Oct. 4, 1927. 1,644,462

T. J. BACHOFEN

MACHINE FOR PIECE DYEING

Filed March 30, 1926 2 Sheets-Sheet 1

Fig. 1.

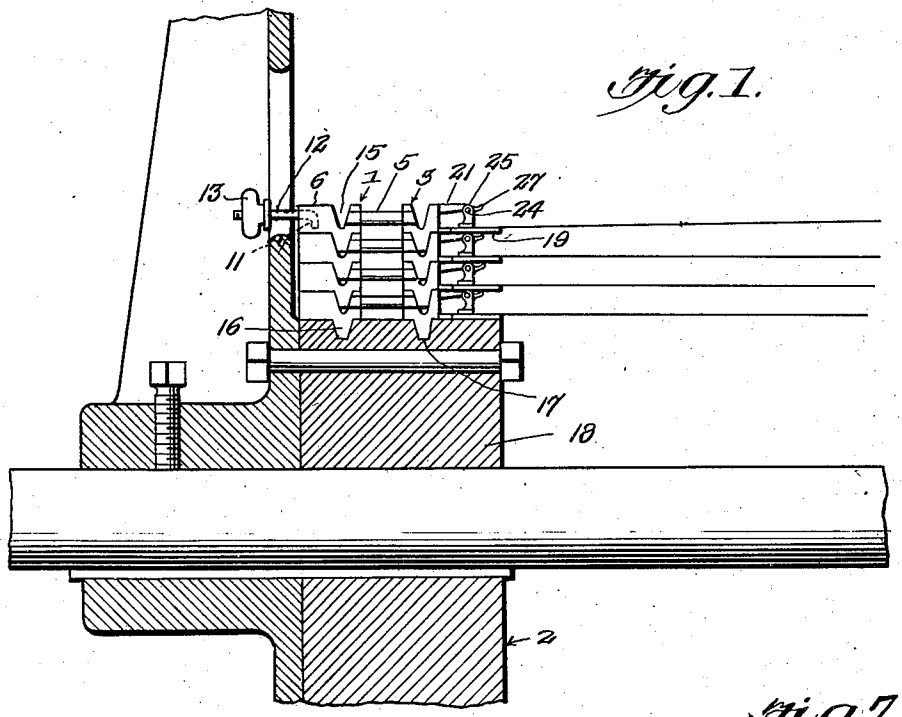



Fig. 7.

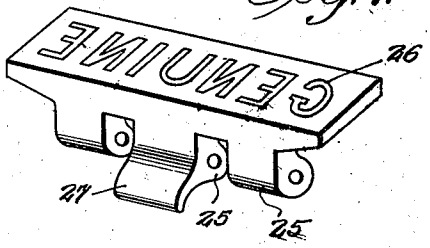
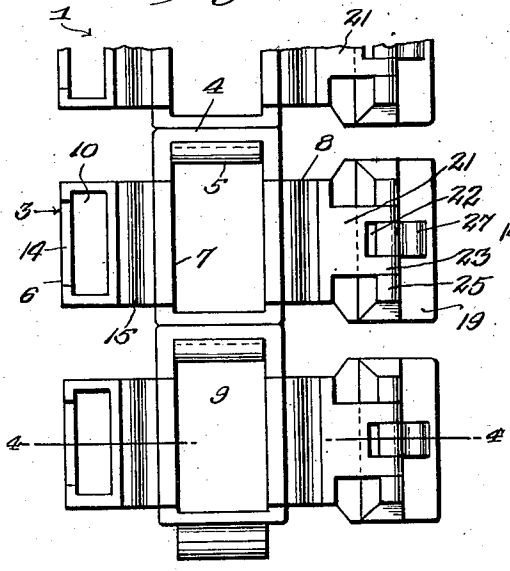



Fig. 3.



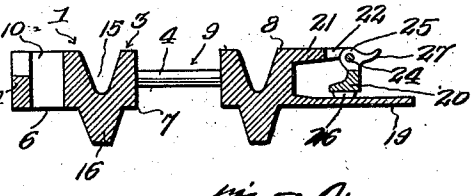




Fig. 4.

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MACHINE FOR PIECE DYEING

Filed March 30, 1926 2 Sheets-Sheet 2

Fig. 2.

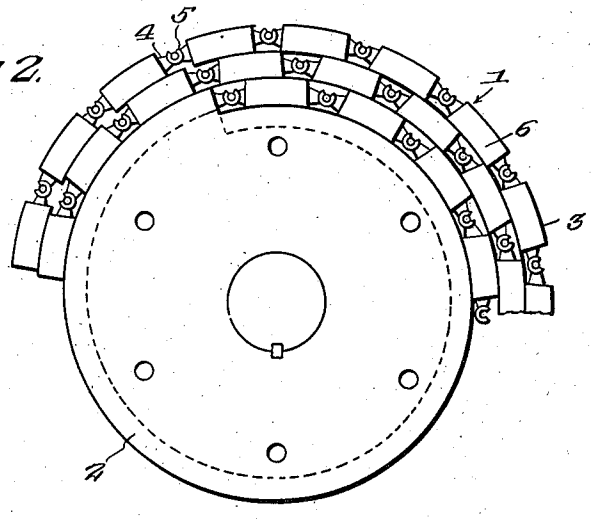
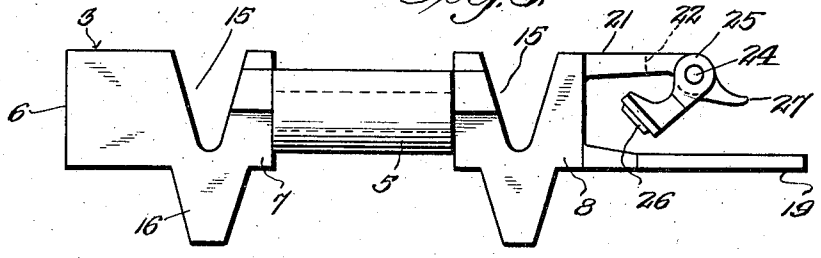



Fig. 5.



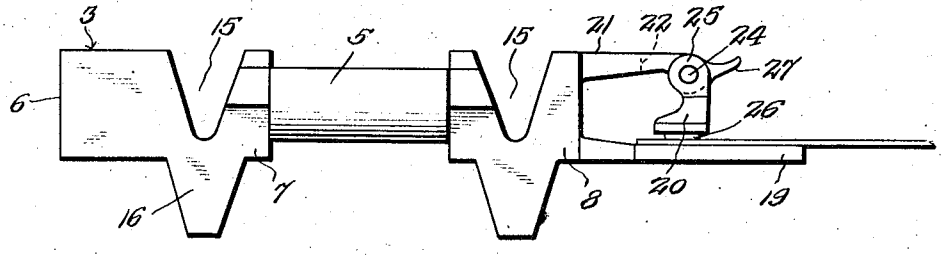




Fig. 6.

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Patented Oct. 4, 1927. 1,644,462

# UNITED STATES PATENT OFFICE.

THEODOR J. BACHOFEN, OF WESTBROOK, MAINE.

## MACHINE FOR PIECE DYEING.

Application filed March 30, 1926. Serial No. 98,556.

The invention relates to a machine for piece dyeing and is an improvement on the side chains and the cloth holding means thereof of the apparatus shown and described in my co-pending application, Serial No. 66,818, filed November 4, 1925.

The object of the present invention is to improve the construction of the side chains and the cloth holding means of the apparatus of the aforesaid application and to provide a simple, practical and efficient combined clamping and stenciling device adapted to engage and securely hold and stencil the more delicate or finer fabrics without tearing, puncturing or otherwise injuring the same.

Another object of the invention is to provide side chains of this character adapted to be wound on a drum to spirally coil the piece goods and maintain the same in spaced relation for such operations as boil-off, bleaching, washing and dyeing without the cloth clamping means of the links of the chains interfering with the coiling of the said chains on the drum.

With these and other objects in view, the invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:

Figure 1 is a detail sectional view of a portion of the drum illustrating the manner of winding the side chains thereon and securing the side chains in proper position.

Fig. 2 is a side elevation of the same.

Fig. 3 is an enlarged plan view of a portion of one of the side chains.

Fig. 4 is a transverse sectional view on the line 4—4 of Fig. 3.

Fig. 5 is a side elevation of one of the links the pivoted jaw being open.

Fig. 6 is a similar view, the pivoted jaw being closed.

Fig. 7 is a detail view of the pivoted jaw, illustrating the arrangement of the stenciling type.

In the accompanying drawing in which is illustrated the preferred embodiment of the invention, the side chains 1 are adapted to be wound on a drum 2 in the same manner as the side chains of the apparatus shown and described in the aforesaid application. In practice the cloth from the cloth roll is engaged at opposite sides by the cloth engaging means of the side chains for maintaining the proper width and length of the cloth so that when the cloth is subjected to operations producing shrinkage the shrinkage of the cloth will be controlled and excess shrinkage prevented by maintaining the cloth at a desired predetermined width and length during such operations as boil-off, bleaching, dyeing and washing and excess shrinkage during such operations is prevented and it is unnecessary to tenter or stretch the goods after such operations to remove excess shrinkage and restore the goods to their proper width and length and injuries and damage to the goods and loss incident to such tentering or stretching operations are eliminated. In practice the chains are rolled from one drum to another and the side chains are composed of links 3 detachably and flexibly connected with one another by means of a transverse pivot portion 4 and a bearing portion 5 similar to the links of an ordinary sprocket chain, each link being provided with a pivot portion and a bearing portion. The link 3 consists of an outer portion 6, an intermediate portion 7 and an inner portion 8. The intermediate portion is provided with a rectangular opening 9 to receive the sprockets or projections of sprocket wheels or other rotary elements over which the chains pass. The pivot portion and the bearing portion are located at opposite ends of the rectangular opening. The outer portion 6 is provided with an oblong slot or opening 10 which is adapted to receive the bill or engaging portion 11 of a hook 12 or other suitable fastening device carried by the drum 2 and operating in radial slots thereof as explained in the aforesaid application. The hook 12 is adapted to be placed on the drum in the slots thereof for engaging the chain at intervals and it is equipped with a nut 13 for clamping the hook in its adjustment. The outer portion of the stem of the hook is threaded to receive the nut. This will enable the chain to be built up by successive coils or convolutions and will enable the links to be maintained in their nested or interlocked relation with each other and with the drum. The outer

wall 14 of the opening in the outer portion of the link is recessed as shown to permit the stem of the hook to be arranged below the upper or outer edge of the adjacent portion of the link so that the hooks will not interfere with the coiling of the chains and the nesting of the links on the drum.

Each link is provided at opposite sides of its intermediate portion with tapered grooves 15 and with tapered lugs 16, the grooves being formed in the upper face of each link and the tapered lugs projecting from the lower face of each link and preferably arranged in pairs beneath the grooves. The lugs of the links are adapted to engage tapered annular grooves 17 in the hub portion 18 of the drum and also to fit in the grooves of contiguous links so that the links will coil or nest in compact form flat against one another as shown. The first coil or convolution of each side chain will be arranged upon the hub portion of the drum and the coils or convolutions will be arranged upon one another as clearly illustrated in Figs. 1 and 2 of the drawing. The taper of the grooves and the lugs will provide a tight wedging fit and will enable the side chains to be firmly coiled on the hub portion at each side of the drum.

The inner portion 8 of each link is provided with a cloth engaging clamp comprising a fixed lower jaw 19 and an upper pivoted jaw 20. The lower fixed jaw consists of a thin plate preferably formed integral with the inner portion of the link as shown and extending from the outer wall of the adjacent tapered groove and it presents a smooth flat surface to the piece goods. The pivoted jaw is hung from the outer or edge portion of a flange 21 projecting from the upper portion of the adjacent wall of the said tapered groove and located above and in spaced relation with the fixed jaw and provided with a recess 22 and having spaced eyes 23 located at opposite sides of the recess and receiving a pivot pin 24 which also passes through a plurality of alined eyes 25 of the pivoted jaw. The pivoted jaw swings inwardly from its closed engaging position and it is limited in its outward swing by the fixed jaw and it is provided at its lower engaging face with stenciling type 26. The stenciling type 26 engages the fabric and it excludes the dye from portions of the fabric so that in the dyeing operation the portions of the fabric engaged by the type will be left undyed and will show at the side edges of the material. Any suitable words or characters may be employed such as "Genuine" with the name of the manufacturer and in practice the pivoted jaws will be provided at intervals with words and the intervening jaws may have other characters such as dashes but it will be clear that any form of type may be provided. The stenciling type are formed integral with the pivoted jaw and the latter is provided at its outer side with a projection 27 located between the planes of the upper and lower faces of the links so that the projection which is adapted to be engaged in the usual manner by operating means will not interfere with the nesting of the chains in coiling the same around the hub portions of the drum. The tension of the material on the pivoted jaws of the clamps will maintain the pivoted jaws firmly in engagement with the goods. Also there will be no liability of puncturing or injuring the goods through the clamping action of the pivoted jaws.

What is claimed is:

1. In a machine of the class described, the combination of a drum having a hub provided with tapered annular grooves and a side chain adapted to be wound around the said drum and composed of links provided at one face with tapered grooves and having lugs projecting from the opposite face adapted to fit the grooves of the drum and the grooves of contiguous links, and clamps carried by the inner portions of the links for engaging a web of material.

2. In a machine of the class described, the combination of a drum having a hub provided with tapered annular grooves and a side chain adapted to be wound around the said drum and composed of links provided at one face with tapered grooves and having lugs projecting from the opposite face adapted to fit the grooves of the drum and the grooves of contiguous links, said links being provided at their outer portions beyond the grooves with oblong slots and having recesses in the outer walls thereof and fastening devices mounted on the drum and adapted to be arranged in the said recesses and having a portion to engage the said slots, and means carried by the inner portions of the links for engaging a web of material.

3. In a machine of the class described, the combination of a drum having a hub provided with tapered annular grooves and a side chain adapted to be wound around the said drum and composed of links provided at one face with tapered grooves and having lugs projecting from the opposite face adapted to fit the grooves of the drum and the grooves of contiguous links, said links being provided at their outer portions beyond the grooves with oblong slots and having recesses in the outer walls thereof and fastening devices mounted on the drum and adapted to be arranged in the said recesses and having a portion to engage the said slots, and clamps carried by the inner portions of the links for engaging a web of material.

4. In a machine of the class described, a

side sprocket chain composed of pivotally connected links consisting of intermediate portions provided with rectangular openings, outer portions having substantially oblong slots and inner portions provided with clamps having pivoted jaws for engaging the goods, said links being provided at opposite sides of the said openings with grooves and lugs, the grooves being formed in one face of the links and the lugs projecting from the opposite face of the links.

5. In a machine of the class described, a side sprocket chain composed of pivotally connected links provided at their inner sides with stationary laterally projecting jaws and pivoted jaws hung from the links and cooperating with the stationary jaws and located wholly between the planes of the upper and lower faces of the links, whereby the sprocket chain may be coiled without affecting the clamps formed by the said jaws.

6. In a machine of the class described, a side sprocket chain provided at the inner side with links having clamps composed of fixed laterally projecting jaws and pivotally mounted jaws coacting with the fixed jaws and provided with stenciling type for engaging a web of material.

In testimony whereof I have hereunto set my hand.

THEODOR J. BACHOFEN.