June 16, 1953 W. BINDSZUS 2,642,111

RAZOR BLADE BACKING MACHINE

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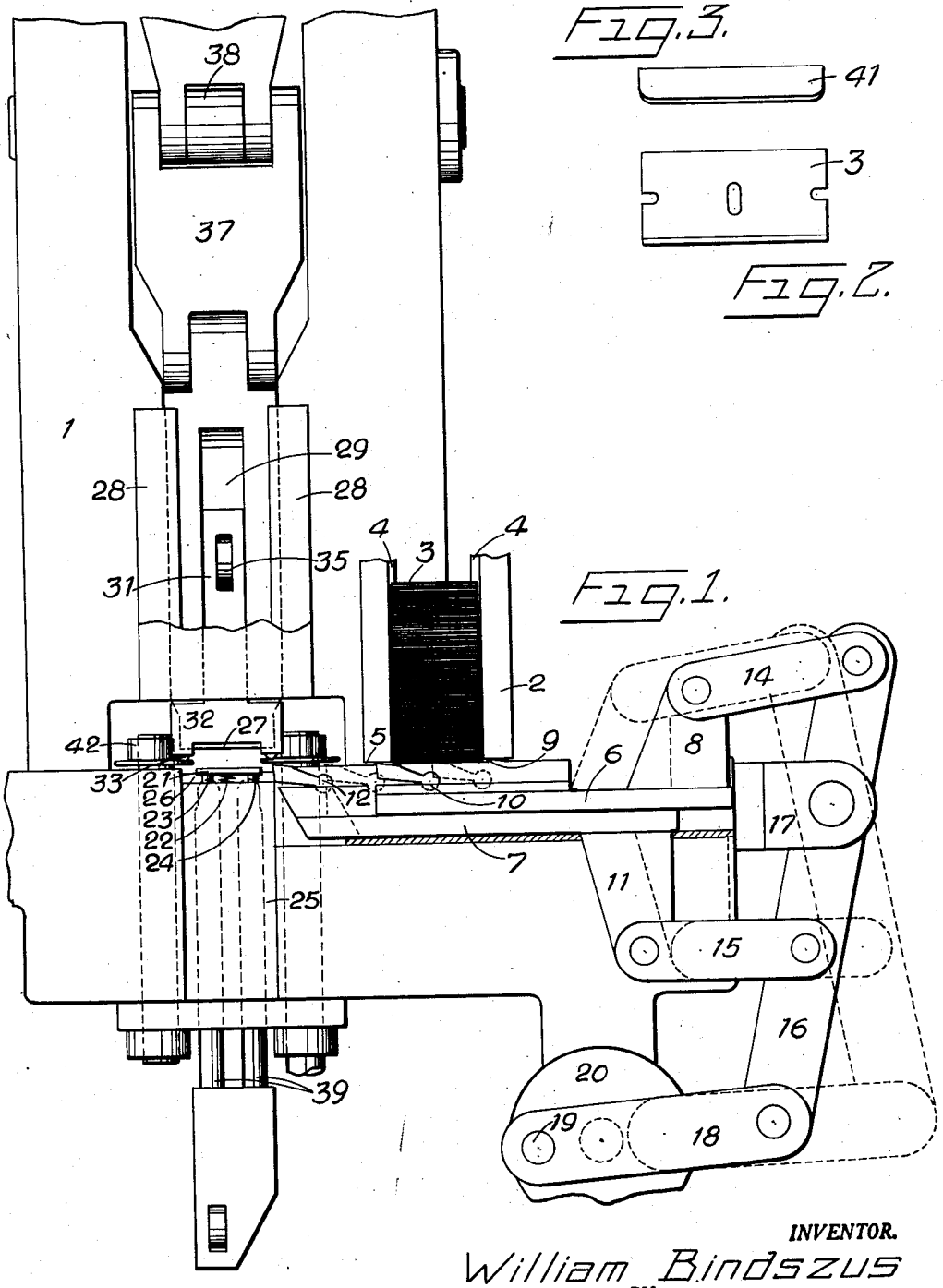


Fig. 1.

Fig. 3.

Fig. 2.

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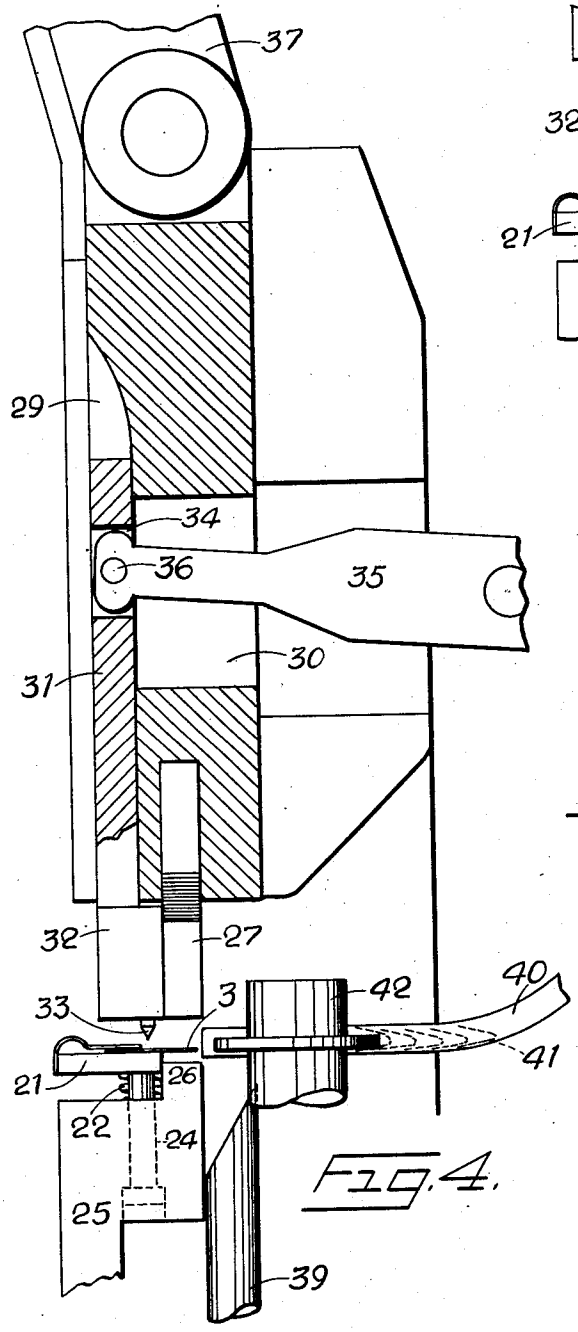


Fig. 4.

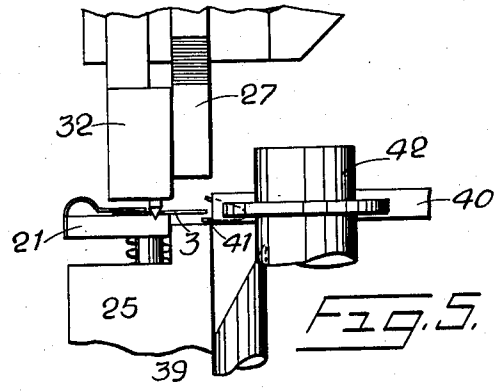


Fig. 5.

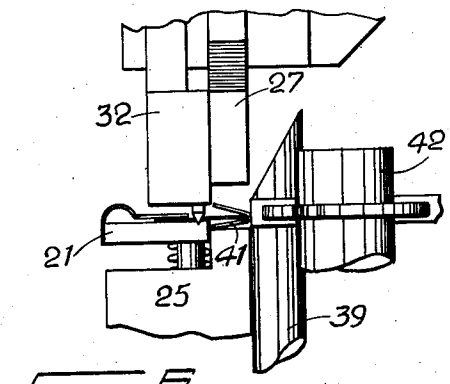


Fig. 6.

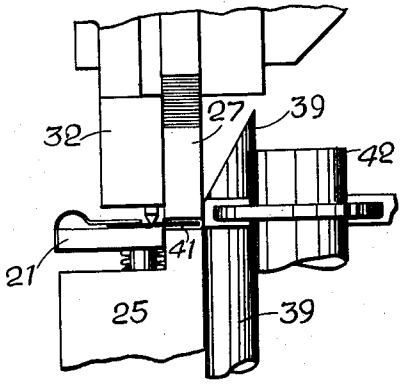


Fig. 7.

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Fig. 8.

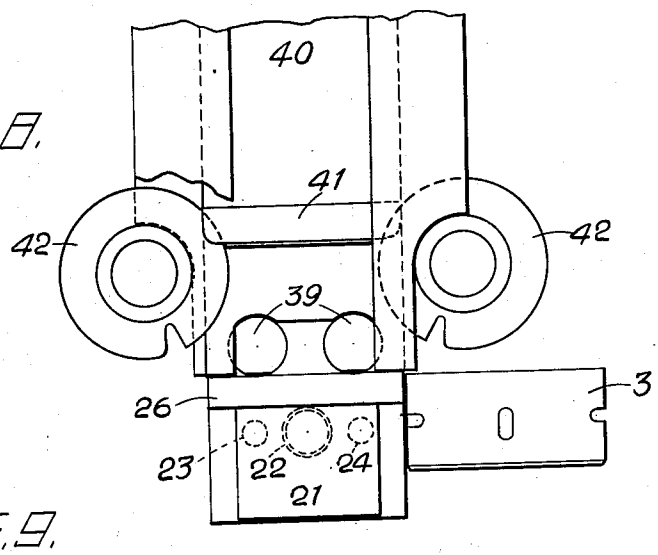


Fig. 9.

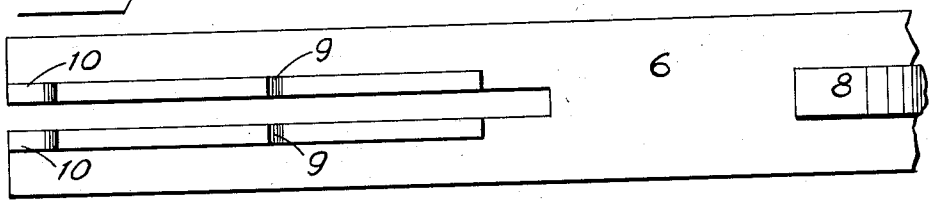


Fig. 10.

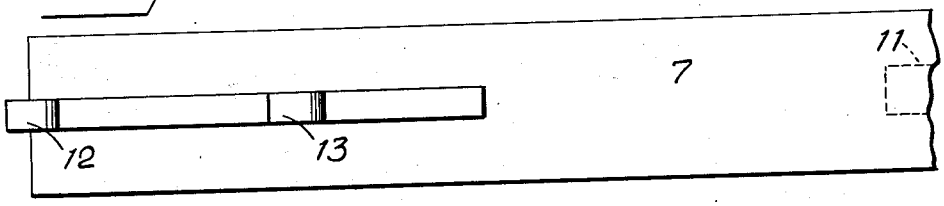


Fig. 12.

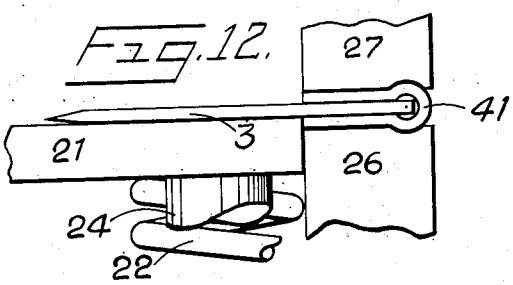
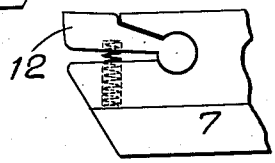


Fig. 11.



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RAZOR BLADE BACKING MACHINE

William Bindszus, Rutherford, N. J.

Application February 23, 1946, Serial No. 649,641

1 Claim. (Cl. 153—1)

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My invention relates to a machine for attaching the usual back to the back edge of single-edge safety razor blades.

The back on a single-edge blade is convenient for handling the same and functions to align the blade in the safety razor holder.

One object of my improved machine is to secure a maximum frictional grip of the back on the blade so as to prevent its loosening up or shifting position after attachment.

Another object is to provide an improved machine for precisely aligning each back with its blade.

A further object is to provide an improved single-edge blade backing machine that will greatly simplify and speed up production.

A still further object is to provide cam-controlled means adapted to prolong the pressing together of the two flanges of the back on its blade thereby to overcome the tendency of said flanges to spring apart, as when the back is closed by a blow.

And a still further object is to provide improved feeding means whereby the blades are fed lengthwisely to the press and the backs are fed breadthwisely onto the blades, thus minimizing the distance of travel of these two elements to the backing station.

With these and other objects in view, my invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the constructional details may be made without departing from the spirit of the invention or sacrificing any of the advantages thereof.

In the drawings, Fig. 1 is a front view, partly in section and partly broken away, of the backing part of the machine;

Fig. 2 is a front view of a single edge blade;

Fig. 3 is a perspective view of an open-V-shaped back prior to attachment to a blade;

Fig. 4 is a side view, partly in section, of the blade-backing elements of the machine which cooperate in assembling and clamping a back on the blade;

Figs. 5, 6, and 7 are views similar to Fig. 4 showing the backing operation in three progressive stages;

Fig. 8 is a plan view of the parts for feeding backs onto blades;

Figs. 9 and 10 are plan views of two carriage members;

Fig. 11 is a detail of a spring-pressed finger;

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Fig. 12 is a fragmentary enlarged detail of an anvil and die with a back and blade clamped therebetween.

Referring to Figs. 1 to 12 inclusive of the drawings, 1 is the frame of the backing part of the machine embodying my invention which frame broadly comprises a table portion and an upstanding head portion, 2 a rack for a stack of blades 3 having tracks 4 adapted to fit the usual notches formed in the opposite ends of such blades, and at its bottom a slot 5 corresponding in width to the thickness of one blade. For transporting blades from the rack to the backing station, reciprocating carriage members 6 and 7 are mounted under the rack 2 for horizontal sliding movement: the member 6 is forked at one end so as to present two parallel conveying ledges and has an integral upstanding lever arm 8 at its other end; a pair of lugs 9 are formed integral one on each conveying ledge, while a pair of spring-pressed pivoted fingers 10 spaced from said lugs are mounted in suitable notches formed in said ledges, one opposite the other so that their tips and the tips of lugs 9 protrude above the conveying surfaces of said ledges a distance about equal to the thickness of one blade. The member 7 has a broad base upon which the member 6 is supported, an integral depending lever arm 11, and a single centrally disposed conveying ledge portion rising at right angles to said base which fits between the fork and two ledges of member 6 so that in their assembled relation all three conveying ledges are flush. Pivotally mounted in suitable notches formed in the ledge of member 7 are two similar spring-pressed fingers 12, 13 spaced one from the other. The carriage members 6 and 7 being mounted on the table of frame 1 for sliding reciprocable movement, their arms 8, 11 are connected through links 14, 15 respectively to a rocker bar 16 pivoted to a fulcrum 17 on the frame 1 and at its lower end to a connecting rod 18 moved by a crank pin 19 on a rotating disc 20. During their movement from rack to backing station, the back edges of the blades 3 are guided against a rail (not shown) so that their finished cutting edges which overhang the outer edge of the member 6 are out of contact with any part and thus protected against damage. During their travel from rack to backing station, the loose blades may be held down on the conveying ledges and against the spring pressure of fingers 10, 12, 13 moving beneath them by a flat spring (not shown). The parts thus far described constitute the means for feeding blades to the backing station.

The parts of the blade-backing device comprise a vertically depressible bed 21, resiliently mounted upon a compression spring 22 and retained in position by bolts 23, 24 slidable in suitable holes drilled in a block 25 fixed in the frame 1. The block 25 is formed with a raised portion constituting a fixed anvil or die 26 the top face of which in its assembled relation lies normally slightly lower than the surface of the bed 21. A rectangular block the lower portion of which constitutes a complementary movable die 27 is mounted in guides 28 for vertical sliding movement over and in line with the anvil die 26. In the front face of the die 27 is formed a recess 29 having a slot 30 therein. Fitted in the recess 29 is a slidable member 31 having an integral enlarged lower portion 32 carrying spaced prongs 33; the upper end of member 31 is slotted at 34 to accommodate one end of a lever arm 35 pivoted on a pin 36 and extending through the slot 30 in member 27 to raise and lower the member 31. The upper end of the die block 27 is connected to a toggle 37 controlled by a lever arm 38, fulcrumed and having a cam-follower which follows an interior cam formed within a wheel on the main driving shaft (these parts not shown). Upstanding cam-controlled rods 39 having wedge-shaped upper ends are mounted for vertical movement. A flat spring may be provided to hold the blade on the bed 21 during the backing operation. The dies 26, 27 may be grooved as shown at Fig. 12 so as to form a bead on the back when the same is clamped on the blade.

In a magazine chute 40 disposed transversely in inverted nested relation to each other is a supply of backs 41 fed by gravity to a pair of notched rolls 42 spaced from one another so as to receive in said notches simultaneously the opposite ends of each successive partially open back and to move same breadthwisely directly toward the back edge of the blade fixed on the bed 22. The under part of the chute 40 is cut-away centrally thereof adjacent its mouth which leads directly up to the anvil die 26, to accommodate the rods 39.

The backing operation is as follows: The lowermost blade 3 on movement of the member 6 is caught by lugs 9 and carried to the left one step out of rack 2 through the slot 5. At the same time by reciprocating action of the member 7 traveling to the right its finger 13 passes between lugs 9 to a point slightly behind the trailing edge of the blade and upon reversal of movement of the members 6, 7 the said finger 13 in turn catches said edge and carries the blade along a second step; meanwhile the finger pair 10 on member 6 pass under the blade to a point slightly behind its trailing edge and upon reversal of movement of said members said fingers 10 catch said edge and advance the blade a third step; while with similar action the finger 12 catches said trailing edge and advances the blade a fourth and final step onto the bed 21. The carriage members 6, 7 thus transport the blade in four short quick steps from the rack to the backing station, the movement being continuous and in timed relation. The member 31 is next moved downward by its lever arm 36, suitably controlled by an exterior cam on said wheel mounted on the main driving shaft, until its prongs 33 engage the usual notches formed in the blade and thereby exactly position and fix the blade to receive a back.

The lowermost back 41 is now advanced by rotation of the notched rolls 42 to the end of the chute 40 over its said cut-away portion and the rods 39 with their wedge shaped ends move upward so as to wedge the back forward onto the die 26 and the back edge of the blade 3 with the back's flanges enfolding and in contact with said edge to hold the back in this position until the die 27 moving downward in its guides 28 by action of the cam-controlled toggle 37 presses the back upon the die 26 tightly clamping the same on the blade and then quickly releases the same, whereupon the member 31 is raised and the blade freed to be pushed out of the backing station by the succeeding blade. The movements of the respective parts as described are of course all in timed relation one to the other.

Following the backing operation, as each blade 3 is successively freed by raising of the prongs 33 of member 31 and the blade is pushed by a succeeding blade off the bed and out of the backing station, the line of backed blades, end to end, is then turned by means of a spiral guideway (not shown) from their flat position to a position at right-angles thereto, so to continue their movement in line on edge with backs down and finished cutting edges uppermost and free from contact with any part of the machine, and the backed blades are held in this position throughout the shelling operation by suitable channel guideways and rails which contact only the backs on the blades.

In connection with the backing part of the machine suitable safety devices may be provided to automatically stop the machine and protect the same against damage upon any failure in its operation, as for example in the case of jamming up of blades or backs, but as it is customary in a machine of this type to provide such safety devices these have not been shown.

Although the drawings and the foregoing specification describe and disclose the best mode in which I have contemplated embodying my invention, I desire to be in no way limited to the details of such disclosure, for in the further practical application of my invention many changes in form and construction may be made as circumstances require or experience suggests without departing from the spirit of the invention within the scope of the appended claim.

What I claim is:

A razor blade backing machine comprising a press having a toggle operated main ram; an auxiliary holding ram being slidably operable in front of said main ram; a cam operated lever having one end in operable engagement with said auxiliary ram, said lever extending through an opening in said main ram; cam operated driving means engaging the other end of said lever, said driving means being coordinated with said main ram; a resilient spring supported anvil mounted under said auxiliary holding ram; a fixed anvil being located under said main ram; a coordinated feeding mechanism feeding one blade at a time into engagement with said auxiliary holding ram from one side; a positive rotary feeding mechanism coordinated with said rams feeding a back onto said blade from the rear of said rams, said positive rotary feeding mechanism comprising a hopper chute containing a stack of backs, a pair of vertically journalled rotatable shafts located slightly to the rear of said main ram, each of said shafts having a disc near its upper end, said discs each having a notch engageable with the ends of said backs, said shaft being geared together and driven in

opposite directions, said gearing being coordinated with the driving means of said rams, and a vertically moveable coordinated holding cam located between said discs, said cam having an inclined plane at its upper end whereby said backs are pushed against said blades and held securely in position while said main ram completes the fastening of said back.

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