June 26, 1934. J. K. DIAMOND 1,964,457

MACHINE FOR CUTTING BELT LACER HOOK CARDS OR HOLDERS

Filed June 17, 1933 2 Sheets-Sheet 1

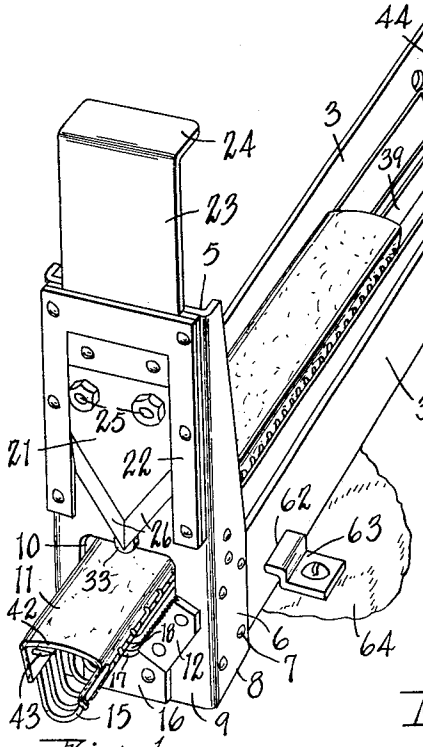


Fig. 1

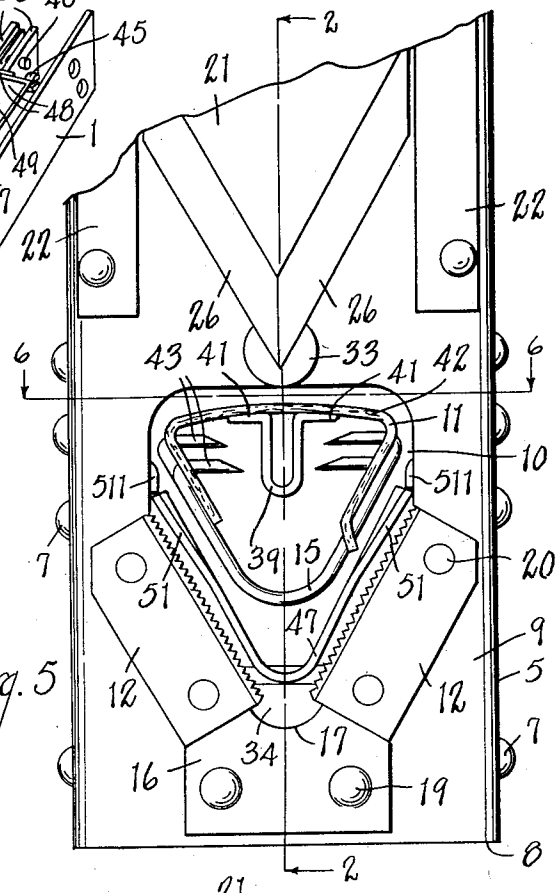


Fig. 5

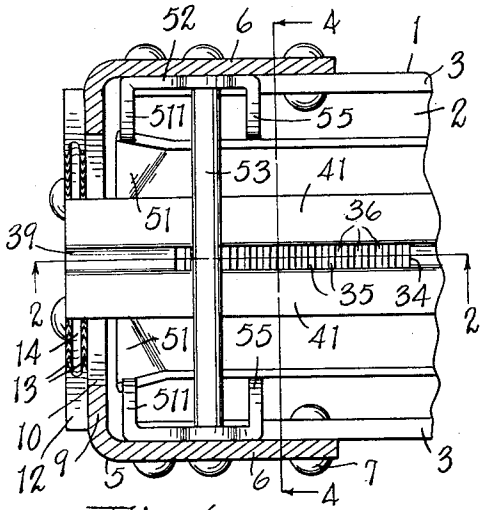


Fig. 6

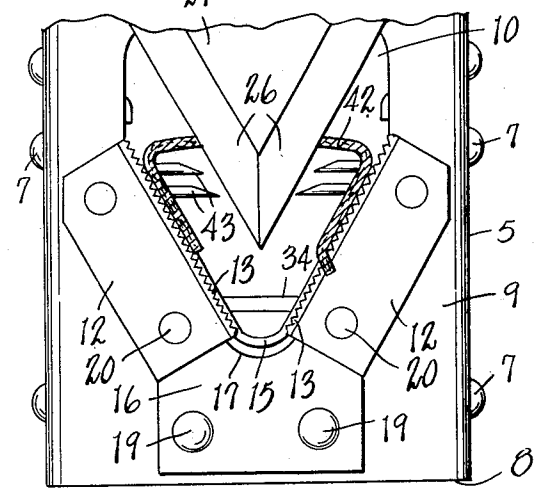


Fig. 7

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MACHINE FOR CUTTING BELT LACER HOOK CARDS OR HOLDERS

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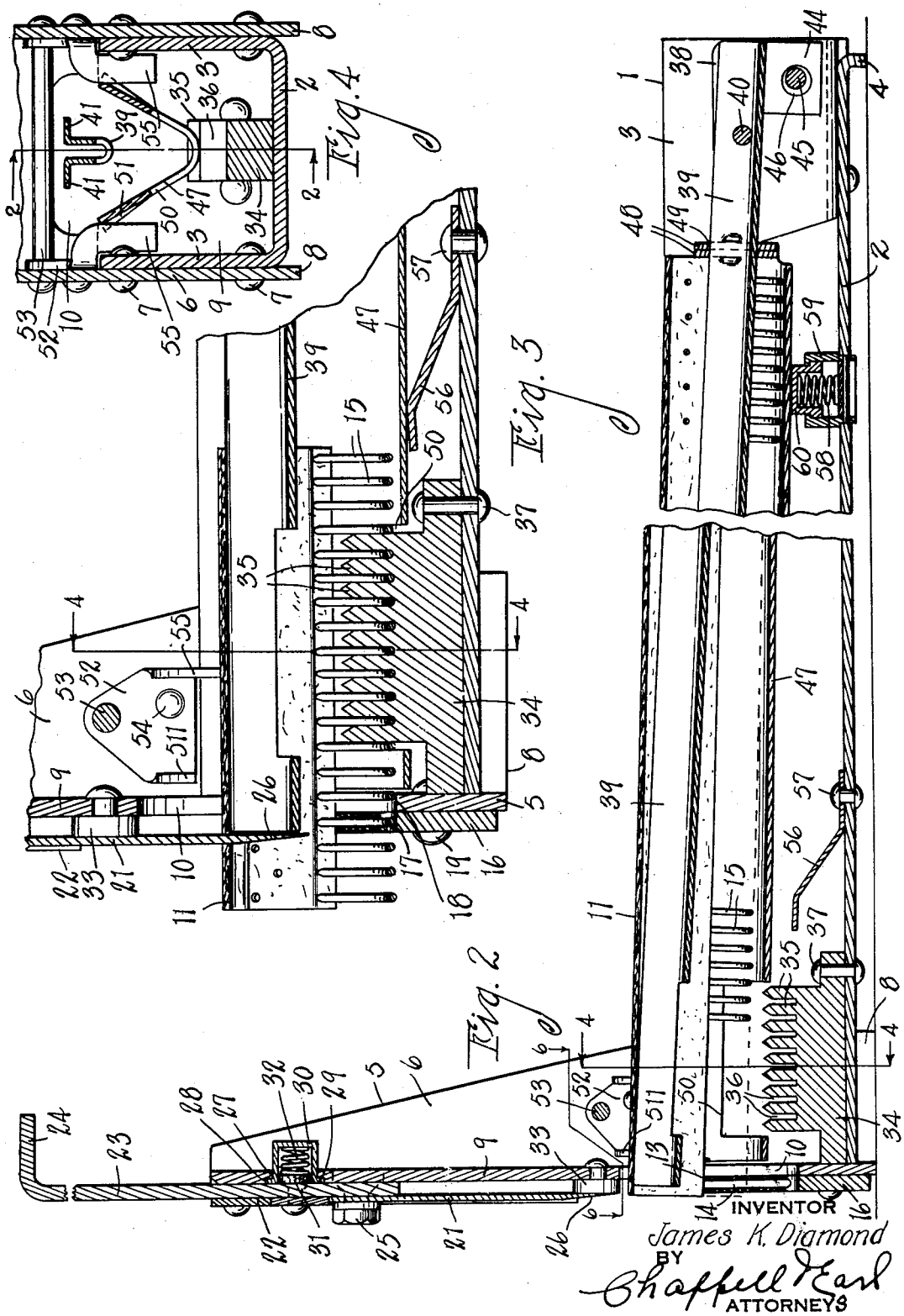


Fig. 4

Fig. 3

Fig. 2

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# UNITED STATES PATENT OFFICE

1,964,457

## MACHINE FOR CUTTING BELT LACER HOOK CARDS OR HOLDERS

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Application June 17, 1933, Serial No. 676,287

30 Claims. (Cl. 164—47)

It is now quite the general practice to market belt lacer hooks on cards or holders, the hooks being spaced thereon to correspond to the desired spacing when they are applied to the belt, and also so that the card or section thereof may be used to facilitate the positioning of the hooks in the hook setting or applying machine or device. These carded hooks are commonly of uniform length, it being intended that a suitable section shall be cut therefrom to fit the particular belt or needs. The general practice has been to do this with shears or knives which frequently results in the mutilating of the card and displacement of the hooks thereon, thereby resulting in loss of the hooks or rendering the setting operations more difficult.

The main objects of this invention are:

First, to provide an improved machine for cutting belt lacer hook cards or holders.

Second, to provide means in a machine of this character for longitudinally locating the hook card or holder so that the shear blade passes through the card between adjacent hooks and is not fouled thereby.

Third, to provide a cutting machine having a vertical shear blade and means frictionally engaging the same so that the blade will remain in an adjusted position.

Fourth, to provide a machine of this character, having a pivoted card support with means for urging the support to its normal position and an adjustable stop for limiting the movement of the support by said resilient means.

Fifth, to provide means for effectively supporting the card while the same is being cut by the shear blade.

Sixth, to provide a cutting machine having the above desirable features, which is simple and economical in its parts and efficient and effective in operation.

Objects relating to details and economies of my invention will appear from the description to follow. The invention is defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a perspective view of a machine for cutting belt lacer hook cards, embodying the features of my invention, a card being shown in the machine in position for the cutting operation.

Fig. 2 is a fragmentary longitudinal vertical section on a line corresponding to line 2—2 of Figs. 4, 5 and 6.

Fig. 3 is an enlarged fragmentary section similar to Fig. 2, showing the machine in operation.

Fig. 4 is a fragmentary transverse section on a line corresponding to line 4—4 of Figs. 2, 3 and 6.

Fig. 5 is an enlarged fragmentary front elevation.

Fig. 6 is a fragmentary horizontal section on line 6—6 of Figs. 2 and 5, with the belt lacer hook card removed from the machine.

Fig. 7 is a view similar to Fig. 5, showing the machine in operation.

Referring to the drawings, 1 is an elongated channel-like body member having a substantially flat bottom web 2 and spaced vertical flanges 3. At its rear end, the body member is provided with a down-turned flange 4 from the web 2 which constitutes a rear foot. A channel-shaped standard or upright 5 is disposed at the front end of the body member, the flanges 6 of the standard overlapping the flanges of the body member and being secured thereto by means of the rivets 7. The lower end of the standard is arranged to extend below the bottom of the body member so as to provide a front supporting foot 8.

The web 9 of the standard is provided with an opening 10 for the passage of the work 11. A pair of shear plates 12 are secured to the front of the standard in upwardly diverging relation and are provided with spaced rows 13 of fine teeth, there being a groove 14 between the rows of teeth for receiving one of the carded hooks 15. The lower ends of the jaw plates 12 rest on the upper outwardly inclined edges of the plate 16 which is provided with a concave upper surface 17 registering with the concave surface 18 at the bottom of the opening 10. The plate 16 is secured to the standard 9 by means of rivets 19. The heads of the rivets 20 which secure the jaw plates 12 to the standard 9 are countersunk so as not to interfere with the downward movement of the shear blade or cutter 21 which is adapted to coact with the shear plates.

A vertical shear slideway 22 is provided at the front of the standard 5 for the shear slide 23 which is provided at its upper end with an outturned flange 24 forming a finger-piece or handle. The shear blade 21 is secured to the front of the slide 23 by means of the bolts 25, the blade depending below the slide and having downwardly converging knife edges 26. The blade is sharpened so that the back thereof presents a substantially flat surface for slidable coaction with the faces of the shear plates 12.

The web 9 of the standard has an opening 27

adjacent the slide 23, the opening having an annular recess 28 at its inner end for receiving the annular flange 29 of the cup-like spring housing 30 which is disposed in the opening. The friction disk 31 is urged into engagement with the slide 23 by the compression spring 32 arranged in the housing. The friction disk 31 acts to hold the shear slide in any desired position. The blade is thus prevented from falling inadvertently and cutting the fingers of the operator. Also, with the parts arranged in this manner, the blade remains in its upper position while the card is being manipulated. The blade guide 33 is secured to the web directly above the opening 10. The guide 33 also acts as a stop for limiting the downward movement of the slide 23.

Within the body member and at the front end thereof is disposed a work member 34 having a plurality of spaced upwardly extending transverse plates 35 which are beveled at their upper edges. The spaces 36 between the transverse plates provide slots adapted to receive the depending hooks 15 of the belt lacer holder 11 and hold the same in proper position so that the shear blade in its downward movement cuts the card between a pair of contiguous hooks, thus preventing injury to the blade and the freeing of a hook from the card or the severed portion thereof. The hook locating member 34 is secured to the web 2 by means of the rivet 37, the front end of the member abutting the inner side of the web 9.

Secured to the rear end of the web 2 of the body member are a pair of L-shaped brackets 38, the brackets being arranged in back to back spaced relation. The card support 39 pivoted at 40 is preferably of channel cross section and relatively narrow and provided at its front end with out-turned flanges 41. The flanges 41 act to support the web 42 of the card 11. In placing the card in the machine, it is manipulated so as to telescope the support 39 with the flanges 41 disposed between the inturned ends 43 of the belt lacer hooks and the web 42 of the card, the support lying between the inturned ends of the hooks. Disposed between the brackets and below the support 39 is a stop for the support 39. This stop is adjustably supported by the pin 45 journaled to the brackets and having an eccentric 46 supporting the stop and rotatable therein. Thus arranged, the position of the stop 44 may be adjusted by turning the pin 45 which is provided at its end with a tool receiving slot for this purpose.

The trough-like hook receiver or holder 47 is arranged under the support 39 and is provided at its rear end with inturned flanges 48 arranged in overlapping relation and provided with an opening 49 through which the card support is disposed. This arrangement has the effect of pivoting the rear end of the hook receiver to the card support at the front of the uprights 38. The hock receiver is provided with an opening 50 for the passage of the locating member 34. The front end of the hook receiver terminates at the rear of the opening 10 and the side walls thereof are turned outwardly at 51 to facilitate the insertion of the work in the machine and also to constitute projections engageable with the stops 511 at the front of the body member. The stops 511 are inturned arms of the U-shaped clips 52 which are secured to the inner sides of the flanges 6 of the standard by means of the cross bar 53 extending between said flanges and the rivets 54. The rear arms 55 of the clips 52 constitute guides for the side walls of the hook receiver 47.

A spring 56 is secured to the bottom of the body member by means of the rivet 57 and extends upwardly and forwardly under the receiver 47. The spring 56 acts to elevate the receiver from its lowermost position to disengage the hooks from the hook locating member 34. When the receiver is in its normal position, the upper end of the spring 56 is spaced therefrom as illustrated by Fig. 2.

The receiver 47 is urged upwardly by the compression spring 58 which is disposed in the spring housing 59 on the bottom of the body member. The outer end of the spring is enclosed by the cap-like plunger 60 which engages the receiver 47. The compression spring 58 not only acts to elevate the receiver, but it also acts to elevate the support 39. The upward movement of the receiver under the influence of the compression spring is limited by the stops 511 at the front end thereof, while the upward movement of the support is limited by the stop 44. By turning the pin 45, the normal position of the support 39 may be readily adjusted. The forward end of the support projects through the opening 10 and terminates in the plane of the jaw plates 12 so as to clear the blade 21 in its cutting movement. The support is held by the stop 44 in spaced relation to the top of the opening 10 so as to provide a free passage for the insertion of the web of the belt lacer hook holder therethrough.

In operation, the belt lacer hook card or holder 11 is inserted on the support 39 through the opening 10, and the same is then depressed to cause the depending hooks 15 to enter the slots 36 of the hook locating member 34 to properly position the work so that the blade will pass therethrough between a pair of the hooks, the shear plates supporting the hook adjacent the cutting point. After the work has been thus longitudinally located, the blade 21 is actuated. In its downward movement, the point of the blade first pierces the center of the web of the card and cuts the same outwardly with a slicing action. The cutting action then extends to the flanges of the card as the blade continues its downward movement and forces the same outwardly into engagement with the rows of fine teeth 13 on the jaw plates 12. The teeth support the flanges of the card while the blade severs them with a clean cut. The blade is then lifted and the spring 56 acts to elevate the hook receiver 47 so as to disengage the hooks from the hook locating member 34. The compression spring 58 elevates the receiver and the support to their upper position, in which position the belt lacer hook card may be adjusted for another cut as desired, or removed from the machine. In the cutting of the card, the flanges at the top of the forward end of the support 39 coact with the inturned ends of the hooks to support the web of the card while being cut. The machine is adapted to cut belt lacer hook cards or holders of various sizes.

The flanges 3 of the body member have transverse openings 62 for receiving the clips 63 which secure the machine to the table or bench top 64.

I have illustrated and described my improvements in an embodiment which I have found very practical. I have not attempted to illustrate or describe other embodiments or adaptations, as it is believed this disclosure will enable those skilled in the art to embody or adapt my improvements as may be desired.

Having thus described my invention, what I

claim as new and desire to secure by Letters Patent is:

1. In a machine for cutting belt lacer hook cards, the combination of an upwardly facing body member of channel cross section, an upright disposed at the front end of said body member and having a work opening at the end of the body member, shear plates disposed in upwardly diverging relation at the sides of said opening and each having spaced parallel rows of teeth and a hook receiving groove between the rows of teeth, a V-shaped cutter blade slidably mounted on the outer side of said upright to coact with said shear plates, a hook positioning member at the front of said body member having a plurality of upwardly facing hook receiving slots with V-shaped entrance portions, a work support pivotally mounted at its rear end with its front end terminating adjacent the path of the blade and provided with laterally projecting work supporting flanges, a trough-shaped work receiving member having upwardly diverging sides pivotally mounted on said work support adjacent the rear end thereof and having an opening to receive said hook positioning member, stops limiting the upward movement of said work receiving member and supporting its forward end against lateral movement, an adjustable stop limiting the upward movement of said work support, a spring acting to yieldingly urge said support and work receiving member upwardly, and an auxiliary spring with which said work receiving member engages when in depressed position acting to strip the hooks from said hook locating member.

2. In a machine for cutting belt lacer hook cards, the combination of an upwardly facing body member of channel cross section, an upright disposed at the front end of said body member and having a work opening at the end of the body member, shear plates disposed in upwardly diverging relation at the sides of said opening, a cutter blade slidably mounted on the outer side of said upright to coact with said shear plates, a hook positioning member at the front of said body member having a plurality of upwardly facing hook receiving slots, a work support pivotally mounted at its rear end with its front end terminating adjacent the path of the blade, a trough-shaped work receiving member having upwardly diverging sides pivotally mounted on said work support adjacent the rear end thereof and having an opening to receive said hook positioning member, stops limiting the upward movement of said work receiving member and supporting its forward end against lateral movement, an adjustable stop limiting the upward movement of said work support, a spring acting to yieldingly urge said support and work receiving member upwardly, and an auxiliary spring with which said work receiving member engages when in depressed position acting to strip the hooks from said hook locating member.

3. In a machine for cutting belt lacer hook cards, the combination of an upwardly facing body member of channel cross section, an upright disposed at the front end of said body member and having a work opening at the front of the body member, shear plates disposed in upwardly diverging relation at the sides of said opening and each having spaced parallel rows of teeth and a hook receiving groove between the rows of teeth, a V-shaped cutter blade slidably mounted on the outer side of said upright to coact with said shear plates, a hook positioning member at the front of said body member having a plurality of upwardly facing hook receiving slots with V-shaped entrance portions, a work support pivotally mounted at its rear end with its front end terminating adjacent the path of the blade and provided with laterally projecting work supporting flanges, and a trough-shaped work receiving member having upwardly diverging sides pivotally mounted on said work support adjacent the rear end thereof and having an opening to receive said hook positioning member.

4. In a machine for cutting belt lacer hook cards, the combination of an upwardly facing body member of channel cross section, an upright disposed at the front end of said body member and having a work opening at the end of the body member, shear plates disposed in upwardly diverging relation at the sides of said opening, a cutter blade slidably mounted on the outer side of said upright to coact with said shear plates, a hook positioning member at the front of said body member having a plurality of upwardly facing hook receiving slots, a work support pivotally mounted at its rear end with its front end terminating adjacent the path of the blade, and a trough-shaped work receiving member having upwardly diverging sides pivotally mounted on said work support adjacent the rear end thereof and having an opening to receive said hook positioning member.

5. In a machine for cutting belt lacer hook cards, the combination of an upwardly facing body member of channel cross section, an upright disposed at the front end of said body member and having a work opening therein, shear plates disposed in upwardly diverging relation at the sides of said opening and each having work engaging teeth and a hook receiving groove, a V-shaped cutter blade slidably mounted on the outer side of said upright to coact with said shear plates, a hook positioning member at the front of said body member having a plurality of upwardly facing hook receiving slots, and a work support pivotally mounted at its rear end with its front end terminating adjacent the path of the blade.

6. In a machine for cutting belt lacer hook cards, the combination of an upwardly facing body member of channel cross section, an upright disposed at the front end of said body member and having a work opening therein, shear plates disposed in upwardly diverging relation at the sides of said opening, a cutter blade slidably mounted on the outer side of said upright to coact with said shear plates, a hook positioning member at the front of said body member having a plurality of upwardly facing hook receiving slots, and a work support pivotally mounted at its rear end with its front end terminating adjacent the path of the blade.

7. In a machine for cutting belt lacer hook cards, the combination of an upwardly facing body member of channel cross section, an upright disposed at the front end of said body member and having a work opening therein, shear plates disposed in upwardly diverging relation at the sides of said opening and each having work engaging teeth and a hook receiving groove, a V-shaped cutter blade slidably mounted on the outer side of said upright to coact with said shear plates, and a work support pivotally mounted at its rear end with its front end terminating adjacent the path of the blade.

8. In a machine for cutting belt lacer hook

cards, the combination of an upwardly facing body member of channel cross section, an upright disposed at the front end of said body member and having a work opening therein, shear plates disposed in upwardly diverging relation at the sides of said opening, a cutter blade slidably mounted on the outer side of said upright to coact with said shear plates, and a work support pivotally mounted at its rear end with its front end terminating adjacent the path of the blade.

9. In a machine for cutting belt lacer hook cards, the combination of a supporting frame, shear plates disposed in upwardly diverging relation and having work engaging teeth with a hook receiving groove, a coacting reciprocatingly mounted V-shaped cutter blade, a hook positioning member at the rear of but adjacent to said blade having a plurality of upwardly facing hook receiving slots, and a work support pivotally mounted at its rear end with its front end terminating adjacent the path of the blade and provided with laterally projecting work supporting flanges.

10. In a machine for cutting belt lacer hook cards, the combination of a supporting frame, shear plates disposed in upwardly diverging relation, a coacting reciprocatingly mounted cutter blade, a hook positioning member at the rear of but adjacent to said blade having a plurality of upwardly facing hook receiving slots, and a work support pivotally mounted at its rear end with its front end terminating adjacent the path of the blade.

11. In a machine for cutting belt lacer hook cards, the combination of a supporting frame, shear plates disposed in upwardly diverging relation, a coacting reciprocatingly mounted cutter blade, a hook positioning member at the rear of but adjacent to said blade having a plurality of upwardly facing hook receiving slots, a work support pivotally mounted at its rear end with its front end terminating adjacent the path of the blade, a trough-shaped work receiving member having upwardly diverging sides pivotally mounted on said work support adjacent the rear end thereof and having an opening to receive said hook positioning member, and stops limiting the upward movement of said work receiving member and supporting its forward end against lateral movement.

12. In a machine for cutting belt lacer hook cards, the combination of a supporting frame, shear plates disposed in upwardly diverging relation, a coacting reciprocatingly mounted V-shaped cutter, a hook positioning means at the rear of but adjacent to said blade having a plurality of upwardly facing hook receiving slots, a work support pivotally mounted at its rear end with its front end terminating adjacent the path of the blade, a trough-shaped work receiving member having upwardly diverging sides disposed below said work support, an adjustable stop limiting the upward movement of said work support, a spring acting to yieldingly urge said support and work receiving member upwardly, and an auxiliary spring with which said work receiving member engages when in depressed position acting to strip the hooks from said hook locating member.

13. In a machine for cutting belt lacer hook cards, the combination of a supporting frame, shear plates disposed in upwardly diverging relation, a coacting reciprocatingly mounted V-shaped cutter, a hook positioning means at the rear of but adjacent to said blade having a plurality of upwardly facing hook receiving slots, a work support disposed with its front end adjacent the path of the blade, and a trough-shaped work receiving member having upwardly diverging sides disposed below said work support.

14. In a machine for cutting belt lacer hook cards, the combination of an upwardly facing body member of channel cross section, an upright disposed at the front end of said body member and having side flanges overlapping and secured to the flanges of said body member, and a work opening at the front end of the body member, shear plates disposed in upwardly diverging relation at the sides of said opening and having spaced vertical rows of teeth and a hook receiving groove between the rows of teeth, a hook supporting means pivotally mounted at the rear end of said body member with its front end adjacent to said shear plates, and a V-shaped cutter blade slidably mounted on said upright to coact with said shear plates.

15. In a machine for cutting belt lacer hook cards, the combination of a frame having an upright disposed at the front end thereof, shear plates disposed on said upright in upwardly diverging relation and having a row of work engaging teeth and a hook receiving groove, a hook supporting means pivotally mounted at the rear end of said body member with its front end adjacent to said shear plates, and a V-shaped cutter blade slidably mounted on said upright to coact with said shear plates.

16. In a machine for cutting belt lacer hook cards, the combination of a frame having an upright disposed at the front end thereof, shear plates disposed on said upright in upwardly diverging relation, a hook supporting means pivotally mounted at the rear end of said body member with its front end adjacent to said shear plates, and a V-shaped cutter blade slidably mounted on said upright to coact with said shear plate.

17. In a machine for cutting belt lacer hook cards, the combination of a frame having an upright disposed at the front end thereof, shear plates disposed on said upright in upwardly diverging relation, a hook supporting means pivotally mounted at the rear end of said body member with its front end adjacent to said shear plates, a V-shaped cutter blade slidably mounted on said upright to coact with said shear plates, and a friction means for holding said cutter in its adjusted position.

18. In a machine of the class described, the combination of a supporting frame, shear plates disposed in outwardly diverging relation and each having work engaging teeth and a hook receiving groove, a coacting V-shaped slidably mounted cutter, a hook positioning means at the rear of said shear plates having a plurality of upwardly facing hook receiving slots, and a work supporting means adapted to receive and support the work adjacent said cutter.

19. In a machine of the class described, the combination of a supporting frame, shear plates disposed in outwardly diverging relation and each having work engaging teeth and a hook receiving groove, a coacting V-shaped slidably mounted cutter, and a work supporting means adapted to receive and support the work adjacent said cutter.

20. In a machine of the class described, the combination of a supporting frame, shear plates disposed in outwardly diverging relation, a coacting slidably mounted cutter, a hook positioning means at the rear of said shear plates having a

plurality of upwardly facing hook receiving slots with V-shaped entrance portions, and a swinging work supporting means adapted to receive and support the work adjacent said cutter.

21. In a machine of the class described the combination of a supporting frame, shear blades disposed in outwardly diverging relation, a coacting slidably mounted cutter, a hook positioning means at the rear of said shear plates having a plurality of upwardly facing hook receiving slots, and a work supporting means adapted to receive and support the work adjacent said cutter.

22. In a structure of the class described, the combination of a supporting frame, a cutter including a slidably mounted blade, a swinging work support adapted to receive and support the work from the inside thereof, an upwardly facing work receiving member having upwardly diverging sides pivotally mounted at its rear end on said work support, and a hook positioning member adapted to engage a plurality of hooks adjacent the cutter.

23. In a structure of the class described, the combination of a supporting frame, a cutter including a slidably mounted blade, a swinging work support adapted to receive and support the work from the inside thereof, and an upwardly facing work receiving member having upwardly diverging sides pivotally mounted at its rear end on said work support.

24. In a structure of the class described, the combination of a supporting frame, a cutter including a slidably mounted blade, a swinging work support adapted to receive and support the work from the inside thereof, and a hook positioning member adapted to engage a plurality of hooks adjacent the cutter.

25. In a machine of the class described, the combination of a supporting frame, shear plates in outwardly diverging relation and each having spaced parallel rows of teeth and a hook receiving groove between the rows of teeth, a coacting V-shaped slidably mounted cutter, and a work supporting means.

26. In a machine of the class described, the combination of a supporting frame, shear plates in outwardly diverging relation and each having work engaging and holding teeth, a coacting slidably mounted cutter having outwardly diverging knife edges, and a work supporting means, the knife edges of the cutter being parallel to the corresponding work engaging and holding teeth of the shear plates.

27. In a machine of the class described, the combination of a pair of jaw plates having spaced upwardly diverging rows of fine work holding teeth, and a shear blade having downwardly converging knife edges, the back of the blade slidably engaging the face of said jaw plates, the knife edges of the shear blade being parallel to the corresponding work engaging and holding teeth of the jaw plates.

28. A machine for cutting belt lacer hook cards, comprising in combination an elongated channel-like body member, a channel-like standard at the front end of said body member, the flanges of the standard overlapping and secured to the flanges of the body member, the web of the standard having an opening for the passage of a belt lacer hook card, a pair of jaw plates at the front of said web having spaced upwardly diverging rows of fine teeth, there being a groove between said rows for receiving a hook, a vertical shear slide way at the front of said standard, a shear slide in said way having an inturned flange at its upper end, a shear blade secured to the front of said slide and depending therebelow, said blade having downwardly converging knife edges, the back of the blade slidably engaging the face of said jaw plates, a hook locating member in the front of the body member having a plurality of spaced upwardly extending transverse plates beveled at their upper ends, a pair of spaced uprights in the rear of the body member, a narrow channel-like card support pivoted between said uprights and having outturned top flanges at its front end, said support extending through said opening in the web of the standard and terminating in the plane of said jaw plates, a trough-like hook receiver underlying said card support and pivoted at its rear end thereto, said receiver having an opening for the passage of the hook locating member, a leaf spring carried by said body member under said receiver at the rear of said hook locating member and acting to raise the receiver from its lowermost position, a compression spring disposed between said receiver and the body member near the rear end of the receiver and acting to urge said receiver and the trough upwardly, stops secured to the standard flanges and acting to limit the upward movement of the front end of the receiver, and an adjustable stop disposed between said uprights and acting to limit the upward movement of the front end of said support.

29. In a cutting machine of the class described, the combination of a standard having a shear slide way, a shear blade having a slide in said way, said standard having an opening adjacent said slide provided with an annular recess, a cup-like spring housing disposed in said opening and having an annular flange seated in said recess, a fiber friction disk in said housing facing said slide, and a compression spring in said housing back of said disk acting to urge said disk into engagement with said slide.

30. In a cutting machine of the class described, the combination of a body member, a pair of L-shaped uprights arranged in spaced back-to-back relation and secured to said body member, a channel-like card support pivoted between said uprights, a stop block for said support disposed between said uprights, a pin journaled to said uprights and having an eccentric wheel journaled to said block, and resilient means urging said support into engagement with said stop block.

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