Sept. 2, 1958 J. P. ENOS 2,849,973

CLOTH HOLDING DEVICES FOR SEWING MACHINE WORK JOGGING ATTACHMENTS

Filed June 1, 1956

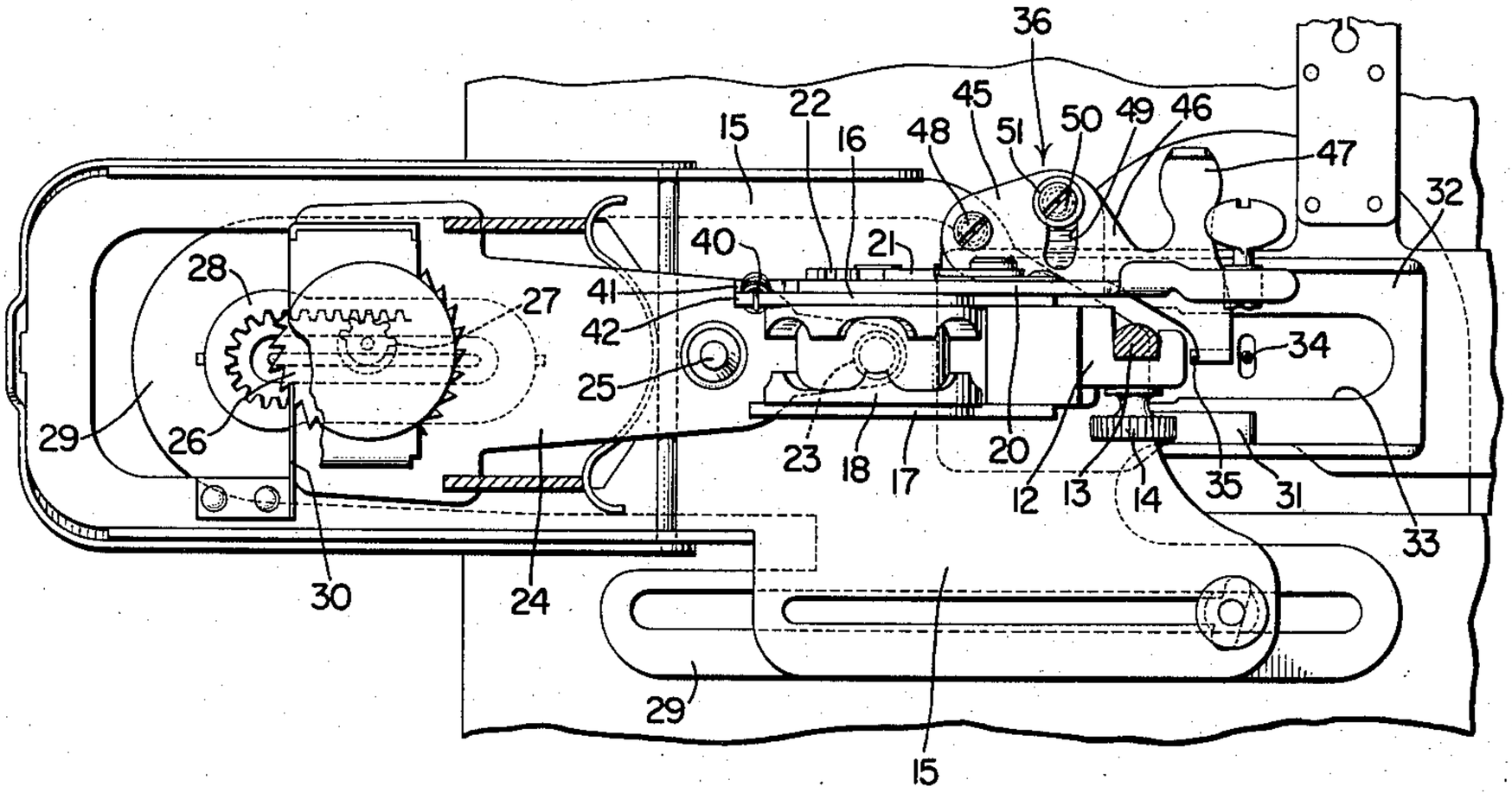

Fig. 1

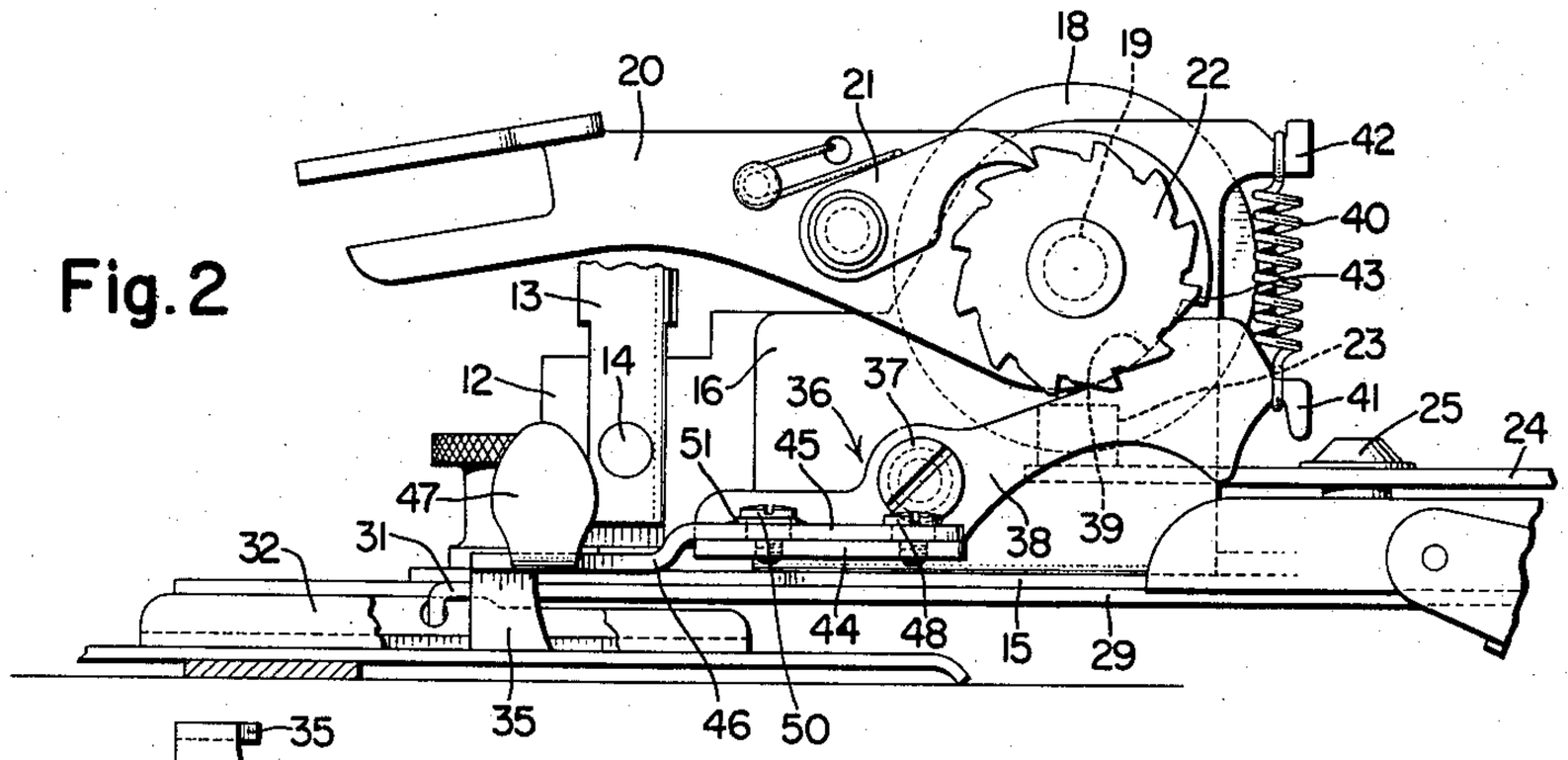

Fig. 2

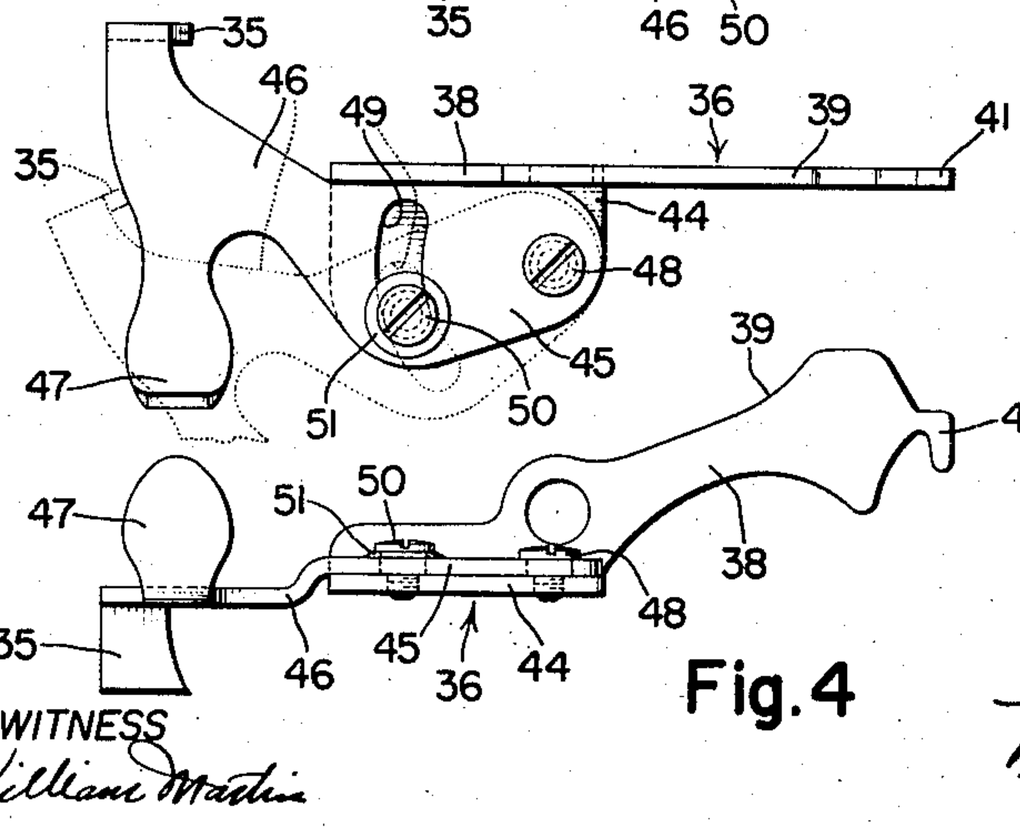

Fig. 3

Fig. 4

WITNESS

William Martin

INVENTOR.

John P. Enos

BY

Marshall J. Breen

ATTORNEY

United States Patent Office

2,849,973

Patented Sept. 2, 1958

2,849,973

CLOTH HOLDING DEVICES FOR SEWING MACHINE WORK JOGGING ATTACHMENTS

John P. Enos, Union, N. J., assignor to The Singer Manufacturing Company, Elizabeth, N. J., a corporation of New Jersey

Application June 1, 1956, Serial No. 588,668

3 Claims. (Cl. 112—77)

This invention relates to work jogging attachments for a sewing machine, and more particularly, to cloth holding devices therefor adapted to prevent flagging of the cloth under the action of the reciprocating sewing machine needle.

It will be understood that the work engaging member of a work jogging attachment must be provided with an opening exposing an area of fabric sufficiently extensive to accommodate the largest group of stitches which the attachment is capable of producing. The fabric within this exposed area being supported only at the edges, is susceptible to "flagging," an undesirable condition in which the fabric being stitched rises and falls in response to penetration and withdrawal of the reciprocatory needle.

It is an object of this invention to provide in a work jogging attachment, a cloth holding device operative during penetration and withdrawal of the sewing machine needle to engage the fabrics within the opening of the work engaging member of the attachment and adjacent to the sewing machine needle to strip the farbrics from the needle and thus to prevent flagging of the work.

In those instances in which the work being stitched with a work jogging attachment comprises a single ply or a number of superposed plies of fabric such as in plain buttonholing or in decorative stitching, the presence of a cloth holding device presents little problem as concerns manipulation of the fabrics into proper position beneath the work jogging attachment. Most work attachments, however, may be used on occasion to apply stitching to relatively small pieces of fabric or other material and on these occasions, manipulation of the work into proper orientation beneath the work engaging member of the attachment would be impeded by the presence of the cloth holding device. Reference is made to my U. S. Patent No. 2,669,202, Feb. 16, 1954, which discloses a buttonhole attachment capable of providing parallel straight line tacks of stitches especially suitable for the stitching of bound or piped buttonhole openings. In stitching a bound buttonhole by the method illustrated in my above mentioned patent, the garment fabric as well as a small patch of piping material must be arranged properly beneath the attachment. Using other known methods of bound buttonhole production, small folded strips of piping material must be arranged carefully beneath the work engaging foot of the attachment. When bound buttonholing or similar operations are to be performed with a buttonhole attachment, cloth holding devices of the type presently known in the art make introduction of the work into the attachment extremely difficult.

It is an object of this invention to provide a cloth holding device for a work jogging attachment which may be shifted readily into an inoperative position out of register with the opening in the work engaging foot of the attachment to facilitate loading of the work fabrics.

With the above and other objects in view which will hereinafter appear, this invention comprises the devices,

combinations, and arrangements of parts hereinafter described and illustrated in the accompanying drawings of a preferred embodiment in which:

Fig. 1 represents a top plan view partly in vertical cross section of a buttonhole stitching attachment having the cloth holding device of this invention applied thereto,

Fig. 2 represents an enlarged side elevational view of a portion of the buttonhole attachment of Fig. 1,

Fig. 3 represents a top plan view of the cloth holding device, and

Fig. 4 represents a side elevational view of the cloth holding device.

Referring to the drawings, this invention is applied to a buttonhole attachment comprising a frame formed with a socket **12** adapted to embrace the presser bar **13** of a sewing machine. The attachment frame is secured to the sewing machine presser bar by a thumb screw **14**. The attachment frame also includes a flat base plate **15** from which rises spaced upstanding lugs **16, 17**. A barrel cam **18** fast on a shaft **19** journaled between the frame lugs **16, 17** is rotated in step by step increments by a needle bar actuated lever **20** journaled on the shaft **19** and carrying a spring loaded pawl **21** cooperating with a ratchet wheel **22** fast on the shaft **19**. The barrel cam **18** is tracked by a follower roller **23** carried on a lever **24** pivoted at **25** to the frame base **15**. Rotatably journaled in the lever **24** is a ratchet wheel **26** secured for rotation with a pinion **27** which meshes with a closed pattern rack **28** fitted into a plate **29** slidably pivoted beneath the attachment frame. A spring finger **30** fast on the base plate of the frame cooperates with the ratchet wheel **26** to impart step by step rotary motion to the pinion **27** thus causing the pinion to track the pattern rack **28**. A compound motion is thus imparted to the plate **29** by the pinion **27** and comprises oscillatory motion transversely of the attachment frame as a result of the oscillatory motion of the pinion, and movement longitudinally of the attachment frame because of the tracking of the pattern rack by the pinion.

At the forward extremity, the plate **29** is formed with downturned fingers **31** pivotally secured to a work engaging foot **32** which is apertured, as at **33**, to expose an area corresponding to the largest size buttonhole tack which the attachment is capable of producing.

The sewing machine needle, indicated in cross section at **34** in Fig. 1, penetrates the work fabrics within the aperture **33** of the work engaging foot. To prevent flagging of the work fabrics in the aperture **33**, a cloth holding finger **35** is provided, the finger being disposed when in operative position immediately behind the path of reciprocation of the needle **34**.

As illustrated in Fig. 2, the cloth holding finger **35** is carried by a lever, indicated generally as **36**, which lever includes two pivotally articulated portions as will be described hereinbelow. Considered generally, however, the lever **36** is carried on a fulcrum pin **37** which is fast in the upstanding lug **16** of the attachment frame beneath the needle bar actuated lever **20** and defines a horizontal axis of turning movement of the lever with respect to the frame.

Referring to Figs. 3 and 4, the articulated lever **36** comprises a vertically disposed member or portion **38** which embraces the fulcrum pin **37** and is formed with an arcuate surface **39** maintained in engagement with the needle bar actuated lever **20**, as shown in Fig. 2, by means of a coil spring **40** extending between the extremity **41** of the vertically disposed portion **38** of the lever and an arm **42** extending from the upstanding lug **16** of the attachment frame. The needle bar actuated lever **20** is formed with a cam projection **43** operative when the needle bar actuated lever **20** is raised to engage and depress the member **38** of the cloth holding lever **36,**

thus raising the cloth holding finger **35** free of the work. Since feeding or jogging of the work fabrics by the work engaging foot **32** is timed to occur only while the needle is raised clear of the fabrics, the cam projection **43** will raise the cloth holding finger **35** during these feeding periods so that work feeding movements will not be impeded thereby.

The vertically disposed member **38** of the lever **36** is formed with a horizontally offset portion **44** disposed to underlie a horizontal arm **45** of a second member or portion **46** of the articulated lever which carries not only the cloth holding finger **35** but also an upturned arm **47** constituting an operator influenced handle. The horizontal arm **45** is pivotally secured to the horizontally offset portion **44** by a pivot screw **48** defining a vertical axis for turning movement of member **46** with respect to member **38**. The arm **45** is also provided with an arcuate guide slot **49** which slidably accommodates a guide screw **50** fast on the offset portion **44** thus to provide interengaging stop means on said articulated members defining two extreme positions of relative angular adjustment therebetween. A flexible dished washer **51** confined between the head of the guide screw and the arm **44** provides frictional resistance against accidental turning of the member **46** with respect to the member **38**.

The screw **48** thus provides the axis of pivotal articulation between the portions **38** and **46** of the lever **36**. Since the fulcrum pin **37** provides a turning axis for the lever **36** which turning axis is perpendicular to a plane containing the axis of pivotal articulation of the two portions **38** and **46** of the lever **36**, turning movements imparted to the portion **38** by the needle bar actuated lever **20** about the axis of the fulcrum pin **37** will be transmitted to the cloth holding finger as though the lever **36** were made in one piece; that is, the pivotal articulation of the lever portions **38** and **46** will not affect the normal operation of the cloth holding device.

Using the upturned arm **47** as a handle, the operator may at will turn the member **46** outwardly into a throw out position, as illustrated in dotted lines in Fig. 3, in which the cloth holding finger **35** will be disposed at one side of the opening **33** in the work holding foot **32** of the attachment. The work may then be manipulated without interference beneath the work holding foot and when properly oriented the cloth holding finger may be returned to operative position within the opening **33** by means of the arm **47**, thus readying the attachment for sewing.

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

1. An attachment for a sewing machine having an endwise reciprocating needle bar and a substantially flat work support, said attachment comprising, a frame, a work engaging foot slidably pivoted to said frame, needle bar actuated work jogging mechanism carried by said frame and operatively connected to said work engaging foot, a cloth holding lever including two portions, means pivotally interconnecting said two lever portions on an axis disposed substantially perpendicular to said work support, means defining a fulcrum for turning movement of one of the portions of said cloth holding lever with respect to said frame on an axis substantially parallel to said flat work support, a cloth engaging finger carried by other of said portions of the cloth holding lever, and means on said work jogging mechanism to engage said cloth holding lever to move said cloth engaging finger toward and away from said work support.

2. An attachment for a sewing machine having a reciprocating needle bar and a substantially flat work support, said attachment comprising, a frame, a work engaging foot slidably pivoted to said frame and formed with an opening adapted to expose an area of fabric to be stitched, needle bar actuated work jogging mechanism carried by said frame and operably connected to said work engaging foot, a cloth holding lever including two portions, means pivotally interconnecting said two lever portions on an axis disposed substantially perpendicular to said work support, a cloth engaging finger formed on one of the portions of said articulated lever, means defining a fulcrum for turning movement of the other portion of said articulated lever with respect to said frame on an axis perpendicular to a plane containing the axis of pivotal articulation of said lever portions, means on said work jogging mechanism to engage the fulcrumed portion of said lever to move said cloth engaging finger toward and away from said work support, and interengaging stop means carried by said articulated lever portions defining extreme positions of angular adjustment therebetween, said cloth engaging finger being disposed within the opening in said work engaging foot in one extreme position of relative angular adjustment of said lever portions.

3. An attachment for a sewing machine having a reciprocating needle bar and a substantially flat work support, said attachment comprising, a frame, a fork arm pivoted thereon adapted for connection with the needle bar, an articulated cloth holding lever including two members pivotally interconnected for relative turning movement about an axis substantially perpendicular to said work support, means pivotally securing a first of said members to said frame on an axis disposed substantially parallel to said flat work support and forwardly of the pivotal axis of said fork arm, the second of said members having a cloth engaging finger at its forward end, said first of said lever members extending rearwardly below the pivot of said fork arm, and cam means on the latter to engage the first of the members of said lever to move said cloth engaging finger upwardly.

References Cited in the file of this patent

UNITED STATES PATENTS

896,949	Stevens	Aug. 25, 1908
2,547,925	Connors	Apr. 10, 1951
2,652,796	Russell	Sept. 22, 1953