This invention relates to an article staining machine in which articles may be mechanically submerged into a staining bath and then subjected to centrifugal force to throw off the superfluous stain which may be recovered back in the bath to be again used.

The device is not limited to the staining of any particular article although it is especially adapted for use in connection with staining wooden shingles. The shingles can be placed in the cage or basket and dipped into a submerging staining bath for a sufficient length of time to allow the stain to penetrate the articles to a sufficient depth and then the basket retracted from the bath and subjected to centrifugal action to throw off adhering stain. This is recovered in the original bath and thereby reduces the operating cost of staining the articles.

Another advantage of such a method is that the centrifugal action provides for a preliminary drying of the shingles or other articles.

The mechanism for accomplishing the result is the important feature of my invention, and its construction as well as its operation will be clearly understood by reference to the following description in connection with the accompanying drawings, in which

Fig. 1 is a perspective view of an article staining machine constructed in accordance with my invention.

Fig. 2 is a vertical, sectional view through the same, and

Fig. 3 is a cross sectional view on the line 3—3 of Fig. 2.

Fig. 4 is a view illustrating the connection of the lifting bracket to the basket shaft.

Referring now to the drawings by numerals of reference:

1 designates a frame in which is mounted 69 a tank 2. The tank has a concave bottom 3, at the vertex of which is a discharge pipe 4. Access to the tank may be had by raising the door 5.

Extending across the frame 1 is a base 65 board 6, on which is a vertical frame consisting of the two standards 7 and 8 and the two standards 9 and 10, the standards 7 and 8 being in spaced relation one with the other and with the standards 9 and 10. 79 The standards 7 and 8 are connected by a cross bar 11 and the standards 9 and 10 are connected by a cross bar 12. The standards 8 and 10 are connected by a side bar 13 and the standards 7 and 9 are connected by a 75 side bar 14.

Mounted on the standards 9 and 10 are two pulleys 15 and 16, around which cables 17 and 18 pass. One end of each cable is connected to a vertically movable cross bar 19 and the other ends of the respective cables carry counter-balance weights 20 and 21. The vertically movable cross bar 19 carries a bracket 19', which is fastened to a vertical shaft 22 vertically slidable in bearings 23 and 24. The shaft has a collar 25 which is fixed to it and which has its end flanges turned over the bracket 19' so that when the bar 19 is raised or lowered, a longitudinal movement will be imparted to the shaft 22 but the shaft can rotate within the bracket 19'.

The bracket has an outstanding finger 26, to which one end of a cable 27 is secured, the cable passing around pulleys 28 and 29 on the cross bar 11 and around a shaft 30 mounted in brackets 31 in the frame 1. The shaft 30 is rotated by a hand wheel 32 (see Fig. 1).

The finger or lug 26 is also connected to one end of a second cable 33, which passes around the pulleys 34 and 35, supported by the angle 36 carried by the standards 7 and 8. The cable 33 is wound around the shaft 30 in a direction opposite to the winding of the cable 27. Therefore, when the shaft 30 is turned in one direction, the bar 19 will be raised due to the fact that the cable 27 will be winding on the shaft 30 and the cable 33 will be unwinding from it. 110
When the shaft 30 is turned in an opposite direction, the shaft 22 will be lowered due to the fact that the shaft 29 will be lowered on account of the cable 33 winding on the shaft 30 and the cable 27 unwinding from the shaft 30.

The raising and lowering of the shaft 23 will raise and lower the article-containing cage or basket 37 which consists of a skeleton frame having a plurality of rollers 33, making up the side bars. These rollers are loosely mounted on iron rods, as will be readily apparent, so that the rollers can have free rotary motion. The cage is also provided with an opening 39, which may be closed by an appropriate latch 40.

The shaft 22 has a key-way 41, which is engaged by a spline or key 42 in the bearing collar 24. The bearing collar is supported in a bearing consisting of the block 43 and the plate 44 (see Fig. 3).

Since the sleeve or collar 24 is splined to the shaft 22, it is obvious that when the sleeve turns, the shaft will have to turn. The sleeve carries at its lower end a beveled gear 45, meshing with a beveled gear 46 on the horizontal shaft 47. The horizontal shaft 47 is in bearings 48 and 49 carried by the bearing bracket 50. At one end of the shaft are two pulleys 51 and 52, one is fixed to the shaft and the other is an idler. The belt 53 which communicates power from the power source can be shifted either onto the idler or onto the positive pulley by a belt shifter consisting of the lever 54, having a forked end 55 and fulcrumed at 56 to the bracket arm 67.

One end of the lever 54 is connected to a rod 58 fastened intermediate the ends of the lever 59, which is pivoted at 60 to the base 6. The lever 59 has a handle 61, by means of which the link 56 can be moved back and forth to rock the lever 54 to shift the belt, as will be well understood.

It will be apparent that when the shaft 30 is rotating in one direction, the articles within the cage can be dipped into the staining liquid 62 in the tank 2. Then the cage can be raised and subjected to centrifugal force to throw off any superfluous liquid or stain.

It is important in a device of this class that the stain be constantly mixed so as to maintain it at the proper consistency and in order to do this I connect to the pipe 4 a pump 63, which discharges through the pipe 64 into the tank 2 preferably just above the level of the liquid 62. Therefore, there will be a constant circulation of the liquid 62 because the pump will be constantly driven and it will be pumping stain from the bottom of the tank and discharging it back into the tank 2 at about the liquid level.

If it is desired to empty the tank, the valve 65 can be seated so as to close pipe 64; then communication can be had through the pipe 66, connected to pipe 64 between the valve 65 and the pump and if the valve 67 in pipe 66 is open, then the liquid instead of being pumped back into the tank will be discharged into a receptacle provided for it. Then a new batch of stain, for example, of a different color, may be introduced into the tank and the operation of the machine will be the same.

When the articles are to be treated, they are introduced into the cage or basket by opening the door 5 and latch 40. Then the door and latch are closed, the basket is lowered into the liquid and allowed to stand a few moments if necessary; the basket is then raised and the shaft 22 is turned at a relatively high rate to provide enough centrifugal force to throw off the superfluous moisture. The amount of moisture recovered is an important factor because if surface penetration is desired, it is of no special advantage to impregnate the article entirely through and by recovering the adhering stain, the operating cost and cost of production is materially decreased.

The device is simple in operation, can be readily controlled, and is highly efficient to accomplish the purpose for which it is intended.

What I claim and desire to secure by Letters-Patent is:

In a dipping and drying machine, a tank, a cage within the tank, means for lowering and raising the cage into and from a bath of liquid contained within the lower portion of the tank, means for rotating the cage when it is above the bath, a conduit having intake from the bottom of the tank and discharge into the tank above the level of the bath, and a pump in said conduit whereby the bath liquid is constantly circulated during operation of the machine.

In testimony whereof I affix my signature.  

JOHN J. STARKS.