L. C. SHARP.

MACHINE FOR LINING CAN COVERS.

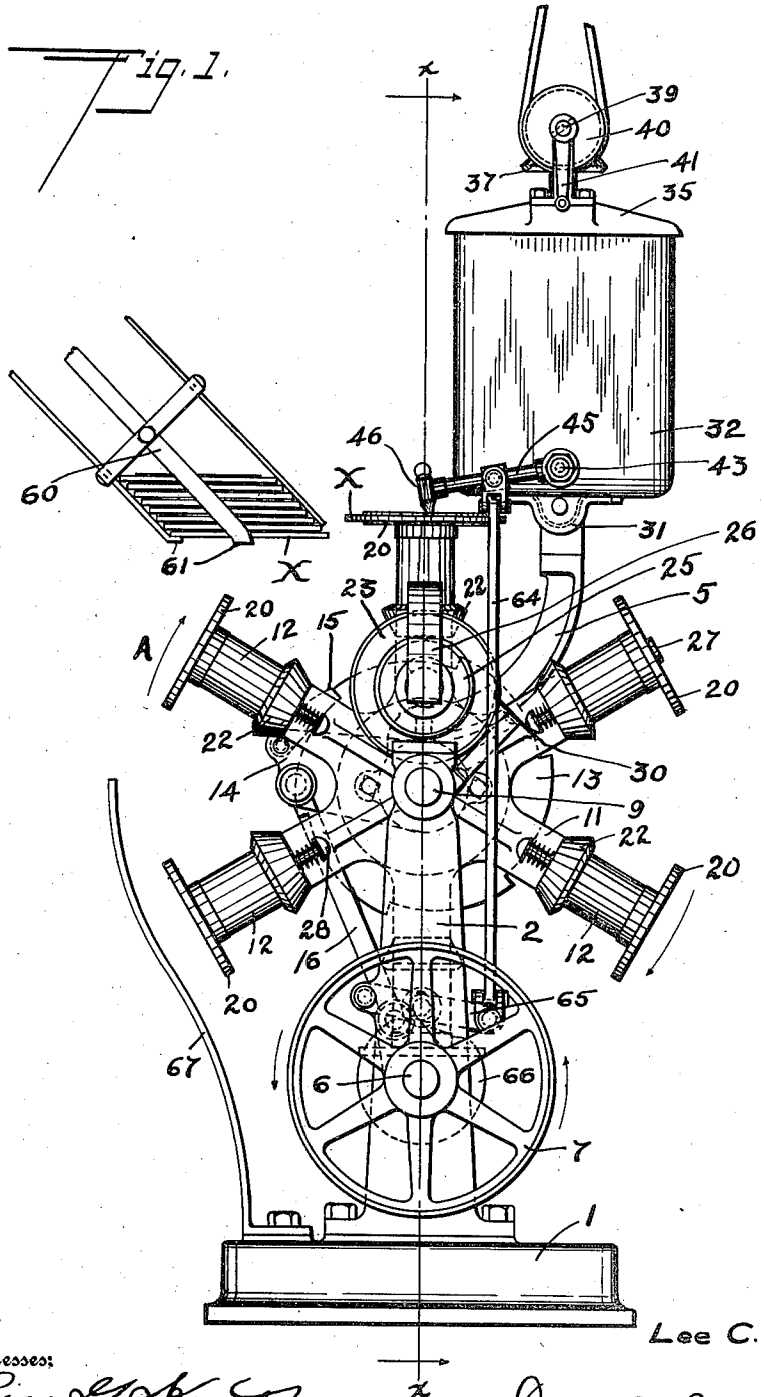
APPLICATION FILED SEPT. 13, 1909.

1,004,699.

Patented Oct. 3, 1911.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

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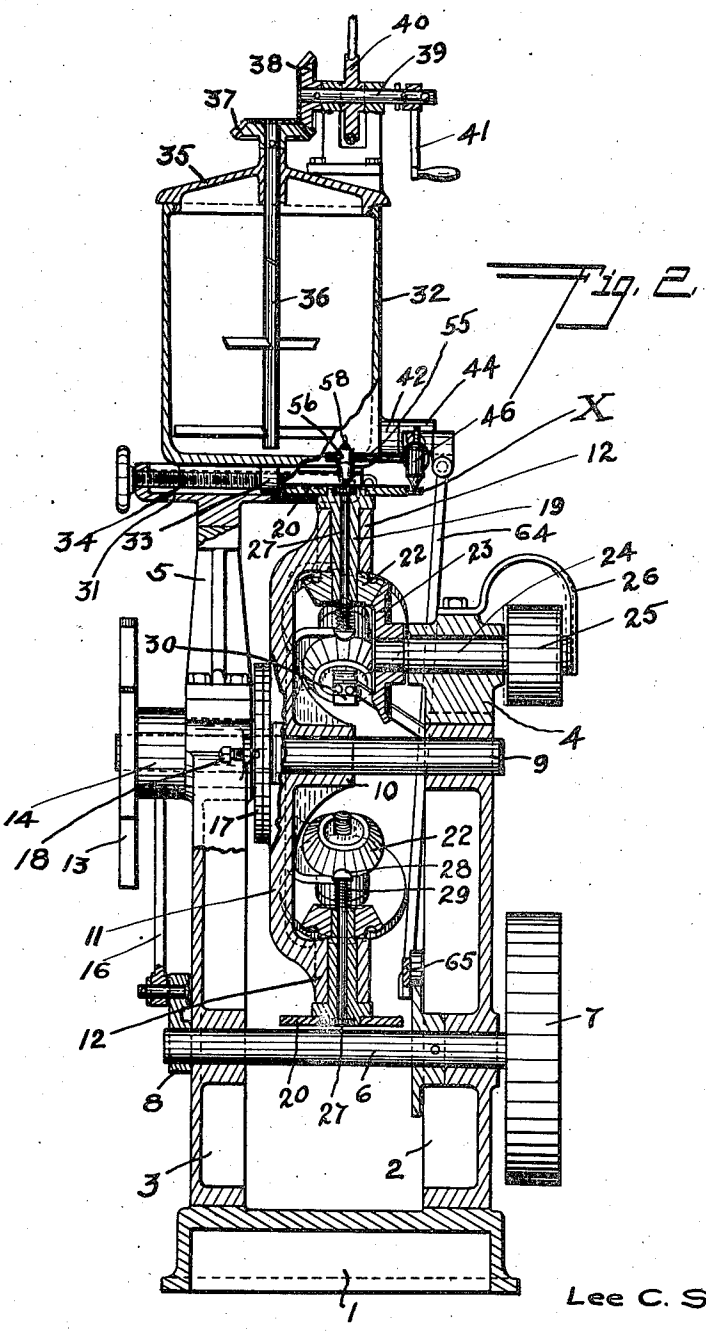

Fig. 2.

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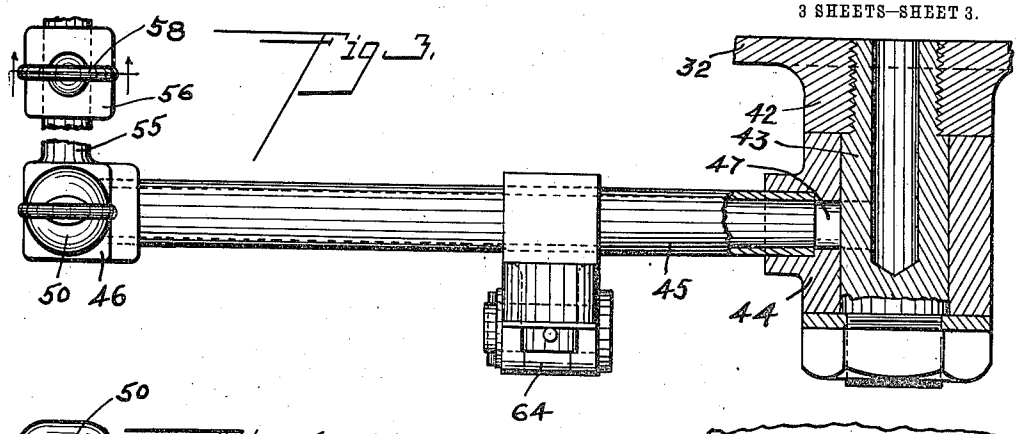

Fig. 3.

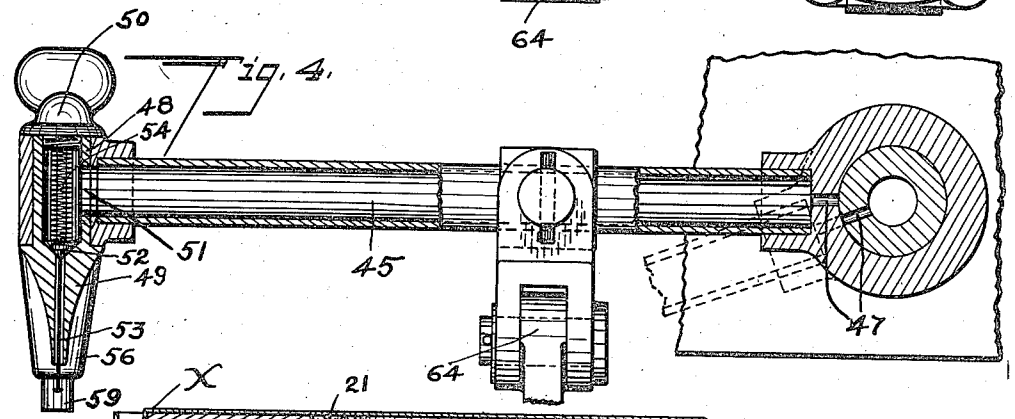

Fig. 4.

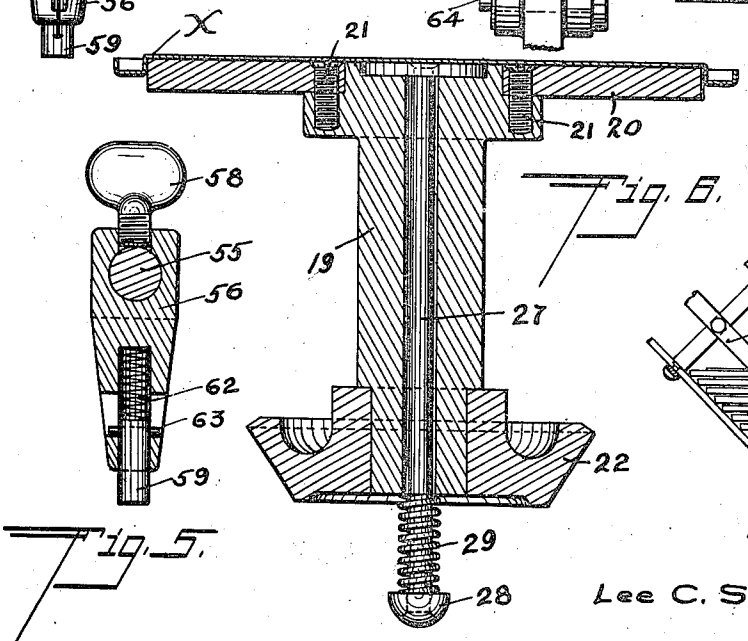

Fig. 6.

Fig. 5.

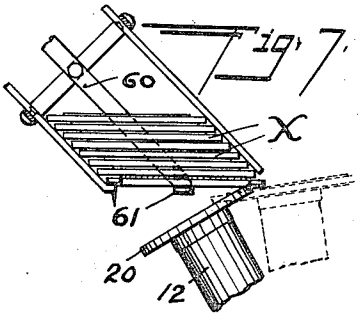

Fig. 7.

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UNITED STATES PATENT OFFICE.

LEE C. SHARP, OF PLATTSMOUTH, NEBRASKA, ASSIGNOR TO AMERICAN CAN COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

MACHINE FOR LINING CAN-COVERS.

1,004,699. Specification of Letters Patent. Patented Oct. 3, 1911.

Application filed September 13, 1909. Serial No. 517,536.

To all whom it may concern:

Be it known that I, LEE C. SHARP, a citizen of the United States, and a resident of Plattsmouth, in the county of Cass and State of Nebraska, have invented certain new and useful Improvements in Machines for Lining Can-Covers, of which the following is a specification.

My invention relates to the art of making sheet-metal cans in which the seams between the can-body and the covers, or tops and bottoms thereof, are rendered hermetic by the introduction therein of a gasket or lining of compressible material.

My invention relates more particularly to mechanism for lining or preparing the covers of such cans by placing in the seam-channels thereof a solution of the gasketing material which upon evaporating deposits a film of said material in the channel.

It is the object of my invention to provide in a machine for automatically performing the function of distributing the gasketing or lining material in can-covers, a simple, compact and inexpensive mechanism which will occupy a minimum of floor space, in which the feeding position is convenient for the operator, in which the operation is performed in view of and within reach of the operator, and in which are embodied certain novel means for controlling and regulating both automatically and manually the feeding of the lining composition.

Constructions embodying my invention are illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the machine, Fig. 2 is a transverse vertical sectional view thereof, taken principally on the plane of the line *x*—*x* of Fig. 1, Fig. 3 is a detail plan view of the valve mechanism for controlling the feeding of the lining composition, and of the device for retaining the can-covers on the chuck-plates while the composition is being applied thereto, Fig. 4 is a detail vertical sectional view of the said valve mechanism, Fig. 5 is a detail vertical section through the retaining-pin head, Fig. 6 is a detail axial section of one of the turret-spindles, and Fig. 7 is a detail showing the operation in removing a cover from the magazine-chute.

In the construction shown I provide a frame consisting of the base 1, the side-frames 2 and 3, and the standard 4 and bracket 5 which are secured to the side-frames 2 and 3, respectively. In the side-frames 2 and 3 near the base is journaled the main driving shaft 6, which carries at one end a pulley 7 and at the other end a crank 8. In the upper part of the side-frames 2 and 3 is journaled the transverse shaft 9 on which is carried a turret consisting of a central hub 10 carrying a number of equally-spaced radial arms 11 each of which at the outer end is turned laterally and carries a cylindrical radially-extending head 12. At the end of the shaft 9 adjoining the frame 3 is secured a ratchet wheel 13 having teeth corresponding in number and arrangement with the centers of the turret-heads 12. On the shaft 9 between the ratchet wheel 13 and the side-frame 3 is pivotally mounted an arm 14 which carries a pawl 15 adapted to engage the teeth of the ratchet wheel. A rod 16 connects the arm 14 and the crank 8, which imparts to the arm a reciprocating motion and thus intermittently actuates the turret through the ratchet wheel and the shaft 9. On the inner side of the frame 3 and surrounding the shaft 9 is an annular friction-plate 17 arranged to bear against the hub 10 of the turret, the said plate being held in position and being adjustable longitudinally of the shaft 9 by means of the screws 18 passed through suitable lugs on the frame 3. The movement of the pawl-arm 14 is so regulated that at the conclusion of each phase of movement of the shaft 9 one of the turret-arms 11 and the head 12 carried thereby will be in a vertical position, and the friction between the plate 17 and the hub of the turret serves to maintain said position of the turret during the return stroke of the pawl-arm. In each of the heads 12 is journaled a radial spindle 19 which at its outer end has a shouldered head on which a chuck-plate 20 is removably secured by means of screws 21, as shown in Fig. 6. On the inner end of each of the spindles 19 is secured a beveled friction-wheel 22 which, when the head carrying the spindle is at the upper vertical position, engages a beveled friction-wheel 23 carried on the inner end of the shaft 24 journaled in the standard 4 above the side-frame 2. On the outer end of the shaft 24 is a small driving pulley 25 which may be suitably connected, as by a belt extending to the main driving pulley 7, so that the shaft

24 and wheel 23 will be continuously revolved at a relatively high speed. An arched spring 26 is connected with the standard 4 and extends over the pulley to engage the outer end of the shaft 24. The wheel 23 and pulley 25 are so arranged as to allow a slight longitudinal movement of the shaft 24 through its bearing so that the tension of the spring 26 may hold the wheel 23 in frictional engagement with one of the wheels 22 carried by the turret-spindles. The extent of the longitudinal movement of the shaft 24 is indicated by the full and dotted positions of the pulley 25 and spring 26 in Fig. 2.

The chuck-plates 20 are made of a size such that the can-covers X will fit over the same as shown in Fig. 6. To accommodate different sizes of the covers, the plates are removed from the spindles and other plates of the proper size substituted therefor. Just before the respective spindles carrying the chuck-plates 20 reach the upper vertical position, the can-covers X which are to be operated upon are placed upon the said chuck-plates by means of the inclined magazine-chute 60 which is arranged as shown in Fig. 1. The covers X are fed into the upper end of the magazine-chute and rest therein in substantially horizontal planes so that the covers are spread out and prevented from nesting into each other. The lowermost cover in the chute rests on the lugs 61 at the side and front edges of the chute, and the rearward edge of said cover lies in the path of the chuck-plate 20 which is advancing to the upper position from the position A in Fig. 1. The plate engages the flange of the said lowermost cover as shown in detail in Fig. 7 and draws the same out of the rearward side of the chute, tilting the cover down into full engagement with the plate as indicated by the dotted lines in Fig. 7. At the end of the movement of the turret by which a cover is removed from the magazine, the respective chuck-plate pauses at the upper or filling position, at which the bevel wheel 22 carried by the respective spindle is engaged by the continuously-rotating bevel wheel 23 and, by the frictional engagement of said wheels, the spindle, the chuck-plate and the cover carried thereby are rotated. During said period of rotation the lining composition is applied to the seam-channel of the cover by the means hereinafter described. After the composition is applied to the cover and at the next movement of the turret, the cover is thrown off the chuck-plate by means of the ejector-stem 27. Said stem extends through the spindle 19, being provided at its inner end with a rounded head 28 which is engaged by a coil spring 29, as shown, to normally hold the stem in retracted position. An arm extending from the side-frame 2 supports an inclined plate 30 in a position such that as the spindle moves from the vertical position said plate will engage the head 28 of the ejector-stem and push said stem outwardly, as shown in Fig. 1, to throw the cover off the chuck-plate. A chute or other suitable device may be arranged at the proper position to receive the cover after it is thrown off the plate.

In case it should be desirable to feed the machine manually instead of automatically, the magazine-chute may be omitted and the can-covers X placed by hand upon the chuck-plates during the time that the same are stationary at the position A indicated in Fig. 1.

The bracket 5 on the side-frame 3 carries a transversely extending head 31 upon which is supported a substantially rectangular receptacle or tank 32 for the lining composition. On the bottom of said tank is a lug 33 which extends down into a groove in the head 31, and a screw 34 is extended through said lug, said screw being provided with a hand wheel at the end thereof by which it may be turned to adjust the position of the tank upon the transverse head 31 in a direction parallel with the turret-shaft 9. The composition tank is provided with a lid 35, shown as screwed therein, and in the lid is journaled a vertical shaft 36 which extends down into the tank and has a number of radial blades thereon, as shown in Fig. 2. A small bevel gear 37 carried on the upper end of the shaft 36 meshes with a similar gear 38 carried by a horizontal shaft 39 journaled in a bearing arranged on the lid 35. The shaft 39 carries a small pulley 40 which may be driven by a suitable belt to actuate the vertical mixing-shaft 36 and cause the same to agitate the contents of the composition tank. The shaft 39 also carries a small crank 41 by which the shaft may be conveniently turned by hand should it be desired.

At one side and near the bottom of the composition tank is a boss 42 into which is screwed a tubular stud 43. A sleeve 44 is mounted on said stud and from said sleeve a tubular arm 45 extends in an approximately horizontal plane and carries at its outer end a head 46 which is thus held in proximity to the can-cover X carried by the chuck-plate 20 at the upper or filling position before described. In the sleeve 44 at the inner end of the tubular arm, and in the side of the stud 43 are ports 47 which, when the sleeve is in such position that said ports coincide, afford a passage for the composition from the tank to the tubular arm. In the head 46 is a vertical cylindrical opening in which is rotatably disposed a tubular spigot-plug 48 which at the lower end is formed into a tapering nipple 49. The upper end of the spigot plug is closed by a

screw-plug 50 of which the flange extends over the upper side of the head 46. In the side of the spigot-plug is a port 51 which, by turning the plug, may be brought into coincidence with a similar port through the side of the head 46 and communicates with the tubular arm. In the lower part of the spigot-plug 48 is formed a seat for the valve 52 from which a lifting-pin 53 extends down through the nipple 49, terminating below the end thereof in a rounded head. A coil spring 54 holds the valve 52 normally upon its seat.

Extending laterally from the side of the head 46 is a stem 55 on which the head 56 is adjustably secured by means of a thumb-screw 58. In the lower part of said head is a recess in which is disposed a pin 59 which is normally pushed outwardly by a spring 62, the outward movement of the pin being limited by a cross-pin 63 working in a slot in the head, as shown in Fig. 5. The length of the pin 59 is such that it will extend slightly below the rounded head of the lifting-pin 53 of the valve 52, as shown in Fig. 4. The tubular arm 45 is connected by means of the jointed rod 64 with a lever 65 pivoted on the side-frame 2 near the main driving shaft 6. A roller carried by said lever engages a cam 66 secured on the shaft 6, the said cam being of a form such that, through the connections described, it will intermittently raise and lower the tubular arm.

In the operation of the machine, the position of the tank 32 is adjusted on the transverse head 31 by means of the screw 34, so that the valve-head 46 will be in transverse alinement with the seam-channel at one side of the cover X carried by the chuck-plate 20 at the upper or filling position. The retaining-pin head 56 is then adjusted along the stem 55 to bring the retaining-pin into vertical alinement with the center of the chuck-plate. When the tubular arm is lowered by the action of the cam 66 the sleeve 44 is rotated on the stud 43 so that the ports 47 are brought into coincidence, as indicated by the dotted lines in Fig. 4. The extent of opening of the port 51 in the spigot-plug is manually adjusted by rotating the plug, so that the composition may flow from the tubular arm into the plug at the proper rate. As the tubular arm is lowered the retaining-pin 59 first engages the cover X at the center thereof, thereby holding the same down onto the chuck-plate, and the lifting-pin 53 then engages the cover, thus raising the valve 52 and permitting the lining composition to flow from the nipple 49 into the seam-channel of the cover. Should there be no cover on the chuck-plate when the arm is lowered, the lifting-pin will not be engaged to raise the valve 52 and none of the composition will be permitted to flow from the nipple. When the arm is raised after the seam-channel is properly filled with the lining-composition, the valve 52 automatically closes, and the supply of composition is also cut off by the rotation of the sleeve 44 on the stud 43. During the time that the arm is held in raised position by the cam 66 the turret is advanced to bring another cover into the filling position, as before described.

At the front edge of the base 1, a shield-plate 67 is connected therewith and extends up in front of the turret, as shown in Fig. 1, to prevent the clothing of the operator from being caught in the wheel.

Now, having described my invention, what I claim and desire to secure by Letters Patent is:

1. In a machine for lining can-covers, a turret mounted to revolve on a substantially horizontal axis, a plural number of radial spindles carried by said turret, chuck-plates mounted on said spindles and adapted to receive can-covers, means for intermittently actuating the turret to bring the radial spindles successively into a vertical position and the chuck-plates carried thereby into horizontal position, means for revolving the spindles while in said vertical position, and composition-applying mechanism arranged adjacent to the chuck-plate carried by the vertical spindle.

2. In a machine for lining can-covers, the combination with composition-applying mechanism; of a series of chuck-plates adapted to carry can-covers, spindles carrying said chuck-plates, a turret revoluble on a horizontal axis, the spindles being journaled in the turret in radial relation thereto, means for intermittently actuating said turret to bring the chuck-plates carried thereby successively into a horizontal position adjacent to the composition-applying mechanism, and means for rotating the respective spindles while the chuck-plates carried thereby are in said horizontal position.

3. In a machine for lining can-covers, a turret revoluble in a substantially vertical plane, radial spindles carried by said turret, chuck-plates mounted on said spindles and adapted to carry can-covers, means for intermittently actuating the turret to bring the spindles successively into a predetermined position, and driving means for rotating said spindles while in said position.

4. In a machine for lining can-covers, the combination with composition-applying mechanism; of a turret revoluble in a substantially vertical plane, radial heads carried by said turret, radial spindles journaled in said heads, chuck-plates carried on the outer ends of said spindles and adapted to carry can-covers, means for actuating the turret to bring the chuck-plates successively into proximity to the composition-

applying mechanism, driving wheels carried on the inner ends of the spindles, and a continuously-revoluble wheel with which the respective driving wheels are carried into frictional engagement by the movements of the turret which carry the chuck-plates into proximity to the composition-applying mechanism.

5. In a machine for lining can-covers, a turret revoluble on a substantially horizontal axis, radial spindles carried by said turret, chuck-plates mounted on said spindles and adapted to carry can-covers, composition-applying mechanism, means for intermittently actuating the turret to carry the chuck-plates successively into proximity to said composition-applying mechanism, means for placing can-covers on the chuck-plates as the same approach the composition-applying mechanism, means for revolving the chuck-plates, and means for displacing the can-covers from the chuck-plates after the same pass the composition-applying mechanism.

6. In a machine for lining can-covers, a turret revoluble in a substantially vertical plane, chuck-plates revolubly mounted on said turret and arranged in tangential relation thereto, a magazine-chute adapted to retain can-covers and having one end extending into proximity to the turret, and means for intermittently advancing the turret to carry the chuck-plates past the said end of the magazine-chute, the arrangement being such that each of the chuck-plates in passing the magazine-chute may engage and withdraw a can-cover therefrom.

7. In a machine for lining can-covers, a turret mounted on a substantially horizontal shaft, radial heads carried by said turret, radial spindles revolubly mounted in said heads, chuck-plates mounted on said spindles, driving-wheels carried by said spindles, a continuously-revoluble wheel arranged in the path of travel of said spindle-driving wheels, means for intermittently advancing the turret to successively engage the spindle-driving wheels with the continuously-revoluble wheel, and means for yieldably pressing said wheel into frictional engagement with the spindle-driving wheels.

8. In a machine for lining can-covers, composition-applying mechanism comprising a tank, a vibrating hollow arm connected therewith and adapted to be swung up and down, a valve-head carried by said arm, a nipple carried by said head, means for moving said hollow arm up and down to bring said nipple into proximity to a can-cover, said means being positively actuated once during each revolution of the power shaft, a valve controlling the passage through said nipple, and a lifting-pin adapted to engage the can-cover and directly open said valve to permit a flow of composition through the nipple.

9. In a machine for lining can-covers, composition-applying mechanism comprising a tank, a vibrating hollow arm pivotally connected therewith, means for moving said hollow arm up and down to bring said nipple into proximity to a can cover, means controlled by movement of said arm to open and close a passage from the tank to the arm, a nipple connected with the arm, a valve controlling the passage through said nipple, and a pin extending from said valve through the nipple, said pin being adapted to directly engage a can-cover and thereby open the valve.

10. In a machine for lining can-covers, composition-applying mechanism comprising a tank, a tubular arm swingably connected therewith, means controlled by movement of said arm to open and close a passage from the tank to the arm, a head carried by the arm, a spigot-plug held in said head and manually rotatable to control a passage from the tubular arm thereto, said spigot-plug having a discharge opening, means for carrying a can-cover into proximity to the spigot-plug, and means controlling the said discharge opening and operatable by direct engagement with the can-cover.

11. In a machine for lining can-covers, a turret, a chuck-plate revolubly mounted thereon in tangential relation thereto, means for placing a can-cover on the chuck-plate, composition-applying mechanism, means for actuating the turret to carry the chuck-plate past the composition-applying mechanism, means for revolving the chuck-plate while in proximity to the composition-applying mechanism, and yieldably-impressed means controlled by the composition-applying mechanism for retaining the can-cover on the chuck-plate during the application of the composition thereto.

In testimony whereof I have hereunto subscribed my name in the presence of two witnesses.

LEE C. SHARP.

Witnesses:
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ROY G. KRATZ.