

(No Model.)

2 Sheets—Sheet 1.

A. TAVERNIER.

METHOD OF AND APPARATUS FOR PRESS DYEING.

No. 263,992.

Patented Sept. 5, 1882.

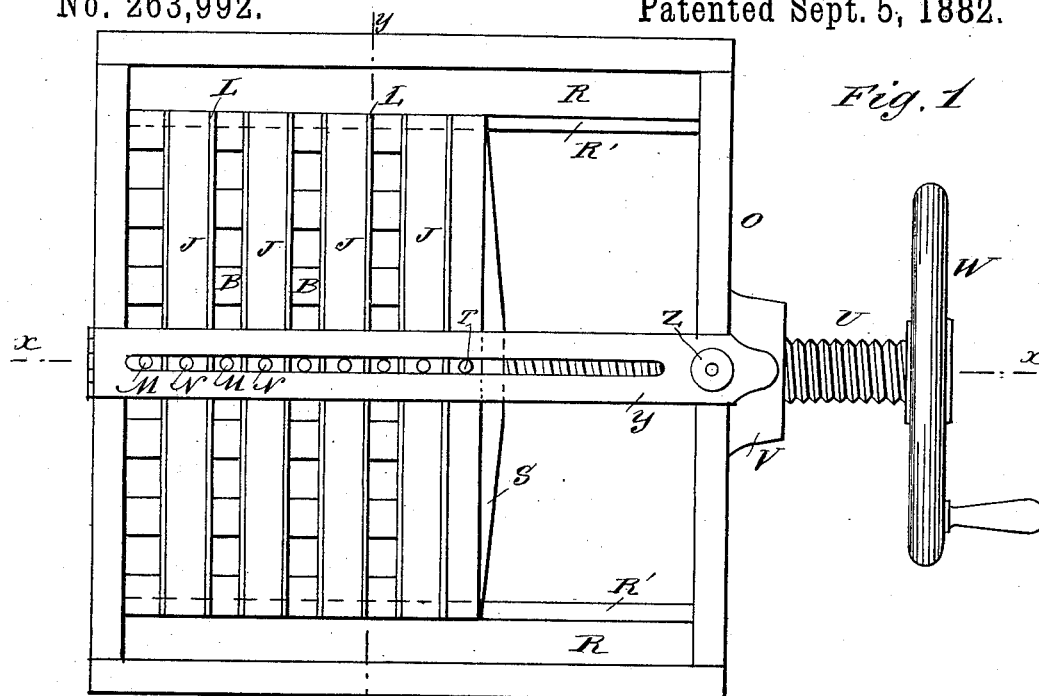


Fig. 1

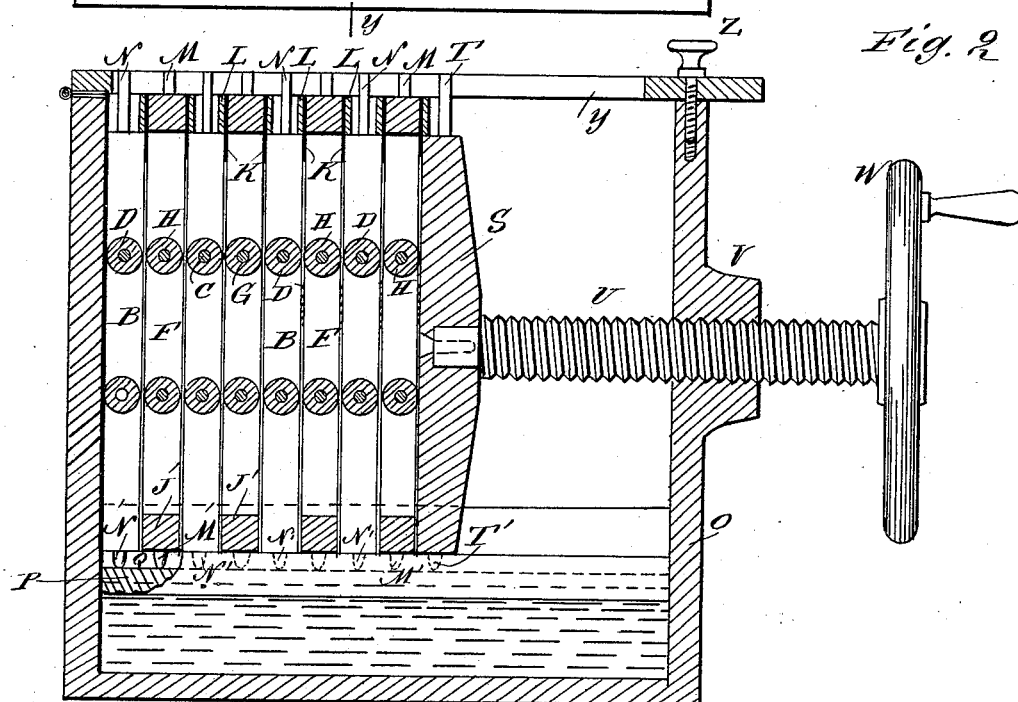


Fig. 2

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Fig. 3

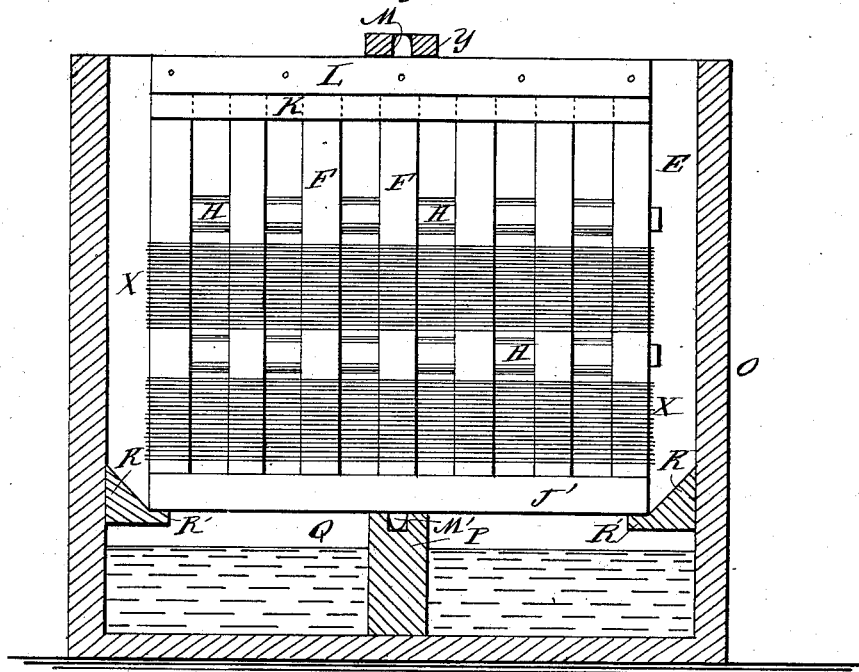


Fig. 4

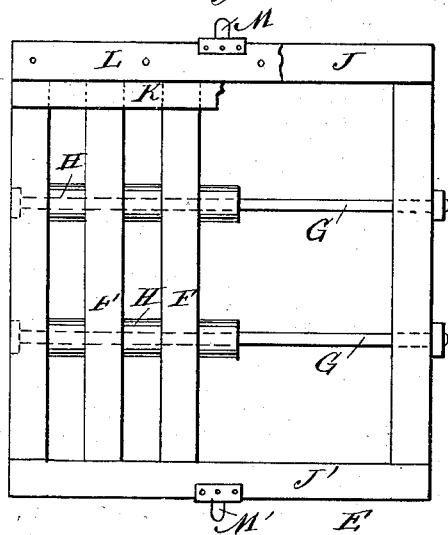
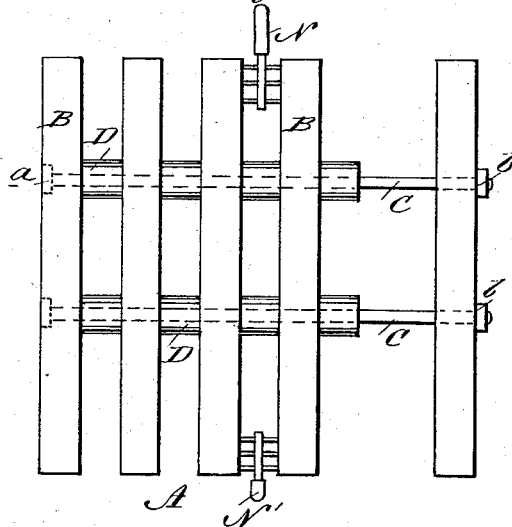


Fig. 5



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# UNITED STATES PATENT OFFICE.

ALPHONSE TAVERNIER, OF PARIS, FRANCE.

## METHOD OF AND APPARATUS FOR PRESS-DYEING.

SPECIFICATION forming part of Letters Patent No. 263,992, dated September 5, 1882.

Application filed October 12, 1881. (No model.) Patented in France August 14, 1879, No. 132,262.

*To all whom it may concern:*

Be it known that I, ALPHONSE TAVERNIER, of Paris, France, have invented a new and improved apparatus for clouding by dyeing the slivers of combed or corded fibrous substances, of which the following is a full, clear, and exact description.

Heretofore a very large color-bath and expensive apparatus have been required for clouding fibrous or textile substances in the form of bands or ribbons by dyeing them.

The object of my invention is to provide a new and improved apparatus in which textile or fibrous substances in the form of ribbons or slivers can be clouded by means of dyeing in a practical, simple, and inexpensive manner and with a small quantity of dyeing-liquid.

The invention consists in a box provided with a central rail and side brackets for supporting a series of female frames, on which the fibrous substances in the form of ribbons or slivers are wound, which female frames are firmly held and pressed between a series of male frames, also fitting in the box, all these frames being pressed together by a screw.

The invention further consists in the construction of the male and female frames, the latter being provided with a rubber packing-strip and a protecting-strip.

The invention also consists in the method of applying a liquid in clouding fibrous substances by winding the fibrous substances on frames, pressing these frames between other frames, and sprinkling the liquid over all the frames.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of my improved apparatus for clouding fibrous or textile substances in the form of ribbons or slivers. Fig. 2 is a longitudinal sectional elevation of the same on the line *xx* of Fig. 1. Fig. 3 is a cross-sectional elevation of the same on the line *yy* of Fig. 1. Fig. 4 is a longitudinal elevation of one of the female frames on which the yarns or slivers are wound. Fig. 5 is a longitudinal elevation of one of the male frames, between which the female frames are held.

A frame, A, Fig. 5, is formed of a series of

bars, B, all of the same size and length and united by a series of transverse rods, C, provided at one end with a rigid head, *a*, and having the opposite end threaded. These rods C pass through wooden thimbles D, interposed between the bars B, for the purpose of keeping the bars separated the desired distance. Nuts *b* are screwed on the threaded ends of the rods C, and by drawing these nuts up tightly the bars B and thimbles D will be pressed firmly against each other, and a rigid frame will be formed composed of longitudinal bars and transverse rods surrounded by thimbles.

Frames E, Fig. 4, are formed of a series of bars, F, united by transverse rods G, passing through thimbles H, interposed between the bars F. The bars F are united at their upper ends by a transverse bar, J, of the same thickness as the bars F, and at their lower ends by a like transverse bar, J'. A strip of rubber, K, is fastened and held on the bar J by a strip of wood, L, of the same length and width as this bar J, this bar L projecting from the frame E and the rubber strip K hanging down from the lower edge of this strip L. The thimbles D and H are to be exactly of the same size, so that the bars B and F will be separated exactly the same distance—that is to say, if the frame A is placed against the frame E, the bars B and F being parallel, these bars will coincide. The length of the bars B of the frame A must be in such relation to the length of the bars F of the frame E that when the upper ends of the bars B rest against the lower edges of the strip L of the frame E the lower ends of the frames A and E will be flush, as Fig. 2 shows. A pintle, M, projects upward from the middle of each bar J, and the pintle M' projects downward from the middle of each bar J'. A pintle, N, projects upward from the middle of the upper edge of each frame A, and a pintle, N', projects downward from the middle of the bottom edge of each frame A. If there are an uneven number of bars B in the frame A, the pintles N and N' can be attached to the middle bar, B; but if there are an even number of bars B in the frame A, there will not be any middle bar B, and the pintles N and N' must be fastened between the two bars B nearest the middle of the frame A in some suitable manner. The pintle N must be of

such length that its upper end is on a level with the upper end of the pintle M. The frames A and E are to be of the same size from end to end.

5 A box, O, is provided on its bottom with an upwardly-projecting rail, P, having a longitudinal groove, Q, in its upper edge. Beveled bracket bars or rails R, having a horizontal projection, R', at the lower edge, are attached  
10 to the inner longitudinal sides of the box O, the upper surface of the horizontal part R' being on a level with the top of the rail P, and the distance between the lower ends of the bevels being exactly equal to the length of the  
15 frames A or E from end to end, as shown in Fig. 3, so that when these frames rest on the rail P and the horizontal parts R' of the bracket-rails R the frames will be in the same position  
20 endwise in the box O. The rail P is of such size and the bracket-rails R are so located that when the frames A and E rest on this rail P and the part R' of the bracket-rails R the upper edges of the frames E will be flush with the upper edge of the box O.

25 A follower, S, of the same size as the frames A or E is provided with top and bottom pintles, T T', and also rests on the rail P and the part R' of the bracket-rails R. The end of a screw, U, passes into the follower S and is held  
30 loosely therein, the screw U passing through a nut or screw-socket, V, in the wall of the box O, and having a hand-wheel, W, or equivalent, rigidly mounted on its outer end. A longitudinally-slotted bar, Y, is hinged to the top  
35 of one of the sides of the box O, so that it can be swung over the top of the box parallel with the screw U. The free end of the bar Y can be locked on the box by means of a screw, Z. A pump is used to pump the coloring-liquid  
40 from the bottom of the box and to sprinkle it over the frames. The frames are preferably made of fir.

The operation is as follows: The combed yarn or the slivers are wound on the frames  
45 E (which will be designated as the female frames) in some suitable manner, as shown at X in Fig. 3. When the yarns, threads, or slivers have been wound on the female frames E, male frames A and female frames E are alternately placed in the box O, the pintles M' and N' passing into the groove Q of the rail P, and the frames A and E resting on the rail P and the horizontal parts R' of the bracket-rails R. The rubber strips K are interposed between  
55 the upper ends of the frames A and E, and, as has been stated, the wooden strips L overlap the upper edge of the male frames A slightly, as is shown in Fig. 2. The slotted bar Y is swung down on the top of the box O, the  
60 pintles T, M, and N passing into the slot of this bar Y. The bar Y is then held down firmly by means of the screw Z. The female frames E, on which the slivers, yarns, &c., are wound, must always be located between two male frames A, excepting the end frame E, which can be located between one male frame and

the follower S. The frames A and E are then firmly pressed together by means of the screw U. The hot dyeing or coloring liquid is then sprinkled over the frames A and E. The rubber packing-strips K and the wooden strips L prevent this dyeing or coloring liquid from flowing down between the male and female frames. The liquid can only pass down through the spaces between the sides of the bars B B or F F, and collects in the bottom of the box O. The dyeing-liquid cannot come in contact with those parts of the yarns or slivers which are pressed firmly between two bars, B and F. The hot coloring or dyeing liquid  
80 comes in contact with and colors those parts of the yarns or slivers extending from one bar F to the next bar. Alternating colored and uncolored spaces or lengths are thus formed on the yarns or slivers, and if these slivers, fibers, &c., are spun the threads formed will be clouded. If the dyeing-liquid is sprinkled over the frames, but a small quantity of liquid is required, whereas the box O would have to be filled if the frames A and E were to be immersed. Furthermore, the frames are not stained as much as by immersing, and the material is not felted. It is essential that the coloring or dyeing liquid is sprinkled equally  
95 over all the frames. I mordant the textile or fibrous substances in exactly the same manner in which I dye or color them to produce the clouding. After that the fibrous or textile substances are washed by sprinkling water over them or by immersion. After this hot  
100 or warm water is sprinkled over the frames for the purpose of removing the superfluous coloring-liquid, and finally cold water is sprinkled over the frames to give the colored fibrous and textile substances life or freshness. Then  
105 the slotted bar Y is raised, the frames A and E are removed, and the clouded yarns or slivers are unwound from the frames E. After this the frames are placed in a box containing chloride of lime, and are then washed in a soda  
110 solution. The frames can then be used again, and the parts that have been covered by the threads or fibers will not be discolored. The clouded fibrous or textile substance is then washed in soap and soda water, which gives  
115 the color permanence and also removes small specks of color in the uncolored parts. Finally, the white or uncolored portions are blued by means of a small quantity of aniline-violet.

120 Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In an apparatus for clouding fibrous substances, the combination, with the box O, of male and female frames A E, constructed substantially as shown and described, and arranged alternately in the said box, and the follower S, as and for the purpose set forth.

2. In an apparatus for clouding fibrous substances, the combination, with the box O, of the frames A and E, the follower S, the screw

U, and the bracket-rails R, substantially as herein shown and described, and for the purpose set forth.

3. In an apparatus for clouding fibrous substances, the combination, with the box O, of the frames A and E, provided with pintles M M' N N', the follower S, provided with pintles T T', the grooved rail P, the bracket-rails R, and the screw U, substantially as herein shown and described, and for the purpose set forth.

4. In an apparatus for clouding fibrous substances, the combination, with the box O, of the frames A and E, provided with pintles M M' N N', the follower S, provided with pintles T T', the grooved rail P, the bracket-rails R, the screw U, and the slotted bar Y, substantially as herein shown and described, and for the purpose set forth.

5. In an apparatus for clouding fibrous substances, the combination, with the box O, of the grooved track P, the beveled bracket-rails R, provided with a horizontal projection, R', the frames A and E, the follower S, and the screw U, substantially as herein shown and described, and for the purpose set forth.

6. In an apparatus for clouding fibrous substances, the frames A, constructed, substantially as herein shown and described, of a series of bars, B, separated by thimbles D, and united by rods C.

7. In an apparatus for clouding fibrous sub-

stances, the frames E, constructed of a series of bars, F, separated by thimbles H, and united by rods G and cross-bars J J', the bars J being provided with packing-strips K and wooden strips L, substantially as herein shown and described, and for the purpose set forth.

8. The method, substantially as herein shown and described, of clouding fibrous substances in the form of ribbons or slivers by dyeing them before spinning, consisting in winding the ribbons or slivers on frames, pressing these frames between other frames, and sprinkling the dyeing or coloring liquid over the frames and fibrous material, as set forth.

9. The method, herein shown and described, of washing the fibrous substances that have been treated with a coloring-liquid for the purpose of clouding these substances, consisting in sprinkling the water over the frames on which the fibrous substances are wound, as set forth.

10. The method, herein shown and described, of treating fibrous substances with liquids, consisting in winding these substances on frames, pressing these frames between other frames, and sprinkling the liquid over all these frames and fibrous material, as set forth.

ALPHONSE TAVERNIER.

Witnesses:

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JOSEPH MEYER.