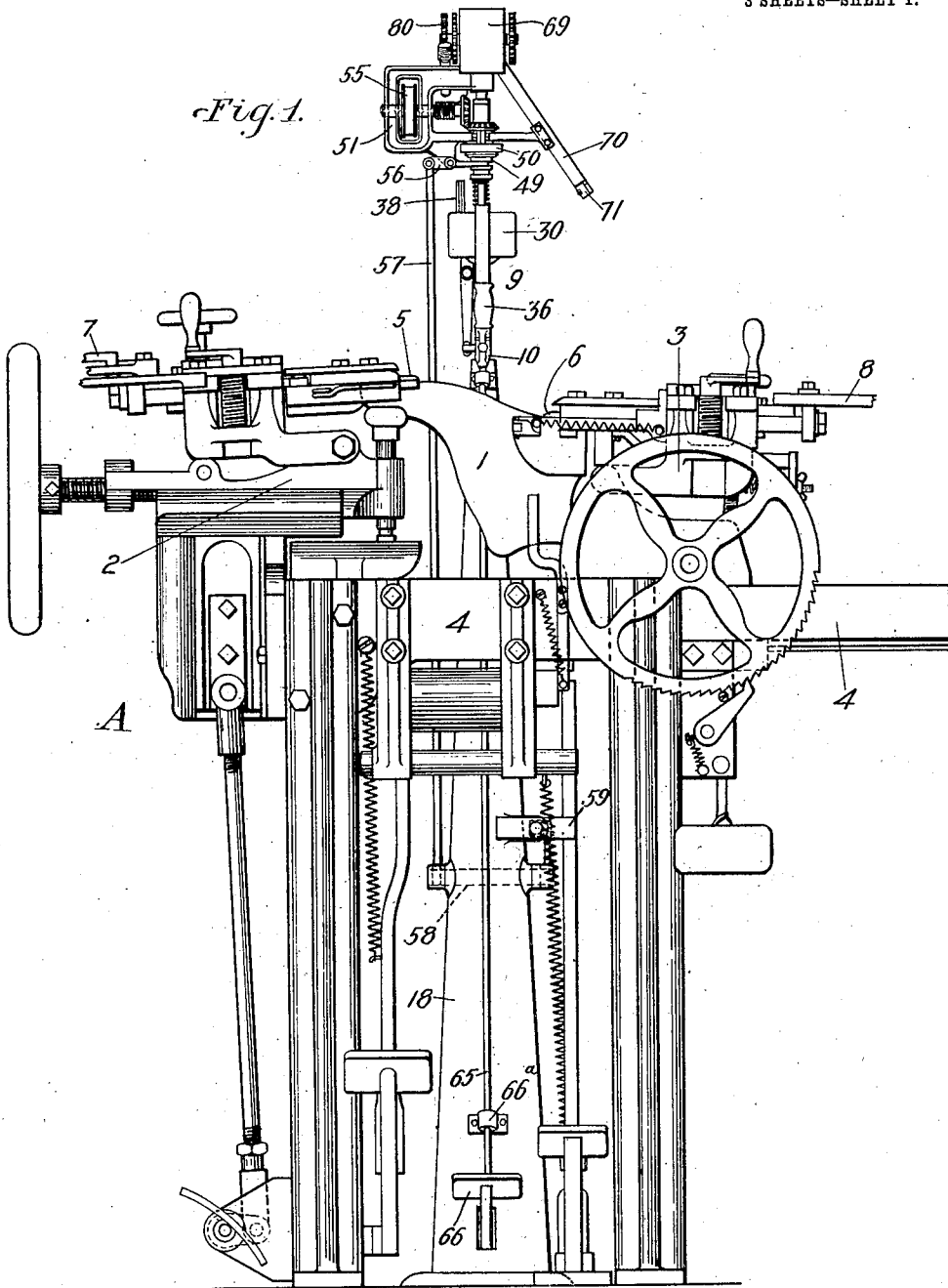


M. D. PHELAN.
 PORTABLE POWER TACKER.
 APPLICATION FILED OCT. 19, 1906.

938,508.

Patented Nov. 2, 1909.

3 SHEETS—SHEET 1.



Witnesses
 Archie B. Colbath
 Franklin C. Low

by

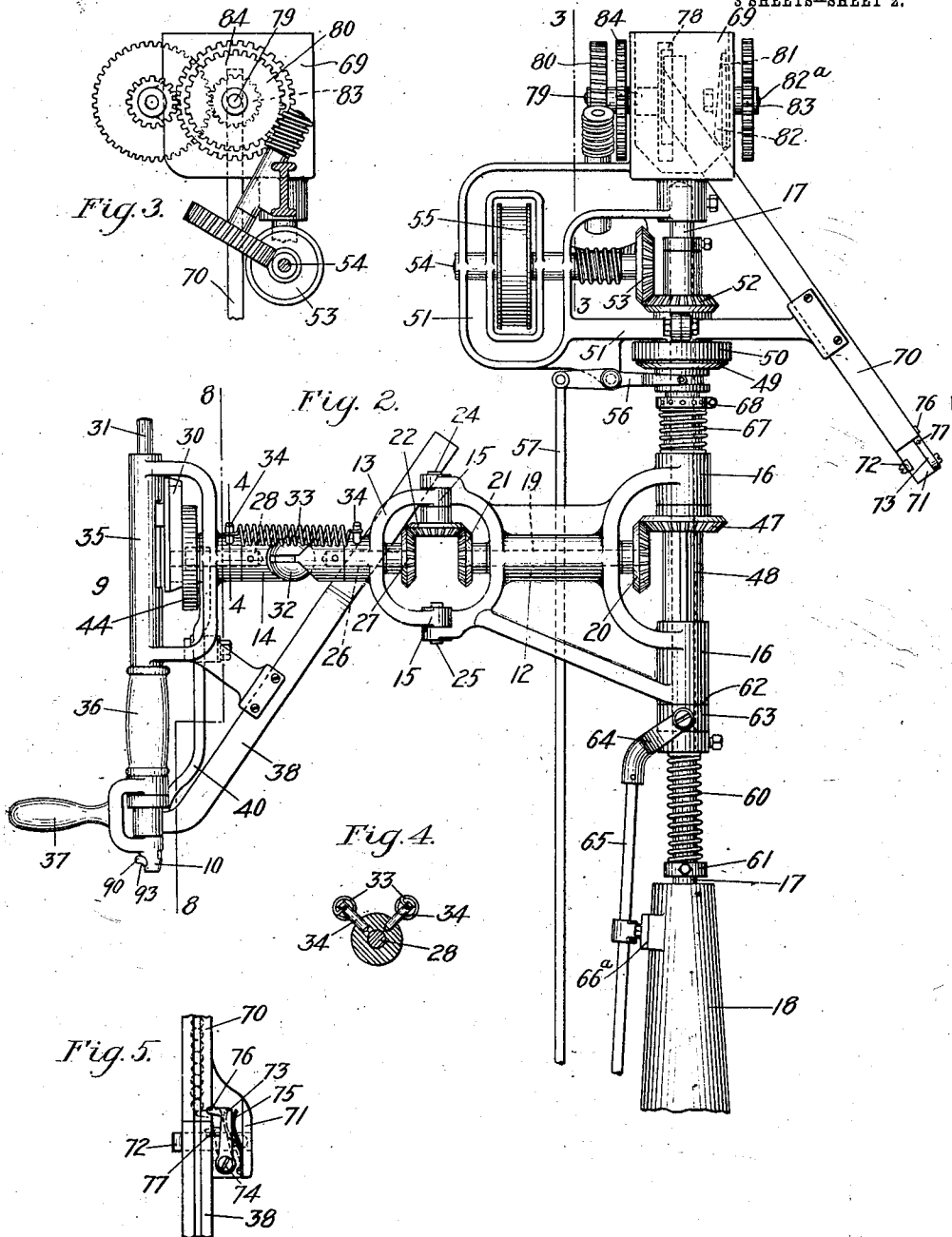
Inventor
 Merton D. Phelan
 Emory Booth,
 Attys

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 3 SHEETS—SHEET 3.

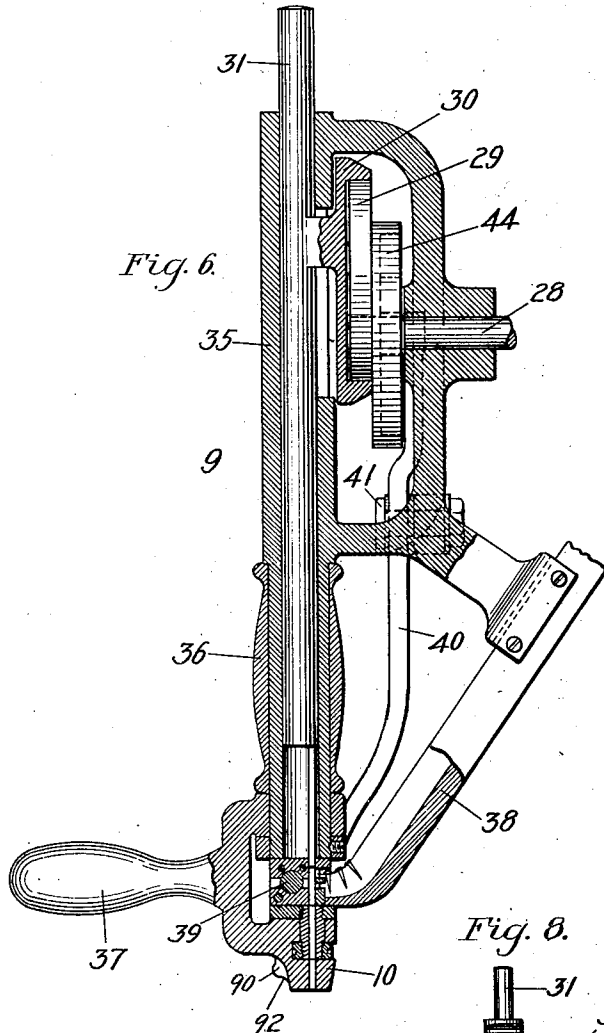


Fig. 6.

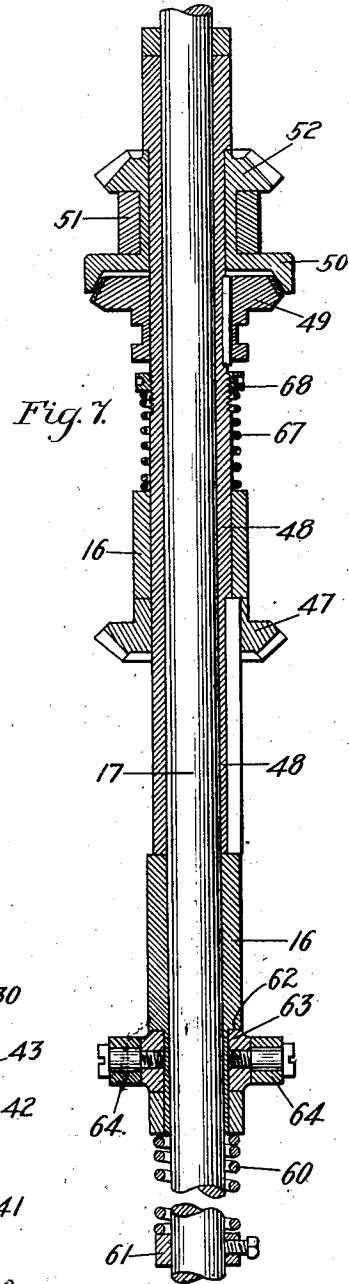


Fig. 7.

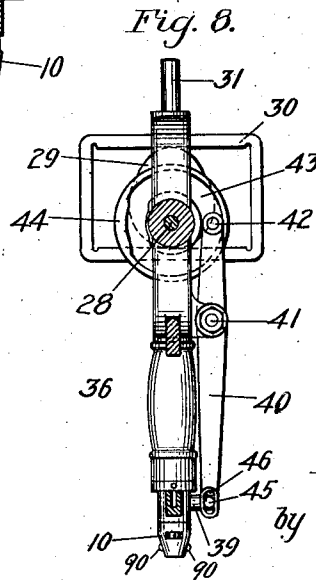


Fig. 8.

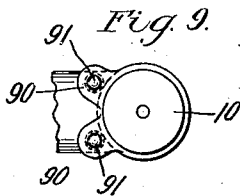


Fig. 9.

Witnesses.
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UNITED STATES PATENT OFFICE.

MERTON D. PHELAN, OF DORCHESTER, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO MANUFACTURERS MACHINE COMPANY, OF MONTCLAIR, NEW JERSEY, A CORPORATION OF NEW JERSEY.

PORTABLE POWER-TACKER.

938,508.

Specification of Letters Patent.

Patented Nov. 2, 1909.

Application filed October 19, 1906. Serial No. 339,633.

To all whom it may concern:

Be it known that I, MERTON D. PHELAN, a citizen of the United States, and a resident of Dorchester, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Portable Power-Tackers, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

My invention relates to machines for applying fasteners, more particularly, though not exclusively, to portable tackers, employed in lasting machines.

My invention aims generally to provide a tacker of novel construction and operation that efficiently and rapidly drives tacks in the desired positions and which will be best understood and appreciated by referring to the following description and accompanying drawings of a single embodiment of my invention selected for purposes of illustration, its scope being more particularly pointed out in the appended claims.

In the drawings; Figure 1 is a front elevation of a lasting machine comprising a preferred embodiment of my invention selected for purposes of illustration only; Fig. 2 an elevation of the portable power tacker, showing the tacker and its carrier swung to the left over the toe of the shoe, the base of the supporting column being broken away; Fig. 3, a vertical section on line 3—3 (Fig. 2) showing the hopper and the gears for operating the tack lifting and clearing mechanism. Fig. 4 a vertical sectional detail on line 4—4 (Fig. 2). Fig. 5 a detail showing in partial plan and elevation the raceways in aligned position with the stops therefor and gate for closing the hopper raceway. Fig. 6 a vertical sectional detail through the tacker proper. Fig. 7 a vertical sectional detail to show the supporting shaft for the hopper and tacker carrier; Fig. 8, a vertical and transverse section of the tacker on the line 8—8 Fig. 2, and Fig. 9, a plan from below of the nozzle, to show the anti-friction support with its balls, to be referred to.

In the particular embodiment of my invention herein selected for purposes of illustration only, referring to the drawings, A (Fig. 1) represents a lasting machine pref-

erably of the type commercially known as bed lasters, wherein a series of lasting plates or wipers are employed for turning and holding the edges of the upper in place upon the inner sole, though obviously my invention is not limited to such type, as it is equally adapted to cooperate with any machine in which wipers of any kind or their mechanical equivalents are employed. The lasting plates, wipers, or other devices furthermore may be of any desired or suitable construction. In the bed laster shown, (Fig. 1), the last with its upper in lasting position is indicated at 1 (Fig. 1) between the toe lasting head 2 and the jacking and heel lasting mechanism 3, each of which is longitudinally movable upon the head 4 of the machine frame for the proper positioning thereof for lasting purposes.

The toe lasting head 2 is provided with the usual toe lasting plates or wipers 5 and the heel lasting mechanism with heel lasting plates 6, said plates 5 and 6 being brought into wiping relation with the upper by the manipulation of their respective operating handles 7, 8, after said head 2 and heel mechanism 3 are closed or brought to operative position relative to the last, insole, and to the upper and linings to be secured thereto.

Any desired type of lasting tools or devices may be employed upon the bed laster to operate upon the intermediate portions or sides of the upper, or said sides may be lasted by hand, or separately by the wipers or other devices used in machines known to the trade as side lasters.

It will be readily understood by those skilled in the art that the wipers or lasting plates, particularly in bed lasting machines, are employed to gather in and lay over the edges of the upper, linings, etc., upon the last, upon the toe and heel end of the bottom of said last. It has been customary, after such materials have been fully laid over and in position upon the edge of the last, to withdraw the wipers slightly so as to expose the infolded edges of the materials without releasing the clamping action of the wipers thereon, so that the infolded edges of the materials are exposed to permit the operative to drive tacks therein. This operation

is usually performed by the operative taking a hand tacker in one hand and a maul or hammer in the other and by which a series of tacks are driven through the exposed edges of said infolded materials into the insole beneath the same for the purpose of securing the upper in lasted position. It has been found, however, that such method is open to many objections, one, for instance, being the loss of time spent in positioning the hand tacker and in driving the tacks successively. To overcome this and other obvious objections, characteristic of such tools, I have found it more advantageous in producing the best results to employ a manually movable or transferable automatic tacker, which may be moved with rapidity around the circle of the toe or heel immediately within the edges of the partially withdrawn wipers, said tacker being preferably operated at high speed to drive the tacks automatically as it progresses around said toe or heel, as will be hereinafter more fully set forth.

Referring now to Fig. 2, the tacker proper is shown as a whole at 9, having a suitable nose or nozzle 10 through which the tacks are driven into the work. That the tacker may be mounted so that it may be freely moved back and forth in a horizontal plane to bring said nozzle into any desired relation or operative position relative to the wipers at either end of the last, or to the work, it is secured to the outer end of a swingable arm constituting a tacker carrier and comprising a plurality of sections herein shown as three in number and respectively indicated by reference numerals 12, 13 and 14. The inner sections 12 and 13 are respectively jointed or hinged together at 15, the inner section 12 of said jointed frame being pivotally mounted, as by bearings 16 formed upon the arms of a yoke at the inner end of said section, upon a stationary, vertical, supporting shaft 17, suitably mounted adjacent the head and in the rear of the lasting machine A, in the present instance, at the head of a suitable column 18 though obviously said shaft may be otherwise supported, my invention not being limited in this respect.

The jointed frame permits the tacker to be moved by the operative in any direction horizontally and into any desired position within the limits of its movement with the utmost freedom. Said section 12 is provided with a suitable central bearing for a horizontal driver shaft 19 (Fig. 2) having beveled gears 20, 21, at its respective inner and outer or opposite ends, the latter meshing with a horizontal bevel gear wheel 22, herein shown as journaled upon the vertical pivot pin 24. The section 13 is similarly provided with a horizontal shaft 26 having a beveled gear 27 in mesh with said beveled gear wheel 22, and by which it is rotated,

said arrangement permitting free swinging movement of the carrier sections 12 and 13 relative to one another about their jointed connections without interfering with the rotation of said shafts 19 and 26, said bevel gears transmitting the rotary motion of the shaft 19 to shaft 26. The outer section 14 is provided with a suitable bearing for a short driver shaft 28, the outer end of which, exterior to said bearing, has a triangular or other cam 29 received into a yoke 30 formed or secured to the driver bar 31 of the tacker and operating to reciprocate the same upon rotating said shaft. The inner end of this shaft 28 and the outer end of the shaft 26 are respectively secured to the members of a universal shaft coupling or joint 32 interposed between said sections 13 and 14, and pivotally securing them together, so as to permit of universal movement of the tacker proper, relative to said section 13 and about said coupling as a center. For normally maintaining the hub like bosses or bearings, in which said shafts 26 and 28 are mounted, in alinement with said coupling 32 and with each other, or to express it differently, for normally maintaining said sections and also their respective shafts, in horizontal alinement, said sections are connected together by a pair of coil springs 33 (Figs. 2 and 4) arranged above said coupling 32 and secured as by pins 34 to the hub like bearings of said sections. By this arrangement, the tacker proper may be tilted or swung in any desired direction about said coupling as a center and the section 14 swung to the right or left on the shaft 28 upon which it is loosely mounted so as to drive tacks at any inclination and in whatever horizontal position the tacker is moved, said springs acting to return the tacker to its normal vertical position after use.

While the tacker proper may be of any desired construction, I prefer that herein shown (see Figs. 2 and 6), in which the outer end of the pivoted carrier section 14 is formed as a yoke, carrying a cylindrical bearing 35 (Fig. 6) in which the driver bar 31 is mounted to reciprocate vertically. The lower end of this bearing has a turned down portion to receive the tubular handle 36 loosely mounted thereon which is adapted to be grasped and guided by one of the operative's hands. This turned down portion of the tacker also receives the nozzle 10 directly beneath the handle 36 also loosely mounted on said portion so as to turn freely thereon. Said nozzle 10 is provided with a horizontal or laterally extending handle 37, by which it may be turned or rotated upon said turned down portion for a purpose presently made clear. The outer section 14 which carries the tacker proper also carries an inclined raceway 38, (Figs. 2 and 6), forming a tack supplying reservoir upon which the tacks

gravitate toward the nozzle end of the tacker and into the path of the driver in a manner common to machines of this type.

The separator employed for separating the nails at the lower end of the raceway and placing them in the path of the driver may be of any suitable or desired construction, but as it is desirable to operate the tacker and hence said separator at high speed and as the springs usually employed for returning the separator to its normal position when operated at such speed are more or less unreliable, I prefer to actuate the separator by positive means in both directions. To this end the actuating or guiding arm 39 of the separator is mounted to reciprocate horizontally, (Figs. 6 and 8), the outer end of said arm 39 being operatively connected with a vertical lever 40 fulcrumed at 41 upon said section 14. For operating this lever, its upper end carries a roller or other stud 42 running in a cam groove 43 of a disk 44 upon the drive shaft 28, so that the separator may be positively moved in and out or in both directions as the driver shaft is rotated and irrespective of the speed at which it is driven. For operatively connecting the lower end of said lever 40 with said actuating arm 39, the latter in the present instance, is provided with a pin 45 (Fig. 8) received within a longitudinal slot 46 on said arm, thereby transmitting a reciprocatory motion to said arm through the oscillations of said lever.

That the jointed driven shaft may be rotated when desired to reciprocate the driver to drive the tacks as required and without interfering with the free swinging movements thereof, the beveled gear 20 is meshed with a cooperating gear 47 (Fig. 7) splined between the bearings 16 on the lower end of a sleeve 48 loosely mounted upon the vertical supporting shaft 17 referred to. At its upper end said sleeve carries a clutch member 49, rotatively connected therewith as by splining and which cooperates with a clutch member 50, journaled in a suitable supporting frame 51 (Fig. 2) stationarily supported at the upper end of said supporting shaft 17. Said clutch member 50, also constitutes a sleeve loosely mounted on the sleeve 48, and carries at its head a bevel gear 52 which is driven by a similar gear 53 upon the short horizontal drive shaft 54. To rotate this drive shaft 54 it is, in the present instance, provided with a pulley 55 (Fig. 2), adapted to be operatively connected and driven, as by belting (not shown) from any convenient source of power, so as to transmit rotary motion therefrom through said shaft and gears and the flexible shaft to the driver cam 29 to reciprocate the driver as described.

For operating the clutch member 49 to move it into and out of contact with a coop-

erating clutch member 50 I have, in the present instance, provided a clutch lever 56 (Fig. 2) connected by a rod 57, to an arm of a rock shaft 58 mounted in said column and adapted to be actuated by any suitable controlling member 59 here shown as designed to be conveniently operated by pressing the side or thigh against it without requiring any foot movement. When the operative has lapsed a toe or heel by moving the wipers into lasting position, he grasps or engages the tacker either by manipulating the carrier or preferably by grasping the guiding handles 36, 37 thereon and simultaneously actuating the controlling member 59 to operate the clutch for setting the driver in operation while sweeping the nozzle end of the driver quickly around the inner semi-circular edges of the partially withdrawn wipers 5, 6, referred to, permitting the driver as it progresses to drive in rapid succession a series of tacks to secure the upper linings, etc. in lasted position. As the heights of different lasts, however, vary with and for different sizes and styles of shoes and as the heights at which the wipers are carried in operating or lasting position also vary according to the difference in the spring of the lasts and as it is furthermore desirable to provide for sufficient clearance to swing the tacker forward to its work and return it to its position out of the way of the operative, I have, in the present instance, provided suitable operative controlled means for moving or adjusting the tacker vertically and for bringing it down to tacking position. To this end, the inner section 12 together with the driving shaft 19 carried thereby is arranged to slide vertically on the sleeve 48 of the vertical supporting shaft 17; (Figs. 2 and 7) said section and its shaft being normally supported in elevated position by a coil spring 60, (Fig. 7) encircling said shaft beneath the lower bearing 16 of said section and seated at its lower end upon a collar 61 adjustably secured upon said supporting shaft 17.

For depressing the tacker frame against the tension of its lifting spring 60 to bring it down to the tacking position for operating upon the shoe, the lower bearing 16 is provided with a circumferential rabbet 62 (Fig. 7) to receive a loose collar 63 (Fig. 2) carried by a yoke 64 at the head of a treadle actuated rod 65 conveniently operated from the treadle 66 at the base of said column. By this arrangement the frame may be swung about upon its pivot shaft 17 without in any way interfering with the action of the depressing mechanism therefor, the lower bearing 16 turning freely in said collar as the tacker carrier is swung back and forth without turning said collar, the treadle rod 65 being maintained in vertical position with its yoke head 64 in horizontal position by suitable guides 66* on said column.

When the uppers have been lasted and are ready for tacking, the operative grasps the tacker, draws it forward and over the work, and by depressing the foot treadle 66 depresses the carrier to bring the driven nozzle 10 down into operative relation with the materials to be tacked, where it is held during the traverse of the driver on the shoe to be operated upon, after which the treadle 10 is released permitting the carrier and said tacker to spring up to its elevated position as it is swung back out of the way. To prevent objectionable jarring of the tacker and its carrying frame, when lifted to normally elevated position upon release of the depressing treadle, I have provided, above the upper bearing 16 of the tacker sectional frame 12, a coil spring 67 interposed between said bearing and a collar 68 adjustably secured to the head of said sleeve 48, said spring acting to retard the vertical movement of the tacker and bring it gradually to rest.

The raceway 38 with which the tacker is provided is of sufficient length to carry a suitable supply of tacks and is arranged to be brought into operative connection with a suitable loading or replenishing device. This device, as herein shown, comprises a loading hopper 69 (Fig. 2) of suitable construction and preferably power driven from the drive shaft 54. Depending and leading from this hopper is an inclined raceway 70 with which said raceway 38 alines and connects as it is swung to the right out of the way (Figs. 1 and 2) and constituting an extension thereof. For the proper positioning of the raceway 38 and for holding it in tack feeding relation with the raceway 70, the latter is provided with a stop 71 (Fig. 5) against which the upper end of the raceway 38 is brought in contact when swung toward it, said stop also having a spring arm 72 at its under side, the active end of which is depressed as the raceway 38 slides over it. This end, however, rises to engage the opposite side of the raceway 38 when the raceways are alined to hold them in said position and which normally prevents the raceway 38 from moving in the opposite direction. This spring arm, however, yields to permit the raceway and the tacker to be forcibly swung forward over and into desired relation with the shoe.

To prevent tacks falling out of the lower end of the raceway 70 when the tacker is swung forward, said end is normally closed by a swinging gate 73 (Fig. 5) pivoted at 74 within a longitudinal recess of said stop 71, a spring 75 normally acting to move the tack engaging head 76 of said gate across the path of the tacks in said raceway and to prevent their further slide downward. When, however, the raceway 38 is swung into alinement with the raceway 70, it is

desirable to automatically open this gate to permit the reloading of the tacker raceway 38. To provide for such automatic operation said gate 73, is provided with a laterally extending projection here shown as a pin 77, which is engaged by the side of said raceway 38 (Fig. 5) as the latter swings into reloading position, the movement of which swings the gate back against the action of its spring 75 and maintains it in said position while the raceways are held in alinement by the spring arm 72, so that the tacks in the loading raceway 70 may gravitate into the raceway 38 to reload the same.

The hopper and operating devices as here shown are preferably constructed and operated substantially as in the well known "Boston lasting machine," long used in the trade and which, therefore, may be but briefly referred to, it being sufficient to designate the elevator wheel 78 mounted upon a horizontal shaft 79 having and rotated by a worm wheel 80 driven by worm gearing interposed between it and the drive shaft 54. The hopper is also provided with a disk 81 carrying spring arms 82 at its periphery adapted to wipe across the raceway to remove tacks improperly placed thereon, said clearer being mounted on a short horizontal shaft 82^a provided with a pinion 83 (Fig. 2) driven in any suitable manner through intermediate gearing from a drive wheel 84 on said shaft 79. The rotation of this shaft 79 operates the elevator wheel and the clearing device 81 in the usual manner to raise, deposit and feed tacks to and down the raceway. That the driver nozzle 10 may be brought into proper operative position relative to the materials to be tacked to the insole, said nozzle is provided with a laterally extended friction support, here shown as lips 90, (Fig. 6) adapted to rest upon and be guided by the inner surface of the wiper plates, so that the tack may be driven as close thereto as possible.

Those skilled in the art will readily understand that if it were possible to bring the tacker into actual physical contact with the materials to be tacked with sufficient force to withstand the driving impact or rebound as the tacks are driven, the friction between the tacker nozzle and said materials would be such as to prevent or to retard the free and rapid traverse of the tacker over the work. To guard against this and yet permit the operative to work with the maximum speed, I have provided the antifriction support above referred to, which overlies the active edge of the wipers and rests or travels thereon. This arrangement leaves the tacker nozzle close to but sufficiently clear of the materials to permit it to traverse quickly and freely around the shoe end. As shown in Fig. 9, these lips constituting the nozzle support are also provided with suitable anti-

friction rollers here shown as friction balls 91 suitably mounted in said lips to project at the under side thereof to roll freely on said lasting plates 5 and 6. These lips 90 may be of any suitable construction but preferably as shown in Figs. 2 and 6, are formed to project and diverge laterally adjacent the lower end of the nozzle one being arranged on each side of and below the horizontal operating handle 37, said lips, at their under side being shaped or provided with a concave surface 92 to fit and rest upon the convex edge of the wipers 5 and 6 referred to.

By pivotally mounting the tacker nozzle upon the lower end of the tacker, the anti-friction support may be brought into desired position relative to the wiping plates. This arrangement avoids turning the entire driver around or similar movements of the tacker proper or of such movement of the jointed sections as would otherwise be necessary to permit said tacker support, if rigid with the tacker proper, to turn in following the approximate half circle contour of the wipers at either end of the shoe. By this means the operative by turning the handle 37 as the driver progresses or is moved over the shoe may keep said anti-friction support always properly in position and running upon the wipers without correspondingly turning the driver or said tacker, the direction of the handle always indicating that of said support. The operating handle 36 immediately above the horizontal handle 37 may be grasped by the other hand of the operative for guiding the tacker into the desired position, the laterally extending handle 37 serving more particularly as stated, to give proper direction to the anti-friction support 90.

In operating the machine, assuming the uppers, linings, etc. to be properly placed or "lasted" and with the wipers slightly withdrawn to expose the infolded edges of the lasted materials, the operative grasps the operating handles 36 and 37 of the portable tacker thereby to swing the tacker forward into position over the work, simultaneously depressing the treadle 66 to bring the nozzle support 90 down upon and to run on the wipers. During this movement the operative also oscillates or tilts the tacker to give it the desired inclination for driving the tacks in such directions as desired and by pressing the thigh controlling member 59 actuates the clutch to start the tacker into operation. While the tacks are being automatically and successively driven, the tacker support is rapidly and easily run around upon the inner surface of the wipers thereby constantly maintaining the nozzle 10 in proper tacking relation thereto and to the work while the treadle effectively holds it down to prevent its rebound after impact. The tacker proper is guided to its work by

the manipulation of the vertical handle 36 which the operative grasps by one hand while with the other he swings the handle 37 horizontally to move the nozzle support to the right or left to guide the same upon the wipers and during the traverse of the tacker around the shoe ends and as the tacks are successively and automatically driven. To stop the machine, the thigh control 59 is released, permitting the clutch members to separate to arrest the rotation of the driver shaft, and stop the reciprocations of the driver, the operative in practice simultaneously withdrawing his foot from the treadle 66, to permit the carrier to be elevated by its lifting spring 60 to its normally elevated position above the shoe, the spring 67 acting to retard the vertical movement and bring the carrier gradually to rest thus preventing jarring of the raceways and displacement of the tacks. The operative simultaneously and by a natural movement swings the carrier toward the rear to cause the raceway 38 to engage and interlock with the hopper raceway 70, automatically opening the gate 73 to permit tacks on said raceway 70 to slide down upon and to reload the tacker raceway 38. In again swinging the tacker forward into operative position, said gate is automatically closed by its spring to prevent tacks running out of the loading raceway 70.

By my invention a tacker is provided that is not only automatically operated and under the complete control of the operative but is furthermore especially adapted for high speed work such as is desirable in lasting operations, the springs usually employed for returning the driver or the tack separator to normal position, or for actuating the same being omitted because of their unreliability for producing the most efficient results under high speed. The tacker is furthermore portable, so that it may be swung back and forth horizontally or moved into any inclined position and the same and its carrying frame simultaneously elevated or depressed to bring it into desired relation with the work and for holding it down upon the same during the tack driving operation.

While in the particular embodiment of my invention herein selected for purposes of illustration, I have shown my portable tacker as cooperating with the wipers of a lasting machine, obviously my invention is not limited thereto, nor to the specific details of construction and arrangement of parts, the same being selected for purposes of illustration only, and capable of modification within wide limits without departing from the spirit thereof.

Having fully described the construction and operation of my invention, I claim as new and desire to protect by Letters Patent of the United States:

1. The combination with a tack driver and a support therefor adapted to permit it to be freely moved in the desired direction, of a tacker support above the nozzle end and adapted to rest upon the wipers of a lasting machine.
2. The combination with a tack driver and a support therefor adapted to permit it to be freely moved in the desired direction, of a tacker support above the nozzle end and a handle connected to the nozzle.
3. The combination with a tacker having a rotatively mounted nozzle and a support therefor adapted to permit it to be moved in the desired direction, of a handle connected to the tacker nozzle.
4. The combination with an automatic tacker having a rotatively mounted nozzle and a support adapted to permit the tacker to be moved in the desired direction, of a plurality of handles, one of which is connected to the nozzle, rotatively mounted on said tacker for moving and guiding the tacker and said nozzle into operative position.
5. The combination with an automatic tacker and a support therefor adapted to permit it to be moved in the desired direction, of a tacker support rotatively mounted on said tacker for positioning the same.
6. The combination with an automatic tacker and a support therefor adapted to permit it to be moved in the desired direction, of a tacker support rotatively mounted on said tacker and a handle connected with said support for guiding the same.
7. The combination with an automatic tacker, a swinging carrier therefor and means on the tacker for engagement by the hand or hands of the operative for directing the tacker travel, of means independent of the hand engagement with the tacker for depressing the latter into tack driving position, and means other than the nozzle on the tacker to cooperate with a lasting machine to limit such depression of the tacker.
8. The combination with a tacker having a swinging carrier and yielding carrier supporting means, of tacker depressing means and a cushioning device acting in opposition to the yielding support of said carrier.
9. A tacker and horizontally swinging carrier therefor movable to and from the tack supply combined with tack supplying means adapted to load said tacker when the latter is brought into tack receiving position.
10. A tacker and swinging carrier therefor, a tack holding raceway on said tacker, and tack supplying means having a loading raceway adapted to register with the tacker raceway, said carrier, tacker, and tack supplying means being constructed and arranged to permit said tacker to be brought into position for its raceway to receive tacks from the tack supplying raceway.
11. An automatic tacker and swinging carrier therefor, a tack holding raceway on said tacker, tack supplying means having a loading raceway adapted to register with the tacker raceway, said carrier, tacker, and tack supplying means being relatively constructed and arranged to permit said tacker to be brought into position for its raceway to receive tacks from the tack supplying raceway, and means for loading the tack supplying raceway during the period of use of said tacker.
12. An automatic tacker and swinging carrier therefor combined with driving means for said tacker, means to start and stop said tacker at will, and means independent of the swinging movement of said carrier to control the effective operating position of said tacker.
13. The combination with an automatic tacker and a swinging support therefor, of tacker depressing means and tacker starting and stopping means adapted and constructed one for foot and the other for thigh control.
14. In a portable tacker, a jointed carrier adapted to permit of universal movement for the proper positioning of the tacker, a support on which said carrier is arranged to slide vertically, means controlled by the operative for depressing said carrier and for returning it to normal elevated position, and means for retarding the return movement thereof.
15. In a portable tacker, a flexible tacker carrier provided with a bearing 16, a support 17 on which said bearing and carrier are arranged to slide vertically, means controlled by the operative and connected with said bearing for depressing the same on its support, the spring 60 for elevating it, and the spring 67 for retarding the movement produced by said spring 60.
16. In a portable tacker, a jointed carrier comprising a plurality of sections 12, 13 and 14, constructed to permit swinging movement in a horizontal plane, a tacker 9 carried by the section 14, and a flexible shaft operatively connected to said tacker for reciprocating the same and comprising means intermediate two of said sections for pivotally connecting the same and to permit of universal movement of said tacker.
17. In a portable tacker, a tacker guiding handle 36, a nozzle 10 rotatively mounted on the lower end of the tacker, and a handle 37 for positioning the same.
18. In a portable tacker, a nozzle provided above its end with an anti-friction support comprising one or more laterally extending lips or ears 90.
19. In a portable tacker, a nozzle provided above its end with an anti-friction support comprising one or more laterally extending lips or ears 90, each of which is provided with rolling means 91.

20. In a portable tacker, a rotary nozzle provided with a support above its end and a laterally extending handle 37 for operating it.

5 21. A portable tacker provided with a nozzle having above its end anti-friction supports comprising a plurality of laterally extending and diverging lips 90.

In testimony whereof, I have signed my name to this specification, in the presence of 10 two subscribing witnesses.

MERTON D. PHELAN.

Witnesses:

SIDNEY F. SMITH,
DANIEL W. COLBY.