

No. 733,771.

PATENTED JULY 14, 1903.

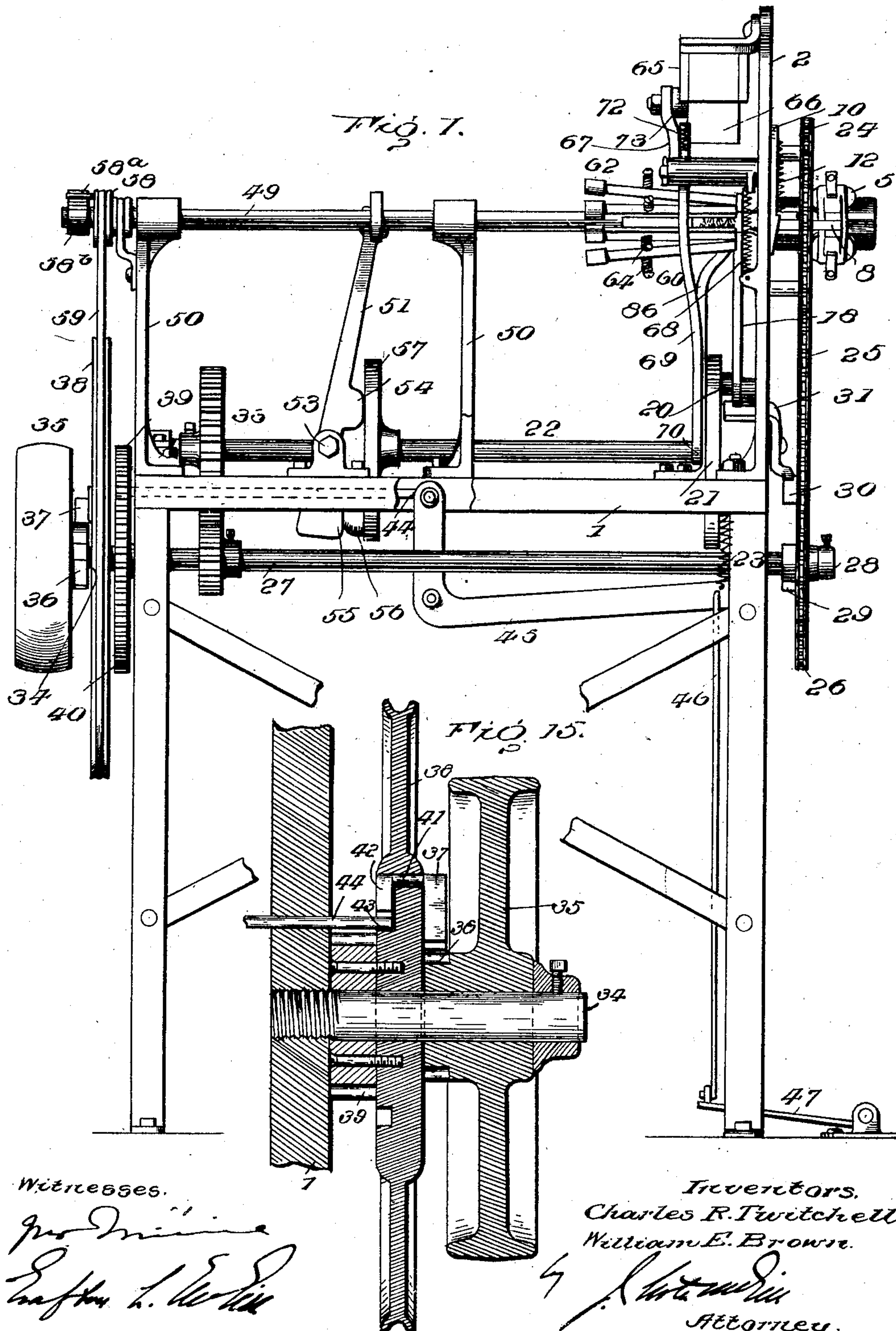
C. R. TWITCHELL & W. E. BROWN.

BOTTLE TIN FOILING MACHINE.

APPLICATION FILED JAN. 29, 1903.

NO MODEL.

4 SHEETS—SHEET 1.



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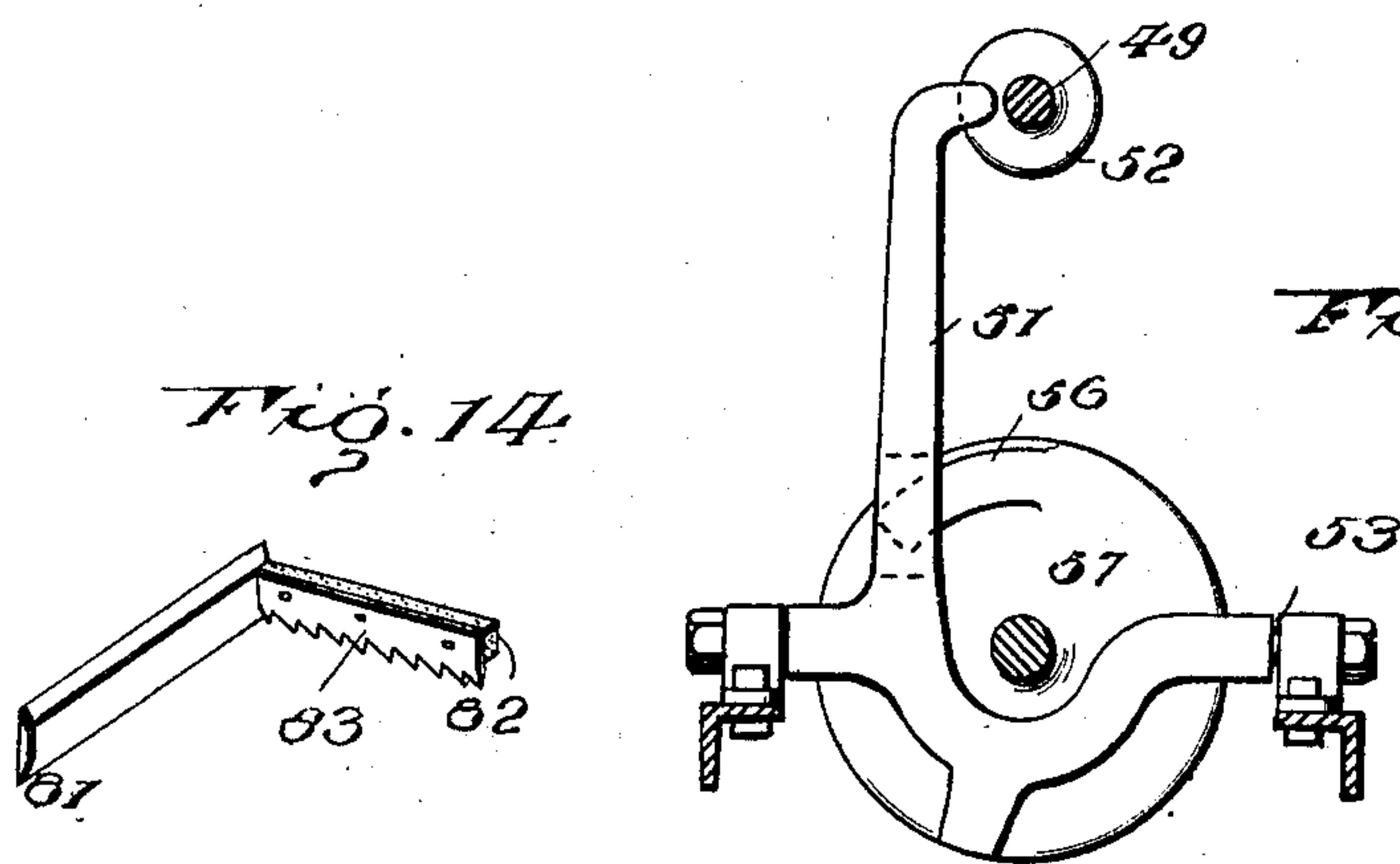
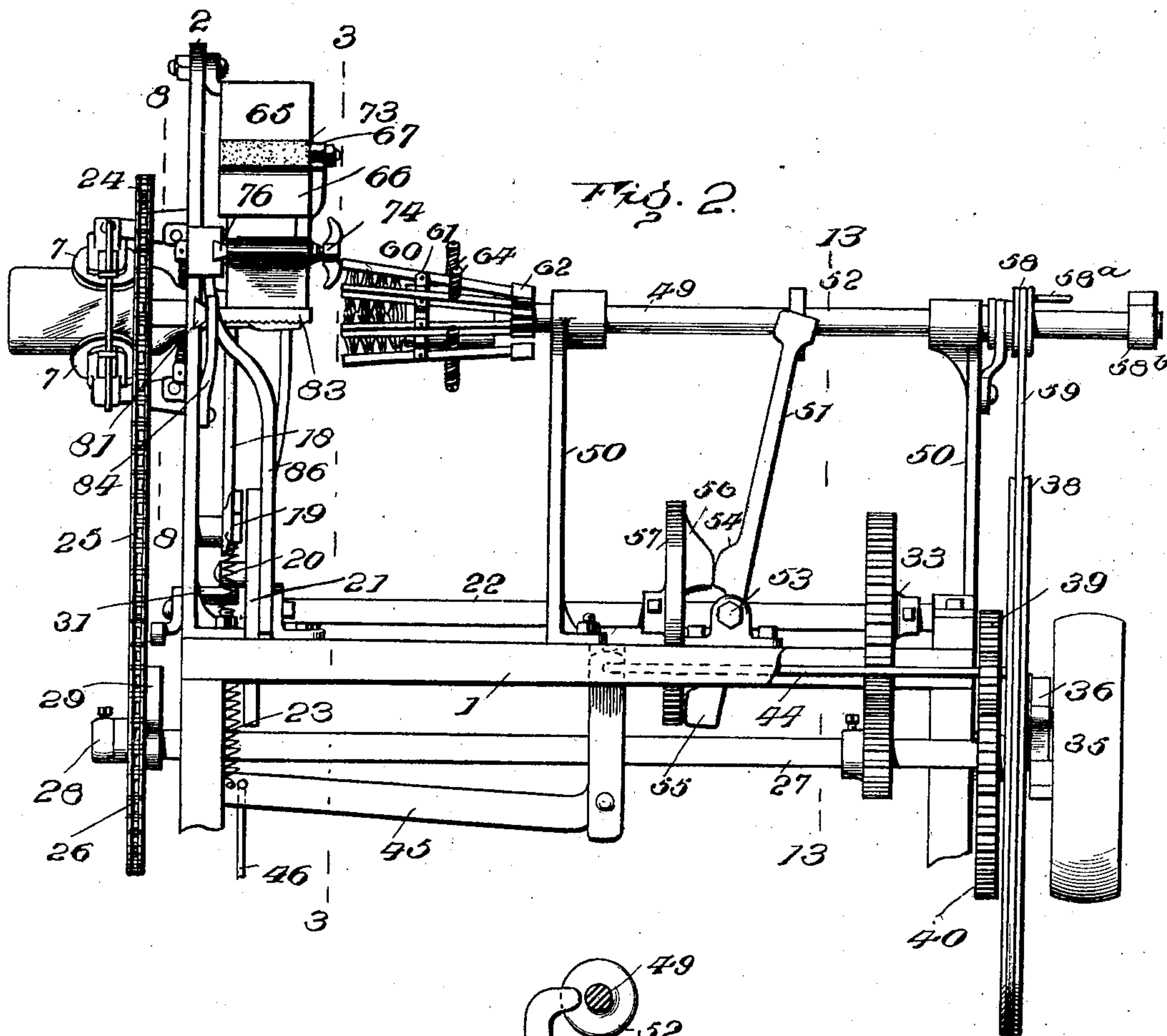
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4 SHEETS—SHEET 2.



Witnesses.

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*Charles L. ...*

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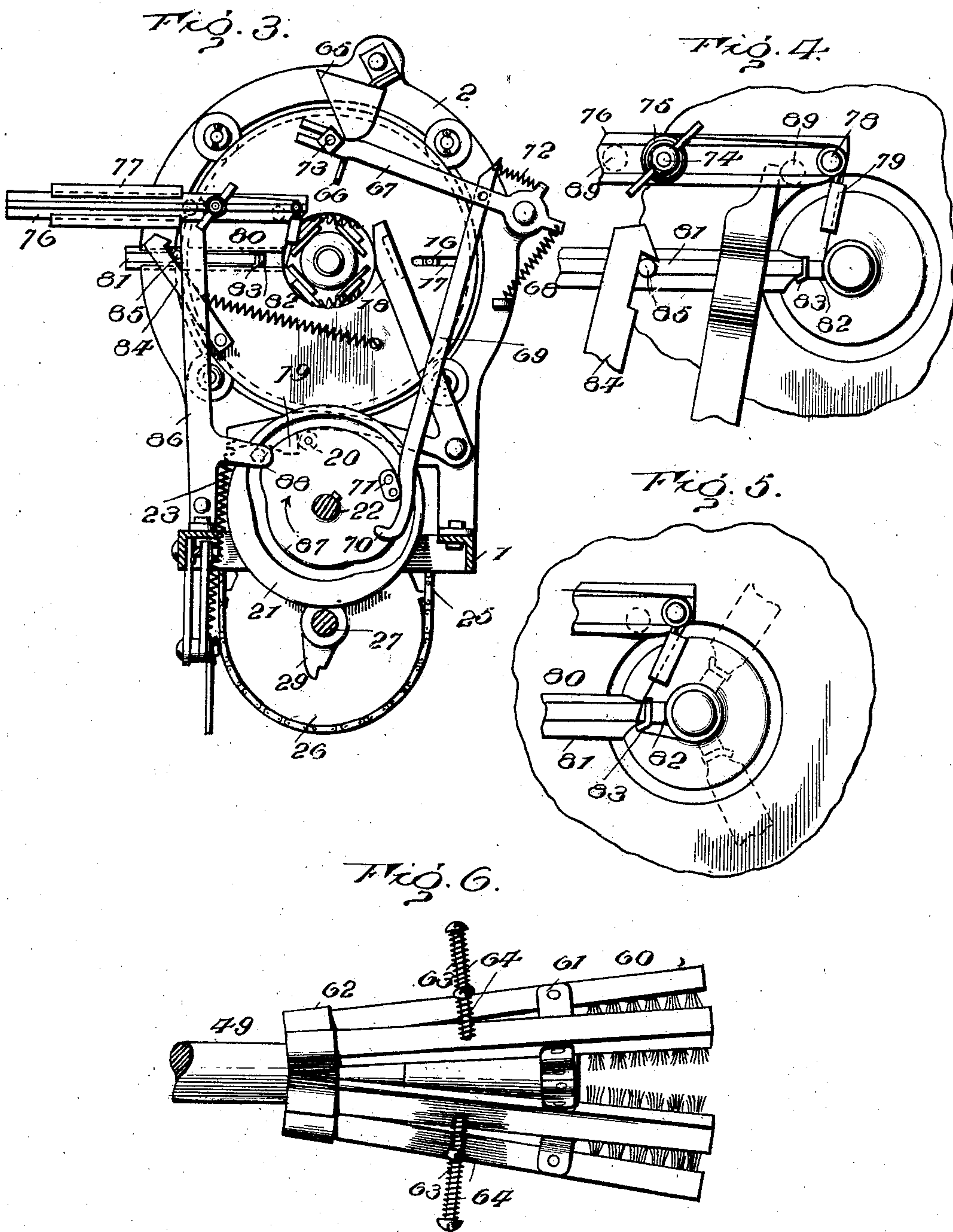
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4 SHEETS—SHEET 3.



Witnesses.

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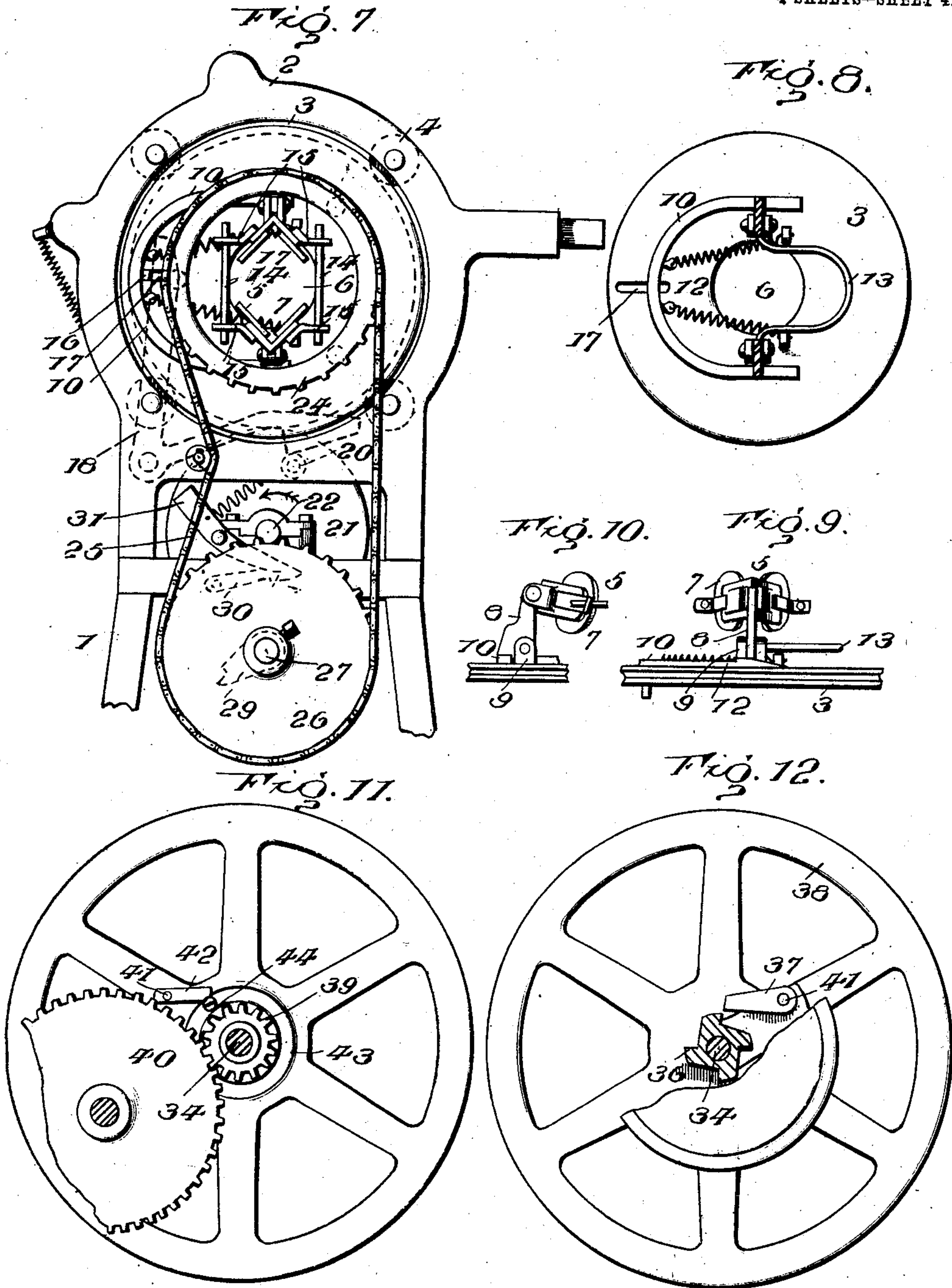
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NO MODEL.

4 SHEETS—SHEET 4.



Witnesses.

*James L. Smith*  
*Charles L. Smith*

Inventors.

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# UNITED STATES PATENT OFFICE.

CHARLES R. TWITCHELL AND WILLIAM E. BROWN, OF LOS ANGELES, CALIFORNIA, ASSIGNORS TO BROWN-WINSTANLEY MANUFACTURING COMPANY, OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA.

## BOTTLE-TIN-FOILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 733,771, dated July 14, 1903.

Application filed January 29, 1903. Serial No. 141,053. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES R. TWITCHELL and WILLIAM E. BROWN, of Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Bottle-Tin-Foiling Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of this invention is to provide simple and highly-efficient means for automatically applying tin-foil to the necks of bottles such as are used for beer, catsup, toilet waters, &c.

A further object is to provide for the application of the tin-foil from a continuous roll thereof, sufficient foil for each bottle being cut from the roll as the application is made to a bottle-neck.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in side elevation. Fig. 2 is a similar view from the opposite side of the machine with the base of the supporting-frame broken away. Fig. 3 is a vertical sectional view on line 3 3, Fig. 2. Fig. 4 is an enlarged view of the foil-holder and means for holding the foil against a bottle-neck, the parts being shown in the position occupied at the beginning of the application of the foil. Fig. 5 is a view of the same parts at the completion of the application of the foil. Fig. 6 is an enlarged view of the brushes. Fig. 7 is a front end elevation showing the reverse of Fig. 3. Fig. 8 is a face view of the chuck-disk on line 8 8, Fig. 2. Fig. 9 is an edge view of the chuck with one of the jaws. Fig. 10 is a side view of the latter. Figs. 11 and 12 are opposite side views of the main operating-wheel. Fig. 13 is a detached view taken on line 13 13, Fig. 2. Fig. 14 is a detached view of the foil binder and cutter. Fig. 15 is a sectional view through the driving-pulley, band-wheel, and stub-shaft.

Referring to the drawings, 1 designates a skeleton frame or stand having at one end an upward extension 2, formed with a circular opening wherein is located the circular disk 3 of a bottle-holding chuck, such disk being held in place by rollers 4 engaging a peripheral groove thereof. This disk carries bottle-holder 5, composed of two jaws arranged on opposite sides of a central opening 6, which opening is formed to accommodate bottles of various sizes. Each jaw consists, preferably, of two diagonally-positioned disks 7, secured to a post 8, pivotally mounted between ears 9, extending from the face of disk 3. Each of these posts is offset at one side, so as to provide a space between itself and the face of the disk to accommodate the ends of a locking device 10. This device is shown in the form of a horseshoe, with its ends tapered and extended beneath the offsets of posts 8. Springs 12 connected to this device act thereon to hold the inner portion of the tapered ends under the offsets of the posts, thus turning the latter on their pivots and insuring the engagement of the jaws with a bottle. A bow-spring 13, connected to the two posts 8, serves to normally hold the jaws outwardly, while two parallel rods 14, extended through openings in lateral wings 15, guide the jaws in their movements and prevent lateral deflection thereof. The locking device carries a pin 16, which extends transversely through a slot 17 in the chuck-disk.

18 designates a lever fulcrumed on the frame extension and formed with an offset 19, with which is designed to engage a pin 20 of a cam-disk 21, which latter is fast on a driven shaft 22. When lever 18 is engaged by pin 20, it is moved as against the tension of a spring 23 so as to engage the pin 16, and thereby force the locking device 10 outwardly as against the tension of its springs 12, and thus release the hold of the jaws on the bottle. As soon, however, as the lever 18 is freed of pin 20 it will be drawn from engagement with pin 16 by spring 23, and thus allow the locking device to reengage the bottle-holder as before.



To the front face of the chuck-disk is secured a sprocket-wheel 24, with which engages a chain 25, such chain deriving motion from a sprocket-wheel 26, loosely mounted on a main operating-shaft 27, extended longitudinally of frame 1, such sprocket-wheel being held in place by a collar 28. Fast to this shaft, immediately adjacent the sprocket-wheel, is a dog 29, which is designed to positively engage a pawl 30, pivotally secured to the sprocket-wheel, and thereby effect the rotation of the latter. This pawl is normally held out of the radius of dog 29 by a spring-held lever 31, such lever being moved so as to release the pawl by pin 20 of cam-disk 21 engaging the outer arm thereof. Thereupon the two sprocket-wheels and the chuck-disk will rotate in unison with the main operating-shaft. Power is transmitted from the latter shaft to the driven shaft 22 by gear-wheels 33.

Loose on a stub-shaft 34, rigidly secured to one end of frame 1, is a driving-pulley 35, having on its inner face a ratchet 36, which is designed, through a pawl 37, to effect the revolution of a large band-wheel 38, by which the pawl is carried. This wheel 38 on its inner face has a gear-pinion 39, which meshes with a gear-wheel 40, fast on shaft 27. When the machine is not in operation, pawl 37 is thrown out of engagement with ratchet 36. This pawl is mounted on a short shaft 41, extended transversely through wheel 38, and on the inner end of such shaft is a dog 42, the free end of which normally lies over a circular groove 43 in the face of said wheel. Into this groove is designed to project the inner end of a rod 44, pivotally secured to one end of a lever 45, the other end of such lever being connected by a rod 46 to a foot-lever 47. By pressing downwardly on the latter rod 44 will be drawn out of groove 43 as against the tension of spring 23, thereby allowing dog 42 and pawl 37 to move, so that the latter will be engaged by ratchet 36. Thus wheel 38 will be caused to rotate with the driving-pulley and power will be communicated to shaft 27. The spring 23 is connected to both lever 18 and lever 45 and is under tension only when the former is held upwardly by pin 20. When so held, the rod 44 is projected into the groove 43, but as soon as lever 18 is freed of pin 20, which occurs immediately following the application of pressure to foot-lever 47, the rod 44 remains withdrawn from said groove until lever 18 is again engaged by pin 20, whereupon through spring 23 rod 44 is again projected into the groove 43.

49 is the brush-carrying shaft arranged axially of the central opening in the chuck-disk. It has its bearings in standards 50, which permit of its being moved longitudinally by a lever 51, whose upper forked end engages a collar 52, fast on such shaft. This lever, which is fulcrumed at 53 on frame 1, (see Figs. 1, 2, and 13,) is equipped on opposite sides of its fulcrum with upper and lower

lugs 54 and 55. These lugs are designed to be alternately engaged by a cam 56, whose disk 57 is fast on shaft 22, such engagement effecting the rocking of the lever in opposite directions and the consequent reciprocal longitudinal movement of the brush-shaft. Loose on a bearing through which shaft 49 is passed is a band-pulley 58, having a laterally-projected lug 58<sup>a</sup>, which is designed to engage a dog 58<sup>b</sup>, fast on shaft 49, and thereby effect the rapid rotation of such shaft when the same is moved inwardly toward the chuck. The band-pulley is driven by a band 59 in engagement with wheel 38.

60 designates a series of brush-carrying levers, each of which is fulcrumed between ears 61, extending from a collar fast on shaft 49, the ends of the long arms of such levers being equipped with weights 62, which are normally held in against the shaft by coil-springs 63, encircling headed studs 64. Thus the brushes on the short arms of the levers are normally held apart, so that they may be readily moved over a bottle held in line therewith by the holders 5. As soon as the shaft 49 begins to rotate the brushes close in against the bottle under the centrifugal action of weights 62.

65 designates the paste or gum receptacle, which is designed to be moved back and forth over an inclined plate 66, permanently secured to the top of the frame extension, such plate forming a wall for the open side of the receptacle. The upward movement of the receptacle is effected by a transferrer-lever 67 under the action of a spring 68, the downward movement of such lever being accomplished by a second lever 69, having its lower hooked end 70 engaged by a lug 71 on the outer face of cam-disk 21. This lug pulls downwardly on lever 69, and the latter being fulcrumed on lever 67 moves the latter over and away from plate 66, such lever 67 returning to its normal position only after lever 69 is freed of lug 71. This latter lever is held in its normal position to be engaged by the lug by a spring 72. Lever 67 carries at its outer free end a paste-transferrer in the form of a brush 73, which brush takes paste from plate 66 and applies the same to a portion of the neck of a bottle held within the chuck. It is obvious that each time the paste-receptacle is moved over plate 66 a fresh supply of paste is left on the exposed portion of such plate, so that the brush 73 in its travel thereover secures sufficient paste to insure the adhesion of tin-foil to a bottle-neck.

74 designates a holder for a roll of tin-foil. This holder is removably secured to a longitudinally-movable slide 76, located in a grooved housing 77, extended laterally from frame extension 2. The foil is carried from the holder over a roll 78 and passed downwardly through a guiding-apron 79, the free end of the foil being normally in line with the side of the neck of a bottle secured in the chuck.



80 designates the foil binder and cutter. This is shown as comprising a slide 81, movable in a groove cut in the face of the chuck-disk, a rubber tip 82 being secured to the inner end of such slide, and immediately adjacent thereto is a cutter-knife 83. The rubber tip and cutter extend laterally from the slide at right angles thereto, so that in the revolution of the chuck the foil will be engaged by the cutter throughout its width. When the slide 81 is moved inwardly toward the center of the chuck-disk, which movement is effected by a spring-held lever 84, fulcrumed on such disk, engaging a pin 85, the rubber 82 will bind the free end of the foil against the gummed surface of a bottle-neck, and so hold the same during the revolution of the chuck, the slide 81, rotating with the latter, being, when moved inwardly, free of the slot in the frame extension 2. The position of the parts when the rubber tip first binds the tin-foil against the bottle-neck is indicated in Fig. 4. It is obvious that since the foil-holder revolves with the bottle the cutter will as the revolution is approaching completion engage the foil, and an outward movement of slide 81 will effect the cutting of the foil at a point to allow of a slight overlapping of the ends of the foil on the bottle-neck and leave a hanging portion of the foil in position for a second operation. This outward movement of the holder and cutter is effected by a lever 86, acted upon by a cam-groove 87 in the face of disk 21, such lever being fulcrumed on frame 1 and carrying a pin 88, which extends into said cam-groove. This lever 86 in its movements engages two stops 89 of slide 76 and moves the latter in unison with the slide 81.

In operation a bottle is positioned centrally within the opening in the chuck-disk between the jaws of the holder, the brushes at this time being in the position shown in Fig. 1—that is, surrounding the neck of the bottle. In this way the extent to which the bottle is to be projected into the brushes is determined. The operator thereupon presses downwardly on foot-lever 47, withdrawing rod 44 from groove 43, and allowing pawl 37 to fall into engagement with the ratchet 36 of the constantly-operated pulley 35, the machine being thus set in motion. The first movement of cam-disk 21 moves pin 20 out of engagement with the offset of lever 18, the latter under the action of spring 23 being thereupon withdrawn from engagement with pin 16, allowing the locking device 10 to force the jaws tight against the bottle, whereby the latter will be held perfectly rigid in the center of the chuck horizontally of the machine. At this time cam 56 is brought into engagement with lug 54, so as to force lever 51 rearwardly, thereby withdrawing shaft 49 and the brushes out of the way of the bottle. The lug 71 then engages the hooked end of lever 69, drawing downwardly the paste-transferrer lever 67 and causing brush 73 to apply paste or gum

to the bottle-neck, the lever 67 being drawn back to its normal position as soon as lug 71 is clear of lever 69. The cam-groove in disk 21 then moves lever 86 inwardly, allowing spring-held lever 84 to move the slide 81 inwardly, the rubber tip 82 engaging the free end of the hanging foil and holding the same against the bottle-neck under the action of the spring secured to lever 84. At this point in the operation pin 20 of cam-disk 21 has pushed against lever 31 and caused the same to release pawl 30, so that the latter will be engaged by dog 29, thereby causing the two sprocket-wheels 26 and 24 to be set in motion, the chuck-disk being revolved therewith. This revolution of the chuck effects the wrapping of the foil entirely around the neck of the bottle, the edges thereof being within the space covered by the gum. As the chuck-disk is approaching the end of its revolution the knife 83 engages the foil, and lever 86 being moved outwardly, so that its engagement with pin 85 will effect the outward movement of slide 81, the knife cuts the foil close to the bottle, the guiding-apron 79 holding the foil while the knife and rubber pad are thus drawn outwardly. At this time the cam 56 has come into engagement with the lower lug 55 of lever 51, effecting the inward shifting of the brush-shaft 49, thus placing the brushes around the neck of the bottle, bringing the dog 58<sup>b</sup> up to the pulley 58, when the lug thereof will engage such dog and effect the rapid rotation of shaft 49, causing the brushes to engage the bottle-neck under the outward movement of the weighted ends of the brush-levers. Thus the foil is caused to firmly adhere to the bottle. Thereupon pin 20 engages the offset of lever 18, forcing the latter against pin 16 and effecting the withdrawal of the locking device 10, permitting the jaws to open and release the bottle. The upward movement of lever 18 draws on spring 23, so as to tilt lever 45 and effect the projection of rod 44 into groove 43, with the result that upon dog 42 engaging therewith pawl 37 will be moved out of engagement with ratchet 36, and thus stop the machine with the parts in the position in which they started.

From what has been said it will be seen that we have provided means for automatically applying tin-foil to bottle-necks, such foil being cut from long strips wound on a holder, which latter may be readily removed when the supply of foil is exhausted, so that a new roll thereof may be positioned ready for use. There is practically no waste, since only sufficient foil is cut off at each operation to cover the neck of a bottle. It will also be noted that after the foil has been applied to the gummed surface it is made to smoothly adhere thereto by the rapidly-rotated brushes.

We claim as our invention—

1. In a machine for applying tin-foil to bottles from long strips or rolls thereof, the combination of a rotary bottle-holder, means movable with the bottle-holder for binding the



end of the foil to a bottle in such holder, means mounted independently of the latter for supporting the tin-foil, and means for cutting the foil as it is so wound around the bottle, as set forth.

2. In a machine for applying tin-foil to bottles from long strips or rolls thereof, the combination of a bottle-holder, means for rotating the same, means movable with the bottle-holder for holding the end of the foil to the bottle during the revolution of such holder, means mounted independently of the latter for supporting the tin-foil, and means also mounted on the holder for cutting the foil as it is applied to the bottle, as set forth.

3. In a machine for applying tin-foil to bottles from long strips or rolls thereof, the combination of a bottle-holder, means for automatically applying paste or gum to a bottle-neck, means for winding the foil around such neck, means for cutting the foil as it is applied thereto, and means for automatically smoothing the foil on the bottle, as set forth.

4. In a machine for applying tin-foil to bottles from long strips or rolls thereof, the combination of a bottle-holder, means for rotating the same, means for automatically applying paste to a bottle-neck, means for holding the end of the foil to the bottle-neck during the revolution of such holder, and means for cutting the foil as it is applied to the bottle-neck, as set forth.

5. The combination with the rotary chuck, of a foil-holder, means for guiding the foil in its passage from the holder, and means movable with the chuck for binding the free end of the foil against the neck of a bottle within such chuck, and means for severing the foil at or about the completion of the revolution of the chuck, as set forth.

6. The combination with the frame, of the rotary chuck mounted thereon, a holder for a roll of foil mounted on such frame, means for guiding the foil and holding the free end thereof in line with the center of the chuck, means mounted on the chuck for binding the foil against the neck of a bottle within the chuck, a cutter, and means for actuating the same to sever the foil as the chuck completes its rotation, as set forth.

7. The combination with the frame, of the rotary chuck mounted thereon, a holder for a roll of foil mounted on such frame, a slide mounted on the chuck, the inner end of which is designed to bind the end of the foil against a bottle within the chuck, a cutter carried by such slide, and means for moving the slide in opposite directions, as set forth.

8. The combination with the frame, of the rotary chuck mounted thereon, a holder for a roll of foil mounted on such frame, a slide mounted on the chuck, the inner end of which is designed to bind the end of the foil against a bottle within the chuck, a cutter carried by such slide, a spring-controlled lever for moving said slide into engagement with the bottle, a second lever for moving said slide

out of engagement, and means for actuating such second lever, as set forth.

9. The combination with the frame, of the rotary chuck mounted thereon, a foil-roll holder, a support therefor adjustably secured to said frame, a guide-apron for the foil depending from such support, a slide mounted on said chuck designed to bind the end of the foil against a bottle held in the chuck, a cutter extending laterally from such slide at or near its inner end, and means for moving the slide in opposite directions, its outward movement at or near the completion of its rotation with the chuck causing the cutter to sever the foil, as set forth.

10. In a tin-foiling machine, the combination with the frame, and the rotary chuck, of the paste or gum receptacle open at one side, an inclined plate forming a closure for such side and over which the receptacle is movable, a paste-transferrer movable over such plate, and means for actuating such paste-transferrer, the movements of such receptacle being controlled by the movements of the transferrer, as set forth.

11. In a tin-foiling machine, the combination with the frame, and the rotary chuck, of the paste or gum receptacle open at one side, an inclined plate forming a closure for such side and over which the receptacle is movable, a paste-transferrer movable over such plate, a lever carrying such paste-transferrer engaging such receptacle and normally holding it at the upper end of such plate, and means for actuating such lever, as set forth.

12. The combination with the rotary chuck-disk, of a bottle-holder carried thereby comprising opposite jaws, means tending to normally move said jaws toward each other, and means for automatically releasing such jaws at the completion of rotation of such chuck-disk, substantially as set forth.

13. The combination with the rotary chuck-disk, of a bottle-holder carried thereby comprising opposite jaws, a spring-actuated device for locking such jaws, and means for automatically moving said device for releasing the jaws at the completion of rotation of the chuck-disk, as set forth.

14. The combination with the rotary chuck-disk, of a bottle-holder carried thereby comprising opposite jaws, each jaw having a pivotally-mounted post formed with an offset, a spring-actuated locking device having tapered portions in engagement with said offsets, and means for automatically moving said device for releasing the jaws at the completion of rotation of the chuck-disk, substantially as set forth.

15. The combination with the chuck-disk, of the bottle-holder comprising oppositely-disposed jaws, posts carrying such jaws pivoted to said disk, means engaging the posts for forcing the jaws toward each other, and means for moving them apart, as set forth.

16. The combination with the rotary chuck-disk, of the bottle-holder carried thereby, com-



prising oppositely-disposed jaws, means tending to normally move said jaws toward each other, means for guiding the jaws in their movements, and means for automatically moving the jaws apart at the completion of rotation of said chuck-disk, as set forth.

17. The combination with the chuck-disk, of the bottle-holder comprising oppositely-disposed jaws, having lateral wings, guide-rods extended through such wings, posts pivotally mounted on the chuck-disk and to which the jaws are secured, a locking device engaging said posts for moving the jaws toward each other, and a spring connected to said posts for forcing the jaws apart, as set forth.

18. A bottle-tin-foiling machine having, in combination, a rotary chuck, means for wrapping foil around the neck of a bottle during the rotation of the chuck, a rotary shaft in axial line with the bottle held in such chuck, and means carried by such shaft for smoothing the foil on the bottle-neck at the completion of rotation of the chuck, as set forth.

19. A bottle-tin-foiling machine having, in combination, a rotary chuck, means for wrapping foil around the neck of a bottle during the rotation of the chuck, a rotary shaft in axial line with the bottle held in such chuck, and a series of brushes mounted on such shaft designed to engage the foil on the bottle-neck at the completion of the rotation of the chuck, as set forth.

20. A bottle-tin-foiling machine having, in combination, a rotary chuck, means for wrapping foil around the neck of a bottle during the rotation of the chuck, a rotary shaft in axial line with the bottle held in such chuck, a series of levers mounted on said shaft having brushes on their short arms, said brushes being designed to engage the foil on the bottle-neck at the completion of the rotation of the chuck, as set forth.

21. A bottle-tin-foiling machine having, in combination, a rotary chuck, means for wrapping foil around the neck of a bottle during the rotation of the chuck, a rotary shaft in axial line with the bottle held in such chuck, a series of levers mounted on said shaft having weights on their long arms and brushes on their short arms, and springs tending to hold the weighted arms of said levers toward the shaft, said brushes being designed to engage the foil on the bottle-neck at the completion of the rotation of the chuck, substantially as set forth.

22. A bottle-tin-foiling machine having, in combination, a rotary chuck, means for wrapping tin-foil around the neck of a bottle during the rotation of the chuck, a shaft in axial line with the bottle held in such chuck, means carried by said shaft for smoothing the foil on the bottle-neck at the completion of the rotation of the chuck, means for moving the shaft toward and away from the chuck, and means for rotating the shaft when moved toward the chuck, as set forth.

23. The combination with the chuck, of the longitudinally-movable shaft, brushes mounted thereon, a lever for shifting said shaft longitudinally, a cam for engaging said lever and alternately moving it in opposite directions, means for actuating the cam and means for rotating the shaft when moved toward the chuck, as set forth.

24. The combination with the frame and the chuck, of the longitudinally-movable shaft, brushes mounted thereon, a collar on said shaft, a lever fulcrumed on the frame engaging said collar, said lever having upper and lower lugs on opposite sides of its fulcrum, a cam for alternately engaging said lugs, means for rotating said cam, a pulley having a side lug, a dog on said shaft designed to be engaged by said lug when the shaft is moved toward the chuck, a band-wheel, a band driven thereby engaging said pulley, and means for actuating said band-wheel, substantially as set forth.

25. The combination with the frame, of the chuck, a sprocket-wheel secured thereto, an operating-shaft, a second sprocket-wheel loose thereon, a belt engaging said sprocket-wheels, a pawl carried by said second sprocket-wheel designed to be engaged by said dog, a lever normally holding said pawl, a driven shaft, a disk thereon having a pin designed to engage said lever to free said pawl, and means for wrapping foil around a bottle held by said chuck when said pawl is engaged by said dog, substantially as set forth.

26. In a bottle-tin-foiling machine, in combination, a constantly-operated pulley, a main operating-shaft, means intermediate said shaft and pulley for connecting the same to effect the rotation of the shaft, means for throwing such connecting means out of engagement, a shaft driven by said operating-shaft, a disk thereon having a pin, a chuck, bottle-holding jaws thereon, a locking device therefor, a lever for acting on said locking device when engaged by said pin, and a connection between said lever and the means controlling the connection between the pulley and the main operating-shaft, substantially as set forth.

27. The combination with the chuck, the jaws, and the locking device therefor, of the lever for acting on such device, the driven shaft, a disk thereon having a pin for engaging said lever, a stub-shaft, a driving-pulley thereon having a ratchet, a wheel carrying a pawl designed to be engaged by said ratchet, a shaft for said pawl supported by said wheel, a dog on the other end of said shaft, said wheel having an annular groove over which said dog is designed to swing, a rod, means connected thereto for moving the rod into said groove for shifting the dog and pawl, a connection between such means and the said locking-device lever, a main operating-shaft for driving said driven shaft, and gearing between said wheel and operating-shaft, substantially as set forth.



28. A bottle-tin-foiling machine having, in combination, the following instrumentalities: a bottle-holding chuck, means for binding and releasing a bottle in said chuck, a foil-holder, 5 means for applying paste or gum to the bottle, means for rotating the chuck, means movable with the chuck for binding the foil thereto and cutting the same at the completion of the revolution of the chuck, brushes for 10 smoothing the foil on the bottle, means for moving the brushes toward and away from the chuck, means for rapidly rotating the

brushes when moved toward the chuck, and means for automatically controlling the successive operation of all the instrumentalities, 15 substantially as set forth.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

CHARLES R. TWITCHELL.  
WILLIAM E. BROWN.

Witnesses:

T. WINSTANLEY,  
CHAS. B. WARREN.