

Dec. 28, 1948.

C. N. HENSHAW
BLADE WRAPPING MACHINE

2,457,233

Filed July 21, 1945

3 Sheets-Sheet 1

Fig. 1,

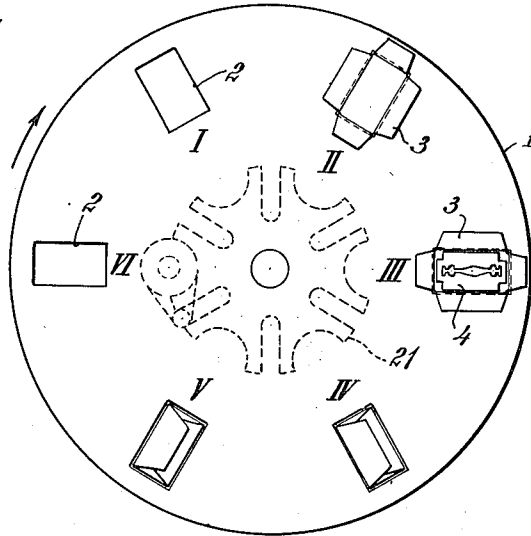


Fig. 2

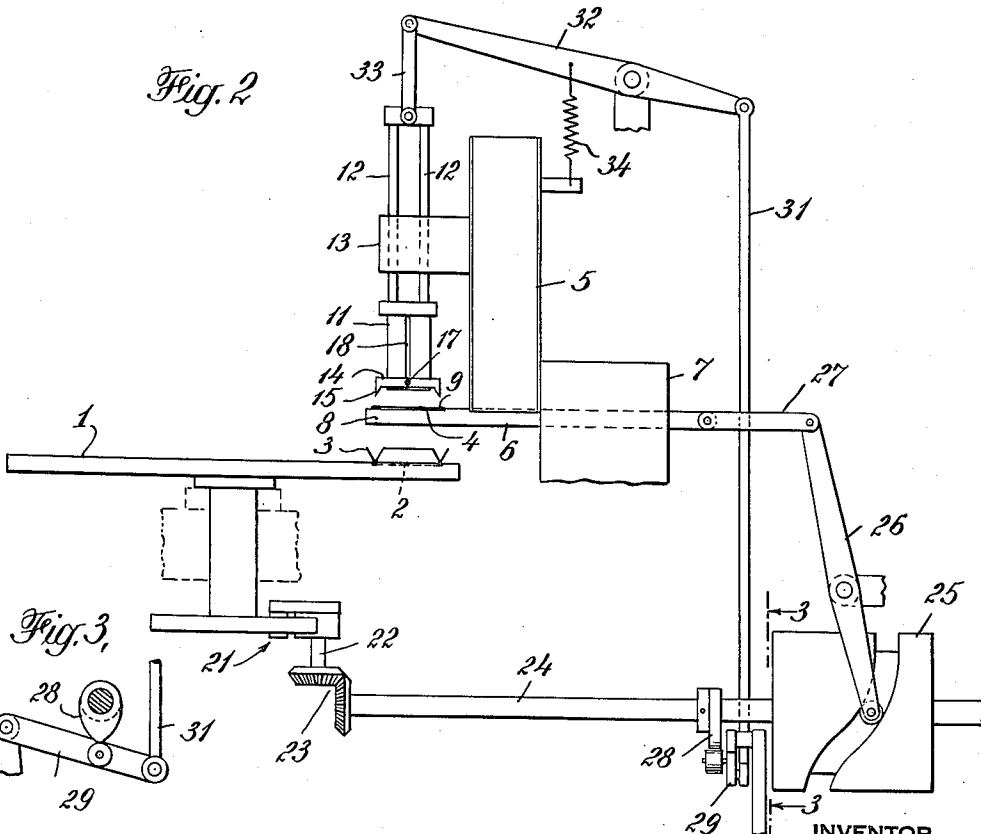
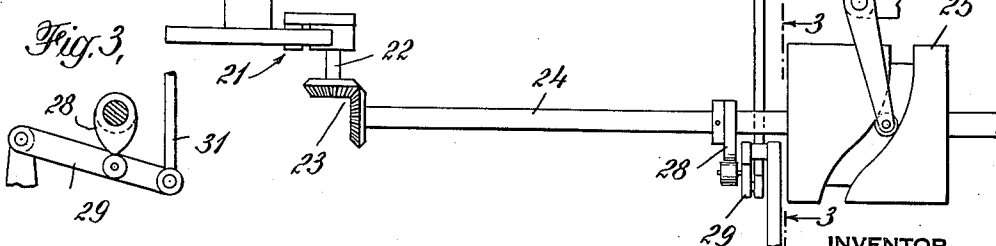


Fig. 3,



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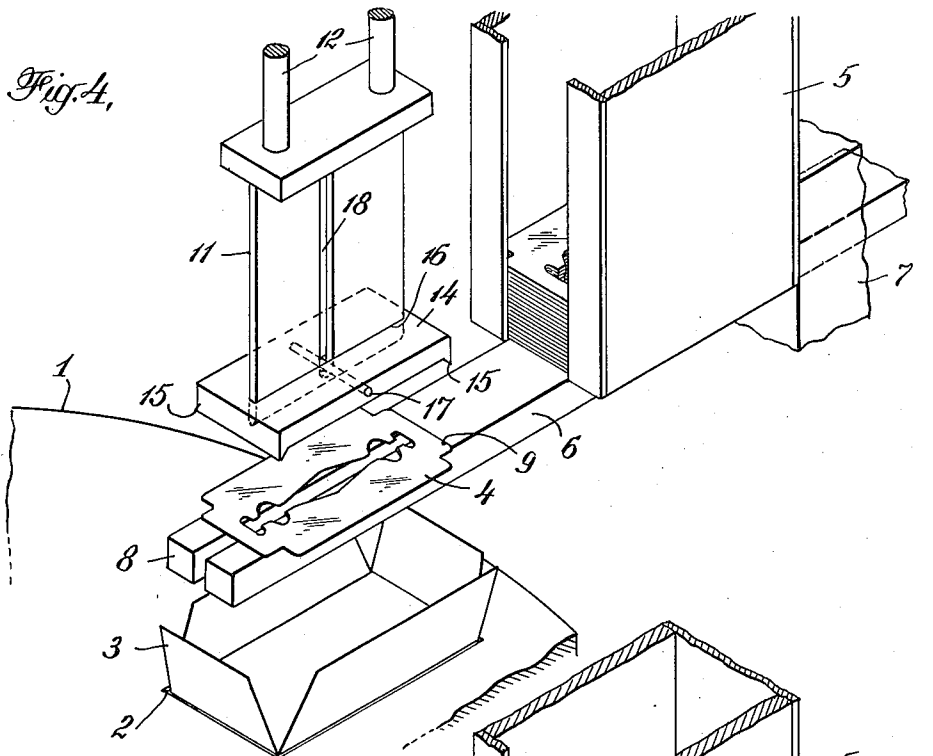
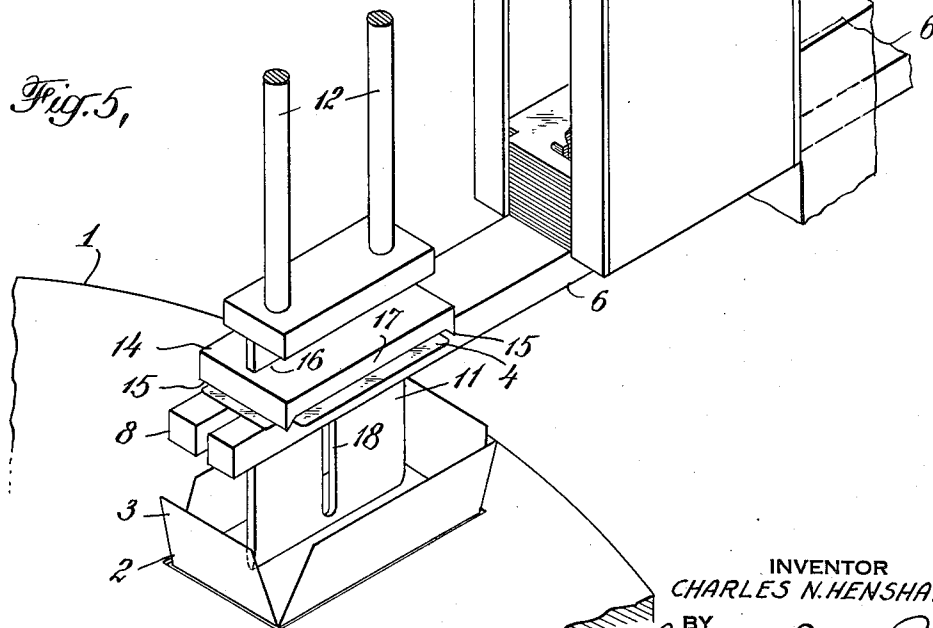
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Fig. 6,

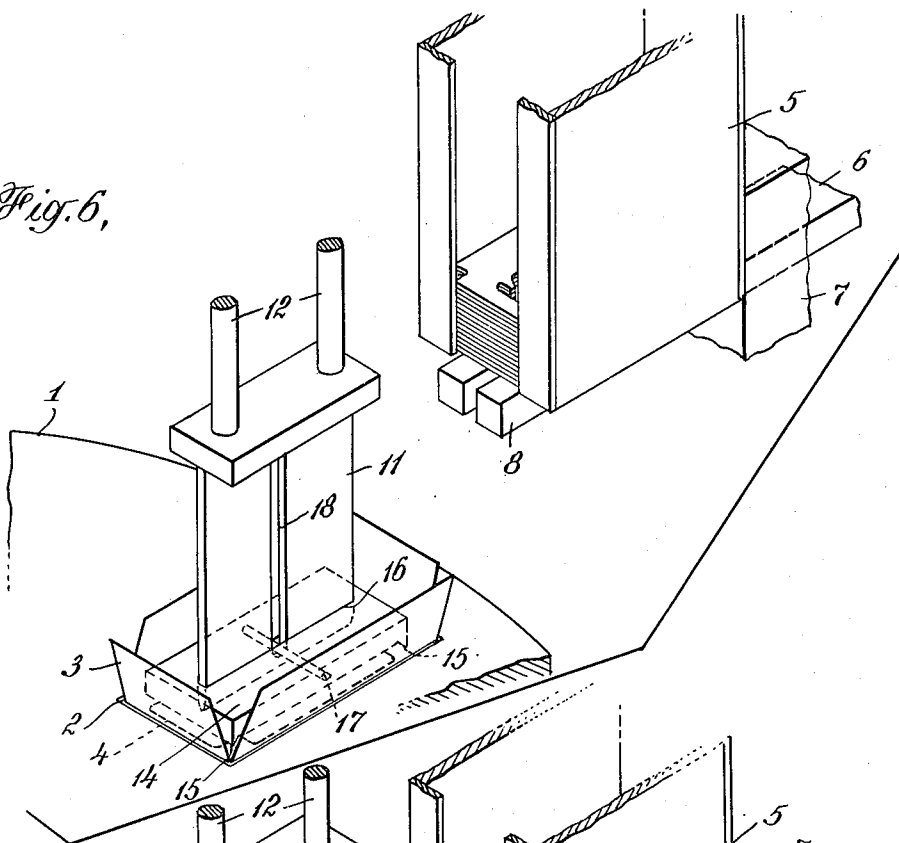
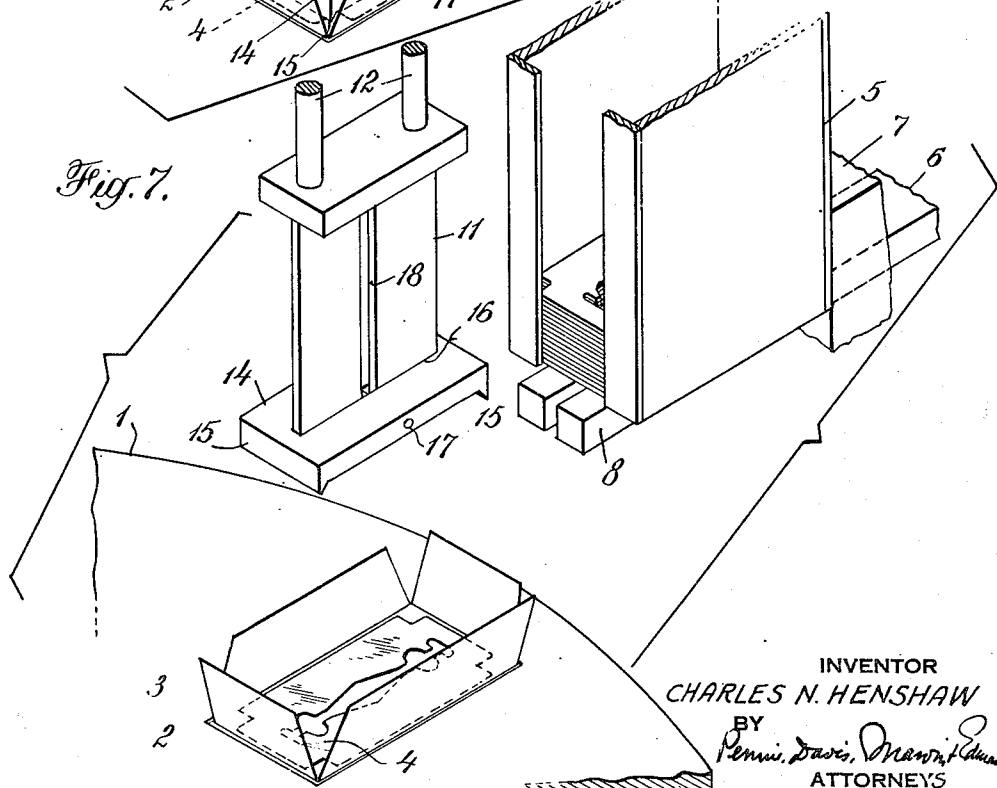


Fig. 7.



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2,457,233

BLADE WRAPPING MACHINE

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Application July 21, 1945, Serial No. 606,336

9 Claims. (Cl. 214—8.5)

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This invention relates to machines for wrapping safety razor blades and in particular to mechanism for transferring finished blades to wrappers creased to receive them.

One common type of blade wrapping machine in use today comprises a turntable having a plurality of peripherally spaced pockets which are moved intermittently to and past fixed stations where successive operations are performed. Thus a wrapper or envelope is fed to a pocket at one station, creased to form a blade-receiving cup at another, a blade placed in the wrapper at another station, the wrapper folded over the blade at still another, and the wrapped blade discharged at the final station. The blades are commonly placed in their wrappers by means of a suction head carried by a swinging arm. This means for transferring the blades to their wrappers has proved unsatisfactory for two reasons: (1) the suction head works best on blades that have been oiled and does not work well on lacquered blades, which constitutes a large part of present-day blade production, and (2) the blades are not accurately positioned within their wrappers so that in subsequent operations one edge may come into contact with parts of the blade-handling machinery and be dulled.

It is the object of the present invention to overcome both of these difficulties. Instead of a swinging arm for picking up individual blades and carrying them to the loading station, blades are fed one-by-one from the bottom of a magazine by means of a reciprocating slide. This slide pushes the lowermost blade from the magazine and over a wrapper placed to receive it. The forward end of the slide is provided with a bifurcated support for the blade. When this support carrying the blade from the magazine reaches its position at the feeding station, a vertically reciprocable pilot, in the form of a plate slightly thinner than the width of the blade slot descends, passing downward through the slot in the blade and between the prongs of the support until its lower end reaches a position practically in contact with the wrapper. The bifurcated blade-support is immediately retracted, whereupon the blade falls by gravity, but as it is guided by the pilot it must fall so as to lie along the geometric center of the wrapper. In order to prevent fluttering of the relatively light blade in its descent along the pilot and so accelerate that descent, I provide the pilot with a relatively heavy stripper which forces the blade to plummet to its position on the wrapper. The pilot and stripper are thereupon retracted, and the blade and wrapper

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advanced to a folding station; meanwhile a new wrapper is moved to the blade feeding station and the operation just described repeated.

In the accompanying drawings I have diagrammatically illustrated my invention embodied in a machine of the general type shown in Gengler Patent No. 1,685,601 although it is applicable to other types. In these drawings

Figure 1 is a plan view of a turntable of a blade-wrapping machine of the Gengler type,

Figure 2 is a side elevation showing the mechanism for synchronously operating the reciprocating blade pusher and pilot and the step-by-step rotary turntable,

Figure 3 is a transverse section taken along line 3—3 of Figure 2 showing the cam that operates the pilot, and

Figures 4, 5, 6 and 7 show the successive operations followed in placing a blade within its wrapper, Figure 4 showing the blade supported on the extended bifurcated end of the slide above the open wrapper just prior to the descent of the pilot, Figure 5 showing the pilot in its lowermost position ready to guide the blade to the wrapper, Figure 6 showing the slide retracted to its original position below the magazine and the blade within its wrapper, and Figure 7 showing the pilot and stripper raised ready for the beginning of the next cycle when a new wrapper shall have been moved into position at the feeding station.

In these drawings 1 represents a turntable provided with six peripherally spaced pockets 2 each of which is located at a station where one of the wrapping operations takes place. Thus at stations I and II the wrappers 3 are fed and creased to form blade-receiving pockets; at station III a blade 4 is placed within the wrapper; at stations IV and V the wrapper is folded over the blades; and at station VI the wrapper blade is discharged.

Mounted at one side of the turntable, above and beyond but adjacent the blade-feeding station III, is a vertical blade magazine 5 in which are stacked the double-edge longitudinally slotted blades 4 to be wrapped. The bottom of this magazine is closed by a slide 6 mounted for horizontal reciprocation in a guide 7. The forward end of this slide is in the form of a bifurcated blade support 8 terminating at its closed end in a transverse shoulder 9, of a height slightly less than the thickness of a blade. When the slide is in its retracted position, as shown in Figures 6 and 7, the blade stack rests upon the bifurcated support 8 and the shoulder 9 is at or beyond the rear wall of the magazine. When the slide is moved

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forward, the lowermost blade, still on the support 8, is carried by the shoulder 9 to a position overlying a wrapper 3 creased to receive it, as shown in Figure 4.

Mounted directly above turntable station III, and lying within a vertical plane passing through the longitudinal center line of the pocket at station III and hence through the center line of the wrapper in that pocket, is a pilot 11 in the form of a thin plate not quite so thick as the width of the blade slot and not quite so wide as the length of it. The clearance, particularly that between the pilot and the sides of the slot, must be great enough to permit easy movement, but not so great as to impair the accuracy with which the blade is centered. A pilot having a thickness of .075 inch and a width of $1\frac{1}{2}$ inches is satisfactory for a blade having a slot .082 inch wide and 1.42 inches long. The pilot is supported on rods 12 mounted for vertical reciprocation in a guide 13.

A stripper 14, slightly narrower and shorter than a blade and provided at each end with a downwardly extending transverse knife edge 15, is mounted on the pilot for limited relative vertical movement by means of a longitudinal slot 16 in the stripper through which the pilot freely passes, and a horizontal pin 17 in the stripper extending through a closed vertical slot 18 in the pilot.

The following mechanism is used to operate the turntable, slide and pilot in synchronism. The turntable is moved intermittently by means of a Geneva movement 21 driven through a uniformly rotating shaft 22 driven through bevel gearing 23 by a drive shaft 24. A cam 25 on the drive shaft reciprocates slide 6 through a rocker arm 26 and connecting link 27, while the pilot is reciprocated by means of a cam 28 on the drive shaft acting on an arm 29 connected to a vertical rod 31 which, in turn, actuates a rocker arm 32 connected to the rods 12 by means of a link 33. A spring 34 constantly urges the rocker arm 32 in a direction to move the pilot downward, the cam 28 acting in opposition to the action of this spring to raise the pilot at the proper time. It is obvious that other driving mechanism might be employed to synchronize the movements of the parts just described.

I shall now review the operation of the blade-transfer mechanism, with particular reference to Figures 4, 5, 6 and 7. A pocket 2 bearing a creased wrapper having been moved to station III, the slide 6 is moved forward to carry a blade into position immediately above the wrapper, as shown in Figure 4, with the pilot raised above it. The pilot now descends, passing through the longitudinal slot of the blade and the slot defined by the prongs of the bifurcated support, the knife edges 15 of the stripper engaging the ends of the blade and remaining fixed upon it while the pilot descends to its lowermost position, as shown in Figure 5. In this position the pilot is almost in contact with the wrapper and is accurately located along its median line. Now the slide is retracted to the position shown in Figure 6, whereupon the blade, under the gravitational compulsion of the stripper, drops quickly to accurate position in the wrapper waiting to receive it, all as shown in Figure 6. The pilot with its stripper are then raised to their initial position, as shown in Figure 7. The turntable is now moved another step to bring a new wrapper into blade-feeding position and to move the blade-filled wrapper to the folding stations. Meanwhile, a new blade has been fed forward and

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the parts are in the position illustrated in Figure 4. The operation is then repeated.

By means of the mechanism just described, lacquered as well as oiled blades can be quickly and accurately fed to their wrappers and the danger of dulling the edges of misplaced blades is eliminated.

I claim:

1. Blade transfer mechanism for a blade-wrapping machine comprising means for feeding a slotted blade into position above a wrapper, a bifurcated support for the blade, a pilot for guiding the descent of the blade upon the wrapper, means for lowering the pilot through the slot in the blade and between the prongs of the support to a point close to the wrapper, means for retracting the support to permit the blade to descend along the pilot to the wrapper, and means for raising the pilot.

2. Blade transfer mechanism for a blade-wrapping machine comprising means for feeding a blade into position above a wrapper, a pilot for guiding the descent of the blade upon the wrapper and a stripper for forcing the blade downward along the pilot.

3. Blade transfer mechanism for a blade-wrapping machine comprising means for feeding a slotted blade into position above a wrapper, a bifurcated support for the blade, a pilot for guiding the descent of the blade upon the wrapper, means for lowering the pilot through the slot in the blade and between the prongs of the support to a point close to the wrapper, means for retracting the support to permit the blade to descend along the pilot to the wrapper, means for raising the pilot, and a stripper slidably mounted on the pilot for forcing the blade downward along the pilot.

4. Blade-transfer mechanism for a blade-wrapping machine comprising a blade magazine for a stack of apertured blades, a slide for moving the lowermost blade from the magazine to a position above a wrapper, a vertically movable pilot for guiding the descent of the blade upon the wrapper, and means for lowering the pilot through the blade aperture to a point close to the wrapper and for raising it after the blade has descended.

5. Blade-transfer mechanism for a blade-wrapping machine comprising a blade magazine for a stack of slotted blades, a slide having a bifurcated blade support and a pusher for moving the lowermost blade from the magazine and holding it on the support above a wrapper, a vertically movable pilot, means for lowering the pilot through the slot in the blade and between the prongs of the support to a point close to the wrapper, means for retracting the support to permit the blade to descend along the pilot to the wrapper and means for raising the pilot.

6. Blade-transfer mechanism for a blade-wrapping machine comprising a blade magazine for a stack of slotted blades, a slide having a bifurcated blade support and a pusher for moving the lowermost blade from the magazine and holding it on the support above the wrapper, a vertically movable pilot, means for lowering the pilot through the slot in the blade and between the prongs of the support to a point close to the wrapper, a stripper carried by but movable along the pilot, means for retracting the support to permit the blade and stripper to descend along the pilot to the wrapper, and means for raising the pilot and stripper.

7. Blade transfer mechanism for a blade-wrapping machine comprising a magazine for a

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stack of longitudinally slotted blades, a slide having a bifurcated blade support and a pusher for moving the lowermost blade from the magazine and holding it on the support above a wrapper, a vertically movable pilot mounted above the center of the wrapper, the pilot being in the form of a thin plate not quite so thick as the width of the blade slot and not quite so wide as the length of the slot, means for lowering the pilot through the slot in the blade and between the prongs of the support to a point close to the wrapper, means for retracting the support to permit the blade to descend along the pilot to the wrapper, and means for raising the pilot.

8. Blade - transfer mechanism for a blade-wrapping machine comprising a blade magazine for a stack of apertured blades, a slide for moving the lowermost blade from the magazine to a position above a wrapper, a vertically movable pilot for guiding the descent of the blade upon the wrapper, the pilot conforming to the shape of the blade aperture, and means for lowering the pilot through the blade aperture to a point close to the wrapper and for raising it after the blade has descended.

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9. Blade transfer mechanism for a blade-wrapping machine comprising means for feeding a slotted blade into position above a wrapper, a pilot for guiding the descent of the blade upon the wrapper, the pilot being in the form of a thin plate not quite so thick as the width of the blade slot, and means for lowering the pilot through the blade slot to a point close to the wrapper and for raising it after the blade has descended.

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