STORAGE COMPARTMENT FOR STAPLES ON A STAPLING MACHINE

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Fig. 11.

Fig. 12.

Fig. 13.

Fig. 14.

Fig. 15.

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The present invention relates to a pocket stapling device, and has for an object to provide a stapling device of this character in which staples of normal size, such as employed in standard size stapling devices may be used, as distinguished from prior pocket stapling devices which have been restricted, because of their limited size, to the use of small size staples.

A further object is to provide a pocket stapling device comprising cover, body and base parts hinged together so that in their operative stapling position the cover and base parts may be swung in relation to the body part to affect the stapling operation, and which in their inoperative position are folded together in closed flat relation so as to provide a compact flat structure which may be easily slipped into a vest or change pocket. The flat form of the device in its closed position also makes it especially desirable as an accessory for carrying in a briefcase. While it is the purpose of the invention to provide a pocket stapling device of relatively flat form so that it may be conveniently carried in the pocket, it is also desired to make such device of sufficient width and length to enable it to be firmly held in the hand and also to provide sufficiently large pressure surfaces for operation by the fingers and thumb, without excessive effort or discomfort, to effectively drive and clinch the staples in the operation of stapling together papers or other suitable material.

In carrying out this purpose, longitudinal spaces are provided at each side of the centrally disposed staple carrying rail forming part of the structure, and it is a further object of the invention to design and utilize these spaces to provide compartments for the storage of additional staple strips. In the disclosed embodiments of the invention four staple strips may be carried, in addition to the staple strip mounted upon the staple carrying rail, and, as such each strip as at present commercially produced consists of approximately 100 staples it will be seen that the stapling device may be provided with as many as 500 staples, giving to the relatively small compact pocket stapling device of the invention substantially greater staple carrying capacity than the usual desk or plier type stapling device which only carries a single staple strip. It is also an object of the invention to provide a pocket stapling device which may be effectually used as a desk stapler, as well as a tacker, the wide flat form of its base part providing a similar firm non-tilting material engaging surface in the other case.

With the above and other objects in view, embodiments of the invention are shown in the accompanying drawings, and these embodiments will be hereinafter more fully described with reference thereto, and the invention will be finally pointed out in the claims.

In the drawings:

Fig. 1 is a perspective view showing the pocket stapling device in closed inoperative position.

Fig. 2 is a perspective view showing the device in open operative position.

Fig. 3 is a perspective view showing the cover of the device raised further into loading position to expose the staple carrying rail and the staple storage compartments, a pair of staple strips being shown in separated relation.

Fig. 4 is a perspective view showing the base of the stapling device swung into a rearwardly extending position to enable the device to be used as a tacker.

Fig. 5 is a perspective view of the anvil carrying base part in detached relation.

Fig. 6 is a perspective view showing the several parts of the staple carrying body part of the device in separated relation.

Fig. 7 is a perspective view showing the several parts of the staple driver carrying cover part in separated relation.

Fig. 8 is a view, on an enlarged scale, partially in side elevation and partially in longitudinal section, showing the stapling device in its closed position and with a portion of a staple strip in place upon the staple carrying rail.

Fig. 9 is a longitudinal vertical sectional view showing the stapling device in its open operative position, a single staple being shown in place with the staple push shoe in its extreme forward position.

Fig. 10 is a transverse vertical section view taken along the line 10—10 of Fig. 8.

Fig. 11 is a perspective view showing a modified form of the pocket stapling device according to the invention in closed inoperative position.

Fig. 12 is a perspective view showing the cover of the device raised to expose the staple carrying rail and the staple storage compartments.

Fig. 13 is a view on an enlarged scale, partially in longitudinal section, showing the stapling device illustrated in Figs. 11 and 12 in its closed position, and with a portion of a staple strip in place upon the staple carrying rail.

Fig. 14 is a similar view partially in side elevation and partially in longitudinal section, showing the stapling device in its open operative position.

Fig. 15 is a transverse vertical sectional view taken along the line 15—15 of Fig. 14.

Similar reference characters indicate corresponding parts throughout the several figures of the drawings.

Referring to the drawings, the pocket stapling device, according to the illustrated exemplary embodiment of the invention, comprises three main parts, namely an intermediate staple carrying body part 10, a staple driver carrying cover part 11, and an anvil carrying base part 12, these parts being hinged together at their rearward ends, as will presently more fully appear.

The intermediate body part 10 is of substantially rectangular tray form and consists of a base wall 13, and an upstanding peripheral rim wall 14, the side portions of which are inwardly offset at their rearward ends, as at 15—15, the hinge means of the cover and base parts, as will presently more fully appear. A longitudinal staple carrying rail 16 of inverted U-shape in cross-section is disposed centrally upon the base wall 13, being provided at spaced points along its lower edges with downwardly projecting lugs 17 which are secured by saddling in slots 18 provided in the base wall. A helical expansion spring 19 is assembled within the rail in compressed relation so that its rearward end bears upon the rearward portion of the rim wall 14, its forward end being adapted, as will presently more fully appear, to propell a push shoe forwardly. The upper wall of the rail is provided with a longitudinal slot 20 for receiving a connecting part of the push shoe.

The forward end of the staple carrying rail is spaced from the forward portion of the rim wall 14 to provide.
a space within which is engaged a staple guide member 21, comprising a vertical forward wall portion 22 of rectangular form, secured by welding or the like to the inner surface of the front portion of the rim wall 14 and projecting substantially above it, rearwardly extending side wall portions 23-23, disposed in spaced relation at each side of the forward end portion of the staple carrying rail to provide guide spaces at each side thereof for the legs of the staple strip S, and flange portions 24-24, bent inwardly from the upper edges of the side wall portions and spaced above the upper side of the staple carrying rail to provide a guide space at each side of the staple portion of the staple strip. The forward edges of the flange portions are spaced from the inner surface of the forward wall 22 to provide a passage for the staple driver, as will presently more fully appear. The spacing of the forward end of the staple rail from the inner surface of the forward wall 22 also provides a space for the staple driver to move in driving the staple, the dimension of the space being such as to receive the foremost staple of the staple strip. The base wall 13 is provided with a U-shaped slot 25, the transverse intermediate portion of which is in line with the staple driving space and constitutes the ejection opening for the staple, and the rearwardly extending side leg portions of which are disposed at each side of the forward end of the staple rail and constitute clearance spaces to prevent jamming of the staples within the device.

The push shoe 26 is of inverted U-shape in cross section and slidably fits upon the rail with its forward edge engaged behind the staple strip. It comprises an upper wall 27 and side walls 28-28, the upper wall having an upwardly lug 29 bent therefrom to provide a manipulating handle for convenient retraction of the push shoe. The upper wall is also provided with a downwardly extending lug 30, centrally disposed and inwardly offset from the forward edge, and which is adapted to freely engage within the slot 20 of the rail, this lug being provided with rearwardly extending ears 31-31, which are adapted to interlockingly engage within the forward end of the spring 19. This engagement is adapted by first holding the forward end of the spring retracted with a suitable tool inserted through the slot 26, thereupon placing the push shoe upon the rail forwardly of the forward end of the spring with the lug 30 in the slot 26 and the ears 31 in position to engage the spring as the latter is released. As the diameter of the spring is greater than the width of the slot 26 the push shoe is thus effectually locked in place.

As will be observed from Fig. 9, the inward offsetting of the lug 30 from the forward edge of the push shoe corresponds to the spacing of the forward end of the slot 20 from the forward end of the staple carrying rail, so that in the extreme forward position of the push shoe, with the lug 30 engaging the forward edge of the slot 20, the forward edge of the push shoe is flush with the forward end of the rail. Thus, the push shoe will effectually drive the last staple of the strip into the staple driving passage, but the push shoe itself will not enter the passage to interfere with the engagement therein of the staple driver.

In spaced relation at each side of the staple rail there are provided upwardly projecting lugs 32 which define the inner sides of staple strip receiving compartments at each side of the staple rail, the outer sides of these compartments being defined by inwardly projecting ribs 33 pressed into the side portions of the rim wall 14. The spacing of the lugs 32 from the ribs is sufficient to allow a pair of nested staple strips to be fitted therewith, as shown in Fig. 3, the lugs preventing interference of these staple strips with the staple strip and the push shoe operating upon the rail, and the ribs preventing their interference with detent means cooperating between the body part 10 and cover part 11, as will presently more fully appear.

The cover part 11 is of substantially rectangular tray form, and consists of a top wall 34 and a downwardly extending peripheral rim wall 35, the side portions of which are inwardly offset at their rearward ends, as at 36-36, to receive the hinging means of the base part, the inwardly offset portions being provided with upwardly extending ears 37-37 which are adapted to engage within the recesses 15-15 of the body part 10 where they are hingedly connected, as will presently more fully appear. The cover part conforms in outline shape to the body part, so that in the closed position of the cover part the front edge of the wall 35 abouts the edges of the rim wall 14 of the body part. Within the forward end of the cover part a staple driver strip 38 having a securing flange 39 bent at right angles thereto is secured by welding or the like to the underside of the top wall 34, this strip being positioned so that in the open operative position of the cover, as is shown in Figs. 2 and 9, its lower end engages the inner side of the forward wall portion 22 of the staple guide member 21 slightly above the staple disposed in the staple driving passage. Upon pressing the cover downwardly the staple driver strip enters the staple driving passage and drives the staple downwardly. The head in and through the ejection slot 25 into clamping engagement with the anvil, as will presently more fully appear.

A spring member 40 is carried within the cover part and comprises an intermediate transverse portion 41 secured by welding or other suitable means to the underside of the top wall 34 of the downwardly offset forwardly extending leaf spring portion 42 engaged at its forward end with the flange portions 24 of the staple guide member 21, and a downwardly offset rearwardly extending leaf spring portion 43 adapted to engage the upper side of the nested staple strips disposed in the compartments of the staple carrying rail. The set of the leaf spring portion 42 is such that it normally exerts pressure to raise the cover part with respect to the body part so that following each stapling operation the cover part moves automatically to its operative open position. The spring is provided with a centrally disposed longitudinal slot 44 providing a clearance space in which the handle portion 29 of the push shoe moves. At the ends of the transverse portion 41 there are provided downwardly extending detent spring portions 45-45, each having an arcuate slot 46 substantially concentric to the hub by which the spring as the latter is released. As the diameter of the spring is greater than the width of the slot 26 the push shoe is thus effectually locked in place.

As will be observed from Fig. 9, the inward offsetting of the lug 30 from the forward edge of the push shoe corresponds to the spacing of the forward end of the slot 20 from the forward end of the staple carrying rail, so that in the extreme forward position of the push shoe, with the lug 30 engaging the forward edge of the slot 20, the forward edge of the push shoe is flush with the forward end of the rail. Thus, the push shoe will effectually drive the last staple of the strip into the staple driving passage, but the push shoe itself will not enter the passage to interfere with the engagement therein of the staple driver.

In spaced relation at each side of the staple rail there are provided upwardly projecting lugs 32 which define the inner sides of staple strip receiving compartments at each side of the staple rail, the outer sides of these compartments being defined by inwardly projecting ribs 33 pressed into the side portions of the rim wall 14. The spacing of the lugs 32 from the ribs is sufficient to allow a pair of nested staple strips to be fitted therewith, as shown in Fig. 3, the lugs preventing interference of these staple strips with the staple strip and the push shoe operating upon the rail, and the ribs preventing their interference with detent means cooperating between the body part 10 and cover part 11, as will presently more fully appear.
in each of the ears 37 of the cover part 11, and which in turn registers with a bearing hole 53 provided in each of the received portions 15 of the body part 10, these registering bearing holes 53 are disposed on opposite sides being engaged by riveted pivot studs 54—54 to thus hingedly connect the cover and base parts to the body part. The length of the ears 59 and the position of the pivot axis are such that the cover part may, if desired, be swung through 180° into a rearwardly extending open position, as shown in Fig. 4, to permit upon the base part in downwardly spaced relation to the body part for convenience in inserting material between the jaws thus formed. The upper edges 58 of the side portions of the rim wall are inclined downwardly from their forward ends, so that in the normal open position, as seen in Fig. 9, the lower jaw of the material receiving space is substantially parallel to the underside of the body part forming the upper jaw.

In order to retain the cover and base parts in inoperative closed relation to the body part a clasp is provided consisting of a flapper member 59 having a hinge curl 60 at its upper end rotatably engaged upon a pin 61 supported at its ends in apertured lugs 62 pierced and bent from the forward rim wall portion of the cover part, this flapper being provided near its lower end with an aperture 63 adapted to be engaged by a latch pin 64 secured upon the forward rim wall portion of the base part 12. In the closed position, as seen in Fig. 5, the clasp is held in operative position by the spring tension set up by the springs 49 and 57, it being only necessary in order to disengage the clasp to press it forwardly with sufficient force to overcome this spring pressure. Thereupon, the cover and base parts will open to their operative positions, as seen in Fig. 9, the open position of the cover part being limited by the detent springs 45. In this open position the flaps is swung into engagement with the upper side of the cover part to remove it from interference with the staple operation.

In operation, the stapling device may either be supported upon a flat surface and operated by exerting downward pressure upon the cover, or by holding in the hand and compressing the fingers and thumb upon the base and cover parts.

The stapling device may also be effectively used as a desk type stapler, in which case the relatively wide flat base 12 provides a firm non-tilting support for resting upon the desk top. In case of the stapling device being used as a tack er the cover 12 is swung to the rearwardly extending position, as shown in Fig. 4, and the undersurface of the body 10 provides a relatively wide flat surface for firm non-tilting contact with the material being tacked.

In Figs. 11 to 15 I have illustrated a modified form of the invention wherein the guide member 21 as employed in the first embodiment is dispensed with, a substantially similarly functioning structure being provided by inwardly offsetting the forward end of the peripheral wall 14 of the body part 12 and extending the same upwardly to provide a vertical guide 22a for engagement with the staple driver 38, side wall portions 23a—23a being blanked and bent upwardly from the base wall 13, the upper edges of these side wall portions being slightly above the upper surface of the staple strip 8 upon the rail 16. In order to provide an upper limit for the forward end of the staple strip, in place of the flange portions 24—24 as employed in the guide member 21 of the first embodiment, the forward end of the spring for exerting opening pressure upon the cover part is slidably engaged on the upper edges of the side wall portions 23a. A modified form of spring is employed, consisting of an intermediate transverse portion 41c secured to the top wall 34 of the cover part 11, at each end of which there is provided a slotted detent spring portion 45. A centrally disposed leaf spring portion 42a extends forwardly from the portion 41a and is provided at its forward end with a flatly widened portion 65 for sliding engagement with the top edges of the side wall portions 23c. Instead of the handle portion 29 provided upon the push shoe 26 the push shoe is modified to provide handle portions 29a at each side disposed outwardly of the edges of the staple strip 42a.

Modified holding means are provided for the staple strips 8 stored within the compartments at each side of the staple rail, consisting of cushion holding strips 66—66 of sponge rubber or the like secured by cementing to the underside of the top wall 34 of the cover part, these cushion strips being engaged under compression with the staple strips in the closed position of the device, as shown in Fig. 13. They provide yieldable shock absorbing holding means for the staple strips, protecting them against breakage. In the open operative position, as shown in Fig. 14, the rearward portions of the cushion members are in engagement with the staple strips and continue to retain them in position.

In order to determine whether a substantial supply of staples is in place upon the staple rail while the device is in closed position, window slots 67 are provided in the top wall 34 of the cover part 11 near the forward end, and a slot 68 is provided in the spring portion 42a in register therewith so that the forward end portion of the staple strip upon the rail is visible through the window openings. If only one or two staples are left the upper side of the push shoe is visible through the window openings, and this may, if desired, be distinctively colored so that the fact that the staple strip is about used up is readily apparent. In addition it should be noted that, whether the cushion staple strip holding members 66 or the downwardly offset rearwardly extending leaf spring portion 43 of a spring 40 is employed, a yieldable means is provided carried by the cover part to holdingly press a staple strip within the storage compartment.

It is pointed out that if desired the spring 40c and the cushion staple strip holding members 66 may be employed in the first embodiment instead of the spring 40 and that the window slots 67 may also be provided in the first embodiment.

I have illustrated and described preferred and satisfactory embodiments of the invention but it will be understood that changes may be made therein, within the spirit and scope thereof as defined in the appended claims.

What is claimed is:

1. In a pocket stapling device, an open top body part including a base wall and upstanding front and side walls, a longitudinal staple strip carrying member within said body part in parallel laterally spaced relation to at least one side wall of said body part to provide a longitudinal open top storage compartment for a strip of staples, and a cover part hingedly connected to the rearward end of said body part normally closing the open top thereof and adapted in open position to expose said staple strip carrying member and said compartment for the transfer of a staple strip from said compartment to said staple strip carrying member.

2. In a pocket stapling device, an open top body part including a base wall and upstanding front and side walls, a longitudinal staple strip carrying member within said body part in parallel laterally spaced relation to said side walls of said body part to provide a longitudinal open top storage space at each side of said staple strip carrying member for a strip of staples, and a cover part hingedly
connected to the rearward end of said body part normally closing the open top thereof and adapted in open position to expose said staple strip carrying member and said compartment for the transfer of staple strips from said compartment to said staple carrying member, spring means interposed between said body and said cover parts normally urging said cover part into open position, and said staple carrying member and said compartment for the transfer of staple strip from said compartment to said staple carrying member, and spring means carried by said cover part and adapted to holdingly press a staple strip within said compartment.

6. In a pocket stapling device, an open top body part including a base wall and upstanding front and side walls, a longitudinal staple strip carrying member within said body part in parallel laterally spaced relation to at least one side wall of said body part to provide a longitudinal open top storage compartment for a strip of staples, a cover part hingedly connected to the rearward end of said body part substantially normally closing the open top thereof and adapted in open position to expose said staple carrying member and said compartment for the transfer of a staple strip from said compartment to said staple carrying member, and spring means carried by said cover part and interposed between said body and said cover parts normally urging said cover part into open position and including a spring portion adapted to holdingly press upon a staple strip within said compartment.

7. In a pocket stapling device, a body part including a base wall and upstanding front and side walls, a longitudinal staple strip carrying member within said body part in parallel laterally spaced relation to at least one side wall of said body part to provide a longitudinal open top storage compartment for a strip of staples, a cover part hingedly connected to the rearward end of said body part normally closing the open top thereof and adapted in open position to expose said staple strip carrying member and said compartment for the transfer of a staple strip from said compartment to said staple strip carrying member, spring means interposed between said body and cover parts normally urging said cover part into open position, a part of said spring means being disposed in spaced relation over the forward end of said staple carrying member to constitute a retaining means in upwardly opposed spaced relation to the staples carried thereby, a base part hingedly connected to the rearward end of said body part, staple clinching and means carried by said base part in line with said staple driving passage, and catch means carried by said cover and base parts adapted to releasely retain them in closed position with respect to said body part.

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