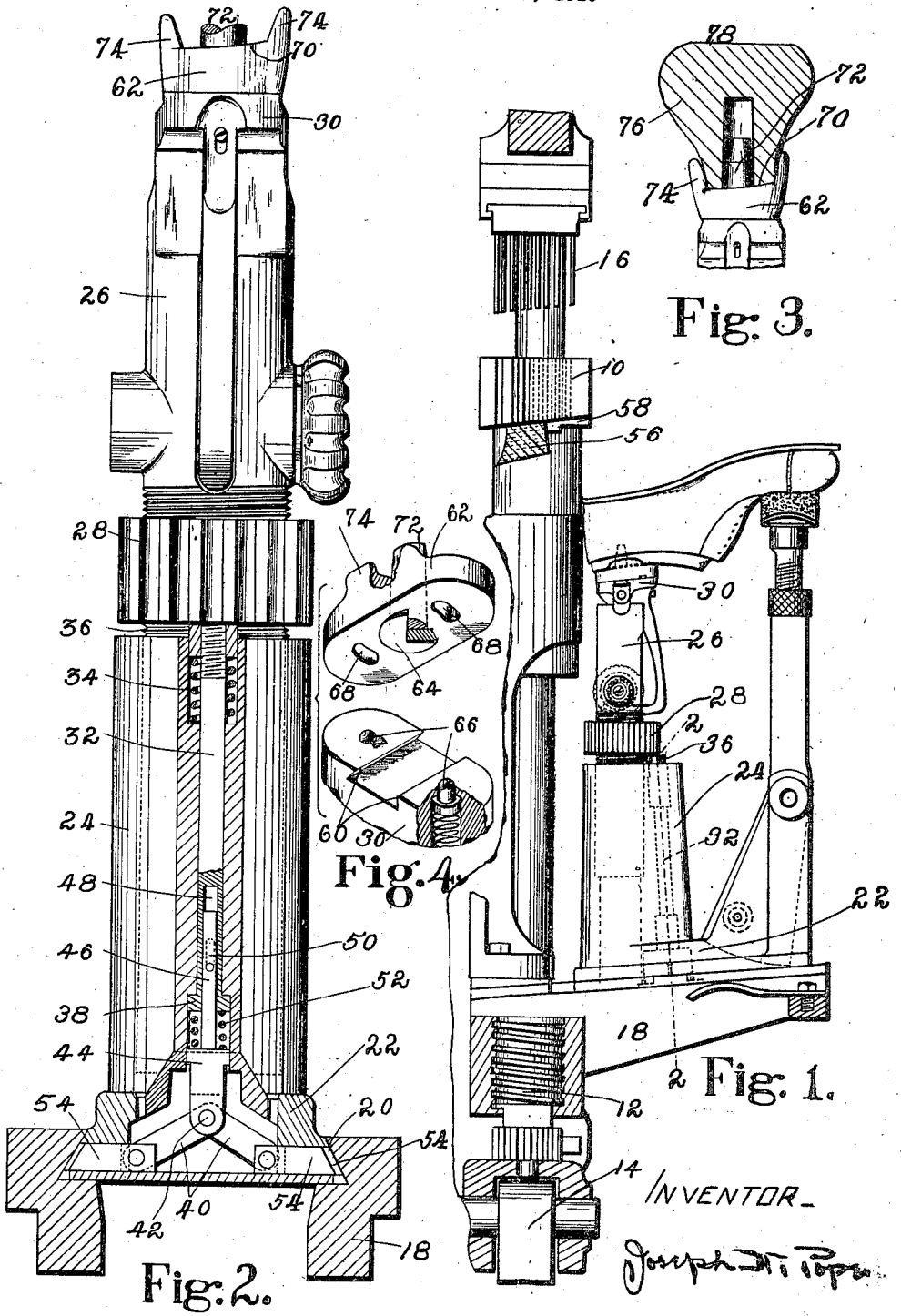
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J. H. POPE

WORK SUPPORT.

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WORK SUPPORT.

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To all whom it may concern:

Be it known that I, JOSEPH H. POPE, a citizen of the United States, residing at Hamilton, in the county of Essex and State of Massachusetts, have invented certain Improvements in Work Supports, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to work supports for shoe machinery and, more particularly, to a work support for facilitating the proper location of a shoe with respect to the operating instrumentalities of the machine and maintaining the shoe in its proper position while being operated upon.

For example, in heeling machines, as well as in other shoe machinery, it is customary to provide a shoe support in the form of a jack which is arranged to slide from a work receiving position in front of the machine into a position in operative relation to the tools which are to operate upon the work. Usually, such a jack slides freely in and out and the friction of the jack base in its guideway is depended upon to retain the jack in position when pressure is exerted upon the work. It is often found, however, especially when the faces of the work are not parallel, that the application of pressure has a considerable tendency to displace the work support or as it is termed in shop language, to cause it to "kick out."

One object of the present invention is to produce a shoe support by which this undesirable tendency is overcome. In pursuance of this object, one principal feature of the invention resides in the combination with a shoe support which is normally freely movable in a substantially horizontal guideway, of means acting upon the surface of the guideway to lock the shoe support against movement at a predetermined period in the operation of the machine. The construction and arrangement are preferably such that the locking means is contained within the slidable shoe support or jack and is controlled in its locking function by the presence or absence of pressure upon the work; thus when the jack is moved into the range of the pressure applying mechanism, it may be automatically locked against displacement by the application of the pressure to the work, without the exertion of any effort on the part of the operative.

An advantageous feature of such an organization as that above outlined is that, since the locking mechanism is self-contained within the jack and may operate upon the surface of the guideway without any modification of the latter, the invention may readily be utilized in connection with existing machines already in use in shoe factories, it being only necessary to substitute for the older type of jack an improved jack constructed according to the invention.

One form of the invention which has proved satisfactory in practical use comprises a plunger slidably mounted in the jack post and arranged to operate through a toggle to project oppositely movable locking members from the jack base into engagement with the guideway in which the jack moves.

Another difficulty which has been encountered with more or less frequency in heeling or otherwise operating upon shoes mounted upon wooden lasts arises from the fact that, after such a last has been used for some time, its top or crown is frequently more or less broken down upon one side or the other and consequently does not afford a firm support for the work when placed upon the ordinary flat jack top. With the object in view of overcoming this difficulty, another feature of the present invention consists in a jack or work support having mounted upon it a reversible last engaging member having a last engaging face inclined transversely of the last. By reversing the last engaging member, the said face may be inclined in one direction or the other as may be required to afford suitable support for lasts having their tops broken down on either side. The last engaging member may also be mounted in such a way as to permit a limited amount of free lateral movement with respect to the jack post, thus making it easy to adjust the shoe to the exact position desired with respect to the instrumentalities which are to operate upon it.

Other features of improvement and advantages of the invention will become ap-

parent upon reading the following detailed description of one embodiment thereof in connection with the accompanying drawings, in which—

Figure 1 is a view in side elevation of a portion of a well-known type of heeling machine having a work support embodying the invention applied thereto;

Fig. 2 is a front elevation of the work support with portions shown in section on the line 2—2 of Fig. 1, to disclose the construction of the locking mechanism;

Fig. 3 is a detail view of the jack top with a wooden last upon it; and

Fig. 4 is a detail view showing the last engaging member separated from the jack top.

Referring now to the drawings, 10 represents the nailing die and 12 the measuring or preliminary pressure screw of a well-known type of heeling machine. As is understood by those familiar with the art, the screw 12 is rotated to jack the shoe and heel up against the nailing die 10, after which a heavy, positive pressure is applied by any suitable means such, for example, as a cam 14, prior to the driving of the heel attaching nails by reciprocating the nail drivers 16. The usual bracket 18, which is raised and lowered by the pressure mechanism, is provided with a guideway comprising undercut surfaces 20 in which a jack base of dovetail formation is fitted to slide easily. The general shape of the jack base is shown at 22, and extending upwardly from it is a sleeve 24 in which is loosely mounted a jack post 26. The jack post 26 is threaded and a large manually operated nut 28 serves to effect vertical adjustment to vary the height of the jack. A jack top 30 is pivotally mounted at the top of the post 26 for the purpose and in the manner described in detail in Patent No. 1,313,909.

A plunger 32 has a vertical sliding bearing in the sleeve 24 and is supported by a spring 34 bearing upon the lower face of a nut 36 adjustably threaded upon the upper end of the plunger. The upward movement of the plunger is limited by an enlargement 38 at its lower end which engages a corresponding shoulder formed within the sleeve 24. The arrangement and normal adjustment of the plunger and nut 36 are such that the nut 36 projects slightly above the top of the sleeve 24 and the jack post adjusting nut 28 rests upon the nut 36.

A toggle comprising links 40, pivoted together at 42, is arranged to be operated by a secondary plunger 44, provided with a stem 46, which telescopes into a recess 48 in the lower end of the plunger 32. A pin and slot connection 50, between the stem 46 and the plunger 32, serves to limit the relative movement between the two, and a compression spring 52 interposed between the members 38 and 44 permits a certain amount of yielding when the member 44 is pressed downwardly by depressing the plunger 32.

Oppositely disposed locking members 54 are arranged to slide horizontally in suitable guides formed in the base 22 and are respectively pivotally connected to the links 40 of the toggle, by which they are projected and retracted. The ends of the members 54 are inclined, to correspond to the surfaces 20, and the arrangement is such that when the said members 54 are projected outwardly they will engage securely with the surfaces of the jack guideway and lock the jack firmly against sliding movement therein.

As previously stated, the spring 34 normally projects the upper end of the plunger 32, or the nut 36, slightly above the top of the jack member 24 and supports the jack post 26 and associated parts with the hand nut 28 slightly above the top of the member 24. The shoe is jacked with the work support drawn forward and occupying the position illustrated in Fig. 1, after which the work support, with the work upon it, is pushed into operative position with the heel seat of the shoe beneath the heel 56, which is held in a suitable holder 58 upon the under side of the nailing die 10. The work support is then raised to apply pressure to the work. In this upward movement of the work support the shoe first engages the heel and then the reaction causes relative approaching movement of the nut 28 and the upper end of the sleeve 24, the spring 34 yielding and permitting the plunger 32 to be depressed by the nut 28. The depression of the plunger 32 is yieldingly transmitted through the spring 52 to the secondary plunger 44 which, in turn, tends to straighten the toggle 40 and project the locking members 54 into locking engagement with the work support guideway. The work support is thus securely held against displacement as long as the work is under pressure but is instantly released as soon as the pressure is removed. It will be apparent that the operation of the locking mechanism is entirely automatic, being controlled by the presence or absence of pressure upon the work and requiring no attention whatever on the part of the operative.

The upper face of the jack top 30 is provided with a transverse undercut slot 60, being in this respect substantially the same as the corresponding member in the jack shown in the prior patent to which reference has hereinbefore been made. The last engaging member has, however, in the case of the present invention, a different and improved construction which is best illustrated in Figs. 3 and 4. The last engaging member 62 is provided upon its under side with a circular dovetail 64 of a diameter to fit in

the undercut slot 60. Spring-pressed plugs 66 having rounded upper ends are so mounted in the member 30 that their ends normally project above the top surface thereof but are capable of yielding until flush with said surface. Elongated recesses 68 are formed in the lower face of the member 62 and are so located that the plugs 66 shall enter them when the said member is in position upon the jack top. It will be understood that, by reason of the construction just described, the last engaging member 62 may be readily placed in position or removed by a simple transverse sliding movement, the rounded ends of the plugs 66 causing them to yield when the member 62 is forced transversely into or out of position but the plugs acting as detents to retain the last engaging member and prevent it from becoming accidentally separated from the jack top. The purpose of elongating the recess 68 is to permit a limited amount of free transverse movement of the last engaging member, thus making it easy to adjust the shoe to the exact position desired.

The upper face 70 of the last engaging member 62 is transversely inclined, as shown in Figs. 2 and 3, and, as illustrated, is provided with a projecting last pin 72 and side wings 74. A last 76 is shown in Fig. 3, which has its top or crown broken down or worn away more upon one side than the other; the inclination of the face 70 of the last engaging member compensates for the transverse inclination of the general top surface of the last which is, therefore, solidly supported with its bottom face 78 substantially horizontal, which is necessary for the proper engagement of the parts of the work when they are brought together. If the inclination of the top face of the last, due to unequal wear, or breaking down, should be in the opposite direction, the last engaging member 62 may be instantly reversed and the inclination of the face 70 presented in the opposite direction by rotating the member about the vertical axis of the circular dovetail 64. It will thus be seen that provision is made for taking care instantly of worn lasts, irrespective of which side is worn away. The improved last bed piece may, furthermore, be removed by a single motion of the hand and the regular flat bed piece inserted for use in connection with lasts which are not broken down nor unevenly worn.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. In a machine of the class described, the combination of a shoe support, a guide in which said shoe support is normally freely movable substantially horizontally in a right line, and means acting upon the guiding surface to lock the support against movement at a predetermined period in the operation of the machine.

2. In a machine of the class described, the combination of mechanism for applying pressure to the work, a work support normally freely movable into and out of the range of the pressure applying mechanism, and means controlled by the presence or absence of pressure upon the work for locking the work support against movement.

3. In a machine of the class described, the combination of mechanism for applying pressure to the work, a jack, means for guiding the jack for movement into and out of the range of the pressure applying mechanism, and means contained within the jack for locking it against movement when the pressure is applied.

4. A work support, applicable to shoe machines having a rectilinear guideway, comprising a base having rectilinear surfaces to co-operate with such a guideway, and means operable by pressure upon the work support for locking the base thereof to said guideway.

5. A work support, applicable to existing shoe machines having an undercut work support guideway, comprising a base having surfaces arranged for sliding engagement with such a guideway and means contained within said base for engaging a surface of the guideway and locking the work support against movement when pressure is applied to the work.

6. A jack, applicable to shoe machines having a jack guideway, comprising a base constructed and arranged to be guided for movement in such a guideway, a plunger slidably mounted in the base, and toggle operated means operatively connected to the plunger for locking the jack to the guideway.

7. Locking mechanism for the jack of a shoe machine comprising a guideway, a jack having a base constructed and arranged to slide in said guideway, a locking member in the jack base movable into locking engagement with the guideway, a toggle connected to said locking member, and means for straightening the toggle to operate the locking member.

8. Locking mechanism for the jack of a shoe machine comprising a guideway, a jack having a base constructed and arranged to slide in said guideway, oppositely directed locking members in the jack base movable outwardly into locking engagement with the guideway, a toggle connecting said locking members, and means for straightening the toggle to project said locking members.

9. In a device of the class described, the combination of a jack post, a jack base in which said post is loosely mounted, a toggle in the base, connections between the post and the toggle for straightening the toggle when the post is depressed, and locking mem-

bers connected to the toggle and operated to lock the jack against movement when the toggle is straightened.

10. A support for lasts comprising, in combination, a jack post, and a member for engaging the top or crown of a last, said member being reversible substantially about the axis of the post and having a last engaging face inclined transversely of the last with relation to said axis.

11. A work support for shoe machinery comprising, in combination a supporting device, and a member mounted upon said device for engaging the top or crown of a last, said member having a last engaging face inclined transversely of the last and being reversible to reverse the inclination of said face relatively to the last.

12. In a work support, the combination of a jack post, a last engaging member loosely mounted thereon for a limited amount of lateral movement relative thereto, said member being capable also of reversal relative to the jack post and means for temporarily maintaining one or the other of the reversed positions while permitting the lateral movement.

13. In a work support, the combination of a jack post, a last engaging member loosely mounted thereon and detent means co-operating with said member normally to permit a limited amount of lateral movement thereof relative to the jack post, said detent means being retractable to permit a complete reversal of said member relative to the jack post.

14. In a work support, the combination of a substantially vertical jack post, a last engaging member having a transversely inclined last engaging face loosely mounted thereon, and detent means normally retaining said member upon the post, said detent means being retractable to permit reversal of the last engaging member in a substantially horizontal plane to reverse the inclination of said face.

15. In a work support, the combination of a jack post having a transverse undercut slot in its end, and a last engaging member having a circular overhanging projection in said slot for retaining said member upon the post and permitting it to be rotated substantially about the axis thereof to present its last engaging face in reversed positions.

16. In a machine of the class described, a shoe support, a guide upon which the support may move, a member movable with the support for locking said support against movement upon the guide, a lever connected to the locking member, and means for moving the lever to operate said locking member.

17. In a machine of the class described, a shoe support, a guide upon which the support may move, a member for locking the support against movement upon the guide, a lever connected to the locking member, and means controlled in movement of the work for moving the lever to operate said locking member.

In testimony whereof I have signed my name to this specification.

JOSEPH H. POPE.