Dec. 6, 1938. L. L. WHEELER 2,139,342

STAPLE DRIVING MACHINE

Filed July 31, 1937 2 Sheets-Sheet 1

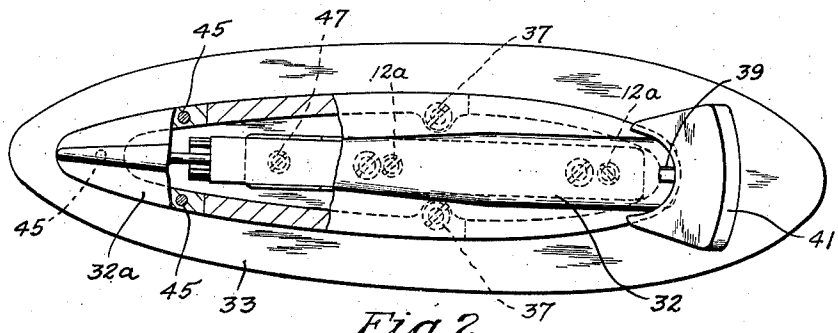

Fig. 2

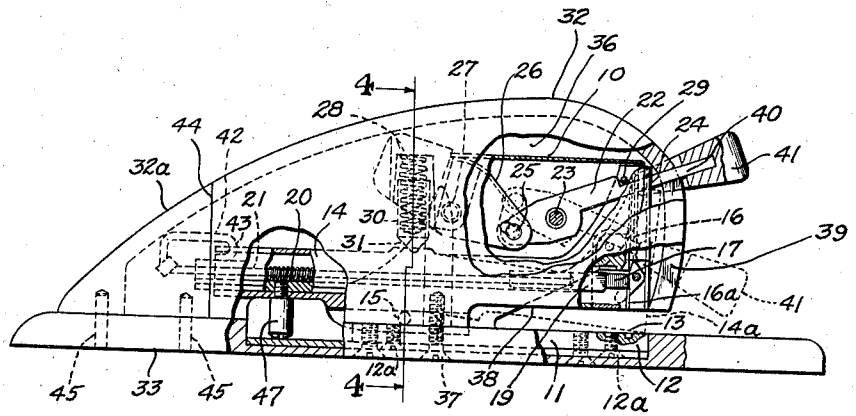

Fig. 1

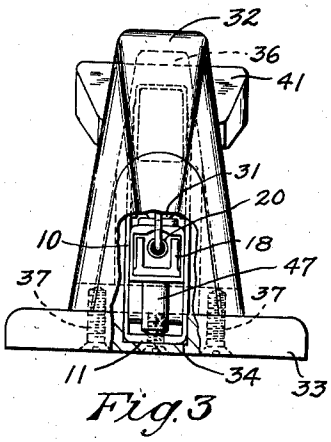

Fig. 3

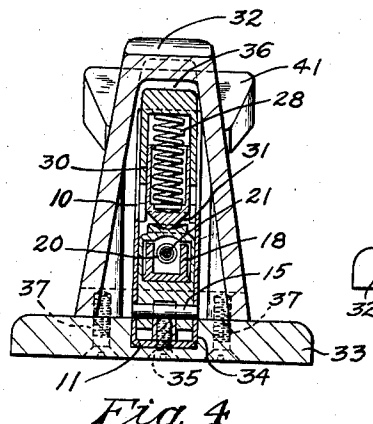

Fig. 4

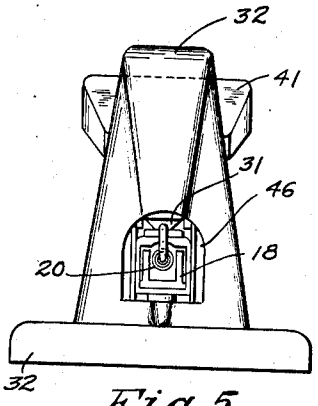

Fig. 5

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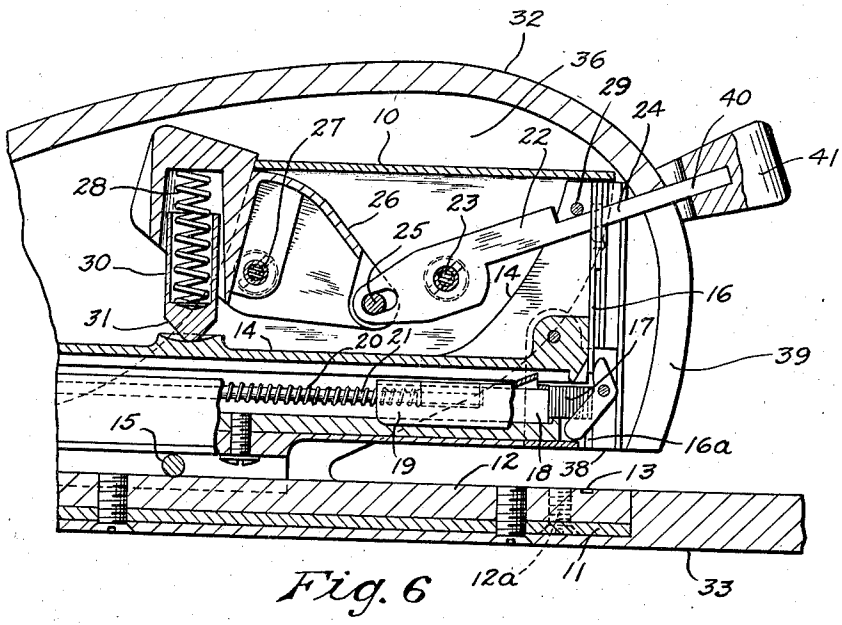

Fig. 6

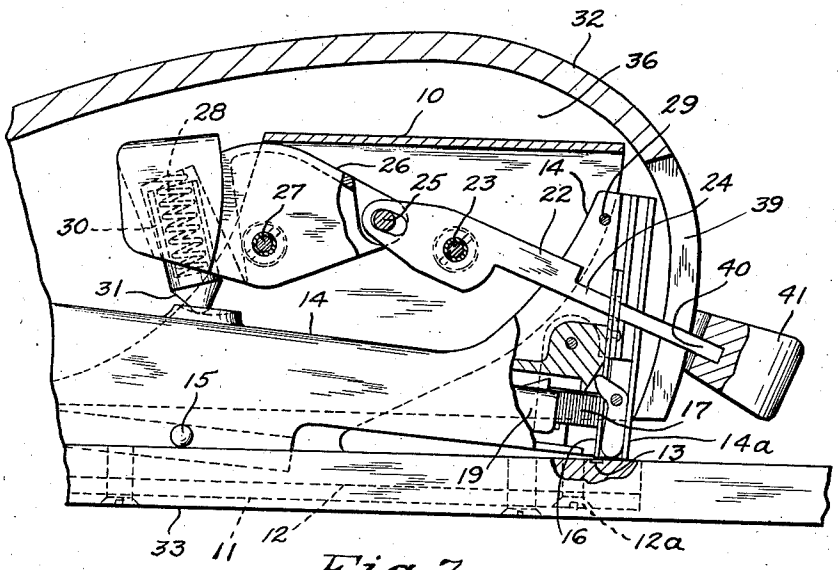

Fig. 7

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STAPLE DRIVING MACHINE

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Application July 31, 1937, Serial No. 156,710

7 Claims. (Cl. 1—3)

This invention relates to a staple driving machine particularly of the desk type, and has for an object to provide an improved construction of this type of machine which will have a greatly improved appearance over machines now available, and therefore will greatly improve the appearance of the desk on which it is used, and will enclose the staple driving mechanism so as to protect it from injury by dust, dirt and other means.

With the foregoing and other objects in view I have devised a novel construction, an embodiment of which is shown in the accompanying drawings forming a part of this specification. It is, however, to be understood that various modifications and changes may be made in the device within the scope of the invention and it is not necessary to limit the device to the specific details shown.

In the drawings:

Fig. 1 is a partial side elevation and partial section of the device showing the improved construction;

Fig. 2 is a top plan view thereof with a portion of the outer casing or housing broken away;

Fig. 3 is a rear end view with a portion broken away to more clearly show the construction;

Fig. 4 is a vertical section substantially on line 4—4 of Fig. 1;

Fig. 5 is a rear end view showing a slight modification;

Fig. 6 is a longitudinal vertical section of the forward portion of the device on an enlarged scale showing the elements in the normal position; and

Fig. 7 is a similar section showing the elements in the position they occupy after operation to set a staple.

Staple driving machines of the desk type used for securing together papers and similar elements usually comprise means for driving and setting substantially U-shaped staples, and include an anvil with which cooperates a reciprocating plunger which drives the staples through the articles to be connected and with the anvil folds the prongs thereof to clinch the staple, means being provided to feed the staples in succession to a driving position under the plunger and a hand operated knob for operating the plunger. There are several types of these devices, at the present time the desk type being made of metal and of such shape and construction that the opportunities for improving their appearance has been very limited. I have devised a construction whereby the usual type of mechanism may be used for driving and setting the staples, thus not requiring the development of an entirely new set of tools and new staple driving and setting mechanism, and combining therewith a mounting comprising a non-metallic ornamental enclosing casing or housing which may be used in attractive natural colors to greatly enhance the appearance of the device, and at the same time will not corrode and is rust-proof so as to maintain its attractive appearance indefinitely, and will enclose and protect the metal parts of the operating mechanism to reduce liability of becoming clogged with dust or dirt and will protect them in other ways whereby a greatly improved device is secured.

In the accompanying drawings is shown one embodiment in which the staple driving mechanism is of an old type, this mechanism being substantially that shown in the patents to Polzer 1,983,397 and 2,028,350. It comprises a support 10 in the form of a frame or inner housing including a lower arm 11 of substantially U-shaped cross section in which is mounted a bar 12 having an anvil 13. The bar may be secured in the arm by suitable screws 12a. This support 10 is mounted on a base 33 in a manner later described. Mounted within the support member 10 is an inner member 14 pivoted to the support at 15, and this member carries at its forward end a guideway 16a for a reciprocating plunger 16 adapted when depressed to move staples one at a time from the forward end of a staple strip 17 on a suitable guide bar 18 along which the strip is fed by a follower 19 through a spring 20 operating on a guide rod 21. The plunger is operated by means of a lever 22 pivoted in the support 10 at 23 and having an extension 24 at its forward end passing through an opening in the plunger whereby when the forward end of the lever is depressed the plunger is depressed to drive the staple. Pivoted to the opposite end of the lever 22 by a pin and slot connection 25 is another lever 26 pivoted to the support at 27, and at the opposite side of this pivot is a spring 28 tending to force the rear end of the lever 26 upwardly and therefore depress the left hand end of the lever 22 and raise the forward end of the lever 22 with the plunger to the upper or full line position of Fig. 1, this upward movement being limited by a suitable stop 29. The lower end of the spring 28 is seated in a socketed member 30 which has a rounded or tapered lower end 31 seated in a recess in the top wall of the pivoted member 14. This socket is located slightly in front of the pivot 15 so that the first effect of pressing downwardly the forward end of the lever 22 is to permit the member 14 to turn about its pivot 15 under action of spring 28

and allow the forward end 14a to move downwardly to the dotted line position of Fig. 1 and the full line position of Fig. 7 and rest on top of any work or articles to be stapled which may have been placed over the anvil 13. After this member reaches this position further downward movement of lever 22 causes the plunger 16 to move downward in the guideway 16a and drive the staple in the usual manner through the work and against the anvil to clinch it. When pressure on the forward end of lever 22 is removed the spring 28 returns the parts to the normal or full line position of Figs. 1 and 6. Backward movement of member 14 is limited by stop member 47. The support or inner housing 10 with its arm 11 remains stationary relative to the base during the staple driving operation.

The support 10 is enclosed in a housing 32 which may be in a single piece or may comprise more than one section and which is mounted on the base 33 and is stationary on this base. This base in the construction shown has a longitudinal recess 34 in its upper wall in which the arm 11 is seated and secured by any suitable means such as screws 35 passing through the base and threaded into the bar 12. The bar 12 is usually secured in the arm 11 by other screws 12a. Thus the staple driving mechanism including the support 10 and mechanism mounted thereby is assembled as a unit and mounted as such on the base. The housing 32 is a non-metallic ornamental housing and is preferably made of a plastic material which is rustproof and will not corrode and can be supplied in beautiful natural colors which are maintained indefinitely. A material which I have found to be very satisfactory for this purpose is a synthetic resin known on the market as "Catalin", and other similar materials may be employed. This material can be formed into the housing in different ways as by molding, forming, etc., and it is so shaped as to give a neat and attractive appearance. It is hollowed out on the inside to form a chamber 36 to receive the support 10 and the various elements or mechanism carried thereby and to enclose the same, this housing being mounted on the base 33 and being secured thereto by any suitable means such for example as the screws 37, although other securing means may be employed if desired.

It will be seen from Fig. 1 that the forward lower end of this housing is cut away at 38 to permit insertion of the articles to be stapled between the anvil 13 and the plunger. Means is also provided for operating the stapling mechanism from outside the housing 32. For this purpose the front end of the housing is provided with an upright slot 39 and the operating lever 22 is provided with an extension 40 projecting through this slot 39. Secured to the outer end of this extension 40 is a finger piece 41 which may be of the same material as the housing 32 or any other suitable material, and it may be colored to harmonize with the color of the housing 32 to improve the appearance of this device. In operating the device the operator merely depresses the finger piece 41 as indicated by the dotted lines Fig. 1, and thus operates the stapling mechanism. The base 33 is preferably of the same material as the housing 32 although it may be of different materials as desired, and it may be of the same or different color to harmonize with the housing 32.

In the stapling device shown the rear end of the rod 21 is curved upwardly as shown at 42 and provided with a hooked end 43 passing through an opening in the top wall of member 14. In supplying a staple strip to the machine on the guide bar 18 this rod is unhooked from the member 14 and then withdrawn through the rear of the machine to remove the follower 19 from the guide bar 18, after which a staple strip may be slid onto the guide bar at the rear end thereof, and then the follower can be replaced and the hooked end 43 inserted in the opening in the member 14 to thus compress the spring 20 so that it will urge the follower and the staple strip forwardly to feed the staples successively to the stapling position. Various arrangements may be provided to permit access to this rear end portion 42 of the rod to permit insertion of the new staple strip. In the construction shown in Figs. 1 and 2 the rear end portion of the housing 32 is provided as a separate piece or section 32a, the two sections being separated as indicated by the line 44. This section is detachably mounted either on the base or connected to the housing so as to be easily removed to give access to the member 42 and the rear end of the guide bar 18. It may be secured by any suitable means, but in the present case pins 45 are mounted on the base 33 and project into suitable openings in the section 32a and removably retain it in position by frictional engagement therewith. If, however, it is preferred that the housing be made in one piece it can be detachably connected with the base so as to permit ready removal to give access to the stapling mechanism and permit insertion of a new strip of staples, or if preferred this housing may be provided with an opening 46 in the rear end portion as indicated in Fig. 5 to permit access to the member 42 and the rear end of the guide bar 18.

From the foregoing description it will be seen that the staple driving mechanism is assembled as a unit assembly including all the necessary elements for driving and setting the staples, and therefore can be of various types of construction, and that this unit assembly after being separately assembled and tested is mounted as a unit on the base 33. Then it is enclosed within the housing 32 which is an ornamental non-metallic housing and preferably of a plastic material in natural colors, and may be shaped to give an attractive and artistic appearance. This material will not corrode or rust and it will therefore retain its color and attractive appearance indefinitely, and as it encloses the staple driving mechanism it will protect this mechanism from dirt, dust, moisture, etc., as well as other injury, and will not only give a much more attractive article and one which has a greatly improved appearance, but will also give a better article in which the mechanism is so protected that it will function more effectively for an indefinite period and still can be very easily operated by merely depressing the finger piece 41 at the outside of the housing. By making the device as described the housing and base may be in one color or in different colors and the housing itself can be in one color or different colors thus greatly increasing the possible variations in the appearance of the device, and it can be made to harmonize with the home or office furnishings or the other articles on the desk. It can also be made in different shapes or designs to harmonize with any desired design or shapes of other articles on the desk or with which it is to be associated.

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

1. A staple driving machine comprising a base, a staple driving and setting mechanism comprising as a unit a support, an anvil and a movable plunger cooperating with the anvil to set the

staple and mounted in the support, means for mounting said support and mechanism on the base as an assembled unit, a housing enclosing said support and mechanism and mounted on the base, means for operating said mechanism extending to the outside of the housing, and a finger piece on said means for operating the same.

2. A desk staple driving machine comprising a unit assembly including a support, an anvil, a movable plunger mounted with the support and adapted to cooperate with the anvil to set the staples and means for operating the plunger, a mounting for said unit assembly including a base, a housing enclosing said unit assembly, and a movable finger piece operable from outside the latter housing connected with the plunger operating means.

3. A desk staple driving machine comprising a unit assembly including a support, staple driving mechanism including an anvil, a movable plunger cooperating with the anvil for setting the staples, means for feeding staples to the driving position, and means for operating the plunger, a housing composed of non-metallic material enclosing said unit assembly, and a finger piece operable from outside the housing connected to the plunger operating means.

4. A desk staple driving machine comprising a support, an anvil mounted in the support, a movable plunger carried by the support and cooperating with the anvil to set the staples, means carried by the support for feeding the staples to driving position, a lever mounted on the support for operating the plunger, a mounting means for the support comprising a base and means for securing the support to the base, a housing composed of non-metallic material enclosing the support, and a finger piece outside the housing connected to the lever for operating it.

5. A desk staple driving machine comprising a support, staple driving and setting mechanism mounted in said support, a mounting for the support comprising a base, means for mounting the support on the base, a housing composed of non-metallic material mounted on the base and enclosing said support, and a movable finger piece outside the housing and connected with said mechanism for operating it.

6. A desk staple driving machine comprising a support, staple driving and setting mechanism mounted in said support including an operating lever, a mounting for the support comprising a base, means for mounting the support on the base, a housing composed of non-metallic material mounted on the base and enclosing said support, said housing having an upright slot in its front end wall, an operating finger piece at the front of the housing, and an extension from the lever passing through said slot and connected to said finger piece.

7. A staple driving machine comprising a support having an arm, an anvil mounted in said arm, mechanism mounted in said support cooperating with said anvil for setting the staples including a movable plunger, means for feeding staples to the driving position under the plunger and a lever for operating the plunger, means for mounting said support comprising a base having a recess in its upper wall, means for mounting said arm in the recess with the anvil substantially in the plane of the top of the base, a housing mounted on the base and enclosing said support, said housing having an upright slot in its front end wall, a finger piece outside the housing, and an extension from said lever passing through the slot and connected with the finger piece for operating the lever.

LESTER L. WHEELER.