Sept. 30, 1924. 1,510,246

R. M. SHARAF

TWO-NEEDLE SEWING MACHINE ATTACHMENT

Original Filed Nov. 18, 1915

Fig:1.

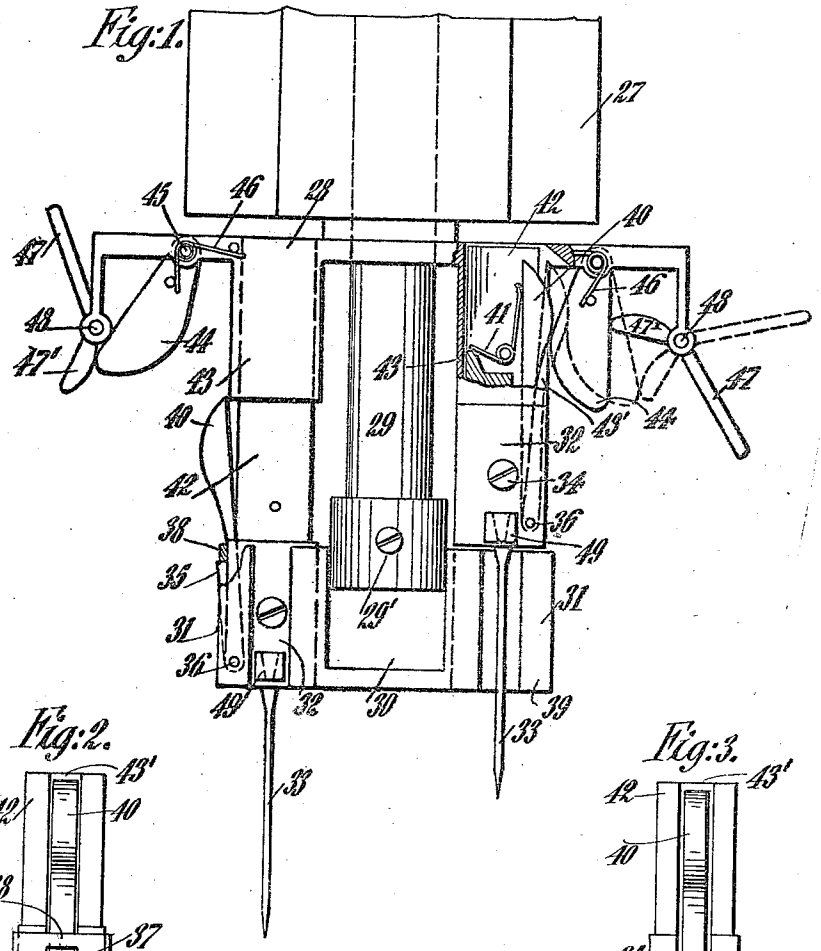


Fig:2.

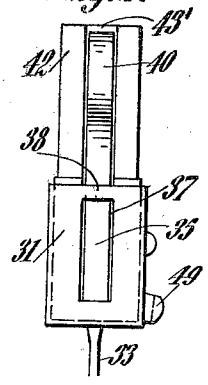
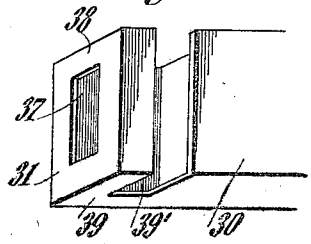


Fig:3.

Fig:4.



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UNITED STATES PATENT OFFICE.

RALPH M. SHARAF, OF NEW YORK, N. Y., ASSIGNOR TO R. M. SHARAF MACHINE CO., OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

TWO-NEEDLE-SEWING-MACHINE ATTACHMENT.

Substitute for applications Serial No. 62,241, filed November 18, 1915, and Serial No. 323,436, filed September 12, 1919. This application filed May 4, 1920. Serial No. 378,309.

To all whom it may concern:

Be it known that I, RALPH M. SHARAF, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Two-Needle-Sewing-Machine Attachment, of which the following is a full, clear, and exact description.

Ths application is a substitute for an application filed September 12, 1919, Serial No. 323,436, which application was a renewal of an application filed May 23, 1917, Serial No. 170,390 substituted for an application filed Nov. 18, 1915, Serial No. 62,241, which latter application was a renewal of an application filed July 6, 1914, Serial No. 849,175, said last named application being a division of an application filed March 26, 1914, Serial No. 827,333.

This invention relates to sewing machines of the two-needle type adapted for the sewing of lace, bindings, and trimmings, or stitching, and having facilities for stopping the operation of either needle without disturbing the operation of the other needle.

Among the objects of the invention, therefore, is to apply to a sewing machine having a single reciprocating needle bar, means to secure two needles to the needle bar for the making of two rows of stitches simultaneously, and to provide means of a safe and reliable nature whereby the operator may stop and start again either needle while the needle bar and the other needle secured thereto continue in operation at full speed.

More specifically stated, the control of the needles is such that the operator, by the touch of his finger, may stop the operation of either needle, means being provided to hold the needle out of operation, leaving both hands of the operator free for turning or guiding the cloth and then making it possible for another touch of the finger in the opposite direction to start the needle for operation again, the other needle being adapted for continuous operation irrespective of the needle which has been stopped temporarily.

The foregoing and many other objects of the invention will hereinafter be more fully set forth and claimed and illustrated in the drawings forming a part of this specification in which like characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a front elevation of my improved controlling means for the needles, one part being broken away to show the details of construction;

Figure 2 is a side elevation of one of the needle controlling devices;

Figure 3 is a similar view of the needle chuck detached from the socket; and

Figure 4 is a detail of one of the needle chuck sockets.

The several parts of the device may be made of any suitable materials, and the relative sizes and proportions, as well as the general design of the mechanism, may be varied to a considerable extent without departing from the spirit of the invention hereinafter more fully set forth and specifically claimed.

As above premised, this invention involves the means for controlling the operation of the needles in such a manner as to cause either or both of them to stop temporarily and again be started without interfering with the operation of the other parts of the machine. At 27 I show the sewing machine head to the bottom of which is secured rigidly in any suitable manner a bracket 28. The needle bar 29 reciprocates in the usual manner in the head 27 and freely through said bracket.

To the lower end of the needle bar is secured rigidly, but detachably, by any suitable means, as by a set screw 29′, a needle holder 30 which accordingly reciprocates with the needle bar continually while the machine as a whole is in operation. Said holder comprises a pair of sockets 31 of tubular form and with open top.

Each socket 31 is adapted to hold a needle chuck 32, the needle 33 for each chuck being secured in place therein by means of a set screw 34 or its equivalent.

The lateral distance between the points or axes of the needles 33 will be arranged in accordance with the work to be performed by the machine, and the bracket 28 with the parts associated therewith may readily be replaced by a set of wider or narrower size. Each of the chucks 32 is of a form to substantially fit the tubular inner portion of the socket 31, and during ordinary operation of the sewing machine these chucks

are held snugly in said sockets by any suitable means providing for detachment when desired. The securing means shown herein and which I have found thoroughly satisfactory comprises a catch 35 pivoted at its lower end at 36 adjacent the lower end of the chuck and adapted to snap outwardly into a slot 37 formed in one side of the socket, the point or shoulder of the catch cooperating directly with a shoulder 38 formed at the upper end of the slot 37 at the top of the socket. The downward movement, therefore, of the needle bar and holder exerts a positive pressure upon the needle chucks forcing the needles through the work. The upward movement of the needle bar and holder causes a positive lifting of the chucks and needles by contact between the bottoms of the chucks and the bottom plates 39 of the sockets. Each bottom 39 has a hole or notch 39′ through which the needle 33 projects. It will be noted, therefore, that when the catch 35 is interlocked with the shoulder 38, the chuck will be held positively in its socket and caused with its needle to reciprocate up and down with the needle bar.

The upper end of the catch 35 consists of a finger 40, the inner face of which bears against a spring 41 mounted within the upper end 42 of the chuck, and said upper end of each chuck is adapted to enter the tubular member or sleeve 43 of the bracket 28 when the needle bar ascends. During the ordinary operation of the machine these upper ends 42 enter freely into the sleeves 43 which offer no resistance thereto.

At 44 I show a cam pivoted at 45 at its upper end on the bracket 28 and held normally out of the path of the finger 40 by virtue of a spring 46. When it is desired to stop the operation of either needle, the operator presses a bell crank 47 pivoted on a pivot 48 on the bracket 28, the toe 47′ of the bell crank being adapted to bear against the lower end of the cam 44, causing it to swing inwardly against the tension of the spring 46 and engage the finger 40. The finger 40 projects laterally normally through a slot 43′ in the side of the sleeve 43, and when the bell crank 47 is depressed into the full line position at the right of Figure 1, the catch 35 is released from the shoulder 38 and the cam 44 cooperating with the finger 40 holds the chuck with its needle elevated while allowing the needle bar 29 and holder 30 to reciprocate in the normal manner. The point or toe 47′ of the bell crank, passing beyond the dead center, remains in the position shown in Figure 1, locking the cam and finger together temporarily. While the machine is in operation, the empty socket 31 passing repeatedly over the chuck 32, the handle end of the bell crank 47 may be swung upwardly by the operator whenever desired, and this will release the cam 44, thus setting the catch 35 free to be engaged by the shoulder 38, and to renew the connection between the socket and the needle chuck. The device is simple and sure in operation, and adapted to be operated in either direction noiselessly.

Secured preferably to the front face or side of each of the chucks 32 is a thread guide 49 having a vertical eye. The thread guide, therefore, bears a constant fixed relation to the chuck and the needle pertaining thereto. It follows, therefore, that the needle being adapted to be stopped in its elevated position, the thread take-up (not shown) will have no effect upon the thread while the needle is idle, and hence there will be no possibility of the snarling of the thread. The thread, however, will be in position for immediate action when the needle is again connected to the needle bar and holder. The front portion of the socket 31 is slotted, as indicated in the drawings, so as to accommodate the set screw 34 and the thread guide 49 when the chuck is stationary.

I am aware that sewing machines of a special type have been made heretofore which purport to so control a plurality of needles as to stop either of them while the other may continue in motion, but such devices, so far as I am aware, are not attachments adapted to be connected to any usual or well known type of machine. I am aware also that it has been proposed heretofore to provide an attachment for a well known or usual form of needle bar, such attachment providing for a plurality of needles and means for throwing one of them out of position to operate, but the needle thus thrown out of operation continues to reciprocate with the needle bar with a tendency to snarl the thread as well as endangering the safety of the operator. I believe it is new with me, therefore, to provide a device in the nature of an attachment adapted for connection to any ordinary or well-known type of sewing machine, the attachment providing means for instantly and safely throwing out of operation or returning to operation either needle without stopping the machine or interfering with the regular action of the other needle.

And furthermore, I believe it to be new with me to provide an attachment for the usual single needle bar of an ordinary sewing machine, of such a nature that not only may either needle be stopped or started independently of the other, but both needles may be stopped, either simultaneously or otherwise, while the machine and its needle bar may continue operating, for the purpose of adjustment of the work or for any other purpose.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent:

1. In a sewing machine of the class set forth, the combination with a sewing machine head and a single needle bar reciprocating therein, of a needle holder secured to the needle bar and having a pair of socket members with open tops, a bracket secured to the head above the holder having a pair of sleeves in vertical alignment with said sockets, a pair of needle chucks carried by the sockets and means associated with the sleeves to release the chucks from the sockets and hold the chucks and needles out of operation, the operation of the needle bar and holder remaining unaffected.

2. The combination with a sewing machine head and a single needle bar reciprocating therein, of a stationary bracket connected to the head, a needle holder secured rigidly but detachably to the needle bar, a pair of chucks each having a needle adapted to be secured detachably to the needle holder, and means associated with the bracket to release either or both of the chucks and their needles temporarily from the holder while the needle bar continues in operation, whereby either needle may be operated independently of the other or both needles may be held idle simultaneously.

3. In a two-needle sewing machine, the combination with a head and a single needle bar reciprocating therein, of a needle holder comprising a pair of open-topped socket members carried by the needle bar, a pair of independent needles carried by said holder socket members, a bracket secured to the lower end of the head, and independent sets of devices associated with said bracket for controlling the operation of either needle, releasing it from and through the open top of its socket member and securing it to the needle holder while the needle bar and the other needle continue in operation at full speed.

4. In a two-needle sewing machine, the combination of a stationary fixed bracket, a needle bar reciprocating along said bracket, a needle holder comprising socket members carried rigidly by the needle bar and each having a notched bottom and an open top, a pair of needles, a pair of needle chucks for said needles adapted to be carried upon said socket bottoms with the needles projecting through the notches, and means under the control of the operator associated with said bracket and chucks to cause the chucks either to be held by the holder for reciprocation by the needle bar or to be withdrawn from the open tops of the sockets and held in a stationary position by the bracket while the needle bar may continue in operation at full speed.

5. In a two needle sewing machine, the combination with a fixed bracket, and a single needle bar reciprocating along said bracket, of a needle holder secured rigidly to the needle bar, a pair of socket members carried by said holder to secure and carry two independent needles, and a separate means for each needle and carried by a stationary part of the machine so that either needle can be released from its socket member while the needle bar and other needle continues in operation at full speed.

6. A sewing machine having a single needle bar, a plurality of needles, means for connecting said needles individually with said needle bar, means for holding said needles stationary when disconnected from the needle bar, and independent means for controlling the several connecting means, to connect any one needle to the needle bar and to disconnect it from the needle bar and to render all said needles inoperative at the same time.

7. A sewing machine having a reciprocating needle bar, two needles, separate means for coupling said needles with the needle bar, means for holding said needles stationary when uncoupled from the needle bar, and independent individual devices for throwing the respective coupling means out of action, whereby either needle or both needles may be idle and stationary at the same time.

8. A sewing machine provided with a reciprocating needle bar, and a socket member connected therewith, a stationary sleeve in alignment with said socket, a needle chuck adapted to enter said socket and said sleeve, and means for connecting said chuck either with the stationary sleeve or with the reciprocating socket member.

9. A sewing machine provided with a reciprocating needle bar and a socket member connected therewith, the axis of said socket being parallel to the path of the bar, a stationary sleeve in alignment with said socket, a needle chuck adapted to enter said socket and said sleeve, a device on the chuck for connecting it either with the stationary sleeve or with the reciprocating socket member, and means for controlling the position of said device.

10. A sewing machine having a single needle bar, a plurality of needles, and a mechanism associated with each needle and operable optionally and carried by a stationary part of the machine, so as to operatively connect any one needle to the needle bar and to disconnect it from the needle bar and whereby all of the needles may be rendered inoperative at the same time.

11. A sewing machine having a single needle bar, two needles, a separate means for connecting each needle to the needle bar each of said means including a manually operable element carried by a stationary part of the machine, so that both needles may be dis-

connected at the same time and either needle disconnected independent of the other needle.

12. A sewing-machine having a head, a single needle bar, a needle holder connected to the needle bar below the head, a plurality of needles, a bracket fixed on the underside of the head, and means carried by the bracket operable manually to disconnect one of the needles from the holder.

In testimony that I claim the foregoing as my invention, I have signed my name hereunder.

RALPH M. SHARAF.