

UNITED STATES PATENT OFFICE.

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APPARATUS FOR DYEING SLIVERS.

SPECIFICATION forming part of Letters Patent No. 791,148, dated May 30, 1905.

Application filed October 14, 1904. Serial No. 228,435.

To all whom it may concern:

Be it known that I, CHARLES M. HANSON, of Peacedale, in the county of Washington and State of Rhode Island, have invented certain
5 new and useful Improvements in Apparatus for Dyeing Slivers Wound into Tops or Cheeses; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompa-
10 nying drawings, in which—

Figure 1 represents a vertical central section through my said improved dyeing apparatus; and Fig. 2 is an enlarged sectional view taken on line *a* in said Fig. 1, partly in ele-
15 vation.

My invention relates to improvements upon the apparatus for dyeing slivers for which United States Letters Patent were granted to me under date of September 9, 1902, No.
20 708,808, and like said patented apparatus is designed more especially for dyeing wool, the sliver being preferably taken as it is wound into the tops or cheeses about eighteen inches in diameter after having been delivered from
25 the first gill-box. Although said apparatus is designed more especially for dyeing wool in the form of tops or cheeses, as above stated, I do not limit the same thereto, as it may be employed equally as well for dyeing any kind
30 of wool or cotton upon stock, such as waste or yarn or any of the textile products, before being woven into the fabrics.

My present invention relates more particularly to the lower part of the apparatus and the method of conducting the dyeing liquor to the stock to be dyed, the upper part of the apparatus being substantially the same as in
35 my said patented apparatus, for a detailed description of which reference is made to said
40 patent.

My improvement consists in arranging a hood A over the central bottom opening B' of the inclined floor B of the apparatus, having a packing-ring C on the bottom edge thereof
45 between said hood and floor and a series of liquor-conducting pipes D, connected with the crown of said hood about equidistant apart around the central vertical drive-shaft E, which passes down through the hood. Said
50 pipes D extend up and out radially from the

crown of hood A to the bottom inner edge of the usual perforated cans F, and from said point each pipe has two branches D' and D², the branch D' extending up vertically next to the inner side of its respective perforated
55 can E and the branch D² extending horizontally to under the center of said can and connected with the bottom of the usual vertical perforated tube G, which extends up through the center of the can. The branch pipes D' are
60 each perforated the whole length of the inner sides next to the cans, as is shown by the enlarged view, Fig. 2, for the purpose of discharging the dyeing liquor against the perfo-
65 rated surfaces of said cans, which cans being rotated slowly independent of the high speed imparted to the operating parts of the appa-
ratus, as described in the patent previously referred to, causes the liquor to enter the cans and pass through the stock contained therein,
70 the centrifugal force caused by said high rate of speed causing the liquor to percolate thoroughly through every part of said stock, and thus evenly dyes the same throughout its en-
75 tire body.

I find in practice that much better results are obtained by the use of conducting-pipes for distributing the dyeing liquor from the bottom reservoir or tank H than by the construction shown and described in my former
80 patent, having no separate distributing system for each perforated can in which the stock to be dyed is held. The liquor is more evenly distributed, and consequently the stock is more evenly dyed, thereby producing a superior
85 grade of material.

Another advantage of my present improvement is that the liquor being almost entirely excluded from the lower part of the apparatus the latter turns with less friction than by
90 my previously-patented construction.

By the employment of the hood A, its packing-ring C, and the liquor-conducting pipes, as shown and described, it will be apparent that when the apparatus is in operation the liquor
95 which lies in the space below the inclined floor B and under the hood (an opening B' in said floor admitting it under said hood) is expelled by centrifugal force through said conducting-pipes and thence through the perforated cans
100

and material contained therein, and said cans having an independent rotary motion the liquor is distributed very uniformly through the material with the result previously stated.

5 The packing-ring C is not designed to make an absolutely water-tight joint, but sufficiently so to not permit sufficient liquor to enter around the lower working parts of the apparatus to cause any material resistance to the
10 proper action thereof by friction. What little liquor does enter is discharged over the top of the inclined floor B by the centrifugal force of the apparatus.

In dyeing coarse open stock, which permits
15 the liquor to percolate through the same readily, it is not necessary to employ the central vertical perforated tubes G in the cans, the perforated pipes or tubes D' being sufficient to properly distribute the dye liquor in such
20 case, and I therefore reserve the right to use said tubes G or not as required in practice in connection with my improvement, an advantage of not using said tubes G being that the stock may be more easily applied and removed
25 to and from the cans F, and it is therefore desirable on this account not to use them unless absolutely necessary to do so to properly dye the material contained therein, as in treating the finer and more compactly wound stock.

30 The packing-ring C is a desirable but not essential feature, and I therefore reserve the right to use the same or not, as desired.

Having now described my invention, what I claim therein as new, and desire to secure by
35 Letters Patent, is—

1. In an apparatus for dyeing yarn-stock in bulk, the combination of the tank, its inclined false bottom, having a central opening; a hood arranged over said opening; a packing-ring
40 interposed between the lower edge of said hood and the false bottom; a series of liquor-conducting pipes, radiating from different points around the dome of said hood; perforated pipe branches extending up vertically

next to the inner sides of the rotary perforated cans which contain the stock to be treated; branches which connect with the bottoms of the central, vertical, perforated tubes in the cans, and said cans and their tubes, substantially as set forth. 45 50

2. In an apparatus for dyeing yarn-stock in bulk, the combination of the tank; its inclined false bottom, having a central opening; a hood arranged over said opening; a series of liquor-conducting pipes, radiating from different
55 points around the dome of said hood; perforated pipe branches extending up vertically next to the inner sides of the rotary, perforated cans which contain the stock to be treated; branch pipes which connect with the bottoms
60 of the central, vertical, perforated tubes in the cans, and said cans and their tubes, substantially as set forth.

3. In an apparatus for dyeing yarn-stock in bulk, the combination of the tank; its inclined
65 false bottom, having a central opening; a hood arranged over said opening; a packing-ring, interposed between the lower edge of said hood and the false bottom; a series of liquor-conducting pipes, radiating from different
70 points around the dome of said hood; perforated pipe branches extending up vertically next to the inner sides of the rotary, perforated cans which contain the stock to be treated, and said cans, substantially as set forth. 75

4. In an apparatus for dyeing yarn-stock in bulk, the combination of the false bottom of the tank, having a central opening; a hood arranged over said opening, having a series of liquor-conducting pipes radiating from different
80 points around its dome, with a packing-ring interposed between the bottom edge of said hood and the aforesaid false bottom, substantially as set forth.

CHARLES M. HANSON.

Witnesses:

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