Nov. 11, 1958 W. JOPP 2,859,443

COMBINATION STAPLER TOOLS

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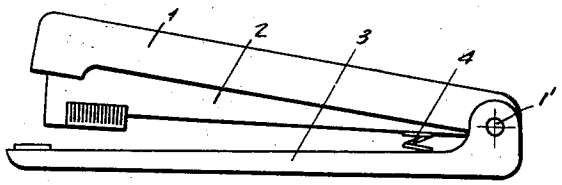


Fig. 1

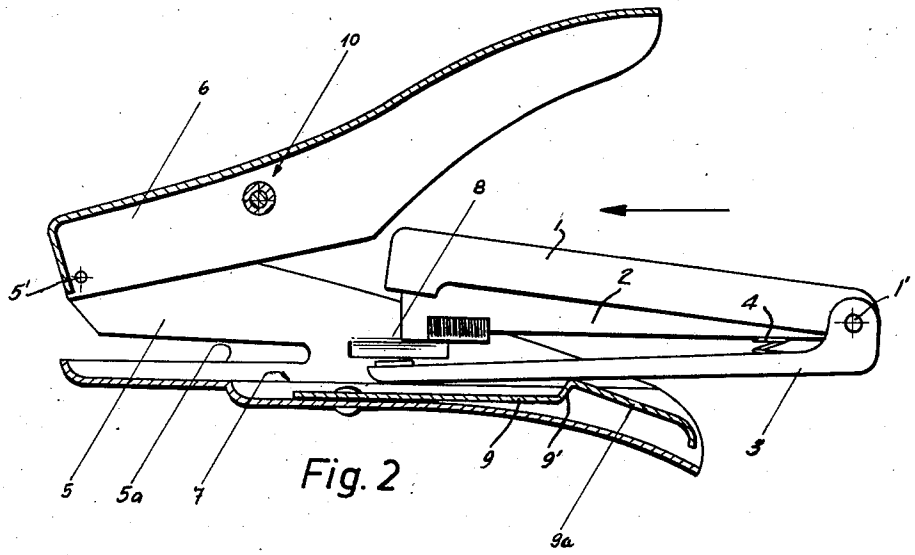


Fig. 2

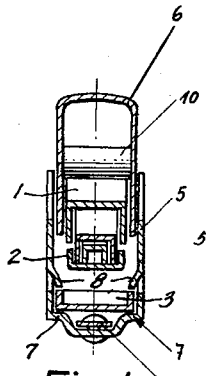


Fig. 4

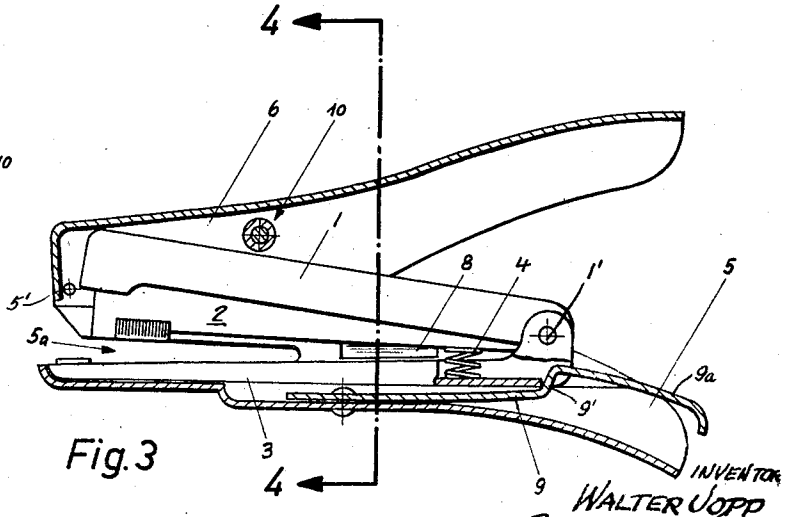


Fig. 3

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Fig. 6

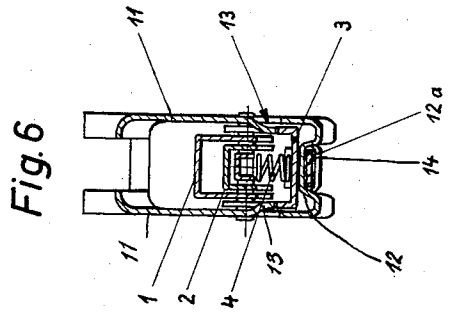
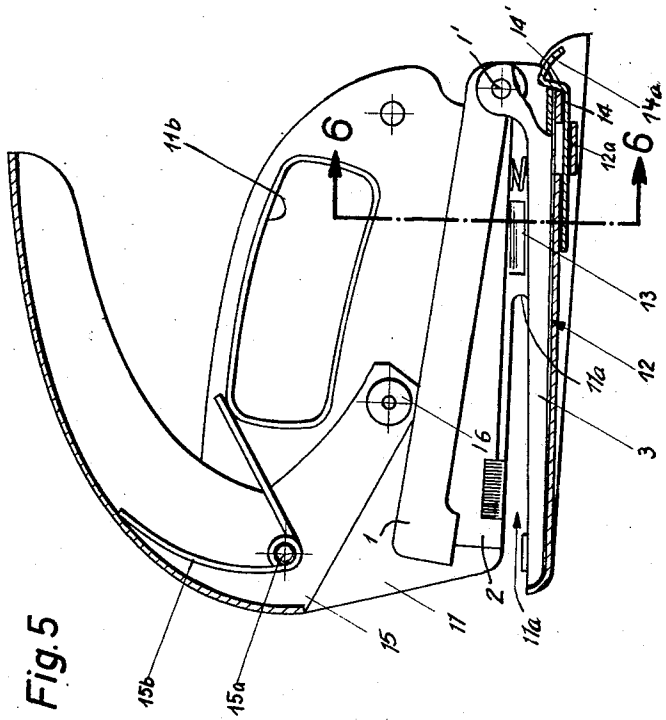


Fig. 5



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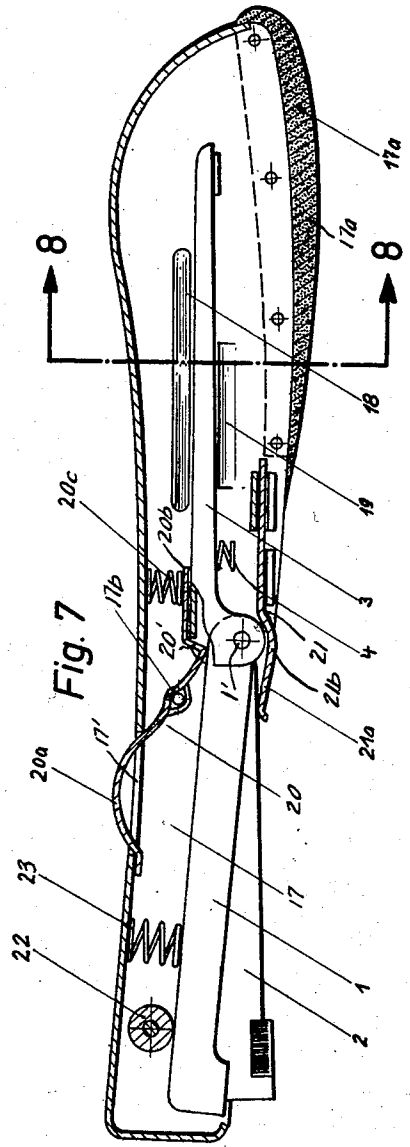


Fig. 7

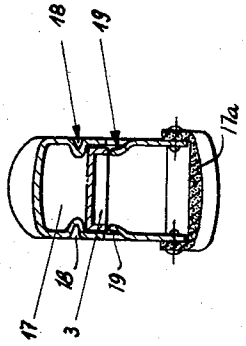


Fig. 8

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COMBINATION STAPLER TOOLS

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Application October 8, 1956, Serial No. 614,455

4 Claims. (Cl. 1—49)

This invention relates to fastening devices and more particularly to a desk type stapler combined with housings of different types into which the stapler may be inserted to form fastening tools suited for a variety of purposes.

Fastening devices are known which are specially constructed as desk-staplers, plier-staplers, stapler-pliers, or tacking hammers, each being particularly adapted to perform its special purpose. It is further known to use parts or structural groups of a desk-stapler as integral portions of plier-staplers, or plier-like fastening devices to form a fixed ensemble suitable to the particular intended use. The fastening apparatus so formed remains definitely limited by its special shape and fixed construction to the narrow use for which it is designed.

It is a primary purpose of this invention to provide a combination of fastening tools suitable to meet the needs of a wide variety of purposes.

It is a further object of the invention to provide a plurality of tool-like housings suitable to perform special fastening tasks into each of which may be inserted the same fastening mechanism and from each of which such fastening mechanism may be released and removed for insertion into another or different tool housing.

Yet another object of the invention lies in the provision of a conventional desk type stapler, which may be used as is for certain fastening tasks, combined with a variety of plier-like or hammer-like tools to operate as the fastening mechanism within such tools.

Still another object of the invention lies in the provision of simply and inexpensively constructed means in a number of different tools adapted to quickly and easily receive and lock a single desk type stapler therein in operative position and to readily release such stapler for withdrawal and insertion into different tools.

A still further object of the invention is to provide a number of fastening tools to meet a multiplicity of fastening tasks at reduced cost by use of a common fastening mechanism for all such tools, at the same time simplifying and reducing the cost of repairs in that only the fastening mechanism need be removed and repaired or replaced.

The novel features that are considered characteristic of the invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and its method of operation, together with additional objects and advantages thereof, will best be understood from the following description of specific embodiments when read in connection with the accompanying drawings, wherein like reference characters indicate like parts through the several figures and in which:

Fig. 1 is a side elevation of a desk-stapler forming the fastening mechanism of a number of tool housings according to the invention;

Fig. 2 is a central longitudinal section of a plier-like tool housing showing the desk-stapler of Fig. 1 in side view partially inserted therein;

Fig. 3 is a sectional view of the plier-stapler similar to Fig. 2 but showing the desk-stapler completely inserted and locked therein;

Fig. 4 is a sectional view taken on line 4—4 of Fig. 3 and looking in the direction of the arrows;

Fig. 5 is a central longitudinal section of a different tool housing showing the desk-stapler of Fig. 1 in side view completely inserted and latched therein:

Fig. 6 is a sectional view taken on line 6—6 of Fig. 5;

Fig. 7 is a central longitudinal section of a tacking hammer-like tool housing with the desk-stapler of Fig. 1 in side view inserted completely and latched therein, and

Fig. 8 is a sectional view through the tacking hammer taken along line 8—8 of Fig. 7.

The desk-stapler illustrated in Fig. 1 is of conventional structure and is used as the common fastening mechanism for all of the tools illustrated in the other figures. The stapler comprises a stapling arm 1, a staple magazine 2, and an anvil base 3 carrying the clinching anvil or staple forming die at one end. The arm 1, magazine 2 and base 3 are hingedly connected at the other end by a pivot 1'. The tongue-like base 3 is held in spread relation to the upper part, comprising the arm 1 and magazine 2, by a supporting spring 4 interposed therebetween adjacent the pivot 1'.

The tool housing incorporating the described stapler as a fastening mechanism, illustrated in Figs. 2–4, comprises two plier legs 5 and 6 of U-shaped cross section and formed as handles which are connected at their front ends by a pivot pin 5'. Formed on the interior of the lower leg 5 of the plier is a slide track comprising a pair of elongated guide edges 7 and a pair of inwardly displaced flanges 8 positioned above the guide edges. The tongue-like base 3 of the desk stapler, illustrated in Fig. 1, can be inserted between edges 7 and flanges 8 (Fig. 2) and pushed forward so that the base 3 is carried and held between the guide edges 7 and the flanges 8 to the operating position shown in Fig. 3.

When the desk stapler is completely inserted, a holding spring 9, fastened in the lower leg of the plier, latches behind the base 3 so that the desk stapler is held securely against movement in a longitudinal direction. The holding spring 9 at its near free end is offset upwardly to form a latch or abutment 9' and then extended as a handle 9*a*. The abutment 9' latches behind base 3 of the desk stapler, as shown in Fig. 3. Depressing the handle 9*a* will release the latch 9' holding the base 3 to the plier handle 5, and the desk stapler can then be withdrawn rearwardly from the lower leg of the plier. If the plier housing is turned, the desk stapler will slide out.

The upper leg 6 of the plier is provided with a pressure roller 10 which bears against the upper surface of the stapler arm 1. Pressing together of the legs 5 and 6 of the plier, pushes the roller 10 against the arm 1 of the desk stapler and effects the stapling action. A slot 5*a* in the forward part of the lower leg 5 permits entrance of papers, or other items to be stapled together, between the base 3 and magazine 2 of the stapler. After each stapling operation, the stapler spring 4 serves to separate both the stapler parts and the plier handles 5 and 6.

The tool illustrated in Figs. 5 and 6 is a combined stapler and plier type of tool suitable for special and heavier work such as fastening cardboard book covers and the like. The housing of the tool is formed with a bottom wall 12 and two parallel side walls 11 defining a hollow space therebetween to receive the desk type stapler of Fig. 1. The base 12 is bent upwardly along its entire length to form a guide and seat for the base 3 of the desk-stapler. Flange 13, bent inwardly from side walls 11, form upper guides and stops for the base 3 of

the desk-stapler. A leaf type spring **14** is secured to the underside of the tool **12** through a depressed loop **12***a* therein. The rear end of spring **14** is bent upwardly to form a latch **14'** and rearwardly to form a handle portion **14***a* which releasably locks the desk-stapler in operative position within the housing.

The tool side walls **11** are slotted at **11***a* in alignment with the space between the base and upper parts of the desk-stapler so that cardboard book covers together with other items to be stapled together may be entered through slots **11***a*. The sides **11** are also provided with a hand grip opening **11***b* adapted to receive four fingers of the operator's hand. Within the forward portion of the tool and above the desk-stapler is an operating lever **15** pivoted to the side walls **11** on pin **15***a*. Lever **15** is curved to form a suitable hand grip and is pressed upwardly above the tops of walls **11** by a wire spring **15***b*. Lever **15** is provided with a bell crank portion carrying a roller **16** adapted to depress the stapling arm **1** of the stapler when the lever **15** is moved downwardly about pivot **15***a*.

To operate the tool illustrated in Fig. 5, it is only necessary to grasp it with the thumb and palm of one hand over lever **15** and the four fingers of the same hand inserted into the grip opening **11***b*. Squeezing the thumb and fingers together will pivot lever **15** and operate the stapler held in the base of the tool. Releasing or opening the hand grip readys the tool for the next stapling operation.

The tacking hammer (Fig. 7), incorporating the described stapler as its fastening apparatus, comprises an inverted U-shaped part **17** extended at one end to form a handle which is completed at the bottom by part **17***a*. About in the middle of the handle part of member **17** is formed a slide track by provision of stamped-in guide edges or ribs **18** and in-turned flanges **19**, into which the tongue-like base **3** of the desk-stapler of Fig. 1 can be pushed from the end opposite the handle. The stapler, before insertion, is opened to align the base **3** with the stapling arm **1** and magazine **2** and when completely inserted, the base **3** is releasably retained in the slide track by a lever **20** and the stapling arm **1** and magazine **2** are retained substantially in alignment with the base **3** by a spring **21**.

The lever **20** is centrally mounted on a pivot **17***b* within the tool housing **17** and at one side of the pivot has a latch portion **20'**, abuttable with the end of the base **3**, and an end extension **20***b* resiliently biased toward the base **3**, conveniently by a coil spring **20***c*, to retain the latch **20'** in engagement with the base **3**. The end of the lever **20** on the opposite side of the pivot **17***b* is curved upwardly and forms a handle or finger portion **20***a* that extends through an opening **17'** in the upper wall of the tool **17** for ready access to swing the latch **20'** from engagement with the base **3**.

The spring **21** is fastened at its rear end to the housing **17** and has a stirrup portion **21***b* for nesting the pivot portion of the desk stapler and a forward part **21***a* that both forms a handle and a presser that holds the upper parts **1** and **2** of the desk stapler in the correct position for use, with reference to the hammer head shaped part of housing **17** of the tacking hammer. In use, pressure is brought to bear on the desk stapler by way of a pressure roller **22** within the housing **17** in such a way that upon striking the head and magazine **2** against a wooden board, the staple is driven into the board because of the yielding of the magazine **2**, with respect to the stapling arm **1**. Part of the shock of each blow is absorbed by a coil spring **23** interposed between the stapling arm **1** and the upper wall of housing **17**.

When it is desired to remove the stapler from within the tacking hammer, finger portion **20***a* is depressed, pivoting the latch portion **20'** of lever **20** upwardly against the pressure of coil spring **20***c*. The handle portion **21***a* is also sprung slightly to free the pivot end portion of the stapler from the stirrup portion **21***b*. This releases the stapler base **3** so that it may be withdrawn from the hammer through the open bottom portion at the hammer head end of housing **17**.

It will be readily apparent from the foregoing description that the invention provides a variety of tools, all utilizing a common fastening mechanism which is itself capable of use as a desk-stapler. The common fastening mechanism may be selectively inserted into the different tools where it is releasably held for the performance of stapling, pinning and nailing functions as well as special fastening tasks requiring the exercise of great pressure, or which are not adapted to be performed on a desk or table top.

Although certain specific embodiments of the invention have been shown and described, it is obvious that many modifications thereof are possible. The invention, therefore, is not to be restricted except insofar as is necessitated by the prior art and by the spirit of the appended claims.

That which is claimed as new, is:

1. The combination with a desk stapler comprising a base, a magazine and a stapling arm all hinged together at one end of a fastening tool housing having an opening adjacent one end to slidably receive said base longitudinally and house said desk stapler, means in said housing actuated by manual manipulation of said housing for applying pressure to said stapling arm to perform a stapling operation, and means in said housing for releasably holding said base with said desk stapler in operative position relative to said pressure applying means, said holding means including guide means for supporting said base, flanges extending inwardly from the sides of said housing and spaced from said guide means for overlying said base and holding the latter on said guide means, and a spring latch adjacent said opening for engaging the outer end of said base and releasably retaining said stapler in said housing.

2. The combination described in claim 1 wherein said fastening tool housing comprises a pair of pivoted plier-like grips, one of said grips including said slide opening and holding means and the other of said grips including said pressure applying means.

3. The combination described in claim 1 wherein said fastening tool housing comprises a hollow base member including said slide opening and holding means, and said manually actuated means includes a hand grip lever pivoted on said base member.

4. The combination described in claim 1 wherein said fastening tool housing comprises an elongated base member having said slide opening at one end, said pressure applying means at the other end and said holding means intermediate thereof, said desk stapler being insertable into said base member when its base is pivoted away from and aligned with its stapling arm and magazine, and additional means on said base member for retaining said stapler in such alignment within said base member.

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