

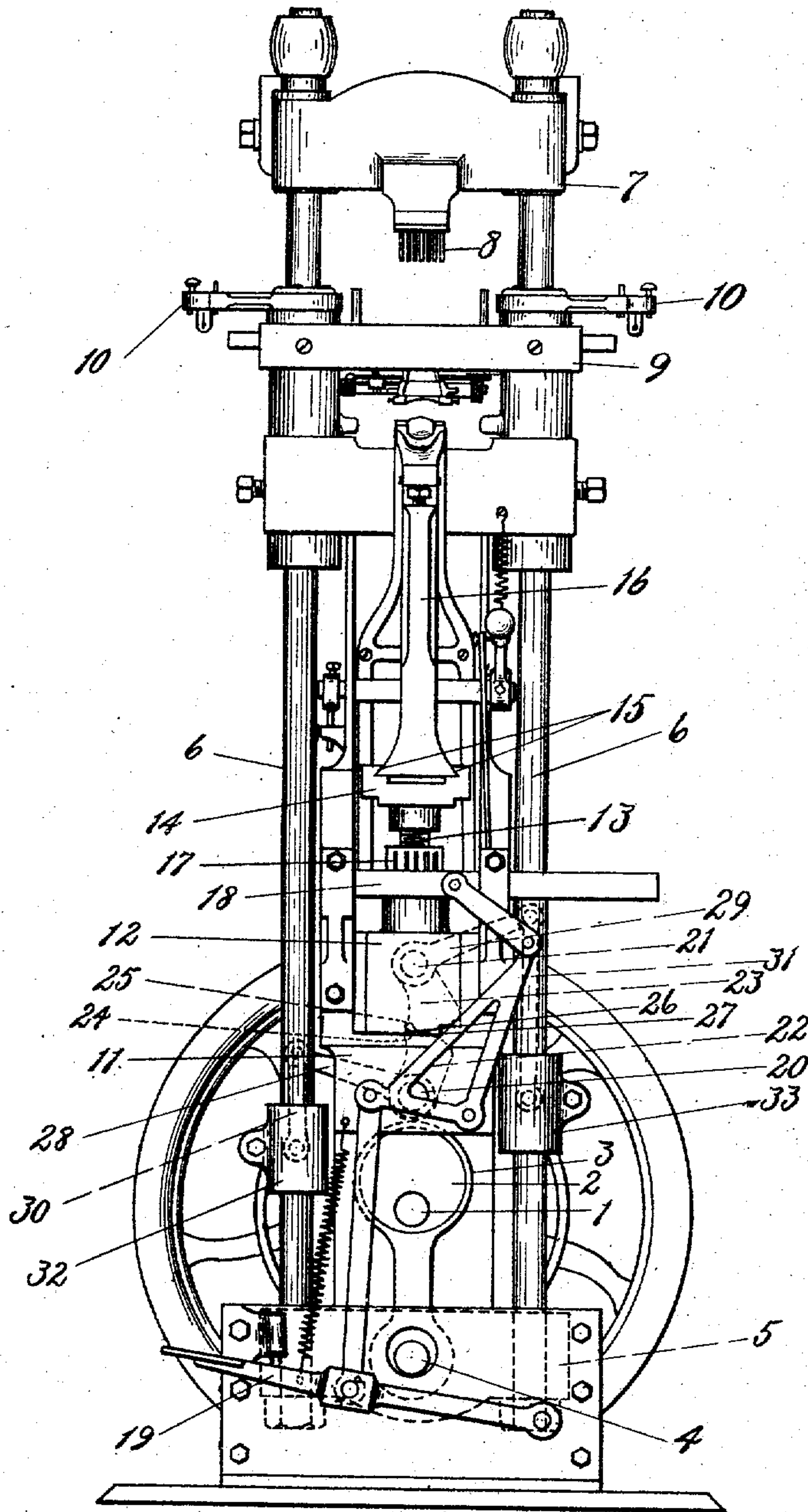
No. 887,870.

PATENTED MAY 19, 1908.

W. H. TAYLOR.
MACHINE FOR INSERTING NAILS.

APPLICATION FILED AUG. 8, 1904.

2 SHEETS—SHEET 1.



WITNESSES.

Elizabeth C. Coupe
Bernard Barrows

Fig. 1.

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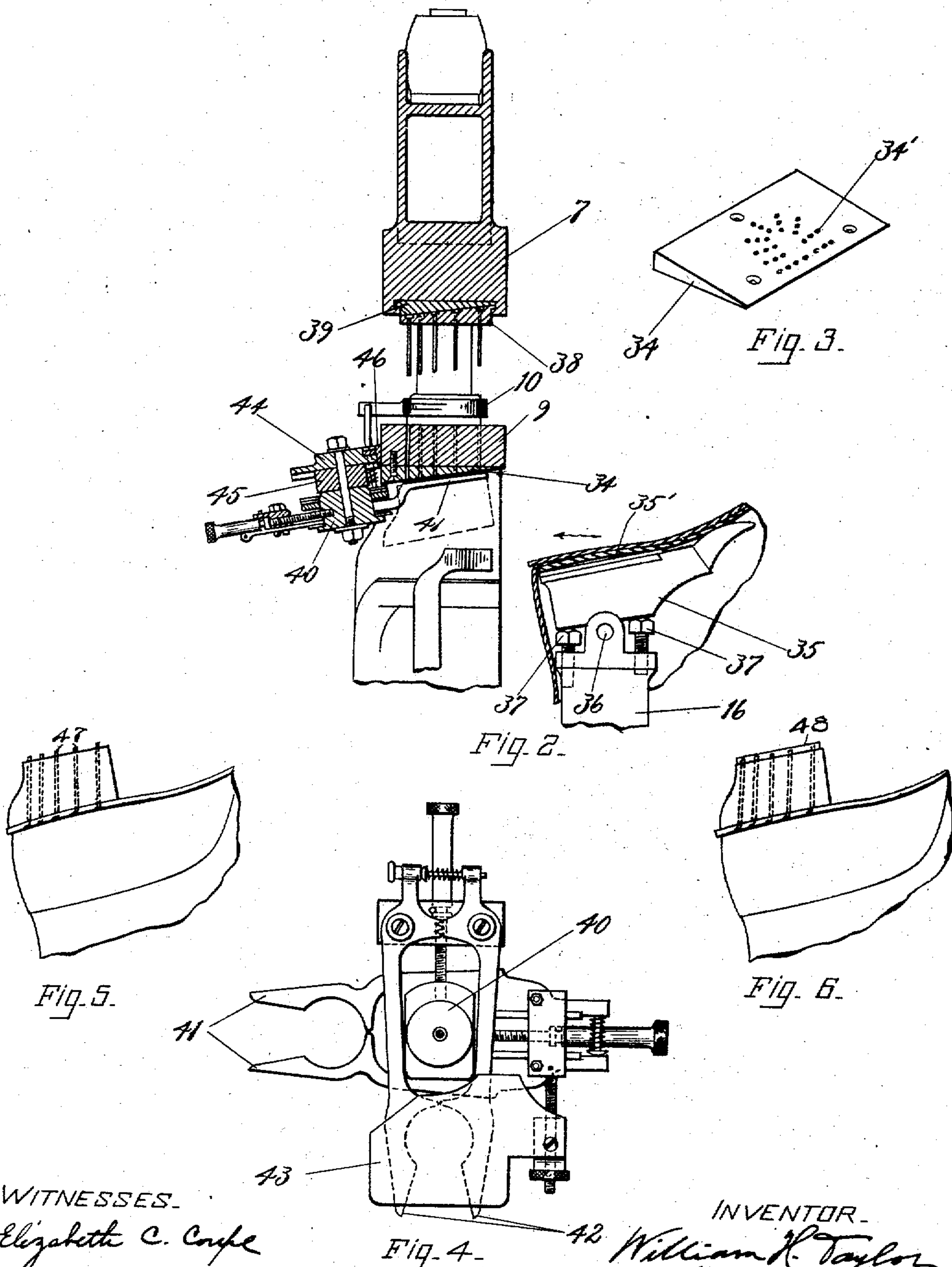
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Elizabeth C. Cope
Bernard Barrows

INVENTOR.

William H. Taylor
By his Attorney
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UNITED STATES PATENT OFFICE.

WILLIAM HEDGES TAYLOR, OF BALTIMORE, MARYLAND, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MACHINE FOR INSERTING NAILS.

No. 887,870.

Specification of Letters Patent.

Patented May 19, 1908.

Application filed August 8, 1904. Serial No. 219,981.

To all whom it may concern:

Be it known that I, WILLIAM HEDGES TAYLOR, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain improvements in Machines for Inserting Nails, 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 machines for inserting nails and more particularly to heel-nailing machines.

In heel-nailing machines in which the several lifts of the heel are attached to a shoe by nails driven in a direction perpendicular to the lifts certain forms of heels cannot be attached securely. Examples of these are found more particularly in the tapered, coned, or undercut heels of ladies' shoes in which the top lift and outer lifts may be of considerably less area than the heel-seat lift, and in which it may be desirable to undercut the rear or to hollow the breast of the heel. When in attaching these forms of heels the nails are driven in a direction perpendicular to the lifts considerable portions of some of the lifts remain unperforated by the nails and are, therefore, insecurely attached.

It is the object of the present invention to avoid this objection and to provide means to attach the heel firmly to the shoe.

In the preferred embodiment of my invention I drive the nails into the heel in an inclined direction, the inclination being such as to hold securely all parts of the heel. I accomplish this result by supporting the heel obliquely with relation to the path of the nails in the nail-driving operation. Preferably the machine embodying my invention is constructed so that its essential parts may be readily assembled with existing machines for inserting nails, and so that nails may be driven into the heel at any desired inclination.

Another feature of the invention consists in means for attaching a top lift to the heel after the heel has been secured to the shoe by nails driven in an inclined direction in the manner above described. This may be accomplished by spanning the top lift on the heel while the latter is held in an inclined position.

Other features of the invention, including details of construction and combinations of

parts, will be hereinafter described and pointed out in the claims.

In the drawings which illustrate one embodiment of my invention:—Figure 1 is a view in front elevation of a heeling machine with my invention applied; Fig. 2 is a fragmentary vertical sectional view taken centrally of the drivers; Fig. 3 is a perspective view of the removable die-block wedge; Fig. 4 is a plan view of the heel and top lift carrier; Fig. 5 shows a shoe with the heel attached by my heel-nailing machine; and Fig. 6 shows a shoe with both heel and top lift attached.

I have shown the invention applied to a machine of the type disclosed in Letters Patent to Pope, No. 446,885, dated February 24, 1891, but it is to be understood that its application to this form of machine is merely illustrative, and that features of the invention may be employed in other types of nail-driving machines.

In the machine shown a driving shaft 1 is supported in bearings in the main frame. Upon the driving shaft is an eccentric 2 surrounded by an eccentric strap 3, the lower end of which is pivoted at 4 to a lower cross-piece 5 guided in bearings in the main frame. Upwardly extending rods 6 are secured to said cross-piece and to the upper ends of these rods is secured a head 7. The nail drivers 8 are carried by the head 7. A stationary perforated die-block 9 is secured to the main frame. Loaders 10 are pivoted on the die-block to deliver heel-attaching nails to the perforations in said block.

A stationary block or projection 11 forms a part of the main frame. At a point above this stationary block is arranged a vertically movable block 12 adapted to slide up and down in guides on the front portion of the machine. On the top of the block 12 is supported the lower end of a vertical jack-screw 13, the upper end of which works in a female screw-thread in a jack-carriage 14, having ways 15 on its upper side on which the jack 16 is adapted to slide out and in relative to the die-block 9. The jack-screw 13 has a pinion 17 integral with its lower end, the teeth of which pinion mesh in the teeth of a rack 18 which is adapted to slide horizontally in suitable guides. Said rack is operated by the treadle lever 19 to turn the pinion 17 and move the jack-carriage 14 and jack 16 upwardly until the top of the sole of the shoe

held in the jack is brought in contact with the under side of the heel held below the die-block 9.

In addition to the treadle mechanism for moving the jack upwardly automatic mechanism may be employed in this machine to place an increased pressure on the jack during the operation of driving the nails. This mechanism may be also employed in the operation of spanking on the top lift. In the stationary block 11 is journaled a shaft 20, and in the movable block 12 is journaled a shaft 21, said shafts 20 and 21 having secured to them the cams 22 and 23, respectively, having cam surfaces 24 and 25, and concentric surfaces 26 and 27. The said cams are operated from the rods 6 by means of levers 28, 29 secured, respectively, to the shafts 20 and 21, said levers 28, 29 being attached by links 30, 31 to adjustable blocks 32, 33 on rods 6. It will be understood that during the first quarter revolution of the driving shaft 1, the cams 22, 23 are moved from the position shown in Fig. 1, the engagement of the cam surfaces 24, 25 in the movement of said cams serving to force upwardly the movable block 12 and the jack-carriage 14 to place an increased pressure on the heel. During the next quarter revolution of the shaft 1 the concentric surfaces 26 and 27 are in contact, allowing the cams 22, 23 to rock without imparting further upward movement to the jack, during which time the drivers descend and drive the nails into the heel while the heel is held under pressure. During the final half revolution of the driving shaft the rods 6 and cams 22, 23 are returned to their normal position. Any suitable clutch mechanism may be employed to control the rotation of the main shaft 1.

In the preferred embodiment of my invention in the operation of driving the nails I support the heel obliquely with relation to the path of the nails by making the face of the die-block 9 inclined to the line of the drivers, and providing means to support the heel with its face in contact with the inclined face of the die-block. The inclination of the face of the die-block may be conveniently secured by means of a removable wedge 34 having perforations 34' to register with those of the die-block. The inclination may be changed by substituting for this wedge another wedge of different inclination. Any suitable means for attaching the wedges to the die-block may be employed.

To support the heel with its upper face in contact with the inclined face of the die-block I may employ a movable work support 35 on the jack 16. This work support is shown as mounted on trunnions 36 and held in adjustable position by the set screws 37. It is desirable to so adjust the work support that the upper face of the work will be brought in even contact with the inclined

face of the die-block. By the manipulation of set screws 37 this position may be conveniently obtained. The work support 35 may be provided with a metal heel plate 35' against which the ends of the nails are clenched.

To drive the nails to the desired depth evenly over the entire heel the drivers may have their driving faces in a plane parallel with the inclined face of the die-block, and hence with the face of the heel. A convenient form of nail driver block by which this arrangement may be obtained is shown in Fig. 2. In this construction the block is composed of two sections 38 and 39, the section 38 having an inclined inner face and being perforated to receive the drivers, and the section 39 being adapted to be secured above section 38 to hold the drivers in place. By making the sections 38 and 39 with the same inclination as the face of the die-block the driving faces of the drivers are brought into a plane parallel to the face of the heel. In case a change is made in the inclination of the face of the die-block the drivers may be changed to correspond by substituting another driver block in which the plane of the driving faces is at the proper inclination. It will be observed that the driver block is removably supported in the head 7.

The heel may be brought into position to be nailed on the shoe by a rotatable carrier 40 having spring-pressed heel clamps 41. On the carrier 40 are also mounted the top lift clamps 42 and spanker plate 43. The carrier 40 is shown as pivotally supported on a member 44 carried by the die-block 9. It is desirable to give the carrier 40 such a position relative to the die-block 9 that the spanker plate 43 will be brought evenly in contact with the inclined face of said die-block when the carrier 40 is turned to bring a top lift into position above the heel, and that the plane of the heel clamps will be substantially parallel with said inclined face. This position may be obtained by employing a removable block 45 as an intermediate connection between carrier 40 and the member 44, and making the block 45 of such vertical dimension as to give the carrier 40 the proper elevation. The proper inclination may be given the carrier by means of a removable wedge 46 placed between the die-block 9 and the member 44. Any desired position of the carrier 40 may evidently be obtained by the substitution of a block 45 and wedge 46 of suitable dimensions.

In the nail-driving operation illustrated on the drawings the nails 47 are driven in a parallel relation towards the rear of the heel and their points are clenched against the metal heel plate 35' of the work support. As the points of the nail strike the heel plate obliquely the clenching operation is accomplished with less liability of distorting or

fracturing the nails, and, as will be observed, the points of the nails after clenching lie towards the rear of the heel.

It will be seen that the nails move in a vertical path, as in the machine of the patent to Pope above referred to.

If desired, the stroke of the drivers in the machine shown may be adjusted to leave the upper ends of the nails projecting above the face of the heel and a top lift may be spanked on the heel while the heel is in this condition. In the operation of spanking on the top lift the top lift clamps 42 carrying a top lift below the spanker plate 43 are brought into position beneath the inclined face of the die-block or abutment 9 and above the heel. The heel is then brought into position by the treadle mechanism and then pressed forcibly against the die-block by the cams 22, 23 so that the top lift is spanked upon the exposed ends of the nails of the heel, as indicated in Fig. 6.

It will be seen that the top lift is forced upon the ends of the nails in a direction parallel to said nails.

Having 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, with mechanism for driving vertically a group of nails, of means for holding a heel under pressure in oblique position with relation to the path of the nails.

2. A machine for inserting nails in heels, having in combination, a plurality of drivers arranged to drive vertically a group of nails and means for holding a heel under pressure in oblique position with relation to the drivers, said drivers having their driving faces in a plane substantially parallel with the face of said heel.

3. In a machine of the class described, the combination, with vertically arranged drivers for inserting nails, of a die-block having a face inclined with relation to the path of the nails, and means for holding a heel under pressure in contact with the inclined face of the die block.

4. In a machine of the class described, the combination, with vertically arranged drivers for inserting nails, of a die-block having a face inclined with relation to the path of the nails, means for holding a heel under pressure in contact with the inclined face of the die-block, and means permitting adjustment in inclination of the face of the die-block.

5. A machine for inserting nails in heels, having in combination, a plurality of parallel drivers, a die-block having a face inclined with relation to the drivers and provided with driver passages, a work-support for sustaining a heel in engagement with the face of the die-block, and means for moving relatively said work-support and die-block in a direction parallel with the path of the drivers

to subject the heel to pressure preliminary to driving the nails.

6. In a machine of the class described, a nail driver block comprising a section perforated to receive the drivers and having an inclined inner face, and a second section adapted to be secured to said inclined face over the drivers.

7. In a machine of the class described, the combination, with drivers, of a die-block, a wedge-shaped block perforated to receive the drivers and adapted to be detachably secured to the face of the die-block, and means to support a heel with its face in contact with the inclined face of the wedge-shaped block.

8. A machine for attaching heels, having in combination, a group of vertically arranged drivers, a die-block having a face inclined with relation to the drivers and provided with driver passages, and a work-support having a heel plate arranged to clench the nails inserted by the drivers and constructed for adjustment in inclination to support a heel in engagement with the inclined face of the die-block.

9. In a machine of the class described, the combination of parallel drivers for inserting nails in a heel over substantially its entire area, a die-block having its acting face inclined to the path of the drivers, a work support to sustain a heel with its face in contact with the inclined face of the die-block and means for relatively moving said die-block and work-support in a direction parallel with the path of the drivers to subject the heel to pressure preliminary to driving the nails.

10. A heel attaching machine comprising mechanism for driving nails into a heel in an inclined direction, and means to spank a top lift on the ends of the nails in a direction parallel with the path of the nails.

11. In a machine of the class described, the combination, with means to support a heel having nails set in an inclined position, of means to force a top lift upon said heel in a direction parallel with the nails.

12. In a machine of the class described, the combination, with an abutment having an inclined acting face, of means to bring a top lift into position adjacent to said face, heel-supporting means arranged to support a heel with its tread face in parallel relation to said acting face, and means to move relatively said abutment and heel-supporting means in a line oblique to said acting face to force the top lift on the heel.

13. In a machine of the class described, the combination, with a die-block having an inclined face, and means permitting adjustment in inclination of said face, of a top lift carrier adapted to support a top lift in inclined position, and means permitting adjustment in the inclination at which the top lift is supported.

14. A heel attaching machine, having in

combination, means for supporting a shoe in a longitudinally inclined position, means co-operating with said supporting means for pressing a heel upon the heel seat of a shoe and mechanism for driving vertically in parallel relation a group of nails obliquely through the heel seat of a shoe over substantially the entire area of the heel.

15. A heel-attaching machine, comprising means for supporting a shoe and heel in position for the attaching operation, combined with mechanism for driving a group of nails obliquely through the heel into the heel seat of the shoe in a parallel direction leaving the head ends of the nails projecting, and means for spanning a top lift on the projecting ends of the nails in a direction parallel with the path of the nails.

16. A heel-attaching machine, having in combination, means for supporting a shoe in a longitudinally inclined position, means co-operating with said supporting means for pressing a heel upon the heel seat of the shoe, and mechanism independent of said supporting means for driving vertically in parallel relation a group of nails obliquely through the heel into the heel seat of the shoe over substantially the entire area of the heel.

17. In a heel-attaching machine, the combination with a nail driver having a path in a fixed direction, of a member provided with a driver passage and having a work engaging face, means to permit the adjustment of said face to vary the angle, relatively to the face of the work, at which a nail may be driven and means for holding a heel under pressure in engagement with said face.

18. In a machine of the class described, the combination with a nail driver having a path in a fixed direction, of a member provided with a driver passage and having a work engaging face, an abutment having a work engaging face, means to permit the adjustment of both said faces to vary the angle, relatively to the faces of the work, at which a nail may be driven and means for moving relatively said member and said abutment to hold a heel under pressure between said faces.

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

WILLIAM HEDGES TAYLOR.

Witnesses:

WILLIAM CHAPMAN JAMES,
GEORGE EDWARD TAYLOR.