

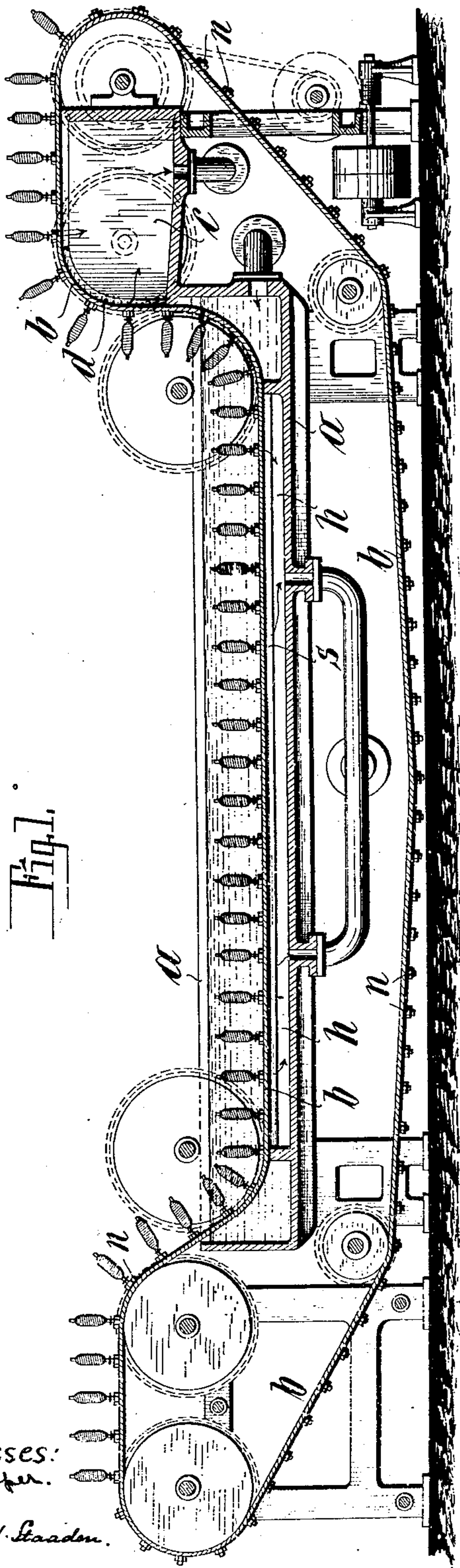
No. 878,103.

PATENTED FEB. 4, 1908.

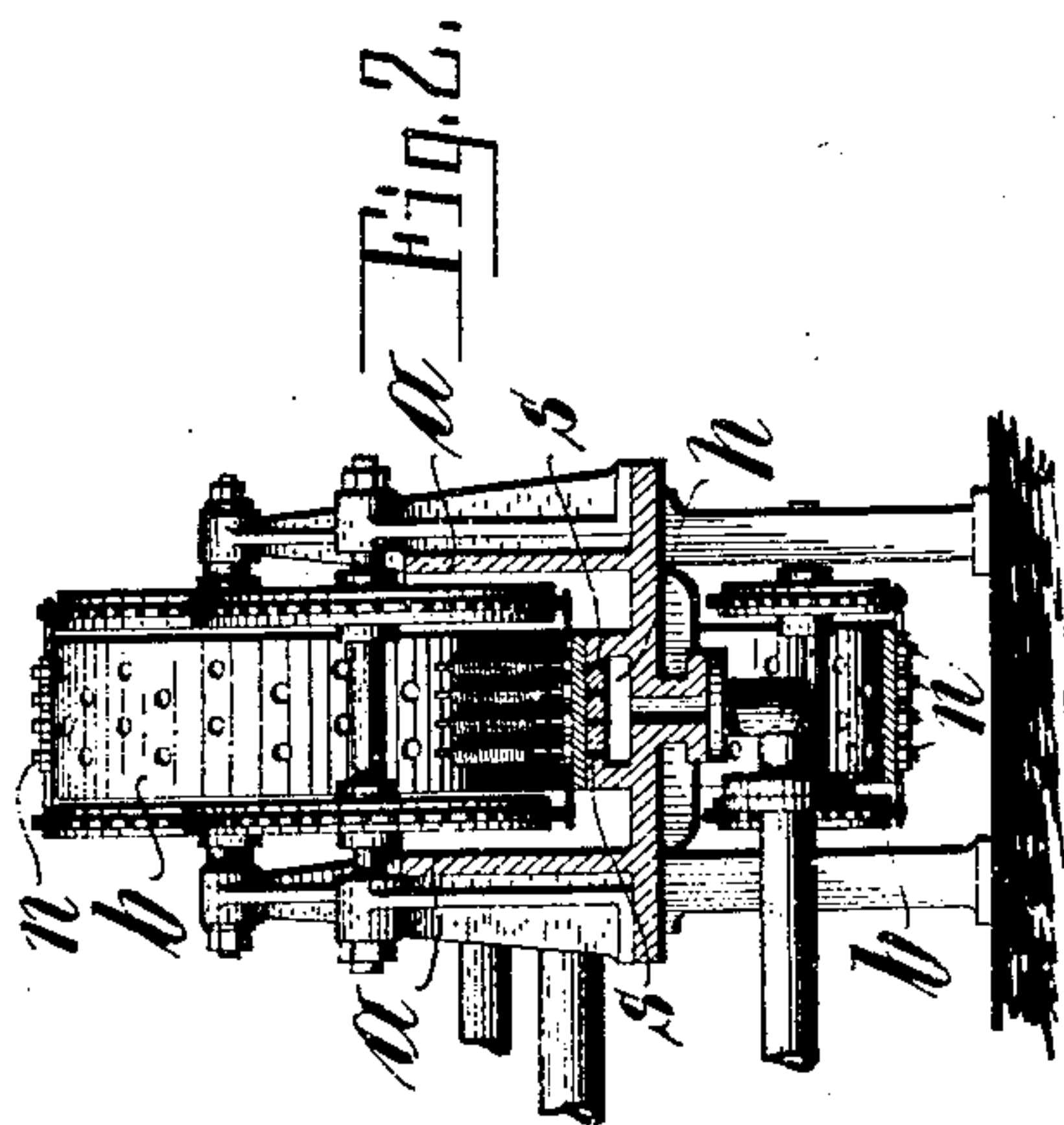
C. WANSLEBEN.

MACHINE FOR DYEING BOBBINS AND THE LIKE.

APPLICATION FILED FEB. 23, 1906.



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UNITED STATES PATENT OFFICE.

CONRAD WANSLEBEN, OF CREFELD, GERMANY.

MACHINE FOR DYEING BOBBINS AND THE LIKE.

No. 878,103.

Specification of Letters Patent.

Patented Feb. 4, 1908.

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To all whom it may concern:

Be it known that I, CONRAD WANSLEBEN, a subject of the King of Prussia, residing at Crefeld, in the Kingdom of Prussia and German Empire, have invented new and useful Improvements in Machines for Dyeing Bobbins and the Like, of which the following is a specification:

My invention relates to improvements in machines for dyeing cops, bobbins and similar goods, and the object of my invention is to provide suitable means for first imbibing the said cops, bobbins or goods with the liquid dye, and for immediately afterwards removing the surplus of liquid by way of suction, the current of atmospheric air drawn through the cops or bobbins serving at the same time, if desired, to develop the color applied thereto.

In dyeing cops, bobbins and other goods with indigo and similar colors it is of great importance, not only to remove the surplus of dye-liquor immediately after removing the goods from the bath, but also to force a current of atmospheric air through the goods, which in a known manner acts to develop the color. If, after leaving the dye-bath, the cops or bobbins or similar goods are left to remain in their wet condition for any considerable length of time, no uniform shade is obtained, as the color becomes spotted. Numerous devices therefore, have already been tried to remove the superfluous liquor immediately after the immersion of the goods in the dye-bath.

The improved machine constructed according to my invention, performs the work in a continuous operation and requires but very little labor on the part of the operator. A traveling apron or belt carries the cops or bobbins into the dye-bath at one end of the machine and delivers them at the opposite end, said belt or apron being provided with suitable holes and hollow pins or nipples secured within said holes to receive the cops or bobbins, which are placed on said nipples by hand at the entrance end of the machine and are taken off at the delivery end, as the continuously moving apron slowly emerges from the dye-bath. The slow and uniform motion of the apron facilitates the placing and removing of the cops or bobbins and also prevents the said cops or bobbins from falling off the said apron, while it passes into the bath and emerges therefrom on an inclined plane. The dye-bath becomes but very

slightly stirred or agitated by the cops or bobbins, while they are carried along through the same.

The cistern containing the dye-bath has a slot or a series of slots or holes in its bottom, and below the said slotted bottom is arranged a channel or air chamber communicating with the cistern through the said slots. A suction pipe or pipes connected to an air pump terminate in the said channel or chamber. The apron carrying the cops or bobbins, while moving through the cistern, is dragged along the bottom of the same, thereby preventing the dye-liquid from flowing through the slots of the bottom into the chamber below it. If the apron were solid, no communication would exist between the cistern and the chamber below its bottom, in spite of the slots therein. The apron, therefore, is perforated and in said perforations are secured hollow pins or nipples on which the bobbins are mounted. When suctional force is applied to the chamber below the cistern, the liquid dye will be drawn into the cops or bobbins, thereby imbibing the yarn of the cops or bobbins from the outside to the inmost core. The liquor passes through the yarn and then through the perforations in the apron into the chamber below the cistern, from where it is removed by the suction, which delivers the liquor to any suitable reservoir from which it may be returned into the cistern.

The belt or apron, on leaving the cistern is made to pass along the slotted or perforated top or cover of an air-chamber, which is connected to an exhaust pump. The holes or perforations in the said top or cover will be closed by the apron, except at those parts, where the said apron is perforated. It will be seen then that, by means of the suctional force acting from below the traveling apron, air will be drawn from the outside through the cops or bobbins, the perforated apron and the perforated top of the air chamber, and along with the air the liquid dye still contained in the yarn of the cops or bobbins will be removed from the yarn and passes into the suction chamber from where it will be carried off through the suction pipe or pipes connected therewith and delivered into a suitable reservoir from which it may also be returned to the cistern.

To better illustrate my invention, reference is made to the accompanying drawing in which

Figure 1 is a longitudinal section of the new apparatus and Fig. 2 a transverse section.

The tank or cistern *a*, which is supported on a suitable frame, contains the dye-bath. The bottom of said tank or cistern is preferably raised through the greater part of the length of the cistern and is provided with the slots *s*, extending in the direction of the length of the tank, whereby the latter communicates with a channel or chamber *h*, arranged below the raised bottom. One or more suction pipes open into said channel connecting it with an exhaust pump not shown in the drawing.

An endless belt or apron *b* passing over a pair of drums arranged at both ends of the tank *a* is guided by idlers so that it is drawn through the tank in close contact with the slotted bottom thereof, so that the slots *s* in said bottom are tightly covered by the apron passing over them.

At the delivery end of the tank *a*, where the belt or apron *b* passes out of the same to a higher plane, an air-chamber *c*, is provided within the frame of the machine, said air-chamber being arranged in the line of motion of the traveling belt or apron *b*. The top or cover *d* of said chamber *c* is slotted or perforated in the direction of its length, and the belt or apron *b*, on passing over said top or cover, tightly closes the slots or perforations against the outside atmosphere. An exhaust-pipe coming from an exhaust pump terminates into said air chamber *c*, to produce a vacuum within the same.

The traveling belt or apron *b* is provided, in the direction of its length, with one or more series of perforations or holes, as seen in Fig. 2, each of said holes or perforations being fitted with a hollow nipple or socket *n*, adapted to receive the hollow perforated spindle of a cop or bobbin. It will be easily understood, that, as the belt or apron *b*, slowly moves from the left hand end of the machine in Fig. 1 toward the right through the tank or cistern *a*, the cops or bobbins can be easily placed on the said nipples *n*, before the apron descends into the dye-bath in said tank. The cops or bobbins thus are carried slowly with uniform movement through the liquid dye without causing any material agitation therein, which might be objectionable. During this time, the cops or bobbins, as will be seen from Fig. 1, become totally immersed into the dye-bath. At the right hand end of the tank in Fig. 1, the belt or apron carrying the cops or bobbins is raised out of the bath and passes over the perforated or slotted top or cover *d* of the air-chamber *c*.

Motion is imparted to the driving drum in a well-known manner. If desired, chains

may be attached to the sides of the belt or apron *b*, to be engaged by corresponding sprocket-wheels, whereby a true guiding of the belt or apron is obtained. It will be easily understood that, as the belt or apron *b*, with the cops or bobbins carried thereby, slowly passes over the slotted bottom of the tank *a*, the liquid in said tank will be prevented from flowing through the slots *s*, into the channel or chamber *h*, as the slots *s* are tightly covered by the belt. When, however, through the suction-pipe, terminating into the channel *h*, a vacuum is created within the same, the liquid dye is forced through the yarn of the cops or bobbins placed onto the belt, and thus passes through the sockets or nipples *n* and the holes in the belt or apron and the slot *s* in the bottom of the tank *a* into the channel *h*, from which the liquid is drawn off and delivered to a suitably located tank or reservoir not shown, from which it can be returned to the tank *a*.

The cops or bobbins leave the dye-bath thoroughly soaked with the liquid dye. The latter, however, must be drawn out again, as soon as the cops or bobbins have left the bath. To this purpose, the apron is guided over the suction chamber *c*. By producing a vacuum in said chamber, air is drawn through the cops or bobbins, and while thus air is forced through the yarn, also the liquid still contained in the yarn is drawn into the chamber, *c*, from where it is drawn off by the suction-pipe terminating in said chamber. The forcing of air through the wet bobbins influences the color to develop the same. At the right hand end of the machine, in Fig. 1, the cops or bobbins are taken off before the belt descends to pass under the tank *a* back to the opposite side thereof.

What I claim is:—

In an apparatus for dyeing cops, bobbins and similar goods, the combination with a tank containing the liquid dye, and having a channel provided in its bottom, the said bottom having openings therein, a suction-pipe terminating in said channel, an air chamber at the delivery end of the said tank arranged in line therewith and having a perforated top-plate, an exhaust-pipe terminating in said air-chamber, a perforated apron adapted to receive the cops or bobbins, means to move said apron in contact with the perforated bottom of said tank and over the perforated top of the said air-chamber.

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

CONRAD WANSLEBEN.

Witnesses:

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