

Oct. 16, 1923.

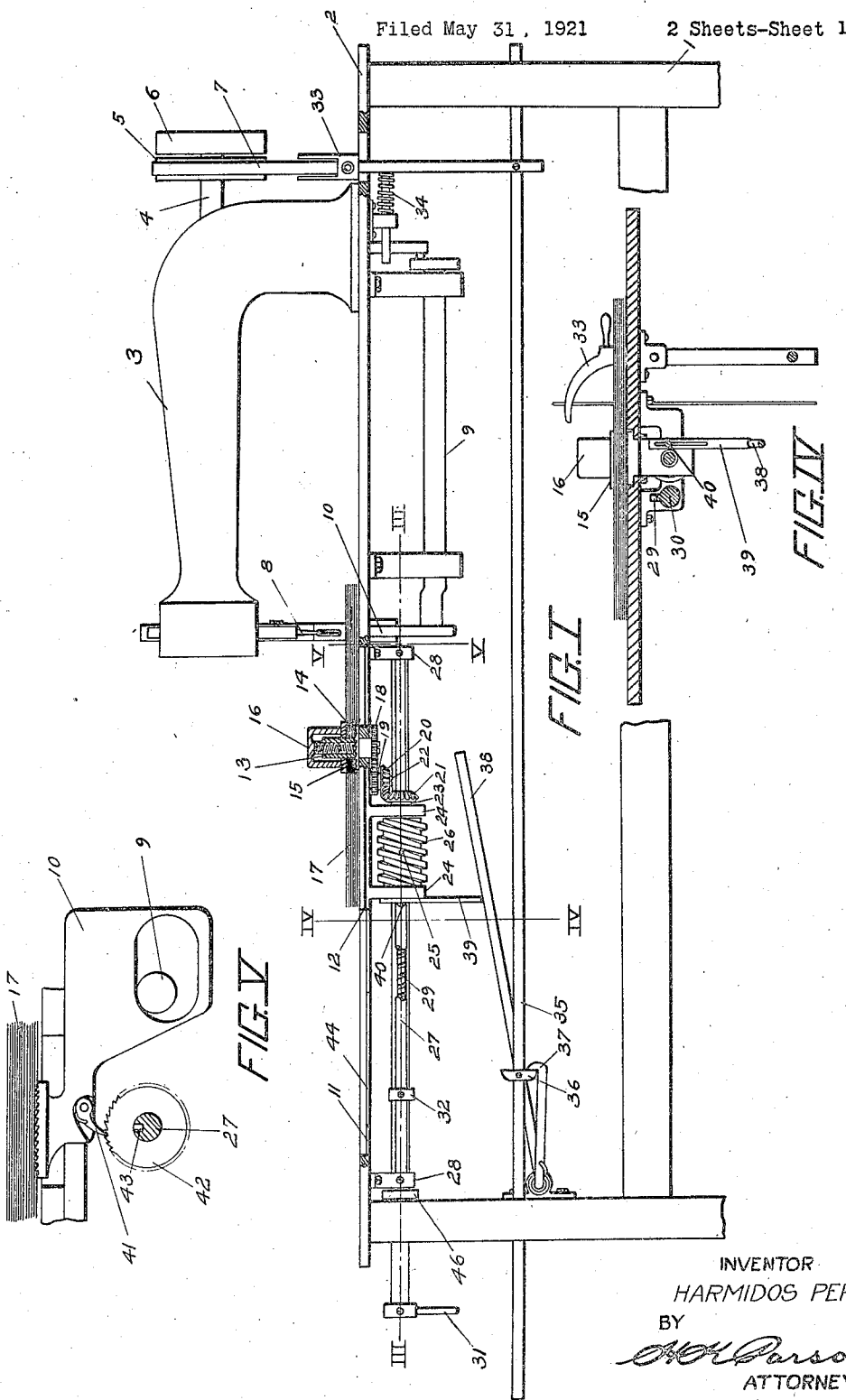
1,470,932

H. PERRAS

SEWING MACHINE

Filed May 31, 1921

2 Sheets-Sheet 1



INVENTOR

HARMIDOS PERRAS

BY

W. H. Parsons
ATTORNEY

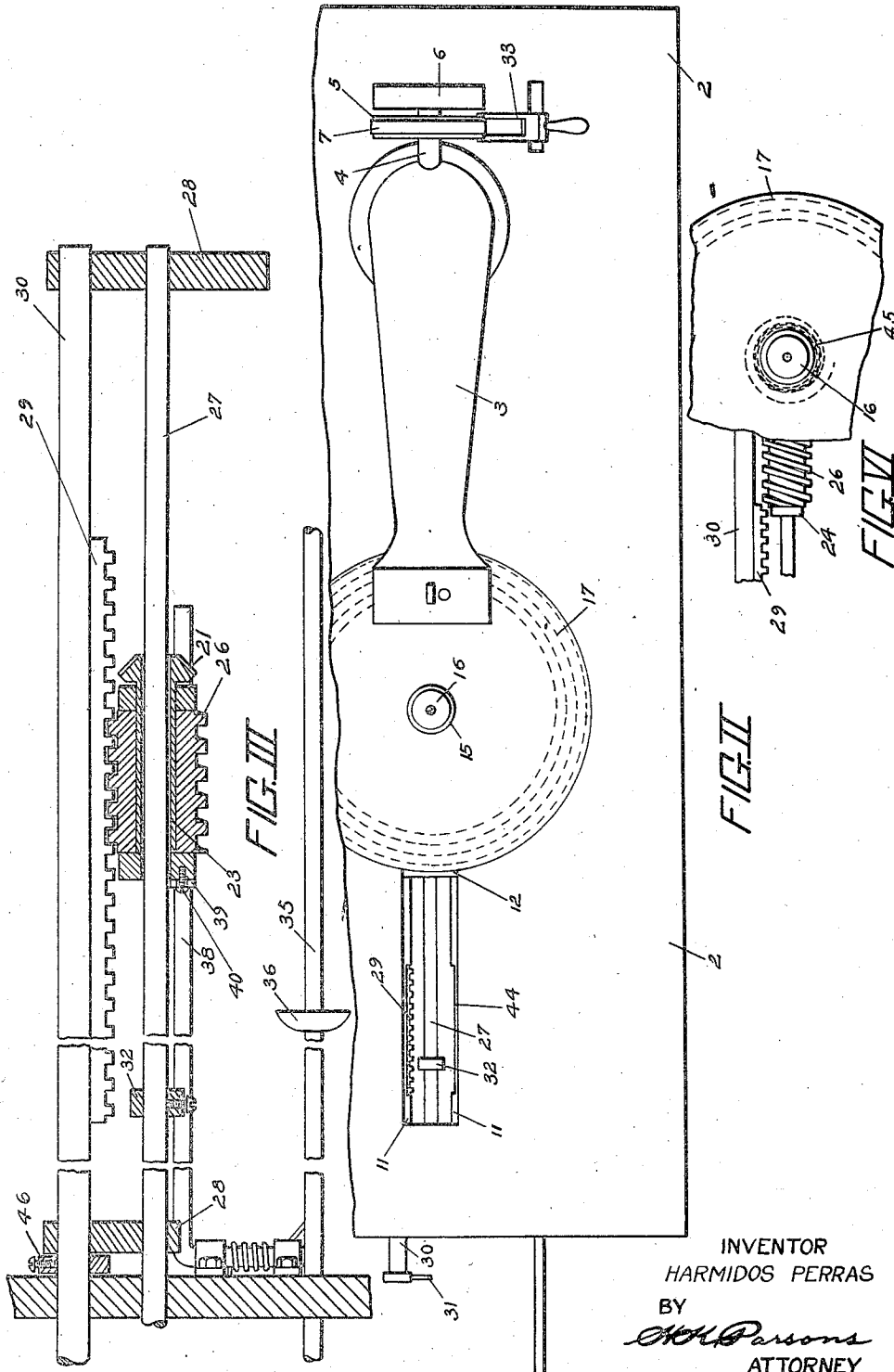
Oct. 16, 1923.

1,470,932

H. PERRAS
SEWING MACHINE

Filed May 31 , 1921

2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE.

HARMIDOS PERRAS, OF DAYVILLE, CONNECTICUT.

SEWING MACHINE.

Application filed May 31, 1921. Serial No. 474,041.

To all whom it may concern:

Be it known that I, HARMIDOS PERRAS, a citizen of the United States, residing at Dayville, in the county of Windham and State of Connecticut, have invented certain new and useful Improvements in Sewing Machines, of which the following is a specification.

This invention relates to improvements in sewing machines and has particular reference to machines intended for use in the stitching of buffing wheels or similar structures in which it is desired to unite members by stitching them in a plurality of rows substantially circular in form to tightly bind them into a substantially solid body.

One of the principal objects of the present invention is the provision in a machine of the general character set forth of novel and improved mechanism for automatically controlling the feed or movement of the work during the switching operation.

A further object of the invention is the provision of a device of this character which while operated by the machine head is entirely independent thereof and capable of use with any standard type of sewing machine.

Another object of the invention is the provision of a buff wheel guiding and shifting attachment for sewing machines which shall be rigid and substantial in construction, in which undue play of the parts shall be eliminated and the wheel positively and continuously fed in a decreasing convolute or spiral path but in which friction is reduced to a minimum so that very little power is required for the proper operation thereof.

Other objects and advantages of my improved construction should be readily apparent by reference to the following specification taken in connection with the accompanying drawings, and it will be understood that I may make any modifications in the specific details of construction shown and described within the scope of the appended claims without departing from or exceeding the spirit of my invention.

Figure I represents a front view of a machine equipped with my improvements, parts being broken away.

Figure II represents a plan view thereof.

Figure III represents an enlarged sectional view as on the line III—III of Figure I.

Figure IV represents a sectional view on the line IV—IV of Figure I, and,

Figure V represents a section as on the line V—V of Figure I illustrating a positive drive for the feed mechanism.

Figure VI represents a fragmentary view illustrating an adjustment of the mechanism for finish-stitching of the center of the wheel.

In the drawings, in which similar characters of reference are employed to denote corresponding parts throughout the several views, the numeral 1 designates the legs or supports for the bed 2 which serves to support any suitable type of sewing machine for use in connection with my improved buffer wheel feeding mechanism. As the structure of the sewing machine itself forms no part of the present invention I have only semi-diagrammatically illustrated the same as comprising the head 3 carrying the driven shaft 4 provided with the tight pulley 5 and loose pulley 6 over which the belt 7 is selectively shifted to control the operation of the head. Said head is further provided with the usual needle 8 suitably operated and with the feed mechanism 9 operating the pusher foot 10 intended to feed the work along under the needle.

My improvement is adapted for use in connection with any standard machine of this type and consists of mechanism for holding an assembled buffing wheel or the like consisting of a number of fabric layers intended to be united by spiral or circular rows of stitching, the purpose of my invention as previously set forth being to so hold the fabric that it will be automatically advanced as the machine is operated to cause the stitching to be in the form of a convolute or spiral constantly decreasing in size from edge substantially to the center of the wheel.

In the accomplishment of this result I form on the bed 2 the guide-ways 11 suitably undercut so that the slide 12 will lie with its upper face flush with that of the bed. This slide carries the rotatable sleeve or bushing having the toothed or ratchet portion 14 to receive and grip the buff wheel 17 held in place as by the washer 15 and clamp nut or member 16. On its other end below the slide 12 the sleeve has the gear 18 in mesh with the spur pinion 19 having the second bevel or mitre gear portion 20

meshing with the second mitre gear 21, the combined spur and mitre gear member being rotatably mounted on the stud 22 depending from the slide 12.

5 The gear 21 is secured on the sleeve 23 which is rotatable in the depending lugs or hangers 24 of the slide 12, having exteriorly secured thereon as by the set screw 25 the worm 26 and interiorly receiving the guide
10 rod 27 on which it slides. This guide rod is one of the important features of the present invention, in that by its use it is possible to insure firm and steady supporting of the slide and associated parts and
15 eliminate all possibility of binding or the like so that a minimum of power is required to properly operate the feed, making it thoroughly feasible to depend on the normal action of the ordinary feed of the sewing
20 machine to cause the spiral advance of the material to be stitched. This rod in the form illustrated in Figure I for example is rigidly secured to the underside of the bed as in the hangers 28, altho it is to be under-
25 stood that as hereinafter described in connection with Figure V it may be rotatable if preferred.

In any event, however, the sleeve 23 is what may be termed a loose or sloppy fit
30 on the rod or shaft so that it may slide freely therealong without binding. This sliding action is caused by the engagement of the worm 26 with the rack 29 carried by the rotatable rod 30 also preferably mounted
35 in the hangers 28 and capable of being rocked by the handle 31 to throw it down into engagement with the worm as shown in Figure III or into raised and disengaging position as shown in Figure IV. In the
40 latter case, the slide may be freely shifted into any desired position on the bed, except as limited by the adjustable stop collar 32 on the rod 27.

In operation, the machine is set up with
45 the rack raised and the slide so shifted as to bring the edge of the buff wheel 17 in proper relation to the needle 8 for the first row of the stitching. This position having been determined the collar 32 is adjusted
50 and secured in proper position on the rod 27 to serve as a stop against which the slide is to be brought when starting on other similar wheels. The member 30 is then
55 rocked to bring the rack and worm in mesh and the belt shifter 33 moved to throw the belt 5 onto the fixed pulley of the machine to start it into operation. As the machine operates, the rearward movement of the wheel caused by the normal action of the
60 feed 10 on account of the pivotal mounting of the wheel on the slide 12 will turn the supporting sleeve and thus through the gearing the worm 26, which is shown as having a left hand thread. The rotation of the
65 worm will on account of its engagement

with the rack feed the slide forward, the slide moving on the bed 2 but being steadied and guided by the rigid rod or shaft 27 with which the sleeve 23 has a loose sliding engagement. The result is that the
70 stitching of the wheel will be in the form of a spiral, the ratio of the gearing controlling the distance between the adjacent rows of stitching.

To automatically stop the operation of
75 the machine when the wheel is completed, I make use of a suitable automatic control such as the spring 34 tending to throw the belt shifter toward the loose pulley 6, a suitable slide frame 35 having a latch portion
80 36 engaged by the keeper 37 normally holding the shifter in place against the pressure of the spring. This keeper, however, is formed with the release arm 38 engaged by
85 the trip 39 on the hanger or bracket 24 of the slide 12. This trip is secured in adjusted position as by the screw 40 so that it will trip or shift the arm 38 to unlatch the
90 keeper 37 as the wheel reaches its inner limit of movement and so through the shifting of the belt, stop the operation of the machine when the slide can be manually shifted back
95 against the stop 32, the completed wheel removed and the parts be in position to start stitching a new one.

While I have particularly described my invention as operating merely by the turning movement imparted to the buff wheel by the feed of the sewing machine, it is to be
100 understood that my device can be used with a positive drive without material modification. In this event, as shown in Figure V it is merely necessary to attach to the feeding foot 10 a pawl or the like 41 co-operating
105 with the ratchet 42 secured on the rod or shaft 27 which is then rotatably held in its bearings against axial movement, while the worm mechanism is keyed in the groove 43, being driven around by the slow turning of
110 the rod but sliding along it and rotating with the wheel as before, the difference being that the worm then drives the wheel in place of the wheel turning the worm.

From the foregoing description taken in connection with the accompanying drawings
115 the construction and operation of my improved mechanism should be readily understood and it will be seen that I have provided a new and desirable buff wheel feeding device which may be either driven by the
120 turning of the wheel itself or positively driven, in which a satisfactory means is provided for steadying the feed slide and insuring its proper movement without
125 binding or wobbling, in which the several parts are so mounted and secured as to be readily accessible for adjustment and so held as to be readily removed and replaced as required. It will be further noted that
130 the arrangement of the gearing is such that

the buff wheel may be fed with its center right up to the needle without the gearing in any way interfering with the feed 10 or other parts, and also that I have provided an improved machine in which the only
5 attention required is the removal and replacement of the work pieces, both the feed of the work through the machine and the stopping of the machine at the completion
10 of the stitching operation being automatic, and a device which is not dependent on a particular make of machine but which is capable of use with any type of sewing machine so long as it is mounted on a bed
15 adapted to carry the attachment.

I would call especial attention to the removability of the parts of the machine and to the fact that to change the entire slide it is only necessary to loosen and slide out
20 the rod 27 when the remainder of the parts can be lifted out through the enlarged portion 44 of the guideway 11 and a new slide put in place.

A further point of advantage in connection with my improvement resides in the fact that it may if preferred be used to place one or more circular rows at the center of the wheel automatically. If desired to perform
25 this operation automatically the stop is raised into inoperative position and the rack 29 set as shown in Figure VI so that the worm will run off the end of the rack and hold the wheel over into center position to form the stitching at the center there illustrated. This adjustment of the rack is
30 controlled by the collar 46 on the rack bearing rod 30, the collar being locked in adjusted position by a suitable set screw. This adjustment makes it possible for the
35 rack to be set in so that the slide will be fed forward till the stop operates to stop the entire machine or may be shifted toward the left so that the worm will run off the
40 rack and the wheel continue stitching till the operator stops the machine, or the stop may be employed in the later form when the stop will be set to operate as the rack and worm are just moving out of engagement,
45 in this instance the disengagement of the drive of the slide preventing any possibility of the wheel clamp and parts being forced under the needle of the machine and breaking any of the parts in the event that
50 the stop is not correctly set or for any reason fails to properly function. Should this happen the wheel being stitched would simply rotate and form the center circular stitching 45.

I claim:

1. In a device of the character described, the combination with a bed, of a slide movable thereover, feed mechanism on the slide,
55 and a rod rotatably secured to the bed adjacent the slide mechanism and having a rack portion at one side, whereby rotation of the

rod will move the rack into and out of engagement with the feed mechanism.

2. In a device of the character described, a buff wheel supporting slide having a bracket portion, a hollow worm rotatably
60 secured to the bracket, and a guide rod secured adjacent the slide and passing through the worm to form a guide for the slide in its movement.

3. A buff wheel stitching attachment for
65 sewing machines, including a slide having a buff wheel support and a hollow worm, gearing connecting the support and worm for simultaneous rotation thereof, and a guide member for the parts slidably engaged in
70 the worm.

4. A buff wheel stitcher, including a stitching machine having a head and a work feed mechanism for engaging the wheel, a bed supporting the head having a slideway
75 formed therein, a slide mounted therein, a rotatable buff wheel support carried by the slide, a feed worm also carried by the slide, gearing connecting the support and worm for simultaneous rotation, whereby as the
80 buff wheel is turned through the action of the work feed mechanism the worm will be turned, and a rack carried by the bed and movable into and out of engagement with the worm to control the feed of the slide on
85 rotation of the worm.

5. A buff wheel stitcher including a stitching machine having a head and a work feed mechanism for engaging the wheel, a bed supporting the head having a slideway
90 formed therein, a slide mounted on the slideway having depending brackets, a hollow worm carried by the brackets, a rotatable buff wheel support on the slide, gearing connecting the support and worm, and a guide rod
95 carried by the bed and passing through the worm to hold the slide in place.

6. A buff wheel stitcher including a stitching machine having a head and a work feed mechanism, a bed supporting the head, a slide movable on the bed, said slide having
100 a depending bracket portion, feed mechanism carried by the bracket, a rotatable work support on the slide, driving connections between the feed mechanism and the work
105 support, and a steadying member for the slide carried by the bed and engaging the bracket.

7. A device of the character described, including a support, a slide movable thereon,
110 a guide rod for the slide, and an adjustable stop mounted on the rod for limiting the movement of the slide in one direction.

8. A device of the character described, including a stitching head, a support therefor,
115 a slide on the support movable toward and from the head, adjustable means for limiting the movement of the slide in one direction, and additional means for stopping said movement when the slide has reached a pre-
120

determined position in the opposite direction.

9. In a device of the character described, the combination with a support, of a slide movable thereon having depending brackets, a rotatable work support on the slide, a sleeve rotatably supported by the brackets and having a worm portion and a gear portion, driving connections between the work support and the gear on the sleeve, and a guide rod slidably engaged in the sleeve and secured to the support to retain the slide in proper relation thereto.

10. In a device of the character described, the combination with a support, of a slide movable thereon having depending brackets,

a rotatable work support on the slide, a sleeve having a worm portion and a gear portion, said sleeve being rotatably supported by the brackets, a guide rod slidably fitting within the sleeve and secured to the support to retain the slide in proper relation to the support, and an adjustable stop on the rod for limiting the movement of the slide in one direction.

In testimony whereof I have affixed my signature, in presence of two witnesses.

HARMIDOS PERRAS.

Witnesses:

LOUIS S. GAGNON,
JULIUS PERRAS.