

1,343,355.

M. DICKERSON.
MACHINE FOR DYEING FUR SKINS.
APPLICATION FILED JAN. 8, 1920.

Patented June 15, 1920.
3 SHEETS—SHEET 1.

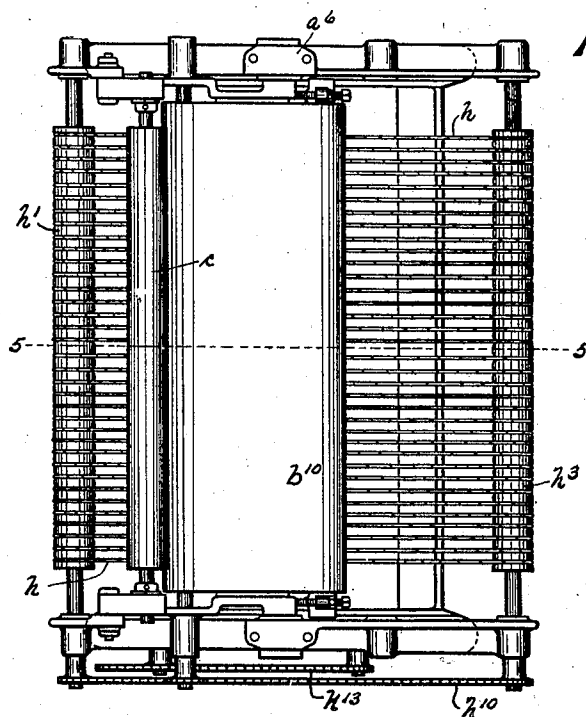


Fig. 1.

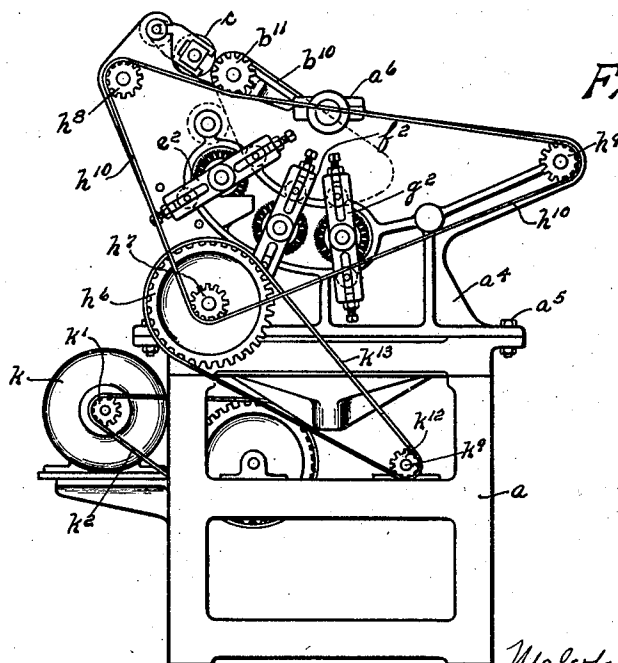


Fig. 2.

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Fig. 3.

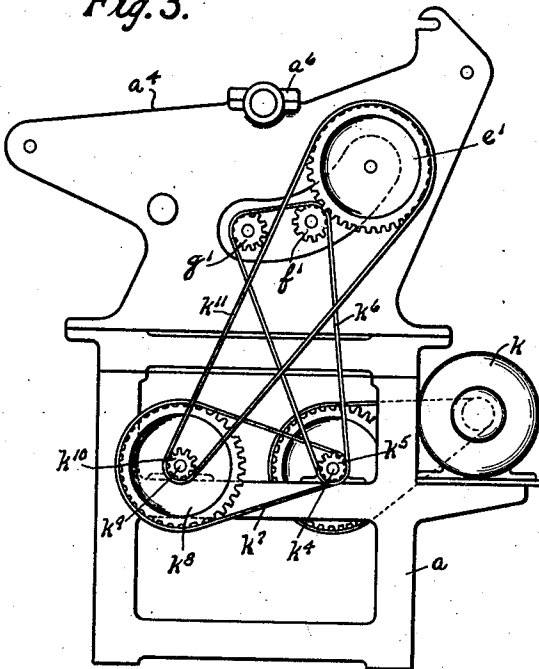


Fig. 4.

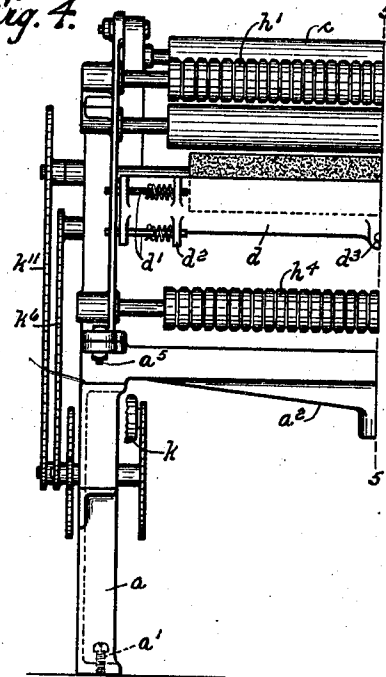


Fig. 6.

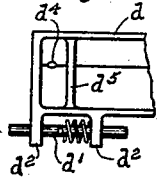
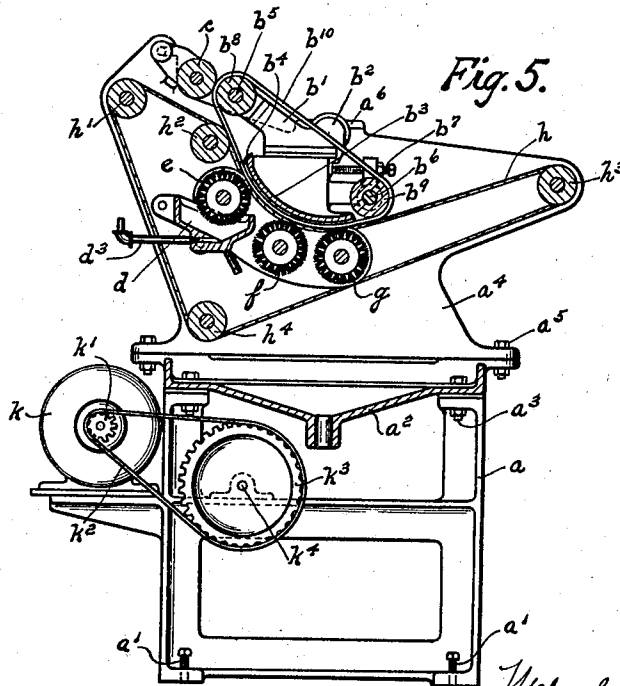


Fig. 5.



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3 SHEETS—SHEET 3.

Fig. 7.

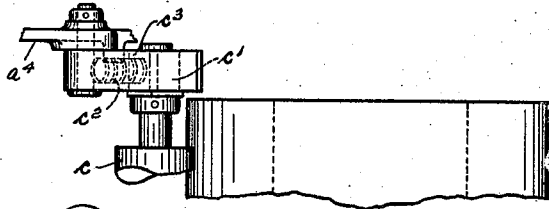


Fig. 8.

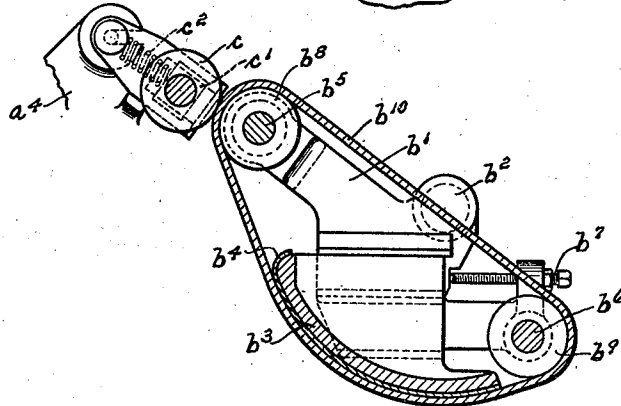


Fig. 9.

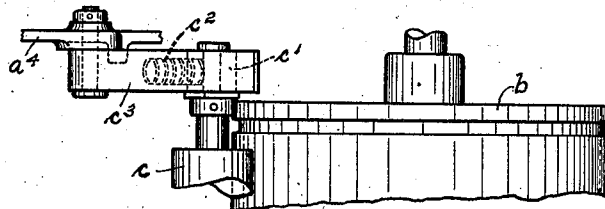
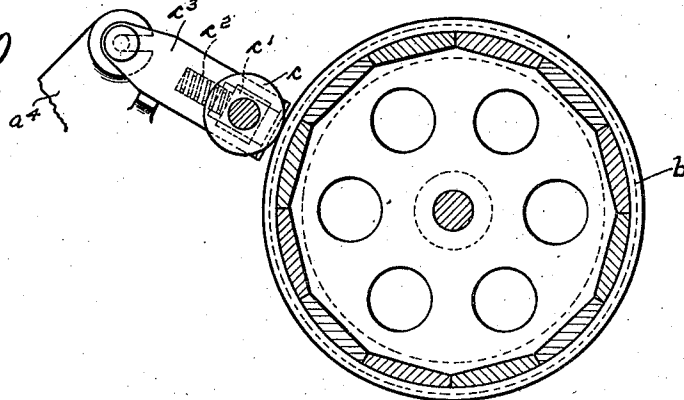


Fig. 10.



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UNITED STATES PATENT OFFICE.

MALCOLM DICKERSON, OF BELLEVILLE, NEW JERSEY, ASSIGNOR OF ONE-HALF TO SOCIETE ANONYME DES ANCIENS ETABLISSEMENTS, C. & E. CHAPAL FRERES & CIE., OF BROOKLYN, NEW YORK, A CORPORATION OF FRANCE.

MACHINE FOR DYEING FUR-SKINS.

1,343,355.

Specification of Letters Patent. Patented June 15, 1920.

Application filed January 8, 1920. Serial No. 350,124.

To all whom it may concern:

Be it known that I, MALCOLM DICKERSON, a citizen of the United States, residing in Belleville, in the State of New Jersey, have invented certain new and useful Improvements in Machines for Dyeing Fur-Skins, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

The application of dye to the fur of fur skins has been hitherto a hand operation, the dye being applied to the fur and distributed uniformly by a brush in the hands of the operator, the fur skin to be dyed being laid upon a suitable table and removed therefrom and hung upon a suitable frame in order that it may dry without pressure upon the fur and without contact of the flesh side of one skin with the wet fur of another skin. This hand operation is necessarily slow and expensive. Efforts have been made to produce a machine capable of performing the operation rapidly, but hitherto such efforts have not resulted in a thoroughly satisfactory machine, mainly because it has sought to handle the fur skin in the same manner that a skin without fur might be handled satisfactorily, the necessity of avoiding application of the dye to the flesh side of the skin and of avoiding the matting of the fur by pressure thereon while the fur is still wet, not being fully recognized or provided for. By the present invention it has been sought, while making use of such main elements as have been used heretofore, so to improve the construction as to meet in a satisfactory manner the peculiar necessities of the satisfactory treatment of fur skins. It has been the further object of the invention to produce a machine which has comparatively few parts, all of which are accessible readily for cleaning, renewal and repair, is comparatively inexpensive, and is capable of performing the intended operation rapidly and efficiently. The invention will be fully described hereinafter with reference to the accompanying drawings in which it is illustrated and in which—

Figure 1 is a top view of one form of a machine which embodies the invention.

Fig. 2 is a view of the same in side elevation.

Fig. 3 is a view of the same in side elevation

as seen from the opposite side of that shown in Fig. 2.

Fig. 4 is a partial view in end elevation as seen from the right hand in Fig. 3.

Fig. 5 is a view in sectional elevation, the plane of section being indicated by the broken line 5—5 of Figs. 1 and 4.

Fig. 6 is a detail view showing a portion of the dye trough and means for securing the same in place.

Figs. 7 and 8 are detail views showing the belt carrier and the relation of the squeeze roll thereto.

Figs. 9 and 10 are detail views illustrating a drum carrier in place of the belt carrier and the relation of the squeeze roll thereto.

The working parts of the machine are supported upon a suitable frame which comprises a lower frame *a* provided with leveling screws *a'*, a drip pan *a''* which also forms a part of the frame, being secured by bolts *a'''* to the lower frame members *a*, and upper frame members or cheek pieces *a''''* secured to the lower frame members by bolts *a'''''*. The upper frame members or cheek pieces *a''''* are provided with bearings *a''''''* in which is mounted a skin carrier, so that it is removable readily when necessary. The skin carrier might be a rotary drum, as shown at *b* in Fig. 10, or, as shown particularly in Figs. 5, 7 and 8, it comprises a frame *b'* having trunnions *b''* to be received in the bearings *a''''''*, a curved shoe *b'''*, covered by a non-friction and non-corrosive lining *b''''*, such as a sheet of celluloid, bearings at *b'''''* and *b''''''*, the latter being adjustable, as by a screw *b'''''''*, rolls *b''''''''* and *b'''''''''* mounted in the bearings *b''''''* and *b'''''''* respectively, and an endless belt *b''''''''*, of rubber or other suitable material, which encircles the rolls *b''''''''* and *b'''''''''* and the shoe *b'''* and is caused to travel in a counter clock-wise direction, a driving pinion *b'''''''''* being fixed on the end of one of the rolls, as the roll *b''''''''*, and engaged by a driving chain as hereinafter described. The shoe *b'''* is suitably curved, as shown in Figs. 5 and 8, and the tension of the belt can be regulated by adjusting the bearings *b''''''* of the roll *b''''''''*.

The skin carrier, whether a drum or a belt, is wetted more or less with the dye, as will be explained, and it is very necessary to remove from the surface of the belt or

drum, before the flesh side of the skin is brought in contact therewith, all free dye. For this purpose a squeeze roll c is mounted in movable bearing boxes c' , pressed toward the skin carrier by springs c^2 and supported by brackets c^3 suitably mounted in the upper frame members or cheek pieces a^4 . The squeeze roller, pressed by the springs c^3 firmly against the skin carrier, effectually removes from the surface of the carrier all the free dye which may be thereon, such dye running off at the ends of the squeeze roller and falling upon the pan a^2 , clear of that portion of the surface of the carrier with which the flesh side of the fur skin may come in contact.

In convenient position with respect to the skin carrier, and preferably below the same, is a dye trough d which may be suitably supported between the upper side members a^4 by spring-pressed rolls d' , carried by lugs d^2 and normally engaging holes formed in the frame members a^4 . The dye is supplied to the trough through a suitable pipe d^3 , at the middle of the trough, and the excess of the dye, not taken up by the brush hereinafter described, flows out from the trough at its ends, as indicated at d^4 , falling thence upon the pan a^2 , to be collected and returned, if desired, to the trough through the pipe d^3 . As the brush referred to rotates there might be a tendency of the dye liquor to eddy in the trough and pile up more or less near the ends. To overcome such tendency, the trough is provided, near each end, between the outlet and the inlet, with a partition d^5 which is lower than the end of the trough, as shown in Fig. 5, so that the dye liquor at the end of the space occupied by the brush flows over the partition and escapes through the opening d^4 without piling up in the trough at the end of the brush.

The fur skin is held with the flesh side against the endless belt b^{10} as hereinafter described, and moves with it under the shoe b^3 , with the fur downward. A dye-applying, cylindrical brush e is supported in suitable bearings so as to be rotated at a moderate speed and so as to be partially submerged in the dye liquor in the trough d , the direction of the rotation being clock-wise so that the direction of movement of the surface of the brush, where it contacts with the fur, shall be the same as that of the fur. By this means the dye is taken from the trough and is applied to the fur. Any excess of dye thrown off by the brush is thrown forward, to fall into the pan a^2 or to be taken up by the first rubbing-in brush f which is likewise mounted in suitable bearings and is rotated also in a clock-wise direction, but at a much higher speed than the brush e . A second rubbing-in brush g is also mounted in the frame to rotate in a clock-wise direction at a relatively high

speed. It will be understood that the bearings of the brushes e , f and g are adjusted as indicated at e^2 , f^2 and g^2 , in Fig. 2, so that the brushes may be moved toward or away from the skin carrier. The effect of the two rubbing-in brushes is to spread the dye uniformly upon the fur hairs and to rub it in well to a substantial depth.

In the passage of the fur skins between the skin carrier, whether the endless belt b^{10} and its appurtenances or the drum b , it is necessary that the fur skin be held against the carrier so that their edges shall not be turned or rolled, whereby the dye might be applied to the flesh side of the skins, and so that they shall be held properly for the necessary action of the rapidly rotating brushes f and g , while at the same time they must be held by such means that the dye liquor shall be applied to all parts of the fur. To effect this result endless cords h are mounted on grooved guide rollers h' , h^2 , h^3 and h^4 and bear against the under side of the skin carrier, as clearly indicated in Fig. 5. One or more of the grooved rollers are driven, as hereinafter described, so that the lineal speed of the cords shall be substantially the same as that of the belt b^{10} and so that the contacting portions of the cords and the belt or skins shall move in the same direction. In order to avoid the necessity of providing adjustable means for maintaining the tension of the cords, the roll h^3 receives a slightly higher speed of rotation than the rolls h' and h^4 , so that the working portion of each cord is maintained under suitable tension by the draft. The slippage is inconsiderable. It is highly important that the wet fur, as it comes from the last rubbing-in brush g , shall not be subjected to pressure, so that the wet fur shall not be matted down. To accomplish this result the grooved roll h^3 is placed at a considerable distance beyond the roll b^8 , thereby providing a table of cords on which each skin, as it leaves the last brush, shall rest lightly and at the same time move forward so that it can be taken by the attendant and placed upon a suitable frame for drying without having any other skin resting upon it. The cords are small in size and do not in practice prevent a uniform distribution of the dye on the fur.

The several working parts of the machine may be driven conveniently from a motor k . A small gear k' on the motor shaft drives, through a chain k^2 , a large gear k^3 on one end of a shaft k^4 . On the other end of the shaft k^4 is a small, double gear k^5 , from one portion of which, by a chain k^6 , are driven at high speed the two small gears f' and g' on the shafts of the rubbing-in brushes f and g . From the other part of the small gear k^5 is driven, by a chain k^7 , a large gear k^8 on a shaft k^9 . A small gear k^{10} on the shaft k^9 , through a chain k^{11} , drives a

large gear e' on the shaft of the brush, e , which is thereby rotated at comparatively slow speed. From the other part of the double gear h^4 a chain h^{12} , through a chain h^{13} , drives a large gear h^6 on the shaft of the roll h^4 . By means of small gears h^7 , h^8 and h^9 , on the shafts of the rolls h^4 , h^7 and h^8 and a chain h^{10} , the three grooved rolls h^7 , h^8 and h^4 are driven at the proper speed and in the proper direction, the gear h^9 having a smaller number of teeth than the gear h^8 , so that the roll h^8 is driven at a slightly higher speed than the roll h^7 , in order to maintain the working portions of the cords h under suitable attention. A small gear on the shaft of the carrier roll b^8 is engaged by the chain h^{10} , so that the carrier b^{10} may be driven.

The operation of the improved machine has been sufficiently explained that no further description therefor is necessary.

It will be understood that various changes in details of construction and arrangement will be made to suit different conditions of use and that, except as pointed out in the accompanying claims, the invention is not limited to the precise construction shown and described herein.

I claim as my invention:

1. In a machine for dyeing fur skins, the combination of a skin carrier, means to apply the dye liquor to the fur, a series of endless cords to hold the fur skins against the skin carrier, said cords being extended beyond the skin carrier to form a table on which each skin may rest and be carried forward after it is released from the skin carrier and from which it may be removed by the attendant, and means to effect the travel of the carrier.

2. In a machine for dyeing fur skins, the combination of a skin carrier, means to apply the dye liquor to the fur, a series of

endless cords to hold the fur skins against the skin carrier, grooved rolls carrying the cords and holding the same against the skin carrier, and means to drive the roll at the discharge end at a higher speed than the roll at the feed end so as to maintain the working portions of the cords under tension.

3. In a machine for dyeing fur skins, the combination of a skin carrier, means to hold the skins against the carrier, means to apply dye to the fur of the skins as they are supported by the carrier, means to effect movement of the carrier, a squeeze roll in contact with the carrier, and means to press the squeeze roll firmly against the carrier to remove the free dye liquor from its surface.

4. In a machine for dyeing fur skins, the combination of a frame having end members with separable bearings, a skin carrier mounted removably in said bearings, means to effect the travel of the skin carrier and endless cords and supporting means therefor to hold the skins against the carrier.

5. In a machine for dyeing fur skins, the combination of a skin carrier, comprising a frame, a curved shoe, carrying rolls and an endless belt passing about the rolls and the shoe, means to effect the travel of the belt, and means to hold the skins against the belt.

6. In a machine for dyeing fur skins, the combination of a skin carrier, comprising a frame, a curved shoe, carrying rolls and an endless belt passing about the rolls and the shoe, means to effect the travel of the belt, means to hold the skins against the belt, and means to adjust the position of one of the carrying rolls to regulate the tension of the belt.

This specification signed this 24th day of Dec., A. D. 1919.

MALCOLM DICKERSON.