

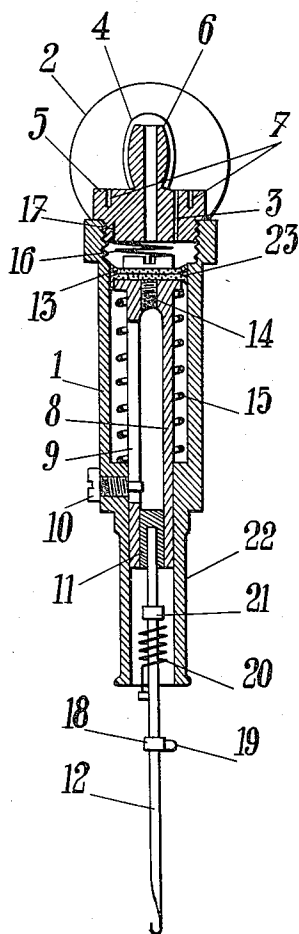
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HOLDING HANDLE FOR RELOOPING TOOLS

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HOLDING HANDLE FOR RELOOPING TOOLS

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1 Claim. (Cl. 66—1.5)

In my prior Patent No. 1,871,099, granted August 9, 1932, holding handles for needles or tools used for relooping runs in stockings and other knitted articles have been described, which consist of a hand held cylinder containing a reciprocating piston constituting the tool holder and provided with a shaped leather piece with return spring. These handles have the following disadvantage. When it is desired to regulate the force of the needle by causing a variation in the intensity of the impulses of air from the machine to the handles, it is easy to bring about an increase in this force in the direction of the outlet of the needle from the handle, but not in the direction of the return into the handle, since it is always the return spring which effects this return and the force of this spring does not vary.

Now it is often necessary to bring about a variation of the force in both directions. An object of this invention is to enable the above-mentioned disadvantages to be overcome.

The invention will appear more clearly from the following detailed description, when taken in connection with accompanying drawing which illustrates in section a preferred embodiment of the invention idea.

In accordance with this drawing 1 is a cylinder which constitutes the actual handle, which has at its upper end an extension in the form of a disc 2, the outer face of which is made concave and serves for holding the handle between the thumb and the index finger, an oval aperture 4 provided in this disc permitting the better determination of the inclined position of the handle on the work, in relation to the fingers, and at the same time facilitating the oscillation of the needle round the axis of the said disc.

The plug 5 which is screwed to the upper portion of the cylinder 1, and which is disposed adjacent the disc 2 includes a nozzle 6 on which is fitted the rubber tube conducting the compressed air by pulsations.

For the insertion and withdrawal of the plug 5, two small grooves 7 are provided to permit of the insertion of the ends of a special pin spanner allowing the plug to be screwed or unscrewed.

Inside the cylindrical handle 1 is disposed the piston 8 having a guiding groove 9 controlled by a screw 10. At its lower extremity is a wooden block 11 in which the needle 12 is inserted by force, its head being fitted with leather pieces 13 and 23 secured by a screw 14, this allowing the piston to receive the pulsations of compressed air, the return of the piston being ensured by a spring 15 wound round the said piston.

Furthermore, to avoid the back-stroke of the piston by the action of the spring 15 being too rapid when it returns against its stop, a light shock-absorbing spring 16, consisting of two or three spirals only, is fitted on the inner face of the plug by its extremity 17.

In order to ensure better protection of the delicate parts of the needle 12, of the known type provided with a sliding latch, having a clip 18 secured by a set screw 19 and a very delicate recoil spring 20 for the latch, secured on the one hand to the said latch and arrested on the other hand by a clip 21, pressed forcibly on the needle so as to permit of the regulation of the tension, the cylinder 1 is extended at 22, thus forming a protection cover for the delicate parts which are thus enclosed in the position of rest of the needle, and sheltered from any shock which might damage them.

In the place of a single shaped leather piece shown in my prior patent, two pieces of leather 13 and 23, shaped in opposite ways, are arranged in such a manner that the needle is actuated in the one direction and in the other by the successive pressures and releases from pressure caused by the machine. It is to be noted that, in the case of the single leather piece, the pump has simply to deliver air and to re-absorb this same air, re-deliver it again, etc., the same air being always used for an indefinite time.

At the moment of starting, if the pump is, for example, on its suction stroke, the air passes round about the leather piece 13 and the needle is not propelled forwards until the time when the pump commences its compression stroke. The starting thus always takes place in the same manner and the same air is always re-used.

In the case of the double leather, if the pump commences with the suction stroke when the needle is in its position of rest, which position is shown in the drawing, the leather 23 prevents the air from passing round about the leather 13, and the pump commences to create a vacuum in the needle cylinder; when the compression stroke is reached by the pump, this stroke will only effect the removal of the vacuum, but will not propel the needle forward.

In order that the operation may take place in a normal manner and that, whatever the starting position of the pump may be, the operation of the needle always takes place under approximately the same conditions, it is necessary to provide either in the cover of the handle of the needle, or in the machine which supplies the impulses of air, or in any other place, an opening which per-

mits of a small leakage. In this way, if the machine is started up, as we have mentioned above, with the suction stroke, the air will, for example, be introduced through the orifice 3. At the moment of compression this air will be compressed, and it will push forward the piston of the needle at the same time as a slight escape of air is again taking place through the orifice 3.

A state of equilibrium will very quickly be brought about between the force of suction and the force of repulsion and the admission and the discharge of air so that in practice no matter what the starting position of the machine is, the operation of the needle will always be approximately identical.

Of course it is necessary to adjust, once and for all, the size of the orifice 3 for the loss of air, in such a manner that this loss is sufficient to bring about the state of equilibrium, but is not so large as to permit all the air to escape freely through this orifice so that it does not act on the piston.

It is likewise necessary to adjust, once and for all, the force of the spring 15 and the force of the counter spring 16.

This arrangement, as has been mentioned above, has the advantage of permitting the adjustment of the force of the needle in both directions by simply varying the intensity of the impulses of air from the machine. It has, moreover,

the advantage of necessitating a spring 15, which is much weaker than that which is required in the case of operation with a single leather, so that the operation of the needle takes place much more gently, which facilitates the work, especially in the case of fine articles, and which also facilitates working by hand, as the action of the hand on the needle is softened through the intermediary of the spring 15.

I claim:

A holding handle for relooping tools, comprising in combination with a cylinder, a piston reciprocable in said cylinder and constituting a tool holder, a spring situated within said cylinder and engaging said piston and one end of said cylinder, and means for intermittently introducing compressed air into said cylinder at the opposite end thereof and rarefying said air, thereby reciprocating said piston; two superposed leather pieces carried by said piston and having flanges bent in opposite directions and engaging the walls of said cylinder to prevent air at the first-mentioned end of said cylinder from flowing toward the second-mentioned end of said cylinder when said means rarefies the air at the second-mentioned end of said cylinder, an opening being formed in said cylinder to connect the interior thereof at the second-mentioned end with the atmosphere.

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