H. L. THOMPSON.

DEVICE FOR APPLYING LIQUID COATINGS TO ELONGATED BODIES.

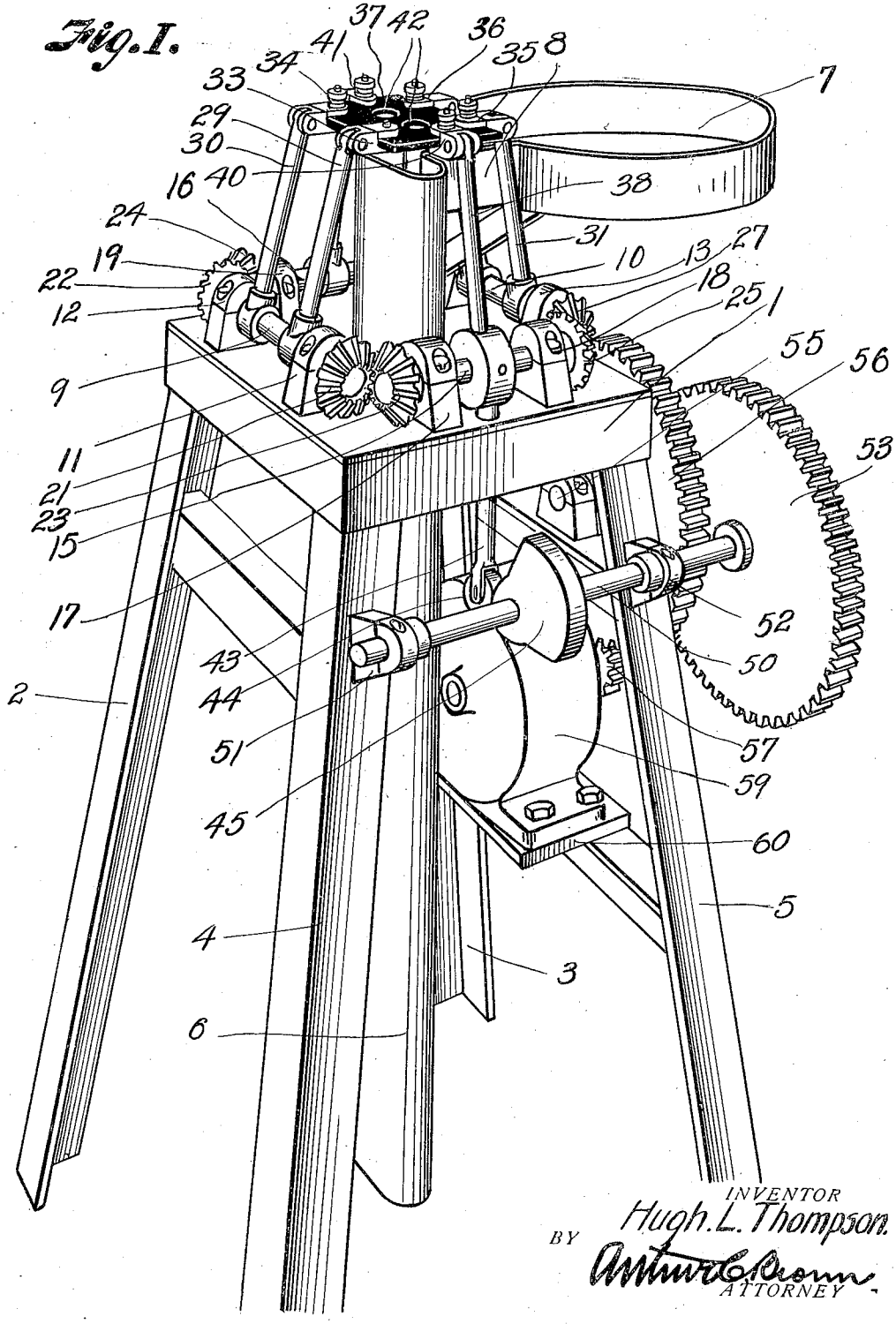
APPLICATION FILED JAN. 19, 1920.

1,346,726.

Patented July 13, 1920.

3 SHEETS—SHEET 1.

Fig. 1.




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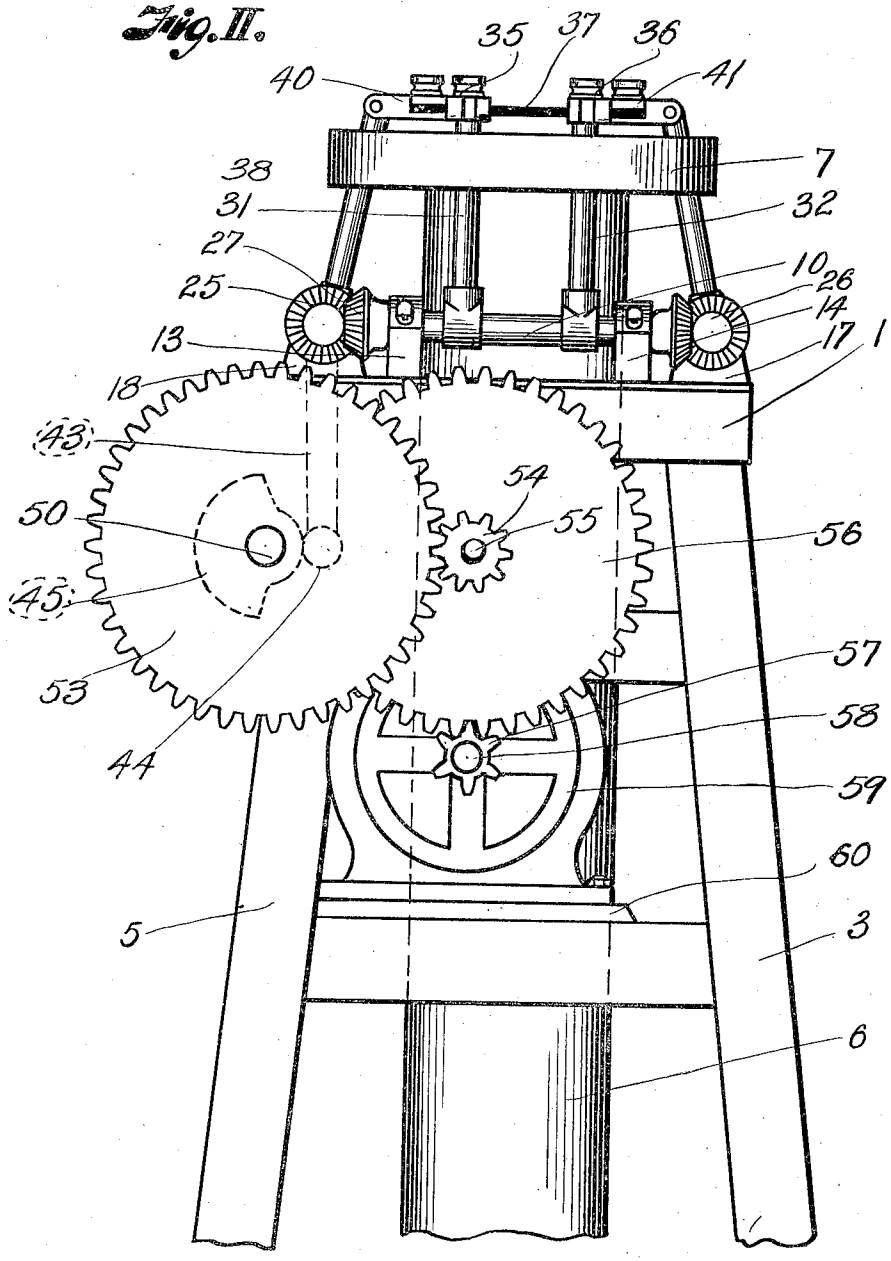
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3 SHEETS—SHEET 2.

Fig. II.




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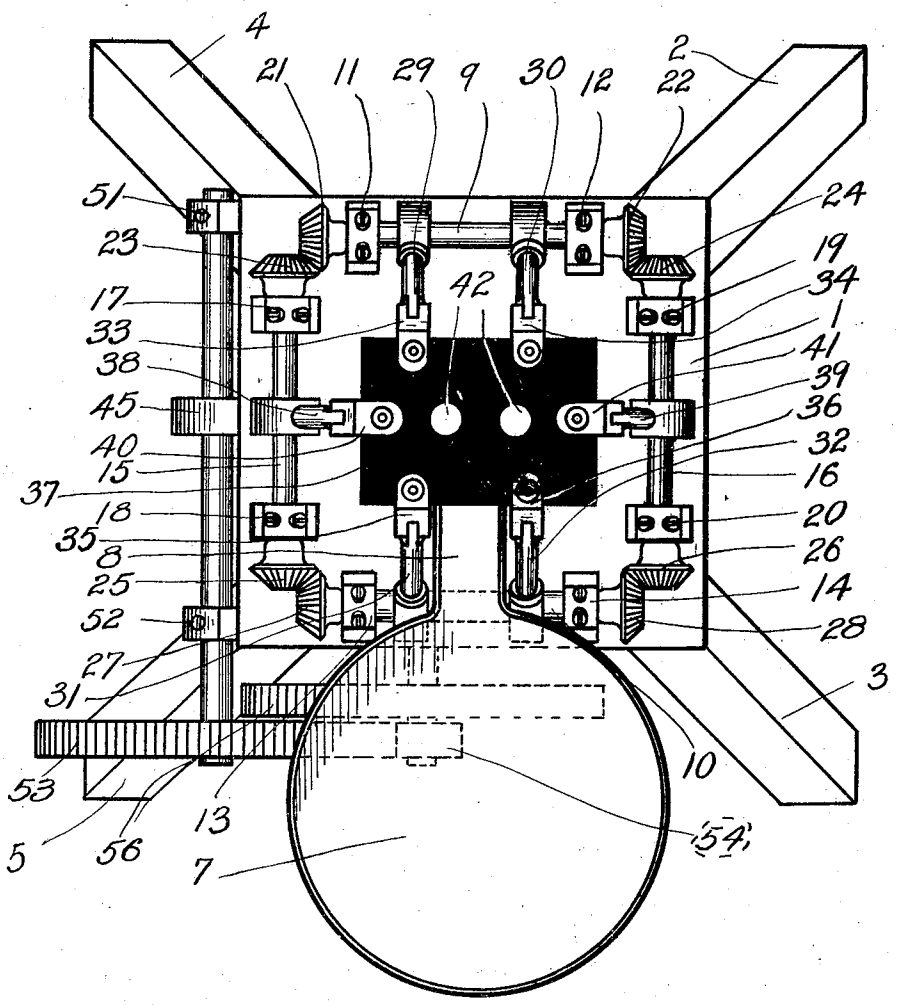
DEVICE FOR APPLYING LIQUID COATINGS TO ELONGATED BODIES.

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3 SHEETS—SHEET 3.

*Fig. III.*




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# UNITED STATES PATENT OFFICE.

HUGH L. THOMPSON, OF KANSAS CITY, MISSOURI.

## DEVICE FOR APPLYING LIQUID COATINGS TO ELONGATED BODIES.

1,346,726. Specification of Letters Patent. Patented July 13, 1920.

Application filed January 19, 1920. Serial No. 352,325.

*To all whom it may concern:*

Be it known that I, HUGH L. THOMPSON, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Devices for Applying Liquid Coatings to Elongated Bodies; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to a device for applying liquid coatings to elongated bodies and it is particularly applicable for use in applying paint to rods, bars, broom handles and the like, the specific construction shown in the drawings being designed for applying paint to broom handles by first dipping the handles in a reservoir or dip tank and then removing the surplus paint so as to leave a smooth, polished or glossy surface.

I have also provided means whereby the bar or broom handle, as the case may be, will be unimpededly introduced into the dipping tank so that the coating of paint or other material may be permitted to adhere thereto, the means being effective, however, to embrace the bar or broom handle during its withdrawal so that the surplus coating material will be removed therefrom and smooth the surface, which action generally results in a high polish or luster.

Broom handles have been forced through a tightly fitting opening preparatory to inserting them into the coating material prior to my invention but so much power has been required to force the handles therethrough that the operator frequently needed to utilize both hands for a single handle, whereas with my invention, the output of the machine can be doubled because no appreciable amount of pressure need be exerted to force the handle through the opening into the tank, and in removing the handles, the coating sufficiently lubricates them to permit their easy withdrawal.

I have found that in devices of this kind an expansible and contractible web with one or more holes of approximately the diameter of the bar or handle to be treated, admirably serves as a surplus coating remover and smoother. The web or sheet may consist of rubber with the requisite number of holes therein to take care of more than one handle at a single operation. The holes will generally be two in number so that a broom handle can be grasped in each hand and introduced through the holes into the paint. Mechanisms are provided for alternately expanding and contracting the web, the expansion being effective in enlarging the holes so that the handles of the brooms will freely slide therethrough into the dipping tank to have the paint applied thereto, and the contraction results in causing the edges of the holes to embrace the handles tight enough to remove surplus paint and smooth the surface of the coating. The expansibility and contractibility of the web to enlarge and decrease the diameter of the holes is an important part of the invention because if the holes were of fixed diameters, the forcing of the handles or bars through them so that the handles or bars can be inserted into the tank would set up so much friction that the edges of the holes would soon become torn or worn. According to the present machine, however, the bars or handles do not touch the edges of the holes with any appreciable amount of friction so there is no wear on account of the dry edge of the handle or bar rubbing against the edge of the hole. The embracing edges of the holes will not become so easily worn upon withdrawal of the handles or bars from the dipping tank because the coating or paint acts as a lubricant. Therefore, the coating remover will last a longer time according to the present invention than would be possible with machines heretofore constructed. The holes actually serve as embracing jaws and while I have shown the web as of a single piece of sheet because such a construction has its mechanical advantages, I do not desire to be limited to the particular form illustrated.

In the drawings,

Figure I is a perspective view of a liquid coating applying machine constructed in accordance with my invention.

Fig. II is a side elevational view thereof, and

Fig. III is a top plan view of the same.

The frame for the device consists of a platform 1, supported upon standards 2, 3, 4 and 5. The platform or base 1 carries a vertical, elongated dip tank or reservoir 6,

which is adapted to contain a coating material, such as liquid paint or the like and near the upper end of the reservoir or tank 6 is an overflow receptacle or tank 7, communicating therewith through a lateral neck 8. The neck is below the upper edge of the tank 6 so that when the level of the material in the tank 6 is raised on account of displacement caused by introducing a broom handle or other body into the tank, the overflow will be received in the tank 7. Therefore, it is possible to maintain a substantially uniform level in the tank 6, it being also possible to maintain the tank practically full at all times so that the handle, bar or other body may be entirely coated with the paint or other material.

Supported about the tank 6 is a plurality of shafts, arranged in parallel paths, and these shafts are connected by gears in a continuous or closed train so that the movement of one shaft will be co-extensive with the movement of all the other shafts. I have provided an expansible and contractible sheet or web above the reservoir, the edges of which are connected to cranks rigid on the shaft, so that the movements of the cranks away from the web will cause an expansion of the web and enlargement of the holes therein, and movement toward the web will permit contraction of the holes. The opposing longitudinal shafts are designated 9 and 10, the shaft 9 being supported in bearings 11 and 12 and the shaft 10 is supported in bearings 13 and 14, all of which are carried by the platform 1. The transverse shafts, at right angles to the shafts 9 and 10, are designated 15 and 16, the shaft 15 being journaled in bearings 17 and 18 and the shaft 16 being journaled in bearings 19 and 20. The shaft 9 has at its ends beveled gears 21 and 22, the beveled gear 21 meshing with a beveled gear 23 on shaft 15 and the beveled gear 22 meshing with a beveled gear 24 on shaft 16. The shafts 15 and 16 carry beveled gears 25 and 26 at the ends adjacent to the shaft 10 and these gears 25 and 26 mesh with gears 27 and 28 on the respective ends of the shaft 10 so it will be seen that the shafts are connected in a continuous or closed train whereby the movement of one shaft will be communicated to all of the other shafts. The shafts 9, 10, 15 and 16 carry rocker arms or cranks, there being two rocker arms or cranks designated 29 and 30 on the shaft 9 and two complementary opposing cranks or rocker arms 31 and 32 on the shaft 10, and these rocker arms or cranks are pivoted to clamps 33 and 34 for the arms 29 and 30 and clamps 35 and 36 for the arms 31 and 32, which clamps engage the opposite edges of the expansible and contractible web 37, illustrated as a sheet of elastic rubber.

The cranks 38 and 39 on shafts 15 and 16 engage clamps 40 and 41 respectively, which grip the sheet 37 at about the longitudinal center and at opposite ends, as indicated in Figs. I and III, and said sheet is provided with one or more holes or openings 42, there being preferably two so that two handles may be dipped at the same time.

The means illustrated for expanding and contracting the web is shown as a depending arm 43, carried by the shaft 15 and provided at its lower end with an anti-friction roller 44, adapted to be engaged by an intermittently functioning cam 45, mounted on shaft 50 in bearings 51 and 52 on the standards 4 and 5. The shaft 50 is provided with a gear 53 meshing with the pinion 54 on shaft 55, which carries a gear 56 driven through a pinion 57 on the shaft 58 of the motor 59. The pinion on the motor 59 and the train of gears which operate the shaft constitute a speed reduction gearing so that the operation of the cam will be relatively slow and a corresponding relatively slow intermittent rocking movement will be imparted to the arm 43 and shaft 15. Since the shafts are geared together, a rocking motion to the shaft 15 will be effective in imparting a rocking movement to all of the shafts co-extensive with that imparted to 15, and, consequently, a uniform pull or relaxation, as the case may be, will be effective for the web or sheet 37 for the purpose intended.

The motor 59 is supported upon a motor base 60 of any approved construction, carried by the standards, as this is a convenient place to mount the motor.

When the parts are all assembled as heretofore described and illustrated, the tank is practically full of coating material, for example paint, the motor 59 will be started and the operator may grasp one or more devices to be coated, for example, broom handles. As the cam 45 comes in contact with the roller 44, the shaft 15 will be rocked in a manner to stretch the web, and the other shafts 9, 10 and 16 will coöperate in an opposing pull to increase the surface area of the web and, consequently, increase the effective cross sectional area of the holes or jaws 42, the diameter of which will then be greater than the diameter of the broom handle. The operator then inserts the broom handles through the openings or jaws into the tank by dipping so that the coating will be applied to the handle. By this time, it is calculated that the cam will have moved out of functional engagement with the roller 44, allowing the jaws 42 to contract about the broom handles so that as the operator pulls the broom handles longitudinally from the tank, surplus material will be removed therefrom and, in most instances, a smooth and polished effect will be given to the han-

dles, which are then permitted to dry in the usual way.

The operator may continue the dipping and retracting of the elongated bodies, such as handles and the like, as the particular devices of the apparatus continuously operate to alternately expand and permit contraction of the sheet, the parts being so timed in their operation that the handles may be dipped in the tank while the jaws or openings are expanded and withdrawn during the contraction thereof.

What I claim and desire to secure by Letters Patent is:

1. A device for coating elongated bodies, comprising a coating material-applying reservoir, an elastic web above the reservoir having a body-receiving opening, and means for intermittently stretching the web to enlarge the opening.

2. A device for coating elongated bodies, comprising a coating material-applying reservoir, a body-engaging jaw above the reservoir, through which the body may have longitudinal movement, and means for opening the jaw to permit the body to freely pass therethrough into the reservoir and for closing the jaw on the body during the movement of the body in the opposite direction to withdraw it from the reservoir.

3. A device for applying liquid coating to elongated bodies, comprising a liquid coating applying reservoir, an expansible and contractible body-engaging device above the reservoir, and means for expanding the engaging device to permit free longitudinal movement of the body toward the reservoir but opposing longitudinal movement thereof away from the reservoir.

4. A device for applying liquid coating to elongated bodies, a dip tank, a plurality of rock shafts adjacent to the tank, an expansible and contractible sheet above the tank and provided with a hole, alining therewith, means for connecting the sheet to the rock shafts, and means for simultaneously imparting rocking movements to all of the rock shafts to stretch the sheet to increase the diameter of the hole, said means being effective to permit the rock shaft to move into non-stretching position.

5. A device for applying liquid coating to elongated bodies, a dip tank, a plurality of rock shafts adjacent to the tank, an expansible and contractible sheet above the tank and provided with a hole alining therewith, means for connecting the sheet to the rock shafts, and means for simultaneously imparting rocking movements to all of the rock shafts to stretch the sheet to increase the diameter of the hole, said means being effective to permit the rock shaft to move into non-stretching position, under the tension of the expansible and contractible sheet.

6. In a device of the class described, a frame including a platform, an elongated tank carried by the platform and having an open upper end, an elastic sheet above the tank and having an opening alining therewith, pairs of parallel rock shafts for stretching the sheet in one direction, pairs of parallel rock shafts for stretching the sheet in an opposite direction, means for gearing said rock shafts together so that a movement of one will be imparted to all the remaining rock shafts, and means for intermittently imparting positive actuation to one of said rock shafts.

7. In a device of the class described, a frame including a platform, an elongated tank carried by the platform and having an open upper end, an elastic sheet above the tank and having an opening alining therewith, pairs of parallel rock shafts for stretching the sheet in one direction, pairs of parallel rock shafts for stretching the sheet in an opposite direction, means for gearing said rock shafts together so that a movement of one will be imparted to all the remaining rock shafts, and means for intermittently imparting positive actuation to one of said rock shafts, said means comprising an arm depending from one of the rock shafts, a cam, and means for intermittently causing the cam to move into functional position with the depending arm on the rock shaft.

In testimony whereof I affix my signature.

HUGH L. THOMPSON.