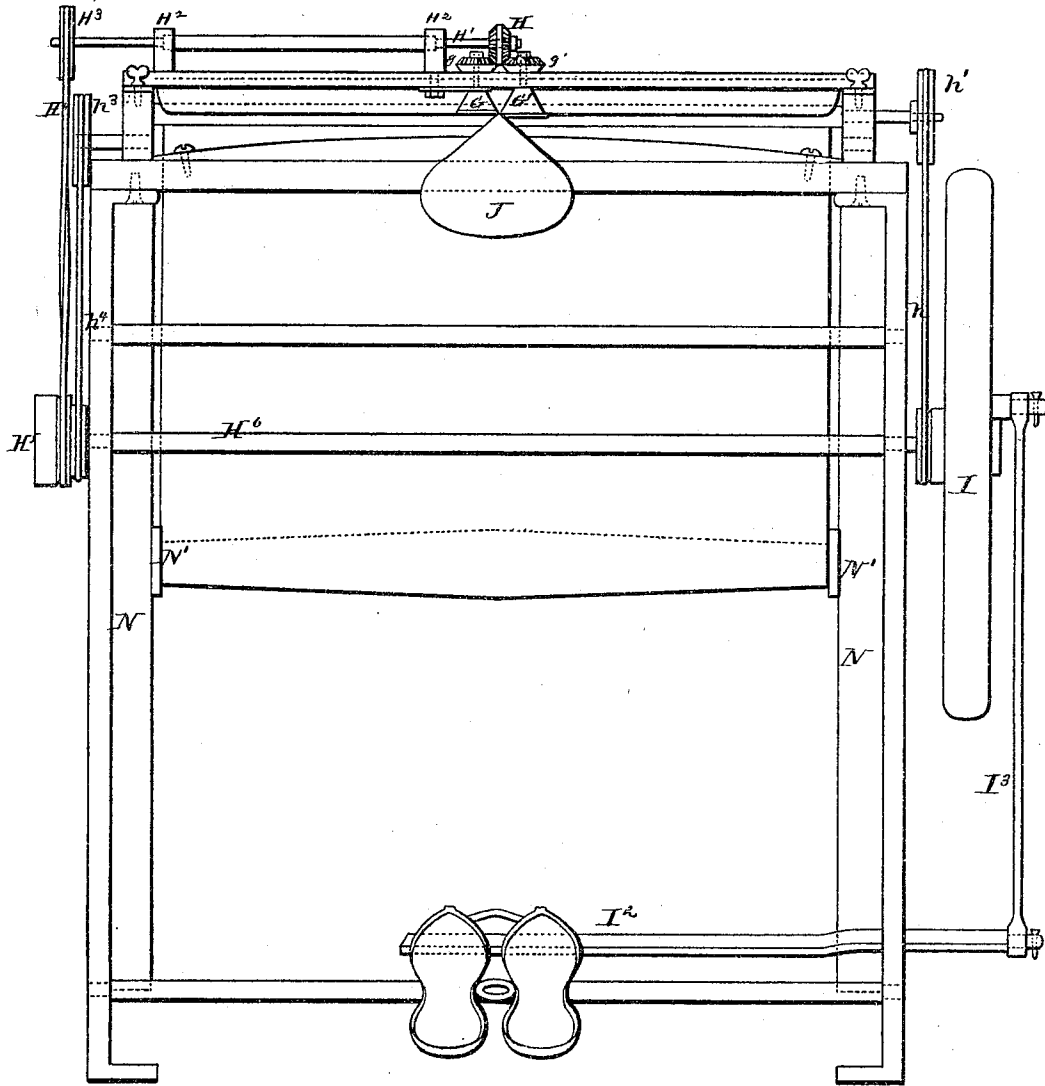


Fig. 1.

WITNESSES.

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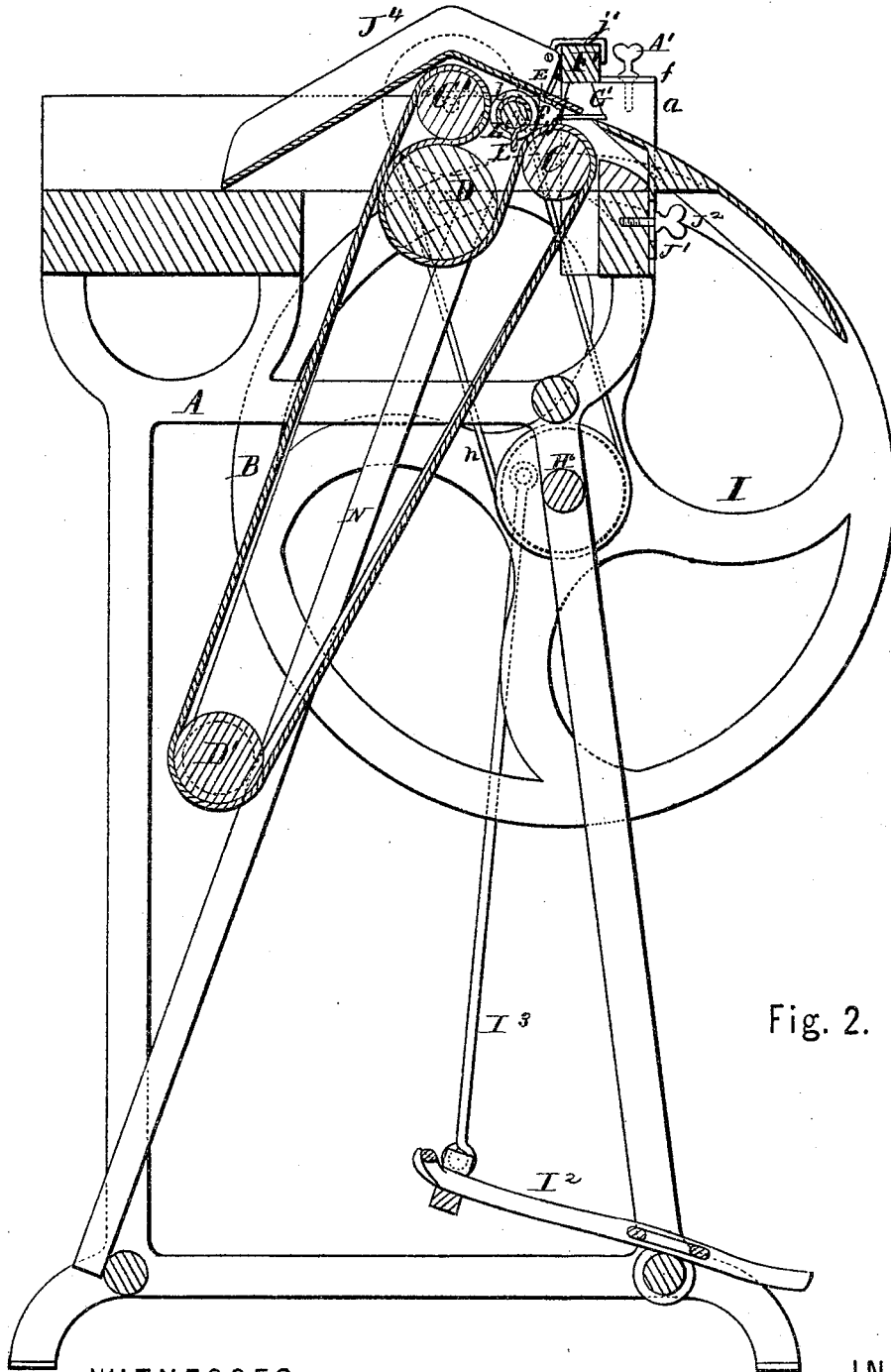


Fig. 2.

WITNESSES.

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UNITED STATES PATENT OFFICE.

OTIS DEAN, OF RICHMOND, VIRGINIA, ASSIGNOR OF TWO-THIRDS HIS RIGHT
TO PHILIP WHITLOCK AND ELLIS ABRAM, OF SAME PLACE.

IMPROVEMENT IN TOBACCO STRIPPING AND BOOKING MACHINES.

Specification forming part of Letters Patent No. 133,420, dated November 26, 1872.

To all whom it may concern:

Be it known that I, OTIS DEAN, of Richmond, in the county of Henrico and State of Virginia, have invented a new and valuable Improvement in Tobacco-Stripping Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a front view of my invention. Fig. 2 is a side view of my invention. Fig. 3 is a detail view. Fig. 4 is a detail view; Figs. 5, 6, and 7, detail views of my invention.

My invention has relation to machines for stemming and booking tobacco; and it consists in the construction and novel arrangement of the stemming-knives; the adjustable frame by which the same are held; the devices for communicating motion to, cleaning, and holding in proper contact the said knives; the booking, guiding, and feed rollers; the weighted roller, by which the elastic booking-apron is properly strained, and the devices for guiding the stem to the knives and the leaf to the booking-roller; all as hereinafter more fully described.

Referring to the accompanying drawing illustrating this invention, A designates the main frame of the machine embodying the elements of my invention. B represents an endless elastic apron arranged at an inclination, and traveling over the guiding-rollers C C' and under the booking-roller D and weighted roller D'. The rollers C C' have spindles, and are journaled to the main frame at the upper part thereof. The roller C' is let down into its bearings, and there retained by means of the sliding plates *c*, which are attached to the top part of the frame, as shown. When these plates are moved back from the recesses holding the spindles of the roller C' the latter may be lifted out of said recesses. The booking-roller D is supported by a fold of the endless apron, and below the roller C', and has no end bearings. The guiding-roller E, also without end bearings, lies in the space between the rollers C C'. When the rollers E C' are raised the booking-roller is immediately thrown up by reason of the strain upon the endless apron,

caused by the weight of the roller D', which, it will be perceived, lies within and upon the bottom fold of the apron, and, not being journaled, tends constantly to pull the apron downward; hence when the rollers C' E (which, when in position, press down upon and retain the booking-roller in place) are removed the weight of the booking-roller is insufficient to counterbalance that of the roller D'; consequently the booking-roller rises, while the weighted roller falls. The booking-roller is usually made of wood, but may be made of any suitable material. F designates a bar of metal, constituting the principal part of the adjustable frame which holds the stem-cutters. To the ends of this bar cleats *f* are secured. These cleats project outwardly, and, being slotted, are secured to elevated portions *a* of the main frame A by means of thumb-screws A'. The slots in said cleats allow the bar F and its attachments to be adjusted toward or away from the roller E. These cleats are the only parts of the knife-frame which are rigidly secured to the main frame; hence said knife-frame may be readily taken from the main frame, secured to an ordinary work-table, and used without the booking devices. The stemming-knives consist of the shear-edged disks Z Z', attached to conical rollers G G', having shafts G², vertically arranged and passing through the bar F. The disk Z overlaps the disk Z', as shown. Upon the upper ends of the shafts G² are beveled pinions *g g'*. These pinions engage with a double-faced beveled spur-wheel, H, on the end of a horizontal shaft, H¹, having its bearings in standards H², rising from the bar F, and holding on its outer end a belt-pulley, H³, coupled by means of a crossed belt, H⁴, to a pulley, H⁵, on the end of the power-shaft H⁶. By means of the wheel H the pinions and knives are rotated in opposite directions. The power-shaft H⁶ is journaled to the sides of the main frame, and holds on one end a balance-wheel, I, operated by means of a treadle and pitman connection, I² I³. The collar of said wheel is grooved, and is connected, by means of a belt, *h*, to a belt-pulley, *h*¹, on the adjacent end of the roller C'. The roller C holds on one end a belt-pulley, *h*², and is connected with the pulley H⁵, or to another on the same shaft, by means of a belt, *h*⁴. By means of the belts *h*⁴ *h* and pulleys *h*¹ *h*²

H⁵ motion is communicated to the shafts C C' from the main shaft; and, by means of the pulleys H⁵ H³ and belt H⁴, motion is conveyed to the devices which actuate the knives. The shafts C C' move the endless apron, which, in turn, rotates the booking-roller, the guiding-roller, and the weighted roller.

J indicates a convex plate, upon which are laid the tobacco-leaves during the stemming operation. This plate is arranged at an inclination, rising toward the stemming-knives. The upper part of this plate converges to a point and is formed into a ridge, which, when the leaf is spread out, guides the stem to the knives. The plate J is supported by a standard, J¹, which is slotted, arranged within a recess formed in the front part of the frame A, and secured to said frame by means of a thumb-screw, J². The leaf-plate is thus attached to the frame A so that any necessary adjustment may be easily effected. By properly adjusting the leaf-plate the machine may be made to cut either the whole stem or a part thereof only.

It will be observed that the method of stemming tobacco-leaves by this machine is altogether different from the ordinary method. The usual way of stemming has been to cut down through the leaf on both sides of the stem, the knife or knives being at right angles with the plane of the leaf during the operation. To take out part of the stem only and leave the leaf entire has been a tedious work, and, at least, incapable of being satisfactorily performed.

The knives in my machine cut in the direction of or parallel with the plane of the leaf, and hence cut only the stem, or as much thereof as adjustment of the leaf-plate provides for, and thereby avoids all inroads into the body of the leaf. The knife-roller G is capable of slight vertical play, and to this end may be arranged to slide on its shaft, or its shaft may be arranged to slide in its bearing, the latter arrangement being the one illustrated in the drawing. The edge of the cutting-disk Z attached to this roller projects over the edge of the cutting-disk Z' of the roller G¹. The roller G, being movable, is affected by a spring, K, and by it the knife Z kept in close contact with its mate Z'. The spring K, as will be perceived, is secured to the bar F and rests on the top of the roller G. A hole is pierced in said spring to let the roller-shaft pass through.

When the machine is in operation the tobacco-leaf is first spread out on the leaf-plate, and, with the stem-end turned toward the knives, guided to the latter. Attached to the back part of the bar F is an inclined guard-plate, F¹, which runs nearly the whole length of said bar. At the middle part of said plate an opening, F², is made to let the stem pass through as it is cut from the leaf. At the bottom of said opening is a plate, F³, having its forward edge beveled off in both directions from the middle part and sharpened. This plate projects over the edges of the cut-

ting-disks, and is so shaped as to correspond to the difference in height of said disks by having a shoulder at the middle part or point. The function of this plate is to keep the cutting-disks clean. F⁴ represents wings rising at the sides of said plate, inclined parallel to the rollers and constructed with rounded edges. These wings serve to keep the rollers clean, and to act as guards to prevent the stems from wrapping the rollers. As the leaf leaves the plate J it passes underneath the stemming-disks, while the stem passes between the rollers and through the opening F². A V-shaped trough, J⁴, having lugs *j* to fit under the guard-plate F¹ and bent arms or hooks *j'*, to catch on the bar F, is sometimes used to carry the stems to a distance. This trough is arranged above the endless apron and the rollers C C' E. As the leaf emerges from underneath the stemming-disks it comes in contact with the endless apron, where the latter passes over the roller C, and being prevented from rising by the guard-plate F¹, passes down between the rollers C E, and is finally wrapped or booked upon the booking-roller. L represents a plate suspended from the roller E, to which it is attached by means of a loose collar, L'. This plate acts as a guard to prevent the leaf, after passing between the rollers C E, from being wrapped around the roller E. The roller E has a groove at *l*, in which the collar L' lies, and which is designed to hold said collar in place, and to provide a free passage for the stems when the trough is not in use. The booking-roller lies directly under the roller C', so that the elastic apron passes around the greater part of the booking-roller, and thereby insures the proper booking of the leaves. As the booking-roller becomes bulky the apron stretches, and thus obviates any difficulty which might otherwise be felt in working the machine. After the booking-roller is filled it is taken out and the tobacco slipped off at the ends. To enable the tobacco to be easily removed the booking-roller should have a piece of paper wrapped around it to prevent the tobacco from sticking to the wood. The weighted roller D' rolls upon inclined ways N, and has flanges N' at the ends to prevent the roller from getting out of place. The weighted roller is constructed with its middle part either bulged or depressed, as shown in Figs. 4 and 5, so as to prevent lateral movement of the endless apron, and at the same time to give space for the booking of the tobacco-leaves around the booking-roller without removing the bearing of the apron from said booking-roller, thus avoiding any rolling strain upon the leaves, which are very tender.

This machine may be used without the booking-roller. In such cases I substitute for the roller E another marked E², and shown in Fig. 7. This roller is made in two sections, one of which has a hole in its inner end to receive a stem, *e*, on the inner end of the other. Between the inner ends of the two

sections a space is left for the tobacco-stems to pass through. The trough J⁴ is especially useful when the booking-roller is not used in order to keep the stems and leaves properly separated. The cutters Z Z' are secured to the rollers by means of screws, and may be taken off to be sharpened.

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

1. The tobacco-booking roller D, in combination with the adjustable and removable bearing-roller C', both rollers being arranged at the top of the frame A, substantially as and for the purpose specified.

2. In a tobacco-stripping machine, the combination, with the booking-roller D and endless apron, of the suspended roller D', constructed with its middle part contracted and supported in the apron B, substantially and for the purpose specified.

3. The knife-frame having the slotted cleats f, and secured to the frame A by means of thumb-screws A', substantially as described.

4. The improved stemming-knives, consisting of the conical rollers G G¹ having the removable shear-edged overlapping disk-cutters Z Z' arranged to rotate in horizontal planes, substantially as specified.

5. In a tobacco-stripping machine, the stem-cutters attached to the vertical shafts G² and rotated in opposite directions through the medium of the horizontal shaft H¹, and the gearing H g g', substantially as specified.

6. The adjustable leaf-plate J convex on its upper surface, and arranged with its projecting point extending between the knives, substantially as described.

7. The guard-plate F¹ having the opening F² and provided with the knife-cleaner F³, substantially as specified.

8. The roller E having the loosely-suspended guard-plate L, substantially as and for the purpose described.

9. The roller E having the groove l, and holding the guard-plate L suspended by means of the loose collar L', substantially as and for the purpose described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

OTIS DEAN.

Witnesses:

RO. HOWARD,
H. W. KUNSTRER.