W. V. GIST.

REPUNCHING MACHINE.

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1,049,847.

Patented Jan. 7, 1913.

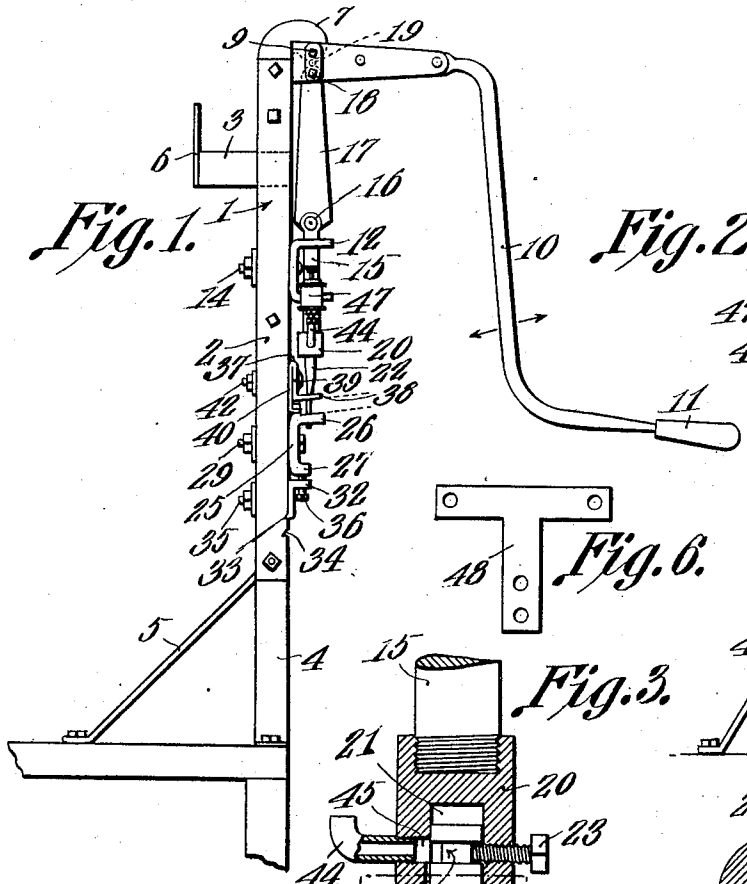

Fig. 1.

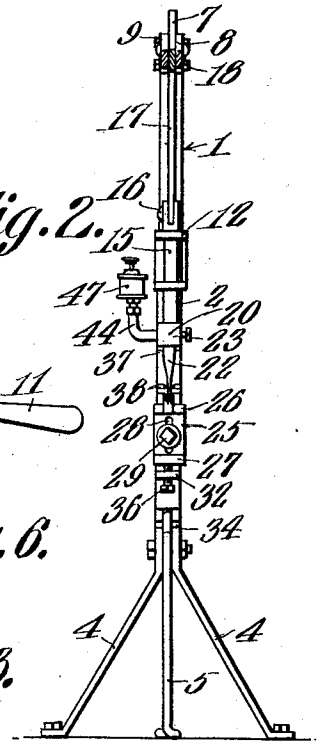

Fig. 2.

Fig. 6.

Fig. 3.

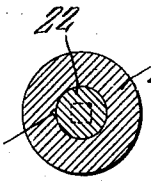

Fig. 4.

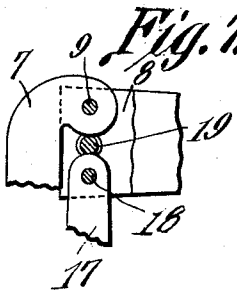

Fig. 7.

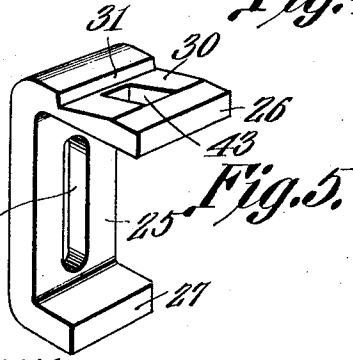

Fig. 5.

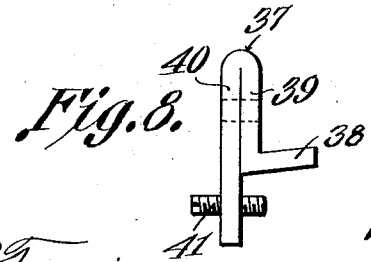

Fig. 8.

Witnesses

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WILLIAM V. GIST, OF SPARTA, TENNESSEE.

REPUNCHING-MACHINE.

1,049,847. Specification of Letters Patent. Patented Jan. 7, 1913.

Application filed March 6, 1912. Serial No. 681,998.

To all whom it may concern:

Be it known that I, WILLIAM V. GIST, a citizen of the United States, residing at Sparta, in the county of White and State of Tennessee, have invented a new and useful Repunching-Machine, of which the following is a specification.

The device forming the subject-matter of this application, is adapted to be employed for repunching the nail holes in factory-made horse-shoes, the device being intended for use, primarily, by farriers, and others who find it necessary to refinish a factory-made shoe. The nail holes in a factory-made shoe must be refinished, for the reason that the nail holes ordinarily are made relatively small, so that a single shoe may be refinished to receive a nail which is of large diameter or of small diameter, depending upon the duty which the shoe is to perform. Furthermore, the nail holes in factory-made horse shoes are always fashioned therein at right angles to the plane of the shoe. It is desirable, in refinishing a factory-made shoe, to repunch the nail holes at an acute angle to the plane of the shoe, so that the axis of each nail hole may be changed, with respect to the slope of the outer face of the hoof.

The present invention aims to provide a machine of this character, having a shoe-support, which is acutely disposed with respect to the line of movement of the hole-forming punch, so that, as aforesaid, the nail hole may be disposed acutely with respect to the plane of the shoe.

The invention aims further, to provide a retaining member, coöperating with the shoe support, and adapted to hold the shoe against upward movement, whereby the punch may be retracted readily from the shoe. A means is provided for positioning the shoe properly with respect to the punch, this means taking the form of an adjustable gage mounted between the shoe support and the retaining member which holds the shoe during the retraction of the punch. In refinishing the holes in the shoe, at an angle to the plane of the shoe, there is considerable friction between the punch and the shoe, and to overcome the friction, a means is provided for lubricating the punch.

A further object of the invention is to provide novel means for mounting and for actuating the plunger which carries the punch.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings,—Figure 1 shows the invention in side elevation; Fig. 2 shows the invention in front elevation; Fig. 3 is a fragmental longitudinal section of the punch-carrying end of the plunger; Fig. 4 is a section upon the line A—B of Fig. 3; Fig. 5 is a perspective of the supporting member which holds the shoe during the insertion of the punch into the shoe; and Fig. 6 is a plan of a supplemental head which may be applied to the standard, for the purpose of permitting a duplicate mounting of mechanisms which will be set forth hereinafter. Fig. 7 is a sectional elevation showing a portion of the actuating lever and attendant parts. Fig. 8 is a side elevation of the retaining member.

In carrying out the invention, a supporting structure is provided, the same preferably taking the form of a standard 1, fashioned from plates 2, laterally bent at their lower ends to form legs 4. A third leg 5 is bound between the plates 2. Secured between the plates 2, adjacent the upper end of the standard 1 is an angle member 3, which may be secured to a wall or like support, permitting the leg 5 to be dispensed with. Secured between the plates 2 adjacent the upper end of the standard 1 is a curved head 7, to which a socket 8 is pivoted as shown at 9, the socket 8 receiving a lever 10, extended approximately parallel to the standard 1 and terminated at its free end in an angularly disposed handle 11.

Secured to the standard 1 is a U-shaped guide 12, preferably held in place by a bolt 14, and in the guide 12 is mounted for longitudinal sliding movement in a line approximately parallel to the standard 1, a plunger 15. By means of a joint 16 of any desired construction, the upper end of the plunger 15 is connected with a link 17, pivoted as shown at 18 to the socket 8, below the pivotal connection 9 between the socket 8 and the head 7. A roller 19 is journaled in the socket 8, between the link 17

and the head 7, the roller 19 being arranged to engage the rounded ends of the head 7 and of the link 17 anti-frictionally, so as to relieve the parts to some extent from the strain incident to the manipulation of the lever 10. The lower end of the plunger 15 is equipped with a tool-receiving head 20, having an axial recess 21 in which a punch 22 is mounted, the punch 22 being held in place by means of a set screw 23, engaging in a circumscribing groove 24 in the punch.

The invention further includes a shoe support, denoted generally by the numeral 25. The support 26 includes outstanding flanges 26 and 27, and in the body portion of the support 25 there is a longitudinal slot 28, adapted to receive a bolt 29 whereby the support is connected with the plates 2 which go to make up the standard 1. In the upper face of the flange 26 of the support 25 there is an inclined seat 30, defining a shoulder 31. The seat 30 is disposed at an acute angle to the standard 1, and at an acute angle to the line of movement of the punch 22. Located below the support 25 is an angle bracket 32, having a projecting finger 33, adapted to engage successively in notches 34 formed in the forward edge of the plates 2 of the standard 1. The bracket 32 is secured to the standard 1, for movement longitudinally of the standard, by means of a bolt 35. A set screw 36 is threaded through the projecting flange of the angle bracket 32, the set screw 36 being adapted to engage the lower flange 27 of the support 25, thereby upholding the support for longitudinally adjustable movement along the standard 1.

The invention further includes a retaining member denoted generally by the numeral 37, and secured to the standard 1 above the shoe support 25. The retaining member 37 includes an outstanding flange 38, parallel to the seat 30 and acutely disposed with respect to the standard 1, and with respect to the line of reciprocation of the plunger 22. The retaining member 37 includes an angularly disposed arm 39, and a portion 40 parallel to the arm 39. Through the arm 40 is threaded a screw 41. The retaining member 39 is held upon the standard 1, for movement longitudinally of the standard, by means of a bolt 42. In the flange 38 of the retaining member there is an opening, alined with an opening 43 in the arm 26 of the shoe support, so as to permit a vertical movement of the punch 22.

Lubricating mechanism for the punch 22 is provided, the same including a pipe 44, entering an opening 45 fashioned in one side of the tool-holding head 20, the opening 45 communicating with the groove 24 in the punch, and communicating also with a longitudinally extended duct 49, fashioned in the wall of the tool-holding recess 21. To the free end of the pipe 44 an oil cup 47 is secured.

When it is desired to mount two of the structures hereinbefore described, upon the standard 1, the head 7 is removed, and the head 48, shown in Fig. 6, is employed, the T-shape of the head 48 permitting two of the sockets 8 and their attendant mechanisms to be supported by the standard 1.

It will be seen that the shoe support 25 may be adjusted longitudinally of the standard 1, to correspond with the travel of the punch 22. Likewise, this adjustment of the shoe support 25 permits shoes of different thicknesses to be inserted between the shoe support and the retaining member 37. The retaining member 37, if desired, may be adjusted longitudinally of the standard 1, so as to accommodate shoes of different thicknesses.

In practical operation, the shoe which is to be repunched, is placed upon the seat 31 which is fashioned in the shoe support 35. The edge of the shoe will abut against the shoulder 31, and the screw 41, constituting an adjustable gage, will also receive the shoe, and coöperate with the shoulder 38 in preventing a tilting of the shoe during the punching thereof. Owing to the fact that the seat 30 is inclined at an acute angle with respect to the line of reciprocation of the punch 22, the punch, as it enters the holes in the shoe, will repunch the said holes acutely to the plane of the shoe. The retaining member 37 serves to hold the shoe during the retraction of the punch 22 therefrom.

Owing to the fact that the punch 22 passes through the holes in the shoe obliquely, and engages diagonally opposite edges of the holes, there is much friction between the punch and the shoe. To overcome this friction, the lubricating mechanism shown most clearly in Fig. 3 is provided. The oil which is contained in the cup 47 will pass through the pipe 44 and enter the opening 45, passing thence into the duct 46 and lubricating the outer face of the punch, so that the same will pass through the holes in the shoe without great and undue friction. The oil will also follow the groove 24 in the punch 22, and should the punch fit somewhat loosely in the tool-holding head 20, the oil will flow from the groove 24 downwardly along the punch.

When the lever 10 is swung to and fro, in the direction of the arrows, the socket 8 will be rocked upon its mounting 9, motion being imparted to the link 7, and thence to the plunger 15, the plunger 15 actuating the punch 22 to a right line movement, approximately parallel to the standard 1. Owing to the disposition of the seat 30 with respect to the line of reciprocation of the

punch 22, the holes in the shoe will be re-punched acutely with respect to the plane of the shoe, thereby to conform more or less to the slant of the hoof, the nails being thus given a stronger hold in the hoof.

Having thus described the invention what is claimed is:—

1. In a machine for re-punching the nail holes in a horse-shoe, the combination with a standard, of a punch mounted for right line movement in the standard, of a shoe support upon the standard and inclined downwardly and inwardly toward the standard at an acute angle to the line of movement of the punch, there being a shoe-receiving shoulder upon the support at the inner end of the incline thereof.

2. In a machine for re-punching nail holes in a horse-shoe, the combination with a standard, of a punch mounted for right line movement in the standard; a shoe-support upon the standard and inclined downwardly and inwardly toward the standard at an acute angle to the line of movement of the punch, there being a shoe-receiving shoulder upon the support at the inner end of the incline thereof; a member located above the shoe-support and movable longitudinally of the standard, said member overhanging the shoe-support; means for holding said member at different points along the support, and a gage adjustable in said member, transversely of the line of movement of the punch, and located above the shoulder.

3. In a machine for re-punching nail holes in horse-shoes, the combination with a punch mounted for right line movement, of a shoe support disposed at an angle to the line of movement of the punch, a retaining member located above the support and adjustable parallel to the line of movement of the punch, the retaining member serving to hold the shoe while the punch is being retracted from the shoe; and a gage for engaging the periphery of the shoe, the gage being mounted in the retaining member, and being adjustable at an angle to the line of movement of the punch.

4. In a device of the class described, a punch having right line movement; a stripper adjustable in the direction of the travel of the punch; and a gage carried by the stripper and adjustable transversely of the line of travel of the punch.

5. In a device of the class described, a standard; a T-shaped member including a body and a projecting stripper; means for connecting one end of the body with the standard for sliding movement; a gage adjustably mounted in the other end of the body, below the stripper, and coöperating with the stripper.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

WILLIAM V. GIST.

Witnesses:
J. M. LOWRY,
T. W. JOHNSON.