

No. 695,828.

Patented Mar. 18, 1902.

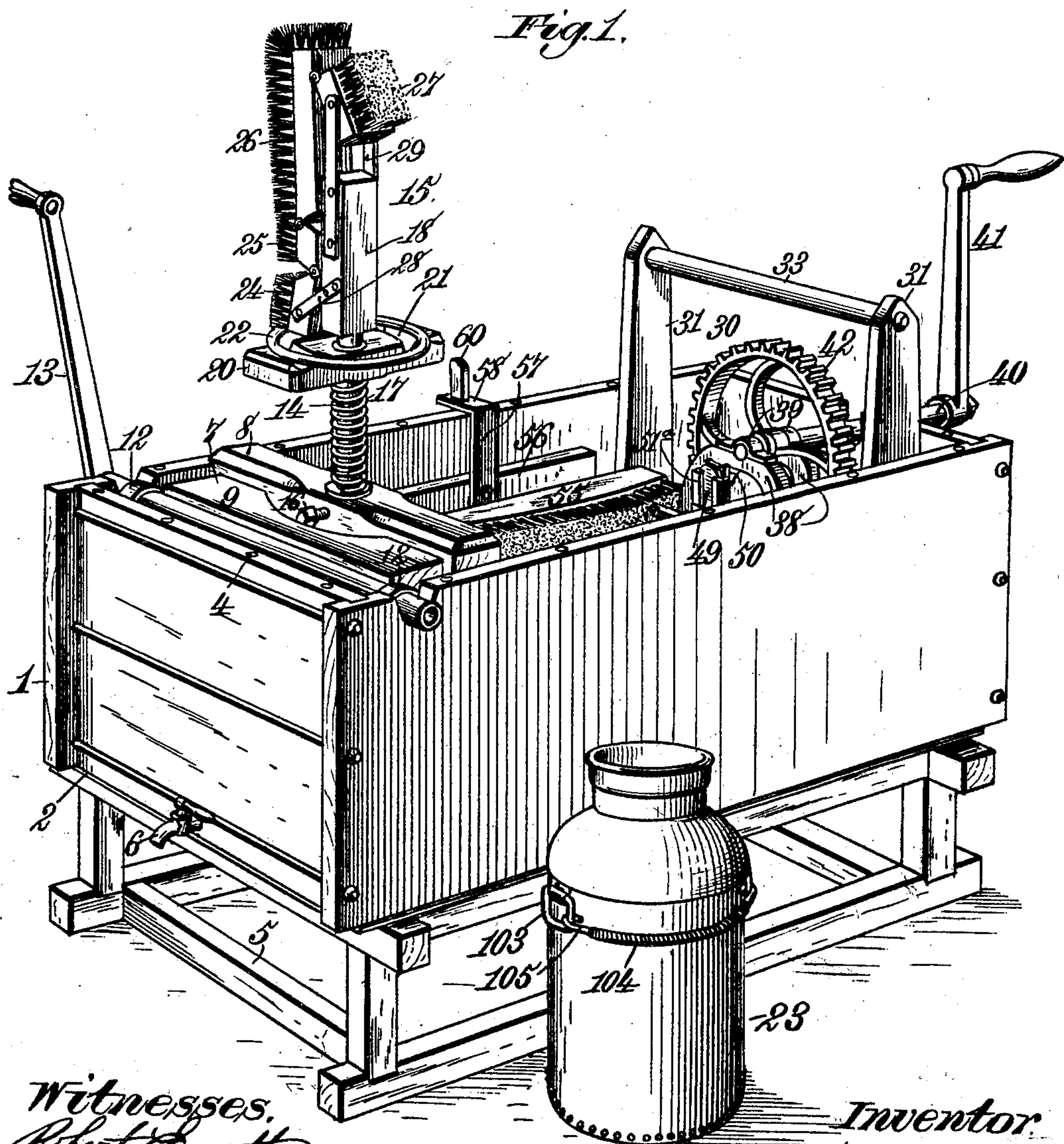
R. NELSON.

APPARATUS FOR SCRUBBING MILK CANS.

(Application filed Mar. 21, 1901.)

(No Model.)

4 Sheets—Sheet 1.



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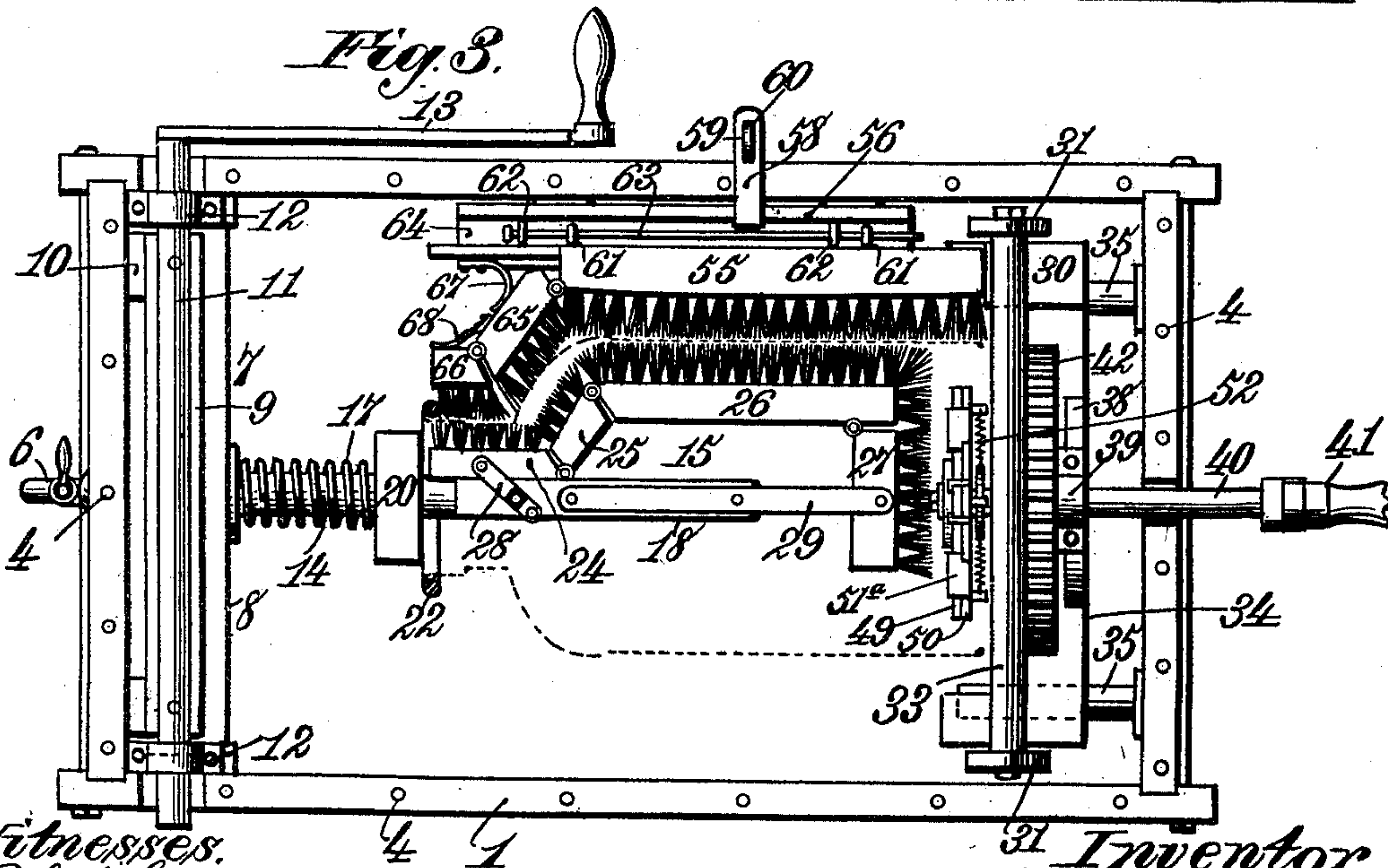
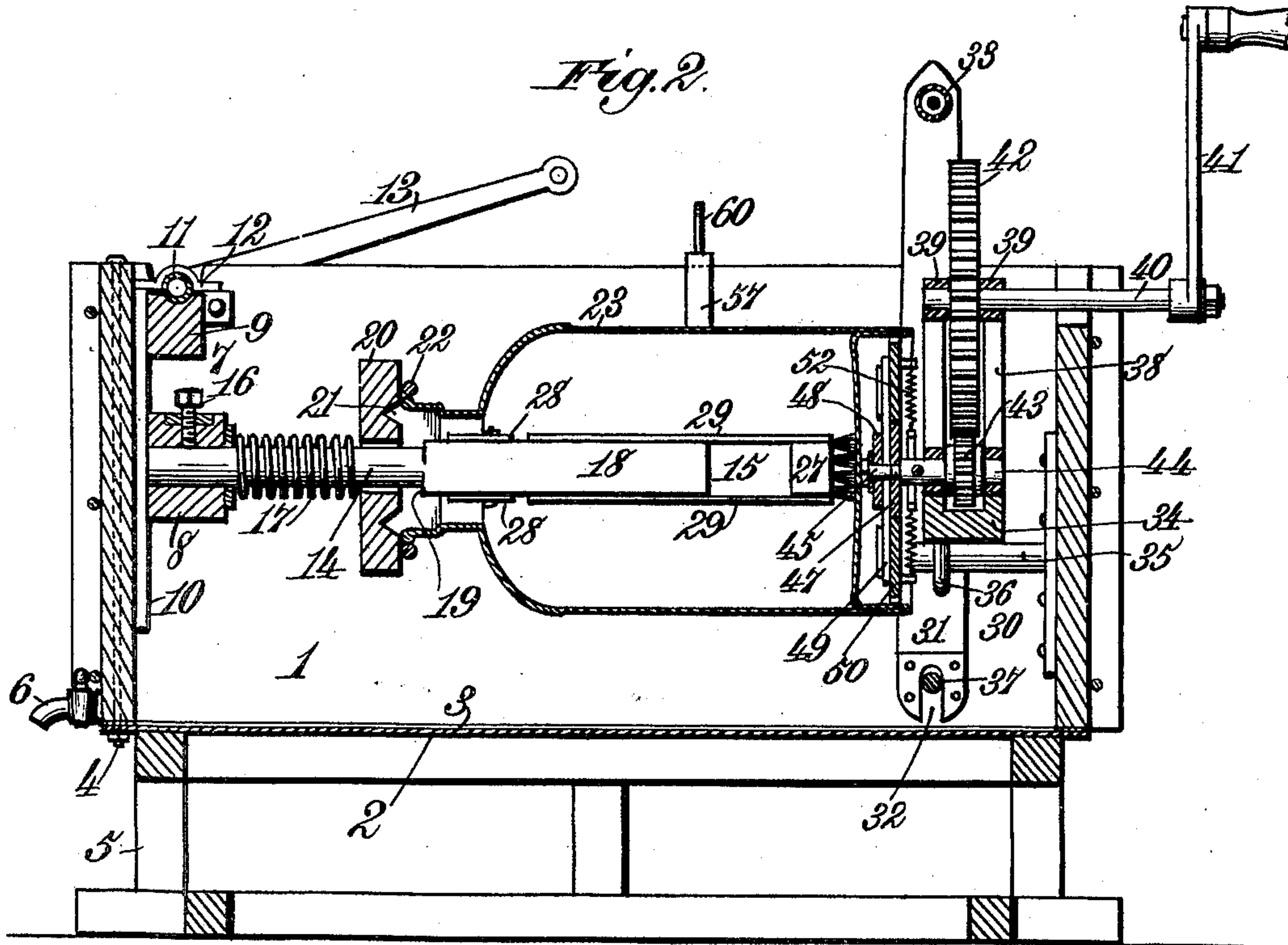
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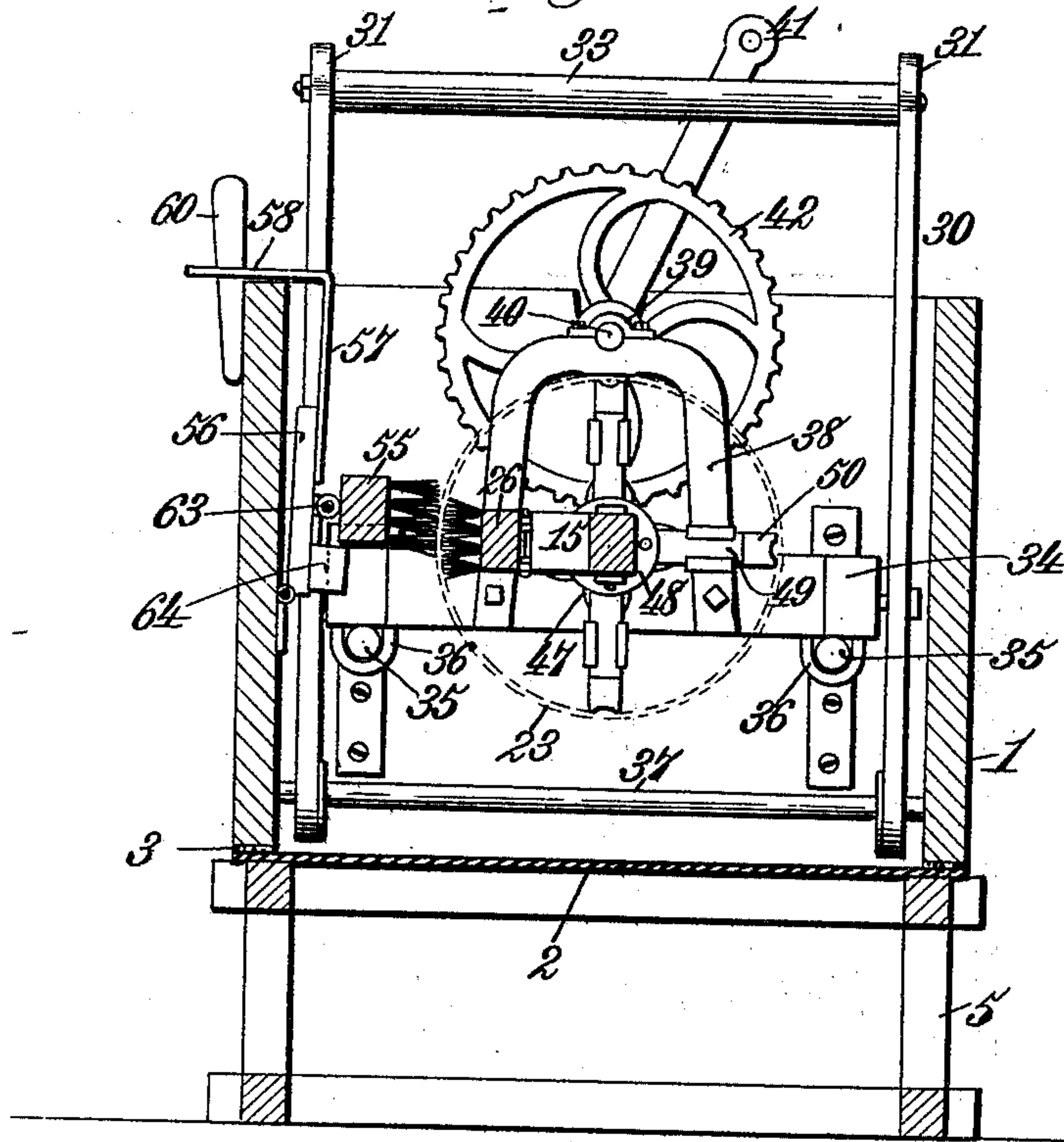
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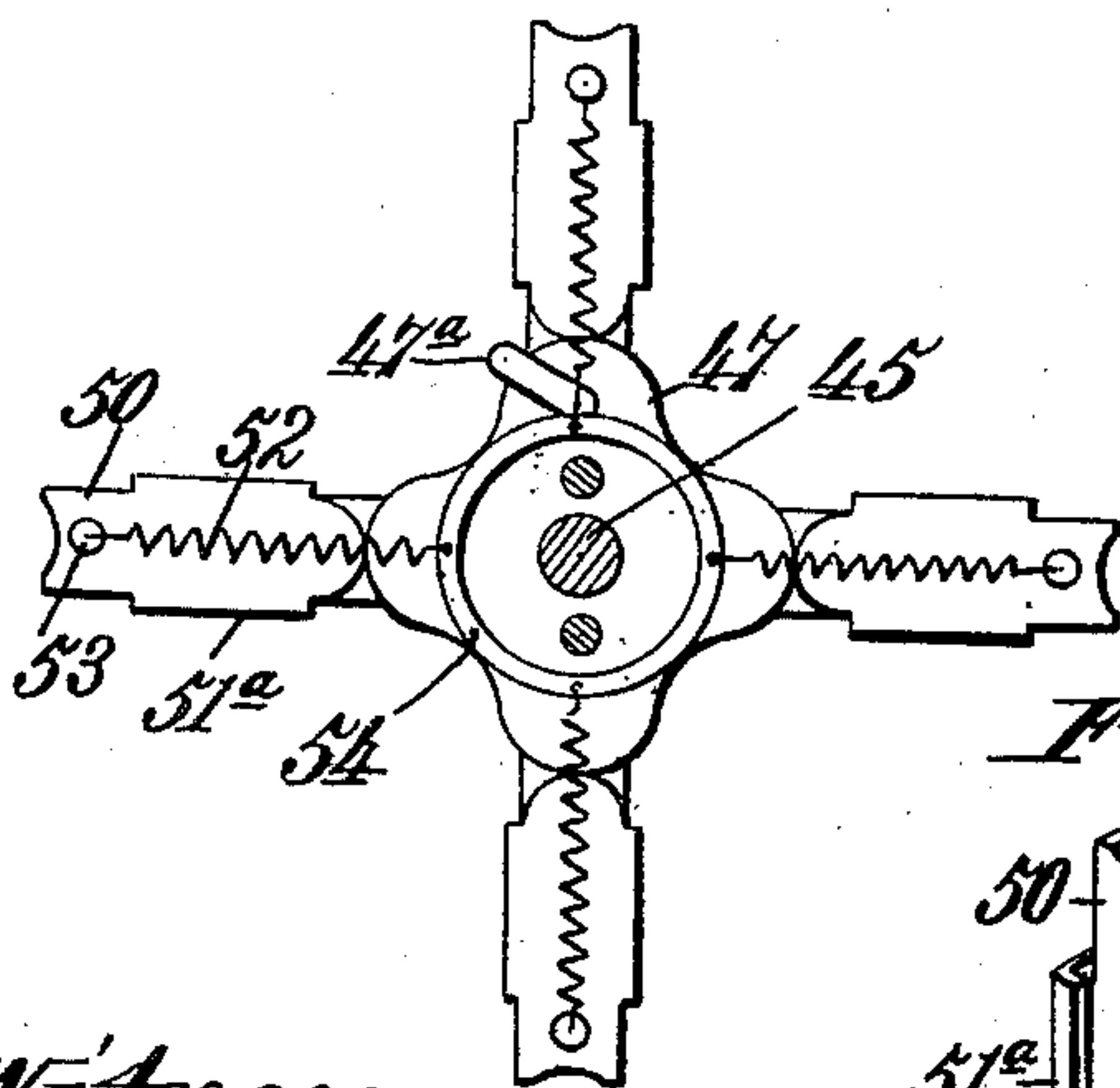
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*Fig. 4.*

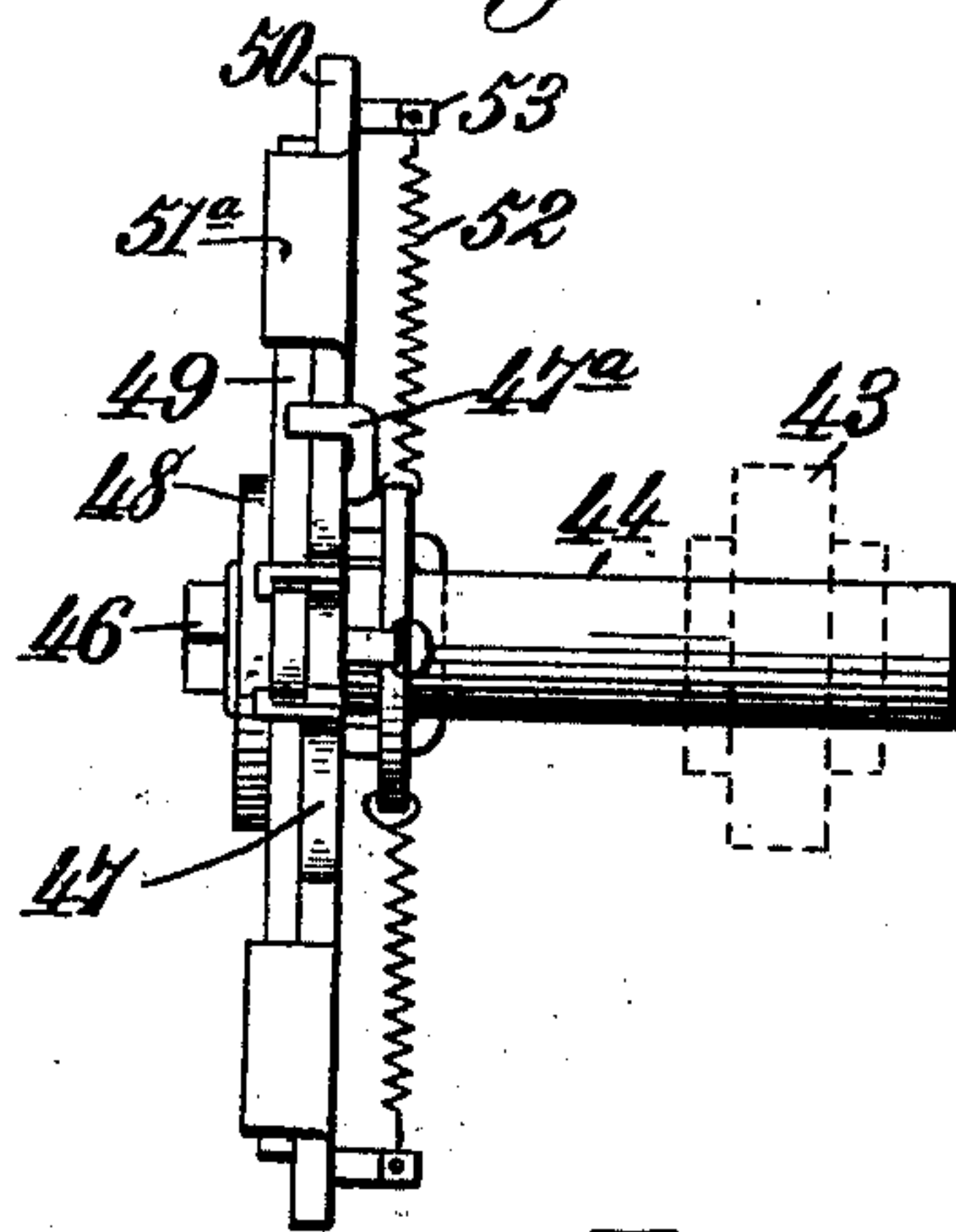


*Fig. 5.*

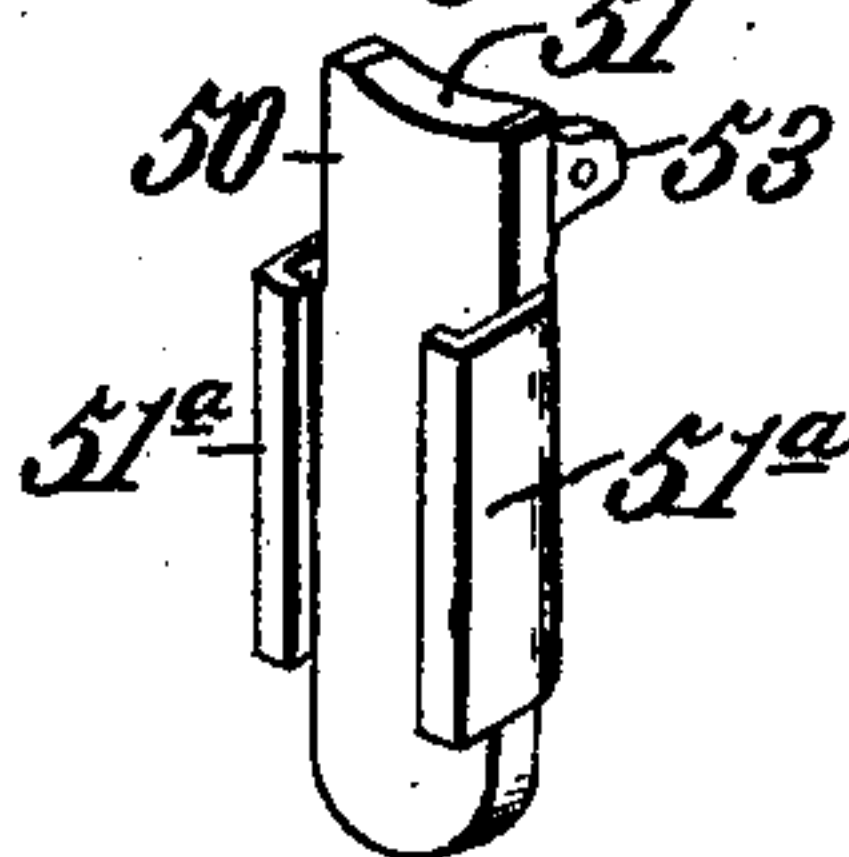


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*Fig. 6.*



*Fig. 7.*



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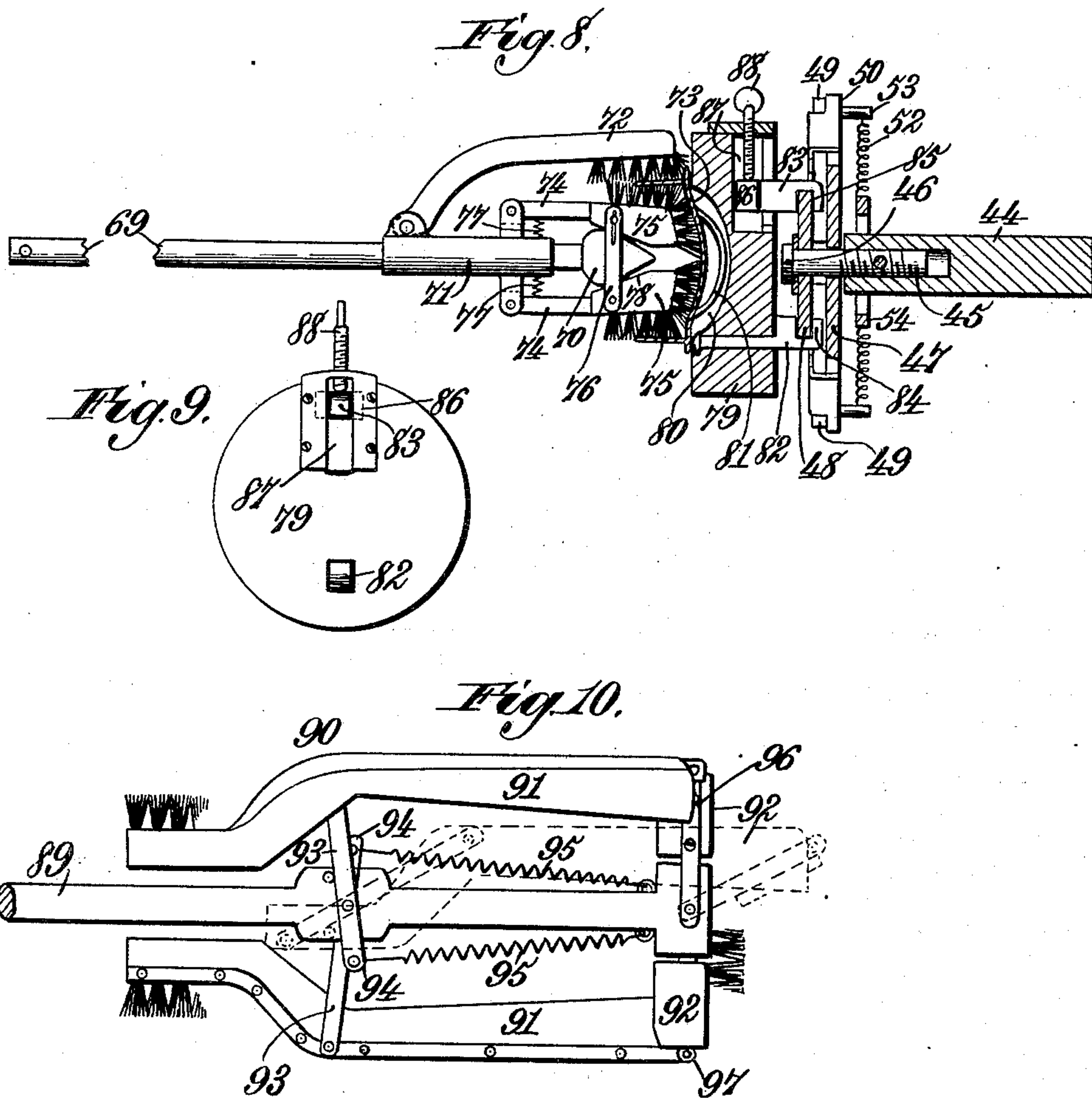
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4 Sheets—Sheet 4.



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# UNITED STATES PATENT OFFICE.

RICHARD NELSON, OF MONKTON, MARYLAND.

## APPARATUS FOR SCRUBBING MILK-CANS.

SPECIFICATION forming part of Letters Patent No. 695,828, dated March 18, 1902.

Application filed March 21, 1901. Serial No. 52,227. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD NELSON, a citizen of the United States, residing at Monkton, in the county of Baltimore and State of Maryland, have invented new and useful Improvements in Apparatus for Scrubbing Milk-Cans, of which the following is a specification.

My invention relates to apparatus for washing and scrubbing milk-cans and the like, the object of the same being to provide novel means whereby a milk-can or other device may be rotated in a tank containing washing or cleansing liquid and simultaneously scrubbed on both its interior and exterior surfaces.

Other objects of the invention will hereinafter appear.

The invention consists in certain features and details of construction and combinations of parts, which will be hereinafter more fully described and claimed.

In the drawings forming part of this specification, Figure 1 is a perspective view illustrative of my invention, showing the device in position to receive a milk-can. Fig. 2 is a vertical central longitudinal section of the same. Fig. 3 is a plan view. Fig. 4 is a cross-section on the line 4-4 of Fig. 2. Fig. 5 is a front elevation of the chuck for the lower end of the can. Fig. 6 is an edge view of the same. Fig. 7 is a detail perspective view of one of the movable locking-dogs forming part of the chuck. Fig. 8 is a sectional elevation showing the construction and arrangement of the device for washing and scrubbing the can-tops. Fig. 9 is a rear elevation of the block in which the can-top is secured. Fig. 10 is a detail view showing a modified form of collapsible brush for the interior of the can.

Like reference-numerals indicate like parts in the different views.

In carrying out my invention, I employ a tank 1, preferably rectangular in shape, having a sheet-metal bottom 2, covered with a layer 3 of asbestos or other like material, the said bottom 2 being secured to the sides and ends of the tank by means of the tie-rods 4. The tank 1 is mounted upon a suitable framework or support 5 and has a discharge-spout or faucet 6 at one end thereof, by means of which the liquid in the tank may be drawn off when desired. The said tank may be filled

with water or other suitable cleansing material, and the same may be heated by any suitable form of heat-generator located beneath the bottom 2. The layer of asbestos on the upper side of the bottom 2 serves to prevent the heat from being conveyed to the wooden sides or ends of which the tank 1 is made.

Located at one end of the tank 1 is a brush-carrying frame 7, the same consisting of the beams 8 and 9, secured together on their rear sides by the vertical straps 10 and having rigidly connected to the upper edge of the beam 9 a shaft 11. Said shaft 11 is parallel to the ends of the tank 1 and is mounted in bearings in the notches 12 in the sides of said tank. One end of said shaft projects beyond the side of the tank and is provided with a crank or handle 13, by means of which the shaft 11 may be turned and the brush-carrying frame 7 moved into and out of the tank. Secured to the center of the beam 8 of the frame 7 and extending outwardly therefrom at right angles to said frame is a rod 14, constituting the stem of a collapsible brush 15. The said rod 14 is removably secured within the frame 7 by means of a set-screw 16. The rod 14 has a cylindrical portion adjacent to the beam 8, which is surrounded by a stiff coil-spring 17, and an enlarged rectangular portion 18 at its free end, forming a shoulder 19. Loosely mounted on the cylindrical portion of the rod 14 is what may be termed a "chuck" 20, the same consisting of a block having V-shaped grooves 21 therein concentric with the rod 14. Also secured to said block 20, outside the grooves 21, is an annular metal band or ring 22, the said ring and the said grooves being designed to receive the neck of a milk-can 23, as will readily appear. The block 20 is normally urged outwardly against the shoulder 19 by means of the spring 17; but of course it may be forced rearwardly against the action of said spring. When the neck of the can is seated in the grooves 21 or is located in frictional contact with the ring 22 and pressure is applied to the bottom of said can, the spring 17 will act to retain the block 20 in frictional engagement with said can. The collapsible brush 15 is made up of the sections 24, 25, 26, and 27, pivoted to each other, as shown. The end section 24 is pivoted to the rectangular portion 18 of the rod 14, which consti-



tutes the stem of the brush, by means of the links 28, and the opposite end section 27 is pivoted adjacent to its central portion to the parallel arms 29, secured to the side edges of the rectangular portion 18 of the brush-stem, and extends outwardly beyond the end thereof. The inner corner of the section 24 is pivoted to the adjacent inner corner of the section 25, whereas the outer corner of the section 25 is pivoted to the adjacent outer corner of the section 26. The section 27 is pivoted at its inner corner to the adjacent portion of the section 26. By this construction it will be seen that the brush 25 may be collapsed, as shown in Fig. 1 of the drawings, to enable the same to enter the contracted neck of the can 23 to be cleaned, and expanded, as shown in Fig. 3 of the drawings, so that the bristles will come in contact with the inner surface of the can at all points. When the brush is collapsed, the section 27 is turned so that it assumes a position substantially in line with the stem of the brush, and the sections 25 and 26 are substantially parallel thereto and in comparatively close relation therewith. When the brush is in its expanded position, the section 27 thereof lies at right angles to the stem of the brush, the section 25 is diagonally arranged with respect thereto, while the section 26 is substantially parallel to the stem, but is removed to an appreciable distance therefrom. The section 27 and the end of the section 26 serve to scrub the inner surface of the bottom of the can. The section 24 serves to scrub the inner surface of the neck of the can, whereas the diagonally-arranged section 25 serves to scrub the inner surface of the tapering portion of the can between the neck and the cylindrical sides thereof.

In the tank 1, at the end thereof opposite the brush-carrying frame 7, is a frame 30, made up of the side bars 31, having slots 32 in their lower ends, the connecting rod or bar 33, constituting a handle at their upper ends, and a beam 34, pivoted to the side bars 31 at a point intermediate their ends and capable of a rocking movement thereon. The frame 30 is supported upon the trunnions 35, secured to one end of the tank 1, extending inwardly and longitudinally thereof and projecting through the loops or staples 36 on the under side of the beam 34. The beam 34 rests upon the trunnions 35 and is maintained at all times at the same level thereby. The slots 32 in the side bars 31 of the frame 30 embrace a cross-bar 37, connecting the sides of the tank 1, parallel to the ends thereof. By this construction it will be seen that by grasping the handle 33 the frame 30, carrying the beam 34, may be moved back and forth, so as to cause the same to approach or recede from the end of the tank 1 on which the brush-carrying frame 7 is located. Secured to the beam 34 and extending upwardly therefrom is a bracket 38, made up of two parallel arch-shaped members and having bearings 39 for

the main drive-shaft 40. The said shaft 40 extends out through one end of the tank 1 and has an operating crank or handle 41 thereon. Secured to the shaft 40 and located between the two parallel members of the arch-shaped bracket 38 is a driving-gear 42, which meshes with a pinion 43, secured to a counter-shaft 44, mounted in bearings on the beam 34. Said counter-shaft 44 is hollow and has threaded into it a bolt 45, having a head 46 thereon and carrying a cam 47. The said bolt 45 and the cam 47 thereon are keyed or otherwise firmly locked to the counter-shaft 44, so that they rotate therewith. Outside the cam 47 and loosely mounted on the bolt 45 is a circular disk or plate 48, having a plurality of radiating arms 49 secured to the rear side thereof and projecting outwardly therefrom. Slidingly mounted on the arms 49 and lying in the same plane with the cam 47 are the locking-dogs 50, the inner ends of said dogs being adapted to be engaged by the cam 47. The said dogs consist of metal rods or bars having notches or recesses 51 in their outer ends adapting them to engage the rivets in the base-flange of the can 23 and provided with flanged plates or yokes 51<sup>a</sup>, which embrace the arms 49 of the disk 48, so that they are held in contact with said arms, but are capable of longitudinal movement thereon. When the dogs 50 are in their normal or inoperative positions, the outer ends thereof do not project beyond the outer ends of the arms 49, the same being maintained in this position by means of the springs 52, which are connected to lugs or projections 53 on the rear sides of said dogs and to a central ring or annulus 54, surrounding the shaft 44. The inner ends of the dogs 50 are rounded, for a purpose which will presently appear. Now I have shown in the drawings the disk 48 as being provided with four radiating arms 49. It is obvious, however, that a greater or less number of these arms may be employed. The dogs 50, however, correspond in number with the arms 49 on the disk 48, and the cam 47 has projections thereon corresponding in number with the dogs 50. In the present instance four engaging portions have been shown on the cam 47. As the disk 48 is loose on the bolt 45 and as the cam 47 is fixed to said bolt, rotary movement of the cam 47 may be imparted independently of the disk 48. When this is done, the engaging or projecting portions of the cam 47 will be brought into contact with the inner ends of the dogs 50 and said dogs will be thrown outwardly. To prevent the cam 47 from turning after the dogs 50 have been thrown outwardly, a lock 47<sup>a</sup> is provided, the same consisting of a curved rod pivoted to the cam 47 and adapted when said cam is turned in one direction or the other to engage one of the fixed arms 49 on the disk 48—that is to say, when the cam 47 has been turned independently of the disk 48, so as to bring the highest points of the projections on said cam beneath or behind the



inner ends of the dogs 50, further independent movement of the cam 47 is prevented by the engagement of the lock 47<sup>a</sup> with the adjacent arm 49 on the disk 48. After the dogs 50 have been thrown outwardly into locking position it is necessary in order to restore the same to their normal positions to reverse the direction of movement of the main drive-shaft 40. When the can 23 is to be connected up with the parts just described, which constitute a chuck, the neck thereof is first introduced into the grooves 21 or into frictional contact with the ring 22 and the same thrown down into horizontal position, as shown in Fig. 2 of the drawings. The frame 30 is then moved toward the can 23 by applying pressure to the cross-rod 33, which constitutes the handle for said frame. In so doing the disk 48 and the dogs 50 are brought within the recess in the bottom of the can 23, so that when the said dogs 50 are thrown outwardly in the manner just described the outer engaging ends thereof will be brought into locking contact with the base-flange of said can, the rivets therein seating themselves in the notches or recesses 51. When thus locked in place, the can may be rotated by turning the main drive-shaft 40 through the action of the crank or handle 41. For scrubbing the exterior surface of the can I provide a brush 55, the same being mounted upon a base 56, having a hinged connection at its lower end to one side of the tank 1, so that the brush 55 may be adjusted toward or away from the exterior surface of the can operated upon. The base 56 has secured to it and extending upwardly therefrom a strap 57, provided with a flange 58, which extends outwardly over the top edge of the side of the tank to which said base 56 is pivoted. The flange 58 is provided with an elongated slot 59, into which a wedge-shaped key 60 may be introduced for the purpose of adjusting the base 56 and the brush 55, carried thereby, in one direction or the other—that is to say, by introducing the key 60 into the slot 59 on one side of the side of the tank or the other said brush 55 may be adjusted in one direction or the other. The brush 55 has a sliding connection with the base 56, so that it is capable of a small degree of longitudinal movement in the tank 1. The means by which this sliding connection is produced consists of eyes or staples 61 on the rear side of the brush 55, similar eyes or staples 62 on the base 56, and a rod 63, extending through said eyes 61 and 62. By this it will be seen by reference particularly to Figs. 3 and 4 of the drawings that the brush 55 may be moved longitudinally on its base 56. Said brush is supported independently of the loose connection just described by means of a block or cleat 64, which projects from the base 56. To conform to the outer surface of the can 23, upon which the brush 55 operates, and to compensate for irregularities in and differences in shape of the cans, the brush 55 is provided at the end thereof adjacent to the neck

of the can being operated upon with two pivoted sections 65 66, which are normally urged outwardly or toward the can by means of the springs 67 68. Longitudinal movement may be imparted to the brush 55 by means of the frame 30, the said frame abutting against one end of said brush.

The construction heretofore described is that which is employed for the scrubbing and cleansing of the cans themselves. When it is desired to scrub and clean the can-tops, the brushes 15 and 55 are dispensed with, the former being removed by disconnecting the stem 14 thereof from the beam 8 of the brush-carrying frame 7. This may be readily done by loosening the set-screw 16 and slipping the stem 14 out of the socket in which it fits. In lieu of the brush 15 and the parts cooperating therewith I employ the devices illustrated in Figs. 8 and 9 of the drawings. The rod 69, which constitutes the stem of the brushes for scrubbing the covers, is introduced into the socket in the beam 8 of the frame 7, which was formerly occupied by the stem 14 of the brush 15, and is locked in place against movement by means of the set-screw 16. The said rod 69 has a wedge-shaped head 70 upon its free end and has keyed thereto, so that it is capable of longitudinal movement thereon, a sleeve 71. Pivoted to said sleeve is a brush 72 for scrubbing the exterior of the can-top 73, and also pivoted thereto are the arms 74, which carry the brushes 75 for cleaning the inner surface of the can-top 73. The arms 74 are connected together, so that they are capable of expansion and contraction, by means of the slotted link 76 and are normally urged inwardly by means of the springs 77, which connect said arms with the sleeve 71. The said arms are provided adjacent to their free ends with the inclined surfaces 78, which are adapted to engage the wedge-shaped head 70 of the rod 69, so that when pressure is applied to the brushes 75 by an inward movement of the can-top 73 toward the outer fixed end of the rod 69 the inclined surfaces 78 will be brought into engagement with the inclined surfaces of the wedge-shaped head 70, and the said brushes 75 will be spread or forced outwardly into contact with the inner surface of the flange or collar of the can-top 73. Pressure upon the outer surface of said can-top may be applied by hand by grasping the brush 72 in an obvious manner.

To connect the can-top 73 with the rotary shaft 44, I employ a block 79, which is dished out on its front face to receive the curved upper surface of the can-top 73 and has an elongated channel 80 therein for receiving the handle 81 of said can-top. When said handle 81 fits within the channel or groove 80 and the block 79 is rotated, said block carries with it the can-top 73 by reason of the engagement of the handle 81 with the side walls of said channel. The block 79 is locked to the disk 48 on the end of the bolt 45 by means of a clamp consisting of a fixed jaw 82



and a movable jaw 83, both carried by the block 79. The jaw 82 consists of a bar which extends through the block 79, projects from the rear side thereof, and has two inwardly-extending lugs or projections 84, between which the disk 48 fits. The jaw 83 also projects from the rear face of the block 79 and has a groove 85 therein which receives the edge of the disk 48 opposite the lugs 84 on the fixed jaw 82. The said jaw 83 is provided with a head 86, which fits and is movable in a socket 87 in the block 79 and is adjustable back and forth to bring the same into locking engagement with the disk 48 by means of a set-screw 88. When the block 79 is locked to the disk 48 and the latter becomes locked to the shaft 44 by the engagement of the lock 47<sup>a</sup> with one of the arms 49, a turning movement of the shaft 44 through the operation of the main drive-shaft 40 will cause a corresponding turning movement to be imparted to the can-top 73, which will cause the same to rotate in contact with the brushes 72 and 75, with the result that the exterior and interior surfaces of said can-top are thoroughly scrubbed. By moving the frame 30 toward the brushes 75 the latter are spread outwardly by the means above described and brought into close contact with the inner surface of said can-top.

The brush 15 (illustrated most clearly in Fig. 3 of the drawings) has been shown as projecting from one side only of the stem 14 thereof. This brush can therefore engage but one side of the interior surface of the can 23 at a time. In Fig. 10 of the drawings I have illustrated a modified form of collapsible brush which is in reality a double brush, the same consisting of a stem 89, adapted to be inserted into the socket in the beam 8 of the brush-carrying frame 7 and locked in place by means of the set-screw 16. Connected with the stem 89 on each side thereof is a brush 90, made up of the sections 91 and 92. The section 91 is intended for brushing the interior surface of the sides and neck of the can and is shaped to conform to the shape of the can to be cleaned. The section 92, on the other hand, is intended for brushing the interior surface of the bottom of the can and has a flat engaging portion. The section 91 is pivoted to the stem 89 by means of a link 93, the end thereof opposite that which connects with said section 91 projecting beyond the stem 89, as shown at 94. To this projecting end 94 is connected a coil-spring 95, the opposite end of which is attached to the stem 89, adjacent to the outer end thereof. The section 92 is pivoted to the stem 89 at the extreme outer end of the latter by means of a link 96, and the outer end of the section 92 is pivoted to the section 91, as shown at 97. The brushes 90 on opposite sides of the stem 89 are identical with each other, so that a description of one only is necessary. By this construction it will be seen that the brushes on opposite sides of the stem 89 may

be collapsed, as shown in dotted lines in Fig. 10, so that they lie in substantially the same plane with the stem 89 and can be readily introduced through the contracted neck of the can to be scrubbed. The springs 95, however, acting upon the projecting ends of the links 93, tend to return the two brushes 90 to their normal outward or expanded positions, so that when the brush as a whole is introduced into the can and the brushes relieved said springs will throw said brushes outwardly into contact with the inner surface of the can. The said brushes are shown in this position in full lines in Fig. 10.

Milk-cans as ordinarily constructed are provided on opposite sides with pivoted bails 103, as shown in Fig. 1 of the drawings, and when the can 23 is introduced into the machine for the purpose of being cleaned and scrubbed it is necessary that said bails be held down in close contact with the body of the can in order to prevent interference between the same and the brushes operating upon the exterior surface thereof. The means provided by me for retaining these bails in contact with the sides of the can consists of an elastic strap or band 104, preferably constructed of coil-spring wire, having hooks 105 on the opposite ends thereof, which are adapted to engage the bails 103, as clearly shown in Fig. 1 of the drawings. When the strap or band 104 is applied as indicated, the bails 103 are prevented from flying outwardly away from the body of the can, and thereby interfering with the working parts of the scrubbing-machine.

From the foregoing description it is thought that the operation of my device will be readily understood. Briefly stated, however, it is as follows: When it is desired to clean and scrub a milk-can, the tank 1 is filled to the desired height with water or other cleansing liquid and, if necessary, heated. The strap 104 is then applied to the bails 103 of the can, and the brush-carrying frame 7 is turned upon its pivot to the position shown in Fig. 1 of the drawings. This turning movement of the brush-carrying frame may be effected by applying power to the crank or handle 13 in the proper direction. The brush 15 is now collapsed, and the can 23 is placed in inverted position upon the block 20, with the edge of the neck thereof fitting within the V-shaped grooves 21 or within the ring 22. In doing this the brush 15 becomes seated within the can 23, and the same is then expanded to the position shown in Fig. 3 of the drawings. With the can 23 on the block 20 the frame 7 is lowered to the position shown in Fig. 2 of the drawings by turning the crank or handle 13. When in this position, the rear side of said frame abuts against the inner surface of the adjacent end of the tank 1 and the stem 14 of the brush 15 lies in a horizontal position. The frame 30 is now grasped by the rod or handle 33 thereof and thrown forwardly toward the can 23, so that the chuck carried thereby will be introduced into the recess in



the bottom of the can 23, with the head 46 of the bolt 45 in frictional engagement with said bottom. By turning the crank 41 and rotating the shaft 40, the gear 42 thereon, the pinion 43, and the counter-shaft 44 the cam 47 is turned so that the peripheral projections thereon are brought into contact with the inner ends of the dogs 50 and the latter are thrown outwardly, so that they are brought into frictional engagement with the base-flange of the can 23, the notches 51 in said dogs straddling or embracing the rivets in said base-flange. The can 23 is by this means locked to the driving mechanism of the device, and by turning the crank 41 the same may be rapidly rotated. As the brush 15 is in contact with the inner surface of said can and as the brush 55 is in contact with the outer surface thereof, this rotation of the can will cause a thorough and complete scrubbing of the same in the cleansing material in the tank, which will result in the complete removal of all dirt and foreign matter adhering thereto. It will be understood, of course, that as the block 20, constituting the chuck for the upper end of the can, is capable of longitudinal movement on the rod or the brush-stem 14 against the action of the spring 17 by moving the frame 30 toward or from said stem 14 the can 23 may be moved so as to vary the position of the same with respect to the brush 15, so as to cause the inner surface of the bottom thereof to be brought into contact with the section 27 of said brush to a greater or less degree or to cause the section 25 to be brought into closer or looser contact with that portion of the can between the neck and the cylindrical sides of the body. As the frame 30 is moved in one direction or the other it will be maintained in the same horizontal plane as it is supported upon the fixed trunnions 35 in the tank. It will also move with it the brush 55, whose adjacent end lies in contact with said frame. When the can 23 has been sufficiently scrubbed, a reverse movement of the drive-shaft 40 will unlock the chuck from its engagement with the base-flange of said can by turning the cam 47 so as to throw the projections thereon out of engagement with the inner ends of the dogs 50. The springs 52 will then act to retract said dogs and move the same inwardly away from said base-flange. The frame 30, carrying the chuck, can then be moved away from the can 23, and said can may be moved upwardly by turning the brush-carrying frame 7 to the position shown in Fig. 1 of the drawings. The can can then be removed by first collapsing the brush 15 and slipping the same off of its seat on the block 20.

To wash and scrub a can-top, a similar operation to that just described will be performed, except that the parts illustrated in Figs. 8 and 9 of the drawings will be used instead of those illustrated in the preceding figures.

Where the term "can" is used in the fol-

lowing claims, I intend the same to include, of course, can-tops and other analogous devices.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a scrubbing apparatus, the combination with a tank and a brush for the inner surface of the article to be scrubbed, of a rocking frame fulcrumed on said tank and movable toward and away from said brush, a rotary shaft carried by said frame, and means for securing the article to be scrubbed to said shaft.

2. In a scrubbing apparatus, the combination with a tank, of a frame pivoted thereto, a brush whose stem is secured to said frame, a second frame movable toward and away from said brush, a rotary shaft carried by the latter frame, and means for securing the article to be scrubbed to said shaft.

3. In a scrubbing apparatus, the combination with a tank and a brush for the inner surface of the article to be scrubbed, of a rotatable chuck for gripping the article to be scrubbed, and a rocking frame fulcrumed on said tank, carrying said chuck and movable toward and away from said brush.

4. In an apparatus for scrubbing milk-cans, the combination with a tank, of a stationary brush for the interior of the can, a laterally-adjustable and longitudinally-movable brush for the exterior of the can, and means for rotating said can in contact with said brushes.

5. In an apparatus for scrubbing milk-cans, the combination with a tank, of a collapsible brush adapted to be introduced into the can and afterward expanded, a laterally-adjustable and longitudinally-movable brush for the exterior of the can, and means for rotating said can in contact with said brushes.

6. In an apparatus for scrubbing milk-cans, the combination with a tank, of a brush-carrying frame pivoted thereto, a brush adapted to be introduced into the can, the stem of said brush being secured to said frame, a block constituting a chuck for the neck of the can loosely mounted on the stem of said brush, a spring acting upon the rear side of said block, a rotatable bodily-movable chuck for the base of the can, and means for locking the latter chuck to said can.

7. In an apparatus for scrubbing milk-cans, the combination with a tank, of a brush-carrying frame pivoted thereto, a collapsible brush adapted to be introduced into the can and afterward expanded, a block constituting a chuck for the neck of the can loosely mounted on the stem of said brush and having a V-shaped channel therein for receiving said neck, a spring acting upon the rear side of said block, a bodily-movable rotatable chuck for the base of the can, and means for locking said can to the latter chuck.

8. In an apparatus for scrubbing milk-cans, the combination with a tank, of a brush-carrying frame pivoted to said tank and adapted



when in one position, to engage one end of said tank, means for turning said frame, a brush adapted to be introduced into the can, the stem of said brush being secured to said frame, a block constituting a chuck for the neck of said can having V-shaped grooves or channels therein, and a metallic ring surrounding said groove, a coil-spring surrounding the stem of said brush and acting upon the rear side of said block, a bodily-movable rotatable chuck for the base of the can, and means for locking said can to the latter chuck.

9. In an apparatus for scrubbing milk-cans, the combination with a tank, of a brush adapted to be introduced into the can for scrubbing the inner surface thereof, a second brush pivoted to the side of said tank for scrubbing the outer surface of the can, means for adjusting the latter brush toward and away from the can, a rotatable chuck for the base of the can, and means for locking the can to said chuck.

10. In an apparatus for scrubbing milk-cans, the combination with a tank, of a brush adapted to be introduced into the can for scrubbing the inner surface thereof, a second brush for scrubbing the outer surface of the can, a base for the latter brush on which the same is slidingly mounted, the said base being pivoted to the side of the tank, means for adjusting the base for moving the brush carried thereby toward or away from the can, a rotatable chuck for the base of the can, and means for locking the can to the chuck.

11. In an apparatus for scrubbing milk-cans, a collapsible brush for the inner surface of the can, comprising a fixed stem, parallel arms secured to the free end of said stem and extending in line therewith, and a plurality of brush-sections, the section for the bottom of the can being pivoted at a point intermediate its ends to and between said parallel arms and projecting on opposite sides of said arms, the section for the neck of the can having a pivoted link connection with said stem and the remaining sections being pivoted to each other and pivoted respectively to the section for the bottom of the can and to that for the neck.

12. In an apparatus for scrubbing milk-cans, the combination with a brush and a rotatable longitudinally-yielding support for one end of the can, of a rotary shaft and a chuck thereon for locking the other end of said can to said shaft.

13. In an apparatus for scrubbing milk-cans, the combination with a brush and a longitudinally-movable yieldingly-mounted rotatable support for one end of the can, of a rotary shaft, and an expansible chuck carried by said shaft for locking the other end of the milk-can thereto.

14. In an apparatus for scrubbing milk-cans, the combination with a brush and a yieldingly-mounted rotatable support for one end of the can, of a frame movable toward and away from said support, a rotary shaft car-

ried by said frame, and an expansible chuck on said shaft for locking the other end of the can thereto.

15. In an apparatus for scrubbing milk-cans, the combination with a brush and a yieldingly-mounted rotatable support for one end of the can, of a frame movable toward and away from said support, a rotary shaft mounted in said frame, a plurality of radially-movable locking-dogs adapted to engage the base-flange of the can, and a cam carried by said shaft for throwing said dogs outwardly into locking engagement with said base-flange.

16. In an apparatus for scrubbing milk-cans, the combination with a brush and a yieldingly-mounted rotatable support for one end of the can, of a rotary shaft bodily movable toward and away from said support, a disk loosely connected with said shaft having a plurality of radiating arms thereon, locking-dogs for the base-flange of the can, slidingly mounted on said arms, and a cam secured to said shaft and adapted to engage the inner ends of said dogs for forcing the same outwardly into locking engagement with said flange.

17. In an apparatus for scrubbing milk-cans, the combination with a brush and a yieldingly-mounted rotatable support for one end of the can, of a rotary shaft bodily movable toward and away from said support, a disk loosely connected with said shaft having a plurality of radiating arms thereon, locking-dogs for the base-flange of the can, slidingly mounted on said arms, springs for retaining said dogs in their innermost positions, and a cam secured to said shaft and engaging the inner ends of said dogs for forcing the same outwardly into locking engagement with said flange.

18. In an apparatus for scrubbing milk-cans, the combination with a brush and a yieldingly-mounted rotatable support for one end of the can, of a rotary shaft bodily movable toward and away from said support, a disk loosely connected with said shaft having a plurality of radiating arms thereon, locking-dogs for the base-flange of the can, slidingly mounted on said arms, and having notched outer ends, a cam secured to said shaft and adapted to engage the inner ends of said dogs for forcing the same outwardly into locking engagement with said flange, a ring surrounding said shaft, and springs connecting said ring with said dogs.

19. In an apparatus for scrubbing milk-cans, the combination with a brush and a yieldingly-mounted rotatable support for one end of the can, of a rotary shaft bodily movable toward and away from said support, a disk loosely connected with said shaft having a plurality of radiating arms thereon, locking-dogs for the base-flange of the can slidingly mounted on said arms, a cam secured to said shaft having projections thereon adapted to engage the inner ends of said dogs for forcing the same outwardly into locking



engagement with said flange, and means for limiting the turning movement of said cam with respect to said dogs.

20. In an apparatus for scrubbing milk-cans, the combination with a brush and a yieldingly-mounted rotatable support for one end of the can, of a rotary shaft bodily movable toward and away from said support, a disk loosely connected with said shaft having a plurality of radiating arms thereon, locking-dogs for the base-flange of the can, slidingly mounted on said arms, a cam secured to said shaft having projections thereon adapted to engage the inner ends of said dogs for forcing the same outwardly into locking engagement with said flange, and a lock carried by said cam and adapted to engage one of said arms for limiting the turning movement of said cam with respect to said dogs.

21. In an apparatus for scrubbing milk-cans, the combination with a brush and a yieldingly-mounted rotatable support for one end of the can, of a rotary shaft bodily movable toward and away from said support, a disk loosely connected with said shaft having a plurality of radiating arms thereon, locking-dogs for the base-flange of the can, slidingly mounted on said arms, and a curved rod pivoted to said cam and projecting beyond the periphery thereof, the said rod being adapted to engage one or the other of said arms for limiting the turning movement of said cam with respect to said dogs.

22. In an apparatus for scrubbing milk-cans, the combination with a tank, a brush and a yieldingly-mounted rotatable support for one end of the can, of fixed trunnions secured to one end of said tank and projecting inwardly therefrom, a horizontally-disposed rod

connecting the sides of said tank beneath said trunnions, a frame comprising parallel side pieces having slots in their lower ends which embrace said rod, and a pivotally-mounted beam connected to said side pieces and supported upon said trunnions, a rotary shaft mounted on said beam, and an expansible chuck carried by said shaft for connecting the end of the milk-can opposite said support to said shaft.

23. In an apparatus for scrubbing milk-cans, the combination with a tank, a brush and a yieldingly-mounted rotatable support for one end of the can, of fixed trunnions secured to one end of said tank and projecting inwardly therefrom, a horizontally-disposed rod connecting the sides of said tank beneath said trunnions, a frame comprising parallel side pieces having slots in their lower ends which embrace said rod, and a pivotally-mounted beam connected to said side pieces and supported upon said trunnions, a rotary shaft mounted on said beam, a bolt secured to said shaft, in line therewith, a disk loosely mounted on said bolt having radiating arms thereon, locking-dogs slidingly mounted on said arms, and a cam secured to said shaft and adapted to engage the inner ends of the said dogs for forcing the same outwardly into locking engagement with the base-flange of the can.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

RICHARD NELSON.

Witnesses:

JAMES L. NORRIS,  
GEO. W. REA.