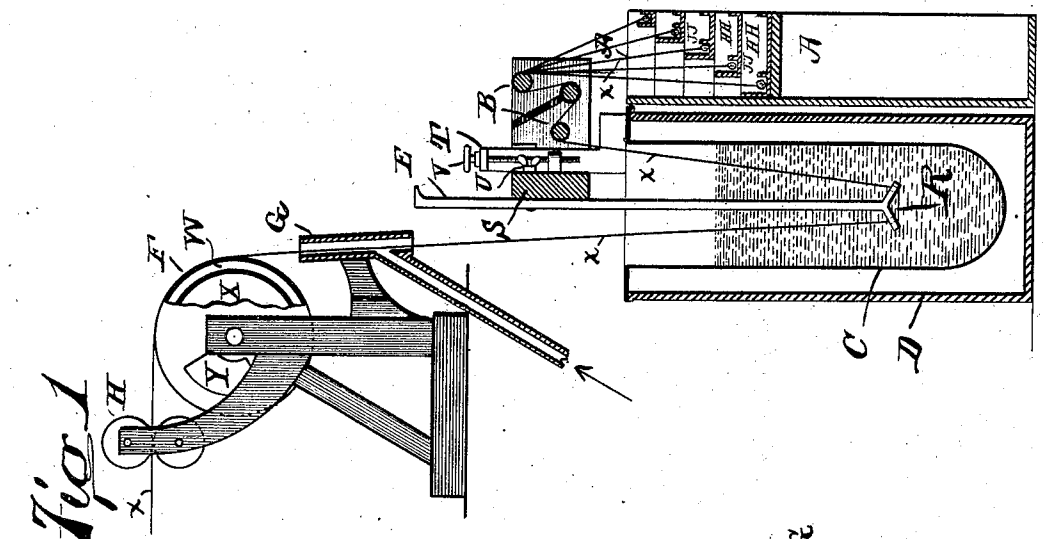
(No Model.) 2 Sheets—Sheet 1.

R. E. JOHNSTON.

CORD COATING MACHINERY.

No. 289,773. Patented Dec. 4, 1883.

Fig. 1



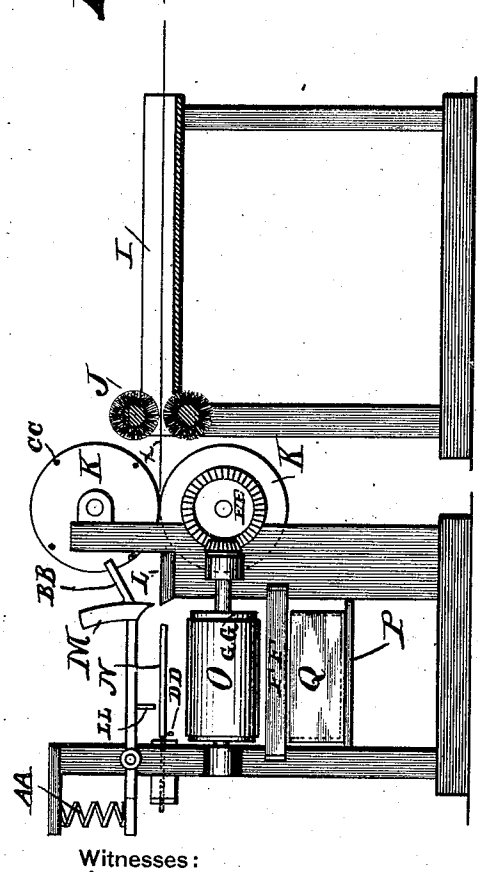


Fig. 2

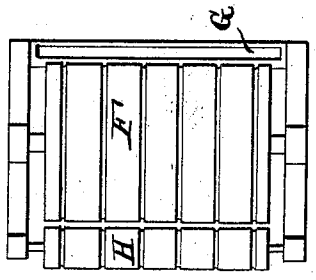
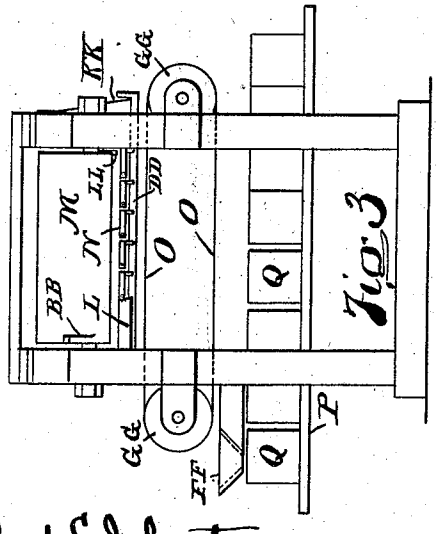


Fig. 3



Witnesses:

H. C. Clarke

D. Gilkey.

Robert E. Johnston Inventor

by James W. See

Attorney

(No Model.)

2 Sheets—Sheet 2.

R. E. JOHNSTON.

CORD COATING MACHINERY.

No. 289,773. Patented Dec. 4, 1883.

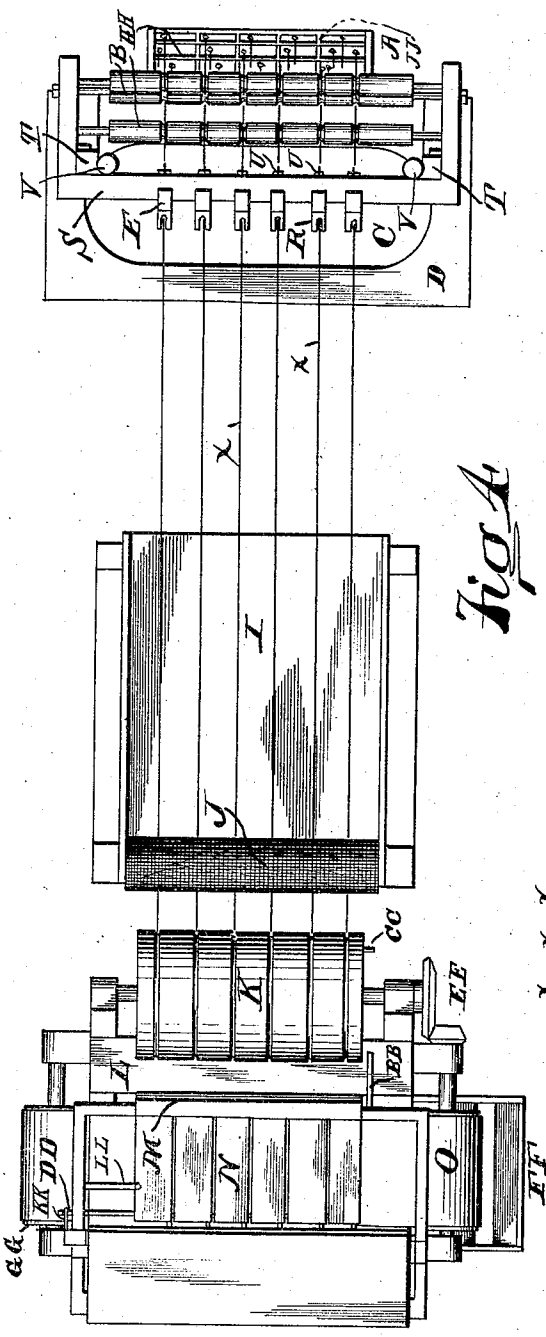


Fig 4

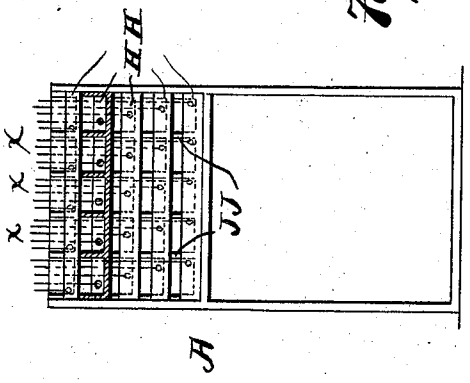


Fig 5

Witnesses:

H. Howard

D. Gilliop.

Robert E. Johnston Inventor

by James W. See

Attorney

UNITED STATES PATENT OFFICE.

ROBERT E. JOHNSTON, OF MIDDLETOWN, OHIO.

CORD-COATING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 289,773, dated December 4, 1883.

Application filed October 31, 1883. (No model.)

To all whom it may concern:

Be it known that I, ROBERT E. JOHNSTON, of Middletown, Butler county, Ohio, have invented certain new and useful Improvements in Cord-Coating Machinery, of which the following is a specification.

This invention relates to machinery for applying to cord a heavy coating of wax or other plastic, and for powdering the exterior of the waxed coating, and for cutting the waxed and powdered cord into lengths and packing the same in boxes.

The nature of the invention will be more thoroughly understood after a perusal of the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a side view, partly in section, of a cord-coating machine embodying my improvements; Fig. 2, a plan of the cooler and shaper; Fig. 3, a front view of the cutter and packer with the feed-rolls removed; Fig. 4, a plan of the machine, minus the cooler and shaper shown in Fig. 2; and Fig. 5, a face view of the cord-drawers.

In the accompanying drawings, A represents a series of drawers holding twine or cords; B, a set of tension-rolls, over which the cords are passed after leaving the drawers; C, a deep vessel containing melted cord-coating material; D, a heating-jacket surrounding said vessel; E, a series of immersing-plungers guiding the cords through the material in the vessel C; F, a cooling-cylinder, over which the cords pass in leaving the vessel; G, a blast-chamber, through which the cords pass; H, a pair of shaping-rolls; I, a horizontal box of anti-adhesive powder, through which the cords pass; J, a pair of brush-rolls at the final end of the powder-box; K, a pair of feed-rolls, to be driven by power, to draw the cords through the previously-mentioned parts; L, a shearing-table to the rear of the feed-rolls; M, a pivoted shear-blade operated in connection with the rear edge of the shear-table; N, a slatted receiving-table for the sheared cords O, a carrier-apron arranged horizontally below the slatted table; P, a packing-shelf below the apron, and Q a series of packing-boxes upon the shelf P.

x represents the cords on their passage through the machine.

From the references thus far made a somewhat general description can be given of the mode of operation of the machine. Balls of the cord are placed in the drawers to the right and the cords led upward around the tension-rolls, as shown. The cords then pass down into the melted material and up through the blast-chamber and over the cooling-cylinder, thence between the shaping-rolls, thence through the powder in the powder-box and through between the brush-rolls, and thence between the feed-rolls. The machine being started, the cords are drawn forward continuously. The cords are maintained in proper tension by the adjustment of the tension-roll. The cords on their passage through the melted wax receive a coating of the wax, and, in passing through the blast-chamber and over the cooling-cylinder, become more or less hardened, after which they are given a neat exterior form by the shaping-rolls. They then pass through the powder-box and pick up a slight coating of the powder, which prevents their adhering to each other in the future. The brush-rolls remove the surplus powder, and the cords are projected by the feed-rolls out upon the shear-table, where at proper intervals they are chopped off by the shear-blade and fall upon the slatted table, whence, by the opening of this table, they are discharged upon the apron, which carries the pieces to its delivery-hopper, whence they fall into the packing-boxes arranged below the carrier.

The machine is shown as provided for running six cords at once; but in practice there will be provision for not less than twenty-five cords. The material in the melting-vessel is heated by steam or hot air surrounding it in the heating-jacket. There is an immersing-plunger for each individual cord, and these plungers may be adjusted vertically in a body or independently. The thickness of the wax coating is regulated by the depth of immersion and the temperature of the wax. A defect in the running of one of the cords may be remedied without disturbing the balance by lifting the proper plunger, &c. The cooling-cylinder is kept filled with ice or other cooling substance, and the shell of the cylinder is made double in order to avoid the presence of sweat upon the surface of the cylinder, which sweat would tend to wet the waxed cords before they reached the powder-box. The shear-

blade is operated by knockers on the feed-rolls, and these knockers can be adjusted to regulate the length of the cutting. The slatted table serves to support the cuttings while actually being cut, but after the cutting each slat of the table tips and allows each cutting to fall independently to the carrier. This prevents the adhesion of the ends of the cuttings to the shear-blades, and forces the cuttings to fall separately and parallel upon the carrier, whereby they are fed nicely into their packing-boxes.

The details of the machine can now be comprehended by the aid of very little description.

In the drawings, R represents the foot of the plungers, which are forked and slotted to receive and guide the cords; S, a rail arranged over the melting-vessel to sustain the plungers, which are attached adjustably to it; T, a pair of standards supporting the rail; U, thumb-screws by which the plungers are attached to the rail, the screws engaging in slots in the plungers; V, the screws by which the rail is adjusted upon the standards; W, the air-space of the cooling-cylinder between the outer shell and the shell of the ice-holding portion; X, the ice-receiving space of the cooling-cylinder; Y, an icing-door in the end of the cooling-cylinder; A A, springs which retain the shear in normal position and restore it to that position after it has made its shearing stroke; B B, an arm projecting from the shear-blade, to be operated upon by the upper feed-roll; C C, knockers in the end of the feed-roll, to engage the arm B B; D D, the paralleling-bar secured to the slats of the slatted table after the manner of a slatted window-blind; E E, bevel-gearing by which motion is transmitted between the feed-rolls and the rolls of the carrier; F F, the delivery-hopper through which the cuttings fall from the carrier to the packing-boxes; G G, the rolls of the carrier; H H, the drawers in which the balls of cord are placed, and J J transverse partitions dividing the drawers into separate ball-receiving compartments.

The gearing is to be so proportioned with reference to the diameter of the feed-rolls and the width of the entire row of cuttings that one set of cuttings will pass from under the slatted table before the next set is sheared. The knockers C C are to be so set in the feed-roll as to produce the desired length of cut, or, in other words, the desired length of non-cutting feeding interval. The shear-blade is lifted by the knockers and falls by its own weight, the spring A A quickly returning it to its normal position, whereby the feeding may be continuous. The slats of the slatted table have rear stems journaled in the frame of the machine, and they are held in normal horizontal position by the spring K K, engaging the end of the parallel bar D D. The descent of the shear-blade causes the arm L L to strike the edge of one of the slats, and thus cause all of the slats to tip uniformly and each to drop its cutting upon the carrier.

If the machine be arranged to run a row of twenty-five cords, an indicator may be applied on the feed-rolls or shear to show when four cuts are made, at which time, if a new packing-box be brought under the hopper, the boxes will be uniformly packed with one hundred cuttings. In running twenty-five cords or any large number, the cords may be laid about an inch apart. Balls of cord being generally two or three inches in diameter will interfere with this close packing of the balls side by side, and for this reason I arrange a cord-holding receptacle which will allow the balls to be closely packed without interfering with each other.

As shown in the drawings, a series of deep drawers are arranged one above another in a case. The bottom drawer is full depth and the ball of cord is held in extreme rear. The drawer being subdivided by partitions, each drawer contains a number of balls. The drawer above the bottom one is shallower than the bottom one, and so on upward.

It will be seen that the cords rising from the balls in one drawer will not interfere with each other, because they are quite a distance apart, and the balls of each vertical row are disposed in different vertical planes, whereby there is no interference. The fronts of the drawers are low, in order that the hand may be inserted into any ball-space. Any ball may be removed or replaced without disturbing others.

The character of the wax used will often suggest a modification of the arrangement of the parts of the machine. Some wax needs no powder; some needs no shaping, the wax forming a neat uniform coating; some wax will not require cooling by air-blast, and some will require only the air-blast. In some cases the shaping is best done previous to any artificial cooling, and in others it is best done when the wax is partially cooled.

The product of this machine is cord coated uniformly with its wax and powder, and, if desired, cut into uniform lengths and packed in boxes in bunches of cuttings disposed parallel to each other. Waxed cord, if not packed in parallel form, is liable to bend in the boxes and become tangled or untidy.

The cord produced by this machine is suited for illuminating-tapers, calking-strings, &c.

I claim as my invention—

1. In cord-coating machinery, the combination, with suitable feeding devices, of an immersing-plunger fitted to adjust vertically in a melting-vessel and guide a cord through more or less of the contents of said vessel.

2. In cord-coating machinery, the combination, with suitable cord-feeding devices, of a series of immersing-plungers fitted to adjust vertically as a whole, and also by individual plungers, in a melting-vessel, and guide a series of cords through more or less of the contents of the vessel.

3. In cord-coating machinery, the combination, with suitable cord feeding and immersing devices, of a vertical series of drawers of different depths, and provided with transverse partitions.

4. The combination, with suitable cord feeding and immersing devices, of an air-blast chamber surrounding the cord at a point between the feeding and immersing devices.

5. The combination, with suitable cord feeding and immersing devices, of a cooling-cylinder fitted to have waxed cords pass over a portion of its periphery and to contain ice or other cooling substance.

6. The combination, with suitable cord feeding and immersing devices, of a cooling-cylinder fitted to receive ice and having a double shell.

7. The combination, with suitable cord feeding and immersing devices, of a horizontal powder-box fitted with brush-rolls.

8. The combination, with suitable cord feeding and immersing devices, of a shear-blade and a table formed of slats fitted to tip and discharge the cuttings independently.

9. The combination, with suitable cord feeding and immersing devices, of a pivoted gravity-shear sustained in normal position by a spring, permitting oscillation of the blade in either direction from the normal one.

10. The combination, with suitable cord feeding and immersing devices and a shear, of a table formed of slats fitted to tip and a carrier-apron disposed below the table.

11. The combination, with suitable feeding, immersing, and shearing devices, of a table formed of slats fitted to tip, a carrier-apron disposed below the table, and a box-shelf below the apron.

12. As a new article of manufacture, cord coated uniformly with wax or similar substance and having an exterior coating of non-adhesive powder.

13. As a new article of manufacture, cuttings of wax-covered cord arranged parallel to each other in boxes.

ROBERT E. JOHNSTON.

Witnesses:
J. W. SEE,
H. CARLE.