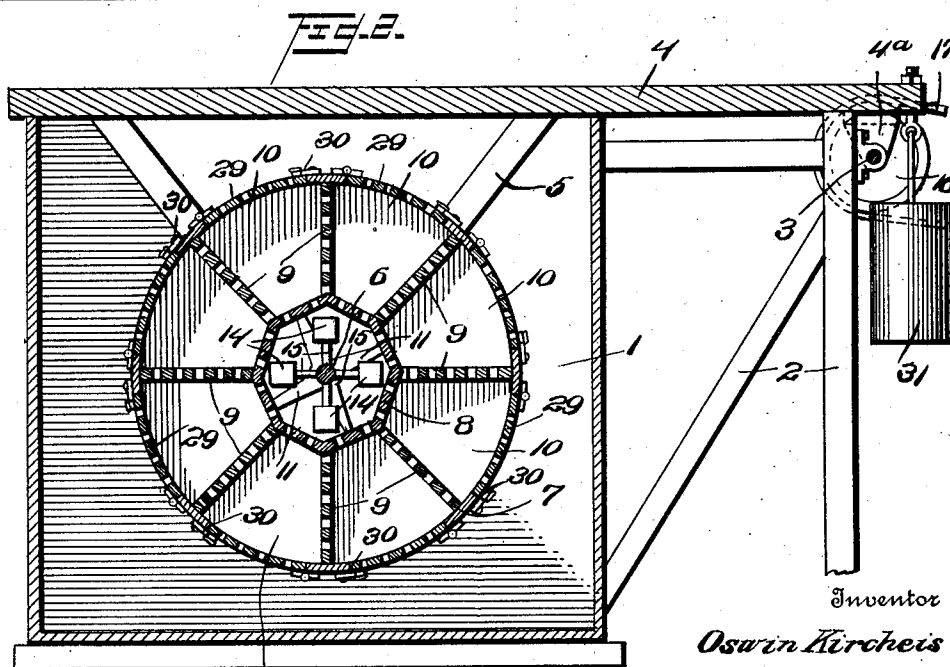
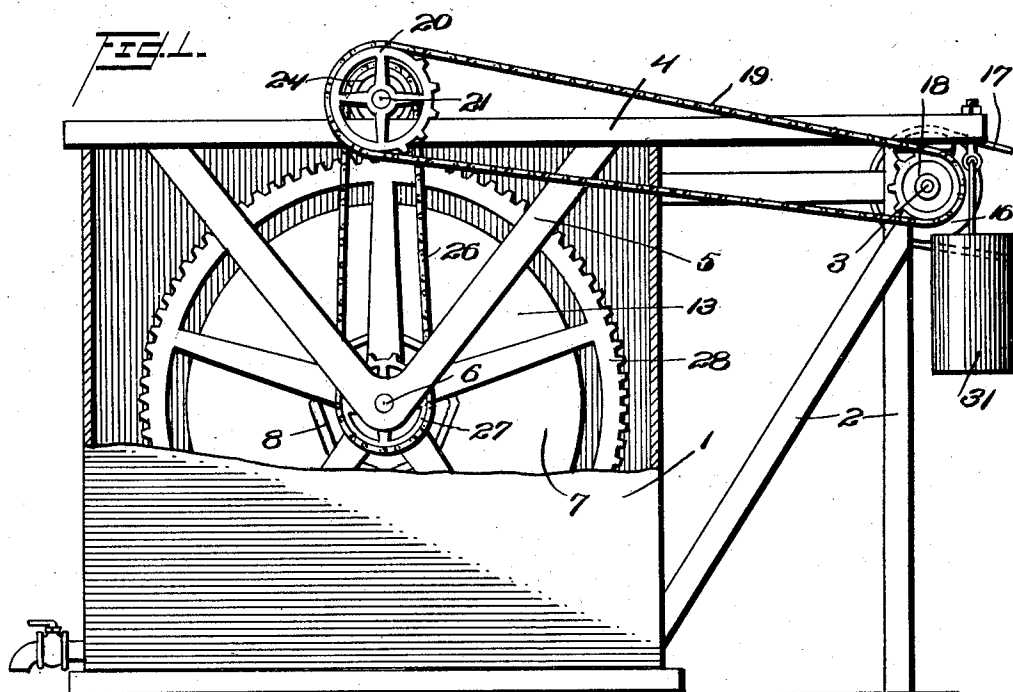


O. KIRCHEIS.
 DYEING APPARATUS.
 APPLICATION FILED AUG. 17, 1911. Patented Dec. 5, 1911.
 1,010,637. 3 SHEETS—SHEET 1.



Witnesses
H. Strauss
C. R. Ziegler.

Inventor
Oswin Kircheis
 By *Joshua R. A. Potte.*
 Attorney

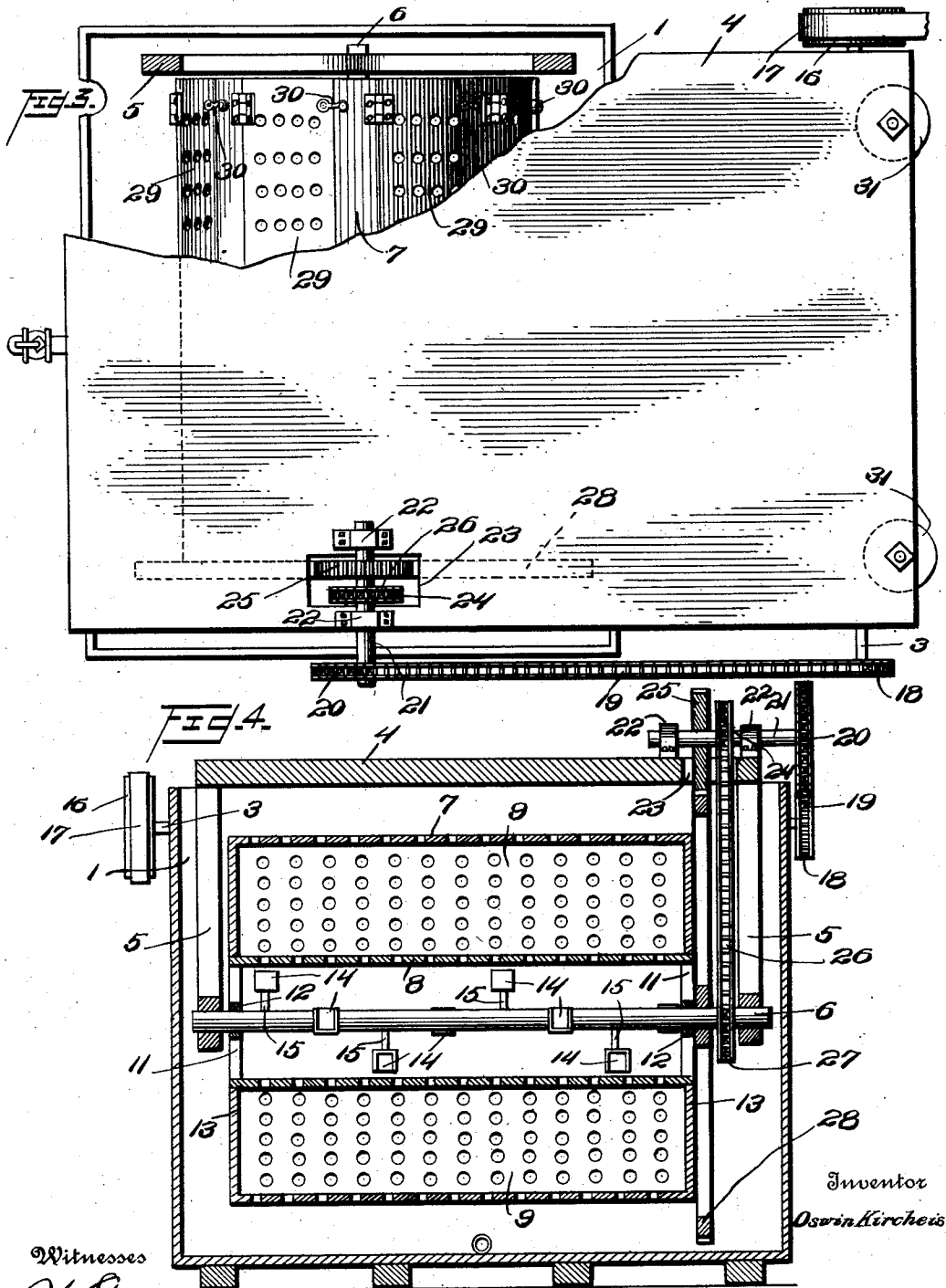
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3 SHEETS-SHEET 2.



Inventor
Oswin Kircheis

Witnesses
H. Strantz
L. R. Ziegler.

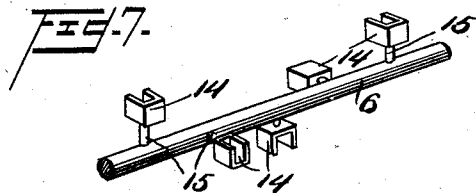
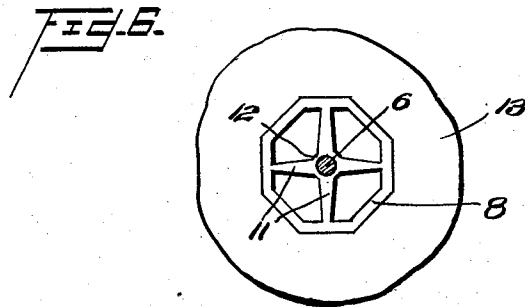
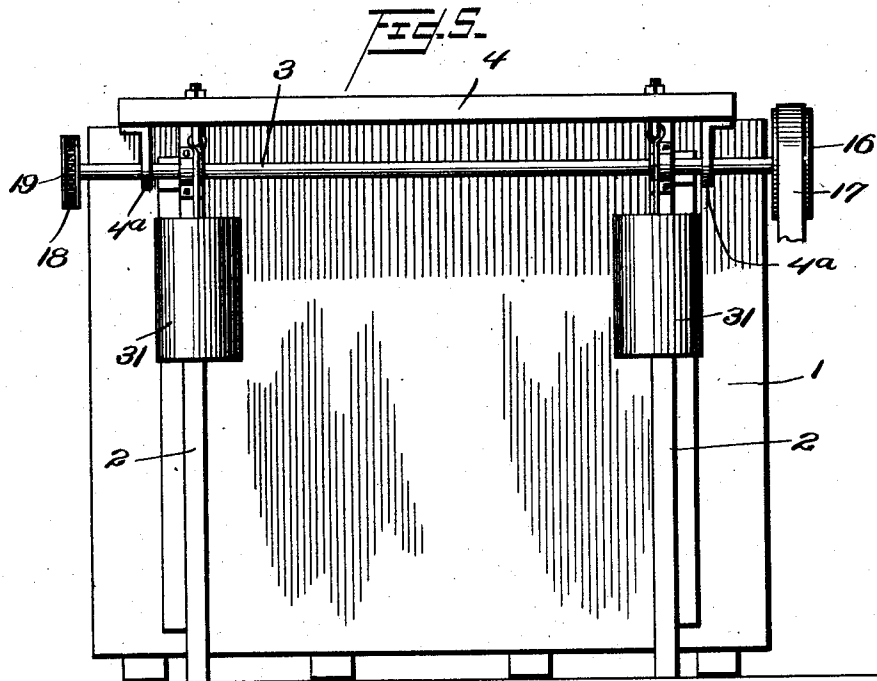
By Joshua R. A. Potts.

Attorney

1,010,637.

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3 SHEETS—SHEET 3.



Witnesses
H. Strauss
C. R. Ziegler.

Inventor
Oswin Kircheis

By Joshua R. H. Potts
Attorney

UNITED STATES PATENT OFFICE.

OSWIN KIRCHEIS, OF PHILADELPHIA, PENNSYLVANIA.

DYEING APPARATUS.

1,010,637.

Specification of Letters Patent.

Patented Dec. 5, 1911.

Application filed August 17, 1911. Serial No. 644,641.

To all whom it may concern:

Be it known that I, OSWIN KIRCHEIS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Dyeing Apparatus, of which the following is a specification.

My invention relates to improvements in dyeing apparatus, and more particularly to apparatus designed primarily for dyeing stockings and the like, the object of the invention being to provide an apparatus which insures the passage of the dye through the stockings or other articles, and compels a uniform distribution of the dye.

A further object is to provide an apparatus of this character which facilitates the handling of the stockings or other articles, both in placing them in the apparatus and removing them after being dyed.

With these and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings: Figure 1, is a view partly in side elevation and partly in section illustrating my improvements. Fig. 2, is a view in longitudinal vertical section. Fig. 3, is a plan view partly broken away. Fig. 4, is a view in vertical transverse section. Fig. 5, is a view in end elevation. Fig. 6, is a broken end view of the central portion of the drum, and Fig. 7, is a detail perspective view of the agitator.

1, represents a tank which is adapted to contain liquid dye, and to one end of this tank a frame 2 is secured and supports a shaft 3.

4, represents a top which is adapted to close the tank 1, extends out over the frame 2, and is provided with perforated ears 4^a to receive the shaft 3, and constitute a hinge for the top. Top 4 is provided with hangers 5 normally positioned within the tank 1, and said hangers support a shaft 6 on which my improved drum 7 is mounted. The drum 7 is made cylindrical, having an octagonal longitudinal center 8 and a circular series of radially disposed partitions 9 connect-

ing the octagonal center 8 with the cylindrical drum 7, and forming a circular series of compartments 10. The octagonal center 8 is provided with spiders 11 which are made with central sleeves 12 mounted to turn on shaft 6. The center 8, the partitions 9, and the circular drum 7 are all perforated, while the ends 13 of the drum are solid, and effectually close all of the compartments 10 at their ends, but do not close the ends of the octagonal center 8, permitting the dye to flow freely into this center and be deflected radially through the compartments by means of radially disposed stirrers. These stirrers 14 are in the general shape of a shovel or scoop, and are connected by rods 15 with shaft 6, and while I refer to the individual members as stirrers by the term "agitator," I mean the stirrers and the shaft. It will be noted that these stirrers are arranged in circular series around the shaft, and as the shaft revolves, as will be more fully hereinafter pointed out, these stirrers throw the dye radially and compel it to pass through the compartments.

The shaft 3 above referred to constitutes a drive shaft, and is provided with a pulley 16 to which motion is transmitted by means of a belt 17 from any suitable source. On this shaft 3, a sprocket wheel 18 is secured, and is connected by a sprocket chain 19 with a sprocket wheel 20 on a shaft 21. This shaft 21 is supported in bearings 22 on top 4, and said top, below the shaft 21 is provided with an opening 23. Over this opening 23 on shaft 21, a sprocket wheel 24 and a pinion 25 are secured. The sprocket wheel 24 is connected by a chain 26 with a sprocket wheel 27 secured to shaft 6, while the pinion 25 meshes with a large gear 28 secured to one end of the drum 7. It will thus be seen that motion is transmitted through the pinion to turn the drum slowly in one direction, while shaft 6 is rapidly revolved in the other direction. This shaft which carries the stirrer, constitutes an agitator, therefore causing the dye to be thrown out radially through the several compartments, while the latter are moving in a circular direction and a uniform distribution of the dye is assured.

Each of the compartments 10 is provided

with a hinged gate 29 normally held by securing devices 30, and these gates are of course, to be opened and closed as the stockings or other articles are inserted and removed from the compartments. During this operation of inserting or removing the articles, the top 4 is thrown upwardly, shaft 3 constituting a hinge pin and to facilitate this movement and balance the weight of the parts, counterweights 31 are connected to the top 4, where said top projects beyond the shaft 3, and these weights assist in balancing the apparatus and enabling the drum to be readily moved into and out of tank 1.

Various slight changes might be made in the general form and arrangement of parts described without departing from my invention, and hence I do not limit myself to the precise details set forth, but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

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

1. In a dyeing apparatus of the character described, the combination with a tank adapted to contain liquid dye, of a frame, a top hinged to the frame and normally covering the tank, hangers secured to the top and constructed to project down into the tank, a shaft mounted to turn in said hangers, a drum mounted to turn on said shaft and comprising a circular series of compartments, and means for turning said drum in the tank, substantially as described.

2. In a dyeing apparatus of the character described, the combination with a tank adapted to contain liquid dye, of a frame, a top hinged to the frame and normally covering the tank, hangers secured to the top and constructed to project down into the tank, a shaft mounted to turn in said hangers, a drum mounted to turn on said shaft and comprising a circular series of compartments, means for turning said drum in the tank, counterweights secured to said top in rear of the point of pivot, and constructed to counterbalance the weight of the drum, substantially as described.

3. In a dyeing apparatus of the character described, the combination with a tank adapted to contain liquid dye, of a frame, a top hinged to the frame and normally covering the tank, hangers secured to the top and constructed to project down into the tank, a shaft mounted to turn in said hangers, a drum mounted to turn on said shaft and comprising a circular series of compartments, stirrers on said shaft, a sprocket wheel on the shaft, a short shaft mounted on the top, a sprocket wheel on said other shaft, a chain connecting said sprocket wheels, a relatively large gear on the drum, a pinion on the short shaft meshing with said gear,

and means for turning said short shaft, substantially as described.

4. In a dyeing apparatus of the character described, the combination with a tank adapted to contain liquid dye, of a frame, a top hinged to the frame and normally covering the tank, hangers secured to the top and constructed to project down into the tank, a shaft mounted to turn in said hangers, a drum mounted to turn on said shaft and comprising a circular series of compartments, said drum having an open center, said open center and the outer cylindrical wall of said drum perforated, stirrers on said shaft, and means for turning said drum and shaft at different speeds, substantially as described.

5. In a dyeing apparatus of the character described, the combination with a tank adapted to contain liquid dye, of a frame, a top hinged to the frame and normally covering the tank, hangers secured to the top and constructed to project down into the tank, a shaft mounted to turn in said hangers, a drum mounted to turn on said shaft and comprising a circular series of compartments, said drum having an open center, said open center and the outer cylindrical wall of said drum perforated, stirrers on said shaft, said stirrers comprising radially disposed bucket shaped deflectors, means for turning the drum in one direction, and means for turning the shaft in the opposite direction at an excess speed over that of the drum, substantially as described.

6. In a dyeing apparatus of the character described, the combination with a tank adapted to contain liquid dye, of a frame, a top hinged to the frame and normally covering the tank, hangers secured to the top and constructed to project down into the tank, a shaft mounted to turn in said hangers, a drum mounted to turn on said shaft and comprising a circular series of compartments, said drum having an open center, said open center and the outer cylindrical wall of said drum perforated, stirrers on said shaft, said stirrers comprising radially disposed bucket shaped deflectors, means for turning the drum in one direction, means for turning the shaft in the opposite direction at an excess speed over that of the drum, said drum having perforated hinged doors in its outer wall for each compartment, and means for locking said gates in closed position, substantially as described.

7. In a dyeing apparatus, the combination with a tank adapted to contain liquid dye, of a hinged top for said tank, hangers on said top constructed to project down into the tank, and a rotary article containing drum mounted in said hangers, substantially as described.

8. In a dyeing apparatus, the combination with a tank adapted to contain liquid

dye, of a hinged top for said tank, hangers
on said top constructed to project down
into the tank, a rotary article containing
drum mounted in said hangers, means for
5 turning said drum, and means for forcing
the dye through the drum, substantially as
described.

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

OSWIN KIRCHEIS.

Witnesses:

C. R. ZIEGLER,
C. E. POTTS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
