April 24, 1951 J. ARMENTI 2,550,322

SEWING MACHINE

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Fig. 1.

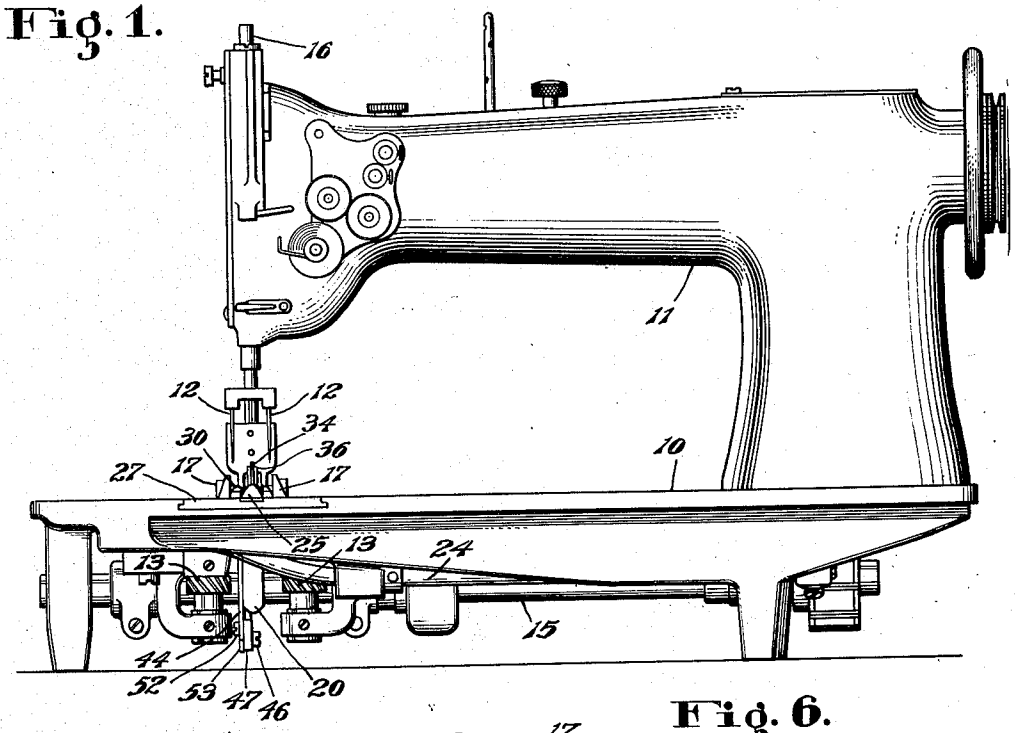



Fig. 2.

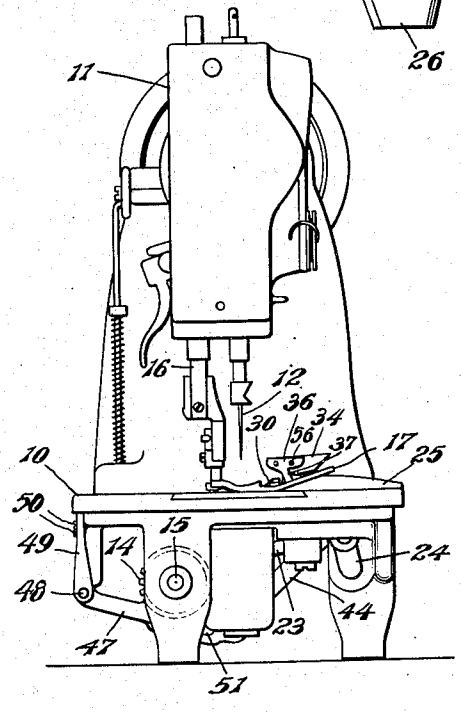
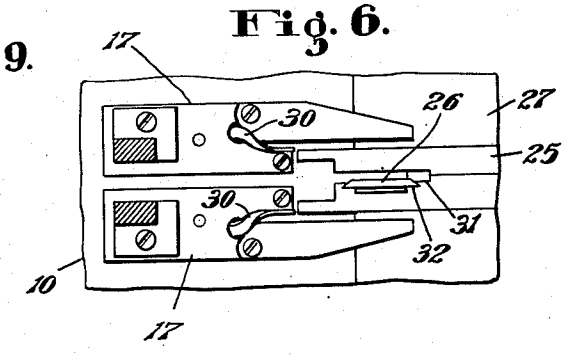



Fig. 9.




Fig. 6.



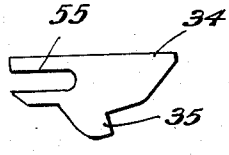




Fig. 7.

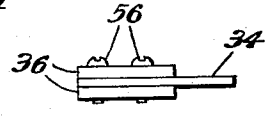



Fig. 8.

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SEWING MACHINE

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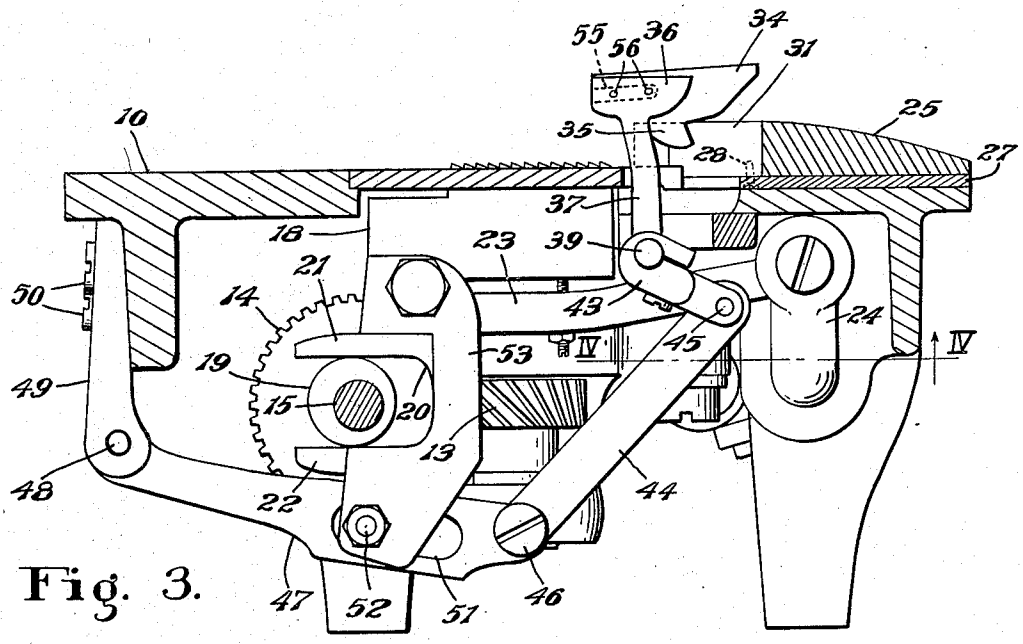



Fig. 3.

Fig. 4.

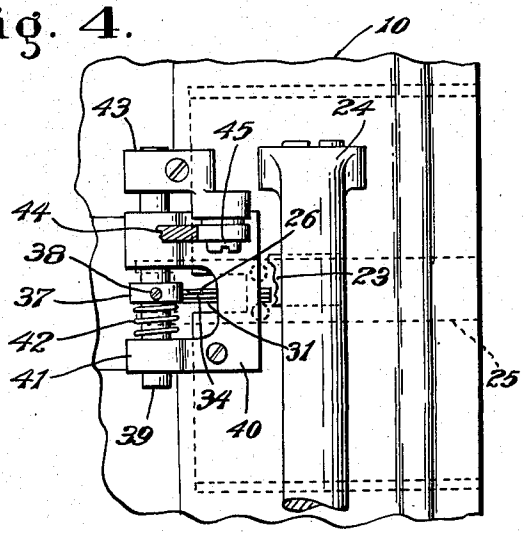
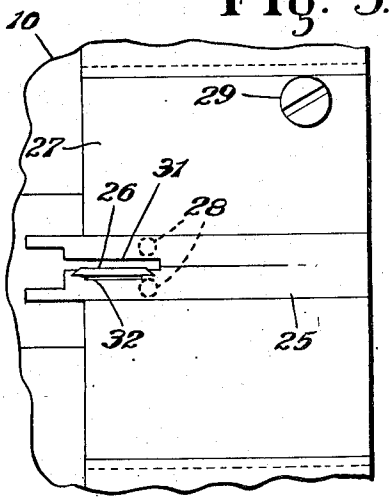



Fig. 5.




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# UNITED STATES PATENT OFFICE

2,550,322

## SEWING MACHINE

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Application October 23, 1946, Serial No. 705,069

5 Claims. (Cl. 112—122)

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This invention relates to sewing machines and more particularly to attachments therefor which perform operations upon the material being sewn in addition to the actual stitching of the material.

Sewing machines, particularly when used in commercial production of articles of cloth, have heretofore been constructed with two needles and bobbins and appropriate mechanism for operation thereof. According to the present invention, I fulfill the objective of both cutting the material between the needles and turning a hem at each of the severed edges whereby the two needles stitch the hems on both edges all as a continuing operation on the cloth in a single passage thereof under the pressure feet.

More specifically, an object of the invention is to adapt a usual construction of double-needle sewing machine obtainable on the market to the accomplishment of the above-recited objective.

Other objects of the invention will appear to those skilled in the art to which it appertains as the description proceeds, both by direct recitation thereof and by implication from the context.

Referring to the accompanying drawing in which like numerals of reference indicate similar parts throughout the several views:

Figure 1 is a front elevation of a double-needle sewing machine to which my invention is applied;

Figure 2 is an end elevation thereof;

Figure 3 is a vertical cross-section of the table or bed portion of the machine substantially on a plane between the needles, but with needles, feet and other super-structure omitted for the sake of clarity;

Figure 4 is an underneath view of the bed in the region of the needles and showing particularly the mechanism added to the usual sewing machine for the support and tensioning of the cutter.

Figure 5 is a plan of the bed and fixed blade of the cutter in the same vicinity as Fig. 4, but with the movable or shearing blade and its holder omitted for purpose of clarity;

Figure 6 is a view similar to Figure 5, but showing the pressure feet and hem turning devices in their proper relationship to the supporting member for the fixed blade;

Figure 7 is a face view of the movable blade;

Figure 8 is a top edge view of the movable blade in its holder; and

Figure 9 is a face view of the fixed blade.

In the specific embodiment of the invention

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illustrated in said drawings, the reference numeral 10 designates the table or bed portion of a sewing machine having the usual goose-neck 11 thereabove for mounting a needle bar therein to reciprocate vertically above the bed and to carry needles 12 for stitching purposes as usual. Since the showing is of a two-needle machine, there are of course two bobbins (not shown) which are rotated by horizontal spiral gears 13 beneath the bed and they in turn by vertical spiral gears 14 meshing each with one of the horizontal spiral gears. The vertical spiral gears are both fixed upon a continuously rotating main shaft 15 extending longitudinally beneath the bed. Usual construction of sewing machine also includes, as will be found on the drawing, a vertically movable bar 16 on the lower end of which are pressure feet 17, 17, one for each needle and through which the needle passes. Feed dogs 18 project through the bed beneath the pressure feet, and an orbital movement is given to said feed dogs such that they intermittently rise to engage the material under the feet and move the material away from the operator or rearwardly an increment between each stitch. Mechanism for applying the orbital movement to said feed dogs is provided beneath the bed, and in the showing machine here shown comprises a cam or eccentric 19 on the aforementioned main shaft 15 at a location between the shuttle-operating vertical gears. A follower 20 shown with jaws 21, 22 above and below the eccentric 19 rises and falls in repeating succession as the eccentric rotates, and is part of or attached to a dog lever 23 extending toward the front of the machine. Said dogs 18 are adjustably mounted above said dog lever 23, and thus rise and fall in consequence of the rotation of the eccentric. Longitudinal movement of the dogs is obtained by imparting a longitudinal motion to the dog lever 23. For that purpose, in the particular sewing machine here shown, the forward end of said dog lever is trunnioned or otherwise pivotally connected to an eccentric portion of a rocker bar 24 which extends longitudinally under a front part of the bed. The detail description so far given is intended merely to be explanatory of essential portions of one type of sewing machine now on the market to enable the invention to be oriented with respect thereto in the drawing and in the following disclosure.

It will be observed that the front ends of the pressure feet 17, 17 (see Figure 2) slope upwardly forward. In the region included between

the forward portions of the pressure feet, I provide a member 25 both for supporting a fixed blade 26 of my improved cutter and for feeding the severed edges of the cloth to the hem-folding devices. Said member 25 is an elongated metallic bar extending in a forward rearward direction and partially embedded throughout its length in a groove in the upper face of a slidably removable plate 27 carried in a prepared depression for the purpose at the upper side of the machine bed. Said supporting member 25 is secured in the groove of said plate 27 by screws 28 projecting upwardly thereinto from said plate, and the plate in turn is held from sliding in its depression by a screw 29 which engages in the bed. Location of the plate in slideways in the depression and location of the member 25 in its groove, in conjunction with retention by the screws, prevents shifting in any direction during use.

The forward and side top edges of the blade supporting member 25 are substantially even with the top edges of the plate thereat, but the longitudinal middle of said member progressively bulges upward as it approaches the rear end so as to both tend to draw the cloth tight thereacross as the cloth feeds over said member and under the feet, and also tends to curl the severed edges upward. At the most rearward portion of member 25 the sides thereof are vertical or perpendicular to the bed. Immediately beyond the rear ends of said member are curled strips 30 carried by feet 17, 17, said strips constituting hem folders, one for each foot, each receiving a severed edge of the cloth and folding it into a hem and feeding it under the foot to be pierced and sewn by the needles. The rear end portions of the vertical side faces of member 25 are directly in front of the hem folders 30.

Severing of the cloth is performed near the rear end of the member 25 and in advance of feeding into the hem folders. For this purpose, the rear portion of said member 25 has a longitudinal slot 31 therein which extends entirely through the member from top to bottom. One wall of this slot is provided with a vertical tapered dove-tailed groove 32 adapted to receive a substantially flat blade 26 (herein referred to as the fixed blade) the end edges of which are tapered vertically downward toward each other to limit downward positioning movement for the blade and are also dovetailed to fit into the dovetailed edges of the groove and thereby keep the blade from lateral displacement.

A movable shearing blade 34 is provided to operate in said slot. Said shearing blade 34 is positioned vertically and with one face thereof flatwise toward or in a common plane with the cooperating face of fixed blade 33. The forward edge of shearing blade 34 slopes upwardly for effecting a scissor action upon the cloth with respect to the fixed blade, and to prevent inadvertent overlap of the blades edgewise, the shearing blade provides a heel 35 which is in the same plane as the engaging face of the shearing blade and continues the flatwise engagement between the blades when the forward shearing edge of the shearing blade moves upward and at an elevation above the top of the fixed blade.

The shearing blade is mounted to swing in its own plane for which purpose it is shown mounted in a clamping head 36 constituting the upper end of a blade holder 37 in the form of a rocker arm. The lower end portion of the blade holder rocker arm 37 extends through the bed 10 and is held non-rotatably, as by set screw 38 upon a slidable



rocker shaft 39 in turn carried by a bracket 40 secured to the under side of the bed. Between one of the bearing ears 41 of said bracket and the blade holder rocker arm 37 is a compression spring 42 mounted on said rocker shaft. The pressure exerted by said spring 42 is effective upon the blade holder and movable blade to obtain constant pressure and engagement of the blades.

Rocking motion for the rocker shaft is obtained by means of a driving rocker arm 43 fixed thereon and depending therefrom for actuation back and forth by a link 44 pivoted at 45 to the depending end of the said driving rocker arm. Said link extends downwardly rearward and has its lower end pivoted by screw stud 46 to the forward end of a rearwardly extending lever 47 which passes beneath the main shaft 15 in the region of eccentric 19 and has its rear end rotatable on a supporting pivot pin 48 in turn carried in a bracket 49 affixed, as by screws 50 to a part of the bed 10. Said lever 47 has a longitudinal slot 51 therein which receives a stud 52 with sliding contact, said stud projecting from a cleat 53 secured to the dog-operating follower 20. Rise and fall of the said follower under actuation by eccentric 19 obtains corresponding rise and fall of the cleat 53 and thereby, through engagement of stud 52 with the lever swings said lever up and down. Through the link and lever connection described, it will be seen that the movable blade is actuated with a scissor motion constantly while the machine is being operated, and thus the cloth is cut, hem turned and stitched as a single progressive operation as the cloth feeds through the machine from the operator and under the needles.

Special attention is called to the ease with which both the fixed blade 26 and the shearing blade 34 may be removed and replaced. As best seen in Figure 9, the fixed blade is trapezoidal, and preferably an isosceles trapezoid, with its top and bottom edges parallel and its end edges converging downwardly. It is these end edges which dove-tail with the slot 32 of member 25, and therefore to remove the blade it is only necessary to pry or pull it upward which can be done without removing any other parts. Shearing blade 34 has a slot 55 in a longitudinal direction and open at the rear edge of the blade. Head 36 of the blade holder is cleft medially from front to back to receive the blade, the cleft portions being slightly resilient toward and away from each other. Screws 56 passing laterally through the cleft portion also pass through the slot of the blade, and when the screws are loosened, the blade may be moved longitudinally for removing or replacing the same. The shanks of the screws substantially fit diametrically in the slot of the blade and keep the blade from wobbling up and down in the head, and tightening the screws causes the cleft portion of the head to frictionally grip the blade therebetween. The screws are readily accessible and the blade may be changed without removing any other parts.

I claim:

1. A sewing machine having a bed and two needles for simultaneously making two lines of stitches in cloth fed thereto, cloth-severing means in front of the plane of said needles and above said bed for severing the cloth to provide severed edges therefor between the needles, said cloth-severing means having a fixed blade and a movable blade in continuous shearing engagement and both entirely in front of said plane of the

needles, an arm carrying said movable blade, said arm being entirely in front of said plane of the needles and depending through said bed, means entirely beneath said bed providing support for said arm, and means entirely beneath said bed for actuating said arm and blade carried thereby for imparting a shearing motion of the movable blade with respect to the fixed blade.

2. A sewing machine having a bed and two needles for simultaneously making two lines of stitches in cloth fed thereto, a cloth-severing means in front of the plane of said needles and above said bed for severing the cloth to provide severed edges therefor between the needles, said cloth-severing means having a fixed blade and a movable blade in continuous shearing engagement and both entirely in front of said plane of the needles, a rocker arm carrying said movable blade, said arm being entirely in front of said plane of the needles and depending substantially vertically through said bed, trunnion means entirely beneath said bed providing swinging support for said arm, and means entirely beneath said bed for rocking said arm and blade carried thereby for imparting a shearing motion to the movable blade with respect to the fixed blade.

3. A sewing machine having a bed and two needles for simultaneously making two lines of stitches in cloth fed thereto and having feet for applying pressure to the cloth and feed means under the feet, hem turning means on each foot, a member having side faces directly in advance of said hem turning means and having a fixed blade between said side faces, a swinging blade having a cutting edge sloping upward in a direction toward the front of the machine throughout the entire amplitude of swing of said swinging blade and cooperating with said fixed blade to provide a cloth-severing scissor shear directed toward the advancing cloth, a rocker arm projecting upwardly through the bed adjacent the end of said member nearest the said feet and in front of the plane of said needles, said swinging blade being fixed to the upper end of said rocker arm, means mounting the lower end of said rocker arm on a fixed axis of oscillation beneath said bed, means for rocking said arm about said axis for imparting scissor shearing motion to the swinging blade, and said member directing the severed edges of the cloth vertically and feeding the same into said hem turning means.

4. A sewing machine having a bed and two needles for simultaneously making two lines of stitches in cloth fed thereto, a cloth-severing means in front of the plane of said needles for severing the cloth to provide severed edges therefor between the needles, said cloth-severing means having a fixed blade and a movable blade in shearing engagement and both entirely in front of said plane of the needles, a rocker arm carrying said movable blade, said arm being entirely in front of said plane of the needles and depending through said bed, trunnion means entirely beneath said bed providing swinging support for said arm, a continuously rotatable main drive shaft beneath said bed and to the rear of said plane of the needles, an eccentric on said shaft, a follower in engagement with said eccentric, a lever extending beneath said eccentric and follower and connected with said follower for actuation thereby, and a link entirely beneath said bed connecting said lever to said depending rocker arm rocking the same and operating the cloth severing means with a minimum of the mechanisms above the said bed.



5. A sewing machine having a bed and two needles for simultaneously making two lines of stitches in cloth fed thereto, a cloth-severing means in front of the plane of said needles for severing the cloth to provide severed edges therefor between the needles, said cloth-severing means having a fixed blade and a movable blade in continuous shearing engagement, a blade-carrying rocker arm carrying said movable blade and depending through said bed, trunnion means entirely beneath said bed providing swinging support for said blade-carrying rocker arm, a driving rocker arm on said trunnion means, a continuously rotatable main drive shaft beneath said bed and to the rear of said plane of the needles, an eccentric on said shaft, a follower in engagement with said eccentric, a lever extending past said eccentric and follower and connected with said follower for actuation thereby, and a link entirely beneath said bed connecting said lever to said driving rocker arm for rocking the same and thereby rocking the blade-carrying rocker arm and blade.

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## REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

| Number | Name | Date |
|---|---|---|
| 1,388,411 | De Voe | Aug. 23, 1921 |
| 1,457,547 | Netter | June 5, 1923 |
| 1,738,025 | Stivers | Dec. 3, 1929 |
| 1,933,038 | Zeier et al. | Oct. 31, 1933 |
| 2,086,407 | Ebert | July 6, 1937 |
| 2,121,526 | Kucera | June 21, 1938 |
| 2,180,424 | MacKenzie | Nov. 21, 1939 |