

Jan. 20, 1948.

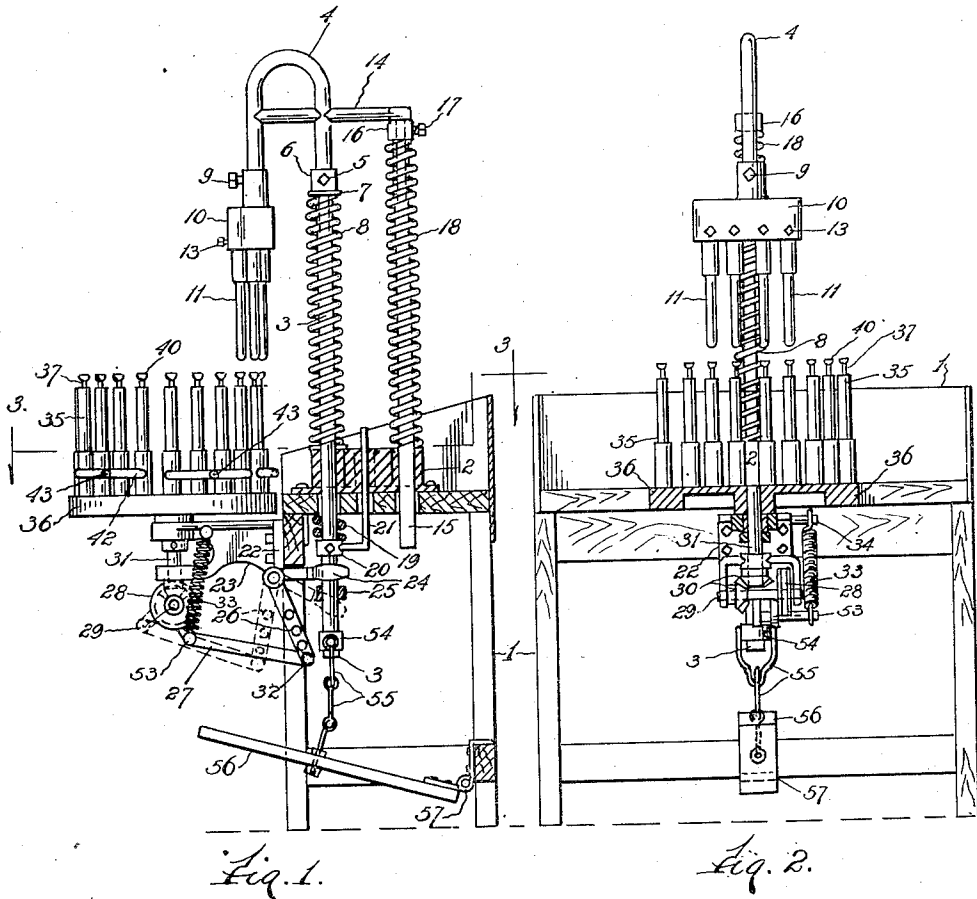
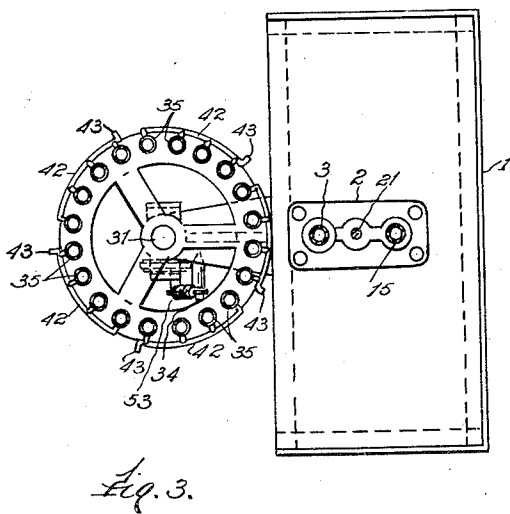
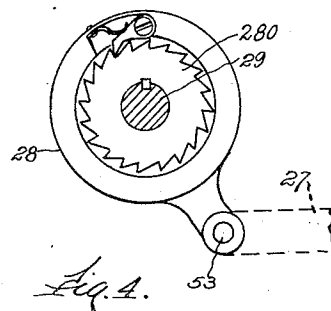
S. SUFTKO

2,434,816

GLOVE TURNING MACHINE

Filed Sept. 7, 1945

2 Sheets-Sheet 1



Inventor:
Stanley Suftho.
By H. J. Sanders
Attorney.

Jan. 20, 1948.

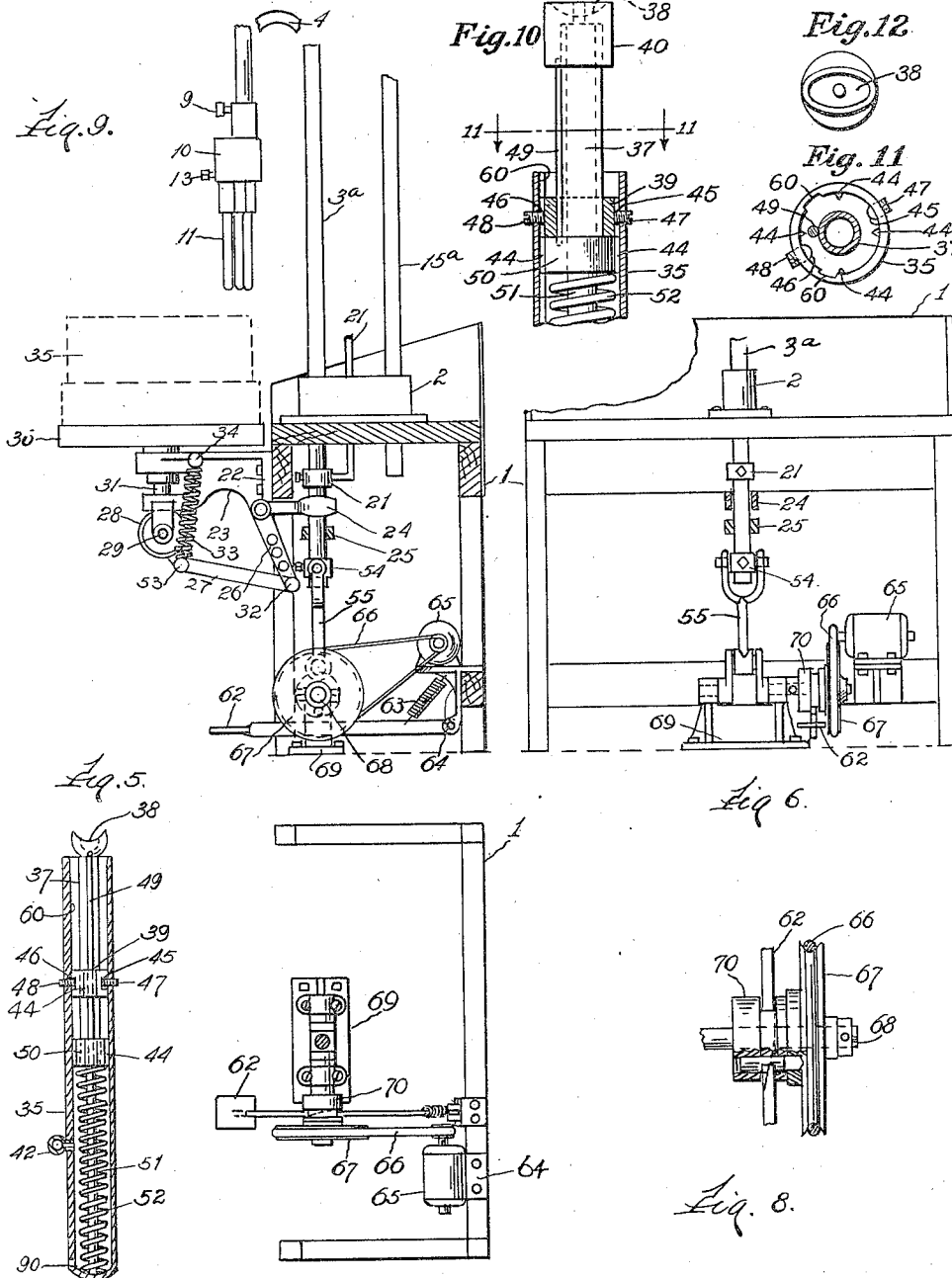
S. SUFTKO

2,434,816

GLOVE TURNING MACHINE

Filed Sept. 7, 1945

2 Sheets-Sheet 2



Inventor:
Stanley Sufko.
by H. Sanders
Attorney.

UNITED STATES PATENT OFFICE

2,434,816

GLOVE TURNING MACHINE

Stanley Suftko, Chicago, Ill.

Application September 7, 1945, Serial No. 615,058

7 Claims. (Cl. 223—40)

1

This invention relates to improvements in glove turning machines for turning glove fingers from wrong side to right side and vice versa. The invention may be considered a further development of my co-pending application for patent on Glove turners, Ser. No. 573,837, filed January 22, 1945.

One object is to provide a glove turning machine that requires but little physical exertion on the part of the operator and that functions to turn one, two, three or four fingers of a glove in a very short period of time, with little friction and no damage to the glove fabric. A further object is to provide a glove turning machine of sturdy construction that is partially operated by foot power and compressed air but that with slight alteration may be operated by motor power and compressed air.

A still further object is to provide a rotary type glove turning machine wherein one, two or more gloves may be applied to the machine before the turning operation is initiated and upon starting the machine the several gloves may be turned without delay.

More specifically the invention consists in certain novel features and parts and combinations of the same as will be more fully hereinafter described and pointed out in the claims. One embodiment of the invention is set forth in the accompanying drawings that form a part of this disclosure and wherein similar reference characters denote corresponding parts throughout the several views.

Fig. 1 is a side elevational view partly in section of a glove turning machine constructed according to the instant invention.

Fig. 2 is a front view of Fig. 1 with the rotary carrier shown partly in section.

Fig. 3 is a top plan view of the machine, partly in section and taken on the line 3—3 of Fig. 1.

Fig. 4 is an enlarged detail view of a ratchet employed.

Fig. 5 is a detail view of one of the glove receiving members employed.

Fig. 6 is a fragmentary front view of the machine showing the application thereto of motor power.

Fig. 7 is a top plan view of Fig. 6.

Fig. 8 is an enlarged detail sectional view of a conventional type of single stroke spring bolt clutch employed when the motor drive is used.

2

Fig. 9 is a fragmentary side view of the machine with motor drive, the table being shown in section.

Fig. 10 is an enlarged fragmentary view, partly in section, of one of the finger tube assemblies. Fig. 11 is an horizontal cross sectional view through Fig. 10 on the line 11—11, and, Fig. 12 is a top plan view of Fig. 10.

The reference numeral 1 denotes a table support for the machine proper to the bed of which a base 2 is secured that receives and operatively supports the plunger rod 3 that extends through the table and that at its upper end is adjustably received in the tubular gooseneck 4 and secured in position by the set screw 5 carried by the gooseneck collar 6 formed with a flange 7 forming an abutment for the upper end of the expansion coil spring 8 arranged upon rod 3 and at its lower end abutting a tubular upstanding portion of base 2. Adjustably secured to said gooseneck by the screw or bolt 9 is the head 10 that carries the adjustable and removable prongs 11, preferably four in number, arranged in an arc and secured in adjusted position by the set screws 13.

Welded to the gooseneck 4 is the horizontal end 14 of the auxiliary plunger rod 15, the vertical portion of which extends through the base 2 and through the table and carries at its upper end the collar 16 adjustably secured thereto by set screw 17 that serves as an abutment for the upper end of spring 18 coiled about said rod and resting upon base 2. Arranged upon the said rod 3 below the table is the small expansion spacer spring 19 abutting the table and the adjustable collar 20 also upon said rod, said collar carrying the angular guide arm 21 that extends up through said table and base and maintains said arm and gooseneck true and against rotation.

Fulcrumed to the base 22 of a bracket 23 secured to the front of the table 1 is the angular lever 24 having one bifurcated end freely receiving said rod 3 at a point in short spaced relation to said collar 20 normally, but for engagement by said collar as said rod moves downwardly to move said lever downwardly from full line to dotted line position, Fig. 1. Fast upon rod 3 is the collar 25 in spaced relation to the adjacent end of said lever 24 corresponding to that of collar 20 above said lever in its normal position.

The lower end of lever 24 is formed with a

plurality of perforations 26 affording adjustable selective connection therewith by link 27 carrying pin 32, said link pivotally connected by pin 53 to the pawl carrier 28 whose pawl operates the ratchet wheel 280 fast to the axis 29 operatively supported in said bracket 23, said axis being connected by the meshing bevel gears 30 to the vertical shaft 31 of the rotary carrier 36, said carrier being supported by said bracket 23 and said shaft 31 mounted for rotation in bearings in said bracket. A contractile coil spring 33 connects pin 53 to pin 34 carried by bracket 23, said pins in the normal position of the moving parts being disposed upon a common side of the shaft 31 with the pin 34 in a relatively elevational and forward position.

It will be noted that the rotary carrier is disposed in a position slightly forward of the bed of the table. Arranged upon said carrier in a circle concentric with shaft 31 are a plurality of upstanding finger tubes 35, open at their upper ends, each containing a floating tubular plunger 37 of materially lesser diameter than said finger tubes and having fast upon its topmost end a head 40 of greater diameter than the plunger tube but smaller than said finger tube so that in the retracted position of said plunger said head may be snugly received within said finger tube; said head being formed with a cross recess 38, the bore of said plunger continuing through said head and opening into said cross recess. The finger tubes are formed interiorly with longitudinally extending recesses 60.

The said recesses 60 form air passageways about the head 40 in its retracted position and about a guide block 39 freely received upon said plunger within said finger tube, said guide block being formed exteriorly with a plurality of vertical recesses 44, preferably four in number, as air and dust passageways and with small oppositely disposed recessed areas 45, 46 into which the ends of the headless set screws 47, 48, removably carried by the finger tube, extend to anchor said guide block. A guide wire 49 secured at one end to the plunger tube contiguous to head 40 extends downwardly passing through guide block 39 to the enlarged base 50, also vertically recessed, of said plunger to prevent plunger rotation. A guide rod 51 secured to the inner end of the finger tube extends upwardly centrally through said plunger and carries thereabout an expansion coil spring 52 receiving the base end of said full floating plunger; said finger tube being formed at its lower end with an air vent perforation 90.

The said finger tubes are preferably arranged in five groups, each group comprising four tubes, a compressed air conduit 42 communicating with each tube of a group and having an air port 43 provided with an air valve operating to admit compressed air from an air hose, air pump or the like. The extent of the arc in which a group of finger tubes is arranged corresponds exactly to that in which the prongs 11 of head 10 are arranged and in the stationary position of carrier 36 one group of finger tubes is always disposed immediately beneath and in line with said prongs 11. Since there are twenty finger tubes in all arranged upon the carrier said tubes will be eighteen degrees apart and the aforesaid prongs 11 will be correspondingly arranged and spaced.

Referring now to Figs. 1 to 5 inclusive a foot pedal and compressed air operated structure is disclosed, the lower end of the plunger rod 3 having fast thereupon a collar 54 connected by linkage 55 to the foot pedal 56 hinged at 57 to the

table. In use, one or two operators may attend the machine. If two are employed, one operator may apply the glove fingers, the thumb excepted, to the tubes of a group.

In the instant machine the operator may apply five gloves, one to each group before the machine is started by the second operator, or he may apply only one glove at a time and after same has been serviced apply a second glove; or if but one operator is employed he may apply and remove the gloves and operate the machine. After one or more gloves have been applied, wrongside out, the glove fingers being pulled well down upon the finger tubes until the heads 40 enter the finger tips of the glove, the pedal, from Fig. 1 position, is depressed. This pulls plunger rods 3, 15 downwardly, compressing their springs 8, 18 and causing prongs 11 to depress the plungers 37 with their heads 40 completely within the finger tubes 35. During this downstroke of the plunger rods 3, 15 the guide arm 21 prevents rotation or play of rod 3. It will be noted that the space between collar 20 and lever 24 is the same as that between prongs 11 and heads 40 before the beginning of this stroke. This is so in order that collar 20 may contact lever 24 at the same time that said prongs 11 contact said heads.

Collar 20 will now depress lever 24 to dotted line position and this being the idle stroke of said lever it will, through link 27 and pin 53 move the pawl of pawl carrier 28 idly over the ratchet teeth until said link and pin move to dotted line position with said pin 53 now disposed upon the opposite side of the vertical center line of said ratchet with spring 33 now having its terminals disposed upon opposite sides of said center line. The engaged glove fingers are now completely reversed but still upon their finger tubes; the pedal 56 is now released to permit the springs 8, 18 to return their respective plunger rods. When said rods have moved an initial distance from their lowermost positions corresponding to that existing normally between collar 20 and lever 24, prongs 11 will have moved upwardly correspondingly from their lowermost position inside finger tubes 35, collar 25 will encounter lever 24 and move same well toward its full line normal position, said lever at its bifurcated end being finally spaced above collar 25 by the action of spring 33 and link 27.

As the foot pedal is released the operator manually applies his compressed air hose to the port 43 of the air tube 42 to admit air into the finger tubes of the group then cooperating with the prongs 11, this air passing about the plungers 37, some passing out the vent 90 in the tube 35, some passing through the recesses 44 of base 50 and block 39 and about head 40 and against the glove fingers still disposed upon prongs 11, this air pressure assisting in the upward movement of the rods 3, 15 and the removal of the glove from the finger tubes when they may be readily removed by the operator from their position upon the prongs 11. A complete stroke of the plunger rods comprises the down and return strokes and while the return stroke would be effected by the stout plunger springs alone it is materially facilitated by the application of compressed air.

As the lever 24 was being returned to normal position by the collar 25, the link 27 was returning the pin 53 and connected end of spring 33 to normal position upon that side of the vertical center line of the ratchet common now to it and pin 34. Spring 33 will, together with link 27 and the lever 24, have moved the ratchet in a work-

5

stroke direction causing it through bevel gears 30 to partially rotate shaft 31 to position the next group of glove fingers beneath prongs 11. The point of connection between link 27 and lever 24 determines the extent of movement of the carrier 36, whether from group to group of finger tubes or a lesser movement. This movement will take place immediately after the prongs 11 have been raised clear of the finger tubes. The application of compressed air to the finger tubes while same contain the glove fingers and prongs 11 materially assists, and under a predetermined air pressure completely effects, their removal from said tubes and facilitates the operation and speed of the machine.

Referring now to Figs. 6 to 9 inclusive, a motor drive is provided wherein the pedal 62 is hinged and connected by spring 63 to the motor stand 64 whereon is supported the motor 65, the drive shaft thereof being connected by belt 66 to the fly wheel 67 having the shaft 68 supported in a bearing in the bracket 69, said shaft having thereon a conventional type of single stroke spring bolt clutch 70 that when the pedal is slightly depressed will cause one-half revolution of said crankshaft to depress the plunger rods 3a, 15a corresponding in all respects to the rods 3, 15 of Fig. 1.

It is of course understood that various changes may be made in the general form and arrangement of parts described without departing from the invention, and hence I do not limit myself to the precise details set forth but consider myself at liberty to make such changes and alterations as rightly fall within the spirit and scope of the appended claims.

What is claimed is:

1. In a glove turning machine, a plunger, a support therefor, means for yieldingly retaining said plunger in a predetermined position relative to said support, prongs carried by said plunger, a rotary carrier operatively carried by said support, finger tubes upon said carrier in predetermined spaced relation to said prongs in the normal position thereof and receiving said prongs in an altered position thereof, actuating means for said plunger, and means connecting said rotary carrier and said plunger for imparting a predetermined movement to said carrier after each down stroke and partial return stroke of said plunger sufficient to clear said finger tubes.

2. In a glove turning machine, a plunger, a support therefor, means for yieldingly retaining said plunger in a predetermined position relative to said support, prongs carried by said plunger, a rotary carrier upon said support, groups of finger tubes upon said carrier for disposal consecutively beneath said prongs in predetermined spaced relation thereto in the normal position thereof as said carrier is rotated and for receiving said prongs in an altered position thereof, actuating means for said plunger, and means connecting said rotary carrier and said plunger for imparting predetermined rotary movement to said carrier after each down stroke and partial return stroke of said plunger sufficient to clear said finger tubes.

3. In a glove turning machine, a plunger, a support therefor, means for yieldingly retaining said plunger in a predetermined position relative to said support, prongs carried by said plunger, a rotary carrier upon said support, finger tubes upon said carrier in predetermined spaced relation to said prongs in the normal position thereof and receiving same in an altered position, com-

6

pressed air conduits communicating with said finger tubes, actuating means for said plunger, and means connecting said rotary carrier and said plunger for imparting predetermined rotary movement to said carrier after each down stroke and partial return stroke of said plunger sufficient to clear said finger tubes.

4. In a glove turning machine, glove-finger tubes, guide rods in said tubes, expansion coil springs carried by said guide rods, tubular plungers within said tubes received upon said springs and receiving said guide rods and having perforated heads disposed immediately above said glove-finger tubes in the normal position of said plungers, and guide blocks for said plungers.

5. In a glove turning machine, a support, a plunger carried thereby yieldingly in adjusted position with respect thereto, prongs carried by said plunger arranged in the arc of a circle, a rotary carrier upon said support, finger tubes upon said carrier arranged in a circle common to the arc of said prongs in predetermined spaced relation thereto in the normal position of said prongs for receiving same in an altered position thereof, actuating means for said plunger including a foot pedal, a lever fulcrumed to said support with one end freely receiving said plunger, collars fast to said plunger upon opposite sides of said lever for alternate operative engagement therewith upon the down and return strokes of said plunger, the space between said collar and lever in the normal position of said plunger being common to that between said prongs and finger tubes, guide means connecting said plunger and support, an axis carried by said support, a ratchet fast to said axis, a pawl carrier having its pawl engaging said ratchet, a link adjustably connecting said pawl carrier and lever, driving connection between said rotary carrier and said axis operative as said ratchet is moved in one direction, a contractile coil spring operatively connecting said ratchet and said support with its ends upon a common side of the center of said ratchet in one position thereof and upon opposite sides of said center in the opposite position thereof, and compressed air conduits communicating with said finger tubes.

6. In a glove turning machine, a plunger, a support therefor, means for yieldingly retaining said plunger in a predetermined position relative to said support, a group of prongs carried by said plunger arranged in an arc, a rotary carrier upon said support, groups of finger tubes upon said carrier in a circle complementary to that of said prongs in predetermined spaced relation thereto in the normal position of said prongs for receiving same in an altered position, actuating means for said plunger, and means connecting said rotary carrier and plunger imparting predetermined movement to said carrier after each down stroke and partial return of said plunger sufficient to clear said finger tubes, said carrier movements positioning successive groups of finger tubes to receive said prongs.

7. In a glove turning machine, glove-finger tubes, guide rods in said tubes secured terminally thereto, expansion coil springs within said tubes upon said guide rods, tubular plungers within said tubes receiving said guide rods and disposed upon said springs and having heads disposed immediately above the ends of said tubes in the normal position of said plungers, recessed blocks received freely upon said plungers within said tubes, set screws carried by said tubes en-

7

gaging the recessed portions of said blocks, and compressed air conduits communicating with said tubes.

STANLEY SUFTKO.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,348,077	Baum	July 27, 1920

8

Number	Name	Date
1,771,521	Baum	July 29, 1930
993,937	Abbott	May 30, 1911
978,434	Crosby	Dec. 13, 1910
917,883	Zimmerman	Apr. 13, 1909
698,956	Jarvis	Apr. 29, 1902
807,295	Lincoln	Dec. 12, 1905
1,790,837	Pym	Feb. 3, 1931
1,430,710	Whitcomb	Oct. 3, 1922
1,087,578	Hadaway	Feb. 17, 1914
1,545,575	Standish	July 14, 1925
2,033,158	Standish	Mar. 10, 1936