

April 10, 1951

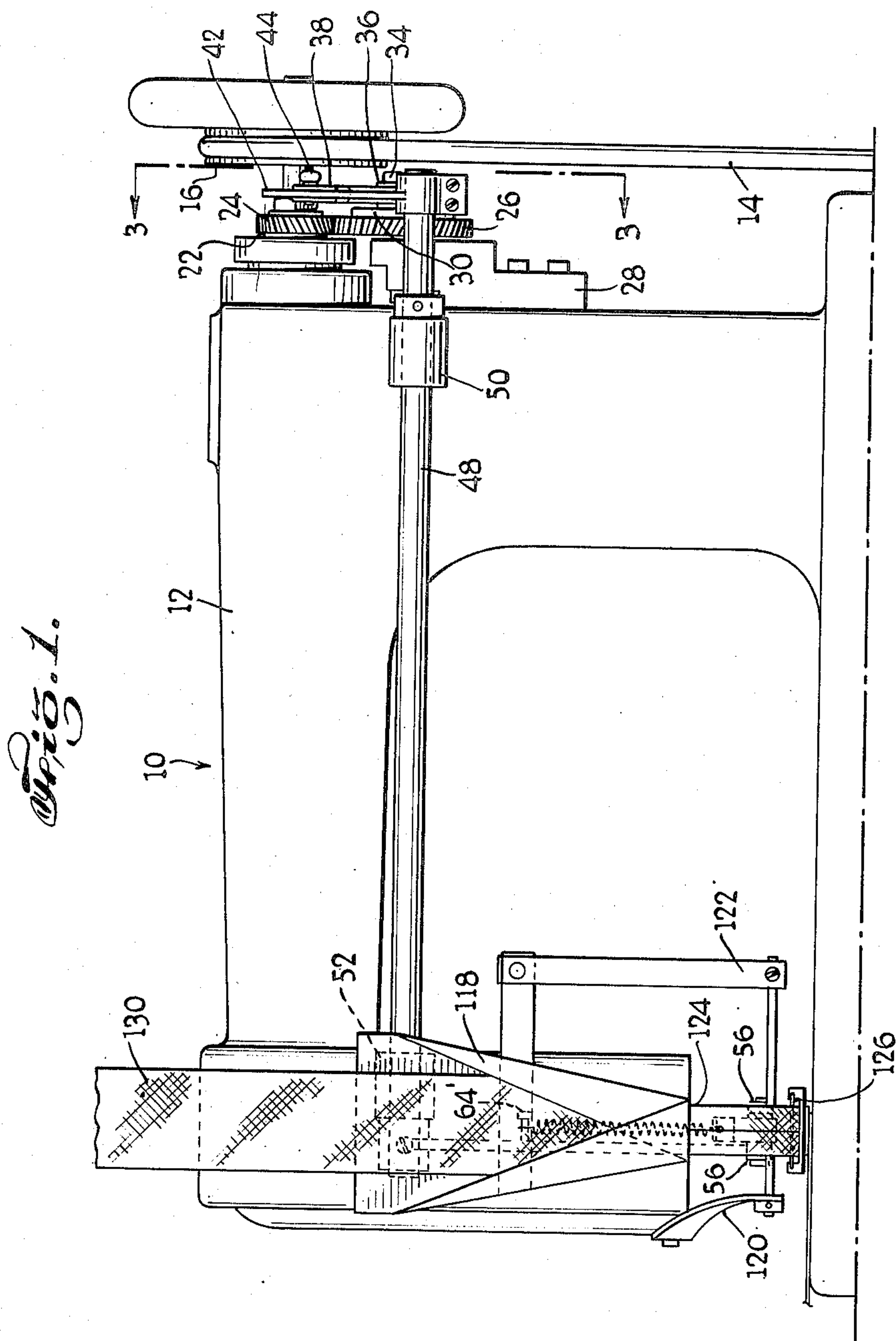
S. COHEN

2,548,144

SEWING MACHINE ATTACHMENT

Filed Nov. 10, 1948

3 Sheets-Sheet 1



INVENTOR.
SAMUEL COHEN

BY

Elmer Fenchel
ATTORNEY

April 10, 1951

S. COHEN

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Fig. 3.

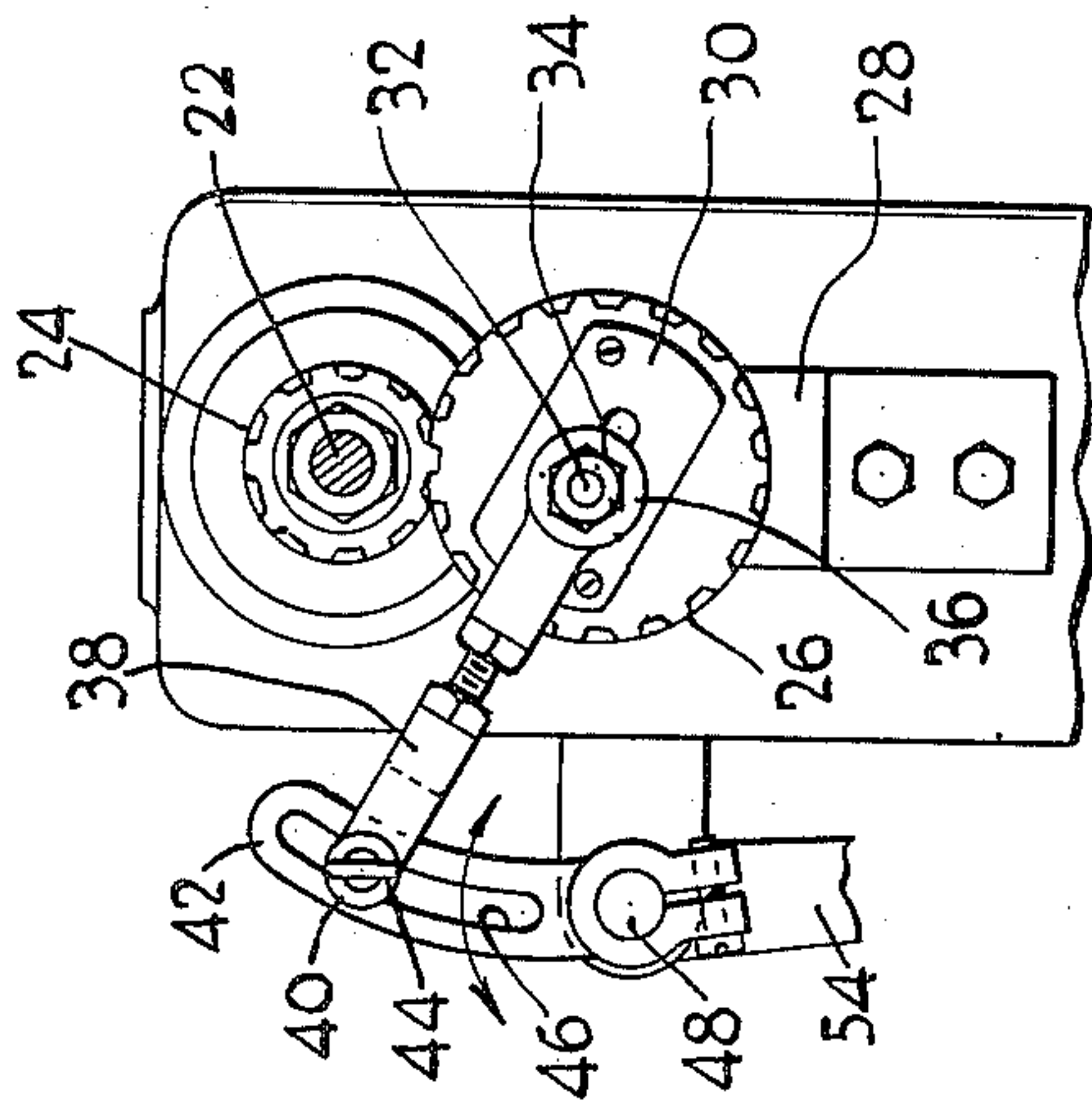


Fig. 4.

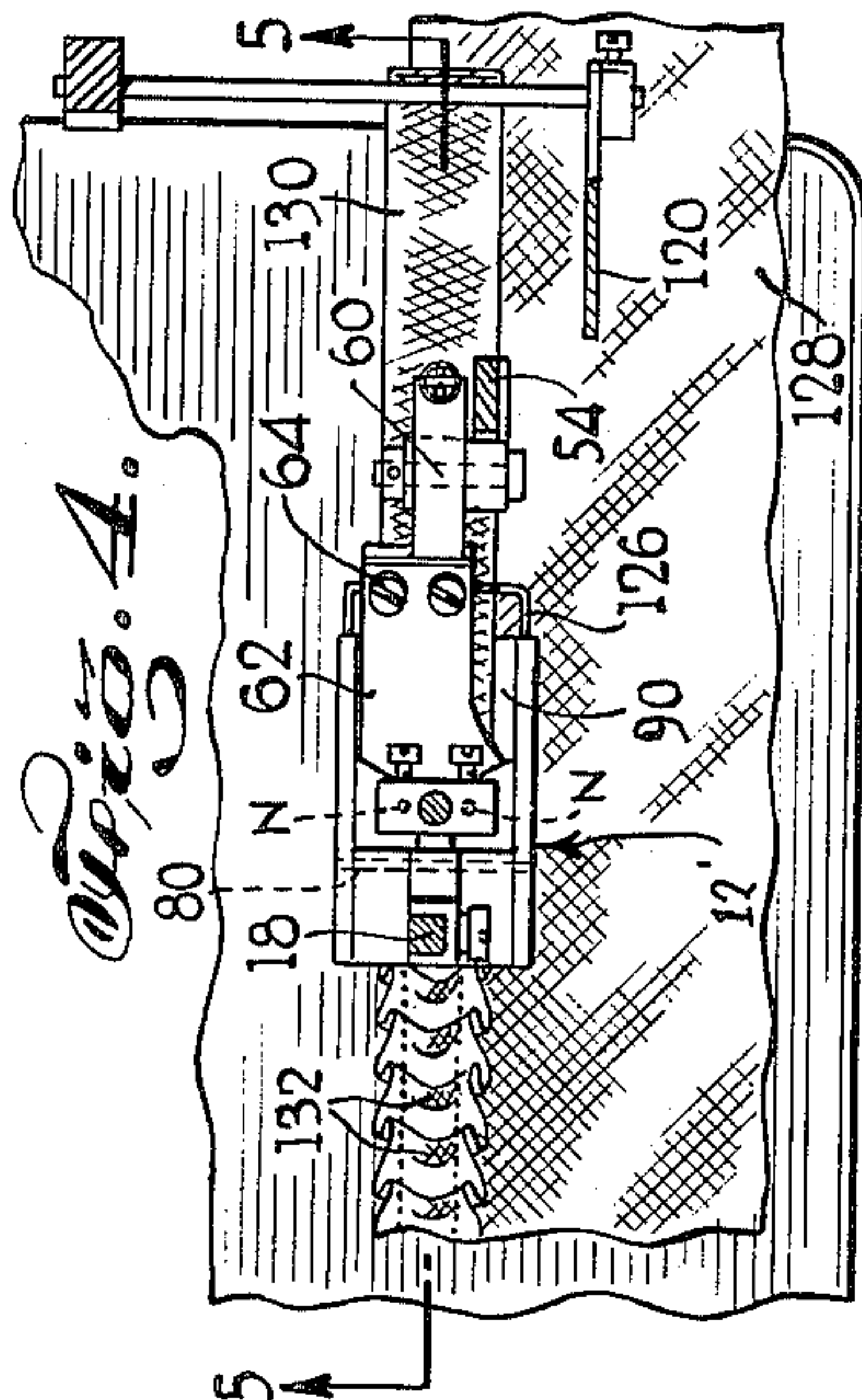
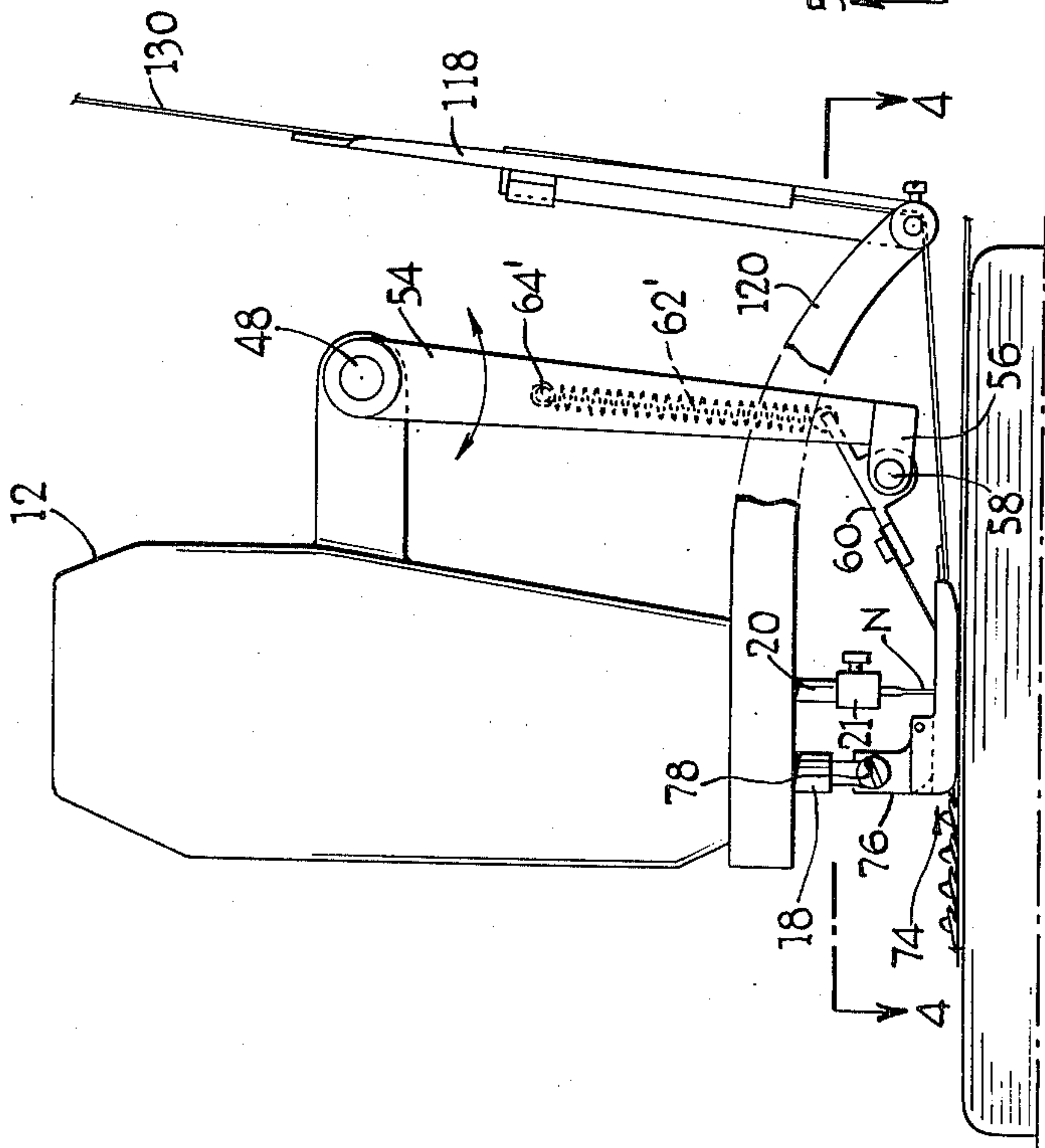


Fig. 2.



INVENTOR.
SAMUEL COHEN
BY
Yoram Finkelman
ATTORNEY

April 10, 1951

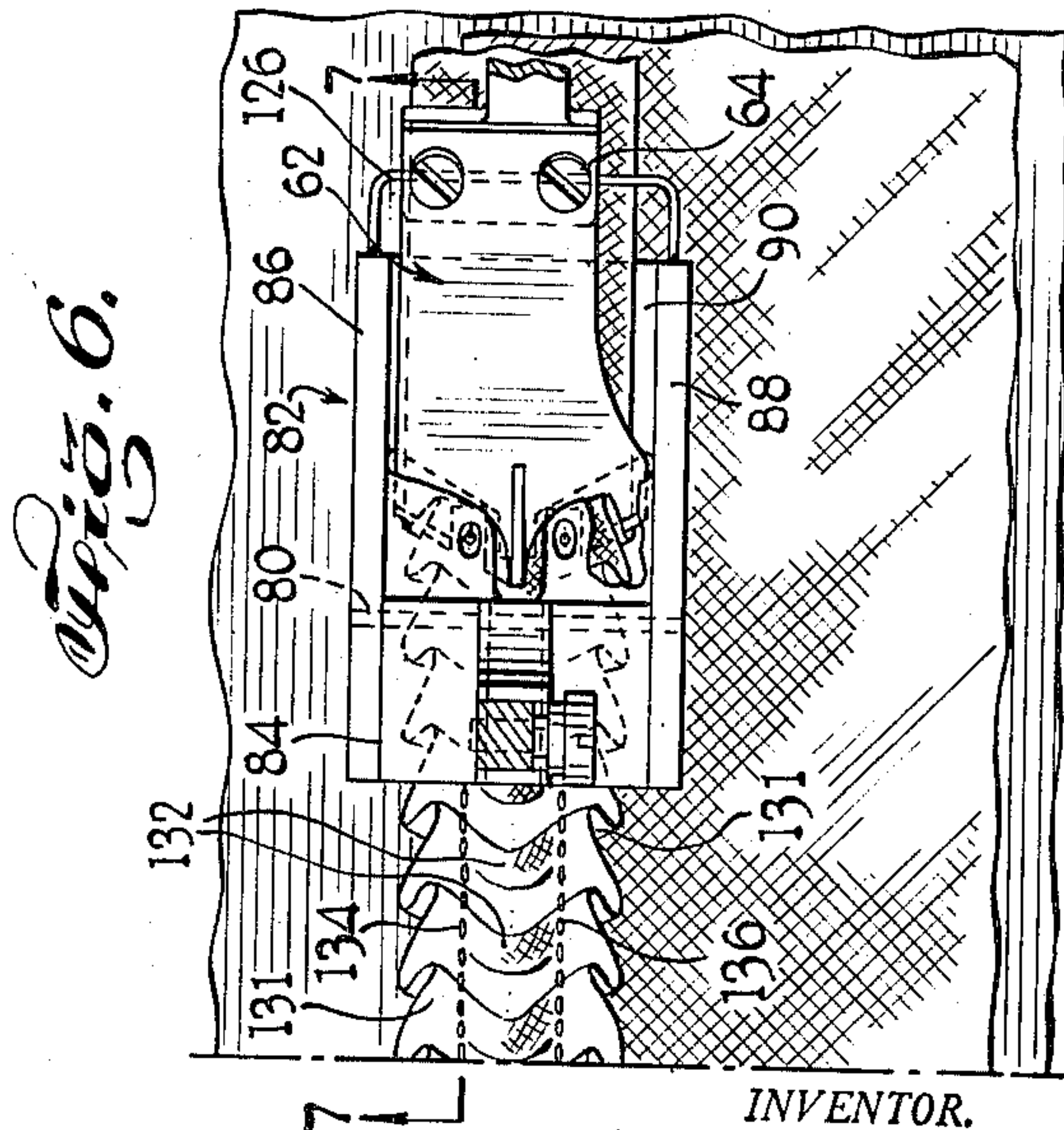
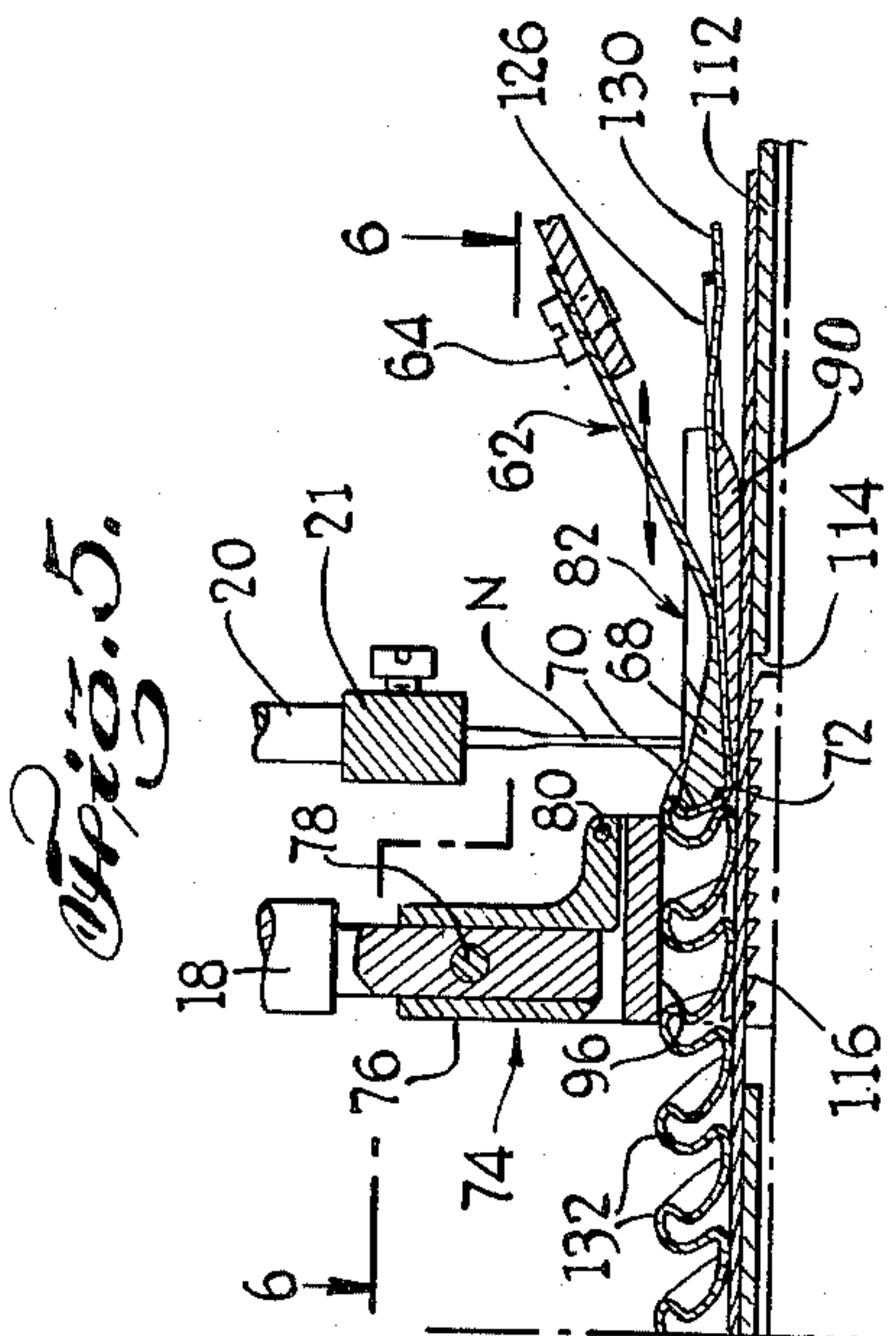
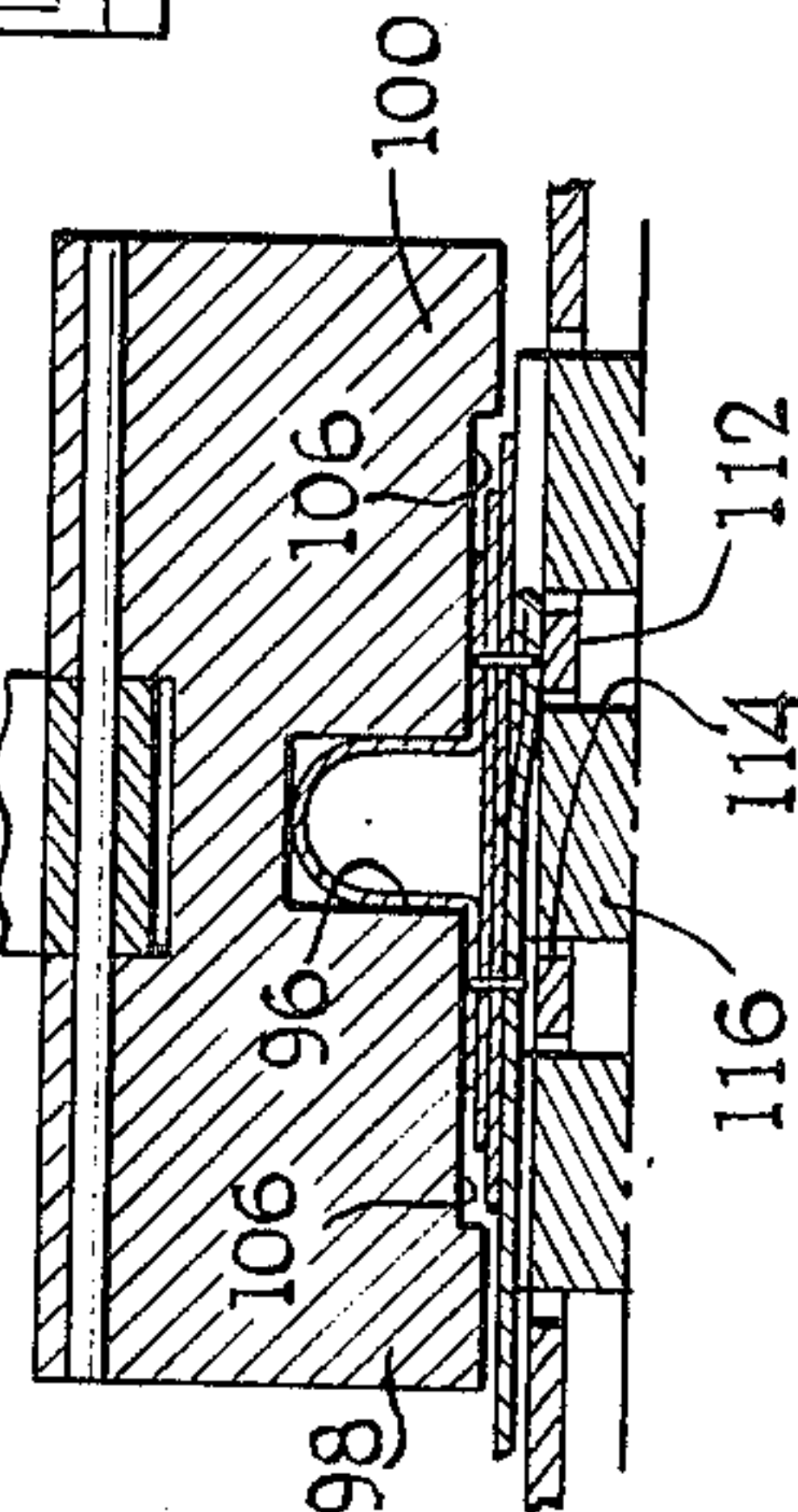
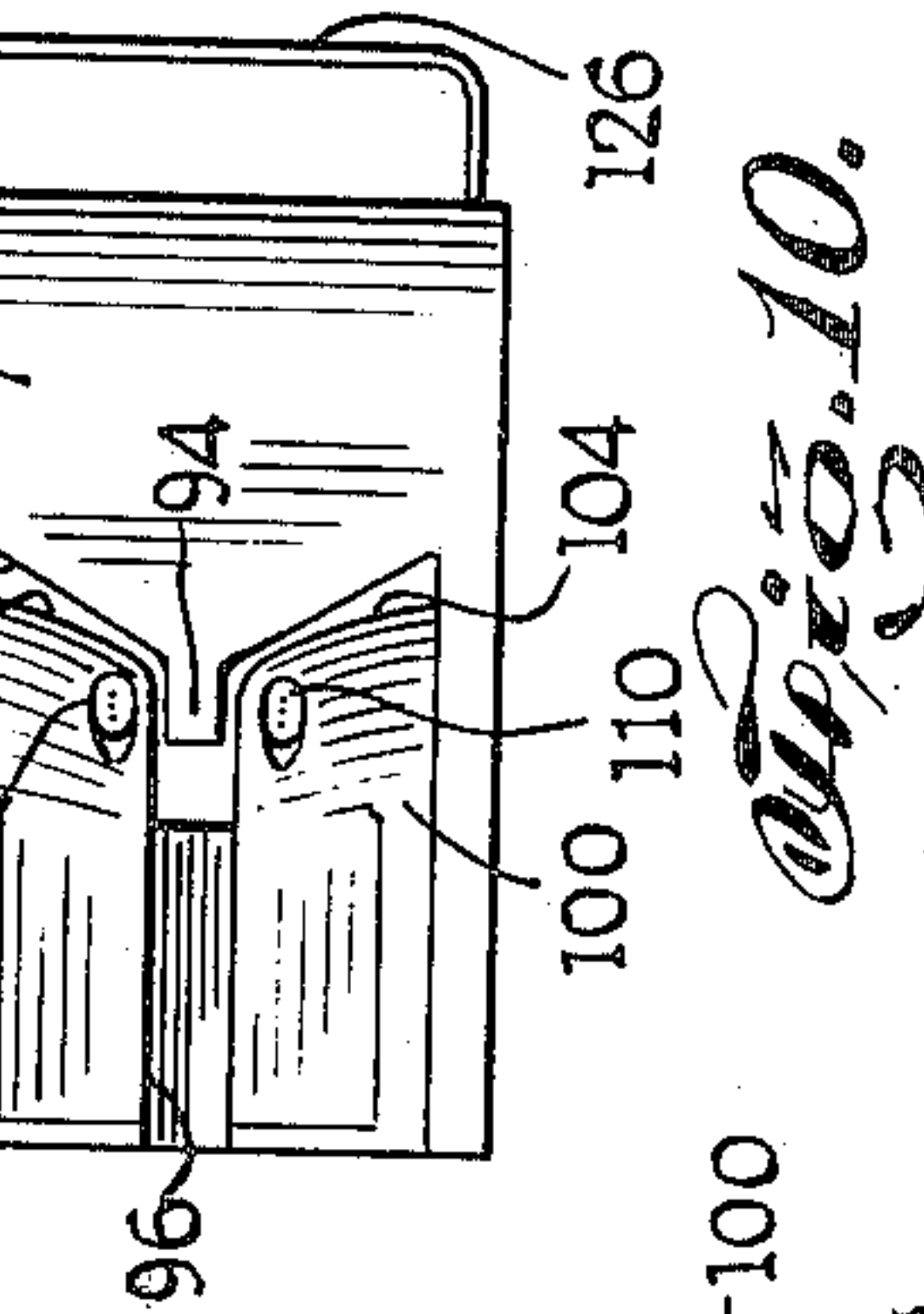
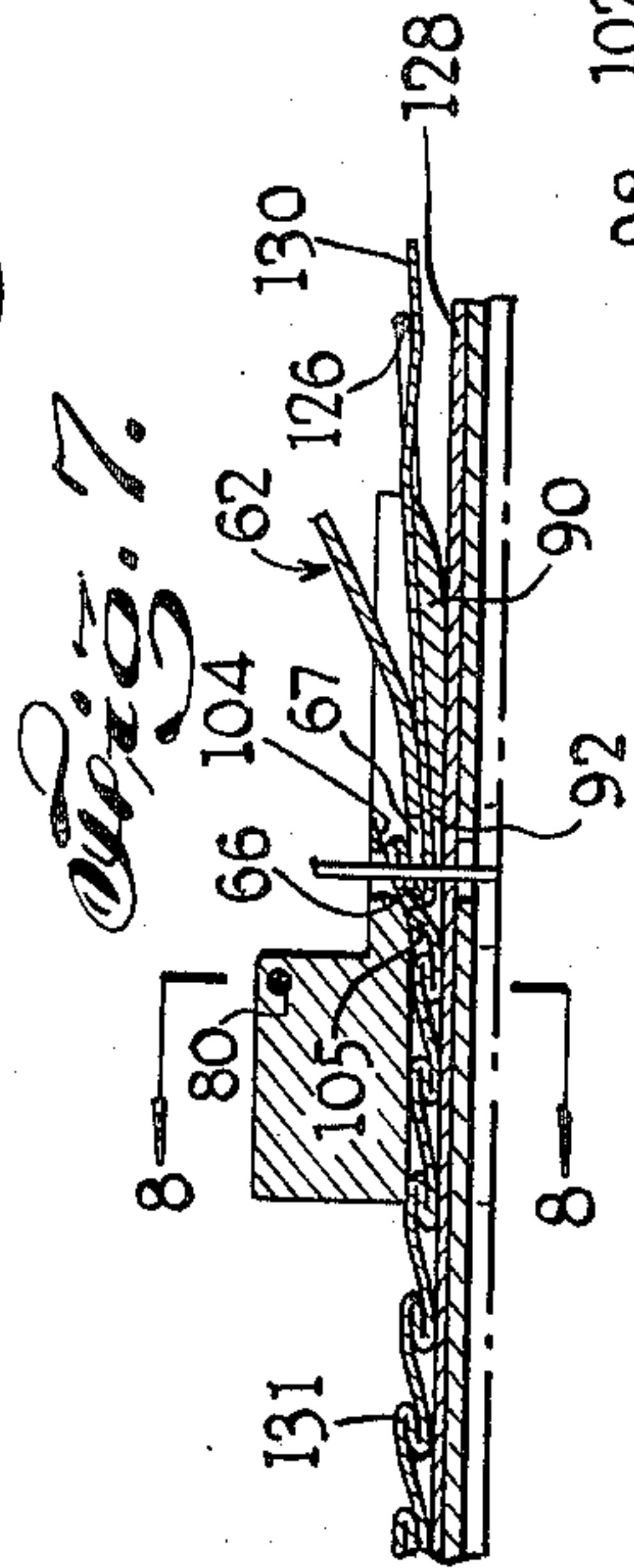
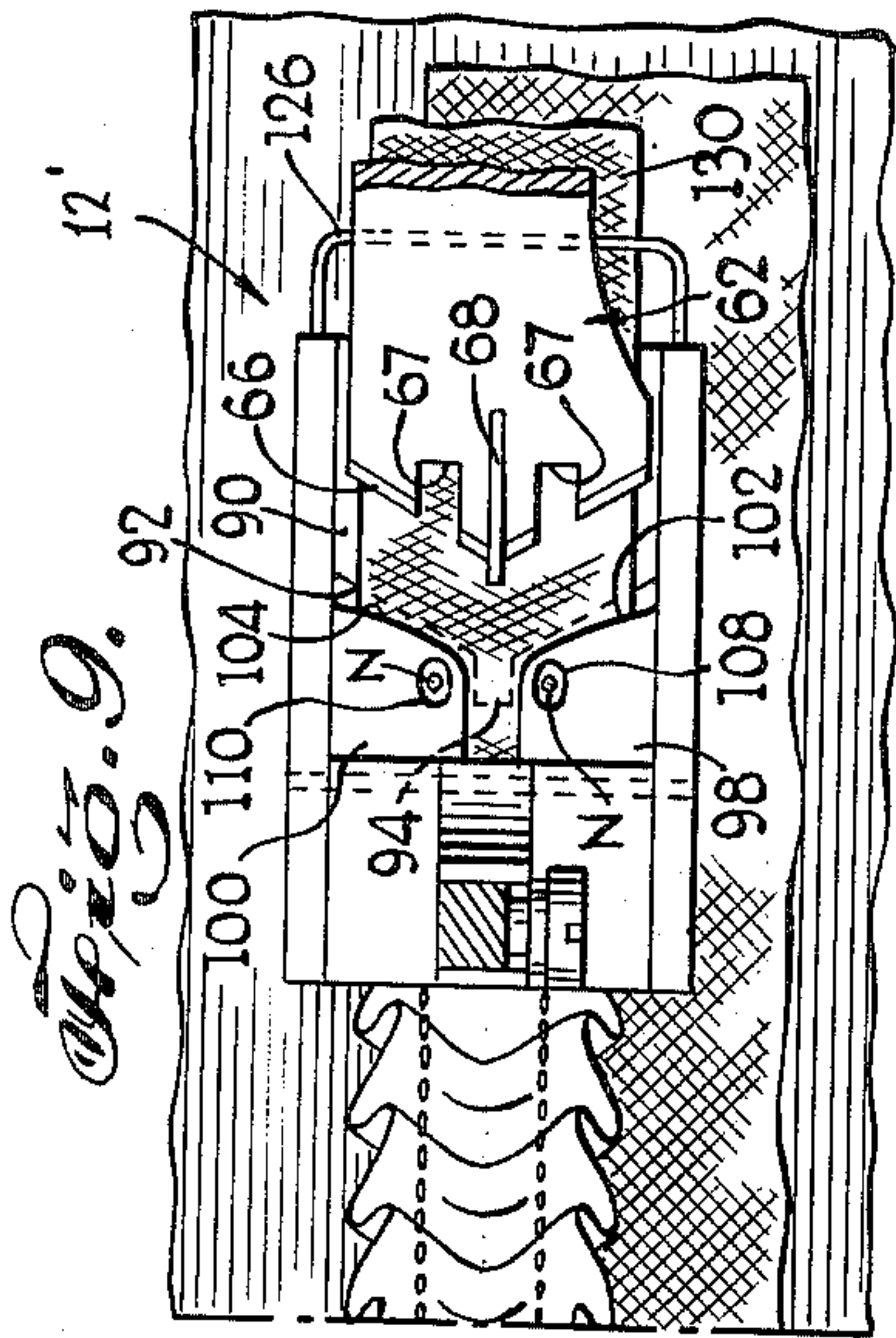
S. COHEN

2,548,144

SEWING MACHINE ATTACHMENT

Filed Nov. 10, 1948

3 Sheets-Sheet 3



INVENTOR.
SAMUEL COHEN
BY

Morris Kinshtein
ATTORNEY

UNITED STATES PATENT OFFICE

2,548,144

SEWING MACHINE ATTACHMENT

Samuel Cohen, Fall River, Mass., assignor to Pilgrim Curtain Co., Inc., Fall River, Mass., a corporation of Massachusetts

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2 Claims. (Cl. 112—134)

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This invention relates to sewing machine attachments. More specifically, the invention pertains to a sewing machine attachment of the type adapted to make a fabric article consisting of at least two plies of fabric of which the upper ply is narrow and is stitched to the under ply.

A typical fabric article of this character is a curtain, the particular portion of the curtain referred to being the edge where a tape-like fabric is stitched around at least a portion of the peripheral zone of the curtain body.

It is an object of the present invention to provide a sewing machine attachment of the character described adapted to manufacture a fabric article wherein the upper ply is sewed to the under ply along two spaced rows of stitching, and the upper ply between these two rows consists of a series of spaced mounds.

It is another object of my invention to provide a sewing machine attachment of the character described which is adapted to manufacture a fabric article wherein the upper ply, in addition to including a series of mounds, comprises two rows of overlapping pleats, one adjacent each edge of the upper ply.

It is a further object of my invention to provide a sewing machine attachment of the character described which comprises relatively few and simple parts and is easy to use.

Other objects of my invention will in part be obvious and in part will be pointed out hereinafter.

My invention accordingly consists in the features of construction, combinations of elements and arrangements of parts which will be exemplified in the construction hereinafter described and of which the scope of application will be indicated in the appended claims.

In the accompanying drawings,

Fig. 1 is a front view of a sewing machine including an attachment constructed in accordance with my invention;

Fig. 2 is a side view of the left-hand end of said machine;

Fig. 3 is a fragmentary side view of the right-hand end of the machine;

Fig. 4 is a sectional view taken substantially along the line 4—4 of Fig. 2;

Fig. 5 is an enlarged fragmentary sectional view taken substantially along the line 5—5 of Fig. 4;

Fig. 6 is a sectional view taken substantially along the line 6—6 of Fig. 5;

Fig. 7 is a sectional view taken substantially along the line 7—7 of Fig. 6;

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Fig. 8 is a sectional view taken substantially along the line 8—8 of Fig. 7;

Fig. 9 is a view similar to Fig. 6, but showing the attachment at a different stage of its operation; and

Fig. 10 is a bottom view of the attachment.

Referring now in detail to the drawings, 10 denotes a sewing machine of conventional construction on which there is mounted an attachment 12' embodying my invention. Said machine includes a conventional head 12 driven from a suitable source of power, such as an electric motor or a shaft (not shown), by means of a transmission such as a belt 14 and pulley 16. The forward end of the machine has the usual presser bar 18 and needle bar 20, the latter carrying a double needle mount 21.

The attachment 12' may be driven in any suitable manner. However, for simplicity and ruggedness, I prefer to take the drive for the attachment from the driven end of the head 12 rather than the needle bar. To this end I provide on the power input end of the drive shaft 22 a gear 24 which meshes with a gear 26 journaled on a supporting bracket 28 bolted to the sewing machine head.

The gear 26 supports a crank plate 30 which is provided with a T-shaped slot extending diametrically of the gear. The head of a crank bolt 32 is captively slidable in the slot and the opposite end of said bolt is threaded to receive a nut 34. Between the head of the bolt and the nut is a collar 36 which is rotatable about a slightly larger sleeve (not shown) so that said collar can be rotatably held in any adjusted position along the T-shaped slot by tightening the nut 34.

The collar 36 comprises one end of an adjustable length connecting rod 38 whose other end has another collar 40. This second collar is pivotally attached to a rocker arm 42 by a wing bolt 44 which threadedly engages a nut (not shown) in back of the arm 42. Said arm is formed with an arcuate slot 46 through which the shank of the bolt passes so that the collar 40 can be set at any desired position along the length of the slot. The rocker arm is clamped to an attachment shaft 48 which is journaled in two bearings 50, 52 at the rear and front of the sewing machine.

The fixed ratio of the gears 26, 24 is 2:1 so that the attachment shaft 48 will oscillate through a complete cycle once for every two revolutions of the power shaft 22, or once for every two complete cycles of the needle bar 20. The angle

through which the attachment shaft rocks can be regulated by adjusting the throw of the crank bolt 32 and the effective length of the rocker arm 42. Moreover, the angular position of the shaft at its two extremes of movement can be adjusted by varying the length of the connecting rod 38.

The forward end of the attachment shaft fixedly carries a long blade holder arm 54 whose lower end comprises a pair of spaced ears 56 which between them support a pin 58 on which a blade carrier 60 rocks. The back of the blade carrier is attached to the lower end of a helical tension spring 62' whose upper end is caught on a bolt 64' secured to the blade holder arm. Thus, the blade holder is biased in a counter-clockwise direction as viewed from Fig. 2 with its front (blade carrying) end urged downwardly.

A shirring blade 62 fixed to this end is of unique construction. Said blade comprises a wide strip of sheet metal having two openings at its rear end through which a pair of bolts 64 pass to secure the blade to the blade holder. The upper forward edge of the blade is beveled as at 65 so that the front of the blade has a chisel-like sectional configuration. Said blade is quite thin (in the order of one-thirty-second of an inch) whereby the bevel, which is at an angle of about 45° to the undersurface of the blade does not extend back too far. The front of the blade is of V-shaped configuration in plan, with the apex of the V extending toward the presser bar 18 and being symmetrically disposed with respect to an imaginary line normal to a line joining the two needles N and midway therebetween. In addition, the front of the blade includes two rearwardly extending notches 67 in register with the two needles N.

At the tip of its V-shaped forward edge, the blade carries an upwardly extending flat sheet metal prong 68. The forward edge 70 of the prong inclines toward the presser bar at an angle of about 70° to the horizontal. Accordingly, the tip of the prong lies in front of the tip of the apex of the V-shaped forward edge of the blade. The forward edge 70 of the prong is notched, as at 72, where it joins the shirring blade.

The shirring blade is used in conjunction with a presser foot 74 of special design. Said foot comprises a conventional shank 76 which is adapted to be secured as with a screw 78 to the presser bar 18. The shank is pivotally connected by a pin 80 to a presser foot tread 82 constructed in accordance with my invention. Essentially said tread comprises a block 84 directly beneath the shank and to which the pin 80 is pivotally secured. Extending toward the shirring blade along both side edges of the block are a pair of upstanding flanges 86, 88. These flanges are connected by a thin tape guiding plate 90 whose undersurface is substantially horizontal and whose upper surface slopes downwardly and forwardly at a slight angle to the horizontal. The forward edge 92 of the guide plate has a configuration in plan substantially matching the configuration of the forward edge of the shirring blade as best will be seen from inspection of Fig. 9. In addition, the tip of said forward edge 92 has an integral projecting tongue 94. The tread is provided with an undercut groove or slot 96 in line with the prong 68 and tongue 94. Said groove extends rearwardly from a point slightly in advance of the tip or free end of the tongue, and divides the undersurface of the tread beyond the guide plate 90 into two sections 98, 100. Both of these sections have their undersurfaces sloped

upwardly as at 105 (Fig. 7) toward the edges 102, 104 facing the guide plate. Said edges 102, 104 are immediately adjacent the forward edge 92 of the guide plate and are located a short distance above the same, e. g. approximately $\frac{1}{8}$ of an inch. Optionally, and as shown, the two tread portions 98, 100 may be completely separated from one another between the guide plate and the block 84. In addition to the foregoing, the undersurfaces of the tread sections 98, 100 may be formed with broad shallow grooves 106 sufficient to accommodate a few plies of fabric. Finally, the tread includes a pair of needle openings 108, 110 in proper position to pass the needles N. The presser foot is designed to be disposed above the usual needle plate 112 having openings 114 through which standard serrated feed dogs 116 move in a rectangular path.

One ply of fabric is fed to the needle beneath the presser foot and another ply of fabric of narrow transverse dimensions is fed to the needle above the level of the bottom of the presser foot tread.

Optionally, the presser foot may include means to guide the upper fabric ply and, if this ply is too wide, the guide means also may constitute means to fold such ply to proper size. In the illustrated embodiment of my invention the foregoing guide and folding means comprises a conventional folder 118 supported from the machine by a pair of arms 120, 122. The folder terminates at a discharge mouth 124 in transverse registry with the space between the upstanding flanges 86, 88. The guide means also includes a cross-pin 126 spaced from and connected to the presser foot tread at its rear edge.

In the operation of the machine the connecting rod 38 is adjusted in length with respect to the settings of the bolts 32, 44 so that the front of the shirring blade at the end of its forward stroke is near but not beyond the tip of the tongue 94. The length of the stroke is adjusted according to the amount of gathering which it is desired to effect or to the height to which it is desired to raise the center of fabric in the overlying fabric ply or tape, whichever is controlling.

The underlying ply 128 is fed to the sewing machine in a conventional manner so that it passes beneath the rear edge of the presser foot tread. The overlying ply 130 of light fabric, e. g. net or curtain material, is reduced to a narrow width by passage through the folding mechanism 118 and then is led beneath the cross-pin 126. It may be mentioned at this point that the term fabric ply as used herein may include only a single layer of fabric, as in the case of the lower ply 128, or it may constitute two or more layers of fabric as in the case of the upper ply 130 whose two side edges are folded underneath. The cross-pin 126 is approximately level with or somewhat below the rear edge of the plate 90 so that as the upper ply 130 is guided on to said plate between the flanges 86, 88 said ply will lay against the plate. The upper ply is led in this fashion to beneath the tread sections 98, 100.

The lower fabric ply 128 is fed forwardly by the feed dogs 116 which press this ply against the undersurface of the plate 90 and thereby impart a forward motion to said fabric ply. The upper fabric ply cannot be fed in this manner inasmuch as it passes over the top of the plate 90, and once it leaves said plates it travels through the shallow grooves 106, 108. The upper ply is fed by the shirring blade 62. By properly setting the position of the bolts 32, 44, this blade

has a length of stroke imparted thereto in excess of the distance the lower ply is advanced by the feed dogs in two operating cycles of the machine. Thus, in its forward motion the blade will feed the upper fabric ply a distance greater than the lower fabric ply is fed in the same period of operation. The overfed portions of the upper ply are folded down into pleats 131 at the lateral edges of said ply by the downwardly and rearwardly sloping undersurfaces 105 of the tread sections 98, 100. These pleated portions are stitched to the cover ply by the double needles N operating through the needle openings 108, 110.

The foregoing pleats are formed beneath and by the tread sections 98, 100. However, these sections are separated by the central groove. In the vicinity of said groove there is nothing to press the overfed portions against the lower ply and the top surface of the blade. Therefore, within the groove the overfed portions take on the shape of mounds. This formation of the center of the overfed portions is ensured by the construction of the shirring blade as set forth hereinabove, e. g., since the blade has a V-shaped pushing edge, there is a tendency to raise the fabric at the center of the blade. Moreover, the prong 68 engages the material of the upper fabric being overfed by the pusher blade and elevates the same as will be appreciated from inspection of Fig. 5. The fabric is prevented from slipping with respect to the blade and prong by the notch 72. With the foregoing construction a mound 132 is raised at each stroke of the shirring blade. Rows of stitching 134, 136 sewn by the needles N through the pleats 131 tend to maintain the shape of the mounds.

It may be observed that the groove 96 is sufficiently large to accommodate a mound of substantial size, but that it is not necessary to the operation of my invention for the mounds raised by the shirring blade 62 to completely fill said groove. The mounds may be of a lesser height or a greater height than the groove, it being sufficient that the mounds are not pressed down to form pleats, as are the side edges of the overlying fabric, by the downwardly and rearwardly sloped edges 105 of the tread sections 98, 100.

It thus will be seen that I have provided a sewing machine attachment which achieves the several objects of my invention and is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various possible changes might be made in the embodiment set forth, it is to be understood that all matter herein described or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A sewing machine attachment comprising a presser foot having a tread including a pair of needle holes, said tread also including a plate rearward of said needle holes, the forward edge of said plate terminating short of said needle holes, the portion of said tread beyond the forward edge of said plate having an undercut groove between the needle holes which runs forwardly from the rear edge of said portion, said presser foot having associated therewith a shirring blade with a V-shaped pushing edge riding on said presser foot plate, said pushing edge having a pair of notches therein to pass needles operating through the needle holes, and means to reciprocate said blade on said plate in synchronism with the feed of a sewing machine.

2. A sewing machine attachment comprising a presser foot having a tread including a pair of needle holes, said tread also including a plate rearward of said needle holes, the forward edge of said plate terminating short of said needle holes, the portion of said tread beyond the forward edge of said plate having an undercut groove between the needle holes which runs forwardly from the rear edge of said portion, said presser foot having associated therewith a shirring blade with a pushing edge riding on said presser foot plate, said blade having a centrally disposed upwardly extending prong, said prong having a forward edge including a base which is located at said shirring blade and a tip which is disposed at a greater distance upwardly from said pressure foot plate than said base, said forward edge extending forwardly from and overhanging the pushing edge of the shirring blade, and means to reciprocate said blade on said plate in synchronism with the feed of a sewing machine.

SAMUEL COHEN.

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