

A. L. DUTILLEUL.
PAD FORMING MACHINE.
APPLICATION FILED JAN. 5, 1909.

965,378.

Patented July 26, 1910.

3 SHEETS—SHEET 2.

FIG. 3

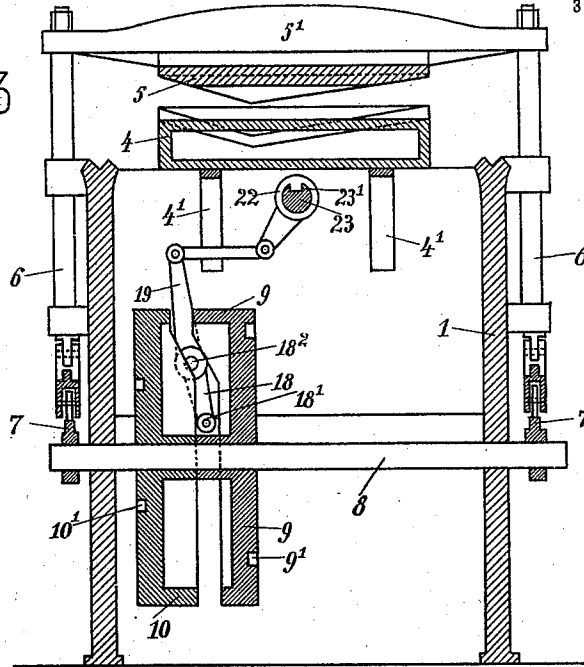
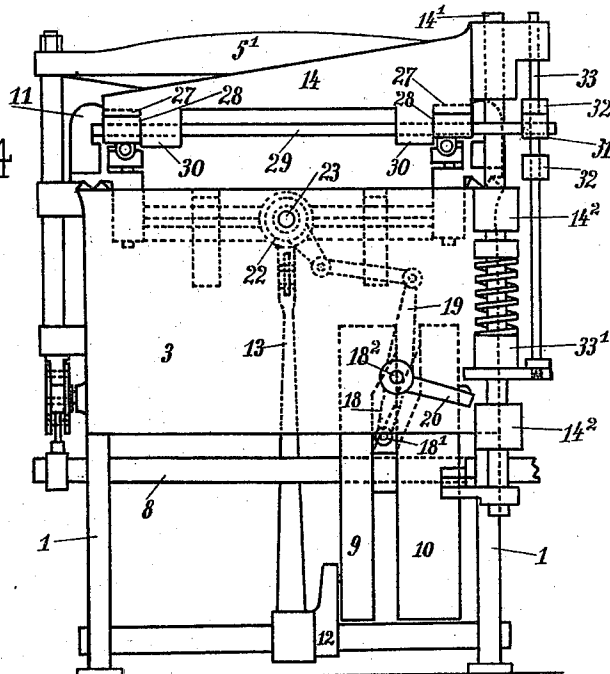


FIG. 4



WITNESSES

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FIG. 5

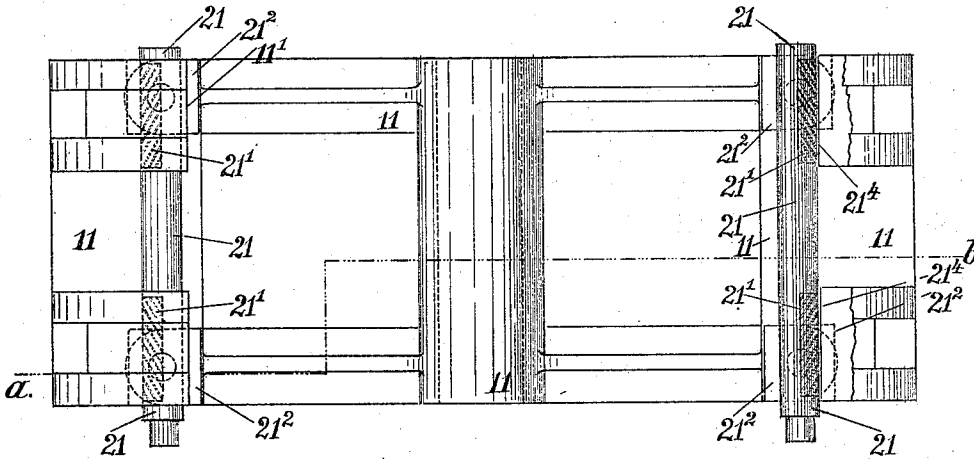
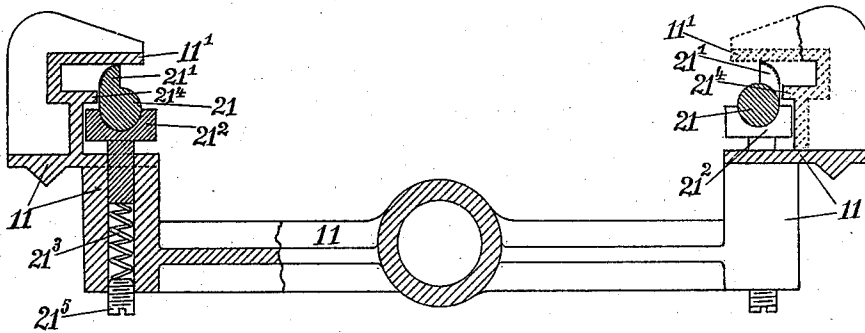


FIG. 6



WITNESSES

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UNITED STATES PATENT OFFICE.

ALFRED LOUIS DUTILLEUL, OF PARIS, FRANCE.

PAD-FORMING MACHINE.

965,378.

Specification of Letters Patent.

Patented July 26, 1910.

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To all whom it may concern:

Be it known that I, ALFRED LOUIS DUTILLEUL, a citizen of the Republic of France, residing at 223 Rue d'Alésia, Paris, France, have invented new and useful Improvements in Pad-Forming Machines, of which the following is a specification.

This invention relates to machinery for giving convexity to plastrons or paddings employed commonly by tailors for preserving the shape of the bosoms of jackets, dresses, overcoats, or the like. As is well known, these plastrons consist of pieces of linen or jute, which are placed between the material that forms the article of clothing and the lining of the latter. In the parts that cover the breasts, the piece of linen or jute is reinforced either with a tissue composed of horsehair, or with some other product capable of imparting a certain degree of rigidity to this part but having sufficient suppleness to avoid cracking during use.

In order to facilitate the fitting in or setting of the chest it is desirable and even necessary to make the plastrons or paddings bulge according to the figures of the persons to be clothed. This work has been performed hitherto by hand. The workman was obliged to support the horsehair tissue by a considerable number of stitches, and then with a hot iron to spend some time in imparting a slightly convex form to this part of the plastron. Plastrons made in this manner were very expensive, owing to the time taken in their manufacture. They could not possibly be used except for relatively high-priced articles of clothing.

The machine hereafter described performs the work of imparting convexity to the plastrons automatically, and in a rapid and uniform manner. The workman has only to introduce the flat plastrons one after the other to the heated matrix that constitutes a part of the machine. The machine does the rest and when the operation is completed the finished plastrons leave the machine without any personal intervention. Thus the work is performed under the most economical conditions.

With several sets of matrices (female and male) it is easy to supply the ready-made clothing industry with assortments of plastrons suitable for all normal figures, with absolute uniformity as regards each figure.

One form of the invention is illustrated in the accompanying drawings.

Figure 1 is a vertical, longitudinal section, through the center of the machine. Fig. 2 is a front elevation partly in transverse section, taken behind the front-plate of the frame of the machine. Fig. 3 is a vertical transverse section, taken through the axis of the main shaft of the machine. Fig. 4 is a back view of the machine. Fig. 5 is a plan view partly broken and on a larger scale of the carriage with means for seizing the plastrons and for stretching them both lengthwise and widthwise when they are introduced by the workman. Fig. 6 is a vertical section of carriage with the tension grippers on line *a, b*, of the Fig. 5.

The frame of the machine is composed of two lateral brackets 1, 1 joined together by two cross-plates 2, 3 in front and at the back, respectively. The female matrix 4, heated to a high temperature by ordinary gas-jets or any other suitable means, is supported by two brackets 4¹ 4¹ attached to the back-plate 3. The male matrix or punch 5 is supported by a cross-beam 5¹ that slides on two vertical shafts 6 6 outside the frame and the lift of which is controlled by two lifting-cams 7 7 mounted on the ends of the main-shaft 8. This shaft carries two circular plates (twin-plates) 9 and 10 formed with cam-grooves 9¹ and 10¹ respectively. These plates control the movements of the various parts which coöperate in effecting the work, with the exception, however, of the movements of the punch, which are controlled by the cams 7 as just previously stated.

11 is a carriage with a forward and backward movement. This carriage which receives the flat plastrons from the hands of the workman and conveys them to the matrix by which they are made convex, slides on the brackets of the machine and is provided with special grippers, described hereafter, intended for seizing the plastrons and stretching them powerfully and uniformly lengthwise and widthwise, when they are introduced by the workman. The movement of the carriage is controlled by the cam-groove 9¹ of the plate 9, through the medium of a bent-lever 13, 12, the small arm 12 of which carries a roller 12¹ that runs in the said groove.

14 is an arm, with a horizontally turning movement, fixed on a vertical shaft 14¹ and furnished with grippers which remove the finished plastrons in the manner described

below. The shaft 14¹ rotates in two sleeves 14² 14² arranged on the cross plate 3 at the back of the frame. The rotary motion is controlled by the cam-groove 10¹ of the plate 10 through the medium of a slide 15 which carries a roller 15¹ that runs in the said cam-groove. The slide is guided in guides 15², 15² arranged on the adjacent bracket 1 and is connected with the shaft 14¹ by a small rod 16 and by a crank 17 keyed to that shaft.

18, 19, 20 is a three-arm lever which serves for controlling the movements of the tension grippers and the removal grippers as about to be explained. 18² is the axis of oscillation of this lever. The movement of oscillation is imparted to the said lever through the medium of its arm 18 that carries a roller 18¹ which runs between the twin-plates 9, 10. The opposite faces of these plates comprise two plane parts and two inclined parts (see Figs. 2, 3 and 4), so that the lever-arm 18 is carried alternately from right to left and from left to right.

The tension grippers, placed on the carriage 11 are constituted by cams 21¹ arranged on two shafts 21, supported by half-bearings 21² mounted on springs 21³ in the carriage 11. When the grippers are released these bearings are pushed in contact with the abutments 21⁴ by the action of the said springs 21³. At the times when the grippers have to act, the shafts 21 rotate so that the nose-like parts of the cams 21¹,—the surfaces of which are provided with a fluting in opposite directions obliquely to the axis of the shafts,—press the edges of the plastron which the workman has just introduced to the machine tightly against the parts 11¹ of the carriage. Owing to the special fluting of the cams, these latter not only grip the material, pressing it tightly against the parts of the carriage which have just been mentioned, but in rotating they stretch it powerfully and uniformly both lengthwise and widthwise, so that the plastron is introduced to the matrix that imparts the convexity without being creased. The movement required for enabling the cams 21¹ to act under the conditions just mentioned is imparted by the lever-arm 19 which controls the collar 22 fastened to a shaft 23. This shaft is formed with a groove 23¹ which receives a corresponding interior feather-tongue of a sleeve 24, which in rotating actuates the shafts 21 and the gripper-cams 21¹ through the medium of the connecting rods 25 and the cranks 26 (Fig. 2). As it is indispensable that the pressure of the cams should be regulated according to the varied thickness of the materials which have to be brought into contact with them, regulating screw-plugs 21⁵ are arranged below the springs 21³.

The removing grippers, placed on the arm 14 already mentioned are arranged and act in the following manner. On the said arm two horizontal projecting pieces 27 forming the fixed jaws of the grippers are arranged. The movable jaws are composed of two small plates 28, fixed on a shaft 29 that rotates in the parts 30, 30 of the arm 14. The shaft 29 carries a small arm 31 (see Fig. 1) controlled by two stops 32, 32 arranged on a rod 33 which is firmly connected with the shouldered sleeve 33¹. When this sleeve and at the same time the rod 33 are raised by the lever-arm 20, the lower stop 32 in pushing the arm 31, causes the shaft 29 to rotate. The plates 28 together with the fixed jaws 27 then grip the edges of the plastron which project on the side of the matrix and of the punch for producing convexity.

The action of the machine is as follows:— The main-shaft 8 is rotated continuously by means of an ordinary driving-belt (not shown in the drawings) or by any other suitable transmission device. When the punch or male matrix 5 is raised by the cams 7 the carriage 11 moves forward, carrying along a plastron held tightly and stretched in its grippers and introduces it between the female and male matrices 4 and 5. The latter is then lowered and owing to its weight exercises the pressure that produces the convexity. During this operation the cam-grippers 21¹ are unlocked, the carriage recoils and receives a fresh plastron from the workman, and the arm 14, which had moved away for the purpose of releasing the preceding plastron, effects rotatory motion, approaching the back of the machine. In other words, this arm comes into position in front of the plastron that is under pressure, and the removing grippers of said arm seize the edges of this plastron, at the moment when the punch is raised. The arm now effects a rotatory motion backward, the removing grippers open letting the finished plastron fall on to a table. The work proceeds continuously in the manner just described.

The details of construction of the machine described above may be varied without going beyond the scope of the invention, provided that the parts are combined so as to produce the convexity of the plastrons mechanically continuously and automatically. If it be desired to simplify the machine, the arm 14 and the removing grippers may be omitted and the removal of the plastron be effected by hand.

I claim as my invention—

1. A machine of the class described, comprising female and male matrices, a carriage having a forward and backward sliding movement, means on the carriage for seizing the plastrons and stretching them uniformly both lengthwise and widthwise in presenting them to the matrices, said means consisting

of cams, two shafts carrying said cams and rotating in opposite directions, the surfaces of said cams being provided with flutings which are oblique to the axes of the shafts, the flutings on one cam extending in an opposite direction from the flutings on the other cam on the same shaft.

2. A machine of the class described comprising female and male matrices, a carriage having a forward and backward sliding movement, means on the carriage for seizing the plastrons and stretching them uniformly both lengthwise and widthwise in presenting them to the matrices, said means consisting of cams, two shafts carrying said cams and rotating in opposite directions, the surfaces of said cams being provided with flutings which are oblique to the axes of the shafts, the flutings on one cam extending in an opposite direction from the flutings on the other cam on the same shaft, half-bearings for the shafts and adjustable springs for elastically supporting the bearings.

3. A machine of the class described com-

prising female and male matrices, a carriage having a forward and backward sliding movement, means on the carriage for seizing the plastrons and stretching them uniformly both lengthwise and widthwise in presenting them to the matrices, a horizontally rotating arm, grippers thereon for removing the finished plastron from the carriage and from the matrices, the said removing grippers consisting of fixed jaws projecting horizontally from the rotary arm, and of movable jaws and a horizontal rotary shaft on which the movable jaws are keyed, said shaft being supported in bearings on the said rotary arm, and mechanical means for operating said parts.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALFRED LOUIS DUTILLEUL.

Witnesses:

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H. C. COXE.