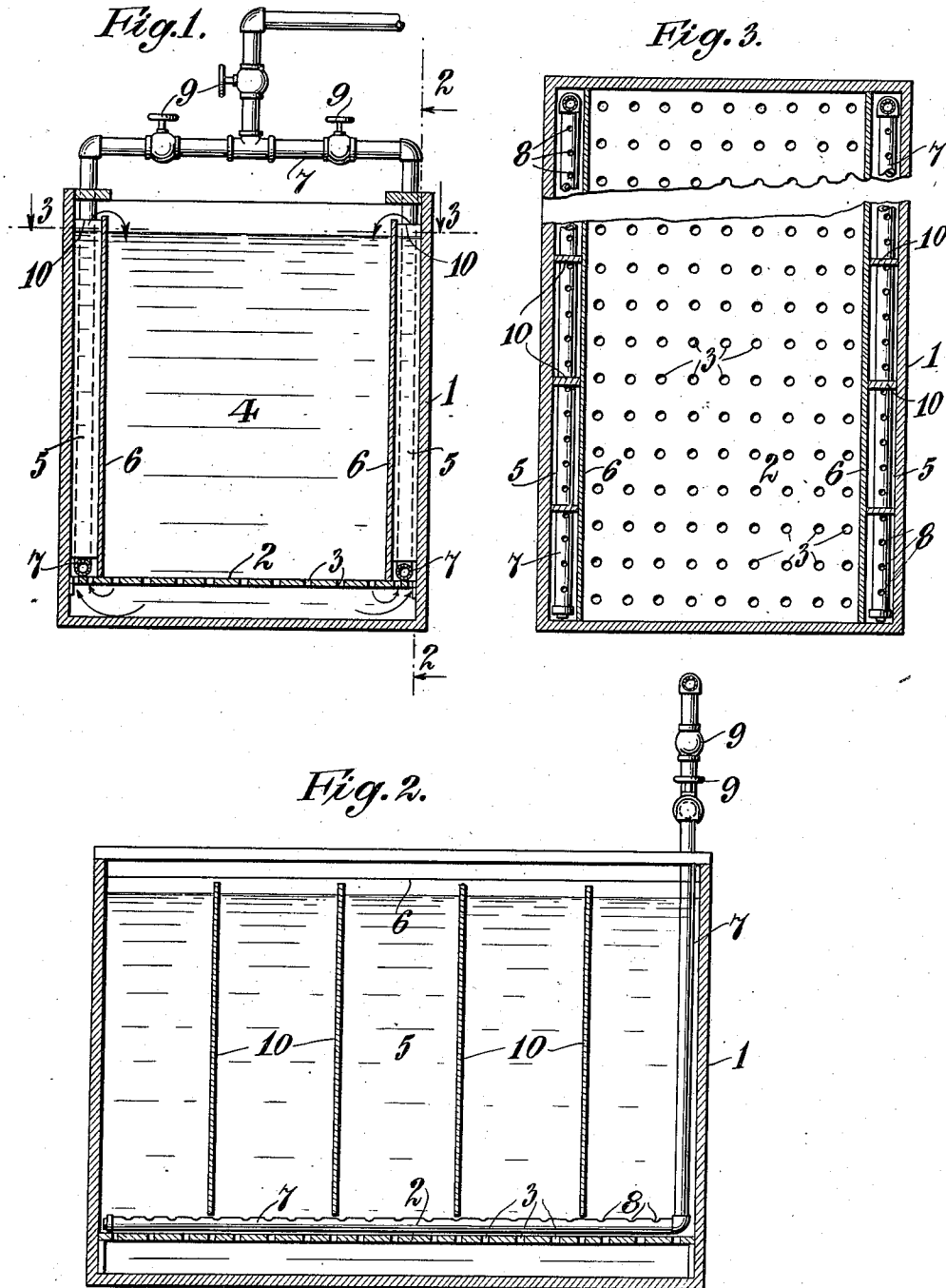


R. B. MILLS.
DYEING TUB.

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1,014,243.

Patented Jan. 9, 1912.



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DYEING-TUB.

1,014,243.

Specification of Letters Patent.

Patented Jan. 9, 1912.

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To all whom it may concern:

Be it known that I, RADCLIFFE B. MILLS, a citizen of the United States, residing at Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Dyeing-Tubs, of which the following is a specification, reference being had to the accompanying drawing, forming a part hereof.

My invention relates to means whereby various materials such as straw braid, raffa, hosiery, felt, and cotton and wool in the raw state, and especially materials which are compactly placed in the dyeing tub, may be dyed evenly throughout, and whereby the dyeing solution supplied to the material may be uniform at all times.

Having these and other objects in view the invention consists in the new and novel features of construction and combinations of parts herein set forth and claimed.

In the accompanying drawing Figure 1 is an end elevation in section of my improved dyeing tub. Fig. 2 is a side elevation in section on the line 2—2 of Fig. 1. Fig. 3 is a plan view in section on line 3—3 of Fig. 1.

The dyeing apparatus such as the tub or receptacle 1 is preferably rectangular in shape, although it may be circular or of any other desired shape, and is provided with a false bottom 2 provided with a plurality of perforations 3. The tub is divided into a main or dyeing vat 4 and a secondary or heating chamber 5 by any suitable means as a partition 6, and said vat and chamber communicate with each other through the perforations 3 provided in the false bottom 2. The partition preferably extends slightly above the normal level of the liquor contained in the tub. If the tub is rectangular in shape preferably two mixing and heating chambers are provided.

Suitable means are provided for heating the dyeing liquor in the secondary chamber comprising preferably a pipe 7 having a plurality of perforations 8 therein for supplying steam, but such perforations are not essential in dyeing certain classes of goods. The pipe 7 is preferably provided with one or more branches according to the number of secondary chambers in the tub and with valves 9 for regulating the supply of steam.

At suitable intervals throughout its length the secondary chamber is provided with a number of partitions 10 separating said

chamber into a plurality of compartments which may communicate with each other both above and below the partitions. Said partitions prevent the liquor from circulating or racing in the chamber and force the same to rise and flow over into the dyeing vat.

In operation dyeing liquid is supplied to the tub and rises to the same level in the chamber and in the vat. Steam is then admitted to the pipes which heats the liquor thereby mixing the same and also causing it to overflow the partition into the main vat. By this construction a constant circulation and agitation of the dyeing liquor is obtained which keeps it of uniform color and causes it to penetrate evenly all the material in the vat. The dyeing is accomplished continuously and without removing, rearranging or disturbing the material in any manner until the dyeing is completed. Consequently the vat may be packed more tightly with material than is otherwise possible and the dyeing is accomplished more quickly. No mechanical agitator is necessary, since the circulation is maintained automatically by the heating and by the escaping steam.

Although I have shown one form of apparatus embodying my invention it is obvious that many changes may be made therein which are within the knowledge of those skilled in the art. For instance, the dyeing tub may be circular in shape, in which case an annular mixing chamber may be provided.

Various other changes may be made without departing from the spirit of the invention, provided the means set forth in the following claims be employed.

I claim as my invention:

1. In a dyeing apparatus, a receptacle provided with a perforated plate arranged near its bottom, a partition resting on said plate to form a heating chamber in said receptacle, a steam supply pipe arranged in said heating chamber above the level of said perforated plate and provided with perforations to permit escape of steam from said pipe, and spacing blocks in said chamber above the steam pipe to divide said chamber into a plurality of compartments.

2. In a dyeing apparatus, a receptacle, to contain a dyeing liquor, a false bottom in said receptacle having a plurality of perforations therethrough, a plurality of parti-

tions in said receptacle extending above the normal level of the dyeing liquor and seating upon said false bottom to form a plurality of heating chambers in said receptacle, means for supplying steam to said heating chambers above the level of said false bottom whereby the liquor contained therein is agitated and heated and caused to overflow said partitions and create a continuous uniform circulation between said

chambers and the interior of the receptacle, and means for regulating the quantity of steam supplied to said heating chambers.

This specification signed and witnessed this 1st day of March, A. D., 1909.

RADCLIFFE B. MILLS.

Signed in the presence of—

ALBERT STETSON,
THOMAS A. PRICE.

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