United States Patent

[11] 3,550,545

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[54] **SEWING MACHINE CUTTER ATTACHMENT**
1 Claim, 4 Drawing Figs.

[52] **U.S. Cl.** **112/130**
[51] **Int. Cl.** **D05b 37/04**
[50] **Field of Search** ..... 112/129, 130, 122, 252; 83/(Inquired)

[56] **References Cited**

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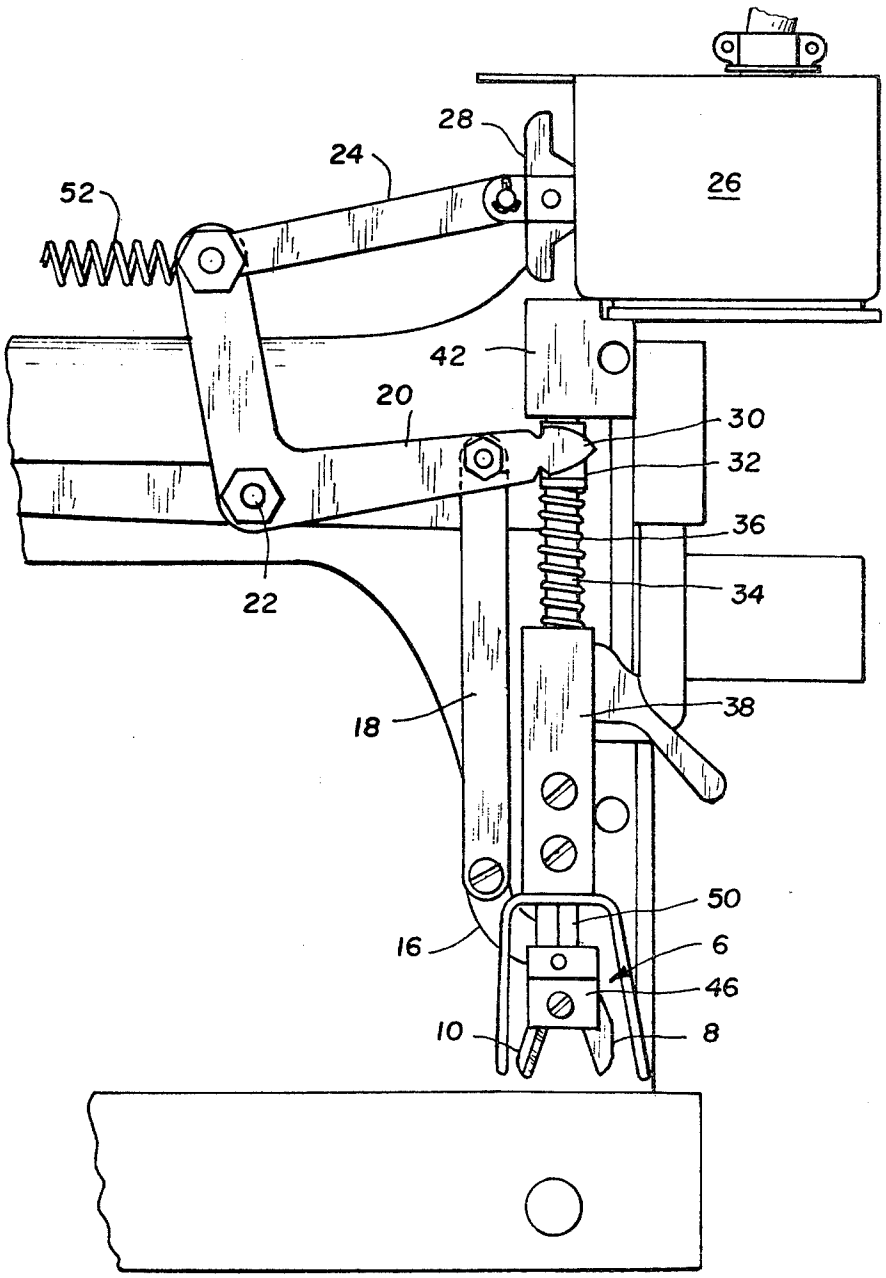
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ABSTRACT: Sewing machine cutter attachment for cutting cloth and comprising a pair of scissors movable vertically, downwardly onto the bed as the result of actuation of an electrical relay and thereafter operated when in the downward position for effectively cutting the cloth after completion of a sewing operation. Normally the scissors are held in an upward position well above the cloth.



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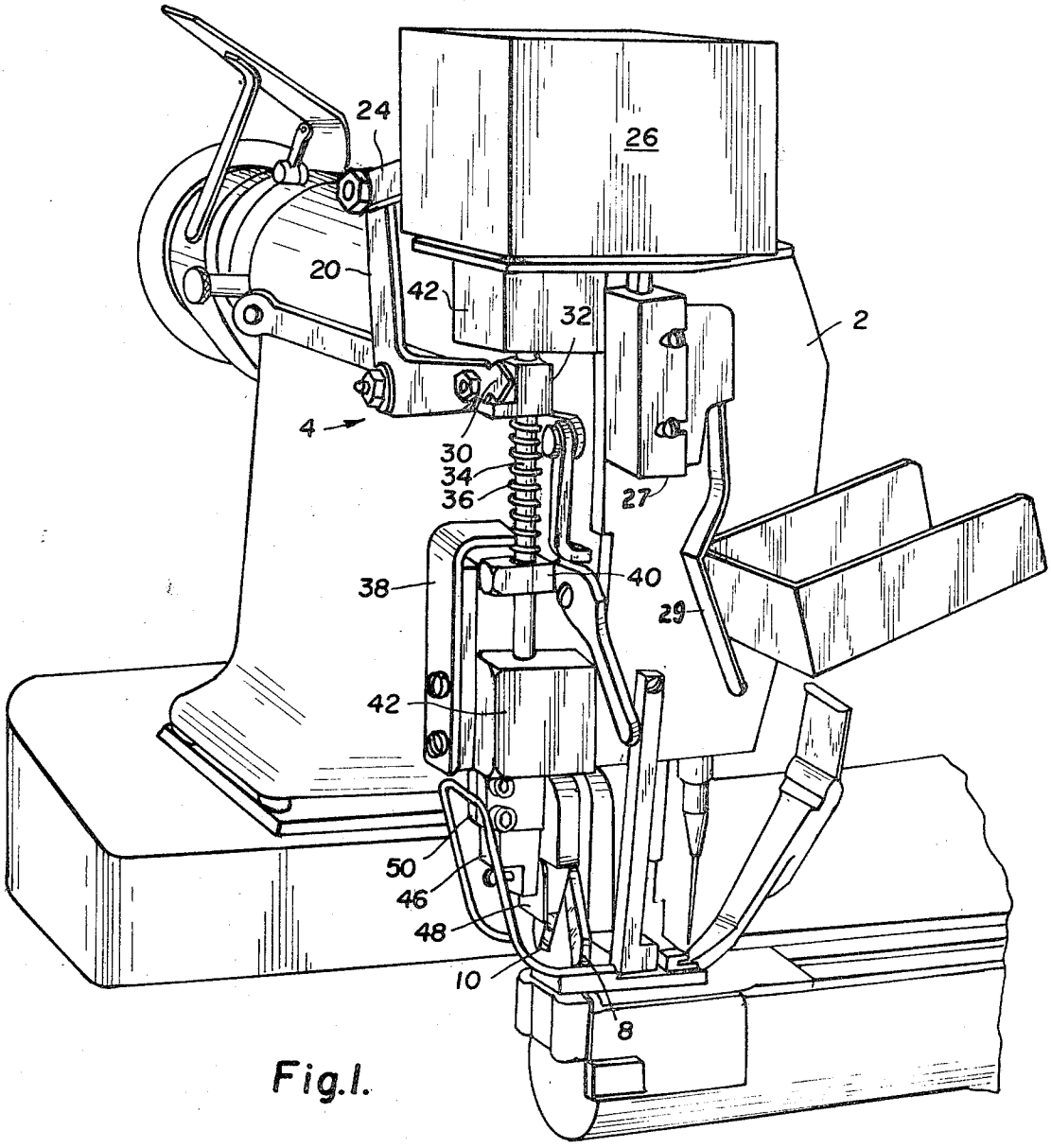


Fig. 1.

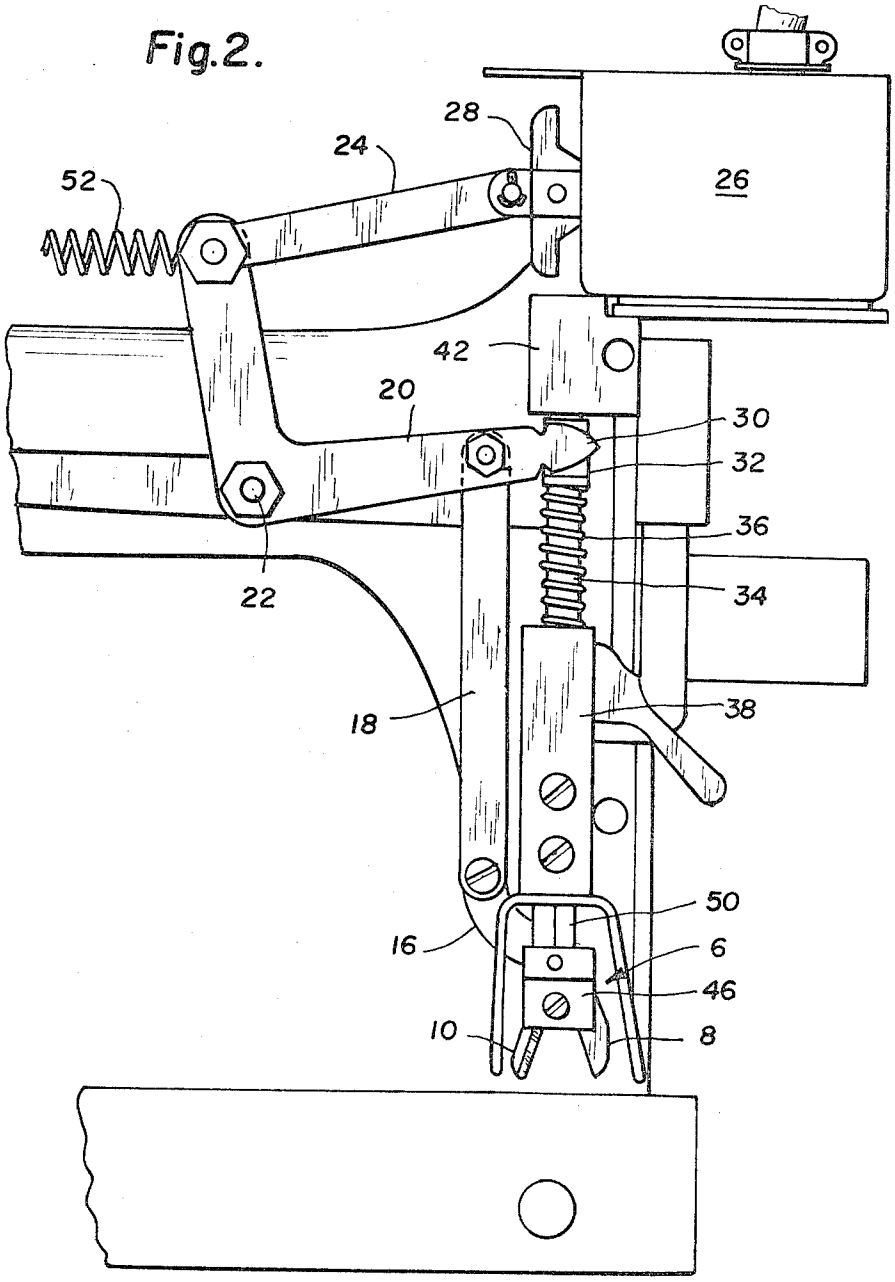
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Fig.2.



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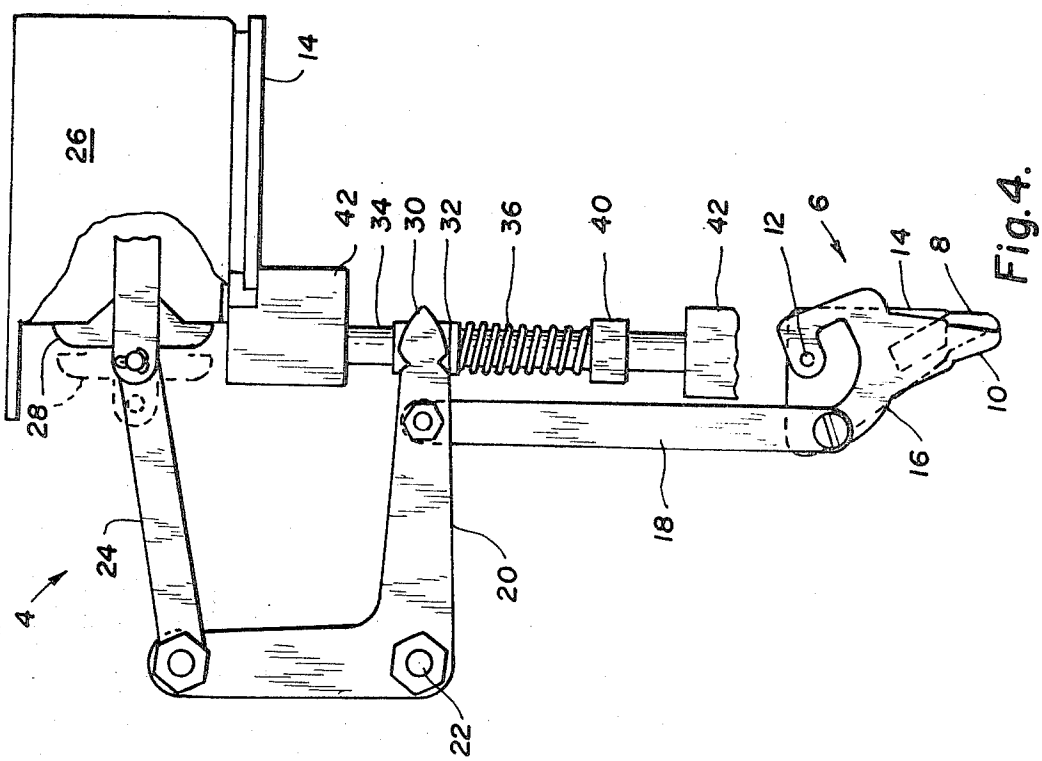


Fig. 4.

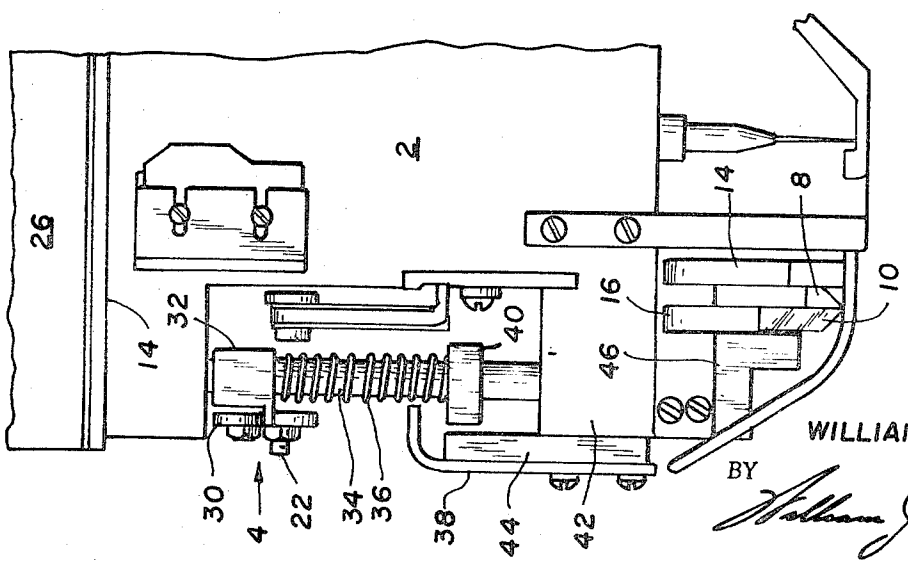


Fig. 3.

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SEWING MACHINE CUTTER ATTACHMENT

This invention relates generally to a sewing machine attachment and, more particularly, a cloth-cutting attachment operated by an electric relay.

An outstanding disadvantage of cutters for sewing machines, of known construction, is that they are not fully automatic in operation and generally include a guillotine type of cutter, which type requires a high degree of accuracy of the relatively movable shear blades, therefore, faulty operation often results since such accuracy is difficult to maintain as the result of vibration and other factors. Furthermore such cutters are dangerous to the sewing machine operators.

An object of the present invention is to provide a novel automatic, power actuated cutter attachment which is devoid of the above-named disadvantages and which is relatively safe in operation.

A more specific advantage of the invention is to provide a cutter attachment wherein scissorlike cutters are normally held at a high position in the machine above the cloth being sewn and upon completion of the sewing operation the cutter is automatically and quickly driven down into the bed wherein scissorlike cutters will cut the cloth with high efficiency and maximum safety.

Other objects and advantages will become more apparent from a study of the following description, taken with the accompanying drawings wherein:

FIG. **1** is a front, perspective view of a sewing machine equipped with an automatic cutter attachment embodying the principles of the present invention;

FIG. **2** is a front view of the cutter attachment and electrical operating means for operating the scissorlike cutter blades which are shown in the elevated, nonoperable position;

FIG. **3** is a side view of the attachment and operating means shown in FIGS. **1** and **2**; and

FIG. **4** is a front view of the relay-actuated cutter shown in the operated position while on the bed of the sewing machine.

Referring more particularly to FIG. **1** of the drawing, numeral **2** denotes a sewing machine base or sideplate on which is mounted a cloth-cutting, power-actuated assembly generally denoted by numeral **4** and comprising a shaft **34** vertically movable by an activating block **32** slidably mounted on shaft **34**. A shaft steadying block **40** surrounds and is rigidly connected to the lower portion of shaft **34** which is surrounded by a shaft steady block slide **44**. A shear stop **38** is attached to block slide **44**. Pressure block **46** supports a blade pressure spring **48**.

The cutter attachment is scissorslike and comprises a fixed blade holder **14** and a swingable or pivotal blade holder **16**. Fixed blade holder **14** supports stationary blade **8** while the swing blade holder supports the pivotal or swing blade **10**.

A blade holder block **50** supports the blade pressure block **46** for applying the pressure of spring **48** to blade **10**.

Power-operating means includes a solenoid contained within cover **26** and comprising a solenoid core having mounted thereon a solenoid bracket **28** (see FIG. **4**) connected to the solenoid connecting link **24** which is pivotally connected at **22** so that the knife moving arm **20** will vertically move connecting link **18** which is pivotally connected to the swing knife blade holder **16** to effect a scissorlike cut of blade **10** relative to stationary blade holder **14** and stationary knife **8**.

The operation of the fixed blade holder **14** and the swing blade holder **16** is substantially as follows:

Solenoid **26** activates the solenoid connecting link **24**, pivotally moving the end **30** of arm **20** downwardly against block **32** which puts pressure on shaft **34** through the spring **36** on block **40** which is rigidly secured to shaft **34**.

When shaft **34** moves down into cutting position and stops by engaging stop block **42**, the knife moving arm **20** continues to move down through connection **18** which moves the swing blade holder **16** and blade **10**. This blade **10** crosses the blade **8** as in a pair of scissors to effect the cutting action of the cloth.

Upon completion of the cutting action of the cloth the solenoid is deenergized thereby enabling the return spring **52** (see FIG. **2**) to retract bracket **28** and the solenoid core thus effecting a pivotal lifting movement of arm **20** to reduce the compression of spring **36**. Shaft **34** will then be lifted until it is limited from further movement by engaging stop **38**.

A suitable limit switch is provided so that upon completion of the cutting operation, the solenoid will become deenergized and allow the return spring **52** to restore the various parts to their initial position as shown in FIG. **2**. Then when another piece of cloth is to be cut, a switch will be closed to complete the solenoid-energizing circuit so as to repeat the cutting operation.

The solenoid switch is contained in an enclosure **27** and is operated by a switch operating arm **29** so that when the operator desires to cut the cloth, he will push against arm **29** in the left direction, as viewed in FIG. **1**, to complete the solenoid circuit and effect cutting operation.

Thus it will be seen that I have provided an efficient, automatically operable cutting attachment for a sewing machine, which attachment includes a scissorlike cutter which is vertically movable so that the entire scissorlike construction is moved into the bed before scissor cutting is effected, thus providing not only a high efficient scissors cutting action, but affording a maximum degree of safety for the operator.

While I; have illustrated and described a single specific embodiment of my invention, it will be understood that this is by way of illustration only and that various changes and modifications may be made within the contemplation of my invention and within the scope of the following claims.

I claim:

1. A cutter attachment for a sewing machine having a bed along which sewn cloth is fed in readiness for cutting, a vertically movable cutter in the form of a pair of scissors which is movable downwardly adjacent the upper surface of the bed prior to operation thereof, and electrical operating means comprising a solenoid and linkage means operated by said solenoid for vertically moving said cutter and effecting said scissorlike movement when adjacent said bed, and return spring-operated means for returning the scissors to an open position above said bed, said electrical operating means also including vertical shaft having a stop element thereon on which is seated the lower end of a spring which surrounds said shaft, a slidable element surrounding said shaft and resting on top of the other end of said spring, said linkage means operating to depress said spring together with said stop element to move said shaft downwardly upon energization of said solenoid.