No. 755,050. PATENTED MAR. 22, 1904.

P. SCHIRP.

APPARATUS FOR DYEING, &c.

APPLICATION FILED MAR. 18, 1903.

NO MODEL.

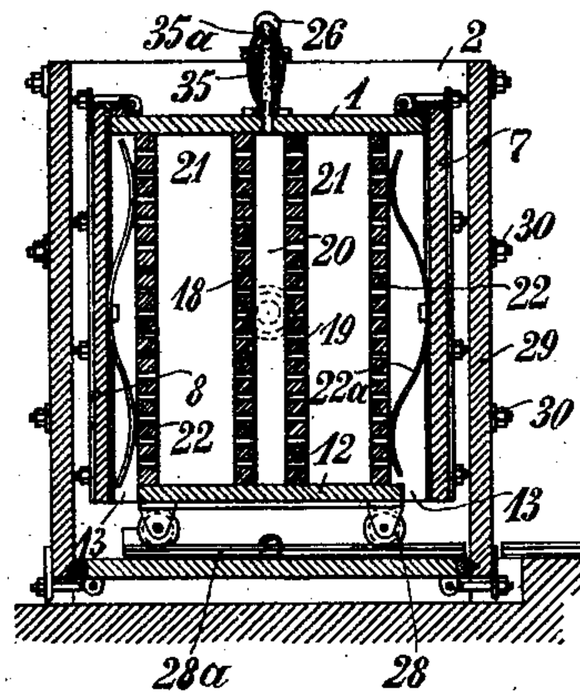
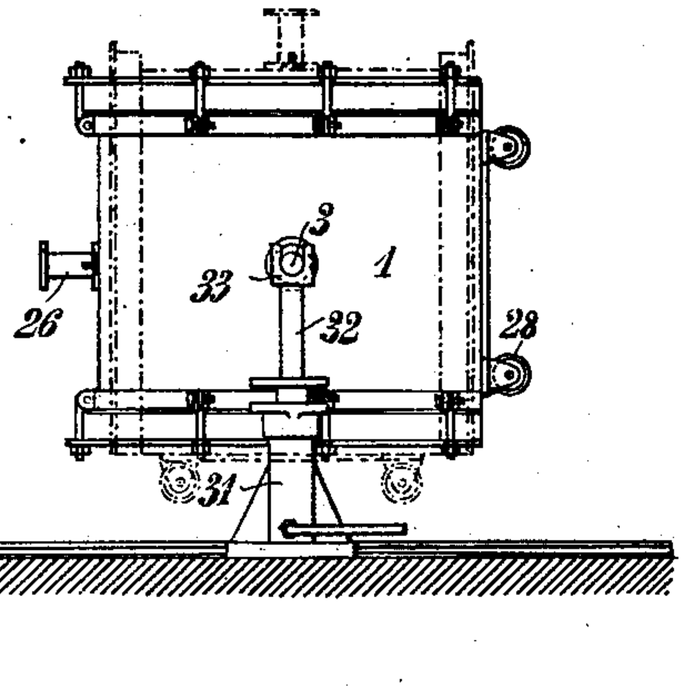


Fig. 1



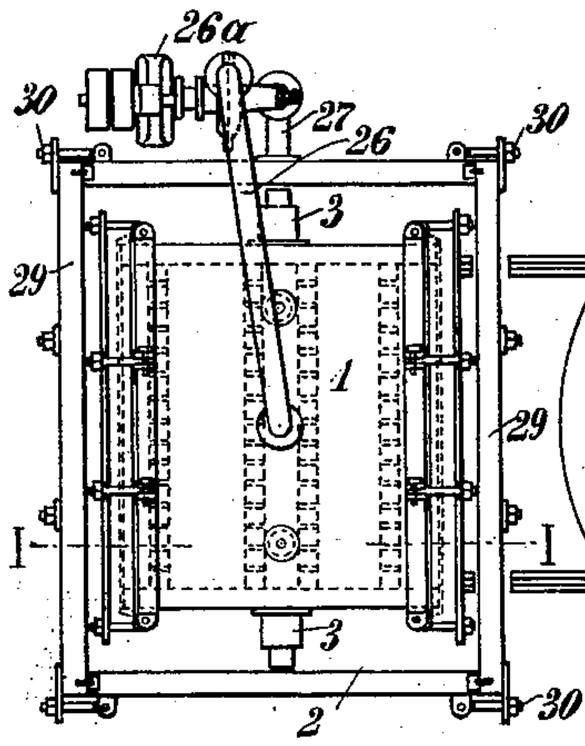
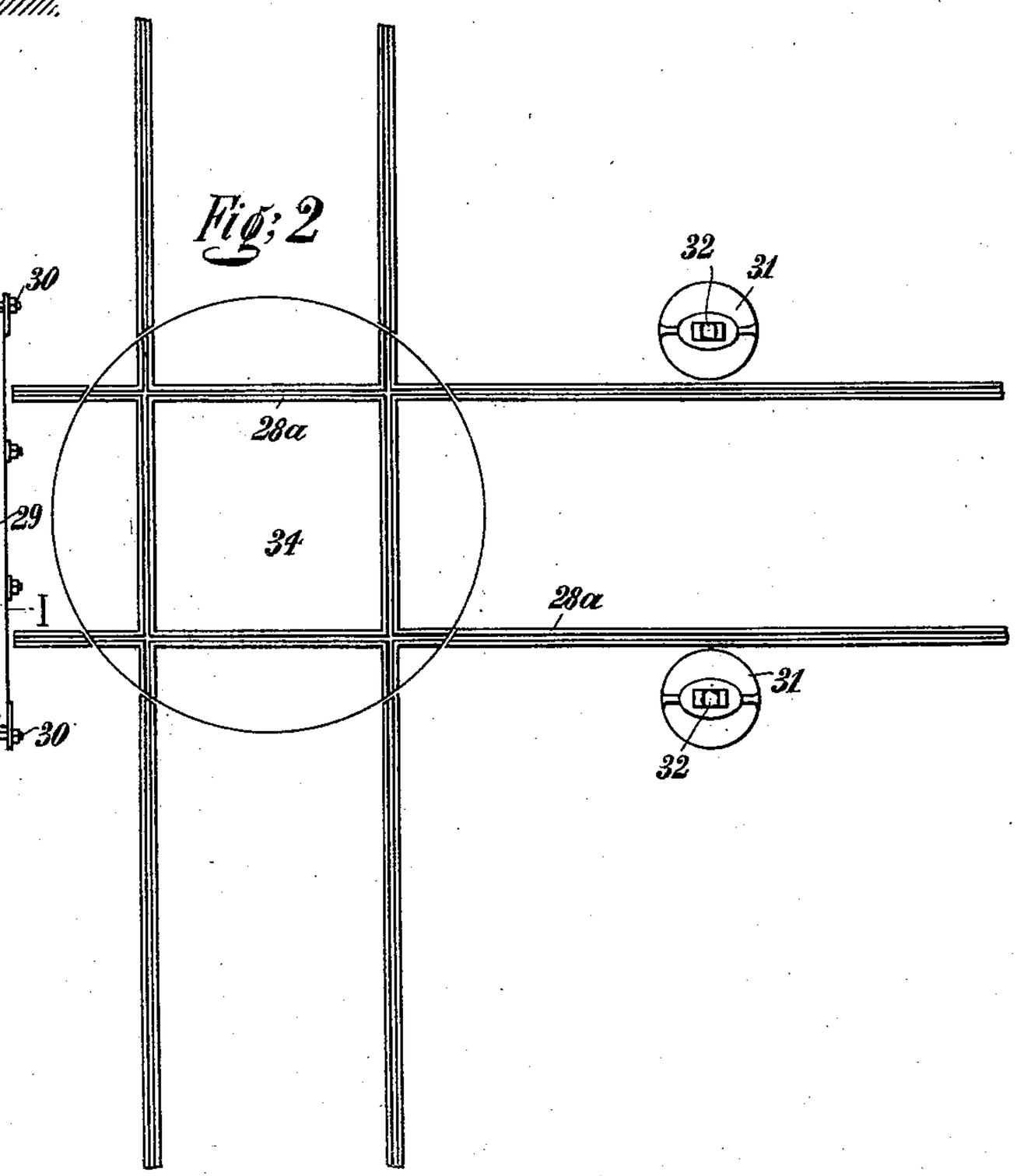


Fig. 2



Witnesses;

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F. A. Ritterhaus.

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Atty.

No. 755,050. Patented March 22, 1904.

UNITED STATES PATENT OFFICE.

PAUL SCHIRP, OF BARMEN, GERMANY.

APPARATUS FOR DYEING, &c.

SPECIFICATION forming part of Letters Patent No. 755,050, dated March 22, 1904.

Application filed March 18, 1903. Serial No. 148,285. (No model.)

To all whom it may concern:

Be it known that I, PAUL SCHIRP, a citizen of the German Empire, residing at Barmen, in the Province of Rhenish Prussia, Kingdom of Prussia, Germany, have invented a certain new and useful Improvement in Dyeing, Bleaching, and Washing Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in the apparatus for dyeing, bleaching, treating with mordants, washing, and the like textile materials, for which Letters Patent have been granted to me under No. 700,832 on May 21, 1902, and dated February 4 of same year. It has been found that for turning the tub of said apparatus in the basin this latter must be rather of considerable size. This hinders the filling and emptying of the tub, and evaporation and cooling of the heated coloring liquor takes place on account of the large uncovered surface of the vat. These drawbacks have been avoided in the present improved construction of my apparatus, and this has been attained by making one or two of the side walls of the vat so that they can be taken off or turned down or sidewards, and by placing the tub on rollers so that it can be rolled in or out of the vat when the respective side wall has been taken off or laid down. The tub is then carried between a suitable lifting-tackle, two hydraulic winches or crab-winches or their equivalent, where it is raised and then turned. By this means the vat can be made so small that there is hardly any dead space in it when the tub has been placed therein and the vat can be made so high that the coloring liquid will cover the tub and its contents completely and the evaporation of said liquid is reduced to a minimum.

On the accompanying drawings the new apparatus is shown.

Figure 1 represents the same on the left side in a vertical section along line I I of Fig. 2, the tub placed upright in the vat, on the left side the tub supported by the hydraulic lifts and raised upward and turned so that its detachable side walls form the top and bottom. Fig. 2 is a view in plan of Fig. 1 without the tub in the lifting devices at the right side.

The tub 1, containing the material to be treated, is of rectangular shape. Perforated diaphragms 18 19 divide the same in three compartments. Into the central one, 20, which is the smallest, the coloring liquid is forced by the pipes 26 27 and pump 26^a, and into the two larger side compartments, 21, the material to be treated is packed. These compartments are closed by perforated sides 22, which are pressed against the material by springs 22^a, fixed to the closing sides 7 and 8, respectively. Between these sides and the bottom piece 12 of the tub there are left openings 13 for the outflow of the liquid. On the other two sides there are arranged pins or trunnions 3, by which the tub can be held in the lifting devices 31 32.

The tub is carried on rollers 28, so that it can be conveniently pulled in and out of the vat on rails 28^a. For this purpose the side walls 29 of the vat 2 are so constructed that they can be taken off, screws 30 serving to connect the same closely and tightly to the basin, and the vat is made so high that the tub is completely inclosed therein.

At a certain distance from the vat are placed two lifting apparatus, by preference hydraulic winches 31, the pistons 32 of which are provided at their top with forked bearings 33, fitting to the pins 3 of the tub 1, so that when the latter is pulled out of the vat and placed between the lifting devices said forked bearings will take it up and allow it to be raised and turned. Immediately in front of the basin a turn-table 34 may be placed, so that empty tubs or such ready for being placed into the vat may be stored close by.

It is recommended to place what I call "trial cops" 35 on the top of the tub, for which purpose small perforated tubes 35^a are fixed over the central compartment 20, so that the liquid pumped therein will also pass through these tubes and through the cops, whereby the state of coloring or dyeing can be observed. When not used, plugs can be put in place of the tubes 35^a. For dyeing materials the tub 1 is pushed into the vat 2, and this having been tightly closed the liquid is forced through the tub and the material therein in a circulating-current by being pumped into the central chamber 20, so that it flows through the material

from the center to the outside back into the vat, whence it is led again to the suction-pipe of the pump, and so on. Instead of forcing the liquid from the central chamber through the goods it might be caused to make the reverse way by connecting the suction-pipe of the pump to the central chamber and withdrawing the liquid out of this, thus causing it to flow through the material to the central chamber. This manner of working of course requires that the tub is fully immersed in the liquid in the vat. The dyeing having been completed, the side wall 29 of the vat is taken away or laid down and the tub can then be pushed out to the lifting apparatus.

Having now explained my invention, I declare that similarly-working machines have been known and that I therefore do not claim, broadly, such a machine; but

What I declare, and desire to secure by Letters Patent, is—

1. In an apparatus for dyeing, bleaching, washing and otherwise treating textile materials by liquids a fixed vat 2, having removable side walls 29, screws 30, for connecting tightly said side walls to the vat in combination with a tub 1, rollers 28 carrying said tub, rails 28ª in said vat allowing to pull the tub out of the vat without raising it therein, pins 3 at the side walls of the tub, lifting devices 31, 32 for taking up said pins 3 of the tub and raising or lowering and turning the tub 1 conveniently outside of said vat 2, the whole as described and illustrated and for the purpose set forth.

2. In an apparatus for dyeing, bleaching, washing and otherwise treating textile materials by liquids a fixed vat 2 having removable side walls 29, screws 30 for connecting tightly said side walls to the vat, rails 28ª in the bottom of said vat, in combination with a tub 1, rollers 28 carrying said tub on rails 28ª, a pump 26ª at the side of said vat and connected to the tub 1 by pipes 26, 27 perforated diaphragms 18, 19 in the middle of said tub and forming a chamber 20 between them for introducing the liquid therein and free spaces 21 at both sides thereof, false perforated sides 22 for each of these spaces, closing covers 7, 8, perforated tubes 35ª on the top of the tub for taking up trial cops 35, the whole as described and illustrated and for the purpose set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

PAUL SCHIRP.

Witnesses:
OTTO KÖNIG,
J. A. RITTERSHAUS.