

A. SCHIFFERS.

MACHINE FOR DYEING, BLEACHING, AND THE LIKE.

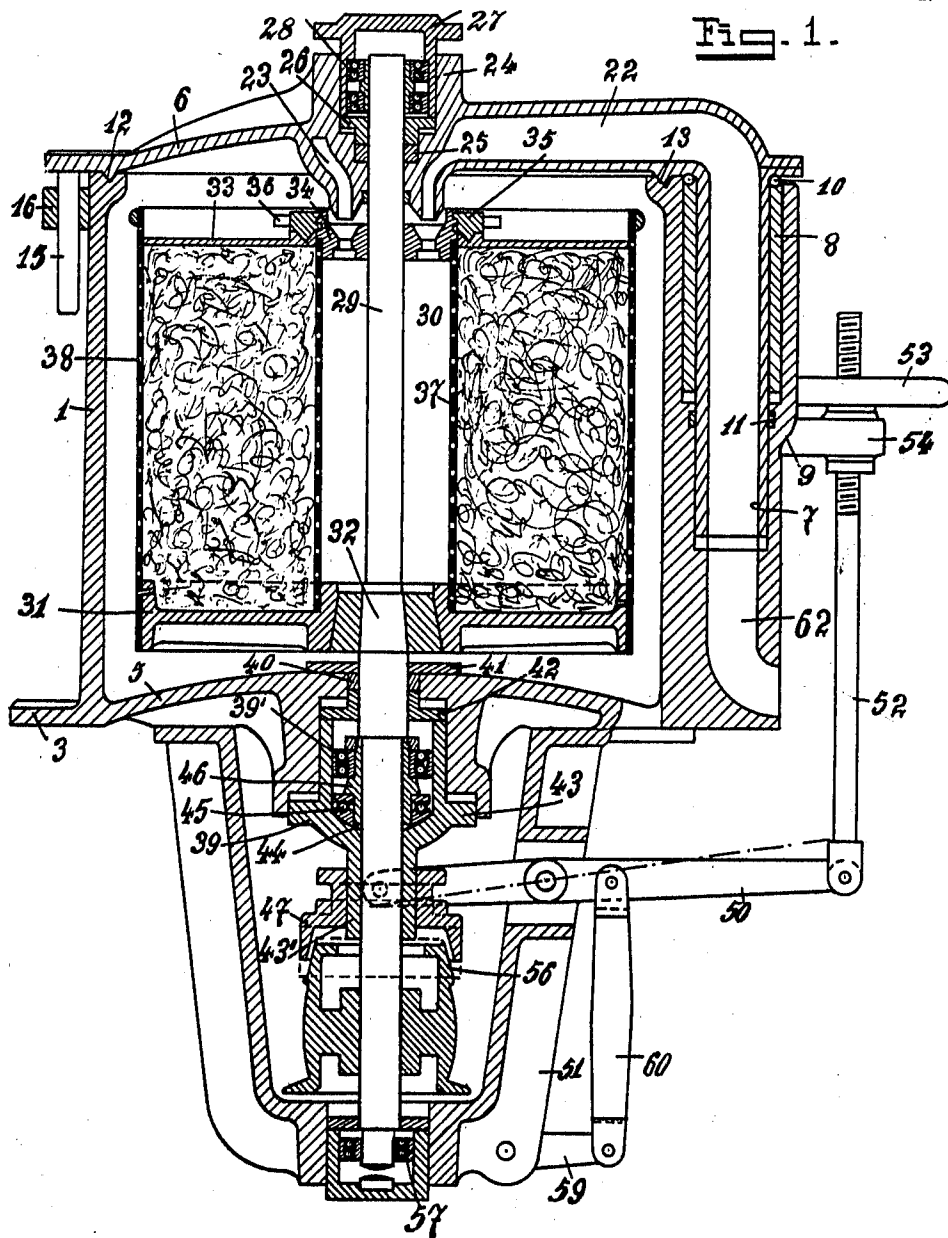
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1,020,452.

Patented Mar. 19, 1912.

2 SHEETS-SHEET 1.

Fig. 1.



Witnesses:
Geo. C. Hinrichs
esq.

Inventor:
August Schiffers
per *B. S. Singer*
Attorney.

A. SCHIFFERS.

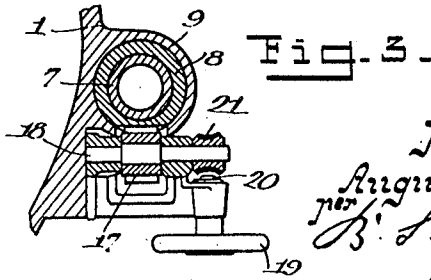
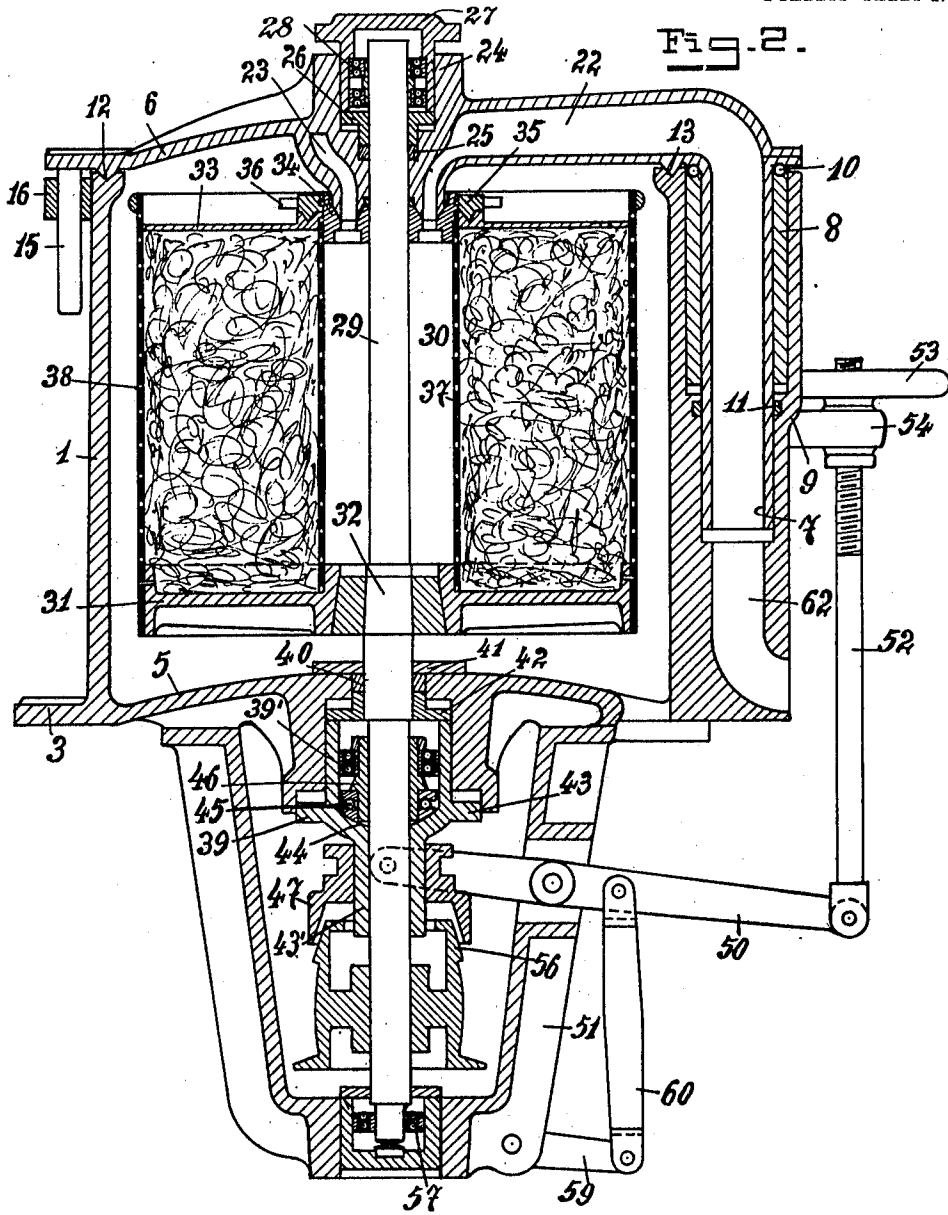
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2 SHEETS—SHEET 2.



Witnesses:
Geo. C. Hennings
ex. emp.

Inventor:
August Schiffers
per *B. Linzer*
Attorney.

UNITED STATES PATENT OFFICE.

AUGUST SCHIFFERS, OF AIX-LA-CHAPELLE, GERMANY.

MACHINE FOR DYEING, BLEACHING, AND THE LIKE.

1,020,452.

Specification of Letters Patent. Patented Mar. 19, 1912.

Application filed November 26, 1910. Serial No. 594,313.

To all whom it may concern:

Be it known that I, AUGUST SCHIFFERS, manufacturer, a subject of the King of Prussia, residing at No. 15 Eilfschornstein-
5 strasse, Aix-la-Chapelle, in the Kingdom of Prussia, Empire of Germany, have invented certain new and useful Improvements in Machines for Dyeing, Bleaching, and the Like; and I do hereby declare the following
10 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.

My present invention relates to dyeing-
15 machinery and particularly to a machine with the aid of which all kinds of textile-fibers such as wool, cotton, and the like can be dyed, bleached etc. not only in state of loose threads, or cops, spools, bobbins and
20 so forth, but also in state of finished goods.

By means of this new machine the dyeing, bleaching etc. of textile-fibers or goods in any state or form cannot only be accomplished quicker and better than it has been
25 possible to do with any machines hitherto employed for this purpose, but also all the different manipulations necessary to obtain the desired end in view, as for instance centrifuging, fixing, rinsing and drying of the
30 fibers or goods can be executed in succession without necessitating removing the latter from the dye-vat and repacking them.

By means of this improvement the advantage is gained, that the working operation
35 can be executed quickly, with ease, and in an absolutely safe manner, whereby not only time and money are saved, but also the wear and tear of the machine, particularly the dye-vat and its armature, are reduced to a
40 minimum.

In the accompanying drawings:—Figure 1 is a vertical sectional view illustrating one embodiment of my invention, with the parts in one position. Fig. 2 is a view similar to
45 Fig. 1, showing the parts in another position. Fig. 3 is a horizontal sectional view showing a detail of an improved adjusting means, forming one of the features of my invention.

50 The dye-vat 1 is provided with a bottom-flange 3 adapted to be bolted to a support. The bottom 5 of the dye-vat 1 forms an integral part of the latter, whereas its cover 6 can be raised as well as swung out to simplify the admission of the raw goods to the
55 dye-vat and the removal of the finished

goods therefrom. The cover 6 is provided with a tubular trunnion 7, seated in a sleeve 8 one side of which is provided with teeth to form a rack. The sleeve 8 is seated in a
60 tubular lateral projection of the dye-vat 1, and carries upon its top-face bearing-balls 10 in order to minimize friction and thus render the swinging in and out of the cover 6 easy. The trunnion 7 is made air- and
65 watertight in the projection 9 by means of the packing 11 which preferably is of the hydraulic kind. The top of the dye-vat is provided with a groove 12 into which the annular feather 13 of the cover 6 enters and
70 is ground-in therein to make this joint air- and water-tight. Eye-bolts 14 are employed to firmly secure the cover 6 to the dye-vat 1. The centering of the cover 6 is simplified by the pintle 15 which enters the eye 16,
75 projecting from said vat, when the cover 6 is lowered. The raising of the latter is accomplished by means of the spur-wheel 17 seated upon the shaft 18 which wheel meshes with the teeth of the sleeve 8. Rotation is
80 imparted to the shaft 18 by means of the hand-wheel 19 rotating the worm 20, which in turn drives the worm-wheel 21 seated upon the shaft 18, so that on rotating the hand-wheel 19 in the one or the other direction
85 the cover 6 may be raised or lowered.

The boring of the trunnion 7 is continued by the channel 22 of the cover and ends in the center of the latter in the shape of a ring-channel 23. The inner wall of the latter
90 forms a part of the stuffing-box 24, the packing-ring 25 of which is held down by the ring 26. The latter can be pressed down by the cap-shaped ring 27 wherein the upper neck-bearing 28 of the main-shaft 29
95 is arranged. The latter carries the annular receiver 30 which may be held in any suitable manner on said shaft removably but not rotatably. The bottom 31 of the receiver 30 is seated upon the conical part 32
100 of the shaft 29 and opposite the said conical part 32 is situated a perforated spacing-ring 34 provided with a V-shaped tightening groove into which the correspondingly shaped faces of the ring-channel 23 enter.
105 The ring 34 is threaded to receive the ring 35 whose pintles 36 are destined for the reception of any hoisting-device for removing the receiver and its contents from the dye-vat 1. The mantles 37 and 38 of the receiver
110 are perforated so that the dyeing-liquor can be driven through the goods from

the inside to the outside of the receiver or in the reverse way.

Below the bottom 5 of the dye-vat 1 the main bearing 39 of the shaft 29 is arranged, which bearing is provided with a packing-ring 40 pressed downward by an annular plate 41 and capable of being tightened by means of the ring 42, the pressure of which is caused and regulated by the cup-shaped ring 43 upon the inside of which the race-way 44 of the balls 45 is arranged, which balls are held down by the ring 46. Within the cup-shaped ring 43 is also arranged a second or intermediate neck-bearing 39' of the shaft 29 to keep the latter in a central position. The ring 43 has a downward projection 43' provided with feathers (not shown) which slide in the usual manner in longitudinal slots (likewise not shown) of the friction-sleeve 47. The latter is provided with an annular groove 48 into which the pintles 49 of the forked end of the lever 50 pivoted to the hanger 51 enter (Fig. 1). To the free end of the lever 50 a rod 52 is hinged which carries on its threaded end a hand-wheel 53 the hub of which is rotatably held in the bracket 54 secured to the dye-vat 1, so that on rotating said hand-wheel in the one or in the other direction the friction-sleeve 47 may be raised or lowered. The pulley 55 of the main-shaft 29 is provided with a conical face 56 for the correspondingly shaped lower end of the friction-sleeve 47, so that on gradually pressing the latter on the conical face 56 the main-shaft 29 can be braked.

In the hanger 51 the lower neck-bearing 57 is arranged and provided with lateral pintles 58 which are received by the forked end of the lever 59, likewise pivoted to said hanger 51. The latter is connected with the lever 50 by means of the link 60. In this manner the brake-arrangement 47, 56 can be rendered inoperative when the rod 52 is lowered. Simultaneously herewith the main-shaft 29 is raised whereby the ground faces of the ring 34 and the ring-channel 23 are pressed air- and water-tight against each other, so that the dyeing-liquor on entering by way of the channels 22 and 23 will find no other outlet than through the inner mantle 37, the goods to be dyed, and the outer mantle 38.

Supposing now that the charged receiver has been inserted and the parts 23 and 34 brought into contact with each other as indicated above. Since the two joints are air- and water-tight high vacuum, absolutely necessary for obtaining a uniform dyeing of the goods, can be attained in the dye-vat 1, which vacuum was hitherto obtainable in a poor and unsatisfactory manner only.

After the dyeing-liquor has been removed the goods must be freed from the dyeing-liquor still contained therein to which end

the main-shaft 29 is lowered to bring the parts 23 and 34 out of contact, whereupon the shaft 29 is rotated until no more liquor is thrown off through the centrifugal action of the receiver. To bring the receiver and the goods contained therein to a standstill the friction-sleeve 47 is gradually lowered to bring it into braking-contact with the conical upper end of the pulley 55 of the main-shaft 29.

The fixing or oxidizing must be accomplished next, to which end the parts 23 and 34 are brought again into an air-tight contact with each other whereupon air is passed through the goods contained in the receiver 30. This can be accomplished in two different ways, namely to drive the cold air through the goods from the center of the receiver to the periphery of the latter or vice versa.

As the centrifugating of the goods following the rinsing is executed in the same way as in the first instance it is deemed superfluous to enlarge upon it again here.

The final manipulation is the drying of the goods, to which end a blower (not shown) presses hot air through the dyed goods, from the center of the receiver outward to the periphery of the latter and then vice versa. To do this in the first mentioned manner the parts 23 and 34 are brought into contact with each other, so that the cooled and moisture-carrying air passes out through the channel 64. When the hot air is to enter the goods by way of the outer mantle 38 the cooled and moisture-charged air passes out by way of the channels 62'. The air employed for the drying of the goods may be heated in any desired manner.

The goods are now dyed as well as dried and in order to remove them from the dye-vat the eye-bolts 14 are unscrewed, the cover 6 is raised by the aid of the lifting-device operated by the hand-wheel 19 and swung out of the way, whereupon a hoisting-device of any suitable kind is connected with the pintles 36 and then the receiver and its contents are removed from the dye-vat to be replaced by another receiver filled in the meantime. The contents of the latter are then treated in the same manner as indicated above, after the cover 6 has been replaced and bolted down.

Bleaching and other treatments of textile-fibers or goods are accomplished by the new machine in a more or less similar manner as the dyeing thereof described above, which manipulation of course much depends on the nature of objects treated and on the means employed.

I claim:—

1. In a machine for dyeing, bleaching and the like of textile-fibers a dye-vat cover provided with a tubular shaped pivot.

2. In a machine for dyeing, bleaching

and the like of textile-fibers a dye-vat cover provided with a tubular shaped pivot, and a channel as continuation of the hollow pivot running out into the middle of the said cover.

3. In a machine for dyeing, bleaching and the like of textile-fibers a dye-vat cover provided with a tubular shaped pivot and an annular feather designed to engage with a corresponding slot for the air and water tight closing of the said cover.

4. In a machine for dyeing, bleaching and the like of textile-fibers a dye-vat cover provided with a tubular shaped pivot which latter is surrounded by a shell carrying a rack engaging with a gear-wheel.

5. In a machine for dyeing, bleaching and the like of textile-fibers a dye-vat cover provided with a tubular shaped pivot which latter is seated air tight in a tubular projection of the dye-vat.

6. A dyeing and bleaching machine comprising in combination, a vat, a cover for said vat having a discharge portion for the liquid, a receiver in said vat for holding the material to be treated provided with an inlet portion adapted to register with the cover discharge portion, means for shifting said receiver to engage said discharge and inlet portions, and means for revolving said receiver.

7. A dyeing and bleaching machine comprising in combination, a vat, a cover for the vat having a discharge portion for the liquid, a receiver in the vat for holding the material to be treated and provided with an inlet portion adapted to register with the discharge portion of said cover, and means for shifting the receiver to engage the discharge and receiver portions.

8. A dyeing and bleaching machine comprising in combination, a dyeing vat, a cover for said vat having a discharge portion for the liquid, a vertically disposed receiver in the vat for holding the material to be treated and provided with an inlet portion at its upper end adapted to register with the discharge portion of said cover, and means for elevating said receiver to engage its inlet portion with the discharge portion of said cover.

9. A dyeing and bleaching machine comprising in combination, a vat provided with a wedge shaped discharge portion, a receiver in said vat for the material to be treated having a wedge shaped inlet portion, and means for shifting the receiver to effect the water or air tight wedge engagement between said portions, substantially as and for the purposes set forth.

10. A dyeing and bleaching machine comprising in combination, a vat provided with an annular central discharge portion, a shaft projecting centrally of the discharge portion, a receiver mounted on said shaft for

holding the material to be treated and provided with an annular inlet portion registering with said discharge portion, and means for moving said shaft longitudinally to effect engagement of said discharge and inlet portions, substantially as and for the purposes set forth.

11. A dyeing and bleaching machine comprising in combination, a vat having a wedge shaped discharge portion, a receiver in said vat having an open central portion for receiving the liquid and an inlet portion delivering to said open central portion, said receiver having a chamber surrounding said central open portion for the material to be treated and an inlet, and means for engaging the inlet and discharge portions.

12. A dyeing and bleaching machine comprising in combination, a vat, a cover for the vat provided with a discharge portion, a revoluble receiver in said vat having inner and outer annular perforated walls for holding the material to be treated, the inner wall forming a central receiving chamber for the liquid, an inclosure for said chamber having an inlet portion for the liquid, and means for shifting said receiver to engage said discharge and inlet portions.

13. A cylindrical dyeing and bleaching machine comprising in combination, a vat, a shaft therein, a receiver mounted on said shaft and adapted to hold the material to be treated, said vat and receiver having co-acting discharge and inlet portions for passage of the liquid into said receiver, means engaging said shaft to rotate the same in said receiver, means for shifting said shaft to engage said discharge and inlet portions with each other, means for braking said shaft, and an operating mechanism for alternately actuating said brake and shifting means.

14. A cylindrical dyeing and bleaching machine comprising in combination, a vat, a shaft therein, a receiver mounted on said shaft and adapted to hold the material to be treated, said vat and receiver having co-acting discharge and inlet portions for the passage of the liquid into said receiver, means engaging the shaft to rotate the same and said receiver, means for shifting said shaft to engage said discharge and inlet portions with each other, means for braking said shaft, and mechanism operable in opposite directions for alternately actuating said braking and shifting means.

15. A dyeing and bleaching machine comprising in combination, a vat provided with a tubular inlet portion, a cover for said vat having a passage discharging therein and a tubular projection mounted in said tubular inlet portion of said vat and forming a continuation of said passage, and means co-acting with said projection to elevate said cover.

16. A dyeing and bleaching machine com-

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prising in combination, a vat provided with
a tubular inlet portion, a cover for said vat
having a passage discharging therein and
a tubular projection mounted in said tubular
5 inlet portion and forming a continuation of
said passage, a sleeve surrounding said pro-
jection and disposed in said tubular inlet
portion, and means for shifting said sleeve
to elevate said cover.

In testimony whereof I have signed my 10
name to this specification in the presence of
two subscribing witnesses.

AUGUST SCHIFFERS.

Witnesses:

HENRY ANADFILLY,
HUBERT SIEBEN.