(No Model.)

A. HINZE.

APPARATUS FOR DYEING.

No. 489,955. Patented Jan. 17, 1893.

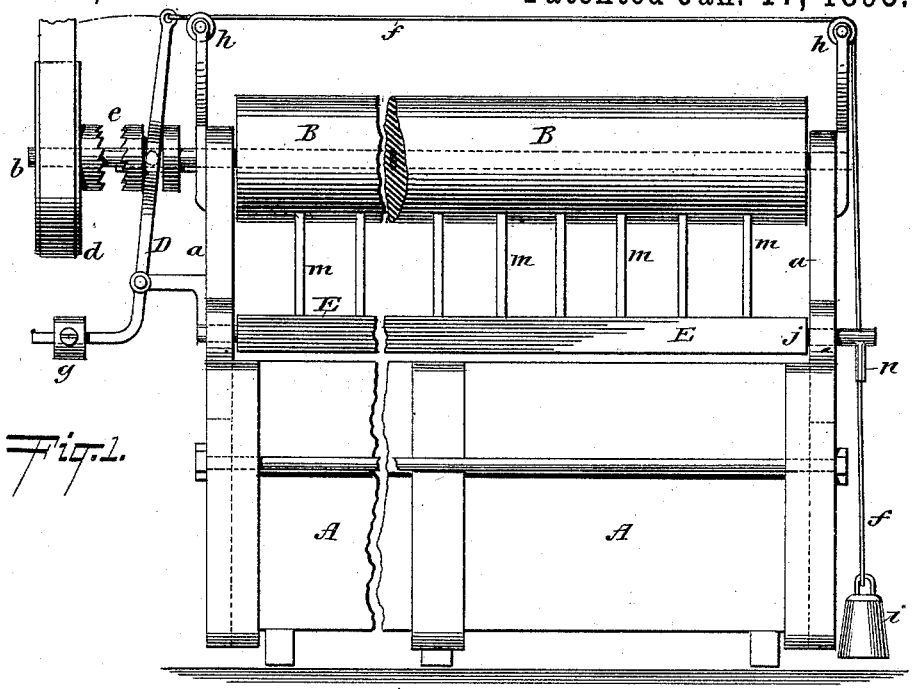

Fig. 1.

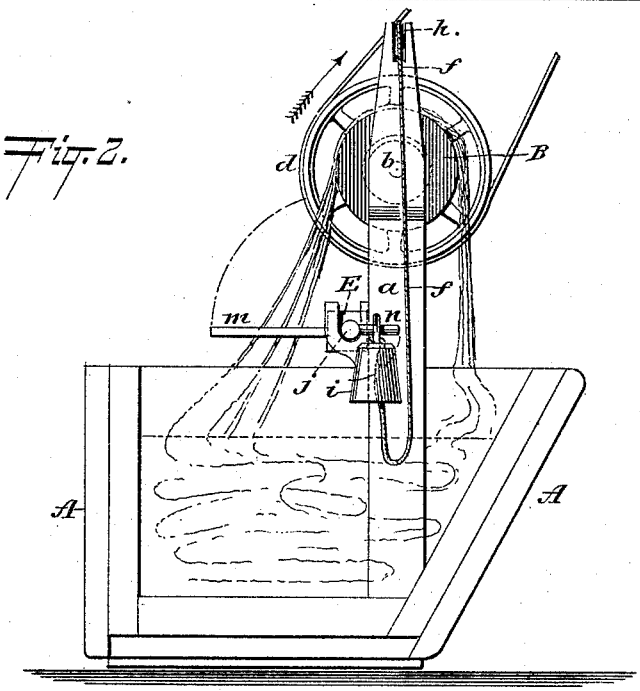

Fig. 2.

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APPARATUS FOR DYEING.

SPECIFICATION forming part of Letters Patent No. 489,955, dated January 17, 1893.

Application filed June 13, 1892. Serial No. 436,455. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH HINZE, a resident of the city, county, and State of New York, have invented an Improvement in Dyeing Machinery, of which the following is a specification, reference being had to the accompanying drawings, forming part hereof, in which—

Figure 1 is a front elevation, partly broken away, of my improved dyeing machinery; Fig. 2 is a side elevation of the same.

The object of this invention is to provide machinery for dyeing quantities of piece-goods with means for automatically arresting the motion of the machine the moment any of the goods become entangled.

Machinery of the kind to which my improvements relate as heretofore made consisted mainly of a vat, within which the dye was contained, of a skeleton-drum hung in bearings above said vat and connected with machinery for rotating it, and of a comb or bar, having fingers projecting therefrom, which were carried by the vat, and which served to keep the piece-goods to be dyed to some extent separated from one another. Nevertheless, it frequently happened that some of these goods as they were carried around by the skeleton-drum became entangled with one another, and thereupon the rotation of the drum continuing, the entangled goods by frictional contact became injured and unsalable, unless very prompt attention was given and the machinery instantly stopped. This of course would have necessitated the employment of a special attendant for every single machine, and even with such an attendant constantly watching one particular machine, it was almost impossible to prevent injury to valuable goods, because the fact of the entanglement was not always promptly noticeable.

My invention consists mainly in substituting for the stationary comb previously employed one that is pivoted or capable of turning on its axis, and in combining with such a movable comb an automatic clutch-disengaging mechanism, all as hereinafter more fully described.

In the accompanying drawings the letter A represents the dyeing vat.

B is the drum for moving the goods to be dyed. This drum, in contradistinction to being a skeleton drum as heretofore, I make of a solid block of wood or other substance, because I find that the continuous surface drum thus produced over which the goods are passed yields a greater frictional surface for carrying the goods and insures a more certain action on the automatic stop mechanism. The solid drum also enables me to keep the drum throughout clean and to use the same drum for tints of similar colors. The skeleton drums heretofore used were very hard to clean in the interior and were liable to foul from the accumulation of dyeing matter within the interior. When I speak of the drum being solid, I mean that it shall be solid to the very core, so that no interstices are formed in which impurities could gather.

The drum B is hung in suitable posts *a*, and its shaft *b* carries a driving pulley *d* which receives rotary motion from a belt or other power. The shaft *b* also has a clutch *e*, whose movable member is connected with a lever D that is pivoted to a bracket projecting from the stationary framework. One end of this lever D connects with a rope or line *f*, while the other end carries a weight *g*, in lieu of which an analogous spring can of course be employed. The line *f* passes over friction rollers *h* that are carried by the stationary framework and connects at its outer end with a weight *i*, sufficiently heavy that when let go it will overbalance the weight *g* and will draw the lever D into the position shown in Fig. 1, thereby opening the clutch. In the stationary framing of the machine, that is to say, in the posts *a* or in the walls of the vat A, are the bearings for a pivoted comb E, which comb consists of a longitudinal bar *j* carrying series of rake, tooth-like or comb-like projecting pins *m*. The ends of the bar *j* are rounded and fit into appropriate stationary bearings, so that the entire comb E is capable of being turned on said pivotal supports from the normal position shown in Fig. 2 into the position shown in Fig. 1. The bar *j*, or one of its gudgeons, has a pin *n* projecting at right angles. In the normal position of the parts this pin is horizontal, as in Fig. 2, and the weight *i* is then suspended from it.

Having now described the construction of the machine I will briefly state its operation:

The piece-goods to be dyed are placed around the drum B so that they are suspended into the vat, which is filled with the dye. Each piece of goods is passed between two teeth *m* of the comb E, the comb being in its normal position, that is, with its teeth standing out horizontally, as shown in Fig. 2. The weight *i* is suspended from the pin *n*, and the clutch *e* closed. Each piece of dye-goods may have its ends connected so that each will be a continuous band; but long pieces not continuous or endless can also be dyed in this apparatus. When the parts are in the position last referred to, rotary motion is imparted to the drum B so that the piece-goods carried by it will be moved through the dye, the teeth *m* of the comb keeping the different pieces of goods separated from one another. But should nevertheless entanglement occur, that is, should two pieces become knotted together, or even should a length of one piece be formed into an entangling loop, the effect will be that upon rotation of the drum being continued after such entanglement has occurred, the comb will be turned from the horizontal position shown in Fig. 2 into the upright position shown in Fig. 1, thereby carrying the pin *n* downward so as to cause the weight *i* to slip off said pin. The dropping weight *i* draws on the line *f* and on the lever D so as to open the clutch *e*, as in Fig. 1, and instantly arrest the motion of the machine. Thus it will be perceived that the instant entanglement of the goods takes place, the machine will be automatically stopped. Hence with my improvement one attendant can serve a number of machines, his whole function being to disentangle pieces in machines that are no longer in motion, and after that to restore the comb E and the weight *i* to the normal position. From the position of parts represented in Fig. 2, it is evident that the drum B is rotated during operation in the direction of the arrow represented in that figure. The comb E will ordinarily be retained in the normal or horizontal position by the weight of its teeth *m*, the weight *i* being suspended from the pin *n* so close to the gudgeon of the comb as to prevent said weight from tilting the comb during the normal operation of parts. But any light spring-catch may be applied, if desired, to help hold the comb in the normal position, such a catch being insufficient to prevent the elevation of the comb by the entangled pieces.

I do not wish to confine myself to the specific mechanism shown in the drawings for opening the clutch *e* by the action of the revolving comb E: any other analogous mechanism for unshipping the belt or opening the clutch may be employed with substantially the same effect, the point of my invention being mainly the combination of the movable comb with the automatic stop mechanism.

What I claim is:

1. In a dyeing machine, the combination of the vat A and the drum B with mechanism substantially as described for rotating said drum, and with the pivoted comb E, having teeth *m*, and mechanism substantially as described for connecting said pivoted comb with an automatic stop mechanism, all as specified.

2. The combination of the vat A, drum B, and mechanism substantially as described for revolving said drum, with the pivoted comb E, carrying the pin *n*, and with the weight *i* adapted to be suspended from said pin *n*, cord *f* and stopping-lever D, said cord connecting said stopping-lever with said weight *i*, all substantially as and for the purpose specified.

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Witnesses:
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