April 29, 1930. W. H. LEAVIN 1,756,294

RUN REPAIRING MULTIPLE NEEDLE HAND TOOL

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Fig. 1.

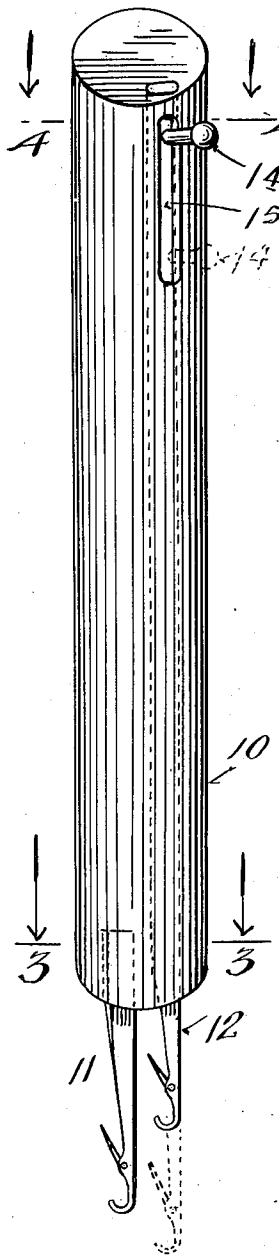


Fig. 2.

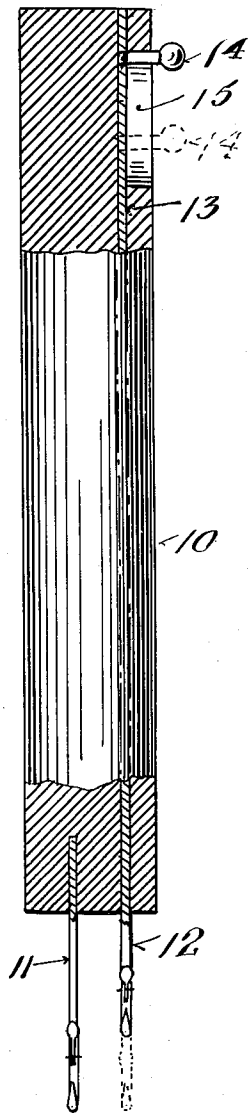


Fig. 4.

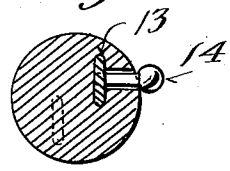


Fig. 5.

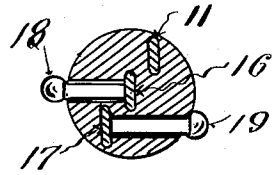
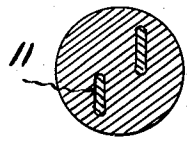


Fig. 3.



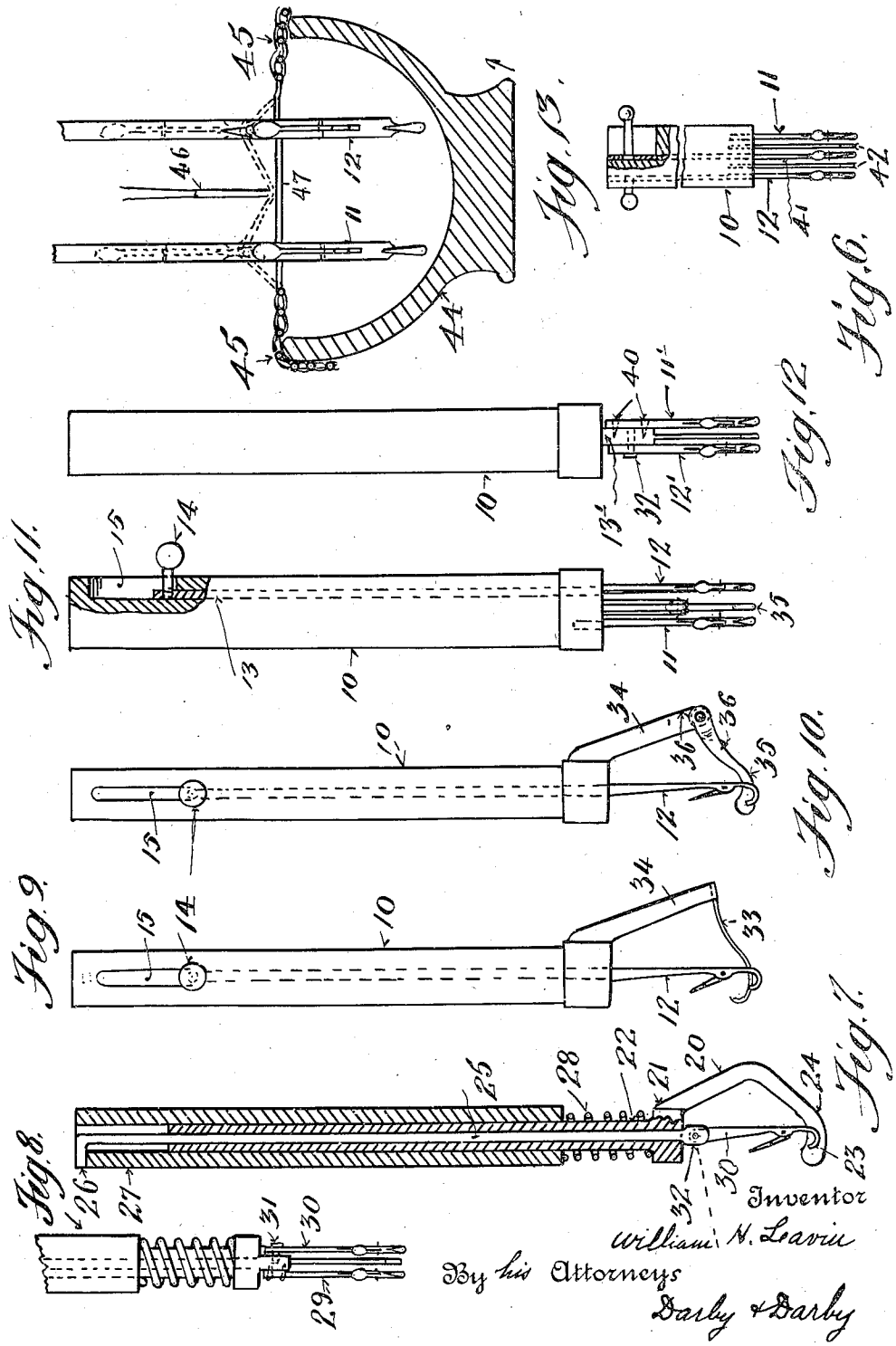
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April 29, 1930. W. H. LEAVIN 1,756,294

RUN REPAIRING MULTIPLE NEEDLE HAND TOOL

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Patented Apr. 29, 1930 1,756,294

UNITED STATES PATENT OFFICE

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RUN-REPAIRING MULTIPLE-NEEDLE HAND TOOL

Application filed July 31, 1929. Serial No. 382,483.

This invention relates to a multiple needle hand tool for repairing runs in knitted fabric and has for its object the provision of a simple and efficient hand tool having a plurality of needles for repairing runs of one or more wales in width.

Another object is the provision of a multiple needle hand tool having means for rendering ineffective some of said needles.

A further object includes the provision of a multiple needle hand tool wherein the needles are arranged in staggered relation by one or more courses.

A still further object embraces the provision, in a multiple needle hand tool, of a divider member between adjacent needles which member (or members) act also as a stripper.

Other objects will appear hereinafter and I attain these objects by constructions shown in the accompanying drawings in which:

Figure 1 is a view in perspective of a hand tool having two needles arranged in staggered relation and showing one of said needles raised out of operative position;

Fig. 2 is a front elevational view of the construction shown in Fig. 1;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1;

Fig. 5 is a sectional view of a form showing an arrangement of three needles in staggered relation;

Fig. 6 is a front elevational view of a construction showing three needles with dividers therebetween;

Fig. 7 is a longitudinal sectional view of another form of construction;

Fig. 8 is a front view of a portion thereof showing the relation of the two needles with a divider therebetween;

Fig. 9 is an elevational view of construction showing a spring member as the divider;

Fig. 10 is a similar construction with the divider shown as a fin flexibly supported;

Fig. 11 is a front end view of the construction shown in Fig. 10;

Fig. 12 is a front elevation of a construction showing one of the needles swingably supported; and

Fig. 13 is a more or less diagrammatic representation showing the application of the tool with two needles and divider in operative relation with respect to a fabric in which a two wale run is being repaired.

Like reference numerals refer to similar parts wherever they appear.

It is one of the prime purposes of my invention to provide a hand tool having a plurality of needles for repairing runs in a fabric such as hosiery and the like. It frequently happens in this type of fabric that a run starts in a row of stitches or a wale which soon develops into a run of two wale width, or even wider. By my construction I am enabled to quickly and efficiently repair runs of this type.

The hand tool is so constructed that one or more of the plurality of needles can be adjusted into and out of operative position. Thus for example, if a one wale run is to be repaired, I adjust the needles in my hand tool in such a position that only the fixed needle is operative. When now the two wale is encountered, I render operative one of the adjustable needles and so on through a three wale run or wider.

Various forms of construction may be devised to accomplish the purpose of adjustably holding one or more of the plurality of needles in the hand tool, specific examples of which will be more fully described hereinafter.

It is also apparent that the runs of more than one wale may be repaired by arranging the needle in the hand tool in different positions, thus, for example, the needles may be arranged in staggered relation so that the needles themselves are off-set by a distance of one or more courses of a knitted material whereby a wide run is repaired by the needles taking up the stitches in succession. Again, the needles may be placed side by side with a divider therebetween so as to take care of runs of a plurality of wales. The divider member itself may assume various forms so as to bear upon the cross threads of the run and thereby ease the fabric and prevent dam-

age thereto, due to the action of the operating needles.

Referring now to the drawings, wherein the specific forms suitable for carrying out the purposes of my invention are disclosed by the way of example,

In Figs. 1 and 2 the multiple needle hand tool comprises a handle 10 which may be substantially solid. In the lower part of the handle there is fastened a fixed needle 11. 12 represents a movable needle which has an extension or stem 13 slidably held in the handle as shown. I have provided means for placing the needle into and out of operative position. In one form said means consists of a knob 14 whereby the stem and needle may be raised or lowered as occasion may require. Knob 14 and its attached stem removably operate in a slot 15.

In Fig. 5 I have shown a construction where three needles are used. In this construction, 11 represents a fixed needle, 16 the stem of one of the movable needles, and 17 the stem of the other movable needle. Said movable stem and attached needle are moved into and out of operative position by knobs 18 and 19 respectively. From the construction shown in Figs. 1 to 5 inclusive, it will be seen that the plurality of needles in the tool are arranged in staggered relation so that one needle will take up one of the course threads before the next needle will take up said course of threads, thereby distributing the tension on the fabric and thus avoiding breaking or injuring the same.

In place of arranging the needles in staggered relation for the purpose of avoiding injury to the fabric, I find that the needles may be arranged side by side so as to engage the same thread at the same time in a multiple wale run. In this type of arrangement which is shown in Figures 6 to 12 inclusive, I provide a divider member to ease the thread of the fabric. This divider member may assume various shapes and forms and in a preferred form comprises an L-shaped member, the lower end of which bears upon the fabric thread.

One form of divider is represented by the construction shown in Fig. 7 at 20, where the head 21 is fastened onto the central stem 22 of the tool handle. The lower part of the divider member ends in a foot like portion 23 which arises abruptly at 24 so as to ease the fabric thread bearing thereagainst during operation.

The tool handle (Fig. 7) comprises a stem 22 which is hollow and movably holds the needle carrying stem 25. It will be noted that the upper portion of this stem is bent at right angles at 26 and is fastened onto the outer shell 27 of the handle. This shell is held in spaced relation by a spring 28 bearing thereagainst so that normally the needles are held in position as shown in Figures 7 and 8. In this type of construction one of the needles 29 is rigidly held on the needle stem and the other needle 30 is movably held on a pin 31 in said stem. This pin therefore constitutes means for placing said needle into or out of operative position by swinging the needle as indicated by the dotted line 32.

In Fig. 9 the flexible divider is disclosed. This divider member comprises a spring member 33 fastened onto the divider arm 34, which arm is secured on the handle 10 of the tool as heretofore.

In Fig. 10 a fin member 35 constitutes the divider member. This member is resiliently positioned on arm 34 by a spring 36.

In the type of construction disclosed in Figs. 9, 10 and 11, the fixed needle 11 is held in the handle of the tool as in the construction shown in Fig. 2. Likewise, the movable needle 12 is movably held on the stem 13 and is operated by the knob 14 as in the former construction.

In the type disclosed in Fig. 12 the fixed needle 11′ is held on the central stem 13′ by suitable means, such as screws 40 and the movable needle 12′ is swingably held on pivot 32.

In the type disclosed in Fig. 6 there are shown three needles, of which, needle 11 is the fixed needle and needles 12 and 41 are removable. Between adjacent needles divider members 42 of any one of the types heretofore described are placed.

In Fig. 13 there is disclosed suitable holder 44 over which the fabric 45 is held or stretched in such a manner that the threads 47 of the run are taken up by the needle and held by the divider member 46. The holder may be in the form of a cup shaped member, or it may assume other forms having therein a depression into which the needles 11 and 12 dip when the goods are repaired.

What I seek to secure by United States Letters Patent is:

1. In a multiple needle run repairing hand tool, a handle, a plurality of needles projecting from one end of said handle and means whereby all but one of said needles may be placed out of operative position.

2. In a multiple needle run repairing hand tool, a plurality of needles projecting from said handle, one of said needles being permanently fastened in said handle and means for fastening the other of said needles, movably in said handle.

3. In a multiple needle run repairing hand tool, a handle, in combination with a plurality of needles and a divider member between adjacent needles.

4. In a multiple needle run repairing hand tool, a handle, in combination with a plurality of needles, a divider member between adjacent needles, and means for raising the point of some of said needles out of operative position.

5. In a multiple needle run repairing hand

tool, a handle, in combination with a plurality of needles, a divider member between adjacent needles, said divider member having a foot and said needles provided with a hook disposed in substantially the same plane and means whereby the relative position of the divider foot and said needle hooks may be displaced.

6. In a multiple needle run repairing hand tool, a handle, in combination with a plurality of needles, a divider member between adjacent needles, said divider member having a foot and said needle having a hook and means for dipping the hook of the needles beneath the foot of the divider.

7. In a multiple needle run repairing hand tool, a handle, in combination with a plurality of needles, a divider member between adjacent needles, said divider member having a foot and said needle having a hook, and means for moving the hook, said divider bearing upon the web threads when the run is repaired.

8. A hand tool for repairing runs in knitted fabric comprising a handle having therein a plurality of needles and a divider member having a foot and means whereby the foot and needle are moved relatively.

9. A hand tool for repairing runs in knitted fabric comprising a handle having therein a plurality of needles and means for moving one of said needles with respect to the other of said needles.

10. A hand tool for repairing runs in knitted fabric comprising a plurality of needles disposed side by side, a handle for moving said needles and means whereby some of said needles may be moved relatively with respect to others.

In testimony whereof I have hereunto set my hand on this 27th day of July, A. D. 1929.

WILLIAM H. LEAVIN.