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B. H. WITTLER
GLOVE TURNING MACHINE

3,143,258

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2 Sheets-Sheet 1

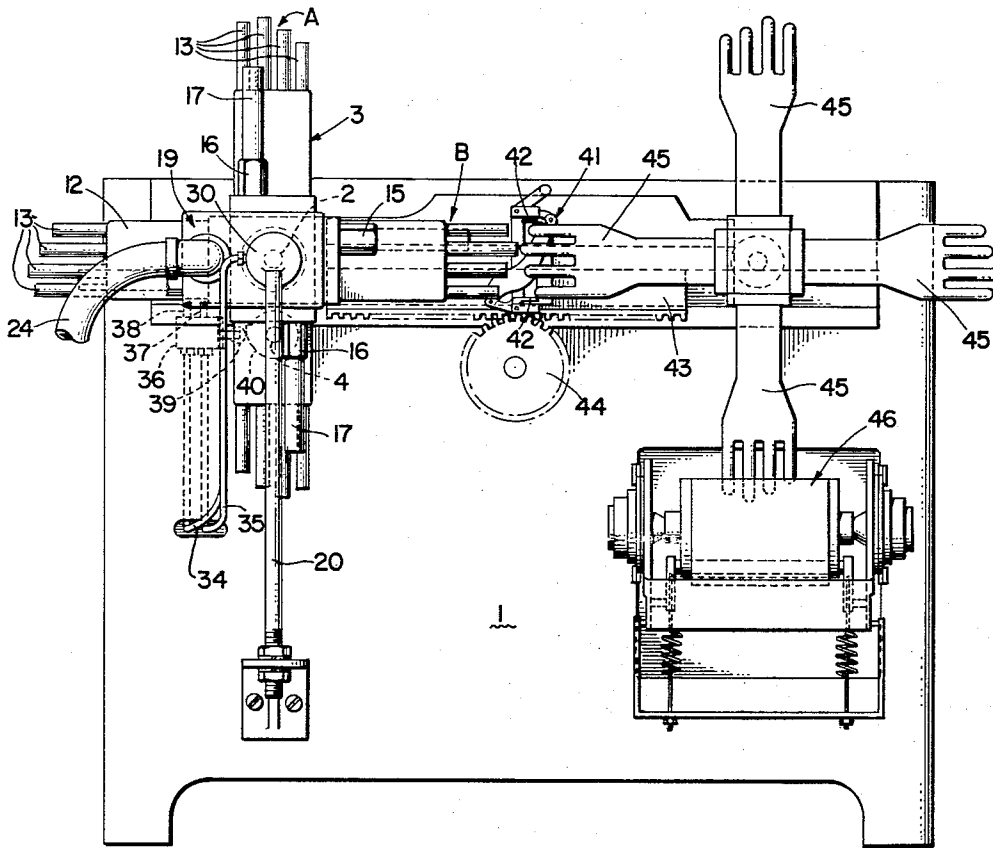


Fig. 1.

WITNESS

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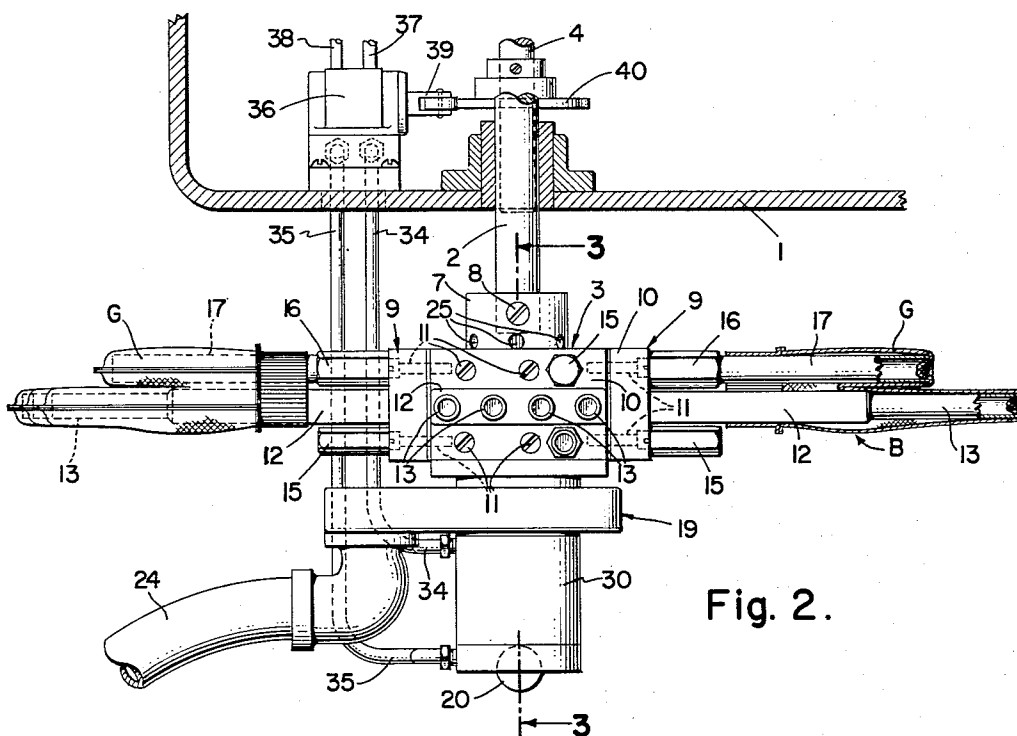


Fig. 2.

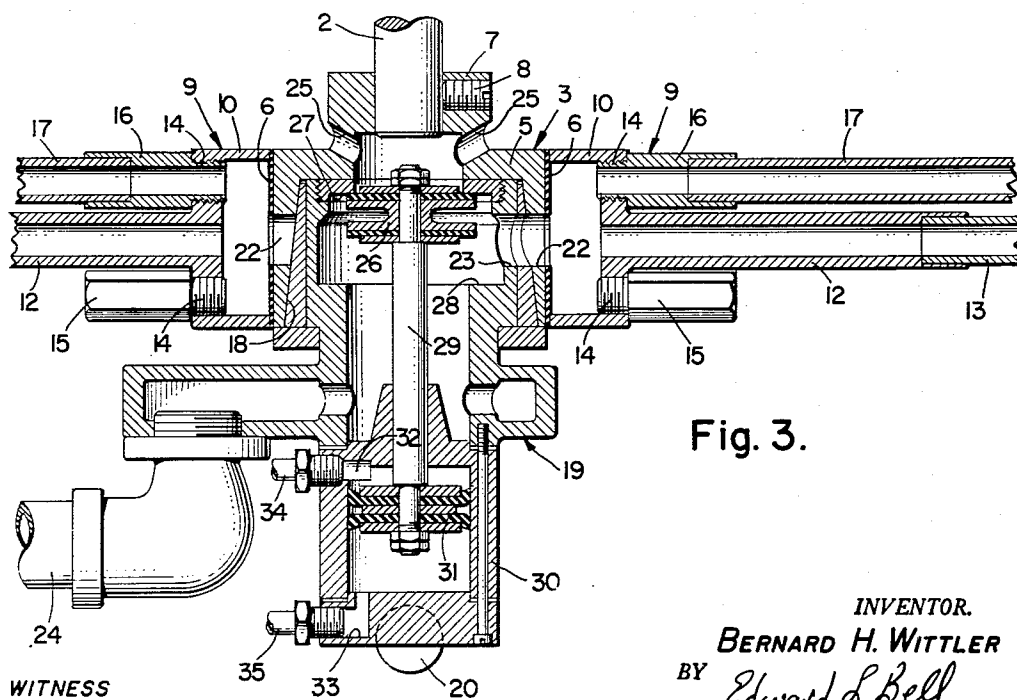


Fig. 3.

WITNESS

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GLOVE TURNING MACHINE

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3 Claims. (Cl. 223—43)

The present invention relates to a glove turning machine, and more particularly to a glove turning machine of the type forming the subject matter of the United States patent of Beasley, No. 2,838,216.

In machines such as disclosed in the above noted Beasley patent, the gloves, which are sewed inside-out, are placed on a glove form resembling a hand. The ends or tips of the fingers and thumb of the glove are forced into the ends of the finger and thumb portions of the form by plungers, and are clamped therein as the glove is stripped from the form, thereby turning the same. It has been found that with some gloves, the action of the plungers tends to damage the same, e.g., with heavy gloves that are stiff and resist turning, the plungers will punch holes in the ends of the fingers and thumb. Accordingly, the object of this invention is to provide a mechanism which will effectively and efficiently force the tips of the fingers and thumb of the glove into the tubes without damaging the glove. In accordance with this invention, there has been provided a glove turning machine wherein vacuum is used for this purpose. It has been found that a rapid application of vacuum will turn the tips without damaging the glove and at the same time, provides a simple and efficient operating mechanism which not only inverts the tips of the glove but also holds the same as the glove is stripped from the form.

Having in mind the above and other objects that will be evident from an understanding of this disclosure, the invention comprises the devices, combinations and arrangements of parts as illustrated in the presently preferred embodiment of the invention which is hereinafter set forth in such detail as to enable those skilled in the art readily to understand the function, operation, construction and advantages of it when read in conjunction with the accompanying drawings in which:

FIG. 1 is a front elevational view of a glove turning machine embodying the present invention;

FIG. 2 is a fragmentary horizontal sectional view substantially through the axis of the glove turning forms of the machine of FIG. 1; and

FIG. 3 is a fragmentary sectional view taken substantially on the line 3—3 of FIG. 2.

The machine is herein illustrated and described only insofar as it is necessary for the disclosure of the present invention. For a more complete understanding of the machine, reference may be had to the above noted patent of Beasley, No. 2,838,216.

With reference to the drawings, the illustrated machine comprises a frame 1 in which is journaled a shaft 2 that carries the glove form mechanism, generally indicated at 3. Intermittent quarter-turn rotation is imparted to the shaft 2 by a shaft 4 disposed beneath the shaft 2, the shaft 4 being driven by the drive motor (not shown) of the machine and being connected to the shaft 2 by a Geneva mechanism (not shown).

The glove form mechanism 3 comprises a head 5 that is substantially square thereby providing four planar faces 6 and includes a hub 7 that receives and is secured by a set screw 8 to the shaft 2. On each of the faces 6 is a hand element 9 which comprises a hollow base 10 secured by screws 11 to the face 6 and a finger portion that comprises a chamber 12 communicating with the interior of the base 10 and carrying four finger tubes 13 open at the tips thereof. On the base at each side of

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the finger portion is a bore 14 communicating with the interior of the base 10 and adapted to receive either a screw plug 15 or a thumb portion consisting of an adapter 16 which is threaded therein and carries a thumb tube 17, also open at its tip. By reversing the plug 15 and adapter 16, the form is adapted to receive either right or left hand gloves.

The head 5 is provided with an axially arranged cylindrical bore 18 open outwardly and receiving the end of a stationary vacuum chamber 19 about which the head 5 turns, the vacuum chamber being supported by a rod 20 extending upwardly from a bracket 21 carried by the frame 1.

Bores 22 are formed through the side walls of the head 5 on each of the faces 6 and communicate with the interior of the hand element bases 10. The vacuum chamber 19 is provided with a single port 23 in the side wall thereof which is adapted to align successively with the bores 22 as the glove form 3 turns relative to the vacuum chamber. The vacuum chamber 19 is connected to a vacuum source 24 herein represented by a conduit connected to a laterally extending portion of the vacuum chamber.

The head 5 is provided with intakes 25 disposed adjacent to the hub 7 and open to the atmosphere, the intakes 25 communicating with the interior of the vacuum chamber 19 and adapted to be closed with respect thereto by a valve 26 that cooperates with a seat 27 formed in the vacuum chamber, as illustrated in FIG. 3. Both the faces of the valve 26 are working faces with the one face adapted to cooperate with the seat 27 and the other face adapted to cooperate with a seat 28. The port 23 is disposed between the seats 27 and 28 which are disposed respectively between the port 23 on the one hand and the intake 25 and the vacuum source 24 on the other hand. Thus, when the valve 26 is in cooperation with the seat 27, the intake 25 is closed with respect to the hand element 9 and the vacuum source 24 is open to the hand element 9 through the port 23. When the valve 26 is in cooperation with the seat 28, the intake 25 is open to the hand element 9 through the port 23 thereby rapidly dissipating the vacuum, and the vacuum source 24 is closed with respect to the hand element 9.

The means for actuating the valve 26 comprises a piston rod 29 upon the end of which the valve 26 is mounted and which extends into a piston chamber 30 mounted upon the outer end of the vacuum chamber 19. Within the piston chamber 30, there is mounted upon the rod 29 a piston 31. The piston chamber 30 is provided with two inlets 32 and 33 for air under pressure, the inlets 32 disposed upon opposite sides of the piston 31 within the piston chamber and being connected by conduits 34 and 35 to a distributor 36 mounted internally of the frame 1 adjacent to the shaft 4. The distributor 36 is connected by a conduit 37 to a source of air pressure and has an exhaust port 38. The distributor 36 has an actuating arm 39 that tracks a cam 40 on the shaft 4. The mechanism is such that when the cam 40 forces the arm 39 inwardly, or to the left in FIGS. 1 and 2, air under pressure is admitted to the conduit 35, thereby forcing the piston 31 upwardly in FIG. 3 into cooperation with the seat 27, thereby closing the atmospheric intake 25 and connecting the source of vacuum 24 to the hand element 9 by way of the port 23. When the cam 40 releases the arm 39, the arm 39 moves outwardly, thereby admitting air under pressure to the conduit 34, forcing the piston downwardly into cooperation with the seat 26 and thereby closing the vacuum source 24 with respect to the hand element 9 and connecting the hand element 9 through the port 23 with the intake 25.

Briefly, the machine also includes a glove stripping mechanism 41 having glove-engaging elements 42

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mounted on a slide 43 that is reciprocated by a gear 44. The elements 42 engage the wrist portion of the glove on the hand element 9 while the tips of the glove are held by vacuum applied at the tips, and as the slide 43 advances to the right in FIG. 1, the glove is inverted and deposited on one of the heating forms 45, which is indexed clockwise, FIG. 1, and eventually delivers the glove to a mechanism 46 which removes the glove from the form 45.

The mechanism is designed such that the glove G, which has been sewed inside-out, is placed on a hand element 9 in the glove-receiving position, indicated at A in FIG. 1. As the shaft 2 and thus the glove form 3 are given successive quarter turns, the glove is advanced counterclockwise so that upon the third succeeding cycle, it is moved into the glove-stripping position, indicated at B in FIGS. 1 and 2. In this position the bore 22 in the head 5 is aligned with the port 23 in the vacuum chamber. The cam 40 rotates one full revolution upon each cycle and actuates the distributor 36 to apply vacuum to the interior of the hand element 9 which, being applied rapidly, inverts the tips of the fingers and thumb of the glove G as indicated in FIG. 2. The vacuum is maintained while the glove-stripping mechanism 41 is operated, after which the cam 40 actuates the distributor 36 to release the vacuum.

Numerous alterations of the structure herein disclosed will suggest themselves to those skilled in the art. However, it is to be understood that the present disclosure relates to, a preferred embodiment of my invention which is for purposes of illustration only and not to be construed as a limitation of the invention. All such modifications which do not depart from the spirit of the invention are intended to be included within the scope of the appended claims.

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

1. In a glove turning machine, a glove form comprising a hand element including individual finger and thumb portions, means for moving said glove form from a glove-receiving position to a glove-stripping position, stripping means cooperating with said glove form in said glove-stripping position for stripping a glove therefrom, and means for inverting the tips of a glove on said glove form and for holding the same during the operation of said glove-stripping means comprising a vacuum chamber and a source of vacuum connected thereto, said hand element being hollow and open at the tips of said finger and thumb portions, a port connecting said vacuum chamber and the interior of said hand element, a valve disposed within said vacuum chamber and movable between a first position wherein said source of vacuum is connected through said port to said hand element and a second position wherein said source of vacuum is closed with respect to said hand element, and means for actuating said valve in

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timed relation to the movement of said glove-stripping means.

2. In a glove turning machine, a glove form, comprising a hollow hand element including individual finger and thumb portions open at the tips thereof, means for moving said glove form from a glove-receiving position to a glove-stripping position, a vacuum chamber and a source of vacuum connected thereto, a port connecting said vacuum chamber and said hand element, an atmospheric intake communicating with said vacuum chamber, a valve disposed within said vacuum chamber and movable between a first position wherein said intake is closed and said source of vacuum is connected through said port to said hand element and a second position wherein said source of vacuum is closed with respect to said vacuum chamber and said intake is connected through said port to said hand element, and means for actuating said valve in timed relation to the movement of said glove form for moving said valve to said first position when said glove form is moved to said stripping position and for moving said valve to said second position when said glove form is not in said glove stripping position.

3. In a glove turning machine, a glove form comprising a hand element including individual finger and thumb portions, means for moving said glove form from a glove-receiving position to a glove-stripping position, stripping means cooperating with said glove form in said glove-stripping position for stripping a glove therefrom and means for inverting the tips of a glove on said glove form and for holding the same during the operation of said glove stripping means comprising a vacuum chamber and a source of vacuum connected thereto, said hand element being hollow and being open at the tips of said finger and thumb portions, a port connecting said vacuum chamber and the interior of said hand element, an atmospheric intake communicating with said vacuum chamber, a valve disposed within said vacuum chamber and movable between a first position wherein said intake is closed and said source of vacuum is connected through said port to said hand element and a second position wherein said source of vacuum is closed with respect to said vacuum chamber and said intake is connected through said port to said hand element, and means for actuating said valve in timed relation to the movement of said glove stripping means.

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