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MAY 4, 1943.
BY A. P. C.

O. WORM
METHOD OF PRODUCING WELTS
Filed Nov. 29, 1940

Serial No.
367,846
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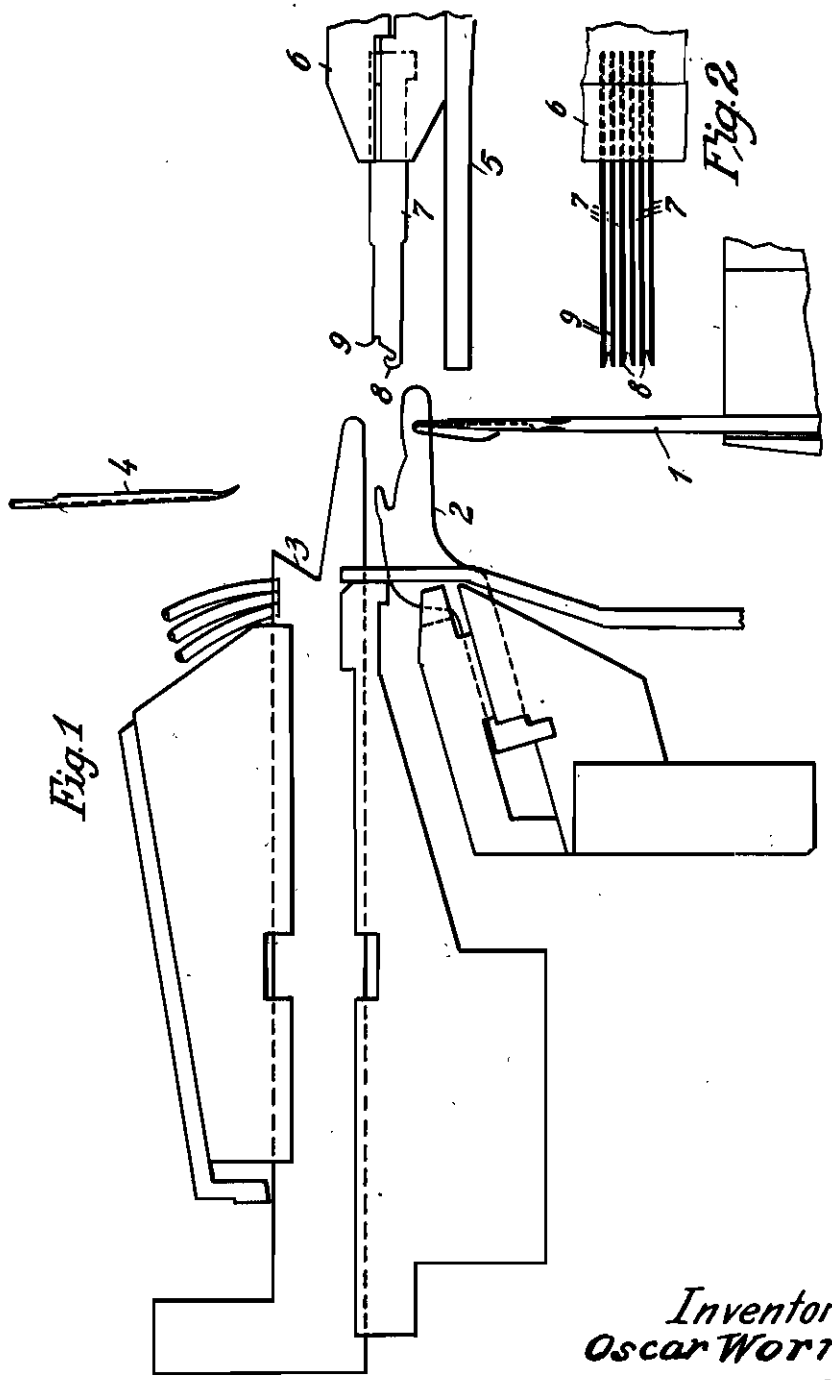

Fig. 1

Fig. 2

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Fig. 3

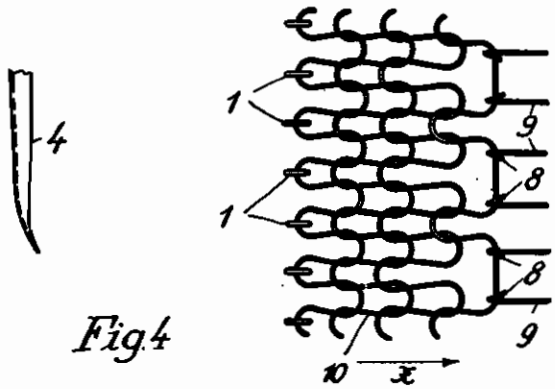

Fig. 4

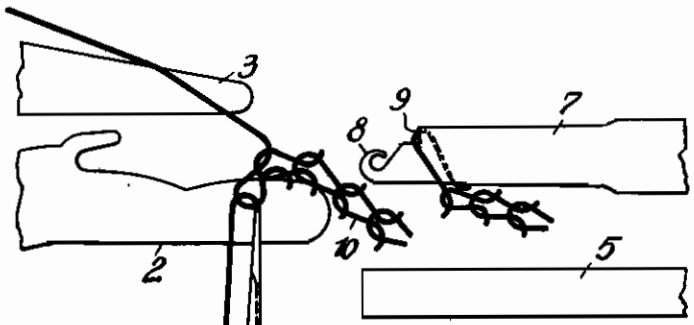

Fig. 5

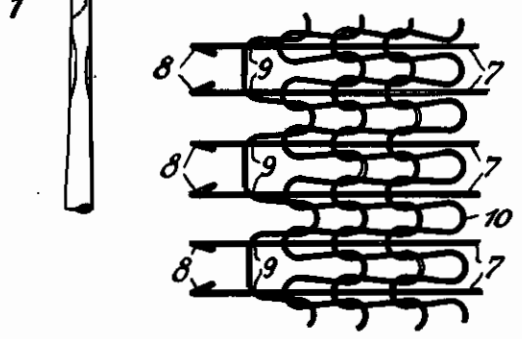

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Fig. 6

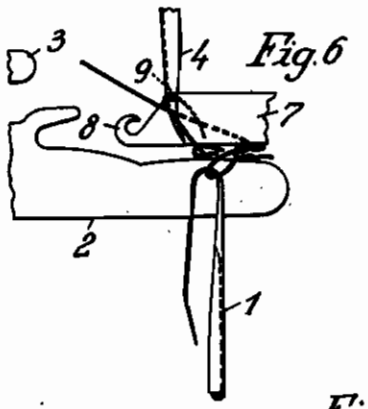


Fig. 7

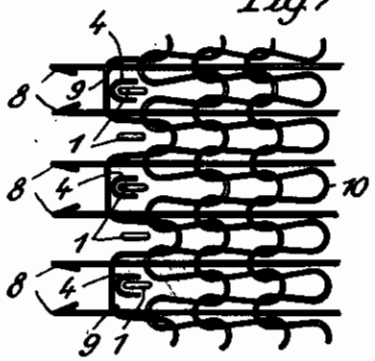
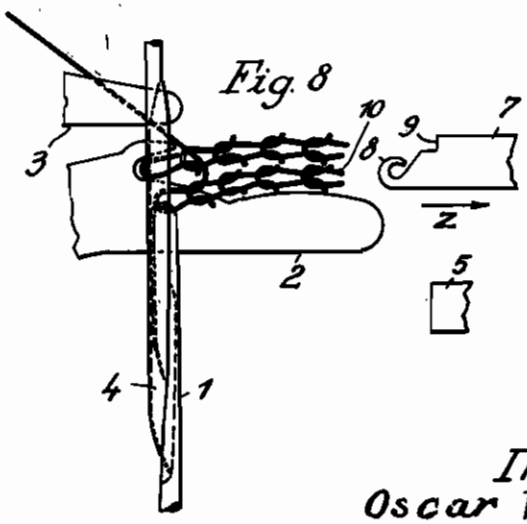


Fig. 8



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ALIEN PROPERTY CUSTODIAN

METHOD OF PRODUCING WELTS

Oscar Worm, Chemnitz, Germany; vested in the Alien Property Custodian

Application filed November 29, 1940

The present invention relates to a method of automatically producing upon a full fashioned flat knitting machine, welts the sinker loops of the beginning edge of which are transferred to each second frame needle only. The invention also relates to a device for carrying out the new method.

According to a known proposal the thread nooses each consisting of two juxta-positioned sinker loops are picked up by each two horizontally reciprocatable welt sinkers or welt points to provide sufficient space for the frame needles which for the purpose of transferring the thread nooses dip from below into said nooses held in a spread condition.

Due to distortions of the fabric particularly of the edge portion of same at which dipping of the frame needles free of disturbance is impossible, auxiliary bars are used for straightening the fabric or the loops to be dipped respectively.

Besides the use of special auxiliary bars the drive and arrangement of which cause certain difficulties, further special oscillating movements of the welt sinkers are required for releasing the latter after picking up of the loops has been effected.

According to the method proposed by the invention these drawbacks are obviated by the fact that first of all all sinker loops in all divisions commonly and automatically are picked up by bars fully provided with welt sinkers, whereupon each second needle loop is tickled off and cast off by covering points present in the machine, whereby, upon each two adjacent welt sinkers, common thread nooses are formed into which, for the purpose of closing the welt, dip the covering points after producing the welt leg and whereby the beginning row after release is picked up by the covering points for the purpose of effecting, by a return movement of the welt sinkers, tickling off of said thread nooses upon each second frame needle. The welt sinkers hereby are horizontally moved away from and towards the frame needles without the welt bars performing oscillating movements or a lateral rack.

For carrying out the method according to the invention a device, forming part of the invention, is used which consists in this that for each division a welt bar is provided carrying welt sinkers, coordinated to each frame needle, the loop picking up hooks of which are bent or inclined towards each other in pairs and are arranged in a lower level than offset shoulders of the welt sinkers upon which, due to the drawing off effect of the welt rods, are shifted the sinker nooses for being tickled off upon the frame needles by the covering points thereby closing the welt.

It is of importance that either the picot bar already present in the machine is used which must be provided with covering points coordinated to each second frame needle or that in connection with Jacquard lace machines narrowing bars fully covered with narrowing points without additional auxiliary bars are employed.

Proposals have already been made to the effect that after sinking of a first row of loops and before picking up of this row by the welt comb each second frame needle of a flat knitting machine is forced not to take up thread and then the welt bar provided with the bearded needles is caused to seize the large sinker nooses obtained in this manner in such a way, that always a sinker noose is held by two welt bar needles. This method in so far is uncertain as free thread nooses must be caught which easily may warp.

Moreover, a device has become known for transferring welts upon flat knitting machines in which covering points are used for the purpose of closing a welt by a closing row produced with all needles. These additional covering points are arranged in a bar below the beginning welt fabric. By oscillating the bars by special toothed segments all the sinker loops of the beginning row are picked up and transferred upon the frame needles by lateral rack for half a needle space.

This rather complicated machine, however, cannot be used for carrying out the method according to the invention.

Welt bars provided with welt sinkers or welt points belonging to each other and arranged in pairs also are known already. According to one construction of such welt bars one of these welt points always serves for picking up each second sinker loop, whereas the other welt point serves for spreading the sinker loop picked up.

According to another construction of such welt bars both welt points are used for picking up and spreading each sinker loop.

In both cases two by two of the welt points resiliently abut against each other to allow movement of the frame needles out of the range of the welt needles which from below dip into the spread thread nooses for the purpose of closing the welt.

As has already been described for another proposal in this case also dipping of the frame

needles free of disturbance into the loops of the fabric, particularly the loops of the edge portions, is impossible owing to warping of the fabric.

In the accompanying drawings a device for carrying out the method according to the invention is shown by way of example.

In these drawings:

Fig. 1 is a side elevation of the device according to the invention,

Fig. 2 shows a plan view of a portion of the welt sinkers,

Fig. 3 is a loop diagram showing the begin of the manufacture of a welt,

Fig. 4 is a side elevation showing the position of the welt sinkers and the covering points before covering of the thread nooses for the purpose of closing the welt,

Fig. 5 is a plan view of a loop diagram and the welt sinkers according to Fig. 4,

Fig. 6 shows a side elevation illustrating the position of the welt sinkers and covering points at the begin of covering of the thread nooses by the covering points,

Fig. 7 is a plan view of a loop diagram and of the welt sinkers as well as the covering points showing the latter in the lowermost position shortly before the return movement of the welt sinkers, and

Fig. 8 is a side elevation showing the tickling off position of the covering points relatively to the frame needles, whereby the welt sinkers already are horizontally returned out of the range of the thread nooses.

In the knitting machine according to the invention the frame needles 1, the knocking over jacks 2, the jack sinkers 3 and the covering points 4 are arranged in a well known manner. Upon the operating table of the machine horizontal guides 5 are arranged for each division upon which welt bars 6 may be shifted. The latter are provided with welt sinkers 7 coordinated to each frame needle. The welt sinkers 7 have a pick up hook 8 as well as a shoulder 9 which is arranged back of the hook in a somewhat higher level than the latter. The shoulder 9 may have any desired shape and be provided for instance with an edge extending vertically or inclined to the frame needles. The picking up hooks 8 are, as shown in Fig. 2 in pairs, either bent off laterally to each other or are inclined towards each other only without projecting laterally. 10 represents the fabric forming the welt.

After formation of the beginning row all the thread nooses of the sinkers are picked up by the hooks 8 of the welt sinkers 7. Then by taking up and casting off the thread noose of each second frame needle which corresponds to the appertaining pair of welt sinkers each two adjacent sinker nooses are, as shown in Fig. 3, formed to a common thread noose. By movement of the welt sinkers in the direction of the arrow x the manufacture of the welt leg is then effected in a manner known per se.

After finishing the piece of fabric 10 forming the welt into which the draw off rods are inserted, the welt sinkers are moved in the direction of the arrow y towards the frame needles as may be seen from Fig. 5. Hereby the thread nooses of the beginning row lying upon each two adjacent welt sinkers are shifted upon the shoulders 9 arranged back of the hooks in a higher level than the latter. If the welt bar is returned so far, that the welt sinkers carried by the same are moved beyond the plane of the frame needles, picking up of these thread nooses upon the covering points is effected by dipping the covering points 4 into the thread nooses of the beginning row (see Fig. 6).

As soon as the covering points reach their lowermost position shown in Fig. 7 the welt sinkers are returned in the direction of the arrow z (Fig. 8), whereupon the covering points 4, together with the frame needles 1, rise in a well known manner for transferring the thread nooses of the beginning row upon the frame needles for the purpose of closing the welt.

The welt bar is moved in both directions in a horizontal plane only without performing rack- or oscillating movements.

Owing to the hooks 8 being arranged lower than the shoulders 9 as well as owing to the bending off or chamfering of the hooks 8, the latter are brought out of the range of the thread nooses without hindrance and thereupon the thread nooses carried by the covering points are automatically tickled off upon the frame needles. A lateral rack of the welt bar is not required in this case.

OSCAR WORM.