Oct. 7, 1930. T. H. SEELY 1,777,382

FASTENING INSERTING MACHINE

Original Filed May 26, 1923 3 Sheets-Sheet 1

Fig. 1.

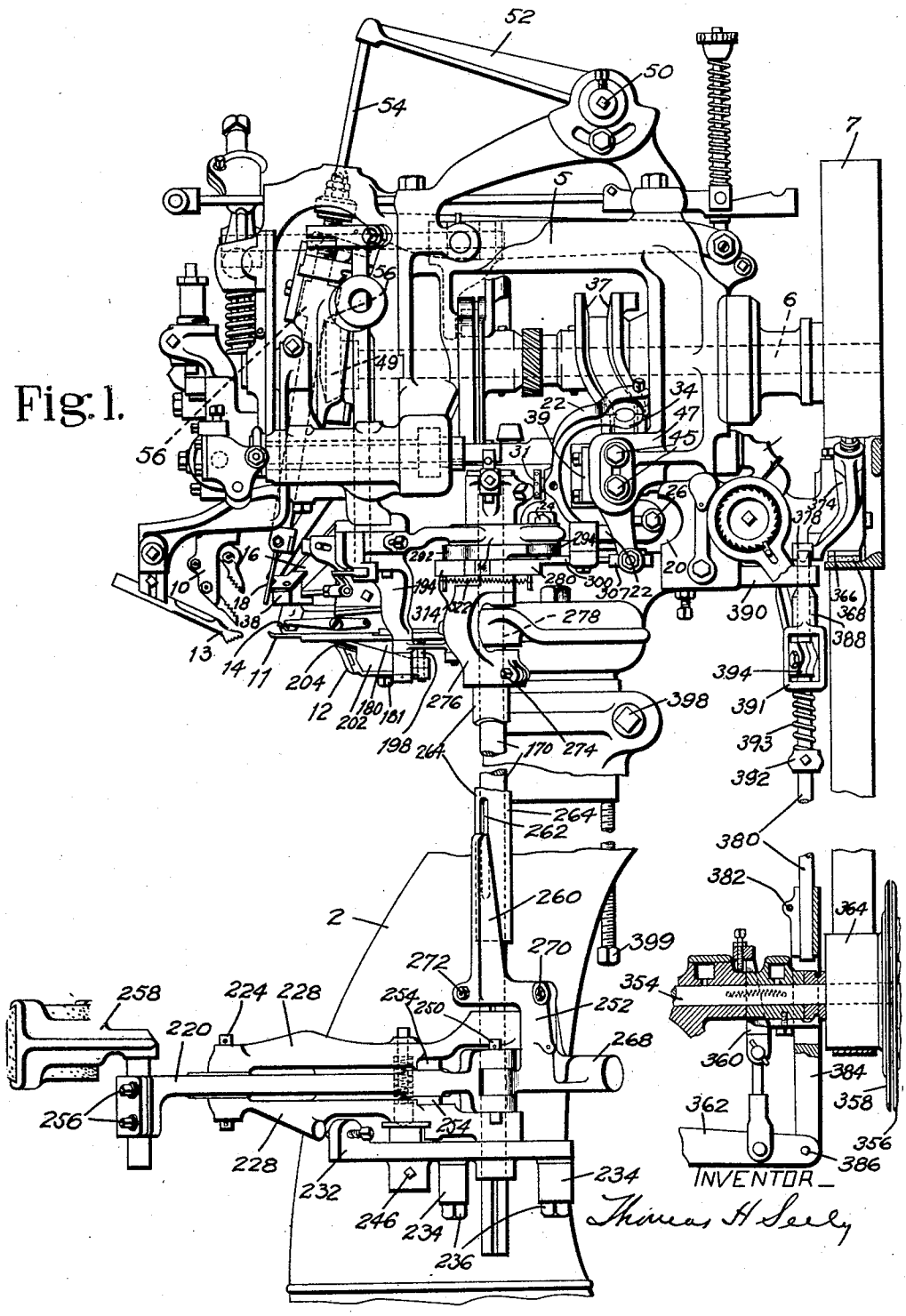

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Fig. 4.

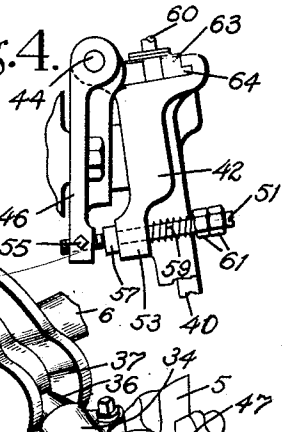

Fig. 2.

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Fig. 3.

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Fig. 5.

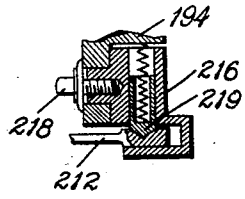


Fig. 6.

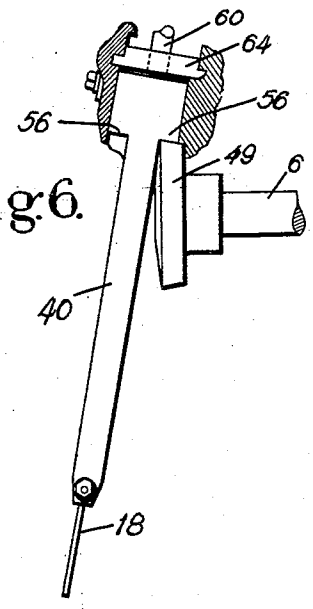


Fig. 8.

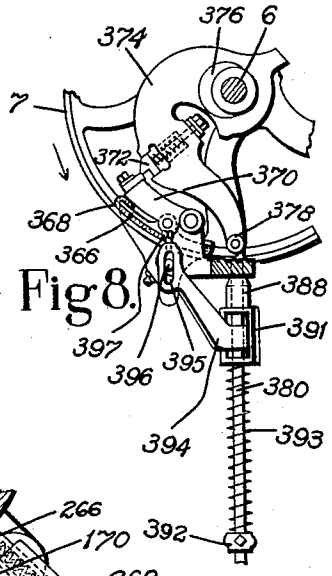
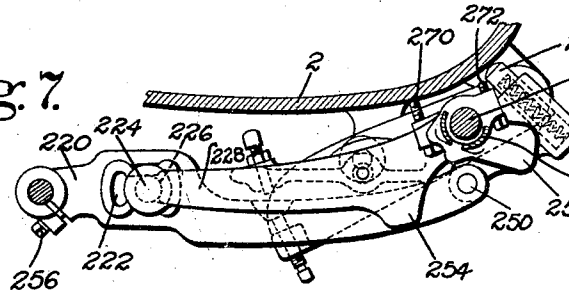


Fig. 7.



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Thomas H. Seely

Patented Oct. 7, 1930

1,777,382

UNITED STATES PATENT OFFICE

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FASTENING-INSERTING MACHINE

Original application filed May 26, 1923, Serial No. 641,685. Divided and this application filed February 28, 1927. Serial No. 171,388.

This invention relates to fastening-inserting machines and is herein shown and described with particular reference to its application to machines for operating on boots and shoes. In the drawings the invention is illustrated as embodied in a lasting machine of the well-known hand method type, examples of which are disclosed in Letters Patent of the United States No. 584,744, granted June 15, 1897, on application of Ladd & McFeely, and in United States Letters Patent No. 1,623,135, granted April 5, 1927, on my application, of which this application is a division.

Objects of this invention are generally to improve and perfect machines of this type without sacrificing the advantages of prior constructions and to provide a machine which will be more rapid, convenient, durable and effective than prior machines for this purpose.

In accordance with features of the invention, the illustrated machine includes novel driver stop mechanism comprising a wedge, or co-operating wedges, for controlling more reliably the stroke of the driver to vary the degree of insertion of the tacks so that they may be completely driven, or partially driven to facilitate their subsequent removal, mechanism operated by power of the machine being provided for effecting the shifting of the stop mechanism which controls the driver from a condition of adjustment for operation on one portion of a shoe to a condition of adjustment for operating on another portion of the shoe; mechanism, preferably comprising a toggle, for automatically locking the wedge of the stop mechanism in its operative position; improvements in the driver bar and its mounting; and improved mechanism for controlling manually the power shifting including a knee lever.

These and other features of the invention, including various other novel combinations and arrangements of parts, will appear more fully from the following description when read in connection with the accompanying drawings and will be pointed out in the appended claims.

In the drawings,—

Fig. 1 is a side elevation, partly broken away and partly in section, of a machine embodying the present invention;

Fig. 2 is a perspective view of the operating mechanism of the machine head, the supporting frame being omitted for the sake of clearness;

Fig. 3 is a plan view of mechanism shown in Fig. 2;

Fig. 4 is a detail side view illustrating the adjustment of the driver bar carrier;

Fig. 5 is a sectional detail of parts shown in Figs. 1, 2 and 3;

Fig. 6 is a detail, partly in section, of the driver bar and its operating cam;

Fig. 7 is a plan of the knee lever mechanism shown in Fig. 1; and

Fig. 8 is a detail in front elevation, partly in section, of the stop mechanism with which the machine is provided.

Referring to Fig. 1 of the drawings, the numeral 2 indicates a column upon which is mounted for vertical adjustment a head frame 5 in which is journaled a shaft 6 carrying a driving pulley 7, the shaft 6 having thereon various cams from which the operating movements of the machine are derived. A gripper 10 is given the usual closing, updraw and overdraw and pleating movements by mechanism similar to that shown in my prior Letters Patent before referred to.

The shoe is positioned laterally by one or the other of two edge gages 11, 12 and is positioned vertically by a bottom rest 13. A reciprocating wiper 14 is provided to wipe the tensioned upper into lasted position upon the shoe bottom and a tack is fed in each cycle of the machine from one or the other of two raceways 16, 17 (Fig. 3) to a pocket in the wiper 14 by movement of which it is carried into position to be driven by a driver 18. The wiper 14 is mounted on a horizontally reciprocating slide 20, directly actuated by a cam on the shaft 6 by the following construction.

An irregularly shaped bracket member 22 (Figs. 1, 2 and 3) is secured to the slide 20 by cap screws 24, 26 which pass through slots in the bracket 22 and are threaded into the slide 20. The bracket is preferably provided

with a rib 28 engaging a groove in the slide to hold the slide and bracket in correct relative position vertically. By loosening the cap screws 24, 26 the bracket may be adjusted horizontally relatively to the slide, and, for the purpose of effecting such adjustment conveniently and accurately, a screw 30 having a capstan head 31 is threaded into the bracket 22 with its head engaging a notch 32 formed in the slide 20. The screw 30 is held in adjusted position by a set screw 33. An arm 34 of the bracket carries a tapered cam roll 36 which engages a suitable cam path 37 formed in the edge of a cam on the shaft 6. The cam path 37 is designed to effect to and fro movements of the slide 20 and wiper 14 from a rearward position in which a tack is fed from one of the raceways 16, 17 to a tack pocket in the wiper, to a forward position to wipe the upper over the shoe bottom. The cam 37 acts directly, through the bracket 22, upon the slide without the intervention of a lever as in prior constructions, and by the adjustment above described the rearward position of the wiper may be accurately adjusted to secure proper alinement between the tack pocket and the tack passage of the separator block 38. To counteract side thrust of the slide 20 due to the taper of the roll 36, sliding contact is provided between the slide 20 and a plate 39 held by cap screws 41 to a block 43 secured at 45 to a bracket 47 of the head frame 5. The holes in the plate 39, through which the screws 41 extend, are sufficiently elongated laterally of the slide 20 to allow the plate to be pressed against the slide before the screws are set up, so that the plate will support the slide 20 as it moves back and forth in contact therewith.

The driver 18 is connected to a driver bar 40 arranged to slide in a driver bar carrier 42. The carrier is journaled for swinging movement on trunnions 44 one of which is shown in Fig. 2, the journals being formed in a bracket 46 secured at 47 to the frame 5 of the machine head. This construction provides a long and rigid bearing for the driver bar carrier so that it will withstand, during long use, the continual battering of the driver blows. The slide 20 is provided with a capstan headed screw 48 which, as the slide moves forward, engages the driver bar carrier 42 and swings it on its trunnions 44, the screw being adjusted so that when the slide has reached its forward position over the shoe bottom the driver 18 is at the proper position and angle to aline with the tack pocket in the wiper 14 and when released will drive the tack through the pocket into the shoe. The rearward position of the driver bar carrier 42 is also made adjustable as shown in Figs. 2 and 4. A rod 51 passes loosely through an ear 53 on the carrier 42 and is threaded into the bracket 46 where it is maintained in adjusted position by a set screw 55. On the rod 51 is a fixed collar 57 against which the ear 53 is held by a spring 59 on the rod between the ear 53 and nuts 61 on the forward end of the rod which is slotted to receive a screw driver. By loosening the set screw 55 and turning the rod 51 the rearward position of the carrier about its pivot 44 may be adjusted and its position with respect to a separator block 38 determined. The driver bar is raised by a cam 49 on the shaft 6 (Fig. 1) and is impelled downwardly by a torsion bar 50 acting on an arm 52 between which and the driver bar is a connecting strut 54. It will be noted in Figs. 1 and 6 that the cam 49 engages a projection 56 on the driver 40 upon which it operates to raise the bar against the driver spring 50, and that the driver bar is provided with a like projection 56 on its front side. It is hence possible, when one of the projections 56 has become worn, to reverse the position of the driver bar in its carrier so as to present the other projection 56 in operative relation to the cam.

In order that the tacks may at times be left upstanding from the work, as in lasting the sides of welt shoes, so that they may be conveniently pulled out, and at times completely driven as in McKay work and in the heel-seat lasting of welt work, novel mechanism is provided for arresting the stroke of the driver. In prior constructions for this purpose driver stops were arranged to close beneath a stop collar on the driver bar. It is necessary to provide buffer washers on the under side of the stop collar and it is difficult to prevent these from dropping down and getting in the way of the closing of the stops. The present construction avoids this and other objections to the old construction, including development of looseness and lost motion, and provides a very rigid and durable mechanism for arresting the driver. To this end the upper portion of the driver bar 40 (Fig. 2) is formed as a cylindrical reduced portion 60 which carries a stop collar 61 held by nuts 62 on the portions 60. Between the collar 61 and the top of the carrier 42 is interposed a pair of wedges 63, 64. The upper wedge 63 is loosely mounted for vertical movement on the reduction 60, and the lower wedge 64 is arranged to slide transversely of the machine beneath the upper wedge 63. On the rear side the wedge 64 is guided for such movement and is held from vertical movement by a rib 65 engaging a groove in the carrier 42, and at the front side the wedge has a rib 66 engaging a groove in a cap plate 67 secured to the carrier 42 by screws 68. The wedge 64 is slotted at 70 to receive the driver bar reduction and to receive a depending portion 71 of the wedge 63 by which the wedges are held in proper alinement and which rests on the carrier 42 to transmit the blow of the driver directly to the carrier when the wedge 64 is withdrawn.

The wedge 64, when moved in its guide, raises or lowers the wedge 63 to vary the space between the stop collar 61 and buffer washers 73 on the top of the wedge 63 and hence to vary the stroke of the driver. To move the wedge 64, a ball-ended link 74 is suitably connected at one end to a projection 75 on the wedge 64 and at the other end to an arm 76 secured to a rock-shaft 78, the operating mechanism for which will be hereinafter fully described.

The link 74 and the arm 76 constitute a toggle which is substantially straight when the wedge 64 is in operative position, so that any tendency of the wedge 64 to slip out from under the wedge 63, due to the blow of the driver, will be transmitted through the straight toggle 74, 76 to the shaft 78, the wedge being thus locked in operative position. When the wedge 64 is out, as shown in Fig. 2, the driver blow is transmitted directly to the carrier 42 through the rib 71 which then rests upon it. To prevent cramping of the wedge 63 against the portion 60 of the driver bar when the wedge 64 is pushed under the wedge 63, an abutment 79 is provided on the carrier 42 against a vertical face of which an end of the wedge 63 bears and which takes the end thrust of the wedge 63 as the wedge 64 is moved under it.

A vertical shaft 170 is associated with the mechanism for operating the edge gages, the raceways and the driver stops now to be described. The thin edge gage 11 and the thick edge gage 12 are arranged, as shown in Figs. 1, 2 and 3, for use alternatively each to the exclusion of the other as is usual in machines of this type. The thin gage 11 is mounted to slide horizontally on a part 180 secured to the machine head at 181. As shown in Fig. 3, a link 182 is adjustably held by a bolt and slot connection 184 to the sliding gage 11 and is pivoted at its rear end to a lever 186 having a fixed fulcrum 188 between its ends. The lever 186 has its other end connected by a link 190 to a pin 192 mounted on an irregularly shaped rocking member 194 to be further described. The pin 192 has a long bearing in one end of a link 196 which, at its other end, has fixed therein an upwardly projecting pin 198 which projects through a hole in an ear 200 of a member 202 arranged for oblique sliding movement on the part 180 toward and from the front end of the thin gage 11 from the position of Fig. 1 to that of Fig. 2. The member 202 slides on ribs 204 formed on each side of the part 180 and carries at its front end the thick gage member 12. Movement of the thick gage 12 toward and from its operative position is effected by movement of the rocking member 194 with the rock-shaft 78 to which it is fastened by a screw 195. As the pin 192 moves about 78 as a center, it acts through the link 196 to slide the thick gage 12 upwardly and forwardly, the link 196 having an upward movement upon the pin 198. As the slide 202 moves forwardly, the slight rotation of the pin 198 during its movement prevents the pin from binding in the ear 200 as it moves vertically on the pin. By the mechanism just described, swinging of the pin 192 with the rocking member counterclockwise by means to be described causes the thick gage 12 to be moved upwardly and forwardly into operative position, and the thin gage 11, through the link 190, lever 186, and link 182, to be moved rearwardly out of operative position. Swinging of the rocking member 194 in a clockwise direction, of course, reverses the motion, causing the thick gage 12 to be withdrawn and the thin gage 11 to be moved forward into operative position. The operative position of the thick gage, however, is farther back of the point where the tacks are driven than is the operative position of the thin edge gage, so that when the thick gage is used the tacks will be located at a greater distance from the shoe edge, as is desirable at the heel-seat. It will be observed also that through the connections described the shaft 78 will be rocked to cause the wedge 64 to be moved out from under the wedge 63 when the thick gage is brought into operative position, so that the tacks will be completely driven when the thick gage is in use as it is when lasting an end portion of the shoe. When lasting the sides of a shoe with the thin gage 11 in operative position, the wedge 64 will be inserted under the wedge 63 to cause the tacks to be only partially driven, as is desirable in lasting the sides of a welt shoe.

In lasting the sides of a shoe, tacks of a different kind from the kind used in lasting the end of the shoe are required, the side lasting tacks being frequently much longer and having small heads and blunter points than those used for end lasting. The raceway 16 (Fig. 3) is adapted to receive long side lasting tacks and the raceway 17 tacks of a different kind for use at the end of the shoe, for example at the heel-seat. The machine provides for the automatic shifting of the raceways in conjunction with the shifting of the edge gages and the driver stop wedges. For this purpose a link 208 has a ball and socket connection at 210 with the raceway, the link 208 is threaded into a link member 212 and is provided with a set nut 214. To provide an adjustable yielding operative connection between the outer end of the link member 212 and the operating member 194, a block 216 (Fig. 5) is adjustably secured in a recess in the member 194 by a cap screw 218 which passes through a slot in the member 194. Part of the block 216 underlies the member 212 and in the block 216 is mounted a spring plunger 219 having a conical end which engages a similarly shaped recess in the end of the link member 212 to form a piv-

ot for the link and an operative connection between the link and the member 194. In case movement of the raceway should be obstructed, for example, by clogging of tacks between the raceway and separator power movement of the member 194 may still take place without danger of breakage or straining of parts, the spring plunger 219 in that case merely passing partially or wholly out of the recess in the link 212. From Fig. 3 it will be seen that the plunger 219 is sufficiently eccentric to the fulcrum 78 of the member 194 to give the required movement of the raceway and that when the parts are in the position there shown the fulcrum 78, the plunger 219 and the ball joint 210 are substantially in a straight line, and also that the face of the member 194 along which the block 216 is adjustable is substantially perpendicular to this line. The block 216 can, therefore, be adjusted without materially varying the position of the raceway when the parts are in the position shown; such adjustment of the block, however, will vary the movement imparted to the raceway when the member 194 is moved and provides convenient and accurate means for alining with the separator the channel 17 of the raceway which is in operative relation to the separator when the lever is moved from the position of Fig. 3 to its other position. The tack channel 16 may be alined with the separator while the parts are in the position of Fig. 3 by loosening the set nut 214 and turning the ball-ended portion of the link 212.

It will now be clear that the movement of the wedges 63, 64 to control the stroke of the driver, the shifting of the raceways 16, 17 to control the size of tacks, and the alternative positioning of the edge gages 11, 12 for mutually exclusive use at the ends and sides of the shoe respectively to position the shoe for the reception of tacks at different distances from the shoe edge, may all be effected by movement of the member 194 with its pivot shaft 78. Movement of the member 194 is effected by power of the machine under control of the operator by mechanism now to be described. A push bar 220 (Figs. 1 and 7) is slotted at 222 to receive a pin 224 on which is a roll 226 fitting the slot 222. The pin 224 is supported in upper and lower branches of a lever 228, both branches of which are splined on the shaft 170. The lever 228 is supported by a bracket 232 secured to lugs 234 on the column 2 by bolts 236. The bar 220 is pivoted by a pin 250 to a rocking member 252 and is guided between projections 254, 254 on the upper and lower branches of the lever 228. At its outer end the bar 220 has adjustably secured thereto at 256 the usual knee pad 258.

The rocking member 252 is mounted to turn loosely on the shaft 170 having bearings thereon which are respectively above and between the branches of the lever 228. The member 252 has an upward extension 260 formed to engage a vertical slot 262 in a sleeve or tubular shaft 264 surrounding the rockshaft 170. An inward thrust on the knee pad 258 will move the bar 220 longitudinally and rock the member 252 and hence the sleeve 264. To hold the bar 220 in its forward position a spring plunger 266 (Fig. 7) is mounted in an enlargement 268 of the member 252 in position to engage the column, and rocking movement of the member 252 is adjustably limited by stop-screws 270, 272 arranged in the member 252 on opposite sides of its axis of movement and in position alternatively to engage the column 2.

On the upper end of the sleeve 264 is clamped at 274 a U-shaped member 276 which extends around a bearing bracket 278 for the shaft 170 and is loosely mounted on the shaft 170 above the bracket. On the upper face of the U-shaped member 276 is mounted a pawl 280 in position to engage the teeth of a six-toothed ratchet wheel 282 loosely mounted on the shaft 170. Above the ratchet 282 and fixed thereto or integral therewith, is a three-projection cam 284. Above the cam, a block 286 (Fig. 3) is loosely mounted on the shaft 170, the block being embraced by a slot 288 in an operating slide bar 290 on the lower face of which are mounted two rolls 292, 294 which are so spaced that when one engages a projection of the three-projection cam 284 the other will engage a portion of the cam between the other two projections. Rotary movement of the cam 284 will therefore impart a reciprocating motion to the operating slide bar 290, for, as one projection 296 (Fig. 3) leaves the roll 294, another projection 297 will engage the roll 292 and move the slide 290 forward until the cam has made one sixth of a rotation. Upon movement of the cam another sixth of a rotation in the same direction, the motion will be reversed. The forward end of the slide 290 is pivoted at 298 to the rocking member 194 at a sufficient distance from its axis of rotation 78 to impart to the member 194 the movement required to effect the shifting of the driver stop wedge, the raceways and the edge gages, as already described. It will be observed that the ends of the projections on the cam 284 and a portion of the surface between the projections is concentric with the axis 170 of the cam, so that a slight movement of the cam when in the position of Fig. 3, for instance, will impart no motion to the slide 290.

In order to actuate the ratchet 282 and the cam 284 by power of the machine, a pawl 300 is mounted by a pin 302 on an arm 304 formed on the bracket 22 secured to the wiper slide 20. The pawl 300 has a wear plate 305 on its forward end which normally slides back and forth, as the slide 20 reciprocates, in close relation to a parallel surface formed between

two adjacent teeth of the ratchet 282, no movement being imparted to the ratchet. The rear end 306 of the pawl 300 carries a wear plate 307 adjacent to which is a spring plunger 308 mounted in a boss 310 on the bracket 47 forming part of the frame 5 of the machine head. The plunger 308 has a stem 309 extending through the boss 310 and provided with adjusting nuts 311 which limit its inward movement in response to its spring 313. The nuts 311 are so set that normally the plunger 308 does not bear on the wear plate 307 and does not press the pawl 300 against the flat between the ratchet teeth. The slide 20 is therefore relieved of any friction due to the pawl 300 or plunger 308 during reciprocation of the slide in the normal operation of the machine. A pawl 314 is pivoted at 316 to ears formed on the machine frame, and at its outer end has two teeth 318, 320, the tooth 318 normally engaging a tooth of the ratchet to prevent backward movement thereof. A spring 322 is connected between a pin on the pawl 314 and a pin on the pawl 280 and serves to hold both pawls in engagement with the ratchet 282.

When the operator desires to have the driver stop and the raceways and edge gages shifted from the positions which they occupy for one kind of work to the positions required for another kind of work, he pushes rearwardly upon the knee pad 258 and thereby, through the mechanism described, rotates the sleeve 264 slightly, causing the pawl 280 to rotate the ratchet 282 far enough to cause the tooth 320 of the pawl 314 to engage the tooth of the ratchet which previously was engaged by the tooth 318. This rotation of the ratchet is sufficient to cause the pawl 300, on the next rearward movement, to engage a tooth of the ratchet which it previously was unable to reach, and upon its next forward movement to turn the ratchet one sixth of a rotation and locate another tooth of the ratchet in position to be engaged by the tooth 318 of the pawl 314. This movement of the ratchet causes the cam 284 to operate the slide 290 and effect the desired changes, as previously described. The next inward movement of the bar 220 by the operator will, of course, restore the parts to their original position, the changes being initiated at the will of the operator and completed by power of the machine.

It will be noted that as the pawl 300 moves forward with the slide 20, the spring plunger 308, being relatively stationary, will bear nearer and nearer the rear end of the wear plate 307 and hence will have increased leverage to hold the pawl 300 against the ratchet 282. This action prevents the sudden movement of the pawl 300 by the slide 20 from effecting an overthrow of the ratchet which, if sufficient, would cause the slide on its next forward reciprocation to shift the parts back to their original positions. Since, as arranged, the plunger 308 does not offer any frictional resistance to the normal operation of the slide, its spring 313 may be quite strong. If the operator pushes on the knee lever to initiate a shift while the slide is in its rearward position, as he is most likely to do with the machine momentarily stopped, he has to overcome the pressure of the plunger spring 313 to move one of the ratchet teeth by the pawl 300. At this time, however, the spring has the least advantage in its action on the pawl so that the shift is the easiest. The shift can be initiated in any position of the pawl, however, without objectionable effort.

As shown in Fig. 1, the machine is provided with the usual counter-shaft 354 which is continuously driven from a source of power and has fixed thereto a friction disk 356. A co-operating disk 358 is forced toward the disk 356 by a wedge 360 raised by a treadle lever 362. A pulley 364 fixed to the disk 358 is belted to the pulley 7. The machine is preferably provided, as shown in Figs. 1 and 8, with stop mechanism similar to that disclosed in Letters Patent of the United States No. 1,356,406, granted October 19, 1920, on my application. This mechanism comprises a brake shoe 366 lined with a piece of leather 368 which is formed at one end as a hook to engage one end of the shoe 366 and is forced against the inner face of the rim of the pulley 7 to arrest movement of the shaft 6 at a predetermined point in the cycle. The shoe 366 is pivoted to a lever 370 which is acted upon to operate the shoe by a spring detent 372 mounted on a member 374 which is arranged to swing on an eccentric 376 on the shaft 6. A roll 378 on the member 374 engages a beveled end on a vertically movable trip rod 380. At the proper time in the cycle, provided the trip rod is in its normal depressed position, the eccentric 376 moves the member 374 radially while the roll 378 is in contact with the beveled end of the trip rod 380, forcing the detent 372 against the lever 370 and applying the brake.

The trip rod 380 is connected (Fig. 1) by a split clamp operated by a screw 382 to a member 384 which is pivoted at 386 to the treadle lever 362. Depression of the treadle to engage the friction disks 356, 358 will concurrently lift the rod 380 and cause its beveled end (Fig. 8) to swing the member 374 about its operating eccentric 376 and release the detent 372 from the end of the lever 370, the brake shoe being then raised by a suitable spring (not shown). The beveled end of the trip rod 380 is maintained in operative relation to the roll 378 when the screw 382 is released to permit the machine head to be raised or lowered. For this purpose a sleeve 388 has a sliding fit on the rod 380 and provides a long bearing therefor to minimize wear. The upper end of the sleeve

is conical and engages a hole in a portion 390 of the frame, through which the rod extends, to centralize the rod in the hole. On the lower end of the sleeve is a frame-like portion 391 through the lower end of which the rod 380 passes and between which an adjustable collar 392 is arranged a spring 393 to depress the rod and maintain the sleeve 388 pressed upwardly into the hole in the frame. Within the frame 391 an arm 394 is clamped to the rod and has a slot 395 in its upwardly extending end which engages a fixed pin 396 on the frame. An adjusting screw 397 engages the pin and limits depression of the arm 394 and the rod 380. This pin and slot connection also prevents rotation of the rod 380 so that the operative relation of the beveled end of the rod to the roll 378 is maintained when the screw 382 is loosened. By merely loosening the screw 382 and a clamp screw 398 (Fig. 1), which holds the neck of the machine head in the column, a screw 399 may be turned to adjust the head vertically, it being understood that the described splined connection between the rock-shaft 170 and lever 228, and between the sleeve 264 and the arm 260, permits movement of the rock-shaft and sleeve with the head.

The above-described mechanism has not been claimed herein since it is described and claimed in my copending application, Serial No. 431,896, filed Feb. 27, 1930.

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 fastening-inserting machine, a driver, operating means therefor to insert fastenings completely, means for limiting the stroke of the driver to cause the fastenings to be partially inserted comprising a wedge movable to vary the stroke of the driver, and a toggle for operating the wedge.

2. In a fastening-inserting machine, a driver bar having a stop to arrest movement of the bar when the fastening is completely inserted, a wedge movable under the stop to arrest its movement at a higher point when the fastenings are to be partially inserted, and an operating toggle for the wedge constructed and arranged to be straight when the wedge is in operative position to lock the wedge against movement.

3. In a fastening-inserting machine, a driver bar having a stop to arrest movement of the bar when the fastening is completely inserted, a wedge constructed and arranged for rectilinear sliding movement transversely of the driver bar beneath said stop to arrest movement of the driver at a higher point, and a toggle for operating the wedge, straightening of the toggle acting to move the wedge under the stop to arrest movement of the driver at a higher point.

4. In a fastening-inserting machine, a driver bar having a fixed stop thereon, a driver bar carrier in which the driver bar slides, a plurality of wedges between the stop and said carrier to arrest movement of the driver bar, one of said wedges being constructed and arranged for movement lengthwise of the driver bar and the other for rectilinear movement transversely of the driver bar, and means for relatively moving the wedges to vary the stroke of the driver.

5. In a fastening-inserting machine, a driver bar having a fixed stop thereon, a driver bar carrier in which the driver bar slides, a wedge arranged on the driver bar between the stop and the carrier for movement longitudinally of the bar, and a wedge arranged for movement transversely of the bar to lift said first-named wedge and to arrest movement of the bar at a higher point.

6. In a fastening-inserting machine, a driver bar having a stop to arrest movement of the bar when a fastening is to be completely inserted, a straight wedge arranged for rectilinear movement under the stop to arrest movement of the bar at a higher point when a fastening is to be partially inserted, a toggle connected to the wedge, and means under control of the operator and operated by power of the machine for operating the toggle to shift said wedge.

7. In a fastening-inserting machine, the combination of a driver bar, a driver bar carrier, a member movable between the driver bar and carrier to arrest movement of the driver bar at a higher point when fastenings are to be partially inserted, and means comprising a toggle which is straightened when said member is in operative position to lock the member against movement.

8. In a fastening-inserting machine, the combination of a driver bar, a driver bar carrier, a wedge between the driver bar and the carrier to take the blow of the driver when fastenings are to be completly inserted, a second wedge movable under said first-named wedge to arrest the driver bar at a higher point when fastenings are to be partially inserted, and means for moving said wedge comprising a toggle which is straightened when the second wedge is in operative position to lock the second wedge against movement.

9. In a fastening-inserting machine, the combination of a driver bar, a driver bar carrier, a member between the driver bar and the carrier having parallel top and bottom surfaces to transmit the blow of the driver to the carrier and having inclined surfaces, and a bifurcated member embracing the driver bar, movable transversely of the driver bar and having inclined surfaces to co-operate with the inclined surfaces on said first-named member, said second member being movable beneath said first-named member to shorten the stroke of the driver.

10. In a fastening-inserting machine, a driver bar having a stop fixed thereon, a driver bar carrier in which the driver bar slides, a wedge arranged on the driver bar between the stop and the carrier for movement longitudinally of the bar, an abutment on the carrier engaging the thick end of said wedge, and a second wedge arranged for movement transversely of the bar and co-operating with said first-named wedge to arrest movement of the bar at a different point.

11. In a fastening-inserting machine, a driver bar having a fixed stop thereon, a driver bar carrier in which the driver bar slides, means movable between the stop and said carrier to arrest movement of the driver bar, and a toggle connected to said means and arranged to be straightened to move said means into driver bar arresting position.

12. In a fastening-inserting machine, the combination of a driver bar having a fixed stop thereon, a driver bar carrier in which the driver bar slides, a block arranged on the driver bar between the stop and the carrier for movement longitudinally of the bar and having parallel faces for engagement respectively with the stop and carrier and having inclined faces on opposite sides of the bar, and a bifurcated wedge straddling said bar and arranged to engage the inclined faces of the block.

13. In a fastening-inserting machine, a driver bar having a stop to arrest movement of the bar when a fastening is to be completely inserted, a wedge movable under the stop to arrest movement of the bar at a higher point when a fastening is to be partially inserted, a toggle to move the wedge into operative position and hold it against outward movement, and means under control of the operator and operated by power of the machine to operate the toggle.

14. In a fastening-inserting machine, a driver bar, a driver bar carrier in which the driver bar slides, and a shaft on which the carrier is journaled for swinging movement, said shaft being offset longitudinally of the machine to permit a long bearing for the carrier without interference with the sliding movement of the driver bar and to provide a rigid support for the carrier to withstand the shocks incident to the impact of the driver bar.

15. In a fastening-inserting machine, a driver bar, a driver bar carrier in which the driver bar slides, and a shaft passing transversely of the machine through the frame and carrier at the rear of the driver bar slide and arranged to provide a long bearing for the carrier to withstand the continual impact of the driver bar.

16. In a fastening-inserting machine, a driver bar, a driver bar carrier arranged to swing, a slide arranged to reciprocate and to engage and swing the carrier to bring the driver bar into fastening-inserting position, a rod carrying a spring to restore the driver carrier to rearward position when the slide is retracted, a stop on said rod to limit the position of the carrier when the slide is retracted, and means for adjusting the stop to vary the rearward position of the carrier.

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

THOMAS H. SEELY.