G. GODDU AND F. L. MACKENZIE.

WORK SUPPORT.

APPLICATION FILED MAY 3, 1919.

1,396,192. **Patented Nov. 8, 1921.**

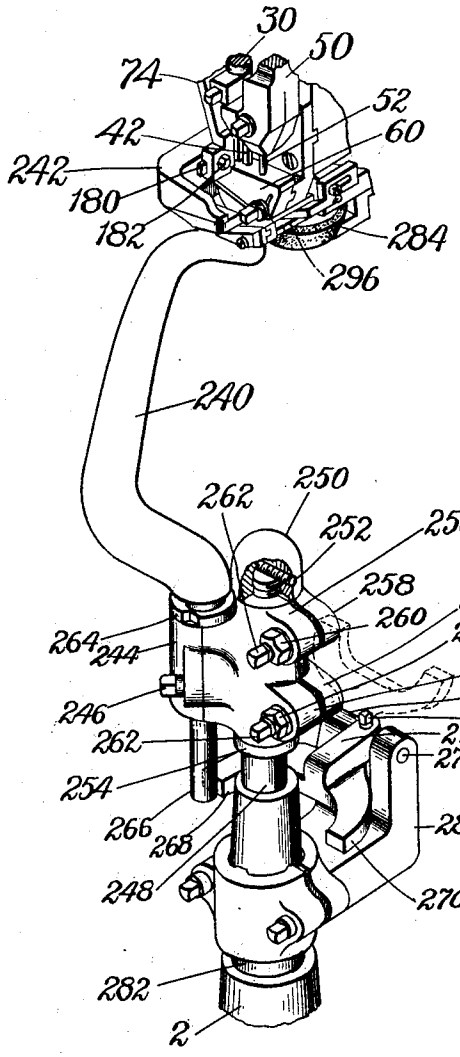


Fig. 1.

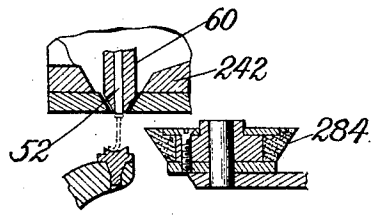


Fig. 2.

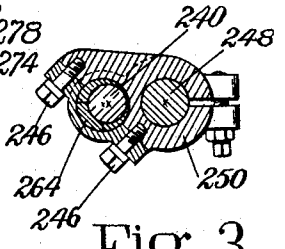


Fig. 3.

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WORK-SUPPORT.

1,396,192. Specification of Letters Patent. Patented Nov. 8, 1921.

Original application filed December 18, 1916, Serial No. 137,571. Divided and this application filed May 3, 1919. Serial No. 294,479.

To all whom it may concern:

Be it known that we, GEORGE GODDU and FRED L. MACKENZIE, citizens of the United States, and residents of Winchester, in the county of Middlesex and Commonwealth of Massachusetts, and Beverly, in the county of Essex and Commonwealth of Massachusetts, respectively, 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 pertains to work supports for fastening inserting machines and is a division of application, Serial No. 137,571, for machines for inserting fastenings, filed by us on Dec. 18, 1916, and disclosing a machine organized to sever nails from a nail string and insert them into the work.

In the use of machines of this type, it is desirable that the points of the nails be clenched in the same direction. To this end, the work is supported on a rotatable horn having a clenching cavity formed in its tip the center of which is substantially coincident with the axis of rotation of the horn and is slightly offset relatively to the line of drive of the nails. It has been found, however, in the operation of such machines that the horn frequently becomes sprung or bent so that its clenching cavity is displaced relatively to its axis of rotation and the line of drive of the nails thus preventing the proper insertion of the nails.

An important object of the invention is to facilitate the centering of the horn in the machine and at the same time to provide means for setting the horn so as to compensate in every position of rotation of the horn for the tendency of the horn to spring during the fastening inserting operations. To this end, one of the features of the invention resides in a horn mounted for rotative movement and improved means for adjusting the horn relatively to its axis of rotation. Preferably, the horn is so adjusted as to make the center of the clenching cavity in its tip coincident with its axis of rotation or substantially so.

In accordance with another feature of the invention, novel means is provided for limiting the extent of rotative movement of the work support or horn to adapt the machine for performing nailing operations in which only a partial turning movement of the shoe is desired, for example, the nailing of a welt to a shoe. In the illustrated exemplification of the invention, the rotative movement of the horn is limited by stops which can be shifted out of operative relation to the horn when desired for any purpose, such, for instance, as to permit nails to be inserted all the way around a shoe. It is customary to provide fastening inserting machines with an edge gage or other shoe engaging part to determine the relation of the shoe to the line of drive of the fastenings during the insertion of the fastenings. In such a case, if the horn is allowed to rotate without restraint it may pinch the shoe against said part. Preferably, the means for limiting the rotation of the horn is so disposed relatively to the horn and the shoe engaging part as to prevent pinching of the shoe.

Although the invention is herein shown and described as employed in a machine for inserting string nails, it is recognized that its application is not restricted to such machines but that it may be utilized in machines of other types including other kinds of fastening inserting machines. It is intended, therefore, that the scope of the invention shall not be limited except as required by the claims.

Other objects and features of the invention will appear as the description proceeds and will be pointed out by the appended claims.

In the drawings,

Figure 1 is a view in elevation of a work support according to the invention;

Fig. 2 is a view in vertical cross-section showing the work support in its relation to the fastening inserting mechanism and the work gage; and

Fig. 3 is a view in cross-section of the connections between the horn and the horn shaft.

The fastening inserting mechanism of machines of the type disclosed in the above-mentioned application comprises a driver bar 30 and an awl bar 50 carrying respectively a driver 42 and an awl 52 movable in passages formed in a throat 60. The

nail strings from which the nails are severed are conducted to the driver passage of the throat by a guide 74 which carries at its lower end a cutter 180 fixed to the guide by a screw 182 and operative to sever the endmost nail from the nail string after it has been inserted in the driver passage of the throat.

The work supporting mechanism comprises a horn 240 which is normally spring pressed upwardly to clamp the work against a fixed abutment 242, the horn being depressed against the pressure of the usual horn spring by a treadle to permit placing a shoe thereon and removal of the shoe after it has been operated upon by the machine and being intermittently and automatically slightly depressed during the operation of the machine to permit feeding of the work, all in the manner well understood by those skilled in this art.

The lower end of the horn 240 is mounted in a bracket or yoke 244 rotatably mounted on the horn shaft or part 248 between a cap nut 250 screw threaded on the upper end of the horn shaft 248 and held in adjusted position by a set screw 252 and a collar 254 on the horn shaft 248. The horn shaft is slidably supported in an upstanding portion 2 of the machine frame. To insure that the horn bracket 244 will have a proper running fit on the shaft 248, this bracket is provided with two pairs of ears 256, 258 and a hollow adjusting screw 260 having a hexagonal head is threaded through each of the ears 256, the inner ends of these screws bearing against the inner faces of the ears 258 to regulate the clamping action of the two pairs of ears. The ears of each pair are locked in adjusted position by a clamping screw 262 which is threaded through the screw 260 and into the ear 258.

To provide for accurate centering of the horn 240 and at the same time to provide for setting the horn 240 to compensate in any position of rotation of the horn for the springing tendency of the horn tip, the lower end of the horn is received in a split eccentric sleeve 264 adjustably disposed within a split bearing of the horn bracket 244 and clamped in adjusted position by screws 246.

It is desirable, in order to facilitate the clenching of the nails, that the center of the clenching cavity of the horn be disposed a little to one side of the line of drive of the nails so that their points will be deflected toward the center of the cavity. It is also desirable, as hereinbefore pointed out, that the points of the nails shall all be clenched in the same direction. To this end, the axis of rotation of the horn 240 which, in the illustrated exemplification of the invention, may be considered as the center line of the horn shaft 248, coincides as nearly as practicable with the center of the clenching cavity of the horn. Accordingly, the axis of rotation of the horn is substantially, but preferably not exactly, coincident with the line of drive of the nails. With this arrangement, it is manifest that the center of the clenching cavity will bear the same relation to the line of drive of the nails in all positions of rotation of the horn about the horn post. The peculiar shape of horn required in machines of this character renders it impracticable to make the horn stout enough to eliminate entirely the springing action caused by the shock produced by the blow of the driver. Any such springing action, of course, displaces the clenching cavity with reference to the line of drive. The usual adjustment is such that the line of drive is very slightly to the right, as the parts are seen in Fig. 1, of the axis of rotation of the horn and consequently of the center of the clenching cavity. The spring of the horn, however, when it is in the position in which it appears in Fig. 1, obviously tends to move the center of the cavity toward the line of drive and thus to neutralize the advantage sought to be gained by this adjustment. At the same time if the clenching cavity were by movement of the head adjusted farther to the left of the line of drive in order to compensate for the spring of the horn in this position, it would bring the line of drive too close to the edge of the clenching cavity when the horn is in a diametrically opposite position, since the spring of the horn in this position obviously tends to throw the center of the clenching cavity still farther away from the line of drive. It will thus be seen that a very fine adjustment of the horn tip is necessary with reference to its axis of rotation and the line of drive and the eccentric sleeve 264 and the parts coöperating therewith, as above described, enable an operative to make this adjustment satisfactorily.

To limit the turning movement of the horn, particularly when the machine is used for welt nailing in which it is not desired to have the horn make a complete revolution, inasmuch as the welt is attached only to the forepart of the shoe, the lower end of the horn has threaded into it a stud 266 which projects below the horn bracket 244 into position to engage either end 268 or 270 of a stop consisting of a yoke 272 adjustably held by a clamping screw 274 on a cross pin 276 which passes through the upper ends of two arms 278, 280 of a bracket that is clamped to a projection 282 from the machine column 2. In the operative position of the yoke 272, as shown in full lines in Fig. 1, its ends 268 and 270 determine the limits of swinging movement of the horn 240. Upon loosening the clamping screw 274, the yoke 272 may be swung into inoperative position, as shown in dotted lines in

Fig. 1, in which position of the yoke 272 unrestricted movement of the horn 240 is permitted, as desired, for instance, in nailing outsoles to insoles in the operation commonly termed "all around nailing."

The machine is also preferably provided with an edge gage of the usual type comprising an idler roll or wheel 284, shown as leather faced, against which the shoe is pressed as it is turned for the insertion of successive fastenings to locate and regulate the distance of the row of fastenings from the edge of the shoe. The horn tip, of course, is inside the shoe while the fastening inserting operation is being performed, and if the horn were allowed an unlimited range of rotative movement about the axis of the horn post, it might pinch the upper stock so hard against the gaging means as to injure the stock and impair the salability of the shoe. The stop construction just described avoids any possibility of damage due to this cause, and at the same time affords all the freedom of movement of the horn necessary in operating on work of certain characters. When the machine is used for the attachment of welts, it is provided with a welt guide 296 as shown in Fig. 1.

Having described our invention, what we claim as new and desire to secure by Letters Patent of the United States is:

1. A machine for inserting metallic fastenings, having a horn operative to support the work while the machine inserts fastenings therein and provided near its tip with a clenching cavity, a support by which the horn is rotatably carried with its axis of rotation permanently in alinement with the line of drive of the fastenings, and means for adjusting the horn with reference to its axis of rotation to bring the clenching cavity into the desired relation to the line of drive after its displacement therefrom.

2. A fastening inserting machine having a horn operative to support the work while the machine inserts fastenings in it, a horn post, a bracket carrying said horn, said bracket being mounted for rotation on said post, an eccentric sleeve carried by said bracket, said horn being supported in said sleeve and said sleeve being mounted for rotatable adjustment, and means for locking said sleeve in its adjusted position in the bracket.

3. A fastening inserting machine having a rotatable horn operative to support the work while the machine inserts fastenings therein, and eccentric means for adjusting the horn with reference to its axis of rotation.

4. In a fastening inserting machine, the combination of a horn operative to support the work during the insertion of fastenings in it, a rotary support for said horn, and an eccentric, with respect to which the horn is relatively adjustable, for adjusting the horn with reference to the axis of rotation of said support.

5. In a fastening inserting machine, the combination of a horn operative to support the work during the insertion of fastenings in it, a rotary support for said horn, and means for adjusting the horn with reference to the axis of rotation of the support comprising an eccentric sleeve in which the horn is rotatably mounted.

6. In a fastening inserting machine, the combination of a horn comprising portions angularly related to each other and operative to support the work during the insertion of fastenings in it, and means for supporting the horn for rotation constructed and arranged to permit bodily adjustment of the horn with reference to its axis of rotation and to permit adjustment of the horn of a character to change the relation between the plane of the horn and its axis of rotation.

7. In a fastening inserting machine, the combination of a horn comprising portions angularly related to each other and operative to support the work during the insertion of fastenings in it, a rotatable support for the horn, and an eccentric sleeve for adjusting the horn with reference to the axis of rotation of the support constructed to permit adjustment of the horn of a character to change the relation between the plane of the horn and its axis of rotation.

8. In a fastening inserting machine, the combination of a horn operative to support the work during the insertion of fastenings in it, a rotary support for the horn, an eccentric sleeve mounted in the support within which the horn is rotatably received, and means for securing the horn from rotation in the sleeve and the sleeve from rotation in the support.

9. In a fastening inserting machine, the combination of a horn operative to support the work during the insertion of fastenings in it, a rotary support for the horn provided with a split bearing, a split eccentric sleeve housed in said bearing, and having the horn rotatably mounted therein, and means for clamping said bearing against said sleeve to restrain the sleeve from rotation in said bearing and the horn from rotation in said sleeve.

10. In a fastening inserting machine, the combination of a horn operative to support the work during the insertion of fastenings in it, a support for the horn, and an eccentric sleeve in which the horn is rotatably mounted for adjusting the horn relatively to said support.

11. In a fastening inserting machine, the combination of a horn constructed and arranged to support the work while fastenings are inserted in it by the machine, means

for supporting the horn for rotation about an axis substantially coincident with the line of drive of the fastenings, and an eccentric for adjusting the horn with reference to its axis of rotation and the line of drive of the fastenings.

12. In a fastening inserting machine, the combination of a horn constructed and arranged to support the work while fastenings are inserted in it by the machine and having a clenching cavity in its tip, means for supporting the horn for rotation about an axis substantially coincident with the line of drive of the fastenings and with the center of the clenching cavity disposed at a predetermined distance from the line of drive of the fastenings, and an eccentric sleeve adjustable to restore the clenching cavity to proper position relatively to the line of drive of the fastenings, when moved out of such position by springing of the horn, without changing the relation between the axis of rotation of the horn and the line of drive of the fastenings.

13. A fastening inserting machine having a horn constructed and arranged to support the work while fastenings are inserted in it by the machine, means for supporting said horn for rotative movement about an axis substantially coincident with the line of drive of the fastenings, and means for limiting the extent of said rotative movement of the horn constructed and arranged to avoid pinching of the article operated on.

14. A fastening inserting machine having a horn constructed and arranged to support the work while fastenings are inserted in it by the machine, means for supporting said horn for rotative movement about an axis substantially coincident with the line of drive of the fastenings, and a stop mechanism for limiting the extent of said rotative movement of the horn, said stop mechanism being constructed and arranged to be rendered operative or inoperative at the will of the workman.

15. A fastening inserting machine having a horn constructed and arranged to support the work while fastenings are inserted in it by the machine, means for supporting said horn for rotative movement about an axis substantially coincident with the line of drive of the fastenings, and a stop cooperating with said horn to limit the extent of its rotative movement, said stop being mounted for movement into or out of its operative position.

16. A fastening inserting machine having a horn constructed and arranged to support the work while fastenings are inserted in it by the machine, means for supporting said horn for rotative movement about an axis substantially coincident with the line of drive of the fastenings, shoe engaging parts toward and from which said horn moves during its rotative movement about said axis, and means for limiting the approach of the horn toward said shoe engaging parts.

17. In a machine of the class described, a horn shaft, a bracket rotatably mounted on said shaft, a horn carried by said bracket, and means for limiting the rotative movement of said bracket comprising stop members and a member depending from said bracket and constructed and arranged for engagement with said stop members.

18. In a machine of the class described, a horn shaft, a bracket rotatably mounted on said shaft, a horn carried by said bracket, and means for limiting the rotative movement of said bracket comprising a yoke formed to present stops disposed on substantially diametrically opposite sides of the horn shaft and a member carried by said bracket and constructed and arranged for engagement with said stops.

19. In a machine of the class described, a horn shaft, a bracket rotatably mounted on said shaft, a horn carried by said bracket, means for limiting the rotative movement of said bracket comprising a member depending from said bracket and a yoke formed to present stops adapted to be interposed in the path of movement of said member, and means for mounting said yoke constructed and arranged to permit it to be moved out of the path of movement of said member to permit free rotation of the bracket and horn.

In testimony whereof we have signed our names to this specification.

GEORGE GODDU.
FRED L. MacKENZIE.