March 25, 1958 R. HAPPE 2,827,867

SUCTION DEVICES FOR PINKING ATTACHMENTS

Filed Sept. 29, 1954 3 Sheets-Sheet 1

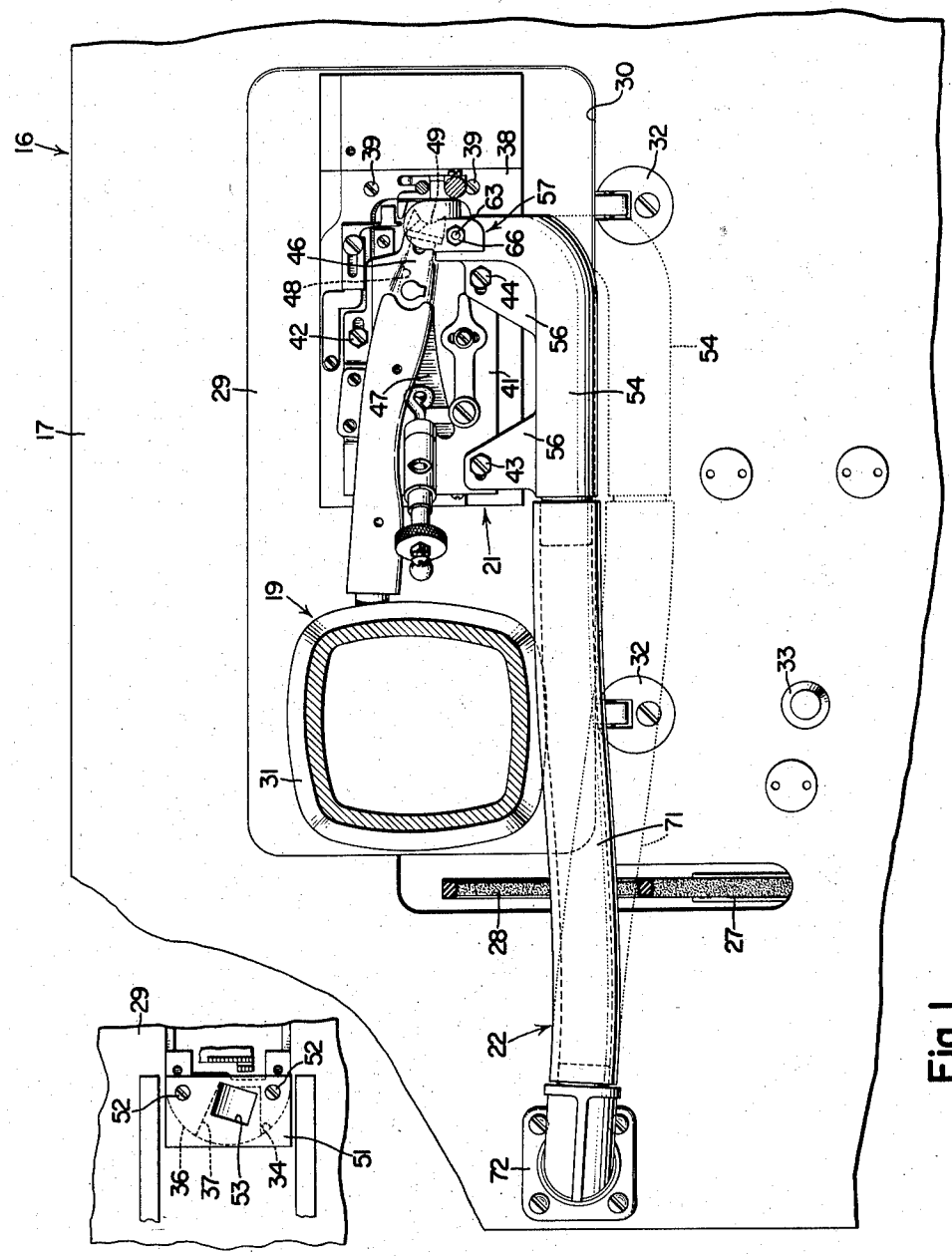


Fig. 1

Fig. 4

WITNESS

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SUCTION DEVICES FOR PINKING ATTACHMENTS

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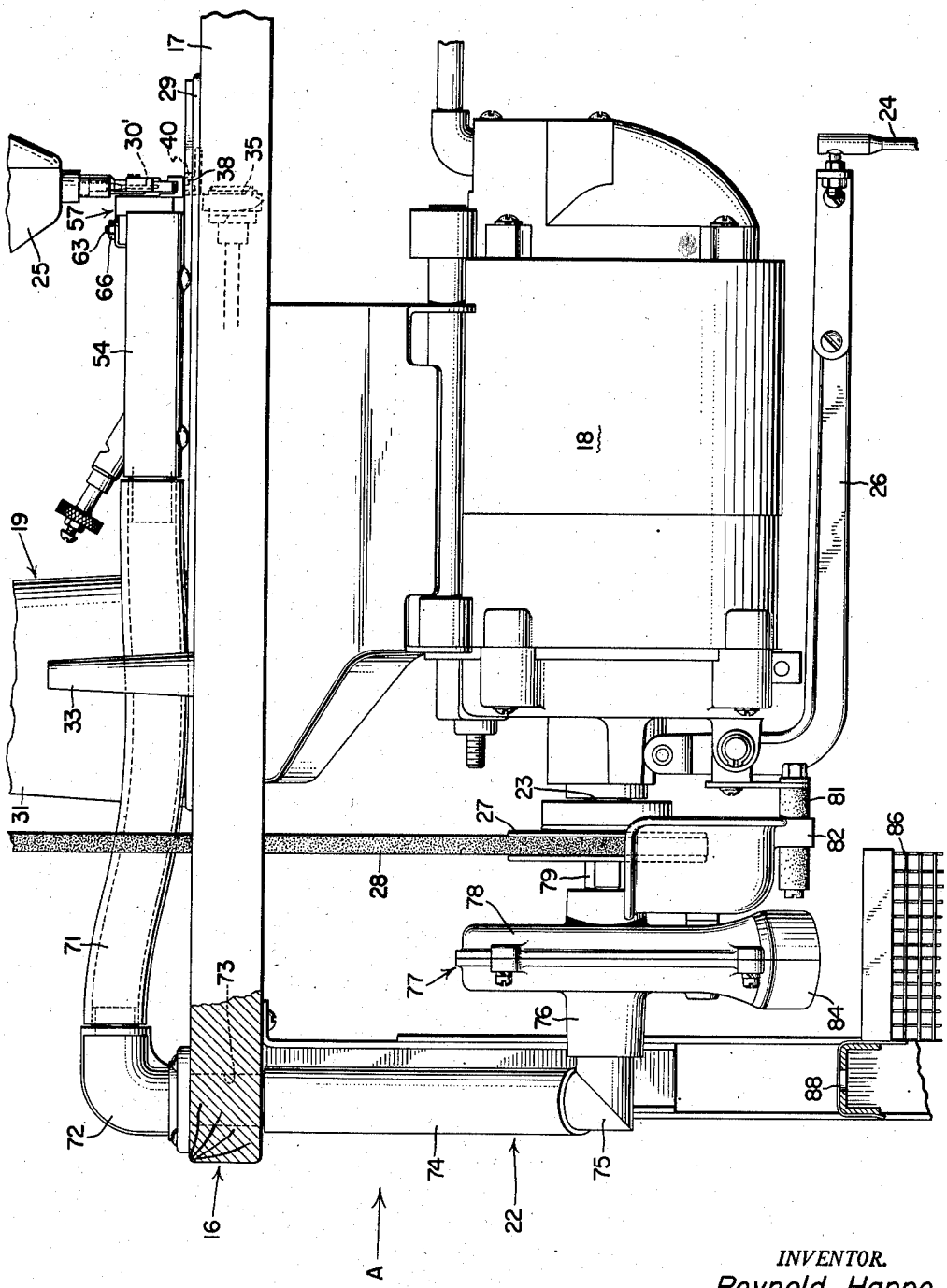


Fig.2

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SUCTION DEVICES FOR PINKING ATTACHMENTS

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Fig. 3

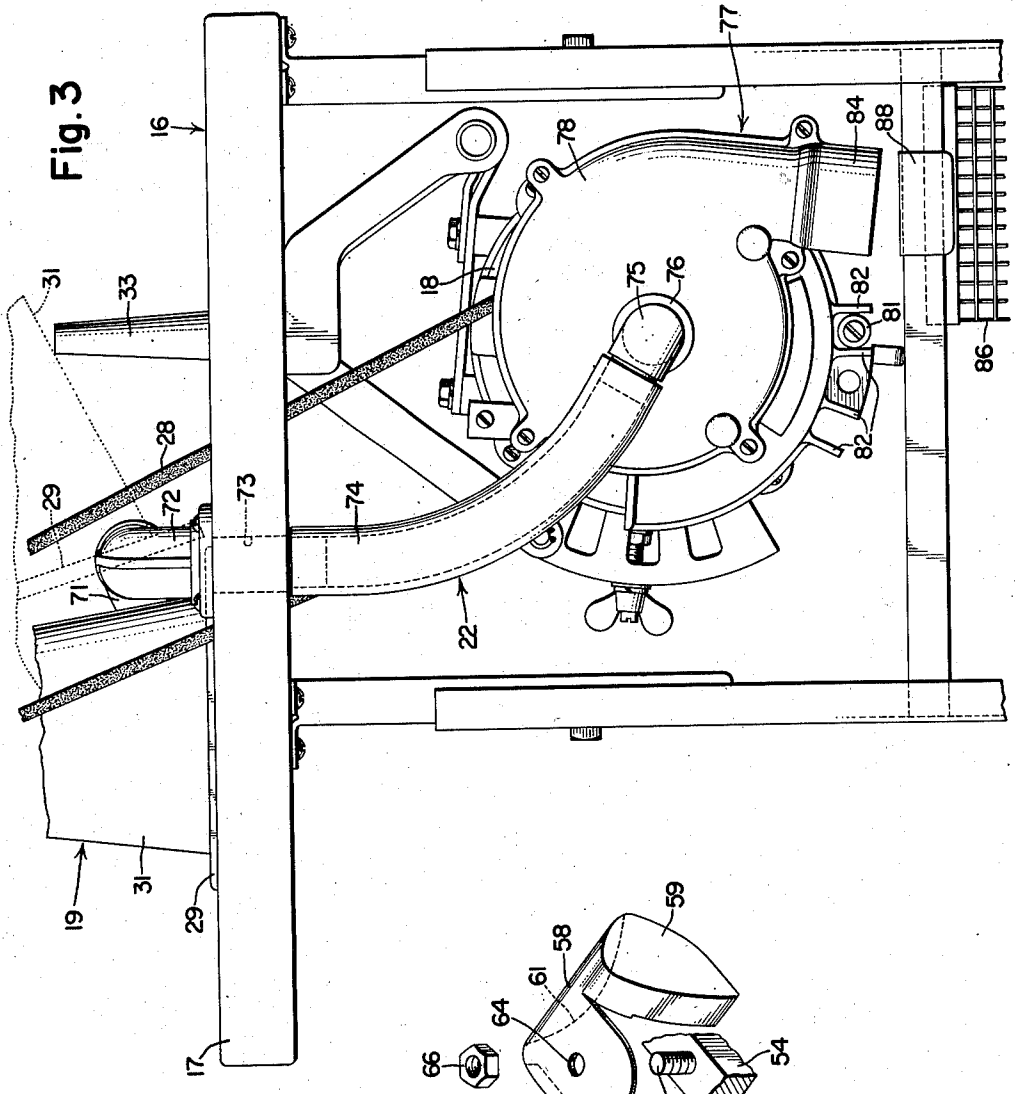


Fig. 5

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United States Patent Office 2,827,867 Patented Mar. 25, 1958

2,827,867

SUCTION DEVICES FOR PINKING ATTACHMENTS

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Application September 29, 1954, Serial No. 459,149

1 Claim. (Cl. 112—122)

This invention relates to pinking or trimming attachments associated with sewing machines and more particularly to suction devices or systems for removing chips, lint and other debris which result from the pinking or trimming operation, and the present invention has for its primary object the provision of an improved device of this character.

Another object of the present invention is the provision of an improved suction system for pinking or trimming attachments which can easily be installed on a power driven industrial type sewing machine equipped with a pinking or trimming attachment.

A further object of the present invention is the provision of an improved suction system which will in no way interfere with the efficient operation and maintenance of a sewing machine equipped with a pinking or trimming attachment.

The invention comprises the devices, combination and arrangement of parts hereinafter described in connection with the accompanying drawings, which illustrate a preferred embodiment of the invention and in which:

Fig. 1 is a top plan view, partly in section, of a sewing machine, and illustrating a portion of the improved suction system for pinking or trimming attachments;

Fig. 2 is a rear elevational view of the machine shown in Fig. 1 and showing other portions of the suction system;

Fig. 3 is an end elevational view as seen in the direction of the arrow A of Fig. 2;

Fig. 4 is a fragmentary plan view of the sewing machine bed with the suction equipment and pinking attachment removed; and

Fig. 5 is a disassembled perspective view, showing the nozzle which forms part of the suction equipment.

Referring more specifically to the drawings, the invention is disclosed as embodied in a power table 16 having a table top 17 which mounts a power transmitter 18 therebelow and a sewing machine 19 thereabove, the sewing machine being equipped with a pinking or trimming attachment 21, and the attachment 21 being equipped with a suction system 22.

The power transmitter 18, which may be of the type disclosed in the copending U. S. patent application of Edgar P. Turner, Serial No. 285,504, filed May 1, 1952, now Patent No. 2,822,903, issued Feb. 11, 1958, comprises a power take-off shaft 23 which may be shifted axially by manuel operation of a rod 24 and a lever 26, thereby selectively engaging and disengaging a driving element (not shown) with a motor element (not shown) or with a friction brake ring (not shown). A pulley 27 secured to the shaft 23 drives a belt 28, which in turn drives the sewing machine 19 in a well known manner. It will be understood that the term power transmitter as herein used is to be interpreted broadly so as to include other forms of power transmission devices.

The sewing machine 19 and pinking or trimming attachment 21 are substantially the same as those shown in

United States Patent No. 2,540,355, issued Feb. 6, 1951. The sewing machine 19 includes, among other conventional elements a bed-plate 29, a hollow standard 31 rising from the bed-plate 29, a head 25 carried by the standard 31, a reciprocatory needle 30' carried by the head 25, and a loop-taker 35 located below the bed-plate 29 adjacent to the feed-dog 40. The bed-plate 29 of the sewing machine 19, in a conventional manner, is located in an aperture 30 in the table top 17 and is hinged to the table top 17 by means of a pair of conventional hinges 32—32, and because of these hinges the sewing machine bed-plate 29 may be removed from the horizontal or lowered position shown in solid lines in Fig. 3 to the elevated position shown in dotted lines in the same figure, in which position the standard 31 rests against a support 33. The bed-plate 29 of the sewing machine 19, as best seen in Fig. 4, is provided with a semicircular opening 34, which is partly closed by a plate 36 having an aperture 37.

The pinking or trimming attachment 21, which is similar to the attachment forming the subject of U. S. Patent No. 2,540,355, supra, includes among other elements a base-plate 38 secured upon the sewing machine bed-plate 29 by means of screws 39—39. Upon this base-plate 38 a cutter carrying member 41 is adjustably mounted by means of screws 42, 43 and 44. The cutter carrying member 41 is formed with a cylindrical bearing 46 having its axis obliquely inclined transversely and vertically with respect to the cutter carrying member 41.

At opposite sides, the cutter carrying member 41 is formed with longitudinally extending rabbets (not shown) which receive the opposite side edges of a ledger blade 47 mounted between the cutter carrying member 41 and the base-plate 38. The bearing 46 journals a cutter shaft 48, that at its end is provided with a cutterhead 49 which cooperates with the ledger blade 47 to trim or pink material as it passes through the sewing machine. The cutter shaft 48 and thus the cutterhead 49 are driven, by means fully disclosed in U. S. Patent No. 2,540,355, supra, from the sewing machine 19.

In order to prevent lint and chips, resulting from the pinking or trimming operation, from passing through the aperture 37 formed in the plate 36 and through the semicircular opening 34 formed in the bed-plate 29, a thin shield 51 has been positioned to overlie the semicircular opening 34, the plate 36 and its aperture 37. This thin shield 51 is held to the bed-plate 29 by screws 52, which also hold the plate 36 in position. The shield 51 is rectangular in form and has a substantially square depression or well 53 the edges of which extend at angles of approximately twenty and seventy degrees (20° and 70°) with respect to the edges of the shield 51. The depression or well 53 extends below the upper surface of the bed-plate 29 and depends into the aperture 37 in the plate 36. This well 53 is of such a size and shape and is so positioned as to receive the portion of the cutterhead 49 which depends below the plane of the upper surface of the bed-plate 29, and the well 53 is large enough to accommodate the cutterhead 49 without any chance of the cutterhead contacting the shield 51.

In order to remove the chips and debris, resulting from the pinking and trimming operation, over the top of the table top 17, there has been supplied the suction system 22. This suction system 22 includes an L-shaped tubular member 54 which by means of two lugs 56—56 formed integral therewith is attached to the base-plate 38 by the same screws 43 and 44 which attach the cutter carrying member 41 to the base-plate 38. The intake end of the L-shaped tube 54 is located above the table top 17 and adjacent to the cutterhead 49. A hollow suction nozzle 57, Figs. 1 and 5, which has a curved top portion 58, a flat end portion 59, a flat side portion 61

as well as a lug 62, is fastened to the intake end of the tubular member 54 by means of a screw 63 formed as part of and extending above the end of the tubular member 54, the screw 63 passing through a hole 64 in the lug 62 of the nozzle 57 and having a nut 66 for securing the nozzle in place. The nozzle is of such size and shape and is so located as to encompass the cutter 49.

A flexible plastic tube 71, which is positioned entirely above the table top 17, is connected at one of its ends to the delivery end of the L-shaped tubular member 54 and at the other end the tube 71 is connected to the upper end of an L-shaped tubular connector 72 located to one side of and behind the sewing machine 19. One leg of the connector 72 protrudes above the table top 17 and the other leg of the L-shaped connector 72 extends through a hole 73 in the table top 17 and at a location below the table top 17 the connector 72 is connected to the upper end of a second plastic tube 74. The lower end of the second flexible plastic tube 74 is connected by means of an L-shaped tubular connector 75 to the suction intake 76 of a centrifugal suction creating fan or device 77. The suction creating device 77 comprises a split housing 78, a shaft 79, and an air moving rotor (not shown), the rotor and the shaft 79 being secured together as a unit. The suction creating device 77 is supported by having one end of the shaft 79 rigidly connected to one end of the power take-off shaft 23 of the transmitter 18, and the housing 78 is supported on the shaft 79 by means of bearings (not shown). The housing 78 of the suction creating device 77 is restrained from rotating with the blower shaft 79 but is permitted to move axially therewith as the two shafts 23 and 79 shift axially. This is accomplished by means of a pin 81, carried by the transmitter 18, the pin 81 being positioned between fingers 82 carried by the blower housing 78. The suction creating device 77 is mounted in substantially the same manner as the air pump, disclosed in U. S. patent application Serial No. 134,958, filed Dec. 24, 1949, now Patent No. 2,721,692, is mounted. Because of the described means for mounting the suction creating device 77, it will be appreciated that the suction creating device 77 will only operate when the transmitter 18 is driving the sewing machine 19.

The exhaust pipe 84 of the suction creating device 77 extends downwardly and blows into a chip collecting receptacle preferably made of wire, of which only the upper portion is shown at 86, the receptacle 86 being supported from the frame work of the power table 17 by means of a hook member 88 formed on the receptacle 86.

Operation

If it is assumed that the pinking or trimming attachment 21 and the suction system 22 have been attached to the sewing machine 19 in the manner shown in the drawings, the equipment will be ready to operate, and all an operator has to do is to perform the customary sewing and pinking operations. When this is done the power take-off shaft 23 turns whenever the sewing machine 19 is operated, and since the shaft 79 of the suction creating device 77 is connected to the power take-off shaft 23, the suction creating device 77 will operate whenever the sewing machine 19 is operated and the suction creating device 77 will stop whenever the sewing machine 19 is stopped. Thus it can be seen that any chips or debris formed by the pinking or trimming operation, immediately upon being cut, will be picked up by the nozzle 57 and transmitted through the L-shaped tubular member 54, over the top of the table top 17 through the plastic tube 71, thence through the L-shaped connector 72, through the plastic tube 74 to the intake or suction side of the suction creating device 77, thence through the suction creating device 77 and out the exhaust pipe 84 of the suction creating device into the chip collecting basket 86.

Because of the shield 51, which closes the opening 34 and aperture 37, none of the chips and debris formed by the pinking or trimming operation will fall below the cutter 49, and thus all of the chips and trimmings will be deposited into the basket 86.

If it should become desirable to lubricate or service the portion of the sewing machine 19 located below the bed-plate 29, the bed-plate 29 will be pivotally turned on hinges 32 and thereby raised from the lowered position shown in solid lines in Fig. 3 to the raised position shown by dotted lines in the same figure. Because the suction nozzle 57, which moves as the sewing machine 19 is moved, is connected to the fixed L-shaped connector 72 by means of the flexible hose 71, the sewing machine 19 can be raised or lowered without disconnecting any part of the suction system 22. In this connection it should be noted, in Fig. 1, that the plastic hose 71 is shown by solid lines in the position it assumes when the sewing machine 19 is in the lowered position and by dotted lines in the position it assumes when the sewing machine is raised. Also axial movement of the shaft 79 and the suction creating device 77 is permitted, because the intake 76 of the device 77 is connected to the L-shaped connector 72 by means of the second flexible tube 74, and because of the absence of a fixed connection between the exhaust pipe 84 and the receptacle 86.

From the foregoing description and the attached drawings, it will be evident that chips, lint and other debris, resulting from pinking or trimming operations, will be picked up immediately upon being formed, and thus it will not be necessary to shut down the sewing machine 19 for the purpose of cleaning either the sewing machine 19 or the trimming attachment 21. The embodiment selected to illustrate the invention shows and describes a rotary cutterhead 49 and plastic tubes 71 and 74, however it will be understood that the improved suction system could be applied to other forms of cutters, as for example a chopper, and that any type of flexible tube could be substituted for the plastic tube shown. Since the suction creating device 77 is shut down whenever the sewing machine 19 is not operating, the suction produced by the device 77 will in no way interfere with threading the needle of the sewing machine or with placing material in the proper position for sewing, trimming or pinking.

Having thus set forth the nature of the invention, what I claim herein is:

In combination, an industrial type sewing machine having a bed-plate provided with an opening, a standard rising from said bed-plate, a head carried by said standard, a reciprocatory needle carried by said head, and a loop-taker located below said bed-plate in the vicinity of said opening, said loop-taker cooperating with said needle to form stitches, a power table provided with a horizontal table-top having a plurality of apertures, a pair of hinges for connecting said sewing machine bed to said table-top and for selectively positioning said sewing machine in one of said apertures or holding said sewing machine in a raised position above said table-top, a power transmitter carried below said table-top, means for driving said sewing machine from said power transmitter, a trimming attachment associated with said sewing machine, a cutter head carried by said trimming attachment and located in the opening in said bed-plate, means for driving said trimming attachment from said sewing machine, a suction creating device having a suction intake and an exhaust pipe, means for supporting and driving said suction creating device from said power transmitter, a suction nozzle supported on top of said sewing machine bed and above said cutter-head, a flexible hose passing over the top of said sewing machine bed and connecting said suction nozzle with said suction creating device, and a shield overlying and closing the opening in said bed-plate, said shield providing a well, said well extending below the upper surface of said bed-plate and being of such size and shape as to receive a portion of said cutter-head, said shield preventing chips

formed by said trimming attachment from fouling said loop-taker.

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