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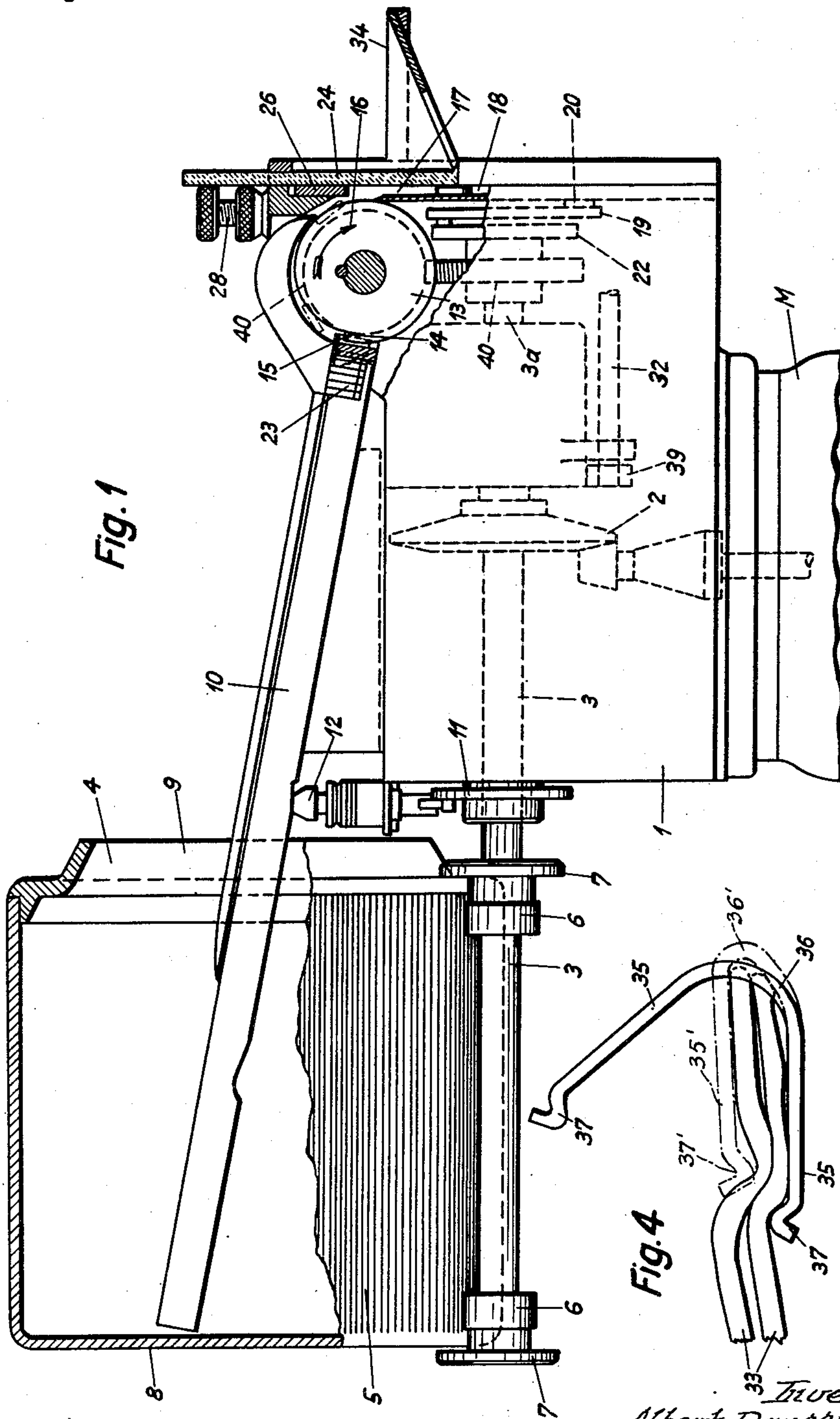
A. BRUGGMANN

2,709,809

METHOD FOR ATTACHING CLIPS TO GOODS

Filed Aug. 31, 1950

2 Sheets-Sheet 1



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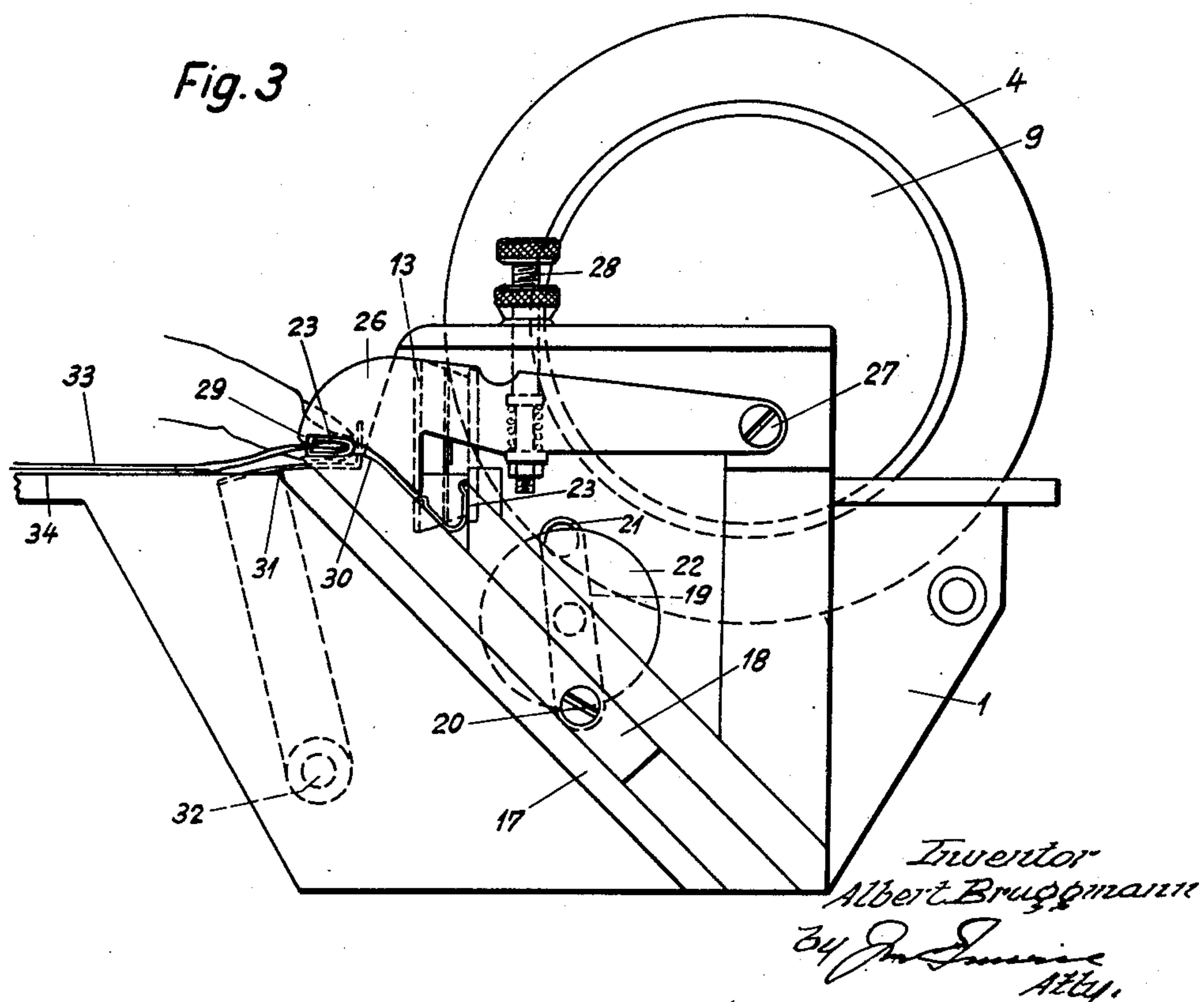
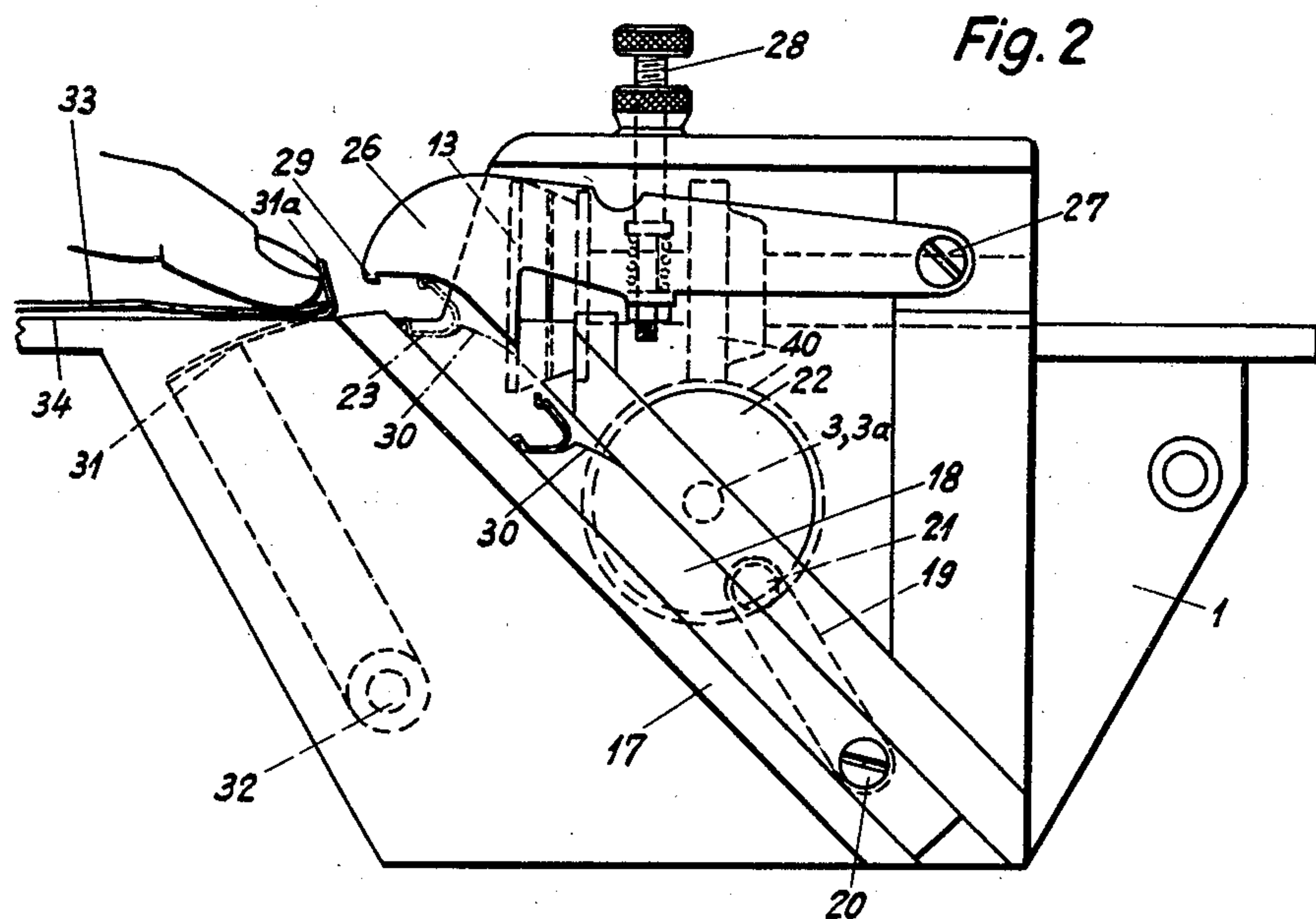
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2 Sheets-Sheet 2



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1

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METHOD FOR ATTACHING CLIPS TO GOODS

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1 Claim. (Cl. 1—68)

The present invention relates to a method for attaching clips to goods, preferably to textiles, either to connect various textile layers together, or to connect a paper or card label, etc. to the goods.

For this purpose it is known to use clips with unequal arms, which are given a hook-shape at the ends of the arms. In these known methods the requisite clamping effect is obtained by pressing the arms against each other. But the adoption of unequal-armed clips has essential drawbacks. The most important of these is that the clips must be introduced into the binding appliance in an absolutely definite position. A considerable simplifying and cheapening is now obtained if equal-armed clips can be adopted. According to the present invention this is possible without the appropriate clamping effect of the unequal-armed clips being lost. The clips employed in accordance with the invention are therefore equal-armed and symmetrical and they are bent over towards each other at the ends of their arms. While being attached to the goods the equal-armed clips are now unsymmetrically deformed in the neighbourhood of the bend connecting the two arms together, in such a way that, in the position of use, the bends at the ends of the arms are displaced with respect to each other in the longitudinal direction of the clip.

The method according to the invention will be explained below with reference to the accompanying diagrammatic drawing showing a preferred appliance for carrying it out, in which:

Fig. 1 shows a part view of the machine from the front,

Fig. 2 a part side view, and

Fig. 3 a view corresponding to Fig. 2 but with the parts in another position,

Fig. 4 shows the clip being applied.

In the drawing, 1 denotes the stand of the machine, to which a motor M is fitted. Through a bevel gear 2 the motor drives a shaft 3 and rollers 6, on which the drum 4 lies loose. On its periphery this drum is provided with flutes 5 so that, when the shaft 3 rotates, the drum is carried round by the rollers 6 and set into rotation. Flanges 7 arranged adjacent the rollers 6 prevent the drum 4 from moving in the longitudinal direction of the shaft 3. Whilst the drum 4 is closed at one side by the end 8, it is provided at the other side with an opening 9, through which a bar 10, approximately triangular in cross-section, projects and is kept vibrating by motion imparted from the shaft 3 through a non-circular disc 11 and a pin 12. The front end of the bar 10 i. e., the right hand end in Fig. 1, comes within reach of a transferring member 13, which in the present case is formed as a disc having a stop-nose 14 on its periphery. This nose enters into a slot 15 of the bar 10 and removes each time one of the clips 23 resting on the bar. The direction of rotation of the disc 13 is indicated by the arrow 16. In an obliquely inclined guide channel 17 (Figs. 2 and 3) of the machine 1, a pusher 18 can be moved to and fro by a link 19. This link is connected at

2

one end to the pusher by a pin 20 and at the other end to a disc 22 by a crank pin 21, the disc 22 being mounted on the shaft 3a which is coupled to the shaft 3. A reciprocating motion is imparted to the pusher 18 by the rotating movement of the shaft 3a. In order to be able to keep the clips 23 on the upper side of the pusher 18, to prevent them from falling out, to supervise the operating and quickly to remove stoppages, the pusher guide channel 17 is covered at the side by a plate 24 (Fig. 1), preferably made of transparent plastics.

Over the upper end of the pusher guide channel 17 a counterholder 26 is provided, whose shape can be seen from Figs. 2 and 3. This counterholder is pivotally carried on an axle 27, about which it can be swivelled by means of the setscrew 28. The head of the counterholder has a nose 29, against which the clips 23 come to lie at the end of the stroke of the pusher 18. On the other hand, the upper side of the pusher, as can be seen especially in Fig. 2, is provided with a nose 30 at the end opposite to that end where the pin 20 is attached.

In front of the counter-holder 26, as can be seen from Figs. 2 and 3, a guiding piece 31 is carried pivoted on an axle 32. The guiding piece 31 is bent up at an angle at its front end 31a facing the counter-holder, so that the goods 33, to which the clips are to be applied, can be laid on the machine table 34 so that their end lies against the said upward bend 31a of the guiding piece 31. This latter is coupled to the drive of the pusher 18 through the axle 32 and a control arm 39, in such a way that the shaft 3a is coupled to the shaft 3 at each forward movement of the guiding piece 31; this causes the disc 13 to turn and also the pusher 18 to move forwards. The turning of the disc 13 is effected through the intermediary of a transmission gear 40.

Now if clips have to be attached to goods, in particular to textiles, they are for this purpose filled into the drum 4. Because of the rotation of the drum, they fall onto the bar 10, along which they slide down from left to right, as seen in Fig. 1, in consequence of the vibrating movement of the bar. Since the clips are formed with equal arms and absolutely symmetrical, no appliance is required to introduce them in the desired position into the closing mechanism. In the described appliance it is of no importance whether a clip lies with one arm or the other on the pusher 18. From the lower end of the bar 10 the clips are raised by the stop-nose of the rotating disc 13 and thrown with one of their arms into the pusher guide 17, where they fall downwards. The lower end position of the pusher 18 is shown in Fig. 2. When the material 33 to which a clip has to be attached is now placed on the machine table 34, laid against the upward bend 31a of the guiding piece 31, and this latter is swung clockwise in Figs. 2 and 3, then, in the manner described above, the drive of the pusher 18 is started and the pusher moves into the top end position as shown in Fig. 3. In the course of this movement, the clip 23 becomes deformed in the manner to be seen in Fig. 4, by the faces of the pusher 18 and of the counter-holder 26 facing one another. In the range of the middle bend 36 connecting the arms 35, the clip becomes unsymmetrically deformed by its being doubled-up and is turned over into the position shown in chain-dotted lines 35', 36', 37, whereby stresses are set up in the material which increase the clamping force. The end bends 37 of the arms 35 are thus displaced with respect to each other in the longitudinal direction of the clip, so that with the altered middle bend 36' and the end bends 37 a particularly good clamping action is obtained with the least possible damage to the goods.

The method described works fully automatically, in that it is only necessary to lay the goods 33 on and to swing the guiding piece 31 manually, after which the pushing

3

forward of the clip 23 and its subsequent closing take place automatically.

The advantage in comparison with known clamping methods making a sharp annular kink, consists in that the specific deformation of the material is considerably less because merely the radius of curvature of the bend in the present clip is reduced. This allows, for the same clamping force, the use of a harder material and thus a smaller cross-section, so that a saving in material can be obtained.

While I have described and illustrated what may be considered a typical and particularly useful embodiment of my said invention, I wish it to be understood that I do not limit myself to the particular details described and illustrated, for obvious modifications will occur to a person skilled in the art.

I claim:

A method for attaching a clip to material wherein the clip in its original form is substantially and symmetrically U-shaped with the end of each leg thereof being hook shaped, comprising the following steps: introducing the material between the legs of the symmetrical clip, pressing the legs toward each other so that the hook shaped ends of the legs are offset in relation to each other

4

in the longitudinal direction, and deforming the bight of the clip to become an unsymmetrical bow having one portion thereof of a curvature greater than the curvature of the remaining portion of the bow to give the clip an intensified gripping effect on the material clamped by the legs of the clip.

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