O. HAMMERSTEIN.

CIGAR ROLLING MACHINE.

APPLICATION FILED JUNE 5, 1901.

969,274.

Patented Sept. 6, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

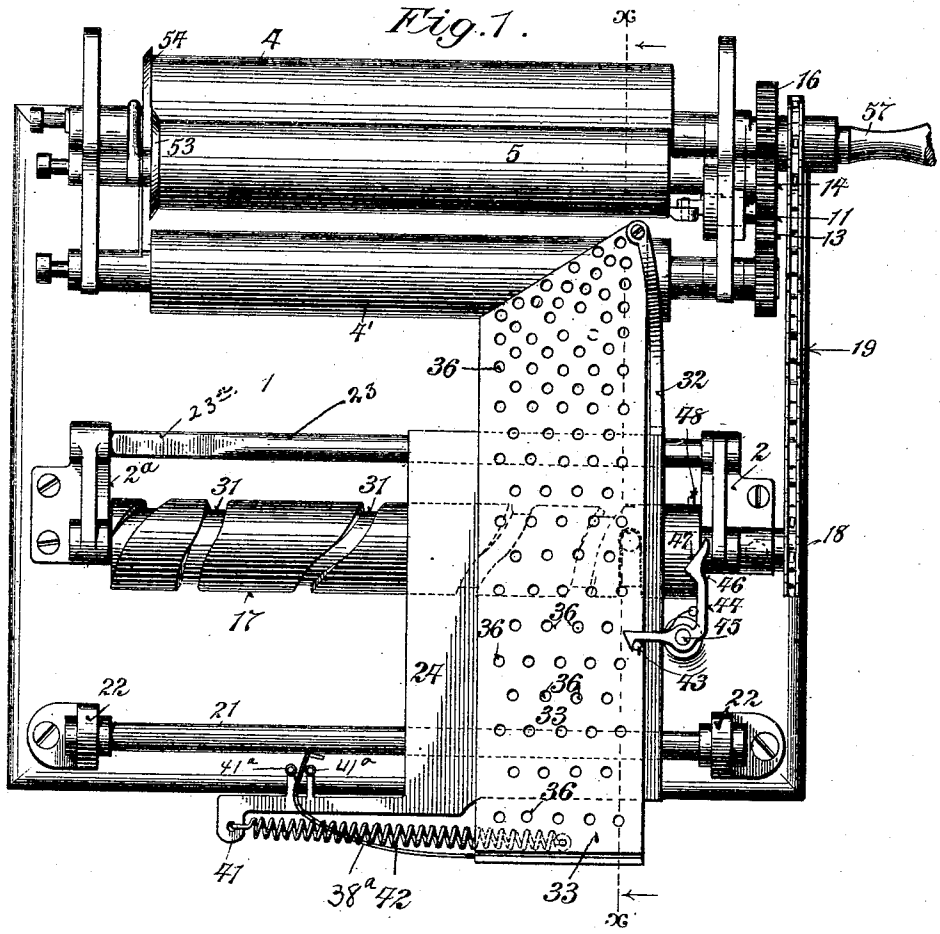


Fig. 4.

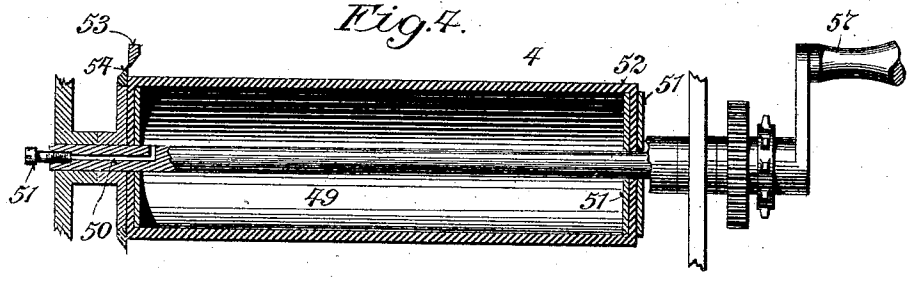
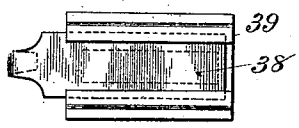


Fig. 6.



Witnesses
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2 SHEETS—SHEET 2.

Fig. 2.

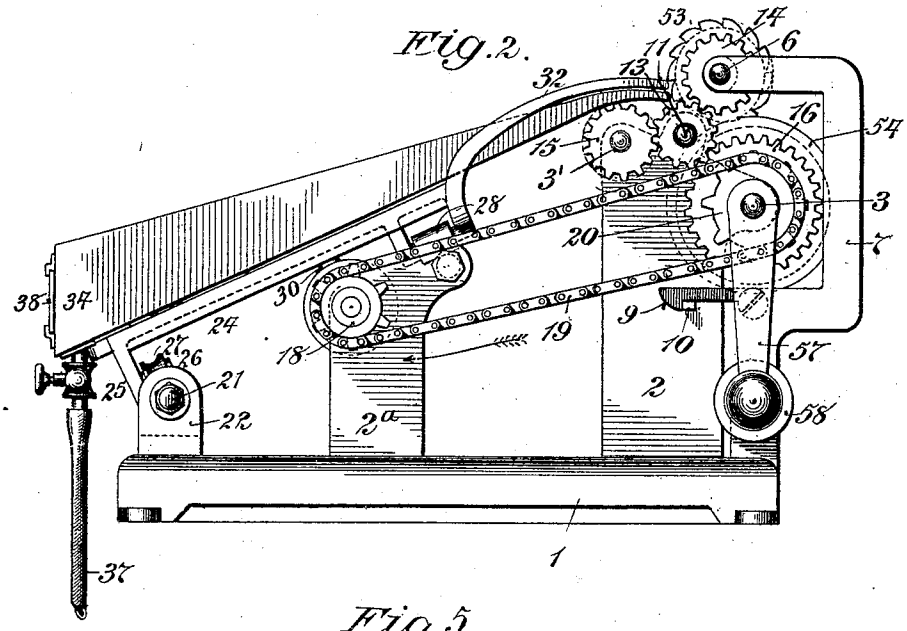

Fig. 5.

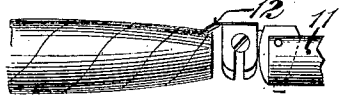

Fig. 3.

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UNITED STATES PATENT OFFICE.

OSCAR HAMMERSTEIN, OF NEW YORK, N. Y.

CIGAR-ROLLING MACHINE.

969,274. Specification of Letters Patent. Patented Sept. 6, 1910.

Application filed June 5, 1901. Serial No. 63,183.

To all whom it may concern:

Be it known that I, OSCAR HAMMERSTEIN, a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Cigar-Rolling Machines, of which the following is a specification.

My invention relates to machines for rolling cigars, and has for its particular object to produce a machine which will efficiently manipulate the bunch and guide the wrapper to the bunch at the same time maintaining a proper tension on the wrapper so that the wrapper will be properly wound, upon the bunch. When air suction is used, this tension will result from a proper application of the air suction and the operation of auxiliary devices, and when air suction is not employed, the proper tension may be maintained by the auxiliary devices alone.

In the accompanying drawings I have shown a machine in which my invention is embodied, but it will be understood that I show and describe this machine merely as an illustration of one form of machine embodying my invention and that I do not confine myself thereto, as various modifications may be made without departing from the nature of my invention as defined in the claims.

In the drawings: Figure 1 is a plan view of the illustrative machine. Fig. 2 is a side view thereof. Fig. 3 is a section on line X—X of Fig. 1; Fig. 4 is a central transverse section of the pneumatic or fluid-filled roll. Fig. 5 is a detail view of the cigar-wrapper holding finger; and Fig. 6 is a detail view of the shutter for regulating the air-suction when air-suction is used.

In the drawing, 1 indicates the bed-plate of the machine from which rise standards, as hereinafter specified. At each end of the machine standards 2—2 rise from the bed-plate. These standards have shafts 3—3′ journaled therein, carrying rollers 4—4′ which, coöperating with the roller 5, serve to rotate the bunch *a*. The roller 5 is carried by a shaft 6, journaled in swinging arms or brackets 7—7, which are shown as pivoted at 8, and provided with hooks or other fastening means 9, by which the roller 5 may be held up to its work. The hook 9 takes over a pin 10 on one of the standards 2. Of course other and equivalent fastening means may be used for the purpose. A short shaft 11 is journaled in one of the end standards 2 and carries pivoted thereto a tuck-holding finger 12, which is adapted to bear on the tuck end of the cigar to hold the first turn of the wrapper in place. The shaft 11 is provided with a spur-gear 13, which meshes with the spur-gear 14 on the shaft 6 and the spur-gears 15 and 16 on the shafts 3—3′. This finger is rotated by the gear 13 at the same speed as the bunch.

Journaled in the brackets 2^a—2^a is a worm or cam roller 17, which is shown as provided with a sprocket wheel 18, geared by a sprocket chain 19 with the sprocket wheel 20 on the shaft 3 of the one roller 4. I prefer to employ a sprocket gear for this purpose on account of the relative speeds necessary to be maintained between the bunch manipulating rollers 4 4′ and 5 and the cam-roller 17, which serves to move the wrapper-propelling guide-box laterally to guide the wrapper to the rollers 4 4′—5 which rotate the bunch and effect the wrapping.

A rear rod 21 is mounted in the brackets 22 and with the rod 23, mounted in the brackets 2^a—2^a, serves to support and guide the carriage 24 in its traversing movement. This carriage 24 is provided with a depending bracket 25, having projecting studs 26, with rollers 27 journaled thereon, which rollers 27 embrace the rear rod 21 of the machine. The front carriage 24 is further supported on the rod 23 by a roller 28, which roller 28 is journaled in a bracket 29 on the carriage 24. The carriage 24 is provided with a pin 30, which enters the cam-slot 31 of the cam-roller 17. Revolution of the cam-roller 17 will propel the carriage 24 across the machine. The carriage 24 carries a suitable wrapper-support or table. In the drawing, this wrapper support or table is shown as a suction box pivoted at its delivery end to a bracket or arm 32, rising from the carriage 24. The wrapper support is not necessarily a suction-box, but may be any suitable device appropriate to support the wrapper and guide it properly to the rolls 4—5. This suction box is shown as provided with a perforated top-plate 33 and with bottom and side plates 34. The delivery end of the suction-box is preferably tapered, as shown and is bent to conform to the shape of the roller 4 and to enter far enough between the rollers to conduct the wrapper to the point or line where it is wrapped about the bunch. The delivery end of the wrapper-support is

further preferably beveled as shown in Fig. 2 to permit the said wrapper-support to swing without contacting with the rollers 4′—5. The apertures 36 in the top-plate 33 of the wrapper-support are shown in the present instance as more numerous in spaces near the rollers than in spaces remote therefrom. The object of this is to produce a more extensive energetic suction near the rollers than at points remote therefrom, as I have found that such an arrangement effects a proper distribution of the air-suction and a consequent adjustment of the tension. A similar result may be effected by any means which will similarly distribute the air-suction. A suitable pipe 37 is connected to the suction-box and to an exhaust fan or other means of producing air-suction. In order to regulate the amount of suction in accordance with the thickness and strength of the leaf, a sliding air-shutter is mounted on the plate 39 of the suction-box, and serves to control the amount of air entering the aperture 40 in the front plate of the suction-box. By sliding this shutter back and forth to adjust the same the size of the entry port for the air may be regulated so as to introduce more or less air at 40, which will have the effect of relieving the pressure on the wrapper due to the suction, in proportion to the amount of air allowed to enter at 40, that is when the shutter is fully open, the largest amount of air will enter and the suction will be at the lowest, and as the shutter is moved nearer to its closed position the suction increases. A bracket 41, mounted on the carriage 24, has secured to it one end of a spring 42 whose other end is secured to the suction-box or wrapper-support. The shutter 38 is provided with an arm 38^a which is embraced by rollers 41^a carried by lugs or arms on the bracket 41.

On the wrapper support is a pin 43, which is engaged by a latch 44, pivoted at 45 to a standard rising from the bed-plate 1. The latch 44 is provided with a tail piece 46 having a cam surface 47. A pin 48 on the cam roller shaft is adapted to operate against the cam-surface 47 in order to disengage the latch from the pin 43. The function of the latch 44 is to hold the wrapper-support in the position shown in the drawing against the tension of the spring 42 until the roller 17 has made three-fourths of a revolution to form the tuck end of the cigar, when the pin 48 will swing the latch 44 and allow the spring 42 to shift the wrapper-support to feed the wrapper to the wrapping-rollers 4 4′—5 at an angle. A further effect of such motion is to cause the shutter 38 to slide closed so that the tension of the air suction will be at once applied automatically by the swing of the suction box.

The wrapping-rollers 4 4′—5 are herein shown as pneumatic rollers. One or more of the rollers may be pneumatic or soft rollers. In the present instance all three are pneumatic rollers, but it is not essential that all three should be of this character. The preferred construction of these rollers is shown in Fig. 4 of the drawings. The roller is shown as consisting of the inner shaft 3 having therein a conduit 50 controlled by an air-valve 51, on which are secured fluid-tight the edges of the rubber envelop 52 or body of the roller. The soft envelop 52 is collapsible and is held distended by air pressure or other fluid pressure. In the present instance the air is introduced through the hollow shaft, and when the roll is blown up the air-valve 51 is closed, so that the roll remains distended, but is sufficiently soft to adapt itself to the shape of the cigar, so that the head of the cigar may be formed and wrapped without the necessity of employing a thimble as shown in Letters-Patent granted to me, viz: U. S. Letters Patent No. 363,065 dated May 17, 1887. A thimble of this character retards the cigar in its rotation and produces a considerable amount of friction. Besides different shapes of thimbles are required for different shapes of cigars.

The rolls 4 and 5 are provided at their ends with knife-edges 53—54 which serve to shear the wrapper to form the strip to be wrapped about the head, it being understood that the extreme end of the cigar is near enough to these knives and to the limit of movement of the suction table to effect this function. One of said knives, for instance, the knife 53 may be scalloped or serrated so as to augment the shearing action of the knives.

In order to provide a braking action when the wrapper support is not in the form of a suction-box, and in order to cover the exposed air-openings when the suction-box is used, I preferably employ a braking or tension device shown in the present instance as a blanket 55 secured to the wrapper-support at 56 and covering the wrapper support, but which may be an equivalent thereof within the limitations imposed by the state of the art. This blanket is preferably made of a very fine grade of felt, such as is employed in bunion-shields. This blanket is shown clearly in Fig. 3, but is omitted in the plan-view Fig. 1 for the purpose of clearer illustration. The weight of the blanket when the suction is not in action acts to produce friction upon the wrapper, so that the wrapper will be held more or less firmly to the wrapper-support, and will be put under a proper restraining tension thereby, so that it will be fed to the rolls properly. When the blanket is employed with a suction-box or device the wrapper will be held by it as in the preceding instances, and in addition as the wrapper is fed forward to the rollers and

the holes become successively uncovered, the blanket will be drawn firmly against the top plate of the suction-box and will prevent air from entering.

The shaft 3 is preferably driven by a handle 57. This handle is provided with a heavy weight 58 so that when the handle is released it will hang in the position shown in Fig. 2 and will thus bring the rolls, including the worm or cam-roller to an initial position so that the pin 30 may be reëntered in cam-slot 31 of the cam-roller.

The detailed operation of the device is as follows: When it is desired to roll or wrap a bunch the latch 9 is lifted and the brackets 7 carrying the roll 5 swung back to permit the bunch *a* to be placed between the rollers. The roller 5 is then swung back to the position shown in Figs. 2 and 3 and the wrapper having been spread on the wrapper-support or wrapper-supporting table 33, the blanket is laid thereon. The end of the wrapper is laid upon the bunch and the finger 12 laid thereon. The handle may now be revolved and the wrapper will be rolled about the bunch. The parts are now in the position shown in the drawings. For the first three-quarters of a revolution of the cam-roller, the wrapper is wound about the end of the bunch to form the tuck. When the cam-roller has made three-quarters of a revolution the pin 48 strikes the cam 46 on the arm 44, and swinging the said arm releases the catch thereon from engagement with the pin 43, whereupon the spring 42 swings the suction-box or wrapper-support on its pivot and causes the same to take an angular position with respect to the carriage 24 which carries the arm 32 upon which the wrapper support is pivoted. This results in presenting the wrappers to the rollers at an angle less than a right angle with respect to the axis of the rollers. The cam-roller 17 continuing to revolve causes the carriage to move laterally across the machine, the movement of the carriage being so timed with respect to the speed of the rotation of the bunch as to apply the wrapper properly thereto, and the cam-slot 31 being properly speeded to the left hand end of the machines to cause the wrapper to be properly wound about the head of the cigar, the knives 53—54 serving to cut into the wrapper to give it the proper shape for application to the bunch to form the head of the cigar. The rod 23 is provided with a depressed portion 23ª. The roller 28 coming upon this depressed portion will drop the front end of the suction box in order to guide the wrapper properly to the reduced or head portion of the bunch. The parts may now be restored to their initial positions as follows: The handle may be released and allowed to fall by gravity into the position shown by Fig. 2, and the suction box may be swung on the rod 21 as an axis, so as to lift the pin 30 clear of the cam-groove 31 on the cam roller; and the entire carriage may be moved by hand to the right hand side of the machine; the swinging suction box being swung over against the tension of its spring 42 and the latch 44 automatically dropping back into position in engagement with the pin 43. The operation described may now be repeated.

In order to insure an automatic opening and closing of the shutter 38, I provide the same with an arm 38ª which extends between two rollers 41ª upon the bracket 41. When the suction box is in the position shown in Fig. 1, the shutter 38 will be opened so that in the initial three-quarter turn the wrapper will not be under the tension of air suction nor is it necessary at this stage of the operation for the blanket 55 to be laid upon it. As the suction box is released by the catch 44 shutter 38 will be automatically closed by the swing of the suction box.

It will be obvious that owing to the yielding character of the rollers the device may be utilized to roll cigars of any usual shape, and as the head is also rolled or wrapped in the same machine it will be unnecessary to employ auxiliary devices by which to form the head.

In the operation just described the blanket 55 is of course laid upon the wrapper and the amount of effective air-suction is regulated by means of the shutter 38.

I claim—

1. In a cigar machine, the combination with devices for wrapping the bunch, a perforated wrapper support, means for exerting suction through the perforations of the support, and means for covering the successive perforations of the support as the said perforations are uncovered by the removal of the wrapper during its manipulation.

2. The combination of a support, a suction mechanism for holding a tobacco leaf upon the support, a wrapping mechanism comprising in its structure means for moving the wrapper-support, and means under the influence of and operating in conjunction with the suction for retarding the movement of the wrapper on its support.

3. The combination of a support, a suction mechanism for holding the tobacco leaf wrapper upon the support, a wrapper mechanism comprising in its structure means for moving the wrapper on its support, means for operating in conjunction with and under the influence of the suction for retarding the movement of the wrapper on its support and to preserve the suction on the wrapper when the latter has partly uncovered the support.

4. The combination with a support, of suction mechanism for holding thin sheet material on the support, a device independ-

ent of the support to which the material is delivered, the said device being adapted to place the sheet material about the body to be surrounded, the said device operating to draw the material from the support against the force exerted by the suction and a retarding device operating to retard the movement of the thin sheet material and to preserve the suction on the thin sheet material when the latter has partly uncovered the support.

5. The combination with a wrapping mechanism of a support for a wrapper, a suction mechanism operating to hold a wrapper on a support and permitting the same to be withdrawn therefrom, and a retarding device for retarding the wrapper in its movement and preserving the suction on the wrapper when the latter has partly uncovered the support.

6. In a cigar-machine, the combination with a wrapping mechanism, of a perforated support provided with an air inlet, suction mechanism coacting therewith and operating to hold a wrapper against the support, means for moving the support and wrapping mechanism so that the support can deliver the wrapper to the wrapping mechanism, and means coöperating with the inlet in said support for regulating the suction during the wrapping operation, substantially as described.

7. In a cigar-machine, the combination with a wrapping mechanism of a perforated support having an air inlet, suction mechanism coacting therewith and operating to hold a wrapper against the support, means for moving the support to deliver a wrapper to the wrapping mechanism, and means coöperating with the air inlet in said support for regulating the suction during the wrapping operation substantially as described.

8. In a cigar machine, a set of rollers arranged to apply a wrapper about the bunch, some of said rollers comprising a yielding fluid containing envelop and a shaft on which the same is mounted, said shaft being provided with a passage for admitting fluid to said envelop, means for closing said passage and mechanism for operating said rollers.

9. In a cigar machine the combination with wrapper manipulating devices, of a wrapper guide, and a blanket, adapted to rest on the wrapper on the guide.

10. In a cigar machine, the combination with a wrapper manipulating device, of a suction wrapper guide box and a blanket superposed upon the same.

11. A hollow inflated roller for a cigar machine, having rigid ends and an elastic envelop intermediate the ends, conformable to the shape of the cigar.

12. A hollow, elastic, inflated cigar machine roller conformable to the shape of the cigar.

13. In a cigar rolling machine, the combination of suitable rolling means, a traveling suction table delivering the wrapper to the rolling means and air suction controlling means connected to and controlled by a movement of the table to apply the tension of air suction at the proper time.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses, this 3rd day of June 1901.

OSCAR HAMMERSTEIN.

Witnesses:

HENRY W. KIRALFY,

GEO. E. MORSE.