

July 13, 1937.

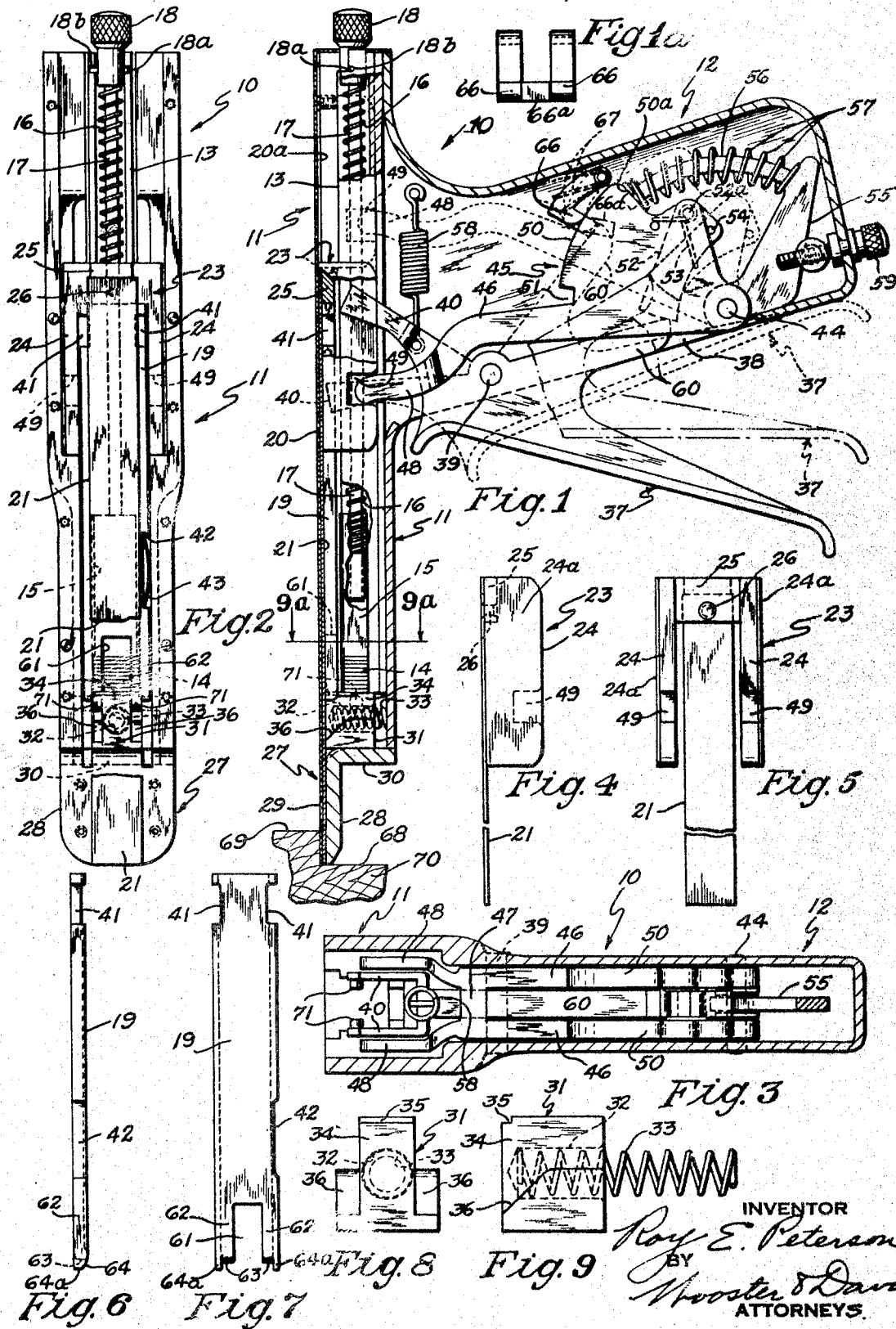
R. E. PETERSON

2,086,922

STAPLE DRIVING MACHINE

Filed Feb. 15, 1936

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

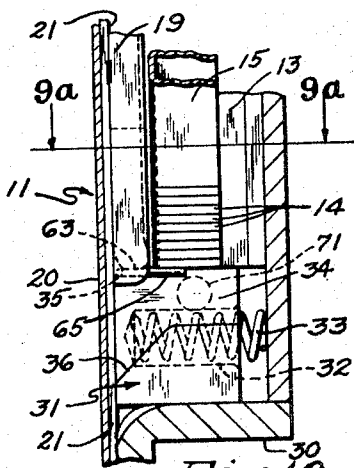


Fig. 10

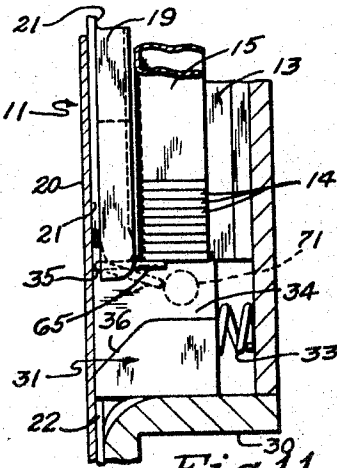


Fig. 11

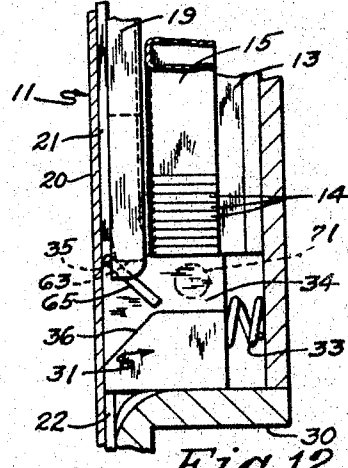


Fig. 12

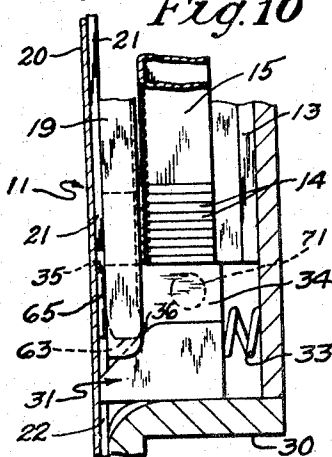


Fig. 13

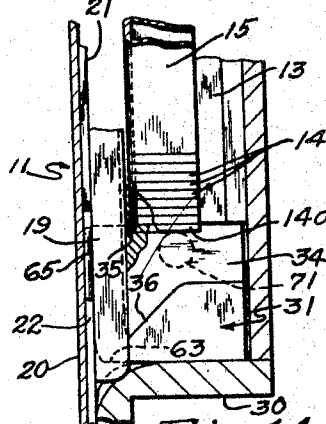


Fig. 14

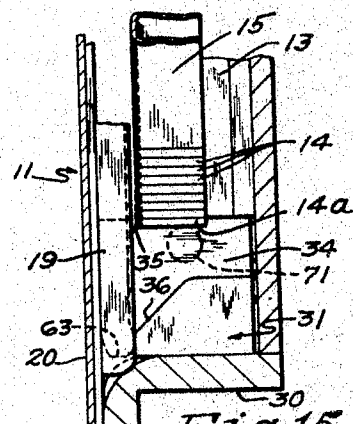


Fig. 15

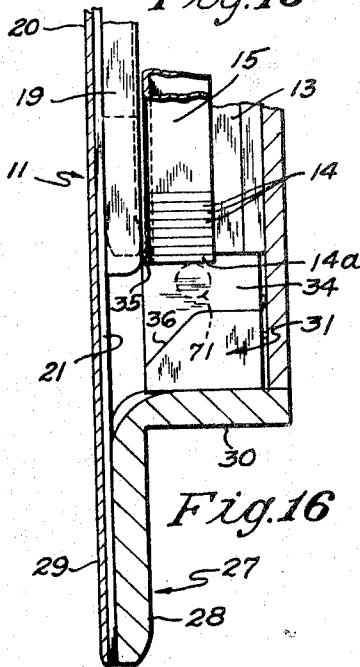


Fig. 16

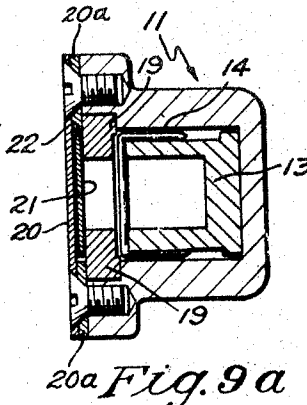
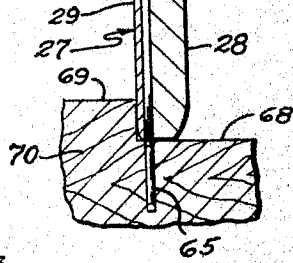


Fig. 9a



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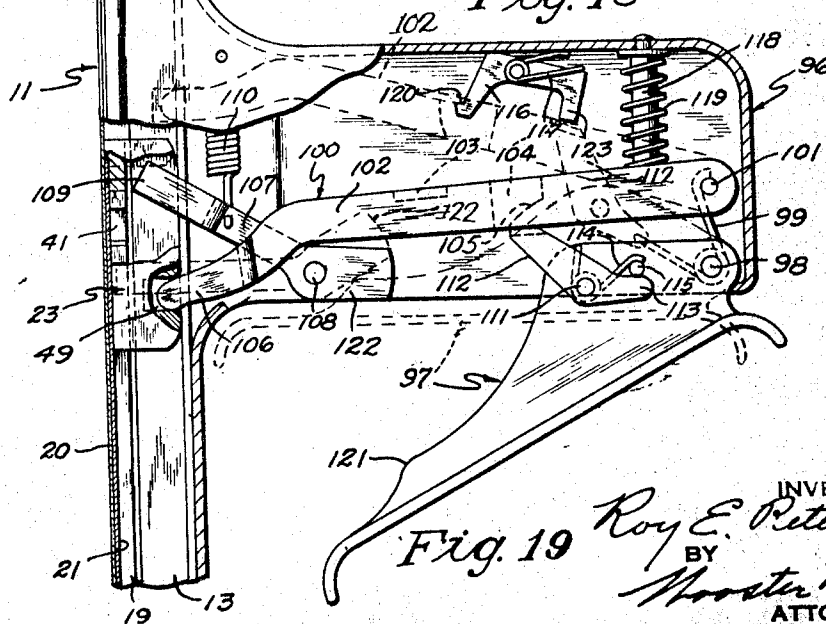
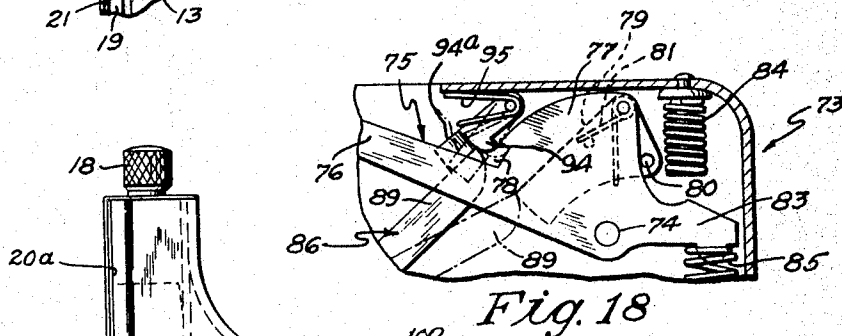
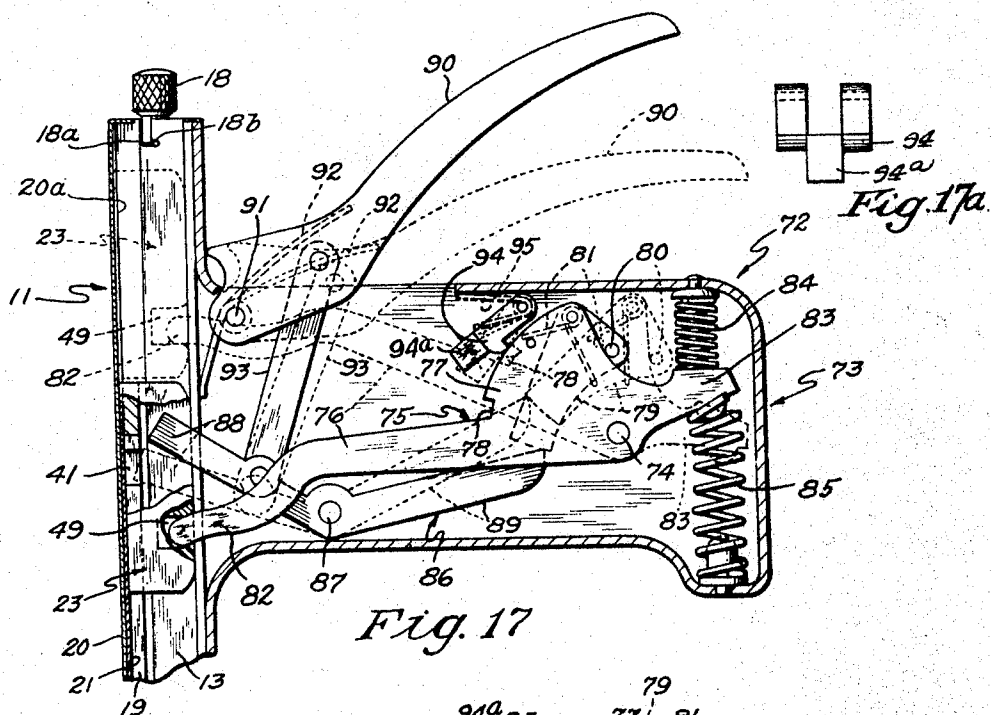
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UNITED STATES PATENT OFFICE

2,086,922

STAPLE DRIVING MACHINE

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corporation of Connecticut

Application February 15, 1936, Serial No. 64,015

26 Claims. (Cl. 1-49)

This invention relates to new and useful improvements in staple driving machines.

An object of the invention is to provide a machine by means of which staples may be driven in corners or close to walls extending at an angle to the wall into which the staple is driven, and also by means of which staples may be driven into objects or surfaces located inwardly of holes or slots, or in other places difficult to reach.

Other objects and advantages of the invention will become apparent from a consideration of the following detailed description taken in connection with the accompanying drawings wherein satisfactory embodiments of the invention are shown. However it is to be understood that the invention is not limited to the details disclosed but includes all such variations and modifications as fall within the spirit of the invention and the scope of the appended claims.

In the drawings:

Fig. 1 is a sectional side view of a machine constructed in accordance with the present invention, one side wall being removed to show interior construction;

Fig. 1a is a view of the pawl looking from the lower right of Fig. 1;

Fig. 2 is a front view of the machine the front cover plate being removed;

Fig. 3 is a sectional view looking down on the upper end of the machine, the top wall being omitted and parts including the staple guide bar, the follower and staple driver being omitted;

Figs. 4 and 5 are views taken at right angles to one another and showing the staple driver removed from the machine;

Figs. 6 and 7 are similar views showing a staple straightener slide;

Figs. 8 and 9 are similar views showing a transfer means for the staples;

Fig. 9a is a transverse section substantially on the plane of line 9a-9a of Figs. 1 and 10 but on the scale of Fig. 10;

Fig. 10 is a detail sectional view showing the position of staple manipulating parts in the normal position corresponding with Fig. 1;

Fig. 11 is a similar view showing the position of the parts after the operating lever 37 has been compressed or raised to the dot and dash position of Fig. 1;

Fig. 12 shows the next position with the staple turning slide moving downwardly to turn the staple;

Fig. 13 shows the position of the parts with

the staple turned to the vertical position for driving;

Fig. 14 shows the next position with the staple transfer block retracted to permit driving of the staple which is in the raceway;

Fig. 15 shows the parts in the final position as the staple is driven and in the position they occupy when the handle 37 is shifted to its farthest position shown in dotted lines Fig. 1;

Fig. 16 shows the staple turning slide returned nearly to its uppermost or normal position and about to release the staple transfer block to permit it to move forward to carry the next staple under the slide to the position of Fig. 10;

Fig. 17 is a view somewhat similar to Fig. 1 but showing a modification;

Fig. 17a is a view of the pawl looking from the lower right of Fig. 17;

Fig. 18 is a detail view showing some of the parts of Fig. 17 in shifted positions; and

Fig. 19 is a view similar to Fig. 1 but showing another modification.

Referring in detail to the drawings, and at first particularly to Figs. 1 through 15, the machine of the invention as here disclosed includes a housing 10 comprising an elongated forward portion 11 and a laterally extending portion 12 projecting from the portion 11 toward one end thereof and functioning as a hand grip when the machine is in use. Within the elongated or head portion 11 and extending longitudinally thereof is a staple slide or guide bar 13 comprising a trough shaped piece secured to the inner or rear wall of the housing portion 11 and disposed with its open side facing outwardly.

The guide is adapted to have a strip of staples 14 slipped onto it from its outer or upper end, and the staples straddle the bar and are urged along it by means of a follower 15 also straddling the bar and urged therealong by a spring 16 disposed about a rod 17 on which the follower is slidably mounted. On the outer end of the rod 17 is a small knurled hand piece 18 which has a detachable connection with an adjacent portion of the housing as by a transverse pin 18a in the hand piece and bayonet slots 18b in the slide, whereby the rod and follower may be removed from the machine to permit of the insertion of a supply of the staples therein and may thereafter be reapplied.

Slidably arranged within the head 11 at the forward side of the guide 13 is a slide 19 adapted to be shifted longitudinally back and forth in a manner and for a purpose later to be described. Between this slide and the cover or 55

forward wall 20 of the head there is arranged the blade-like staple driver 21 mounted for reciprocating movement longitudinally of the housing in a raceway 22 and adapted on its downward or outward movement to drive a staple through such raceway. Spacer plates 29a help guide the slide 19 and provide clearance for the driver 21. The driver 21 is carried by a head portion or block 23 including a pair of spaced arms 24 the distance between the outside surfaces of which is such that in its movements the head is guided by the side walls of the housing. Bearing plates 24a may be secured to the side of this head block if desired. A connecting portion 25 between the arms 24 has the driver 21 secured thereto in any suitable manner as by means of the pin or rivet 26.

From the lower end of the housing there extends a flat bill-like portion generally designated 27 and including a rear wall 28 which with the lower extending portion 29 of the cover plate 20 defines a continuation of the raceway 22. A wall 30 extends across the lower end of the elongated housing portion 11 closing all such end of such portion with the exception of the raceway. The staple bar guide 13 stops short of this wall, and located between the inner end of the guide and the wall 30 and slidable transversely with respect to the elongated housing is a block 31 comprising a staple cut-off and carrying or transfer means.

As shown block 31 (Fig. 9) is provided with a recess 32 opening through its rear side and a coil spring 33 is arranged to enter this recess, having one end bearing against the inner end of the recess and having its other end bearing against the rear wall of the housing. This spring is constantly tending to force the block forwardly or toward the raceway. The spring is of such size that on the application of the proper force block 31 may be forced rearwardly to such an extent that the spring will be substantially entirely received within the recess 32 (see Figs. 14 and 15).

Block 31 includes a portion 34 of a width to be conveniently straddled by a staple 14, and in the upper forward corner of such portion there is a notch 35 of a size to receive the crown or cross bar of a staple. The base portion of the block extends laterally to each side of the portion 34, and the forward surfaces of such laterally extending portions are inclined as at 36 to form cam surfaces. The height of the block 31 is such that the block fills the space between the wall 30 and the inner end of the staple guide 13.

The handle lever 37 extends through a slot 38 in the lower wall of the lateral housing extension or hand grip 12 and is mounted on a pivot 39 carried by the side walls of said extension. This handle includes a pair of spaced arms 40 (see Fig. 3) adapted during certain pivotal movement of the handle to enter notches 41 in the longitudinal edges of the slide 19 and to cause sliding movements to be imparted to such slide. In one longitudinal edge such slide is provided with a second notch 42 receiving a light bowed spring 43 (Fig. 2) bearing against a side wall of the elongated housing portion and thus setting up a friction whereby the slide is held against dropping of its own weight.

A second pivot 44 extending through the side walls of the housing extension 12 mounts a lever 45 comprising a pair of side arms 46 connected at 47, and beyond said connection including a

fork comprising finger-like portions 48 entering recesses 49 in the rear edges of the arms of the driver head 23. Integral with the lever arms 40 are segments 50 each having a notch 51, and between such segments is pivotally mounted at 52a a pawl or dog 52 constantly influenced by a spring 53 tending to turn it to the right or clockwise as viewed in Fig. 1 whereby to normally keep a stop pin 54 carried by the pawl against the rear edges of the segments 50. This permits the pawl to swing in the opposite direction.

Also mounted on the pivot 44 between the segments 50 is an arm 55 carrying a forwardly extending arcuate pin or bar 56 about which is disposed a strong coil spring 57. The bar 56 extends between the plate portions or segments 50 and the spring 57 is of such a diameter as to bridge the segments so that it presses against the portions 50a of these segments. It will be apparent that on the lever 45 being rocked in a direction to carry its segments 50 toward the arm 55 the spring 57 will be compressed. The tension of the spring 57 may be varied or regulated by adjusting the screw 59 to rock the arm 55 about the pivot 44.

The handle 37 includes an arm 60 which when the parts are in their normal positions or in their positions of rest is in engagement with the free end of the pawl 52. Owing to this engagement, on movement of the handle 37 upwardly about its pivot 39 the lever arm 45 will be rocked about its pivot 44 in a direction to compress the spring 57 and at the same time through extensions 48 in recesses 49 shift the driver 21 upwardly or inwardly with respect to the raceway.

To drive a staple with the machine the operator rocks the handle 37 from the full line position of Fig. 1 up through the dot and dash line position to the dotted line position of that figure, and immediately after the time the handle reaches the dotted line position a staple has been driven by the spring 57 which has returned lever 45 to the full line position, and on the handle being released spring 58 returns it to the normal full line position raising plate 19 to normal position.

Figs. 10 through 16 show the successive positions of the driver 21, the slide 19 and the staple cutting off and transfer means 31. Assuming that these three parts are in the normal positions shown in Fig. 10 it will be noted that the driver 21 is occupying the lower portion of the raceway, that the slide 19 is in a raised or retracted position and that the staple cutting off block 31 is being held against the driver with the crown of a staple 65 in its notch 35.

A slot 61 opens through the lower end of the slide 19 thus dividing such end of the slide into a pair of arms 62. At its outer end such slot is expanded laterally in each direction providing a pair of surfaces 63 just short of the lower end of the slide and leaving extensions 64a the rear lower corners of which are cut away or rounded as at 64. Therefore when the slide is located as in Fig. 10 the legs of the staple 65 are under the end surface portions 63 of the slide and the portions 64a of the slide laterally of and extending below such surfaces are at the outer sides of the staple legs.

To drive a staple the handle lever 37 is pressed or squeezed in the direction of the housing extension or grip 12 and during initial movement of the handle its arm 60 engaging the dog 52

forces the lever 45 upwardly about its pivot whereby the spring 57 is compressed, and owing to the fact that the ends of the lever arms 48 are in the recesses 49 of the driver head the latter is drawn inwardly or upwardly as viewed in Fig. 1. After a predetermined movement of the handle the lever 45 is in the dotted line position of Fig. 1 and pawls 66 carried by the side walls of the housing enter the notches 51 in the segment portions of the lever and lock or latch the lever in its retracted position with the spring 57 compressed. The described movement of the lever 45 carries or retracts the driver 21 so that its lower end is drawn inwardly or upwardly of the staple separating block 31 as shown in Fig. 11.

As the movement of the handle 37 continues after the pawls 66 enter the notches 51 its arm 60 passes off the dog 52 so that further movement of the handle is independent of the lever 45. At about this time, or when the driver 21 reaches its upper position, the lever arms 40 which are part of lever 37 enter the notches 41 in the edges of the slide 19 and start to slide said slide toward the block 31. However just as soon as the driver was withdrawn from its position in front of the block 31 the spring 33 forced the block forwardly so that the crown of staples 65 has been carried into the raceway 22 beneath the driver 21 as shown in Fig. 11. Therefore as the slide 19 starts downward or in the direction of the block 31 the legs 62 of the slide straddle the upper portion of the block and the end surface portions 63 of the slide engage the legs of the staple starting to swing them downwardly as suggested by the dotted lines in Fig. 11 and as further shown in Fig. 12.

By the time the handle has moved the slide to the position of Fig. 13 the staple 65 is straight in the raceway and the rear corner portions of the slide ends 63 are engaging the inclined surfaces 36 of the staple separating and transfer block 31. Therefore on continued movement of the handle the slide is forced against the said inclined surfaces 36 with the result that the block 31 is forced back or rearwardly out of the raceway against the action of the spring 33 and to the position of Fig. 14. It will be noted that the slide 19 is now in a position forming a part of the rear wall of the raceway and that the staple 65 is in the raceway. The slide 19 helps to guide the staple until it reaches the lower part of the raceway or the extension 27.

Movement of the handle 37 continuing in the same direction after the block 31 has been shifted to the position of Fig. 14 the arm 60 engages the bar 66a connecting pawls 66 and, against the action of the pawl springs 67, forces the pawls out of the notches 51 thereby releasing the lever 45 for actuation by the spring 57. In Fig. 1 the bar 66a as shown in dot and dash lines is in the position it occupies before arm 60 comes in contact with it. At this time the pawls 66 are in the notches 51 in lever 45 and hold it in the dotted line position, but just before handle lever 37 and arm 60 reach the dotted line position this arm engages bar 66a, and as it moves to the dotted position it lifts pawls 66 to the full line position shown and carries them out of notches 51 to release lever 45, permitting it to be shifted downwardly by spring 57 to the full line position shown. The lever 45 has two arms 46 and two segments 50 as shown in Fig. 3 and so preferably has two notches 51, one in each segment. There are therefore two pawls 66 which are connected

by a crossbar 66a so that the two pawls are in one piece, or in other words it is a double pawl with two holding lugs or hooks to enter the notches 51. Such spring operates to drive the driver 21 outwardly or downwardly through the raceway, thus driving the staple 65 that had been positioned therein. When the driver reaches the end of the staple driving stroke the parts are positioned as shown in Fig. 15 where it will be noted that the staple has been driven into the corner at the juncture of the surfaces 68 and 69 of the piece 70.

It is noted that in Fig. 15 the staple separating and transfer block 31 is in retracted position but that the lowermost or innermost staple of the strip 14 has its crown in the notch 35 of this block. After the staple is driven the handle 37 is released and the spring 58 acting on the lever at the connection between the arms 40 returns the handle to normal position. During this return movement dog 52 yields to the right about its pivot 52a to permit arm 60 of lever 37 to pass. As the spring draws the handle to normal position the arms 40 draw the slide 19 to its normal position in which it is shown in Fig. 16 where the block 31 is ready to move over against the driver 21. The spring 33 immediately moves the block over against the driver carrying the next lower staple 14a on the strip 14 with it and the parts will be in the positions of Fig. 10 ready for the next staple driving operation. At all times the block 31 is so located as to prevent the staple strip 14 from being forced off the guide bar. Lugs or projections 71 (Figs. 1, 2, and 10 to 16) carried by the side walls of the housing are located at the sides of the separating block 31 in positions beneath the legs of the staples on the guide bar, and such lugs serve to support the legs of the lower staple in a horizontal position until the feed block 31 and slide 19 are in proper relation to each other to permit the swinging of the staple to a vertical position below the driver. With these lugs in place the staples must stay in position with their legs transverse with respect to the raceway until the staples are carried forward by the block and straightened by the slide 19.

When using the machine the end of its bill-like portion 27 is placed against the object into which the staple is to be driven, as indicated in Figs. 1 and 15, and then the handle 37 is pressed in the direction of the housing extension 12. This causes operation of the slide 19 and the driver 21. This machine may be used for driving staples in locations inaccessible to the ordinary machines. Thus for example the lower elongated portion 11 of the housing may be inserted through a hole or slot or the like so as to drive a staple in a comparatively inaccessible place. Further owing to the flat bill-like part 27 a staple may be driven in a close corner as in Figs. 1 and 15.

Referring now particularly to Figs. 17 and 18 a housing generally designated 72 is shown as including the elongated forward portion 11 and a lateral extension or grip 73 functioning substantially the same as the lateral extension 12 of the housing of Fig. 1. The mechanism in this portion 11 is the same as that in Figs. 1 to 16. With in the extension 73 and mounted on a pivot 74 is a lever 75 including two arms 76 and segments 77 the latter being provided with notches 78, and pivotally mounting a dog 79 between the segments yieldingly held with its stop pin 80 against the rear edges of the segments by means of a spring 81. The forward end portions 82 of the arms 76

enter the recesses 49 in the arms 24 of the driving head 23. The lever 75 also includes a rear extension 83 engaged on its upper side by a cushioning spring 84 and on its lower side by heavy spring 85 which imparts the driving stroke to the driver 21 as will later appear.

An arm or lever 86 within the housing portion 73 is pivoted intermediate its ends as at 87 and includes a pair of end portions 88 adapted to enter the notches 41 in the edges of the straightening slide 19 for manipulation of the latter. The other end portion 89 of arm 86 is normally in engagement with the dog 79. A handle 90 is pivoted at 91 and a spring 92 tends to keep the handle in the normal full line position shown. Pivoted at its respective ends to the arm 86 and the handle 90 is a link 93. A pawl 94 is pressed against the segments 77 by a spring 95, and on the lever 75 being rocked upwardly about its pivot the pawl engages in the notches 78 to latch the lever in its raised position.

To drive a staple with a machine embodying the modified construction the handle 90 is squeezed or pressed toward the housing extension 25 or grip 73 and owing to the connection made by the link 93 such movement of the handle causes the arm or lever 86 to be rocked about its pivot and the end portion 89 of said arm being in engagement with the dog 79 causes the lever 75 to be swung upwardly resulting in compression of the spring 85. When the lever reaches the dotted line position of Fig. 17, which is the full line position of Fig. 18, the lugs or hooks of pawl means 94 enter the notches 78 latching the lever in this position. Fig. 18 shows the lugs of the pawl just after being withdrawn from these notches as will later be described. The two pawls are connected or bridged by the crossbar 94a.

At about this time the portion 89 of the arm 86 leaves the dog 79 and the portions 88 of such arm enter the notches 41 in the staple straightening slide 19. Continued movement of the handle 90 in the same direction results in the slide 19 being operated as described when considering the first figures of the drawings, and as such slide is moved into its final position (Fig. 14) the arm portion 89 engages the crossbar 94a of the pawl 94 forcing it out of the notches 78. This releases the lever 75 and the spring 85 immediately and violently actuates the lever 75 to impart a staple driving stroke to the driver 21. This brings lever 75 back to its normal position, while spring 84 cushions the end of the movement of the lever 75 under action of spring 85. Thereafter on handle 90 being released spring 92 returns it, and through link 93, the arm 86 to normal position. During this return movement dog 79 yields to the right about its pivot to permit arm 89 to pass by it. It is noted that while the handle 37 (Figs. 1 and 16) is at the inner or lower side of the housing extension 12 (Figs. 17 and 18) the handle 90 is at the outer or upper side thereof.

Fig. 19 shows another modification wherein a housing extension or grip 96 has a handle or lever 97 pivoted to it at 98 and constantly urged toward a normal position by a spring 99. A lever 100 is pivoted in the housing extension as at 101 and embodies two arms 102 connected together as by a strap 103 and a block 104 the latter having a curved surface 105. The forward end portions 106 of the arms 102 enter the notches 49 in the head 23 of the driver. An arm or lever 107 is pivoted intermediate its ends at 108 and has forward end portions 109 adapted on proper movement of the arm to enter the notches 41 in the

edges of the staple straightening slide 19 to manipulate said plate in the manner and for the purpose already described. A spring 110 serves to return arm 107 to its normal position when moved therefrom. The driving mechanism in the up-right or forward portion 11 is the same as that shown in Figs. 1 to 16.

Pivotally mounted on the handle 97 at 111 is a dog 112 yieldingly held in place with its tail portion 113 against the stop pin 115. A spring 114 10 tends to maintain the dog in its normal position. Pivotally mounted in the upper portion of the housing extension 96 is a pawl 116 yieldingly held in the normal position shown by means of a spring 117. A post 118 carried by the housing 15 extension projects between the arms 102 of the lever 100 and a stout coil spring 119 is disposed about this post and bears on the upper edges of the lever arms 102 and it will therefore be clear that on the lever being swung upwardly about 20 its pivot 101 it will cause the spring 119 to be compressed.

To drive a staple with the structure of Fig. 19 handle 97 is pressed inwardly or upwardly toward the lever 100 and the dog 112 engaging the block 25 104 lever 100 is swung about its pivot 101 compressing spring 119 and drawing the driver 21 upwardly in the raceway. When the lever reaches a cocked or fully raised position the portion 120 of pawl 116 engages under the strap 103 and 30 latches the lever in cocked position. The dog 112 then slips past the block 104 as movement of the handle continues and thereafter a bump or projection 121 on the handle comes into engagement with the portion 122 of arm 107 forcing 35 such arm about its pivot to have its portions 109 enter the notches 41 of slide 19 to slide said slide downwardly to straighten a staple in the raceway. As the slide 19 reaches its appointed position dog 112 engages the portion 123 of pawl 116 rocking 40 such pawl to release its portion 120 from the strap 103. Spring 119 then shifts lever 100 to impart a driving stroke to the driver 21, and on release of the handle spring 99 returns the handle to normal position and spring 110 returns arm 107 45 and through it the slide 19 to normal position. During this return movement of handle 97 dog 112 may swing to the right about its pivot to permit its free end to pass by the block 104.

Having thus set forth the nature of my invention, what I claim is:

1. In a staple driving machine, a housing including an elongated portion at one end thereof forming a reduced portion adapted to be inserted through an opening or the like, means defining a raceway within and extending longitudinally of said housing portion and opening through an end thereof, a guide for preformed substantially U-shaped staples extending longitudinally of the raceway and laterally to one side thereof and feeding the staples with their legs extending transversely of the raceway, means for transferring individual staples from the guide to said raceway and positioning them therein with their legs extending longitudinally of the raceway, a 55 driver operable to drive staples through said raceway, and means to operate said driver and transfer means in certain timed relation to each other.

2. In a staple driving machine, an elongated housing, means defining a raceway extending 70 longitudinally of said housing, a staple guide extending longitudinally of the housing, means for feeding a strip of staples along the guide with the legs of the staples transverse of the housing, means operable to transfer the forward staple 75

of the strip to the raceway, means to engage the legs of this staple to position the legs longitudinally of the raceway, and means to thereafter drive said staple through the raceway.

3. In a staple driving machine, a housing having a forward wall, means defining a raceway immediately at the inner side of said wall, means for feeding staples in a direction longitudinally of said raceway and with their legs transversely thereof, means for transferring the staples one at a time from said feeding means to the raceway, means engaging the legs of the individual staples to turn the staples and place them in the raceway with their legs extending longitudinally thereof, and means for driving the individual staples through the raceway.

4. In a staple driving machine, means defining a raceway, a driver movable in the raceway to drive individual staples, means for feeding staples in a direction longitudinally of the raceway with their legs extending in a direction transversely of the raceway, means for transferring the forward staple to the raceway, means engaging the legs of the staple to turn it to bring the legs to extend longitudinally of the raceway under the driver, and means for operating the driver to drive the staple.

5. In a staple driving machine, a housing including an elongated reduced portion adapted to be inserted through an opening or the like and having a forward wall, means defining a raceway immediately at the inner side of said wall and extending longitudinally of said portion, a flat bill-like extension on the end of said portion having an outlet at its free end and defining a continuation of said raceway, a guide for substantially U-shaped staples, a transfer block shiftable to carry individual staples from the guide to the raceway, means operable to drive a staple through said raceway to the outlet, and means to operate the drive means and the transfer block in certain timed relation.

6. In a staple driving machine, an elongated housing, a staple guide extending longitudinally of the housing, means for feeding staples along the guide with the legs of the staples extending transversely of the housing, a raceway extending longitudinally of the housing, means operable to remove the forward staple from a strip on the guide and shift the staple to dispose its crown in the raceway, means thereafter operable to rock the staple to dispose its legs within and extending longitudinally of the raceway, and means for then driving the staple through the raceway.

7. In a staple driving machine, an elongated housing, a staple guide extending longitudinally of the housing, means for feeding staples along the guide with the legs of the staples extending transversely of the housing, a raceway extending longitudinally of the housing, means operable to separate the foremost staple from a strip on the guide, means thereafter operable to dispose the staple entirely within the raceway and with its legs extending longitudinally of the raceway, and means then operable to drive the staple through the raceway.

8. In a staple driving machine, a housing, means defining a raceway in the housing, means for feeding staples toward said raceway with the legs of the staples extending transverse with respect to the raceway, means operable to engage the legs of the foremost of said staples to turn it and dispose it in the raceway with its legs extending longitudinally of the raceway, and means

thereafter operable to drive the staple through the raceway.

9. In a staple driving machine, an elongated housing, a staple guide extending longitudinally of the housing, means for feeding staples along the guide with the legs of the staples extending transversely of the housing, a raceway extending longitudinally of the housing, a block slidable transversely of the raceway, means operable to slide said block and have it remove the foremost staple from the guide and shift the staple to dispose its crown in the raceway, means thereafter operable to rock the staple to bring its legs within and extending longitudinally of the raceway in a position straddling a portion of said block and to then slide the block back out of the raceway to a normal position, and means then operable to drive the staple through the raceway.

10. In a staple driving machine, an elongated housing, a staple guide extending longitudinally of the housing, means for feeding staples along the guide with the legs of the staples extending transversely of the housing, a raceway extending longitudinally of the housing, a block slidable transversely of the raceway, a spring operable to slide said block and have it separate the foremost staple from the guide and carry the staple to dispose its crown in the raceway, means thereafter operable to shift the staple to bring its legs within and extending longitudinally of the raceway, and means then operable to drive the staple through the raceway.

11. In a staple driving machine, a housing having a staple raceway, a staple guide extending longitudinally of the raceway, means for feeding staples along the guide with the legs of the staples extending transversely of the raceway, a block slidable transversely of the raceway, means operable to slide said block and have it remove the foremost staple from the guide and shift the staple to dispose its crown in the raceway, a slide slidable longitudinally of the raceway and operable to engage and rock the shifted staple to bring its legs within and extending longitudinally of the raceway, and means then operable to drive the staple through the raceway.

12. In a staple driving machine, a housing having a staple raceway, a staple guide extending longitudinally of the raceway, means for feeding staples along the guide with the legs of the staples extending transversely of the raceway, a block slidable transversely of the raceway, means operable to slide said block and have it separate the foremost staple from the guide and shift the staple to dispose its crown in the raceway, a slide slidable longitudinally of the raceway and operable to engage and rock the shifted staple to bring its legs within and extending longitudinally of the raceway, a driver operable to drive a staple through the raceway, a shiftable lever, and means operable by a continuous movement of said lever to slide said slide and thereafter cause operation of said driver.

13. In a staple driving machine, a housing having a staple raceway, means for feeding a strip of staples in a direction longitudinally of the raceway with the legs of the staples of the strip extending transversely of the raceway, means for separating the foremost staple from the strip and placing its bridge in the raceway, a slide thereafter operable to straighten the staple in the raceway with the staple legs extending longitudinally of the raceway and with said slide forming a portion of one wall of the raceway.

and a driver thereafter operable to drive the staple through the raceway.

14. In a staple driving machine, a housing having a staple raceway, means for feeding a strip of staples longitudinally of the raceway with the legs of the staples of the strip extending transversely of the raceway, means for separating the foremost staple from the strip and disposing its bridge in the raceway, a slide thereafter operable to straighten the staple in the raceway with the staple legs extending longitudinally of the raceway and with said slide forming a portion of one wall of the raceway, a driver thereafter operable to drive the staple through the raceway, a lever, and means whereby the slide and driver are operated successively in the order named on movement of said lever in one direction.

15. In a staple driving machine, a housing having a staple raceway, means for feeding a strip of staples longitudinally of the raceway with the legs of the staples of the strip extending transversely of the raceway, means for separating the foremost staple from the strip and disposing its bridge in the raceway, a slide thereafter operable to straighten the staple in the raceway with the staple legs extending longitudinally of the raceway and with said slide forming a portion of one wall of the raceway, a driver thereafter operable to drive the staple through the raceway, a spring for operating said driver on its driving stroke, a handle, and means whereby during movement of said handle in one direction it successively compresses the spring while withdrawing the driver from the raceway, shifts said slide to straighten the staple in the raceway and then releases the spring to operate the driver.

16. In a staple driving machine, a housing having a raceway extending longitudinally thereof, means for feeding staples to said raceway with their legs extending transversely thereof, a slide shiftable to straighten a staple in the raceway and thereafter forming a wall of the raceway, a driver for driving staples through the raceway, a pivoted lever including an arm engaging said driver to move the same as the lever is moved about its pivot, a spring adapted to move said lever and thereby impart a driving stroke to the driver, a pivoted handle including an arm positioned to move said lever to compress said spring as the handle is moved in one direction, means to latch said lever in position with the spring compressed, a second arm on said handle and operable on further movement of the handle to shift said slide to straighten the staple in the raceway, and the first mentioned arm of the handle thereafter adapted on further movement of the handle in the same direction to trip said latch means whereby to permit the spring to impart a driving stroke to the driver.

17. In a staple driving machine, a housing having a raceway therein, means for feeding staples to said raceway with their legs out of alignment therewith, a slide shiftable to straighten a staple in the raceway and thereafter forming a wall of the raceway, a driver for driving staples through the raceway, a pivoted lever including an arm engaging said driver to move the same as the lever is moved about its pivot, a spring adapted to move said lever in one direction to impart a driving stroke thereto, a pivoted handle operable to move the lever to compress the spring, as the handle is moved in one direction, means to latch the lever in position with the spring compressed, means operable by the handle on its further

movement to shift the slide to straighten a staple in the raceway, and said handle on further movement adapted to release said latch means to permit the spring to impart a driving stroke to the driver.

18. In a staple driving machine, a housing having a raceway therein, means for feeding staples to said raceway with their legs out of alignment therewith, a slide shiftable to straighten a staple in the raceway, a driver for driving staples through the raceway, a pivoted lever including an arm engaging said driver to move the same as the lever is moved about its pivot, a spring adapted to move said lever in one direction to impart a driving stroke thereto, a pivoted handle, an arm pivoted intermediate its ends, a link connecting said handle and arm whereby movement of the handle is imparted to the arm, said arm including an end portion operable to shift the lever to compress the spring as the handle is moved in one direction, means to latch the lever in position with the spring compressed, said arm having its other end portion arranged to shift said slide to straighten a staple in the raceway on further movement of the handle, and said arm on further movement of the handle adapted to release the latch means to permit the spring to impart a driving stroke to the driver.

19. In a staple driving machine, a housing having a raceway therein, means for feeding staples to said raceway with their legs out of alignment therewith, a slide shiftable to straighten a staple in the raceway, a driver for driving staples through the raceway, a pivoted lever including an arm engaging said driver to move the same as the lever is moved, a spring adapted to move said lever in one direction to impart a driving stroke to the driver, a pivoted handle, a dog on said handle and engaging the lever whereby on movement of the handle in one direction the lever is moved to compress the spring, means to latch the lever in position with the spring compressed, a pivoted arm, means on the handle to engage said arm on further movement of the handle after the lever is latched in position with the spring compressed to rock the arm and through it shift the slide to straighten a staple in the raceway, and said dog thereafter operable on further movement of the handle to trip the latch means whereby to permit the spring to impart a driving stroke to the driver.

20. In a staple driving machine, a housing having a staple raceway, a guide for staples extending longitudinally of the raceway, a spring operated driver in the raceway and normally in its advanced position, means for feeding staples along the guide with their legs extending transversely of the raceway, a transfer device for carrying the foremost staple from the guide to the raceway, a slide for turning the staple to dispose its legs longitudinally of the raceway, operating means, means connecting the operating means with the driver to retract the driver on initial movement of the operating means and permit the transfer means to carry a staple to the raceway, a catch to retain the driver in retracted position, means operated by the operating means to then shift the slide to turn the staple, and means to release said catch by further movement of the operating means to permit driving movement of the driver.

21. In a staple driving machine, a housing having a staple raceway, a spring operated staple driver in the raceway and normally in its advanced position, a staple guide extending longi-

5 tudinally of the raceway, means for feeding
 staples along said guide with their legs extending
 transversely of the raceway, transfer means for
 carrying the foremost staple from the guide to
 10 the raceway, a slide for turning the staple to
 place its legs longitudinally of the raceway; and
 operating means including means to first retract
 the driver to permit the transfer means to carry
 a staple to the raceway under the plunger, means
 15 to shift the slide to turn the staple and retract
 the transfer, and means to then release the driver
 to permit its spring to force it forwardly to drive
 the staple.

22. In a staple driving machine, a housing hav-
 15 ing a staple raceway, a staple guide extending
 longitudinally of the raceway and supporting the
 staples with their legs extending transversely of
 the raceway, means to transfer the forward staple
 on the guide laterally to the raceway in the plane
 20 of the staple, means to turn the staple to bring
 its legs within and extending longitudinally of
 the raceway, and means operable to drive the
 turned staple through the raceway.

23. In a staple driving machine, a housing hav-
 25 ing a staple raceway, a staple guide extending
 longitudinally of the raceway and arranged
 to hold staples with their legs extending trans-
 versely of the raceway, means for transferring
 the first staple in the guide to the raceway, a
 30 slide for turning the staple to position its legs
 longitudinally of the raceway, a staple driver
 movable in the raceway, and means for operating
 the transfer means, the slide and the driver in
 certain timed relation.

35 24. In a staple driving machine, a housing hav-
 ing a staple raceway, a staple guide extending
 longitudinally of the raceway and arranged to
 guide the staples with their legs extending trans-
 versely of the raceway, a transfer block located

at the discharge end of said guide, means to
 shift the block to carry the foremost staple to
 the raceway, a slide for turning the staple to po-
 sition its legs longitudinally of the raceway, co-
 operating cam means on the slide and block to 5
 retract the block from the raceway, a staple
 driver movable in the raceway, means for oper-
 ating the slide, and means for operating the
 driver.

25. In a staple driving machine, a housing hav- 10
 ing a staple raceway, a staple guide extending
 longitudinally of the raceway and arranged to
 guide the staples with their legs extending trans-
 versely of the raceway, a transfer block located
 at the discharge end of the guide and provided 15
 with a recess to receive the cross bar of the fore-
 most staple in the guide, means to shift the block
 to carry said foremost staple to the raceway, a
 slide to turn the staple to position its legs longi-
 tudinally of the raceway, cooperating cam means 20
 on the slide and the block to retract the block
 from the raceway, a staple driver in the raceway,
 and means to operate the slide and the driver in
 certain timed relation.

26. In a staple driving machine, a housing hav- 25
 ing a staple raceway, a staple guide extending
 longitudinally of the raceway and holding the
 staples with their legs extending transversely of
 the raceway, a transfer means for shifting the
 foremost staple on the guide to the raceway, 30
 means for turning the staple to position its legs
 longitudinally of the raceway, cooperating means
 between the staple turning means and the trans-
 fer means to retract the transfer means from
 the raceway, a staple driver in the raceway, and 35
 operating means for the turning means and the
 driver.

ROY E. PETERSON.