

CHANNEL LIP TURNING MACHINE.

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CHANNEL-LIP-TURNING MACHINE.

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To all whom it may concern:

Be it known that I, WILLIAM H. HOOPER, a citizen of the United States, residing at Lynn, county of Essex, and State of Massachusetts, have invented an Improvement in Channel-Lip-Turning Machines, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

The invention to be hereinafter described relates to lip turning machine and has for its object to provide a device of this character which will be simple in construction, efficient in operation, and wherein the parts shall be so related and disposed that the work may be readily put in operative position with respect to the parts that act upon it, and be properly guided throughout the extent of the lip turning action. These with other objects and purposes of the invention will be readily understood by those skilled in the art from the following description of one form of the invention selected for illustrative purposes.

In the drawings:—Figure 1 is a side elevation of a lip turning machine embodying the features of the present invention, sufficient only of the frame and other parts being illustrated to show the relation and connection of the invention therewith. Fig. 2 is a detached detail view of a portion of the machine head looking in the direction of the arrow Fig. 1. Fig. 3 is a detached detail view showing the lost motion connection between the treadle operated rods for depressing and swinging the feed wheel and tool carrier respectively.

The frame A may be of any usual or desired construction suitable to support the operative parts in desired position, said frame preferably rising from the floor, as usual.

Mounted in a suitable bearing 1 carried by the frame A is the shaft 2, shown by dotted lines Fig. 1, said shaft having mounted thereon the worm gear 3 preferably running in an oil cup 4, and driven from a worm 5, mounted on the cross or worm shaft 6, carried by brackets 7 projecting from the frame A.

Mounted in a vertically movable bearing 9, is a shaft 8 carrying the feed wheel B, said shaft 8 being operatively joined to the shaft 2 by the well known Oldham coupling

10, so that while shafts 2 and 8 are connected for rotation in unison, the sliding bearing 9 and shaft 8, together with the feed wheel B, may be raised or lowered, as will be readily understood by those skilled in the art. It will likewise be obvious that instead of the Oldham coupling, the shafts 2 and 8 may be otherwise operatively connected, so that the feed wheel B may be raised or lowered.

Projecting from the frame A is a guide arm or bracket 11, upon which rests one end of a coiled spring 12, the other end whereof bears upon and normally maintains the bearing 9 and its connected parts in raised or working position, a stop 13 being employed to limit the upward movement of said parts. Connected to the movable or sliding bearing 9 is a treadle rod 14 which extends downward to a treadle or other operating device not necessary to illustrate because old and well known in the art.

Rotatably mounted in the bearings C and D secured to or forming part of the main frame A is the vertical outer tool shaft 15 to which is fixed the operating pulley 16, driven by the belt 17, which extends over similar pulleys 18 on the worm shaft 6, and is driven from any suitable source of power. From this construction it will be clear to one skilled in the art that the belt 17 serves to rotate the worm shaft 6, the connected feed wheel B, and the tool shaft 15 in a convenient and efficient manner. To the lower end of the tool shaft 15 is connected the lip turning tool for acting upon the outer lip, adjacent the sole edge, and which in the present form of the invention comprises wings or projections 19, the action of which in conjunction with the opposed lip turning tool and associated guides will hereinafter more fully appear.

To extensions 20 of the bracket D' which supports the bearing D of the tool shaft 15, is pivotally connected at 22 a small frame 21, which, for identification, may be termed the inner lip frame. This pivoted frame 21 has rotatably mounted therein the vertical shaft 23, the lower end of which carries the inner lip turning means, preferably, though not necessarily formed by vertical grooves or corrugations 24 in the lower end of the inner lip turning shaft 23.

The inner lip turning frame is disposed so as to swing on its pivotal axis 22, between

the side or cheek extensions 25, 25 of the bracket D', said side or cheek extensions thus serving as guides for the frame 21 as it swings on its axis and as steadying means for the frame during the action of the inner lip turning tool, as will be clearly understood by those skilled in the art. To the upper portion of the inner lip turning frame 21 is connected an arm 26, preferably secured thereto by screws or other suitable means 27, 27, and to the free end of said arm is appropriately jointed the operating rod 28, normally maintained in raised position (Fig. 1) by means of a spring 29 surrounding the rod and bearing at its ends respectively upon the frame at 30 and the shoulders 31 on the rod. The operating rod 28 extends downward below the machine head and passes through the end 33 of an adjustable sleeve 32 secured to the treadle rod 14 (Figs. 1 and 3), the lower portion of the operating rod having attached thereto a collar 34 some distance below the sleeve 32. From this construction it will be clear to one skilled in the art, that upon depression of the treadle rod 14, the feed wheel B will be first moved downward to enable the work to be carried below the lip turning tools, and thereafter, by engagement of the sleeve 32 with the collar 34, the operating rod 28 will be depressed, thereby turning the inner lip turning frame 21 upon its axis 22, and separating the lip turning tools for the ready removal and entrance of work between them; and that as the treadle rod is raised by the spring 12 its first effect will be to permit the spring 29 to swing the inner lip turning frame 21 in a direction to move its tool toward the outer lip turning tool to properly bring both tools into working relation with the sole and lips thereon, and its second effect will be to permit the feed wheel B to close upon and clamp the work against the guides to be now explained.

Projecting upward from the main frame A is a short guide supporting standard 35 recessed to accommodate an outer channel guide 36 adjustably mounted thereon, said outer channel guide 36 being provided with a curved advance edge 37 and a bottom portion 38 extending beneath the lower end of the outer lip turning tool, said bottom portion 38 affording a bearing surface extending into the outer channel of the sole S, as indicated in Fig. 1, and supporting the upward thrust of the work due to the upward tendency of the feed wheel B, as will be readily understood, while its curved edge 60 gives the initial raise to the outer lip that it may be properly treated by the outer lip turning tool.

The feed of the work is in the direction of the arrow, Fig. 2, so that the curved forward lip raising edge of the guide 36 first

acts on the work, then the outer lip turning tool turns the lip to the up position shown, while the bottom surface of the guide travels in the outer channel. Disposed on the side of the outer lip turning tool opposite the edge 37, is a lip presser 39 (Fig. 2) having a lower portion to extend into the channel and an upper portion to bear against the upturned lip and press or hold it in its raised position, a construction and operation sometimes desirable in passing around the toe and other sharp curved portions of the sole.

Secured to the inner lip turning frame 21 by suitable means as the screws 40, 40 is an inner channel guide 41, the lower end 42 of which is disposed to project beneath the inner lip turning tool (Fig. 1) and run in the channel of the inner lip, from which construction it will be seen that in swinging the tool 24 to working position, as already explained, the inner channel guide, also, is placed in the channel and beneath the tool to thereby act not only as a guide but as a support for the sole against the upward thrust of the feed wheel, similar to corresponding functions of the outer guide 36. Likewise by projecting beneath the ends of the inner and outer lip turning tools, the inner and outer guides protect the work from being distorted or its line of feed disturbed by the ends of the tools turning against the surface of the channels.

It has already been stated that the inner lip turning shaft 23 is mounted in the frame 21, and to drive said shaft in unison with the outer lip turning shaft 15, the latter is provided with a pinion 44 which operatively engages a pinion 45 secured to the inner lip turning shaft 23, sufficient play or lost motion being provided to allow the shaft 23 to swing with the frame 21, as will be readily understood. Such play or lost motion is negligible in the practical operation of the machine, because the pinions are located near the pivotal point of the frame 21.

To limit the swing of the tools toward each other, the swinging frame 21 is provided with an adjusting screw 46.

The operation of the machine will be readily understood from the construction described, it being apparent that variations in form, location and character of parts may be made within the limits of mechanical skill without departing from the spirit of the present invention, which contemplates the simultaneous treatment and raising of two channel lips by rotating tools working upon the lips between them and guides for the work disposed to engage the channel of its adjacent tool. It will also be clear that in placing a piece of work in position between the tools that a simple depression of the treadle serves to lower the work support or feed wheel, and then separate not only the

tools by the movement of the swinging frame but also the two channel guides.

Having thus described the invention, what I claim and desire to secure by Letters Patent is:—

1. In a channel lip turning machine, the combination with a feed wheel and means to operate it, of inner and outer lip turning tools, means for rotating them in unison, a guide associated with each of said tools, and means to move one of the tools and its associated guide toward and from the other tool and its guide.

2. In a channel lip turning machine, the combination with a feed wheel and means to operate it, of inner and outer lip turning tools, means for rotating them in unison, a guide associated with one of said tools, said guide being interposed between the end of said tool and the surface of the channel in the shoe sole.

3. In a channel lip turning machine, the combination of a feed wheel and means to rotate it, of two parallel lip turning shafts each carrying a lip turning tool, operative connections between said shafts, means for rotating one of said shafts, a guide interposed between the end of each of said shafts and the feed wheel, and means for swinging one of said shafts and its associated guide toward and from the other shaft.

4. In a channel lip turning machine, the combination of a feed wheel and means to rotate it, an outer lip turning shaft and its tool, a pivotally mounted inner lip turning frame, an inner lip turning shaft mounted therein, gearing connections between said lip turning shaft and means for lowering the feed wheel and thereafter swinging the inner lip turning frame and its shaft away from the outer lip turning shaft.

5. In a channel lip turning machine, the combination of a feed wheel, an outer lip turning shaft carrying outer lip turning devices, an inner lip turning shaft carrying inner lip turning devices, a swinging frame carrying one of said lip turning shafts, means for driving said lip turning shafts, means for moving the feed wheel to and from said lip turning devices, connections interposed between said means and the swinging frame constructed and arranged to move one of said lip turning devices away from the other subsequent to the movement of the feed wheel from said devices, and to return the lip turning device to its initial position prior to the return movement of the feed wheel to its initial position.

6. In a channel lip turning machine, the combination of a feed wheel, an outer lip turning shaft carrying outer lip turning devices, an inner lip turning shaft carrying inner lip turning devices, a channel guide associated with each of said lip turning devices and interposed between its associated

turning device and the work, a swinging frame carrying one of said lip turning shafts, means for driving said lip turning shafts, means for moving the feed wheel to and from said lip turning devices, connections interposed between said means and the swinging frame constructed and arranged to move one of said lip turning devices away from the other subsequent to the movement of the feed wheel from said devices, and to return the lip turning device to its initial position prior to the return movement of the feed wheel to its initial position.

7. In a channel lip turning machine, the combination of a feed wheel for the work, an outer lip turning shaft and its lip turning device, an inner lip turning shaft and its lip turning device, a channel guide associated with each of said lip turning devices, a swinging frame carrying one of said lip turning devices and its associated guide, and means for moving said swinging frame and with it the associated lip turning device and its guide to and from the other lip turning device and its guide.

8. In a channel lip turning machine, the combination of a feed wheel, an outer lip turning shaft and its lip turning device, an inner lip turning shaft and its lip turning device, a swinging frame carrying one of said shafts and its lip turning device, a treadle rod for moving the feed wheel away from said lip turning devices, an operating rod for said swinging frame, and lost motion connections between said treadle rod and operating rod constructed and arranged to move the swinging frame subsequent to movement of the feed wheel from said lip turning devices.

9. In a channel lip turning machine, the combination of a feed wheel, an outer lip turning shaft and its lip turning device, an inner lip turning shaft and its lip turning device, a channel guide associated with each of said lip turning devices, a swinging frame carrying one of said shafts and its lip turning device, a treadle rod for moving the feed wheel away from said lip turning devices, an operating rod for said swinging frame, and lost motion connections between said treadle rod and operating rod constructed and arranged to move the swinging frame subsequent to movement of the feed wheel from said lip turning devices.

10. In a channel lip turning machine, the combination of an outer lip turning tool, an inner lip turning tool, means for rotating said tools, a work support having its work supporting surface extended opposite both of said lip turning tools, and means for relatively forcing the work support and tools toward each other to hold the work disposed in substantially a flat condition between the work support and the ends of the tools.

11. In a channel lip turning machine, the combination of an outer lip turning tool and inner lip turning tool, means for rotating said tools, a work support, means for forcing
5 the work support toward said tools, said work support having its work supporting surface extended and arranged opposite the ends of both of said tools to cause said means to hold the work disposed in substantially a flat condition between the surface
10 of the work support and the ends of said tools.

12. In a channel lip turning machine, the combination of a feed wheel and means to
15 rotate it, an outer lip turning shaft and its tool, a pivotally mounted inner lip turning frame, an inner lip turning shaft mounted therein, a guide associated with one of said tools and disposed between it and the feed
20 wheel, gearing connections between said lip turning shafts, and means for lowering the feed wheel and thereafter swinging the inner lip turning frame and its shaft away from the outer lip turning shaft.

25 13. In a channel lip turning machine, the combination of a work support for maintaining the work in operative position, an inner lip turning tool, an outer lip turning tool, means for operating said tools to turn
30 up the inner and outer channel lips of a shoe sole on said work support, and a guide associated with one of said lip turning tools, said guide having a part extended and

interposed between its associated lip turning tool and the work. 35

14. In a channel lip turning machine, the combination of a work support for maintaining the work in operative position, an inner lip turning tool, an outer lip turning tool, means for operating said tools to turn
40 up the inner and outer channel lips of a shoe sole on said work support, a guide associated with one of said lip turning tools, said guide having a part extended and interposed between its associated lip turning tool
45 and the work, and a part acting to initially turn up the channel lip.

15. In a channel lip turning machine, the combination of a work support for maintaining the work in operative position, an
50 inner lip turning tool, an outer lip turning tool, means for operating said tools to turn up the inner and outer channel lips of a shoe sole on said work support, a guide associated with one of said lip turning tools,
55 said guide having a part extended and interposed between its associated lip turning tool and the work, and a lip presser.

In testimony whereof, I have signed my name to this specification, in the presence of
60 two subscribing witnesses.

WILLIAM HENRY HOOPER.

Witnesses:

ROSWELL F. HATCH,
REDFIELD H. ALLEN.