July 6, 1937. F. EBERT 2,086,407

CUTTING DEVICE FOR SEWING MACHINES

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Fig. 7

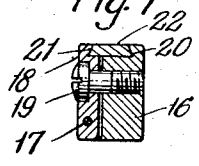
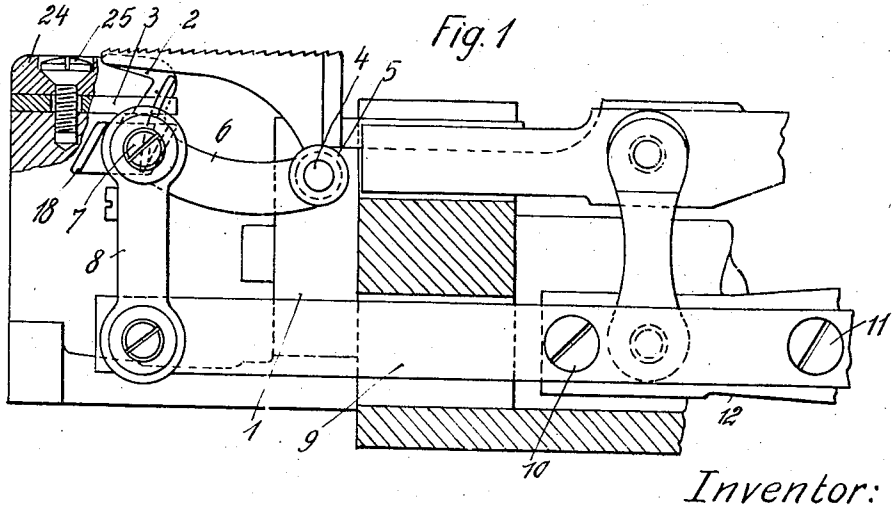


Fig. 1



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Fig. 2

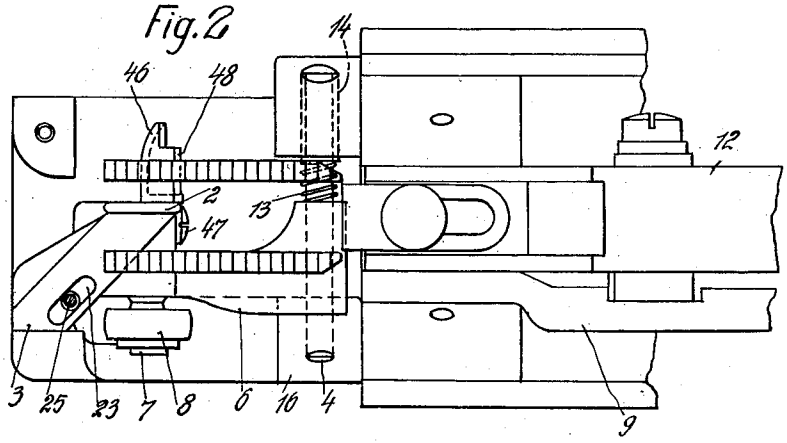


Fig. 3

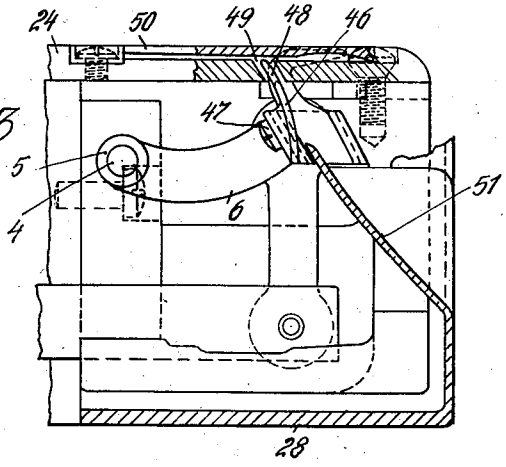


Fig. 4

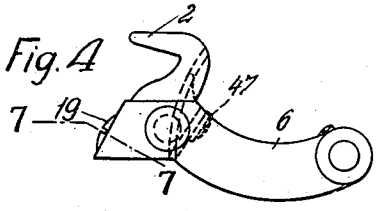
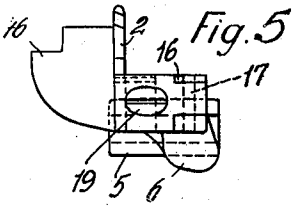


Fig. 5



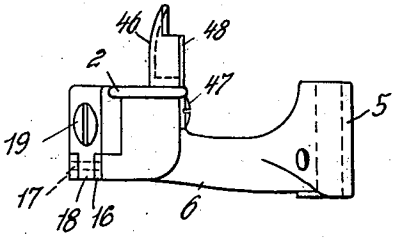


Fig. 6

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UNITED STATES PATENT OFFICE

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CUTTING DEVICE FOR SEWING MACHINES

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Application January 23, 1935, Serial No. 3,170
In Germany January 29, 1934

4 Claims. (Cl. 112—122)

The present invention relates to cutting or trimming devices for sewing machines having an overhanging arm.

The new cutting or trimming device has the great feature, that relatively small curves may be sewn on the sewing machine. This advantage is obtained by the fact, that the resiliently mounted movable upper knife operates in direct neighborhood of the needle. By resiliently arranging the movable upper knife still further advantages are gained. Thus, the upper knife always bears against the stationary lower knife with a certain pressure which may be adjusted according to the material to be handled. In this manner, perfect cutting or trimming is always warranted. Besides this, the adjustment of the cutting device to different widths of cutting or trimming is very much simplified. For this purpose, the lower knife may be adjusted by means of a screw easily accessible from the front portion of the head of the sewing machine. The upper knife then automatically bears against the lower knife again.

In the accompanying drawings, forming part of the specification, one embodiment according to the invention is shown by way of example.

In these drawings:

Fig. 1 is a side elevation of the cutting mechanism embodying the present invention, partly in section,

Fig. 2 shows a plan view of this mechanism,

Fig. 3 is a side elevation, partly in section, of the mechanism, looking from the left and showing the end-cap in position,

Fig. 4 is a side elevation of the upper knife, its operating link and a stripper mechanism,

Fig. 5 shows a front elevation of the parts illustrated in Fig. 4,

Fig. 6 is a plan view of the mechanism shown in Fig. 4, and

Fig. 7 is a detail sectional view taken on the line 7—7 of Fig. 4.

The cutting or trimming device according to the invention forms a self-contained unit which conveniently may be fixed to and removed from a support 1 in front of the working arm of a sewing machine. As usual, the trimming device consists of a movable upper knife 2 and a stationary lower knife 3. In the support 1, a shaft 4 is journalled upon which the hub 5 of a link 6 is mounted. The free end of the link 6 carries the movable upper knife 2 and is, by means of a pivot 7, connected to a link 8 the other end of which is pivotally connected to an arm 9. By means of screws 10 and 11, the arm 9 is fixed to the swinging lever 12, moved by the mechanism of the sewing machine, so that, by the movements of this swinging lever, the link 6 and therefore the upper knife 2, carried by the same, are moved also.

By means of the spring 13, surrounding the shaft 4, the upper knife 2 is permanently pressed against the stationary lower knife 3. One end of the spring 13 bears against the hub 5 of the link 6, while the other end of this spring bears against a sleeve 14 which is mounted on the shaft 4 in a manner to be adjusted longitudinally thereof, whereupon it may be fixed in the adjusted position by any suitable means (not illustrated upon the drawings). According to the thickness of the material to be handled, the tension of the spring 13 may be altered by adjusting the sleeve 14 in the longitudinal direction of the shaft 4.

For the purpose of fixing the upper knife 2 to the link 6, the latter carries, as shown in Figures 4–7, a jaw 16 in which a pivot 17 for a second jaw 18 is provided. The jaw 18 may be firmly pressed against the jaw 16 by means of a screw 19. Recesses 20 and 21, provided in the jaws 16 and 18 respectively, form, when the latter are pressed against each other by the screw 19, a dove-tail recess, adapted to receive the correspondingly shaped lower portion 22 of the upper knife 2 which is thereby fixed to its operating link 6.

The lower knife 3, remaining stationary during operation of the cutting or trimming device, is also arranged in a dove-tail guide of the support 1. As shown in Fig. 2, the lower knife 3 has a slot 23 through which a screw 25 extends, serving to fix the lower knife as well as the throat-plate 24. The lower knife 3 may, on loosening of the screw 25, be adjusted according to the desired width of cutting or trimming.

A stripper mechanism 46 is, as shown in Figures 5 and 6, connected to the link 6, by means of a screw 47. Consequently, the stripper device 46 is compelled to perform the same movements as the upper knife 2, so that, with regard to the upper knife 2, it always assumes the most suitable position for stripping off.

As may be seen from Fig. 3, the projecting edge 48 of the stripper mechanism 46 is swingably arranged in a slot 49 of the throat-plate 24, so as to completely cover the free space between the lower surface of the throat-plate 24 and the cutting or trimming device. On top, the slot 49 is covered by the yieldable fold guide portion 50. A depression 51 of the end-cap 28 corresponds in

shape, as may also be seen from Fig. 3, to the shape of the swingable stripper device 46, whereby a perfect stripping off is always obtained and a dropping of trimmed off fabric portions into the gripper mechanism is prevented, thus obviating any troubles or disturbances.

What I claim is:

1. A trimming mechanism for sewing machines comprising in combination a support, a fixed lower knife mounted in said support, an upper knife adapted to be moved downwardly against said lower knife, an intermediate means comprising a shaft journalled in said support, a first link, a jaw provided at the free end of said first link, said jaw having a recess formed therein, a second jaw pivoted to said first mentioned jaw and forming in combination with said first jaw a dove-tail recess adapted to receive a correspondingly shaped lower portion of said upper knife, said second jaw having a recess formed therein, a screw for tightening said two jaws against each other to firmly clamp said upper knife in any adjusted operating position, a hub forming part of said first link and mounted on said shaft, a sleeve slidably arranged on said shaft, a spring adapted to act upon said hub surrounding said shaft and bearing with its ends against said hub and said sleeve, a second link pivotally connected to said first link and a lever pivotally connected to said second link and connected to a member forming part of the sewing machine mechanism.

2. A trimming mechanism for sewing machines comprising in combination a support, a fixed lower knife mounted in said support, an upper knife adapted to be moved downwardly against said lower knife, said lower knife being adjustably mounted in a dove-tail recess formed in said support, a throat-plate, a screw working in a slot formed in said lower knife serving to fix said lower knife after adjustment and simultaneously holding said throat-plate in position, and intermediate means comprising a shaft journalled in said support, a first link, a jaw provided at the free end of said first link, said jaw having a recess formed therein, a second jaw pivoted to said first mentioned jaw and forming in combination with said first jaw a dove-tail recess adapted to receive a correspondingly shaped lower portion of said upper knife, said second jaw having a recess formed therein, a screw for tightening said two jaws against each other to firmly clamp said upper knife in any adjusted operating position, a hub forming part of said first link and mounted on said shaft, a sleeve slidably arranged on said shaft, a spring adapted to act upon said hub surrounding said shaft and bearing with its ends against said hub and said sleeve, a second link pivotally connected to said first link, and a lever pivotally connected to said second link and connected to a member forming part of the sewing machine mechanism.

3. A trimming mechanism for sewing machines comprising in combination a support, a fixed lower knife mounted in said support, an upper knife adapted to be moved downwardly against said lower knife, said lower knife being adjustably mounted in a dove-tail recess formed in said support, a throat-plate, a screw working in a slot formed in said lower knife serving to fix said lower knife after adjustment and simultaneously holding said throat-plate in position, intermediate means comprising a shaft journalled in said support, a first link, a jaw provided at the free end of said first link, said jaw having a recess formed therein, a second jaw pivoted to said first mentioned jaw and forming in combination with said first jaw a dove-tail recess adapted to receive a correspondingly shaped lower portion of said upper knife, said second jaw having a recess formed therein, a screw for tightening said two jaws against each other to firmly clamp said upper knife in any adjusted operating position, a hub forming part of said first link and mounted on said shaft, a sleeve slidably arranged on said shaft, a spring adapted to act upon said hub surrounding said shaft and bearing with its ends against said hub and said sleeve, a second link pivotally connected to said first link and a lever pivotally connected to said second link and connected to a member forming part of the sewing machine mechanism, a screw, and a stripper mechanism for removing trimmed off fabric portions connected directly to said upper knife by said screw.

4. A trimming mechanism for sewing machines comprising in combination a support, a fixed lower knife mounted in said support, an upper knife adapted to be moved downwardly against said lower knife, said lower knife being adjustably mounted in a dove-tail recess formed in said support, a throat-plate, a screw working in a slot formed in said lower knife serving to fix said lower knife after adjustment and simultaneously holding said throat-plate in position, intermediate means comprising a shaft journalled in said support, a first link, a jaw provided at the free end of said first link, said jaw having a recess formed therein, a second jaw pivoted to said first mentioned jaw and forming in combination with said first jaw a dove-tail recess adapted to receive a correspondingly shaped lower portion of said upper knife, said second jaw having a recess formed therein, a screw for tightening said two jaws against each other to firmly clamp said upper knife in any adjusted operating position, a hub forming part of said first link and mounted on said shaft, a sleeve slidably arranged on said shaft, a spring adapted to act upon said hub surrounding said shaft and bearing with its ends against said hub and said sleeve, a second link pivotally connected to said first link and a lever pivotally connected to said second link and connected to a member forming part of the sewing machine mechanism, a screw, a stripper mechanism for removing trimmed off fabric portions connected directly to said upper knife by said screw and a projecting edge of said stripper mechanism swingably arranged in a slot of said throat-plate in such a manner as to completely cover the free space between said throat-plate and said trimming mechanism, and a resilient fold guide serving to cover said slot from above.

FRITZ EBERT.