April 23, 1929. H. E. BREWIN ET AL 1,710,607

DYEING MACHINE

Filed July 9, 1925 2 Sheets-Sheet 1

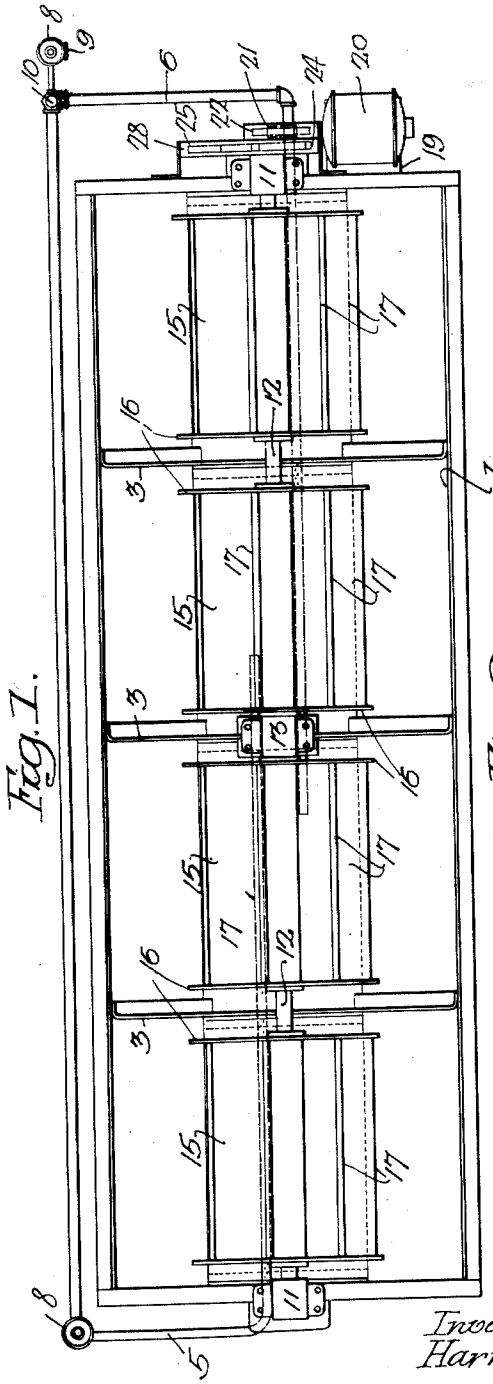


Fig. 1.

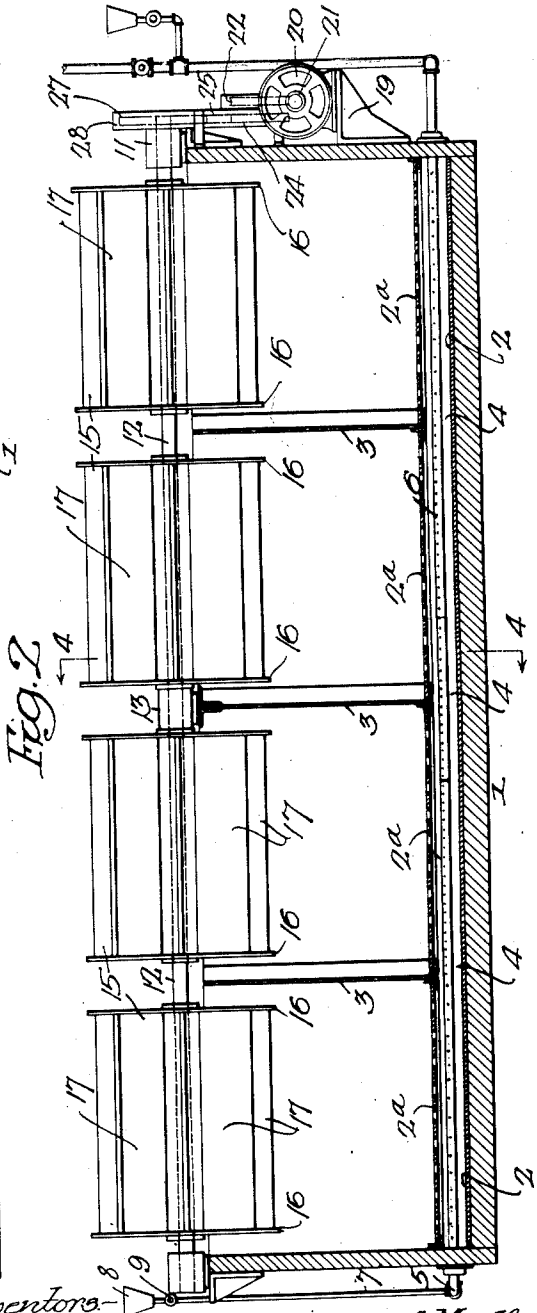


Fig. 2.

Inventors—
Harry E. Brewin, Alexander C. Mackey.
by their Attorneys—
Howson & Howson

April 23, 1929. H. E. BREWIN ET AL 1,710,607

DYEING MACHINE

Filed July 9, 1925 2 Sheets-Sheet 2

Fig. 3.

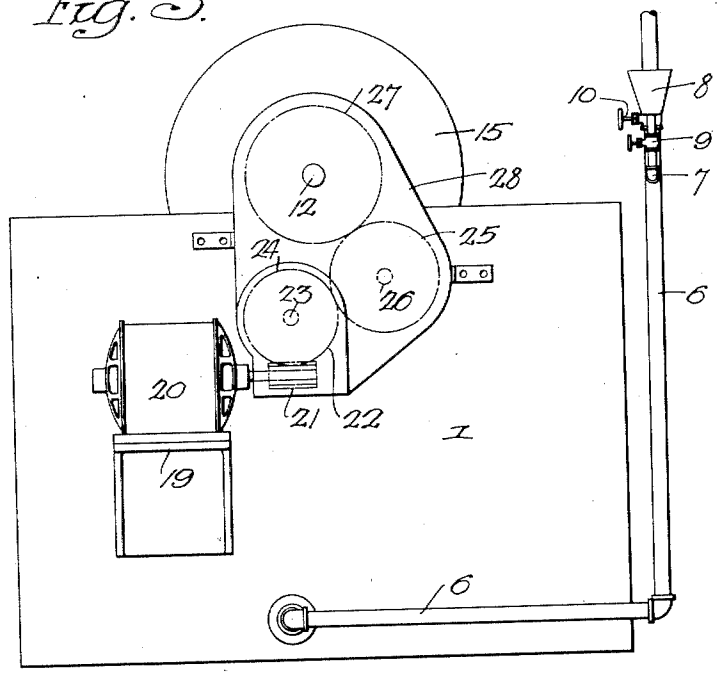
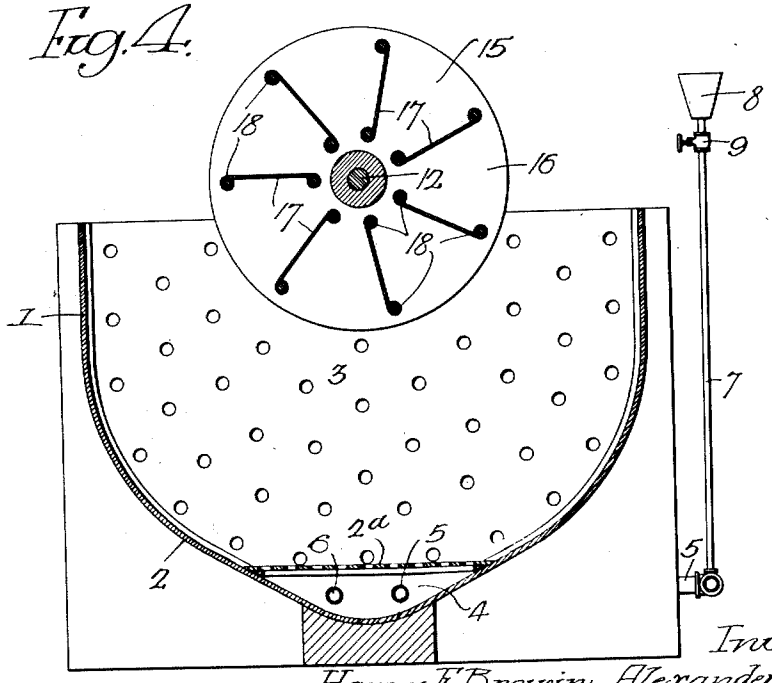


Fig. 4.



Inventor-
Harry E. Brewin, Alexander C. Mackey
by their Attorneys.—
Howson & Howson

Patented Apr. 23, 1929. 1,710,607

UNITED STATES PATENT OFFICE.

HARRY E. BREWIN AND ALEXANDER C. MACKEY, OF PLEASANTVILLE, NEW JERSEY, ASSIGNORS TO SMITH, DRUM & COMPANY, INCORPORATED, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

DYEING MACHINE.

Application filed July 9, 1925. Serial No. 42,520.

Our invention relates to certain improvements in dyeing machines of the paddle type for dyeing stockings and other loose stock.

One object of the invention is to increase the capacity of a machine of the above mentioned type by providing a series of vats, which are separated by perforated partitions, and in which small batches of material are dyed, and by mounting the paddles on a common shaft.

A further object of the invention is to provide means for circulating the dye liquor—first in one direction—and then in the opposite direction, the liquor circulating through the series of vats.

In the accompanying drawings:

Fig. 1 is a plan view of our improved dyeing machine;

Fig. 2 is a longitudinal sectional view;

Fig. 3 is an end view; and

Fig. 4 is a transverse sectional view on the line 4—4, Fig. 2.

The vat 1 is elongated and has a curved bottom 2.

In the present instance, the vat is divided by perforated, flanged partitions 3 into four compartments. The bottom of the vat has a depression at the centre extending below the partitions, forming an uninterrupted space 4—extending from one end of the vat to the other. In the space 4 are the steam pipes 5 and 6, which enter the vat at opposite ends, and pass each other at the center, as shown in Fig. 1. The steam pipes are perforated to allow steam to escape into the vat and heat the dye liquor.

The coloring matter is admitted to the vat through small pipes 7, which are coupled to the steam pipes. The small pipes are provided with funnels 8 and valves 9. The steam pipes have valves 10.

Removable, narrow perforated bottom sections 2^a enclose the space occupied by the steam pipes. The feed pipes for the dye are made comparatively small so that the dye, which is added from time to time, can percolate slowly into the vat.

The holes in the steam pipes are arranged farther apart in the end compartments than in the intermediate compartments. This, with the overlapping steam pipes, insures even distribution of color during the addition of dye to the bath and causes the liquor in each compartment to boil in the same proportion.

Mounted on the vat are bearings 11 for a longitudinal shaft 12, which is supported at the center by a bearing 13 that is mounted on the central partition of the vat.

On the shaft 12 are four paddle wheels 15—one for each vat. Each wheel has solid side members 16 and paddles 17, which are mounted on rods 18 that extend from one side member to the other. The paddles stop short of the center, as shown clearly in Fig. 4.

Mounted on a bracket 19 at one end of the vat is a reversible electric motor 20, of any well known type. On the shaft of the motor is a worm 21, which meshes with a worm wheel 22 on a stud 23. On the stud is a gear wheel 24, which meshes with an intermediate gear wheel 25, also mounted on a stud 26. The gear wheel 25 meshes with a gear wheel 27 on the shaft 12. The gearing is located in an enclosing casing 28, as shown in Fig. 3. Other arrangements of the driving mechanism can be employed without departing from the essential features of the invention.

By the construction hereinbefore described, the paddles are driven for a given time in one direction, then the motor reverses automatically and drives the paddles in the opposite direction, causing the dye liquor to circulate, first in one direction and then in the opposite direction.

A machine of this type is especially adapted for dyeing stockings and other knit or woven fabrics and wool and fur felts. The stockings are placed in bags, or are otherwise arranged in batches, and each compartment of the vat contains a certain number of bags or batches. As the paddles rotate, the liquor is rotated and the material is agitated and turned so that each article is thoroughly and uniformly dyed.

We claim:

1. The combination in a dyeing machine, of a vat; a series of perforated transverse partitions in the vat forming compartments, said vat having a central longitudinal depression at the bottom; a narrow perforated bottom section in each compartment closing the depression; steam pipes in the depressed portion of the vat under the perforated bottom sections; a paddle wheel in each compartment of the vat; and means for rotating said wheels.

2. The combination in a dyeing machine, of a vat; a series of perforated, transverse

partitions in the vat, dividing the vat into a series of compartments; a perforated steam pipe extending from each end of the vat and located in the bottom of the vat, each pipe extending past the central partition of the vat; bearings on the vat; a longitudinal shaft mounted in the bearings; a series of paddle wheels on the shaft, one paddle wheel for each compartment; and a reversible electric motor for driving the shaft.

3. The combination in a dyeing machine, of a vat; a series of transverse, perforated partitions in the vat forming compartments, the partitions stopping short of the bottom of the vat; steam pipes located in the bottom of the vat and extending under the partitions; removable, perforated bottom sections enclosing the space occupied by the pipes; a longitudinal shaft; a series of paddle wheels on the shaft, one for each compartment; and means for rotating the shaft.

HARRY E. BREWIN.
ALEXANDER C. MACKEY.