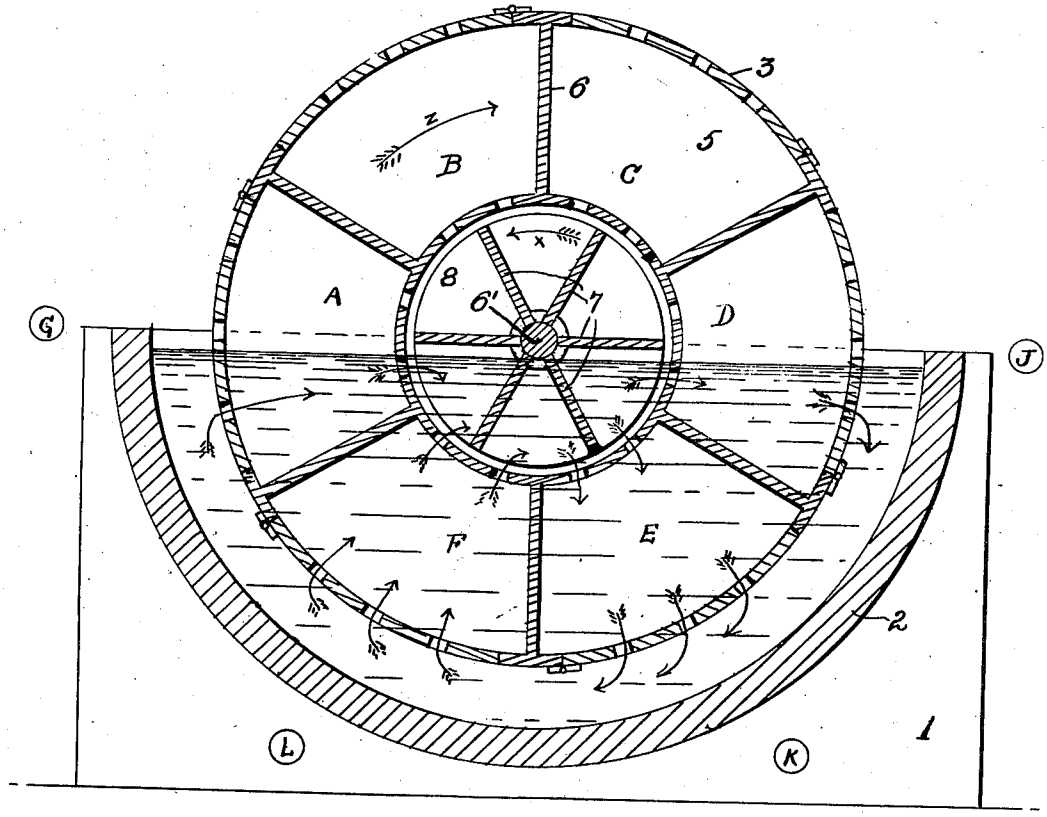
J. H. SKITT.

PROCESS OF DYEING.

APPLICATION FILED NOV. 25, 1912.

1,067,380.

Patented July 15, 1913.



WITNESSES

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JAMES H. SKITT, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO ROBERT P. SMITH AND GEORGE E. DRUM, COPARTNERS TRADING UNDER THE FIRM-NAME OF SMITH, DRUM AND COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

PROCESS OF DYEING.

1,067,380. Specification of Letters Patent. Patented July 15, 1913.

Application filed November 25, 1912. Serial No. 733,258.

To all whom it may concern:

Be it known that I, JAMES H. SKITT, a subject of the King of England, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Processes of Dyeing, of which the following is a specification.

The invention relates to a process of dyeing and broadly consists in agitating the dye liquor in a vat at a point near the surface of the latter and in moving the goods to be dyed in a circular path around the point of agitation and into and out of the dye liquor in a manner to cause the liquor to pass first in one direction through the goods and then in a reverse direction so as to thoroughly penetrate and impregnate the goods with the dye liquor, at the same time without the usual knotting or injuring of the goods.

Other objects and steps will be more fully pointed out in the following description and with reference to the accompanying drawing forming a part of this specification.

The apparatus employed in carrying out this process is similar to that of co-pending application Serial Number 657,084, and as seen in the drawing of this invention consists in a vat 1 which contains the dye liquor. The bottom 2 of the vat is semi-circular in cross section and between this bottom and the peripheral wall 3 of the carrier for the goods is left sufficient space for free circulation of the dye liquor. The carrier comprises the said peripheral or outer wall 3 and an inner concentric wall 4 and both of these walls are perforated and are suitably connected to circular imperforate end walls 5 and imperforate radial partitions 6. The latter divides the carrier into compartments A, B, C, D, E, and F. The end walls 5 of the carrier are journaled on a shaft 6′ and any suitable means may be employed for rotating the carrier thereon in the direction indicated by arrow Z.

Radiating from the shaft 6′ are imperforate circulating blades 7, which with imperforate end walls 8 constitute the agitating or circulating means. Any means may be provided for rotating the shaft and agitator in the direction indicated by the arrow X; that is, in a direction reverse to that in which the carrier rotates.

In carrying out the process, the carrier and agitator are rotated as respectively indicated by the arrows Z and X, the vat being previously filled with dye or other liquor. The goods to be dyed are compacted into the compartments A, B, C, D, E and F, but left loose enough not to interfere with the free passage therethrough of the dye liquor. When the compartment A is at the zone G, the compartments F, E and D are respectively at the zones L, K, and J, and all submerged or partly so in the dye liquor. The agitators 7 rotating in the direction of the arrow X, draw the dye liquor through the compartment A from the exterior thereof to the center of the carrier as indicated by arrows; and from the center, the agitators draw the dye liquor through the compartment D to the exterior of the carrier as indicated by arrows. The perforated walls of the compartments permit this circulation. Likewise, the agitators draw the dye liquor through the compartment F from the exterior of the carrier to the center of the carrier; and force the dye liquor from the center of the carrier through the compartment E to the exterior of the carrier. This circulation of the dye liquor by the agitator is confined to the paths indicated, by the end walls and partitions, which in the main should be imperforate. It will be observed that the circulation of the dye liquor is most perfect when one of the partitions 6 becomes located in the vicinity of a medial line between the zones L and K, as illustrated, and when so located, the partition offers an obstruction around which the dye liquor is compelled to flow, thereby maintaining a continuous circulation of the liquor from left to right in the upper portion of the vat and from right to left along the bottom wall 2 of the vat. The dye liquor from the compartments A, B, C and D or the portions thereof not submerged drains into the central chamber of the carrier, except for a small portion that escapes through the exterior walls of the same. As the carrier slowly rotates to bring the compartments F, E, D, and C adjacent the zones G, L, K and J respectively, the dye liquor circulates from the carrier exterior through the compartments F and E to the carrier center, and from the carrier center

through the compartments D and G to the carrier exterior. The dye liquor in the vat between the carrier and vat bottom flows continuously in one direction from the zone J to the zone G. From the zones L and G, the dye liquor flows from the exterior of the carrier to the center thereof; and from the center thereof toward the zones J and K. Obviously at certain points the line of flow will not be exactly as described and illustrated, as there will be certain eddy currents tending to break the direct flow at certain points, but in general the circulation of the dye liquor will be as described, and the bulk of the liquor will take the paths of flow indicated.

At the zones L and G, the dye flows through the goods in one compartment in one direction. This dye liquor then drains from the said compartment as the latter leaves the vat, and as the compartment is again submerged at the zones J and K, the dye liquor again flows through the goods, but in a reverse direction. The carrier turns slowly so as not to roughen or tangle the goods in the compartments and to not interfere with the described circulation of the dye liquor. On every revolution of the carrier, the dye liquor passes twice through the goods in the compartments, once in one direction and then in a reverse direction.

Of course it will be understood that the invention is not restricted to dyeing, but is applicable generally to impregnating such as washing, coating or otherwise. The invention is particularly adapted to treating knit goods, as stockings, but may be employed for treating any other goods or articles.

Having fully described the invention, what is claimed as new and desired to be secured by Letters Patent is:—

1. A process of dyeing, consisting in agitating the dye liquor to produce currents thereof toward and from the point of agitation, in passing the goods to be dyed through said currents to cause the currents to pass first in one direction and then in an opposite direction through the goods, and in obstructing the flow of the liquor between the point of agitation and a point adjacent the outer limit therefrom in the path of travel of the goods.

2. A process of dyeing, consisting in agitating the dye liquor to produce currents thereof toward and from the point of agitation, in rotating the goods around the point of agitation to cause the currents to pass first in one direction and then in an opposite direction through the goods, and in obstructing the flow of the liquor between a point adjacent the point of agitation and a point adjacent the outer limit therefrom in the path of travel of the goods.

3. A process of dyeing, consisting in agitating the dye liquor to produce currents thereof toward and from the point of agitation, in rotating the goods around the point of agitation into and out of the liquor to cause the currents to pass first in one direction and then in an opposite direction through the goods, and in obstructing the flow of the liquor between a point adjacent the point of agitation and points adjacent the outer limits therefrom in the path of travel of the goods.

4. A process of dyeing, consisting in agitating the dye liquor to produce currents thereof toward and from the point of agitation, in immersing the goods in the liquor on one side of the point of agitation and withdrawing them on the opposite side thereof thereby causing the currents to pass in one direction and then in an opposite direction through the goods.

5. A process of dyeing, consisting in agitating the dye liquor to produce currents thereof toward and from the point of agitation, in immersing the goods in the liquor on one side of the point of agitation and withdrawing them on the opposite side thereof thereby causing the currents to pass in one direction and then in an opposite direction through the goods, the direction of agitation being opposite to that of travel of the goods.

6. A process of dyeing, consisting in agitating the dye liquor to produce currents thereof toward and from the point of agitation, in surrounding the point of agitation with the goods to be dyed, separating the goods into lots in a manner to prevent flow of the liquor directly from one lot into the other, and in moving the goods about the point of agitation to cause the lots treated by one of said currents to be subjected to the other thereof.

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

JAMES H. SKITT.

Witnesses:
MARGARET CRAIG,
ELLEN W. NELSON.