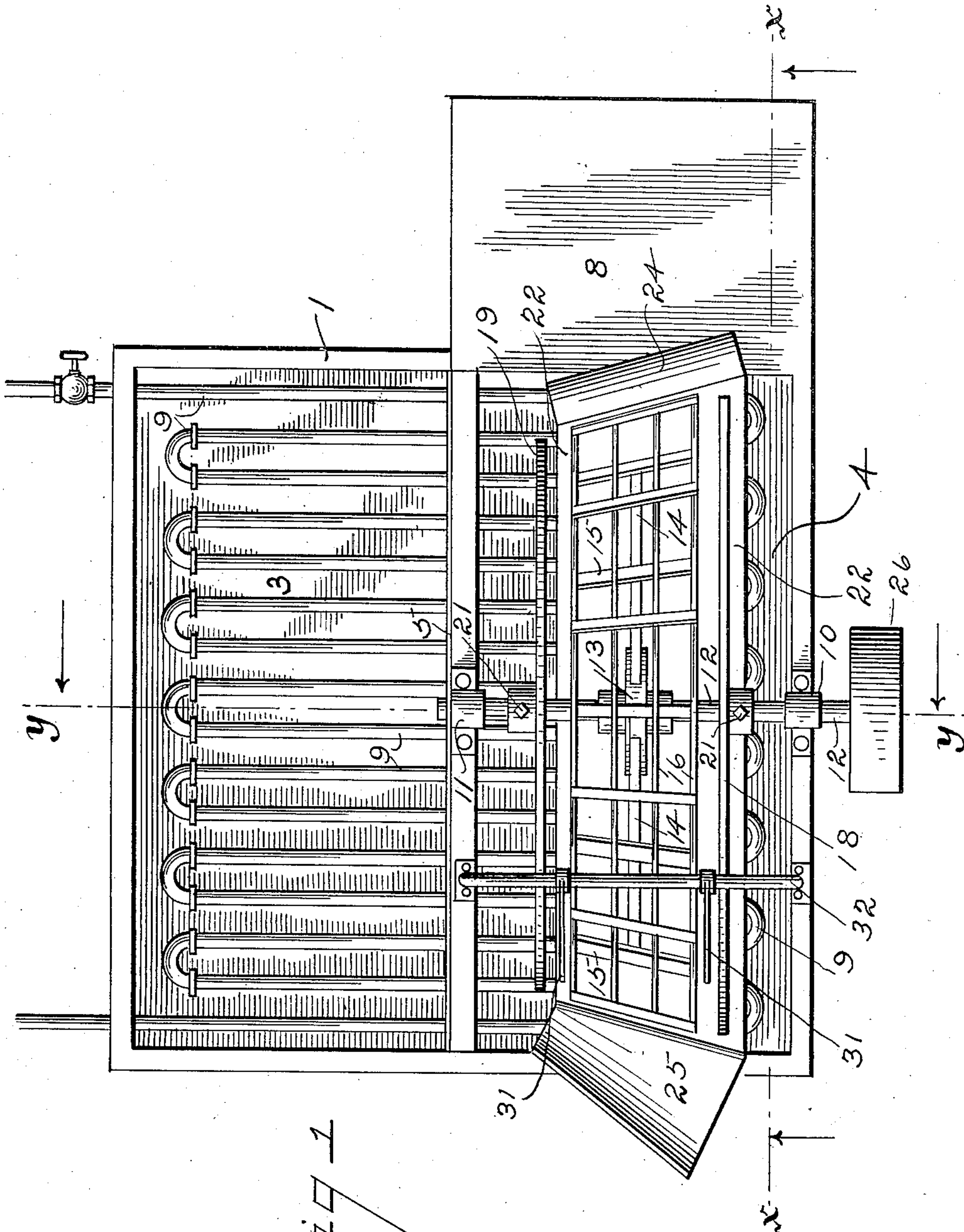


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MACHINE FOR DIPPING ARTICLES INTO FLUID BATHS.  
APPLICATION FILED OCT. 19, 1908.

936,238.

Patented Oct. 5, 1909.  
3 SHEETS—SHEET 1.



Witnesses:  
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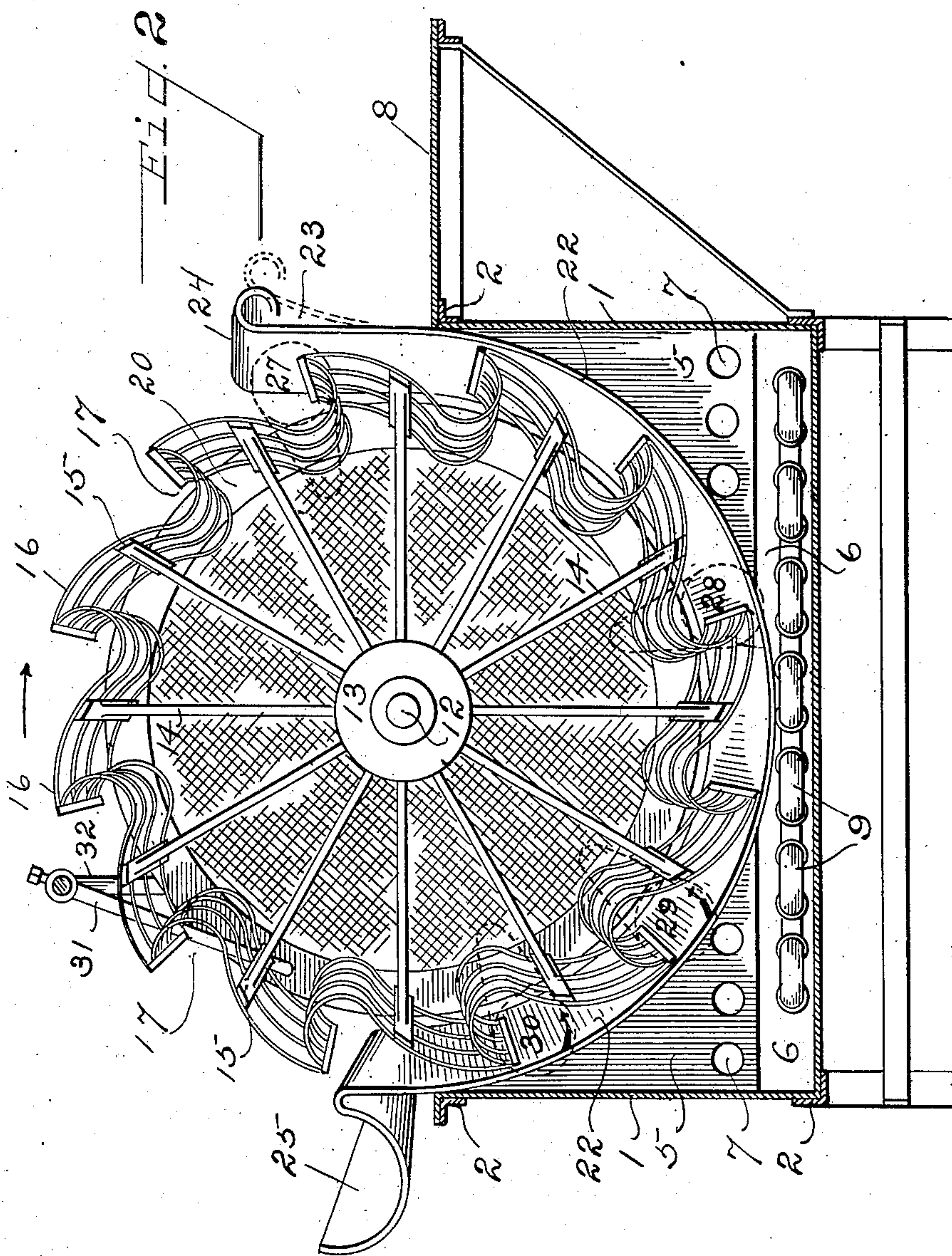
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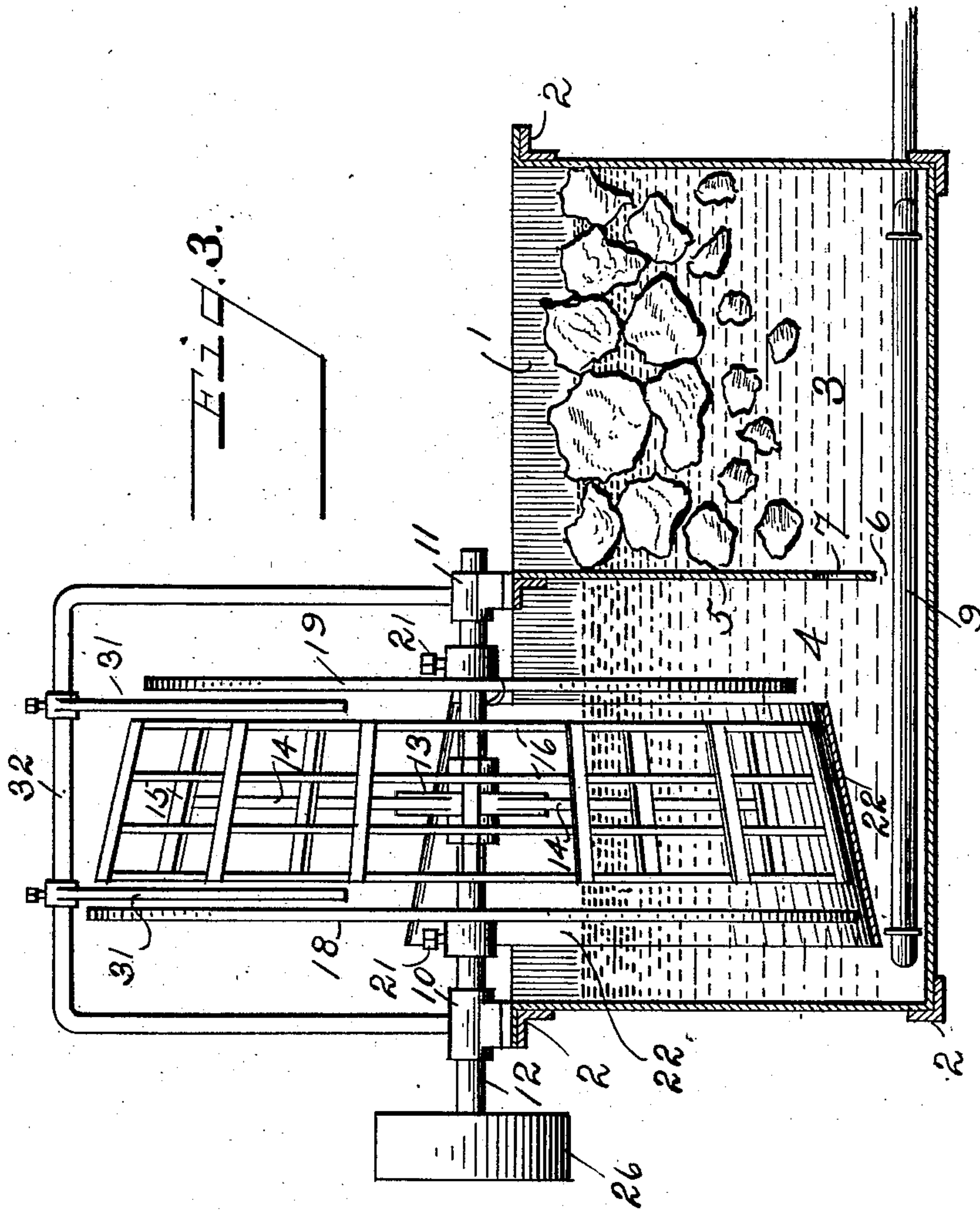


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3 SHEETS—SHEET 3.



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# UNITED STATES PATENT OFFICE.

HARRY E. DILL AND WILLIAM P. MARSH, OF DAYTON, OHIO, ASSIGNORS OF ONE-THIRD TO SAID DILL, ONE-THIRD TO MALON P. WOODY, AND ONE-THIRD TO W. ALLISON SCOTT, OF INDIANAPOLIS, INDIANA.

## MACHINE FOR DIPPING ARTICLES INTO FLUID-BATHS.

936,238.

Specification of Letters Patent.

Patented Oct. 5, 1909.

Application filed October 19, 1908. Serial No. 458,391.

*To all whom it may concern:*

Be it known that we, HARRY E. DILL and WILLIAM P. MARSH, citizens of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Machines for Dipping Articles into Fluid-Baths, of which the following is a specification.

Our invention relates to the manufacture of paper receptacles and particularly to a machine for coating such receptacles with paraffin or other water-proofing or similar material by dipping or submerging the articles therein.

The object of the invention is to provide a machine which will be simple in structure and in operation, which may be cheaply constructed and easily and rapidly operated, the operation thereof being substantially automatic.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention consists of the features of construction, parts and combinations thereof, and the mode of operation, or their equivalents as herein-after-described and set forth in the claims.

Referring to the drawings, Figure 1 is a plan view of the assembled machine. Fig. 2 is a sectional view on the line  $x x$  of Fig. 1, viewed in the direction indicated by the arrows. Fig. 3 is a sectional view at right angles to that of Fig. 2 on line  $y y$  of Fig. 1.

Like parts are indicated by similar characters of reference throughout the several views.

In constructing the machine, there is employed a tank 1 substantially rectangular in form which may be formed of sheet metal or other suitable material. When formed of sheet metal, the tank is reinforced and braced by suitable angle irons 2. The tank is divided into two compartments 3 and 4, by a vertical partition 5, extending to a point adjacent to the bottom of the tank, leaving an opening 6 below the edge of the partition 5 forming a means of communication between the compartments 3 and 4. The partition 5 may also be provided with openings 7 forming additional means of communication between the said compartments. At one side of the tank 1 is provided a ledge or table 8, adapted, when in use, to support the supply

of articles to be operated upon. Located adjacent to the bottom of the tank and extending into both compartments 3 and 4 is a series of pipes 9 arranged in reverse order, through which is circulated hot water or steam for the purpose of heating the water-proofing material contained in the tank.

Mounted on suitable bearings 10 and 11 on opposite sides of the compartment 4 is a horizontal shaft 12 on which is supported the carrier-wheel for the articles to be operated upon. The carrier comprises a hub portion 13 from which project radial arms 14 carrying transverse or T shaped heads 15. The periphery of the carrier is preferably formed of wires 16 arranged parallel with each other and curved or bent to form a series of pockets 17. The carrier is further formed somewhat conical as illustrated in Figs. 1 and 3; that is, of less diameter at one side than at the other. Adjustably mounted on the shaft 12 at either side of the carrier are disks 18 and 19. The disks 18 and 19 preferably comprise a rim 20 within which is a perforated web preferably of wire screen. The disks 18 and 19 are adjustable to and from the carrier and are secured to the shaft 12 by set screws 21.

Extending through the compartment 4 and concentric with the carrier is a band or strip of metal 22. The band or strip of metal 22 is located adjacent to the carrier and conforms to the conical shape thereof and is adapted to form a support for the articles carried within the pockets 17 during their passage through the compartment 4. The end of the strip 22 at the intake end or the feeding side of the machine projects above the upper side of the tank 1 and is capable of being flexed as is shown in dotted lines at 23 Fig. 2. If the operator, in feeding the machine, should accidentally get a hand caught between the carrier and the upper edge of the strip 22, which is turned upon itself as at 24, the strip will flex or bend to prevent injury. The opposite end of the strip 22 is formed into a trough 25 into which the articles are discharged from the carrier.

The compartment 3 of the tank 1 is charged with paraffin which is melted by heat from the pipes 9. The melted paraffin flows through the opening 6 beneath partition 5 and through the opening 7 into the



compartment 4, the partition 5 serves to keep unmelted lumps of paraffin out of the compartment 4 where they would interfere with the operation of the carrier.

5 The shaft 12 to which is secured the carrier, is driven by means of the drive pulley 26.

The machine is adapted particularly to paraffining paper bottles such as described in the pending application of Harry E. Dill, Serial Number 451,818, filed September 5, 1908.

The operator stands at the right of the machine, Figs. 1 and 2, with a supply of the paper receptacles on the table 8, and as the carrier revolves toward the operator, as indicated by the arrow in Fig. 2, the operator deposits one of the paper receptacles in each of the pockets 17 of the carrier with the top of the bottles directed toward the apex or the smaller side of the conical carrier. When first placed in the pocket 17 of the carrier, the mouth of the bottle will be directed slightly downward as shown in dotted lines 27 Fig. 2. As the carrier revolves the receptacle is carried downward into the melted paraffin within the compartment 4. The tendency of the receptacle will be to float in the paraffin but the movement of the carrier will force it beneath the surface, and as it continues to revolve on account of the inclined position of the receptacle due to the conical form of the carrier, the mouth of the bottle will be gradually raised until as it approaches the bottom of the compartment 4 it will be directed somewhat upward as shown by dotted lines at 28 which will permit the escape of air from the interior of the receptacle, which escaping air will be replaced by melted paraffin. After the air has been permitted to escape by the upward inclination of the mouth of the receptacle, the receptacle will lose its buoyancy and will then rest on the strip 22 instead of floating upward against the wires of the carrier as it does through the first part of the course. The continued movement of the carrier will cause the receptacle to roll upon the strip 22 as indicated by arrows at 29 and 30, Fig. 2. The turning over and over of the receptacle as it rolls up the inclination of the strip 22 will cause the melted paraffin or other solution contained within the receptacle to flow about the interior reaching and thoroughly coating every part thereof. During the passage of the receptacle from the point where it is relieved of the contained air and receives a filling of the melted paraffin or other solution to the discharge point of the machine, the receptacle is rotated several times insuring a thorough coating of the interior as well as the exterior of the receptacle. The receptacle will be carried through the tank

and discharged from the carrier into the trough 25. The trough 25, is somewhat conical in shape as shown in Fig. 1 and is inclined downward, discharging into the compartment 4. The receptacle discharged from the carrier will be received in the trough 25 with the mouth directed downward which will permit the paraffin or other solution to drain from the interior of the receptacle back to the tank 1.

To insure discharge of the receptacle from the carrier, stripper-arms 31 are provided projecting on opposite sides of the carrier intermediate the carrier and disks 18 and 19. The stripper-arms 31 are adjustably supported on the frame 32. The disks 18 and 19 limit the end movement of the receptacle when in the carrier and are adjustable to and from the carrier to accommodate receptacles or paper bottles of different sizes.

While the machine herein described is designed for dipping paper receptacles such as the conical bottles before mentioned in paraffin or other water-proofing solutions, it is not limited to such use, but may be readily adapted for dipping various articles in paint, varnishes, oils, or other liquids.

From the above description it will be apparent that there is thus produced a machine of the character described, possessing the particular features of advantage before enumerated as desirable, and which obviously is susceptible of modification in its form proportion, detail construction, and arrangement of parts, without departing from the principle involved or sacrificing any of its advantages.

Having thus described our invention we claim:

1. In a machine for dipping articles into fluid baths, a tank, a revoluble carrier, pockets in the periphery of said carrier to receive the articles, and stationary means engaged by said articles to positively discharge said articles from the pockets after they have been passed through the fluid in the tank, by the revolution of the carrier, substantially as specified.

2. In a machine for dipping articles into fluid baths, a tank, a wall dividing said tank into two compartments, means of communication between the respective compartments adjacent to the bottom of the tank, a revoluble carrier projecting into one of said compartments, pockets in the periphery of said carrier, the axis of said pockets being angular to that of the carrier, substantially as specified.

3. In a machine for dipping articles into fluid baths, a tank, a horizontal shaft, a revoluble carrier on said shaft, the periphery of said carrier comprising a plurality of wires in paralleled arrangement, said wires being bent to form a series of pockets



in the periphery of the carrier to receive the articles to be dipped, substantially as specified.

4. In a machine for dipping articles into fluid baths, a tank, a carrier revolving in a vertical plane, pockets in the periphery of said carrier to receive the articles, a band conforming substantially to the periphery of the lower portion of said carrier, by which the articles will be retained in the pockets, substantially as specified.

5. In a machine for dipping articles into fluid baths, a tank, a carrier revolving in a vertical plane, pockets in the periphery of said carrier, to receive the articles, a band inclosing the lower portion of said carrier, on which the articles will rest and on which the articles will roll during the time the said pockets are inverted, substantially as specified.

6. In a machine for dipping articles into fluid baths, a tank, a carrier revolving in a vertical plane, a plurality of pockets in said carrier adapted to receive the articles, said pockets being arranged at an inclination to the axis of the carrier, substantially as specified.

7. In a machine for dipping articles into fluid baths, a tank, a horizontal shaft, a carrier for the articles mounted on said shaft, disks mounted on opposite sides of the carrier and adjustable on the shaft to and from the carrier, and adapted to limit the end movement of the article when in the carrier, substantially as specified.

8. In a machine for dipping articles into fluid baths, a tank, a carrier revolving in a vertical plane and extending within the tank, article receiving pockets in said carrier, members on either side of said carrier

adjustable to and from the carrier to limit the end movement of the articles while in said pockets, substantially as specified.

9. In a machine for dipping articles into fluid baths, a tank, a revoluble carrier extending within said tank, a semi-circular band within the tank and about the lower portion of the carrier, one end of said band projecting above the level of the tank and capable of being flexed, substantially as specified.

10. In a machine for dipping articles into fluid baths, a tank, a carrier for the articles, means whereby the articles will be inclined as it approaches the lower portion of its course, to permit the escape of air and the entrance of fluid to the interior thereof, and means for rotating the article, in addition to its movement with the carrier, substantially as specified.

11. In a machine for dipping articles into fluid baths, a tank, carrier for the articles, a trough into which the articles are discharged from the carrier, said trough being inclined and discharging into the tank, whereby any surplus fluid barred by the articles will be returned to the tank, stripper arms with which the article is brought into engagement by the continued movement of the carrier, to insure the ejection of the article from the carrier, substantially as specified.

In testimony whereof, we have hereunto set our hands this 16th day of October A. D. 1908.

HARRY E. DILL.  
WILLIAM P. MARSH.

Witnesses:

HARRY F. NOLAN,  
F. L. WALKER.