

No. 791,745.

PATENTED JUNE 6, 1905.

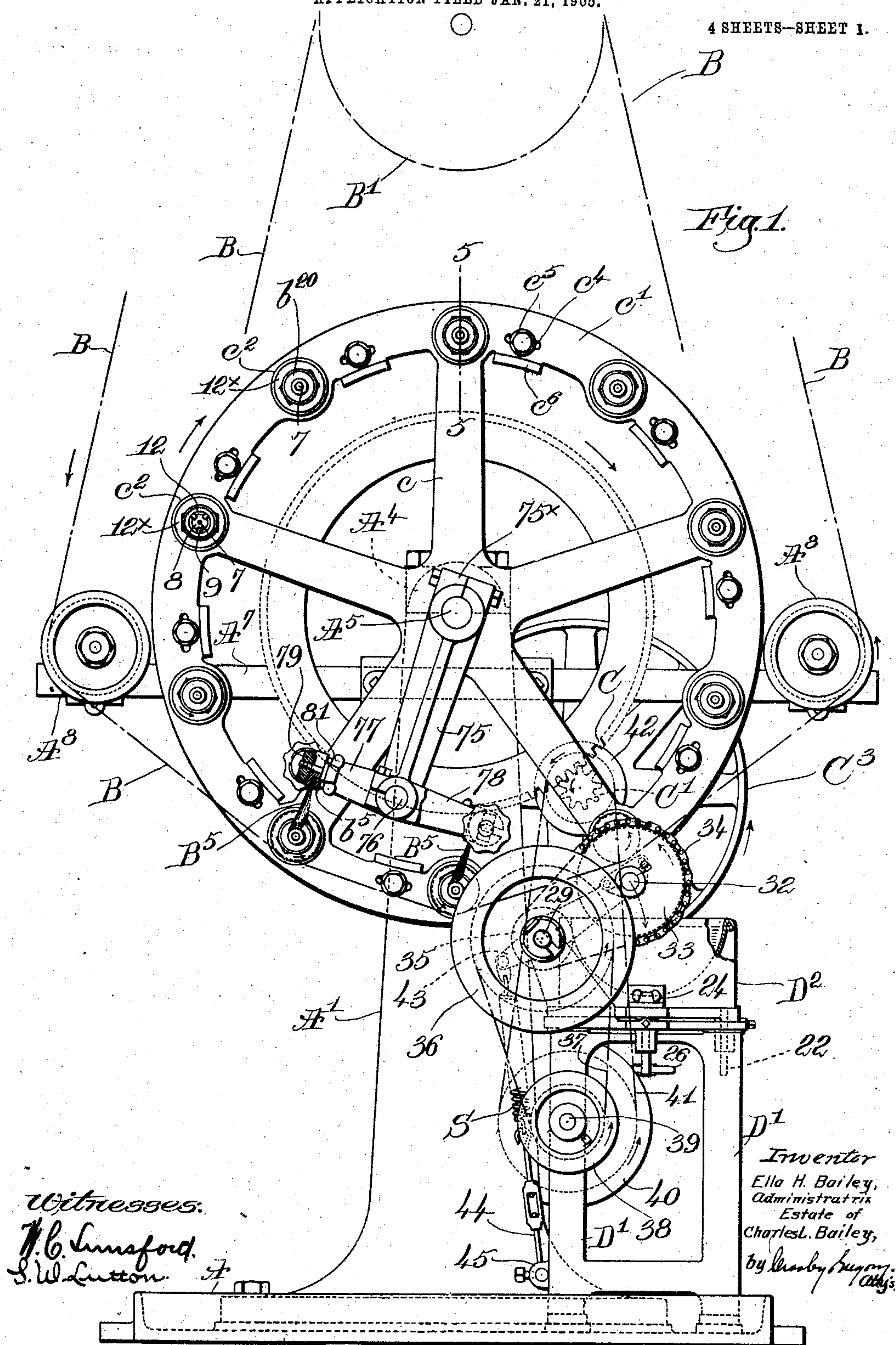
C. L. BAILEY, DEC'D.

E. H. BAILEY, ADMINISTRATRIX.

MACHINE FOR COATING BOBBINS.

APPLICATION FILED JAN. 21, 1905.

4 SHEETS—SHEET 1.

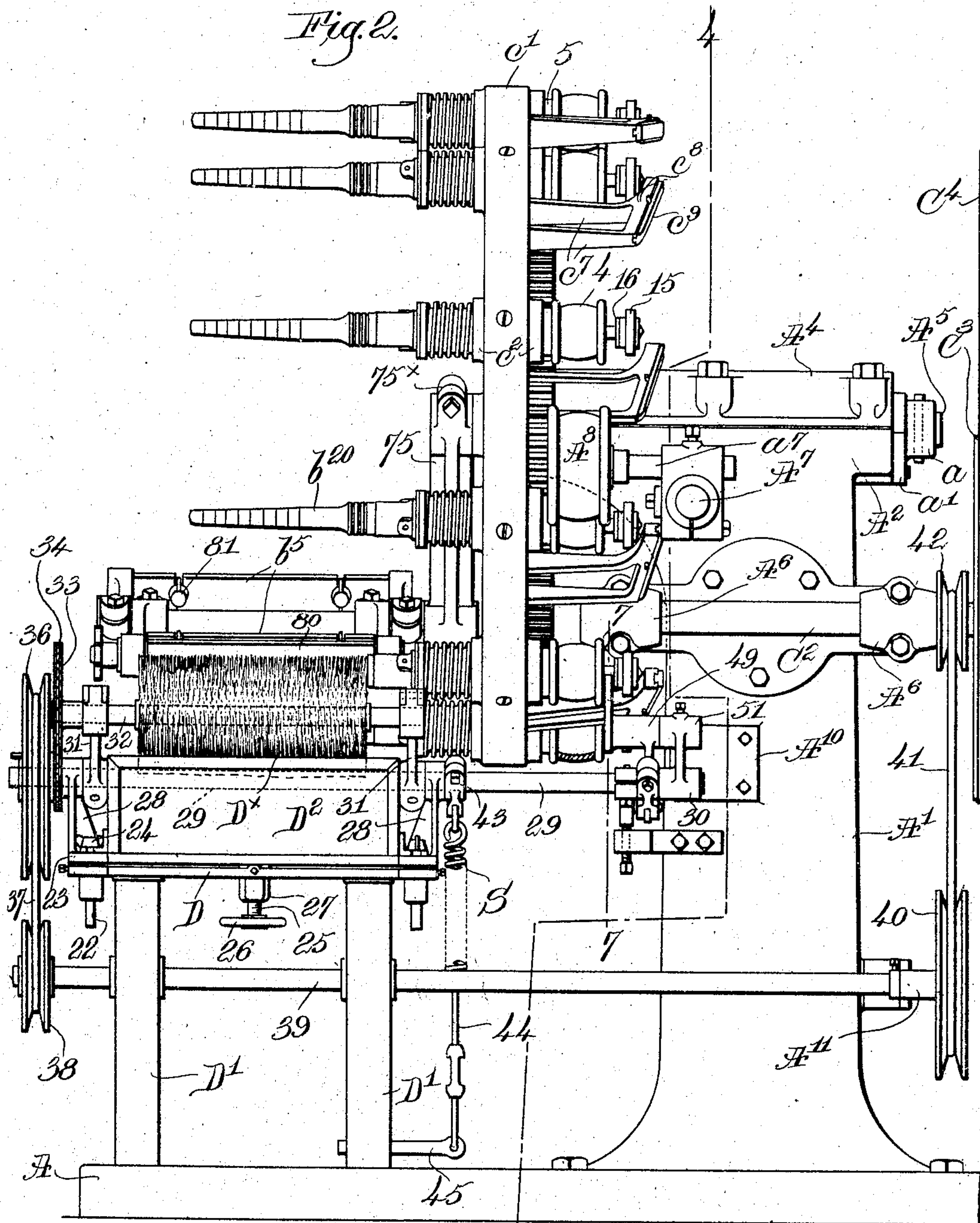


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Witnesses.  
W. C. Linsford.  
S. W. Lutton.

Inventor  
Ella H. Bailey,  
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Charles L. Bailey.  
by Crosby & Sugony. Atty's.

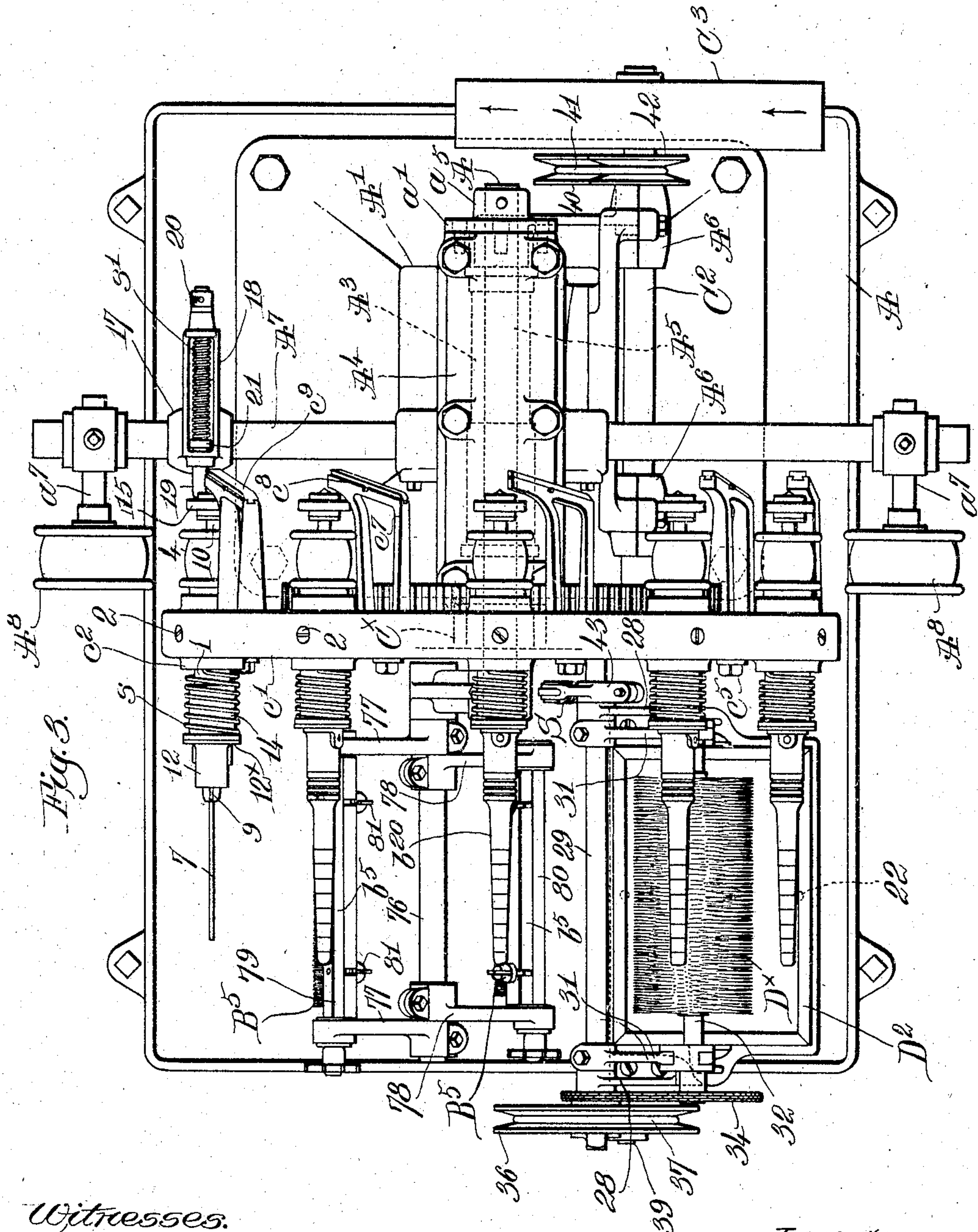


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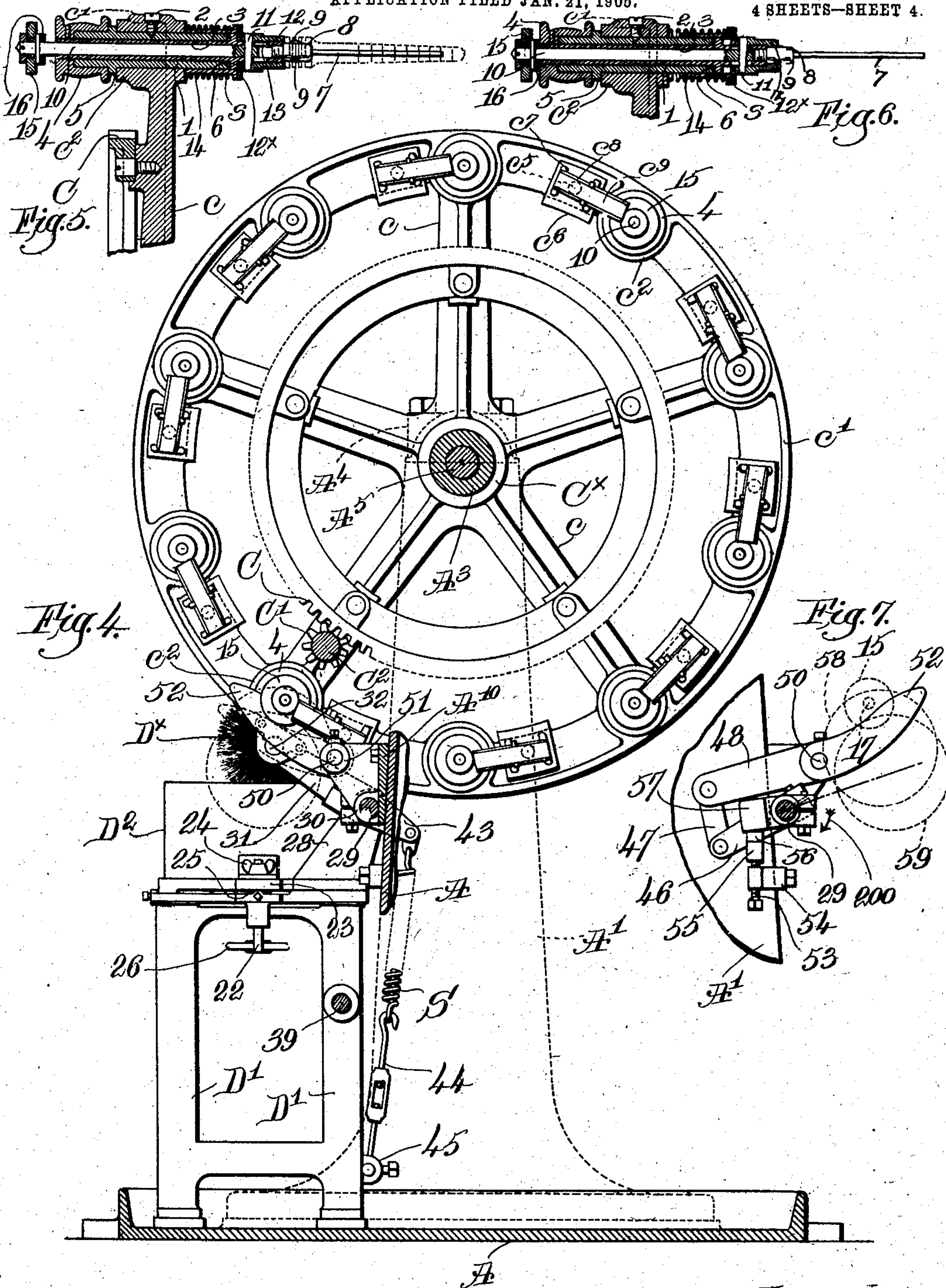
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Charles L. Bailey.  
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# UNITED STATES PATENT OFFICE.

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CHARLES L. BAILEY, DECEASED, ASSIGNOR TO DRAPER COMPANY, OF  
HOPEDALE, MASSACHUSETTS, A CORPORATION OF MAINE.

## MACHINE FOR COATING BOBBINS.

SPECIFICATION forming part of Letters Patent No. 791,745, dated June 6, 1905.

Application filed January 21, 1905. Serial No. 242,052.

*To all whom it may concern:*

Be it known that CHARLES L. BAILEY, deceased, did invent an Improvement in Machines for Coating Bobbins, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention has for its object the production of a machine for expeditiously and effectively applying a coating of protective and preservative material, such as shellac, to spinning-bobbins. Such bobbins are generally coated with shellac or other similar material to give a smooth hard surface thereto and also to preserve the wood from the effects of moisture. The coating material has been applied in various ways heretofore, principally by dipping the bobbin into the coating liquid, withdrawing it, and permitting the surplus to drip therefrom; but this process is slow and requires the frequent handling of the bobbins.

In the present invention a movable carrier is provided with a series of holders adapted each to detachably support a bobbin, and the carrier is moved to bring one bobbin after another into position to be acted upon by means which apply coating material thereto, thoroughly covering the surface of each bobbin. Thereafter the surplus material is removed from each coated bobbin in such a manner that the coating is simultaneously smoothed and evenly distributed, after which the bobbins are automatically removed from the holders. The only manual operation required is the application of the bobbins to the holders of the moving carrier, so that the speed of operation of the apparatus is limited only by the skill of the attendant in applying bobbins and the time required to properly coat and finish each bobbin. Inasmuch as the shellac dries very rapidly, this last-mentioned limitation as to speed is of comparatively minor importance. As the application of the coating material to the exposed part of an empty bobbin-holder would be objectionable, manifestly, automatic means have been provided herein to render inoperative the coat-

ing mechanism when an empty bobbin-holder is presented thereto by the carrier.

The various novel features of the invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a front elevation of a machine for coating bobbins and embodying one form of the present invention. Fig. 2 is a right-hand side elevation thereof. Fig. 3 is a top or plan view of the machine. Fig. 4 is a vertical sectional detail on the irregular line 4 4, Fig. 2, looking toward the left. Fig. 5 is a longitudinal sectional detail of one of the bobbin-holders on the line 5 5, Fig. 1, the parts being in the relative position assumed when a bobbin (shown in dotted lines) is applied thereto. Fig. 6 is a similar sectional view, but showing the relative position of the parts when the holder is empty; and Fig. 7 is an enlarged detail on the line 7 7, Fig. 2, looking toward the right, of a portion of the mechanism by which the coating means is rendered inoperative by or through an empty bobbin-holder.

Referring to the drawings, a wide heavy base A supports a pedestal A', provided at its upper end with a transverse head A<sup>2</sup>, provided with a seat to receive a bushing A<sup>3</sup>, held in place by a detachable cap A<sup>4</sup>, the bushing having extended through it a non-rotatable shaft A<sup>5</sup>, pinned or otherwise suitably secured to a boss *a* on a cap-plate *a'*, bolted or otherwise secured to the rear end of the head A<sup>2</sup>, the shaft projecting beyond the front end of the bushing for a purpose to be described.

Upon the front end of the bushing, which is shown in dotted lines in Fig. 3, is mounted the hub C<sup>x</sup> of the carrier, herein shown as comprising a series of arms *c*, radiating from the hub and terminating in a rim *c'*, provided at intervals with tubular enlargements or bearing-bosses *c*<sup>2</sup>, the rim between such bosses being substantially L-shaped in cross-section. Herein ten bosses are shown on the carrier, (see Fig. 4,) each boss being adapted to sustain a bobbin-holder to be hereinafter described.



A ring-gear C is rigidly secured to the arms of the carrier and meshes with a pinion C', fast on a shaft C<sup>2</sup>, supported in bearings A<sup>6</sup> (see Fig. 4) on the side of the pedestal A' below its head, the shafts C<sup>2</sup> and A<sup>5</sup> being in parallelism, and the former in the present embodiment of the invention constituting the main driving-shaft of the machine and having an attached pulley C<sup>3</sup> at its rear end, (see Fig. 3,) driven by a belt C<sup>4</sup> (partly shown in Fig. 2) from any suitable source of power. The rotation of the gear C' acts, through the ring-gear C, to revolve the carrier at a much slower speed on the sleeve A<sup>3</sup>, the hub C<sup>x</sup> of the carrier being held from movement in one direction by the front end of the head of the pedestal and its cap A<sup>4</sup> and in the opposite direction by an arm, to be referred to, rigidly secured to the projecting end of the shaft A<sup>5</sup>.

Referring more particularly to Figs. 5 and 6, one of the bobbin-holders will be described in detail, as the several holders are alike in construction. In the bearing-boss c<sup>2</sup> is mounted an elongated sleeve 1, rigidly held in place by a set-screw 2, extended through the boss, the sleeve supporting rotatably within it a tube 3, provided at its rear end with a pulley 4, the latter being recessed, as shown, to embrace the rearwardly-projecting end of the sleeve 1, the adjacent face of the pulley bearing against a flange 5 on the sleeve. Adjacent the front end of the sleeve the tube 3 is provided with an annular flange 6, and into the end of the tube is screwed the butt of a spindle 7, enlarged at 8, adjacent the end of the tube and provided with spring-catches 9 to enter the usual chamber in the head of a bobbin and hold the same firmly upon the spindle. Within the tube 3 a long pin 10 is slidably mounted and constitutes a combined tripping and knock-off device, as will be explained later, said pin being connected by a key 11 with a collar 12, slidable on the exterior of the tube 3 at its outer end, the key 11 extending through longitudinal slots 13 in the tube. A bushing 14 loosely surrounds the end of the sleeve 1 projecting from the front of the carrier and is flanged at its outer end to take the thrust of a coiled spring s, the opposite end of the spring bearing against the front of the boss c<sup>2</sup>. The normal action of the spring s forces the bushing outward against an enlargement 12<sup>x</sup>, secured to the collar 12, and thereby moves the latter outward into the position shown in Fig. 6, and the knock-off pin 10 is drawn into the tube 3. A circular trip or follower 15 is mounted upon the rear end of the pin, and a cushion 16, of rubber or other yielding material, is mounted on the pin between the adjacent end of the pulley 4 and the trip 15. When a bobbin is applied to the spindle of one of the bobbin-holders, the butt of the bobbin engages the outer end of the collar 12, and as the bobbin is pushed home the collar is forced in a

rearward direction toward the face of the carrier into the position shown in Fig. 5, exposing the spring-catches 9, so that they can engage the interior of the bobbin, and at the same time the knock-off pin 10 is retracted, moving the trip or follower 15 away from the pulley 4 and into inoperative position. The tube 3, the spindle 7, and the pulley 4 attached thereto will rotate together within the bearing-sleeve 1, the collar 12 rotating in unison with such parts, as will be manifest from the foregoing description, the rotation of the bobbin-holder being effected during a certain portion of the bodily movement thereof in its circular path as the carrier revolves, for a purpose to be described. When the bobbin is applied to a holder, the collar 12 slides back until the key 11 engages the rear ends of the slots 13, and at such time the bushing 14 will also have assumed the position shown in Fig. 5, abutting against the outer end of the boss c<sup>2</sup>.

In Fig. 1 a bobbin is shown on all of the bobbin-holders save one, the latter having just been acted upon by an ejecting device to eject the bobbin from the holder.

Referring to Fig. 3, the pedestal A' has extended through it a cross-rod A<sup>7</sup> between the sheaves A<sup>5</sup> and C<sup>2</sup> and at right angles thereto, the cross-rod at its opposite ends being provided with suitable supports a<sup>7</sup> for sheaves A<sup>8</sup>, the relative position of the sheaves and carrier being shown clearly in Figs. 1, 2, and 3, and by reference to Figs. 2 and 3 it will be seen that the said sheaves are rotatable on axes parallel to the axis of rotation of the carrier and of the bobbin-holders, the several spindles 7 of the latter being parallel to the axis of the carrier and extending forwardly therefrom. Furthermore, a belt B, Fig. 1, passed around the sheaves A<sup>7</sup>, is adapted to engage several of the pulleys 4, hereinbefore referred to, three of such pulleys being shown in engagement with the belt in Fig. 1. This belt is driven from an overhead pulley B', (partly shown in Fig. 1,) and the direction of travel of the belt is opposite to the revoluble movement of the carrier. When in the revolution of the latter some of the pulleys 4 are brought into contact with the belt B, such pulleys and the corresponding bobbin-holders will be axially rotated in the direction of the small arrows, Fig. 1, and at high speed and at a speed dependent upon the speed of the belt B.

Referring to Fig. 3, the cross-rod A<sup>7</sup> has secured to it near its left-hand end, viewing the machine from the front, a hub 17, provided with an elongated housing 18, in which is mounted an ejector, shown as a plunger 19, having at its rear end a head 20, and within the housing surrounded by a coiled spring s', bearing at its rear end against the housing and at its front end against a collar 21, fast on the ejector 19. The ejector is so positioned that the rear ends of one after another of the knock-off rods 10 will be brought into aline-



ment therewith, and at that instant the ejector previously retracted is released, and the expansion of the spring  $s'$  drives it forward to deliver a sharp hard blow upon the knock-off rod, driving the latter forward within the tube 3 of the bobbin-holder, and thereby restoring the parts of the holder to the relative position shown in Fig. 6. Such forward or return movement of the previously-retracted knock-off pin causes the collar 12 to engage the butt of the bobbin and push it completely off from the spindle 7, so that the attendant can immediately place thereon a fresh bobbin to be treated. In order to retract the ejector 19, the rim  $c'$  of the carrier is provided with a segmental slot  $c^4$  near each bobbin-holder to receive a screw-bolt  $c^5$  and connected with a plate  $c^6$ , held against the rear face of the rim of the carrier, said plate having a rearwardly-extended portion  $c^7$ , terminating in a cam-face  $c^8$ , Figs. 2 and 3. In each of these cam-faces is detachably secured a preferably hardened-steel shoe  $c^9$ , the shoe being extended in the direction shown in Fig. 4 and so placed that its leading end is nearer the carrier than its rear end, the latter being so positioned that it will release the ejector 19 just as the adjacent knock-off pin 10 is moved into alignment with said ejector. As one after another of the inclined shoes passes the ejector the latter will be retracted in its housing, compressing the spring  $s'$ , and thereby rendering the ejector operative, so that on the sudden release the spring throws the ejector forward to operate the knock-off pin 10, as has been described.

A table D, supported on uprights  $D'$  on the base A in front of and at one side of the pedestal  $A'$ , is provided with upright guide-pins 22, adapted to extend through holes in ears 23 on a pan  $D^2$ , adapted to contain the coating material, nuts 24 when screwed onto the upper ends of the guide-pins holding the pan firmly in place.

A central threaded rod 25, provided with a hand-wheel 26, is extended through a bearing 27, depending from the table D, and bears against the bottom of the pan, so that the latter can be vertically adjusted by loosening the nuts 24, the entire pan being raised or lowered, as may be found desirable.

Upright arms 28, rigidly secured to the table D, provide bearings for a long rock-shaft 29, supported at its rear end in a bearing 30, forming part of a casting  $A^{10}$ , bolted to the side of the pedestal  $A'$ . (See Fig. 2.)

A rock-shaft 29 has clamped upon it rocker-arms 31 at each end of the pan D and upturned above the latter to form swinging supports for a cylindrical brush  $D^x$ , mounted on a rotatable shaft 32, extended through bearings in the upturned ends of the rocker-arms, the front end of the brush-shaft having attached to it a sprocket 33, connected by a sprocket-chain 34 with a smaller sprocket 35,

rotatably mounted on the outer end of the rock-shaft 29, projecting beyond the adjacent rigid supporting-arm 28. A sheave 36, secured to or forming a part of the sprocket 35, is connected by a band 37 with a second sheave 38, fast on a counter-shaft 39, shown as mounted in bearings on the uprights  $D'$  and in a bearing  $A^{11}$  on the pedestal  $A'$ . Said counter-shaft at its rear end has an attached sheave 40, driven by a belt or band 41 from a smaller sheave 42, fast on the main driving-shaft  $C^2$  of the machine.

The arrangements of the devices for imparting rotation to the brush-shaft 32 from the main driving-shaft  $C^2$  are shown clearly in Figs. 1 and 2, and inasmuch as the rocker-arms 31 swing on the rock-shaft 29 as a fulcrum, the latter also rotatably supporting the sprocket 35, it will be obvious that the rotation of the brush  $D^x$  will be maintained even though the swinging support therefor be rocked on its fulcrum. A short arm 43, rigidly attached to the rock-shaft 29, is attached to one end of a spring S, the other end of the spring being connected by an adjustable link 44 with a fixed stud 45 near the base of the apparatus, the tension of the spring tending to swing the brush-supports upward and toward the center about which the carrier revolves.

The brush-shaft 32 is parallel to the shaft  $A^5$ , and normally the periphery of the brush will extend across the circular path of movement of the several bobbin-holding spindles 7, so that as the carrier revolves and moves one bobbin after another past the brush the latter will apply coating material to the bobbins, it being remembered that the bobbin-holders are themselves axially rotated by or through the belt B at the time the bobbins are brought into coöperative relation with the brush. This is shown clearly in Fig. 1, wherein the brush is shown as operating upon a bobbin, the holder of the latter having been moved forward by the carrier to bring the pulley 4 into engagement with the running belt B.

Referring to Figs. 2 and 4, the rock-shaft 29 has clamped upon it an arm 46 and connected by a short link 47 (see Fig. 7) with an arm 48, secured to or forming part of a hub 49, mounted to rock on a stud 50, rigidly held in a bearing 51 on the casting  $A^{10}$  in parallelism with the rock-shaft 29, the said hub 49 having a cam extension 52 thereon, which is normally held upturned by or through the action of the spring S in the position shown in Fig. 7. An adjustable upright stop-screw 53, mounted in a bracket 54 on the pedestal, has a head 55, preferably provided with a rubber or other cushion 56, to be engaged by a short arm 57, clamped on the rock-shaft 29, the stop-screw thus limiting the upward movement of the swinging support for the brush  $D^x$ . The cushion 56 prevents shock when the brush is temporarily moved out of operative



position and then released, as will now be described.

It will be manifest that if the attendant fails to apply a bobbin to each bobbin-holder as the carrier revolves the spindle and spring-catches of such empty bobbin-holder would be moved directly into the path of the coating-brush  $D^x$  were the latter permitted to retain its normal operative position. (Shown in Fig. 1.) To prevent this, however, the trip or follower 15 on each knock-off pin 10 is so arranged that if the bobbin-holder is empty such trip will move into engagement and wipe over the cam 52, hereinbefore referred to, and will depress the cam, elevating the arm 48 on the hub 49, and thereby rocking the shaft 29 in the direction of the arrow 200, Fig. 7, against the action of the spring S. The normal position of the brush is shown in Fig. 7 by the dotted circle 58, and when it is moved out of normal position, as described, its periphery assumes the position shown by the dotted circle 59, far enough away from the bare spindle and exposed spring-catches of the empty bobbin-holder to prevent the coating material from being smeared thereon. As soon as the empty bobbin-holder has passed by the cam extension 52 the spring S is free to act and immediately returns the brush to operative position, the stop-arm 57 bringing up at such time against the cushioned end 56 of the stop-pin 53. By adjusting the stop-pin the normal position of the brush with relation to the path of the bobbin-holding spindles can be regulated, as will be necessary for bobbins of different external diameters. When a bobbin is applied to a bobbin-holder, the trip 15 is moved out of the path of the cam extension 52, as will be manifest from an inspection of Fig. 2, so that the brush will remain in its operative position.

From an inspection of Figs. 1 to 4 it will be seen that the brush  $D^x$  occupies such a position with relation to the pan that the periphery of the brush will dip into the pan and take up coating material to apply it to the bobbins as they are positioned by the revolution of the carrier. After the bobbins have been coated and before they are automatically removed from the holders by the adjusting device the surplus coating material is removed, and at the same time the coating is smoothed evenly upon the exteriors of the bobbins. To this end the forward projecting end of the shaft  $A^5$  has rigidly secured to it a depending arm 75 and carrying at its lower end a rigid rod 76, extended forward at right angles to said arm and in parallelism with the axis of the carrier, the rod having clamped upon it pairs of oppositely-extended arms 77 78, connected at their outer ends by cross-bars 79 and 80, respectively. The backs  $b^5$  of the brushes  $B^5$  are detachably secured to the two cross-bars by means of clamping-bolts 81, the

brushes depending below the cross-bars 79 and 80, as shown in Fig. 1, and so positioned that they will wipe over the bobbins as the carrier revolves. By having a pair of wiper-brushes each coated bobbin is subjected to a double wiping action, so that not only is the surplus coating material effectively removed, but it is smoothed and evenly laid, it being understood from Fig. 1 that the bobbins are rotating while being acted upon by the brushes  $B^5$ . The angular position of the brushes can be changed by varying the position of the arm 75, the latter being clamped on the projecting end of the shaft  $A^5$ , as at  $75^x$ , so that the wiping or finishing brushes  $B^5$  can be moved toward or from the coating-brush, as may be desired.

The several bobbins are indicated in the drawings at  $b^{20}$ , and in Fig. 1 the bobbin on the holder nearest the left-hand one of the guide-sheaves  $A^8$  is just about to be ejected, while the holder next above it is empty and ready to receive a bobbin to be coated. By the automatic device for rendering inoperative the coating-brush when an empty bobbin-holder is presented opposite thereto failure of the operator to fill each bobbin-holder will not result in clogging or gumming up the spindle and spring-catches of the empty holder or holders. The carrier will be revolved at such a speed that the coating material can be applied properly to the bobbins and the surplus material removed therefrom before the ejecting device is brought into operation, and the speed with which the coating-brush is rotated and the speed of axial rotation of the bobbin-holders during a portion of their bodily travel with the carrier can be regulated by the relative sizes of the transmitting gears or sheaves and the size and speed of the overhead pulley  $B'$ .

In the particular construction herein shown the carrier is arranged to make fifteen revolutions and the coating-brush nineteen revolutions per minute, while the bobbin-holders are rotated at a much higher speed than either, preferably several hundred revolutions per minute. If desired, the belt B for rotating the bobbin-holders may be carried direct from the overhead pulley  $B'$  to and around the pulleys 4 at the right-hand side of the machine, viewing Fig. 1, instead of being passed around the sheave  $A'$  at that side, thus starting the revolution of the bobbin-holders at an earlier point in their path of bodily movement with the carrier.

In Fig. 4 the normal position of the brush is shown in full lines and in dotted lines the position thereof when moved into temporarily-inoperative position by or through the presentation of an empty bobbin-holder.

The invention is not restricted to the precise construction and arrangement herein shown, as the same may be modified or rearranged in



various particulars by those skilled in the art without departing from the spirit and scope of the invention.

Having fully described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a machine of the class described, a movable carrier, a series of holders thereon each comprising a spindle projecting from the face of the carrier and adapted to detachably support a bobbin, and a spring-catch to internally engage the bobbin, and means to apply coating material to the exterior of one after another of the bobbins as they are operatively positioned by the carrier.

2. In a machine of the class described, a movable carrier, a series of holders thereon and projecting beyond the face thereof, each adapted to detachably support a bobbin, means to apply coating material to the exterior of the bobbins as they are operatively positioned by the carrier, and fixedly-positioned means to subsequently remove surplus material from the bobbins.

3. In a machine of the class described, a movable carrier, a series of holders thereon each comprising a spindle adapted to detachably support a bobbin, and a catch to internally engage and retain the bobbin on the spindle, means to apply coating material to the exterior of the bobbins as they are operatively positioned by the carrier, an ejecting device to remove automatically the bobbins from the holders, and fixedly-positioned means located between the ejecting device and the coating means to remove surplus coating material from the bobbins.

4. In a machine of the class described, a movable carrier, a series of holders thereon each comprising a spindle adapted to enter and detachably support a bobbin, and means including a rotating brush mounted in parallelism with the axes of the bobbins and normally in operative position, to apply coating material to the exterior thereof as the bobbins are carried past the brush by movement of the carrier.

5. In a machine of the class described, a movable carrier, a series of rotatable holders thereon, each adapted to detachably support a bobbin, and a retaining device to interiorly engage each bobbin, means to apply coating material to the exterior of one after another of the bobbins as they are moved past the coating means by the carrier, and means to rotate the bobbin-holders when the coating material is being applied.

6. In a machine of the class described, a revoluble carrier, a circularly-arranged series of holders thereon, each comprising a rotatable spindle adapted to detachably support a bobbin, and a catch to internally engage and retain the bobbin on the spindle, means to apply coating material to the exterior of the bobbins one after another, as they are operatively

positioned by the carrier, and an ejecting device to remove automatically the coated bobbins from their holders.

7. In a machine of the class described, a revoluble carrier, a circularly-arranged series of holders thereon, each comprising a spindle adapted to detachably support a bobbin, and a device to retain it on the spindle, means to apply coating material to the exterior of the bobbins, as they are operatively positioned by the carrier, and fixedly-positioned means to subsequently remove surplus material from the coated bobbins.

8. In a machine of the class described, a revoluble carrier, a circularly-arranged series of holders thereon, each adapted to detachably support a bobbin, means to apply coating material to the exterior of the bobbins as they are operatively positioned by the carrier, an ejecting device to remove automatically the coated bobbins from their holders, and fixedly-positioned means intermediate said ejecting device and the coating means to remove surplus material from the bobbins.

9. In a machine of the class described, a revoluble carrier, a circularly-arranged series of bobbin-holders thereon near its periphery, and each adapted to detachably sustain a bobbin in parallelism with the axis of revolution of the carrier, means including a rotating brush to apply coating material to the exterior of the bobbins, as they are swept across the brush by movement of the carrier, a brush mounted in fixed position to remove surplus material from the coated bobbins, and means to rotate the bobbins while the coating material is applied thereto and the surplus material removed therefrom.

10. In a machine of the class described, a movable carrier, a series of rotatable bobbin-holders mounted thereon and each comprising a spindle and a catch, means including a rotating brush normally and operatively located in the path of movement of the spindles, to apply coating material to the exterior of the bobbins as they are swept past the brush by the movement of the carrier, and means to automatically retract the brush from engagement with a bare spindle.

11. In a machine of the class described, a revoluble carrier, a circularly-arranged series of rotatable holders mounted thereon and each adapted to detachably support a bobbin, means to rotate said holders about their own axes, during a portion of their bodily movement with the carrier, and means normally in operative position to apply coating material to and to remove surplus material from the exterior of the bobbins while they are axially rotated.

12. In a machine of the class described, a revoluble carrier, a circularly-arranged series of rotatable holders thereon, each adapted to detachably support a bobbin, normally operative means to apply coating material to the



bobbins as they are positioned one after another by the carrier, means to axially rotate the bobbin-holders during the application of coating material to the bobbins, and a device  
5 to render the coating means inoperative when an empty holder is operatively positioned with relation thereto.

13. In a machine of the class described, a  
10 revoluble carrier, a circularly-arranged series of holders thereon, each comprising a spindle and a spring-catch to support and retain a bobbin placed thereon, a spring-controlled pin in axial alinement with each spindle, and adapted to be retracted by the bobbin when placed  
15 upon a holder, means to axially rotate the holders during a portion of their bodily movement by and with the carrier, means including a rotating brush to apply coating material to the bobbins when operatively positioned by the carrier, the bobbins at such  
20 time being axially rotated, and an ejecting device comprising a spring-actuated ejector and a series of retracting-cams mounted on the carrier, to retract the ejector as each bobbin-holder approaches a position in axial  
25 alinement therewith, release of the ejector by the cam permitting the ejector to strike the spring-controlled pin of the holder, and thereby force the bobbin from the holder.

30 14. In a machine of the class described, a revoluble carrier, a circularly-arranged series of bobbin-holders mounted thereon adjacent its periphery, and each including a rotatable spindle and a spring-catch to engage and support a bobbin when slid thereon, the spindles  
35 being arranged in parallelism with the axis of revolution of the carrier, means to apply coating material to the bobbins, and including a rotatable brush, rocking supports on  
40 which it is mounted and movable toward and from the path of movement of the bobbin-holding spindles, and means forming a part of each bobbin-holder adapted to move the brush-supports and thereby render the brush  
45 inoperative when an empty bobbin-holder is operatively positioned by movement of the carrier, the application of a bobbin to a holder rendering said means inoperative.

50 15. In a machine of the class described, a revoluble carrier, a circularly-arranged series of bobbin-holders thereon, each comprising a rotatable sleeve having a fixedly-attached spindle and a spring-catch to receive and hold in position a bobbin, a pin longitudinally movable within the sleeve and provided at one  
55 end with a follower, and a spring-controlled collar fixedly connected with the other end of the bobbin and eccentric to the spindle, application of a bobbin to the holder acting  
60 through the collar to retract the pin, combined with coating means including a rotatable brush, a swinging support therefor having a cam, means to rotate the spindles as they are positioned with relation to the brush  
65 by revolving movement of the carrier, and

an intermittingly-operating ejecting device to strike the pins of the bobbin-holders and restore them to normal position, such retractive movement of each pin acting through its attached collar to remove the bobbin from  
70 the spindle, the follower on the pin of an empty bobbin-holder cooperating with the cam on the brush-support to swing the latter and the brush into inoperative position, to prevent the application of coating material to  
75 the bare spindle.

16. In a machine of the class described, a revoluble carrier, a circularly-arranged series of rotatable bobbin-holders thereon, each having a spindle in parallelism with the axis of  
80 revolution of the carrier, and a spring-catch to internally engage and retain a bobbin on the spindle, means to axially rotate the bobbin-holders during a portion of their bodily movement on the carrier, means to apply  
85 coating material to the bobbins during their axial rotation, flexible wipers to thereafter cooperate with the rotating bobbins and remove surplus material therefrom, and means to automatically remove the bobbins one after another from the holders after the latter have  
90 ceased their axial rotation.

17. In a machine of the class described, a revoluble carrier, circularly-arranged holding devices thereon to detachably and rotatably support a series of bobbins in parallelism with the axis of revolution of the carrier,  
95 means to apply coating material to the bobbins, including a rotating brush, a swinging support therefor, an adjustable stop to limit the swinging movement of the brush toward the circular path of movement of the bobbins, means to automatically retract the brush whenever an empty bobbin-holding device is  
100 operatively positioned by the carrier with relation to the brush, means to automatically remove from the holding devices coated bobbins, and means to axially rotate the holding devices as they are bodily moved past the brush.  
110

18. In a machine of the class described, a revoluble carrier, a circularly-arranged series of axially-rotatable bobbin-holding devices mounted thereon, and each provided with a knock-off pin, a series of cams on the opposite side of the carrier, one for each bobbin-holding device, means to axially rotate said  
115 bobbin-holding devices during a portion of their bodily movement, means to apply coating material to the bobbins, and to remove surplus material therefrom during the axial rotation of the holding devices, and a spring-controlled ejector adapted to be engaged and retracted by one after another of the cams on the carrier, the release of the ejector by each  
120 cam permitting it to resume its normal position, and to thereby cooperate with the knock-off pin of the adjacent bobbin-holding device to eject a bobbin therefrom.

19. In a machine of the class described, a 130



revoluble carrier, a series of axially-rotatable holders thereon, each adapted to detachably support a bobbin, means to apply coating material to the bobbins and including a rotatable brush, a pan to contain coating material and into which the brush dips, means to axially rotate the bobbin-holders as they are carried past the brush by the movement of the carrier, wiping means to remove surplus material from the coated bobbins, means to vertically adjust the height of the pan, and an ejecting device to automatically eject the coated and wiped bobbins from the holders.

20. In a machine of the class described, a revoluble carrier, a circularly-arranged series of holders thereon each adapted to detachably support a bobbin, a combined trip and bobbin-knocking-off device for each holder, the application of the bobbin to a holder moving said device into abnormal position, means, including a brush and a swinging support therefor, to apply coating material to one after another of the bobbins as they are operatively positioned by the movement of the carrier, and an ejector to thereafter cooperate with the knock-off devices of the holders to automatically remove the bobbins, the trip por-

tions of each of said knock-off devices normally moving in the path of and being adapted to engage the swinging support of the coating-brush, to thereby move the brush into inoperative position whenever an empty bobbin-holder is moved by the carrier adjacent thereto.

21. In a machine of the class described, a carrier, a circularly-arranged series of holders thereon each comprising a spindle adapted to detachably support a bobbin, and a catch to internally engage the bobbin and retain it on the spindle, means to apply coating material to the exterior of the bobbins one after another, and means to effect relative movement of the carrier and the coating means to effect cooperation of the latter with the bobbins successively.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ELLA H. BAILEY,  
*Administratrix of Charles L. Bailey, deceased.*

Witnesses:

ROSE A. CLARKIN,  
ROBERT A. LOWE.