Feb. 14, 1939. R. E. PETERSON 2,147,380

STAPLE DRIVING MACHINE

Filed Jan. 11, 1937

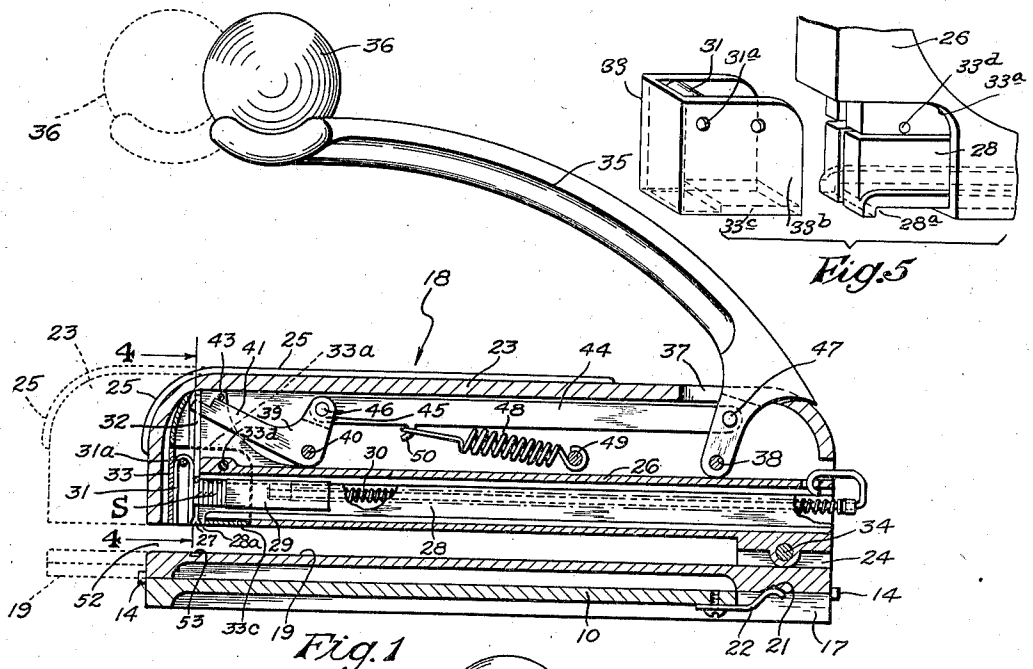


Fig. 1

Fig. 5

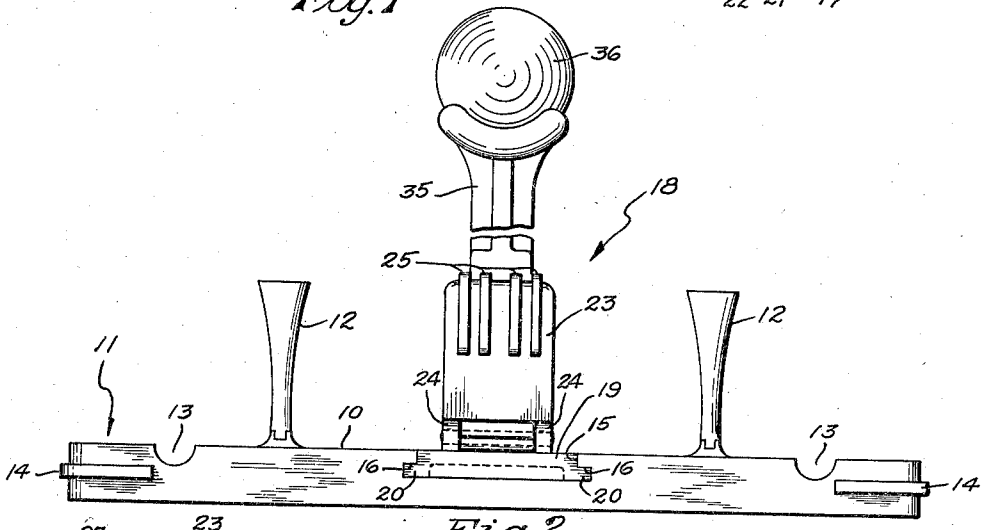


Fig. 2

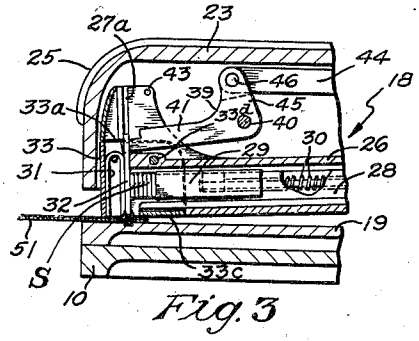


Fig. 3

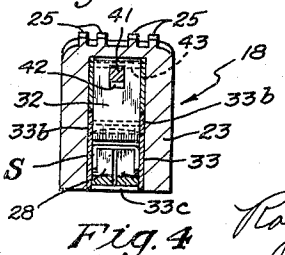


Fig. 4

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Patented Feb. 14, 1939 2,147,380

UNITED STATES PATENT OFFICE

2,147,380

STAPLE DRIVING MACHINE

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Application January 11, 1937, Serial No. 119,921

12 Claims. (Cl. 1—3)

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

An object of the invention is to provide a staple driving machine of attractive appearance and which is of simple construction and easy to operate.

Another object is to provide a construction wherein a staple driving machine is mounted on the base portion of a pen or pencil desk set or stand, arrangements being made whereby the machine is removable for repairs and the like.

Other objects and advantages will become apparent from a consideration of the following detailed description taken in connection with the accompanying drawing wherein a satisfactory embodiment of the invention is 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 drawing:

Fig. 1 is a longitudinal sectional view through the machine of the invention, the dotted lines suggesting the manner in which the machine may be removed from the large base of the pen desk set or stand;

Fig. 2 is a front elevational view thereof;

Fig. 3 is a detailed sectional view showing portions of certain parts at the end of a staple driving operation; and

Fig. 4 is a sectional view taken as along the line 4—4 of Fig. 1.

Fig. 5 is a perspective view showing a block member separated from the housing to indicate details of construction.

Referring in detail to the drawing at 10 is shown the base portion of a desk set or stand 11 comprising in addition to the base, a pair of fountain pen sockets 12 and pencil receiving grooves 13. Beads or other ornamentation 14 may be provided on the base as desired. The size and shape of the base 10 may be varied to suit different tastes and the base may support but one fountain pen socket in a less expensive arrangement, or any number as desired.

Intermediate its edges the base 10 is provided with a channel 15 opening through the upper surface of the base and through the front and rear edges thereof. The channel is laterally undercut as shown at 16 in Fig. 2 and toward its rear end is cut entirely through the base as at 17 (see Fig. 1). Mounted on the base is a staple driving machine generally designated 18 and including a base or supporting portion 19 located in the channel 15 and having portions 20 entering the undercut parts of such channel whereby the machine base 19 is not vertically movable out of or rockable in the said channel. In its underside, adjacent its rear end, the machine base 19 is provided with a notch 21 exposed through the slot 17 and entered by a portion of a spring 22 carried by the large base 10. With this arrangement it will be apparent that the spring yieldingly holds the machine base in the channel to prevent casual sliding movement thereof along the channel 15.

Machine 18 includes a housing 23 extending forwardly over the base 19 and stationary with respect thereto by reason of being rigidly attached thereto by rear side wall portions 24. The outer surface of housing 23 may be ornamented to suit as for example by the beads 25 although it will be understood that other forms of ornamentation may be used or that the housing may be free of ornamentation. Within and extending longitudinally of the hollow stationary housing 23 is a movable housing 26 toward its forward end provided with a raceway 27, and being provided with a staple guide bar 28 to receive staples and a follower 29 urged along such bar by a spring 30 whereby the staples are fed to the raceway. The forward side of the raceway is formed by an inverted U-shaped spring 31, and a plunger 32 is provided for operation through the raceway to drive staples therefrom, the plunger being guided for reciprocating movement in guideways 27a in the housing 26.

On the forward portion of the movable housing 26 is a member 33 comprising a head or block mounting the spring 31 forming or defining one side of the raceway 27. The plunger 32 is retracted when in a position of rest as shown in Fig. 1. Movable housing 23 is mounted on a pivot 34 extending between the side wall portions 24 of the stationary housing and is normally held in the horizontal position within the stationary housing as shown in Fig. 1. The member 33 is substantially U-shape as shown in Figs. 4 and 5 and straddles the lower front portion of the housing 26 which is recessed on opposite sides as shown at 33a to receive the side walls 33b of this member. The side walls 33b are connected by a lower cross wall 33c extending across under guide bar 28 back of a shoulder 28a on this bar. A pin 33d extends transversely through the side walls 33b and the housing 26 and this pin together with the shoulder 28a at the forward edge of cross wall 33c retains the member 33 in proper position. The inverted U-shaped spring is

mounted by a cross pin 31*a* extending through and between the walls 33*b*.

Extending forwardly over the stationary housing 23 is a hand lever 35 which may be of any desired design, and as here disclosed this lever is provided with a hand piece in the form of a ball 36. The lever passes through an opening or slot 37 in the rear portion of the top wall of housing 23 and within the latter is mounted on a pin or pivot 38 extending between the side walls thereof. In the forward portion of housing 23 above the movable housing 26 is mounted a bell crank lever 39 adapted to be rocked about a pivot 40 extending between the side walls of housing 23.

One arm 41 of the bell crank lever extends through an opening 42 in the driving plunger 32 (see Figs. 1 and 4) and such arm also extends under and at certain times engages a pin 43 extending between the side portions of the forward head portion of housing 26. A link 44 in housing 23 has its forward end pivotally connected with the other arm 45 of bell crank lever 39 as at 46 and the rear end of such link is pivotally connected at 47 with the hand lever 35 within the housing 23, but above the pivot 38 of such lever. A coil spring 48 has one end anchored to the housing 23 at 49 and has its other end connected with the link 44 by being hooked over a lug 50 carried by the lower edge of the link.

When papers or other materials 51 are to be stapled together they are inserted through the space 52 between the housing and the base 19 and the lever 35 operated to cause driving of a staple, the latter being clinched by having its legs turned by the anvil recesses 53. To drive a staple the lever 35 is depressed, and on its initial movement the link 44 is moved forward tensioning the spring 48 but moving the bell crank arm 41 from supporting contact with the under side of the pin 43. This permits the movable housing 26 to move downwardly about pivot 34 to bring its forward portion against the papers 51. Thereafter further downward movement of the hand lever results in further rocking of the bell crank lever 39 in a counter-clockwise direction with the result that driving movement is imparted to the plunger 32 and a staple S is driven through the papers.

The relative positions of the parts at the end of a staple driving stroke are shown in Fig. 3 wherein the forward end portion of the movable housing 26 is against the papers and the plunger is in its lower position. On release of the lever 35 following the driving of a staple the spring 48 returns all parts to their positions of rest as seen in Fig. 1. That is, it causes retraction of the plunger by drawing on the link 44 to rock the bell crank lever 39 in a clockwise direction, and such lever 39 in addition to retracting the plunger engages the pin 43 and rocks the movable housing 26 about pivot 34 to normal position within the stationary housing. The movement imparted to the link 44 by spring 48 also raises the hand lever 35 to normal position.

A staple driving operation may be performed without removing the machine from the large desk set base 10. However, for repairs or the like the machine is easily removable from base 10, it being only necessary to slide the machine base 19 through one end or the other of channel 15 as suggested by the dotted lines in Fig. 1. Spring 22 prevents any casual sliding movement of the machine relative to the base, and vertical movement of the machine relative to the base is also impossible owing to the undercut channel 15. The machine adds greatly to the completeness of the desk set being handy with the pens and pencils and is of attractive appearance, and while not free for casual movement relative to base 10 is yet easily removable therefrom as may be required. The base 10 may be of metal, wood, molded composition, such as "Bakelite", phenolic resins, stone or other suitable material as desired. It will thus be seen the combined desk set and staple driving or stapling machine can be made much more attractive than the usual type of stapling machine heretofore used. It can also be made in various styles or designs to match other desk articles.

It will be seen the top of the base 19 of the stapling machine, and on which the staple clinching anvil 53 is located, is substantially in the same plane as the top surface of the mounting base 10 which also forms a desk set, and therefore the base 10 forms a continuation of the stapling machine base and also forms an extended lateral support for the work being stapled which retains or supports it in the proper stapling position. This is advantageous in stapling work which is very flexible and easily bent and so would drop down on the opposite sides of and be arched over a narrow anvil or base and would not be supported in the flat position over the anvil which is the best for proper stapling. This wide base however, as shown can be decorated or ornamented to give an improved and attractive appearance.

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

1. In a staple driving machine, a base adapted to seat on a support, a stationary housing above the base, a movable housing within said stationary housing and having a raceway at the forward end thereof, means for feeding staples to said raceway, a plunger operable to drive staples through said raceway, means yieldingly maintaining said movable housing within the stationary housing, a handle pivoted to the rear end portion of the stationary housing extending forwardly over this housing and having a hand grip for manual operation, means operable by said handle to permit of movement of the movable housing to bring its portion having the raceway against the base, and said handle thereafter operable to move the plunger to drive a staple.

2. In a staple driving machine, a base to seat on a support, a stationary housing above the base, a movable housing within said stationary housing and having a raceway at the forward end thereof, means for feeding staples to said raceway, a plunger operable to drive staples through said raceway, means yieldingly maintaining said movable housing within the stationary housing, a handle pivoted to the rear end portion of the stationary housing and extending forwardly over this housing on the outside thereof, means operable by said handle to permit of movement of the movable housing to bring its portion having the raceway against the base, said handle thereafter operable to move the plunger to drive a staple, and said yieldable means operable to raise the plunger and return the movable housing to a position within the stationary housing on release of said handle.

3. In a staple driving machine, a base adapted to seat on a support, a stationary housing above the base, a movable housing within said stationary housing and having a raceway, means for feeding staples to said raceway, a plunger operable to drive staples through said raceway, means yieldingly maintaining said movable housing

within the stationary housing, a hand lever pivoted toward its rear end to said stationary housing and extending forwardly over the same outside the housing, means operable by said lever to permit of movement of the movable housing to bring its portion having the raceway against the base, and said lever thereafter operable to move the plunger to drive a staple.

4. In a staple driving machine, an elongated base, a hollow elongated housing rigid at its rear end with the rear end portion of the base and extending over the base, an elongated movable housing within said hollow housing and pivoted thereto at its rear end, said movable housing having a raceway in its forward portion, means for feeding staples to said raceway, a plunger for driving staples through said raceway, a bell crank lever within the forward portion of the hollow housing and pivoted thereto and having an arm connected with said plunger, a hand lever pivoted in the rear portion of the hollow housing and extending forwardly over said housing, a link within and extending longitudinally of the hollow housing and pivotally connected at its respective ends with the rear portion of the hand lever and the other arm of the bell crank lever, a coil spring within the hollow housing and anchored at one end thereto and at its other end connected with said link whereby the spring normally maintains the plunger retracted, the movable housing within the hollow housing and the hand lever elevated, and said hand lever operable on initial movement to shift said link and rock said bell crank lever to permit the movable housing to rock about its pivot and bring its forward end portion toward the base and on further movement to cause the link to rock the bell crank lever and impart staple driving movement to the plunger.

5. In a staple driving machine, a base, a stationary housing above the base, a movable housing within the stationary housing and having a raceway, means for feeding staples to said raceway, a plunger operable to drive staples through said raceway, means yieldingly maintaining said movable housing within the stationary housing, a hand lever pivoted at its rear end within the stationary housing and extending forwardly over the same, and means within the stationary housing and operable by said hand lever to impart staple driving movement to said plunger.

6. In a device of the character described, a large base having an undercut channel open through its upper side and an edge of the base, and a staple driving machine including a base, an anvil mounted on said base, and said base being slidable in said channel and having portions entering the undercut parts of said channel and positioning the anvil substantially in the plane of the top surface of the first mentioned base.

7. In a device of the character described, a large base having an undercut channel open through its upper side and an edge of the base, a staple driving machine including a base slidable in said channel and having portions entering the undercut parts of the channel, and means yieldingly securing said machine base in said channel.

8. In combination a wide base adapted to seat on a desk, a staple driving machine including a base member having an anvil, cooperating means on the base and base member for mounting the latter on the former comprising an undercut channel in the top of the base opening at one end through an edge of the base and a similarly shaped portion on the base member slidable in said channel, a housing pivoted to said base member, a movable plunger in said housing cooperating with said anvil to set a staple, and a handle extending over said housing for operating the plunger.

9. In combination a wide base adapted to seat on a desk and provided with a guide having undercut sides, a staple driving machine including a base member having an anvil, said base member being formed to slide longitudinally in said guide and having portions entering the undercut parts of the guide to retain the staple driving machine on the base and locate the anvil substantially in the plane of the top surface of said base, a housing pivoted to said base member, a movable plunger in the housing adapted to cooperate with the anvil to set a staple, and a handle for operating the plunger.

10. A device of the character described comprising a base adapted to seat on a desk, a stationary housing spaced above the base for insertion of work to be stapled between them, a movable housing in the stationary housing and movable toward and from the base, a movable plunger in the movable housing for setting a staple, means normally holding the movable housing in the stationary housing, and a handle for operating said holding means and the plunger to set a staple, said handle being pivoted to the rear end portion of the stationary housing and extending forwardly over and outside of said housing for manual operation.

11. A device of the character described comprising a base adapted to seat on a desk, a stationary housing secured at its rear end to said base and extending forwardly over the base to permit insertion of work between them, a plunger in the housing for setting a staple, an operating handle pivoted at the rear part of the housing and extending forwardly over the same, and an operative connection between said handle and the plunger.

12. A device of the character described comprising a base adapted to seat on a desk, a stationary housing secured to the base and extending forwardly over the same to permit insertion of work to be stapled between them, a movable housing in the stationary housing and movable toward and from the base, a plunger in the movabl housing at the forward end thereof for driving a staple, a pivoted hand lever extending forwardly over the base and having a hand grip at the forward end of the housing for manual operation of said lever, and an operative connection from the lever to the plunger.

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