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BROGADING MACHINE

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2 Sheets-Sheet 1

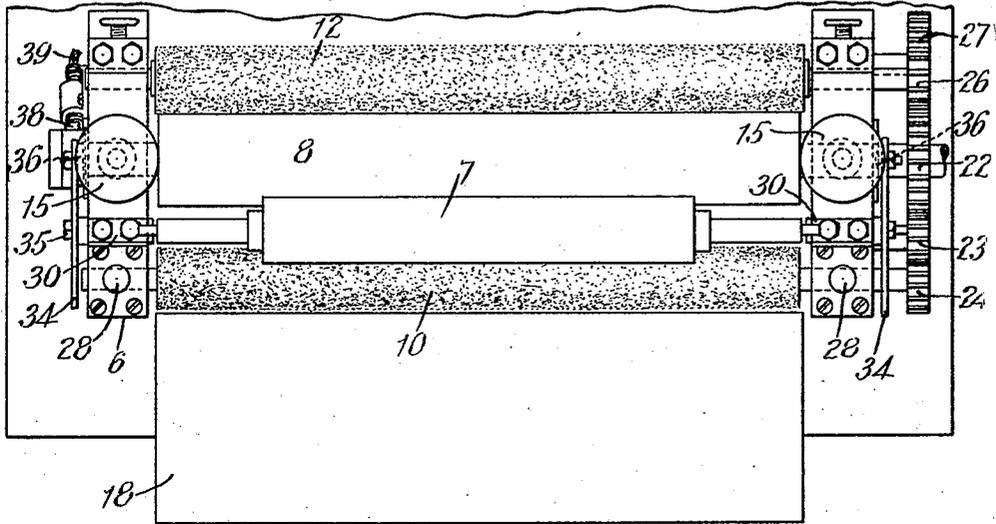


Fig. 1.

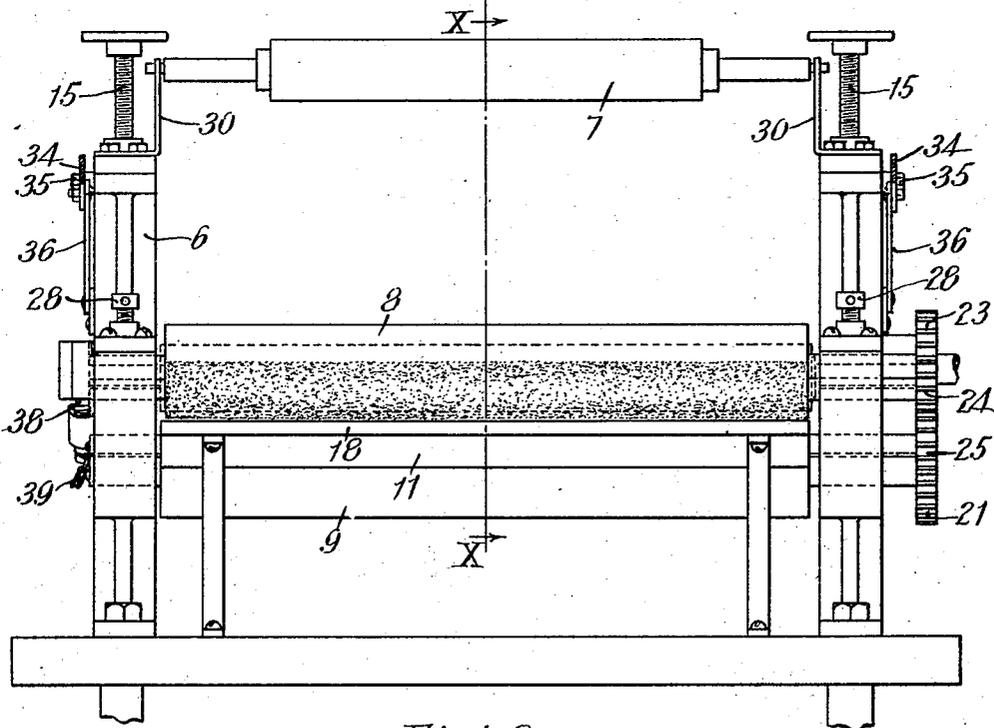


Fig. 2.

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UNITED STATES PATENT OFFICE.

FRANKLIN B. BALLOU, OF SALEM, MASSACHUSETTS.

BROCADING MACHINE.

Application filed September 7, 1927. Serial No. 217,948.

My invention consists of an improved machine for ornamenting or brocading leather, and has for its particular object, the brocading of ooze or suede leather.

5 In the accompanying drawing illustrating my invention Fig. 1 is a plan view of my machine; Fig. 2 is a front elevation; Fig. 3 is a right end elevation; Fig. 4 is a left end elevation, and Fig. 5 is a vertical section through the line X—X of Fig. 2.

10 Heretofore leather in small pieces has been in some instances ornamented or embossed by means of a stamp or die operated under pressure, but the novelty of my invention resides in the employment of a heated metal cylinder having the ornamental pattern or design to be reproduced, formed on the periphery of the roll, combined with other structural features to adapt it to practical use.

15 Referring to the drawing, 6 is the frame of the machine supporting suitable bearings in which are mounted the paper roll 7, the brocading cylinder 8, the pressure roll 9, the brush roll 10, the feed roll 11, and the carding roll 12. The paper roll 7 is adapted to carry a sheet of paper 13, which paper has an adhesive coating over the surface which is presented in contact with the suede side of the leather while it is subjected to the action of the brocading cylinder. The adhesive coating of the paper 13 consists of any suitable gum, such for instance as shellac and alcohol preferably with the addition of some softer gum thinly and uniformly spread upon the paper and dried, and containing, if desired, some coloring matter or dye.

20 I have discovered that the suede side of leather will permanently retain a pattern transferred by a heated brocading roll through a gummed paper, and if the gummed paper is colored, a correspondingly colored pattern is permanently transferred thereby. The gummed substance in the paper is driven into the texture of the leather at the points of immediate contact of the pattern with the leather and thereby the pattern is more clearly defined and permanently sealed than when no gummed substance is used. Furthermore when a colored pattern is required, the gum acts as an efficient conveyor of the coloring matter into the texture of the leather and it becomes indelibly impressed therein. The best results are produced by employing a pressure roll with the brocading roll. The pressure roll presents but a small surface of

the leather at a time to the heated pattern and the gum has no opportunity to spread and blur the pattern, which would be the tendency if a pressure table or platen were used instead of a roll.

60 The paper roll 7 is mounted, as shown, in supports 30 at the top of the frame of the machine, and the sheet of paper 13 is fed downwardly therefrom and under the brocading cylinder 8, together with the leather, the paper lying between the surface of the brocading cylinder 8 and the upper or suede side of the leather.

65 The brocading cylinder 8 is mounted in vertically and yieldingly adjustable bearings 14 for the purpose of varying the space between the brocading cylinder 8 and the pressure roll 9, so as to adapt it to different thicknesses of leather and for the purpose of regulating the degree of pressure of the pattern or design upon the surface of the leather, and to compensate for variations in the thickness of a given hide or skin.

70 I have shown as one form of means for vertically and yieldingly adjusting the pressure of the brocading cylinder 8 the adjusting screw 15, and the helical spring 16 interposed between the bearings 14 of the brocading cylinder 8 and the cap 31 secured to the end of the adjusting screw 15. Both bearings of the brocading cylinder 8 are provided with similar vertically and yieldingly adjusting means.

75 My invention is not limited to the specific means shown for adjusting the space between the brocading cylinder 8 and the pressure roll 9, and for regulating the pressure upon the hide or skin between them, as other familiar and well known means of accomplishing such adjustment would be the equivalent of the combination shown. It is obvious also that the arrangement may be reversed by mounting the brocading cylinder in fixed bearings and the pressure roll in vertically adjustable bearings.

80 Upon the peripheral surface of the brocading cylinder 8 is formed or cut or arranged in any suitable manner the pattern or design to be reproduced upon the leather, and the pattern is of the cameo type, preferably cut about three-sixteenths of an inch deep. The depth of the pattern may be varied to meet the special requirements in producing different designs, and also to adapt it to the character and weight of the leather to be brocaded.

85 90 95 100 105 110
Beneath the brocading cylinder 8, the pres-

sure roll 9 is mounted in fixed bearings 32 in the frame of the machine, and between which and the brocading cylinder 8, the hide or skin 17 and the sheet of paper 13 are carried and 5 subjected to the required pressure to produce the design upon the leather.

An important feature of my invention consists in constructing the pressure roll of less diameter than the brocading roll when the 10 axes on which they are mounted are rotated at the same speed. The object being to have the surface of the pressure roll travel at slightly less speed than the speed of the surface of the brocading roll. I have discovered 15 that by having the pressure roll of less diameter than the brocading roll by approximately the thickness of the material to be brocaded, a much clearer and more pronounced and permanent pattern is produced upon the ma- 20 terial.

The tendency of this difference is the speed of the surface of the brocading cylinder and the pressure roll is slightly to retard the forward movement of the material. Any 25 means of adjusting the speed of the surface of the pressure roll slightly less than that of the surface of the brocading roll to about the extent above described would be within the scope of my invention.

I have made application for United States Letters Patent jointly with James Y. Lake for a machine for ornamenting leather, Se- 30 rial Number 682,382, filed December 24, 1923, which is substantially the same as the machine herein described, excepting that in the 35 machine of the pending application the surfaces of the brocading and pressure rolls travel at the same speed.

On the front of the machine is a table 40 over which the hide or skin 17 is laid and from which it is fed between and by the feed roll 11, and the brush roll 10 to the brocading cylinder 8 and pressure roll 9 as and for the purpose above described.

The brush roll 10 is useful in removing any dirt and foreign matter from the suede sur- 45 face of the leather, so that it may be presented to the action of the brocading cylinder 8 to the best advantage for receiving the im- 50 pression of the pattern or design. The brush roll 10 is what its name indicates, a roll having its periphery set with bristles of suitable length and stiffness to adequately clean the surface of the hide or skin, and to cooperate 55 with the feed roll 11 in presenting the hide or skin to the brocading cylinder 8 and pressure roll 9.

At the rear of the brocading cylinder 8, and in contact with it, is mounted in suitable fixed 60 bearings in the frame of the machine, the carding roll 12.

The periphery of the carding roll 12 is covered with the well known wire card cloth com- 65 monly used in carding wool and other textiles. The carding roll 12 is rotated by means of

suitable gears 26 and 27 in an opposite direc- tion to the rotation of the brocading cylinder 8. The object of the carding roll 12 is to remove from the pattern on the brocading roll any dirt, grease or other foreign matter 70 that may be caught and adhere to it, and thus to keep the pattern clean and clear.

I also employ for the sake of precaution in keeping the pressure roll 9 free from any sub- stances that may be gathered from contact 75 with the hide or skin, an adjustable scraper 19, held in yielding contact with the pressure roll 9, by means of the adjustable bracket 20 secured to the frame of the machine.

For the purpose of raising the brocading 80 cylinder 8, so as to insert the hide or skin and the sheet of paper 13 beneath it, or for any other purpose temporarily to increase the space between it and the pressure roll 9, I have provided a treadle connected by suit- 85 able vertical rods 33 with the levers 34 pivoted to the frame of the machine at 35, the levers 34 being pivoted to the rod 36, which in turn is connected with the bearings 14 of the brocading roll 8. 90

The brocading cylinder 8 is hollow and preferably is heated electrically by means of resistance coils installed within the cylinder. The resistance coils are preferably contained in a plurality of glass tubes 37 and are con- 95 nected with a source of power through the wires 39 and the brush 38 forming a contact in any of the well known ways. The brocading cylinder 8 may, however, be heated by a gas or oil flame or by steam or any other 100 suitable source of heat. The brocading cylinder 8, and of course the pattern upon it, should ordinarily be heated to a temperature of from about two hundred to two hundred 105 fifty degrees Fahrenheit during the operation of the machine. This, however, must depend upon certain varying conditions, namely, the thickness of the skin to be ornamented, the kind of dye used and the speed of operation 110 of the machine, which the operator must take into consideration in regulating the temperature of the roll.

Mounted upon the shaft of the pressure roll 9 is the driving pulley of the machine 115 driven by a belt from any suitable source of power. The gear 21 (see Fig. 3) on the shaft of the pressure roll 9, drives the gear 22 on the shaft of the brocading cylinder 8, which in turn, through the intermediate gear 23, drives the gear 24 on the shaft of the brush 120 roll 10,—the gear 24 meshing with gear 25 on the shaft of the feed roll 11, by which the latter is driven. The carding roll 12 is driven by the gear 26 mounted on its shaft, and by the gears 27 and 21. 125

The brush roll 10 is also mounted in verti- cally and yieldingly adjustable bearings, the adjusting means consisting of the adjusting screws 28, and the helical springs 29 confined 130 between the bearings 40 of the brush roll 10

and the plate 41 secured to the adjusting screws 28.

The operation of the machine is as follows:

5 The brocading cylinder having attained the requisite degree of heat, as above described, a hide or skin is laid upon the table 18 with its suede side upward, and is presented to the feed roll 11, which delivers it between the brocading cylinder 8 and the pressure roll 9. Simultaneously the sheet of gummed and colored paper 13 is presented to the brocading cylinder 8, as shown in the drawing (Fig. 5), above and in contact with the suede side of the hide or skin,—the sheet of paper 13 and the hide or skin being fed together between the brocading cylinder 8 and pressure roll 9, under sufficient pressure to transfer the design of the pattern on the brocading cylinder 8 to the surface of the hide or skin. By reason of the pressure of the pattern upon the paper and the heat of the roll, the hide or skin will receive and permanently retain not only the figure of the pattern, but the color of the gummed surface of the sheet 13, so that by these means an accurate reproduction of any pattern or design in form and color may be obtained upon the ooze or suede side of the leather.

30 The chief novelty of this invention over the machine described in said pending application, consists of the pressure roll being of less diameter than the pattern roll.

My machine, by suitable adjustment of the pattern and pressure rolls, may be used for ornamenting or brocading other materials than leather, including, among others, felt, textile fabric and hat straw.

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

1. In a machine for ornamenting leather, the combination of two rolls superimposed upon each other, one of said rolls having a pattern formed upon its periphery adapted to be transferred to suede leather, and means for causing the periphery of the pattern roll to travel at slightly greater speed than the periphery of the other roll.

50 2. In a machine for ornamenting leather, the combination of two rolls superimposed upon each other, one of said rolls having a pattern formed upon its periphery, and the other roll being a pressure roll, the diameter of the pressure roll being less than that of the pattern roll.

55 3. In a machine for ornamenting leather, the combination of two rolls superimposed upon each other, one of said rolls having a pattern formed upon its periphery, and the other roll being a pressure roll, the diameter of the pressure roll being less than that of the pattern roll to the extent approximately

of the thickness of the material between the rolls.

4. In a machine for ornamenting leather, the combination of two rolls superimposed upon each other, one of said rolls having a pattern formed upon its periphery and adapted to be transferred to suede leather, and the other roll being a pressure roll, means for heating said pattern roll, and means for causing the periphery of the pattern roll to travel at slightly greater speed than the periphery of the pressure roll.

5. In a machine for ornamenting leather, the combination of two rolls superimposed upon each other, one of said rolls having a pattern formed upon its periphery adapted to be transferred to suede leather, and the other roll consisting of a pressure roll, a roll having a peripheral carding surface engaging with the pattern roll, and means for causing the periphery of the pattern roll to travel at slightly greater speed than the periphery of the pressure roll.

6. In a machine for ornamenting leather, the combination of two rolls superimposed upon each other, one of said rolls having a pattern formed upon its periphery adapted to be transferred to suede leather, and the other roll being a pressure roll, means for heating the pattern roll, means for feeding leather to said rolls, and means for causing the periphery of the pattern roll to travel at slightly greater speed than the periphery of the pressure roll.

7. In a machine for ornamenting leather, the combination of two rolls superimposed upon each other, one of said rolls having a pattern formed upon its periphery adapted to be transferred to suede leather, and the other roll being a pressure roll, means for heating the pattern roll, one of said rolls being mounted in vertically adjustable bearings in the frame of the machine, and means for causing the periphery of the pattern roll to travel at slightly greater speed than the periphery of the pressure roll.

8. In a machine for ornamenting leather, two rolls superimposed upon each other, one having a pattern formed upon its periphery, and the other roll being a pressure roll, means for feeding a sheet of gummed paper to a side of suede leather between said rolls, said paper being interposed between the leather and the pattern roll, combined with means for causing the periphery of the pattern roll to travel at slightly greater speed than the periphery of the pressure roll.

In testimony whereof I have hereunto set my hand this seventeenth day of August, 1927.

FRANKLIN B. BALLOU.