Oct. 13, 1931. J. NANTERME 1,827,160

MACHINE FOR FOLDING OR PLAITING FABRICS

Filed Nov. 13, 1928 2 Sheets-Sheet 1

Fig. 1

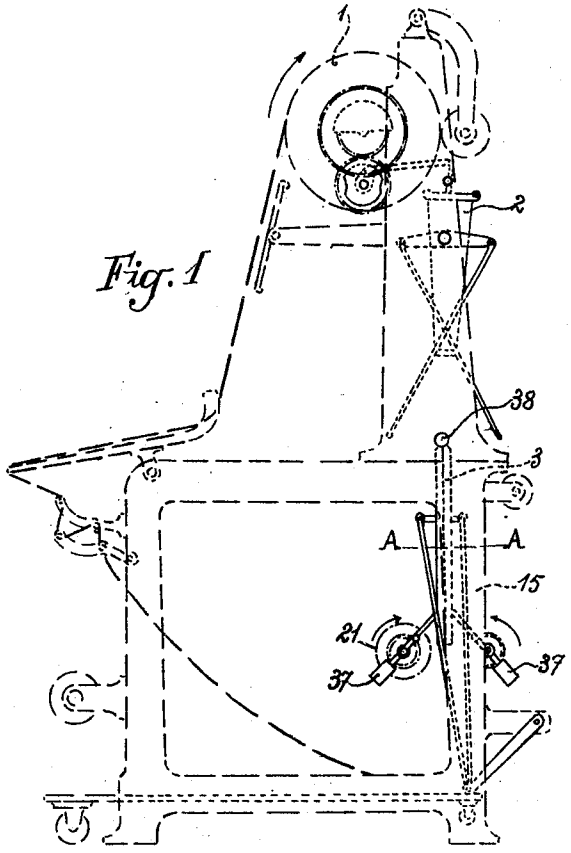
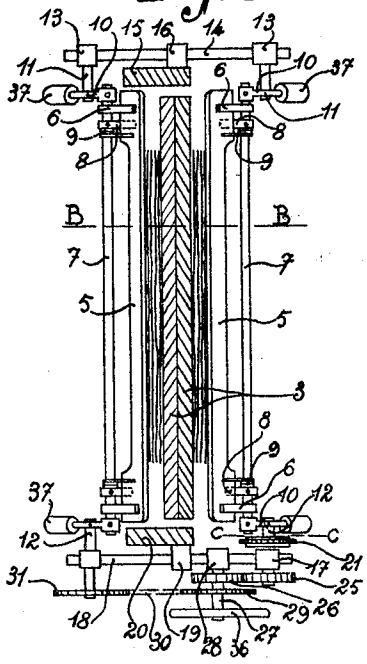


Fig. 3



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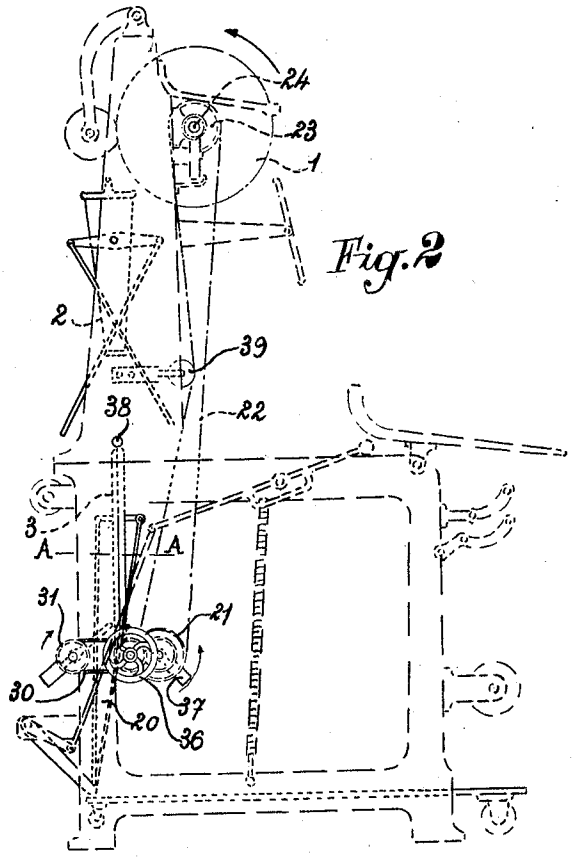


Fig. 2

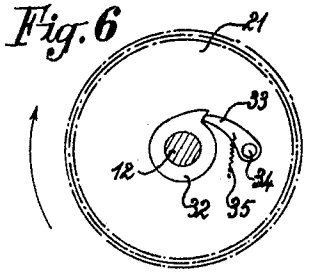


Fig. 6

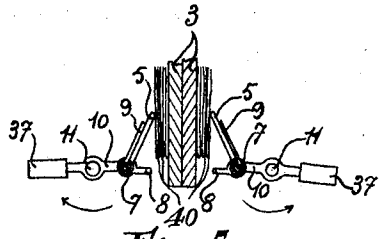


Fig. 5

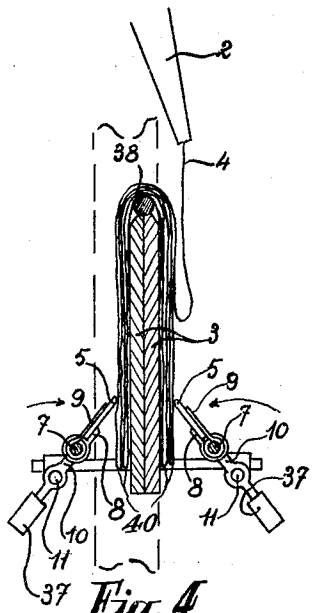


Fig. 4

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Patented Oct. 13, 1931 1,827,160

UNITED STATES PATENT OFFICE

JOSEPH NANTERME, OF LYON, FRANCE

MACHINE FOR FOLDING OR PLAITING FABRICS

Application filed November 13, 1928, Serial No. 319,155, and in France November 24, 1927.

The present invention relates to machines for folding fabrics and more particularly, but not entirely to the machine described in my U. S. Letters Patent No. 1,624,060.

In this machine, the fabric is arranged on a folding board by means of a suitable distributor member, pressure bars or members being provided to flatten down the folds of the fabric as the folding is effected.

These members do not give complete satisfaction with stiff or uneven fabrics and particularly when the folding is effected at high speed. The presser members in fact drive the air towards the centre of the folded piece, thus causing the formation of bulges, wrinkles and creases which are ultimately flattened down by the subsequent folding of the fabric. Moreover, they do not properly pull the fold which is creased in a defective manner as soon as the speed increases or when fabrics are folded which are manufactured (according to the use for which they are intended) with tight or loose selvages.

The improvement of the present invention allows of the use of high speeds for folding even with not very regular fabrics, thus ensuring considerable saving of time and labour while providing perfect folding.

According to the invention, near the edge of a plait a member is arranged which exerts regular friction on the edge of the fold so as to smooth the fabric at the same time that the fold is being pressed. In the preferred form of construction, this member is composed of a spatula elastically mounted on arms rotating at a suitable speed.

The annexed drawings illustrate an example of construction of the invention it being assumed that the improvements are adapted to a machine of the kind described in my aforesaid U. S. Letters Patent No. 1,624,060.

Fig. 1 is a diagrammatic side view of the machine provided with presser bars according to the invention.

Fig. 2 is a diagrammatic view of the other side.

Fig. 3 is a section on a larger scale on line A—A (Figs. 1 and 2).

Fig. 4 is a section on B—B (Fig. 3).

Fig. 5 is a partial view similar to Fig. 4, but representing the presser bars in another position.

Fig. 6 is a section on a large scale on line C—C (Fig. 3), and showing the free wheel drive.

The machine is essentially composed of a traction roller 1 drawing the fabric, of a distributor frame 2 and of a plaiting board 3 on which the fabric is folded as can be well understood from Fig. 4.

Each presser-bar is essentially composed of a small board 5 mounted on arms 6 (Fig. 3) mounted loosely on a rod 7. The rod 7 carries stop-fingers 8 against which the board 5 is pushed by torsion springs 9 mounted on said rod 7.

Each rod 7 is carried at its ends by two arms 10 keyed to the ends of two shafts 11 and 12. The shafts 11 are supported by bearings 13 fixed on a cross bar 14 itself secured to the stay of the framework by a collar 16. The shafts 12 are also supported by bearings 17 secured to a bar 18 clamped in a collar 19 integral with the stay 20 of the framework.

The shafts 11 and 12 of each board are one in the extension of the other and so arranged that the outermost ridge of the board may be parallel with the plaiting board 3.

One of the shafts 12 is driven by a chain-wheel 21 controlled by a chain 22 actuated by a pinion 23 keyed on the shaft 24 of the roller 1. The shaft 12 is connected to the wheel 21 by a ratchet device which will be further described. The pinions 21 and 23 have the same number of teeth. A tightener 39 can be provided for the chain 22. As described in my aforesaid U. S. Letters Patent No. 1,624,060, the distributor frame 2 is driven by the traction roller 1 so as to perform one semi-oscillation at each complete revolution of the same. The chain-wheels 21 and 23 having the same number of teeth, shaft 12 also performs a complete revolution at each semi-oscillation of the distributor frame 2.

The shaft 12 thus driven is provided with a gearing 25 which drives a second gearing 26 keyed on a shaft 27 supported by a bearing 28 secured to the bar 18 like the bearings 17. This shaft 27 is provided with a chain-wheel

29 which, by means of the chain 30, drives another chain-wheel 31 keyed on the second shaft 12. The chain-wheels 29 and 31 and the gearings 25 and 26 are equal. The result thereof is that the two shafts 12 rotate at the same speed and in contrary directions as can be clearly understood from Fig. 3.

As above mentioned, the chain-wheel 21 is loose on the shaft 12 and is only connected to it by a ratchet device. This device (Fig. 6) is simply composed of a small ratchet-wheel 32 with a single tooth keyed on the shaft 12 and co-operating with a catch 33 pivoted at 34 on the wheel 21 and pulled back by a spring 35. The wheel 32 having only one tooth, the respective positions of the arm 10 (keyed on the shaft 12) and of the mechanism of the machine (to which the wheel 21 is connected by the chain 22) always remain the same in the course of work, even if, for reasons stated further on, one has had to rotate the presser-bars by hand during a stoppage of the machine.

The shaft 27 is provided with a hand-wheel 36, intended to allow of the rotation of the presser-bar mechanism by hand during the stoppage of the machine. Finally each presser-bar is balanced by counterweights 37 (Figs. 3, 4 and 5) intended to prevent the bar being involved in rotation by the weight of the board 5 and rod 7.

The working is as follows:—

The presser-bars are driven by the chain 22 and rotate, with a continuous movement like the traction roller 1. The direction of rotation is indicated by the arrows. In this movement, the boards 5 come into contact with the folds of fabric (Figs. 3 and 4) which they draw downwards, whilst rotating round the rods 7 on encountering the springs 9, as can be clearly understood by examining Figs. 4 and 5 which represent the presser-bars respectively at the moment when the ridges of the boards 5 come into contact with the folded fabric and after a partial rotation from that moment. The boards 5 sliding downwards towards the folds 40 of the fabric pull out the creases and expel the air downwards without allowing it the possibility of reascending and swelling out the upper portion of the folds, the layers of fabric being merely rolled or laid over a shaft 38 forming the hinge of the plaiting board 3.

The presser-bars performing a revolution at each semi-oscillation of the plaiter frame, it is possible so to regulate matters that the boards do not interfere with the fold in the course of formation. Fig. 4 illustrates this regulation.

When the plaiting is finished the plaiting board 3 should be turned up that is to say the two panels which compose it are brought into a horizontal position in one and the same plane this being effected by rotation of the shaft 38. It may happen that the presser-bars 5 hinder this movement. This is remedied by the manipulation of the wheel 36 which enables the presser-bars to be rotated by hand in order to bring them into such a position that they allow the panels of the board 3 to pass freely. The free wheel 21 enables this operation to be effected without having at the same time to drive the whole machine, which would be too laborious for the operator. This device having one tooth, when the machine is set going, one necessarily recovers the correct adjustment of the presser-bars in relation to the folding mechanism, as above explained.

The details of construction can be modified without departing from the scope of the invention. In particular, the driving mechanism of the presser-bars can vary according to the type of machine to which the invention is to be applied.

I claim:

1. In a machine for folding or plaiting fabrics, a presser-device comprising a rotatable frame located in the neighbourhood of the end of the folds; means to rotate the same in synchronism with the folding operation; a pressing member loosely supported by said frame and adapted to friction on said folds to pull the fabric towards the end of the fold; and spring means connecting said rotatable frame with said pressing member.

2. In a machine for folding or plaiting fabrics, a presser-device comprising a rotatable frame located in the neighbourhood of the end of the folds; a one-way clutch adapted to drive said frame while permitting its free hand-rotation when the machine is stopped; means to rotate said clutch in syncronism with the folding operation; a pressing member loosely supported by said frame and adapted to friction on said folds to pull the fabric towards the end of the fold; and spring means connecting said rotatable frame with said pressing member.

3. In a machine for folding or plaiting fabrics, a presser-device comprising a rotatable frame located in the neighbourhood of the end of the folds; a ratchet device adapted to drive said frame while permitting its free hand-rotation when the machine is stopped, said ratchet device having only one tooth and one pawl; means to rotate said ratchet device in synchronism with the folding operation; a pressing member loosely supported by said frame and adapted to friction on said folds to pull the fabric towards the end of the fold; and spring means connecting said rotatable frame with said pressing member.

4. In a machine for folding or plaiting fabrics, a presser-device comprising a rotatable frame located in the neighbourhood of the end of the folds; means to rotate the same in synchronism with the folding operation;

a pressing board pivotably supported by said frame, its axis of rotation being parallel with the axis of said frame; spring means tending to rotate said board with respect to said frame in the same direction as the rotation of said frame itself; and fingers fixed to said frame and adapted to stop said board against the action of said spring means, in a direction substantially radial with respect to the axis of said frame.

5. In a presser-device as claimed in claim 4, counterweighting means adapted to the rotatable frame to balance the same.

6. A presser-device as claimed in claim 4, wherein the means to rotate the rotatable frame embody a one-way clutch permitting the free hand-rotation of said frame when the machine is stopped.

7. A presser-device as claimed in claim 4, wherein the means to rotate the rotatable frame embody a ratchet device comprising only one tooth and one pawl.

8. In a machine for folding or plaiting fabrics, wherein the fabric is folded on both sides of a vertical panel, an arrangement to flatten the folds on both sides, comprising two presser-devices adapted to pull the fabric towards the end of the folds; means to connect said devices together; and means to drive one of them in synchronism with the folding operation.

9. In a machine for folding or plaiting fabrics a device exterior of the fold adapted to exert regular friction on the fabric to pull the same towards the end of the fold whereby the fold is flattened and any air entrapped in the fold expelled, said device being driven in synchronism with the folding operation.

In testimony whereof I affix my signature.

JOSEPH NANTERME.