

COMBINED STAPLING AND HOLE PUNCHING DEVICE

FIELD OF THE INVENTION

[0001] The present invention relates to stationery, and more particular to stationery which combines multiple features into a single device.

BACKGROUND OF THE INVENTION

[0002] People regularly use different types of stationery. Examples of such stationery are staplers and hole punchers. In many cases, users would use the stapler to staple sheets of sheet materials together, and then use the hole puncher after that so that the sheet materials could be neatly organized together. The stapler and hole puncher are almost always two separate devices.

[0003] Combinations of staplers and hole punchers which can be operated jointly or individually are known. U.S. Patent 4,640,451 to Steiner et al shows one example of a combination of a stapler and a hole puncher. In Steiner et al, only one set of sheet materials can be stapled and/or hole punched at any one time. This is the hole puncher and stapler are on the same side. Also, in Steiner et al it possible to inadvertently create a punched hole in a sheet material which one intends to staple only.

1 [0004] It would therefore be desirable to provide a combined stapling and hole punching
2 device where at least two separate sheet materials can be stapled and hole punched
3 simultaneously, using the same device.
4

5 SUMMARY OF THE INVENTION

6

7 [0005] A device for both punching holes in sheet material and stapling the sheet
8 material comprises a base plate having a front and a back opposite the front, a hole
9 punching assembly comprising a rocking lever, mounted on the base plate and
10 pivotable between an up position and a down position, and at least one hole punch. The
11 device also comprises a stapling assembly comprising a magazine mounted on the
12 base plate and pivotable between a non-stapling position and a stapling position,
13 adapted to store staples, wherein the magazine defines an aperture for the staples to
14 exit from the magazine, and a magazine biasing member positioned on the base plate
15 and biasing the magazine toward the non-stapling position. The aperture is positioned
16 between the front of the base plate and the magazine biasing member and the at least
17 one hole punch is positioned between the magazine biasing member and the back of
18 the base plate.
19

20 [0006] From the foregoing disclosure and the following more detailed description of
21 various embodiments it will be apparent to those skilled in the art that the present
22 invention provides a significant advancement in the technology of stationery. Particularly
23 significant in this regard is the potential the invention affords for providing a convenient

1 way for users to use a combined stapling and hole punching device. Additional features
2 and advantages of various embodiments will be better understood in view of the
3 detailed description provided below.

4 5 BRIEF DESCRIPTION OF THE DRAWINGS 6

7 [0007] Fig. 1 is an exploded isometric view of a combined stapling and hole punching
8 device in accordance with one embodiment.

9
10 [0008] Fig. 2 is an isometric view of the combined stapling and hole punching device of
11 Fig. 1.

12
13 [0009] Fig. 3 is a cross section view of the combined stapling and hole punching device
14 taken along line 3-3 in Fig. 2.

15
16 [0010] It should be understood that the appended drawings are not necessarily to scale,
17 presenting a somewhat simplified representation of various features illustrative of the
18 basic principles of the invention. The specific design features of the combination device
19 as disclosed here, including, for example, the specific dimensions of the stapling
20 assembly, will be determined in part by the particular intended application and use
21 environment. Certain features of the illustrated embodiments have been enlarged or
22 distorted relative to others to help provide clear understanding. In particular, thin
23 features may be thickened, for example, for clarity of illustration. All references to

1 direction and position, unless otherwise indicated, refer to the orientation illustrated in
2 the drawings.

3 4 DETAILED DESCRIPTION OF CERTAIN EMBODIMENTS

5
6 [0011] It will be apparent to those skilled in the art, that is, to those who have knowledge
7 or experience in this area of technology, that many variations are possible for the
8 combined stapling and hole punching device disclosed here. The following detailed
9 discussion of various alternate features and embodiments will illustrate the general
10 principles of the invention with reference to a combined stapling and hole punching
11 device suitable for use in everyday office or school environments. Other embodiments
12 suitable for other applications will be apparent to those skilled in the art given the benefit
13 of this disclosure.

14
15 [0012] Fig. 1 shows an exploded isometric view of a combined stapling and hole
16 punching device 10. This device advantageously allows a user to simultaneously
17 perform an operation on separate sheet materials. The combined stapling and hole
18 punching device 10 has a hole punching assembly 12, a base plate 14, optionally at
19 least one side mount 16 and a stapling assembly 18. The base plate 14 has a front 90
20 and a back 88 opposite the front. The hole punching assembly 12 comprises a rocking
21 lever 20 operatively connected to a base plate 14, and pivotable between an up position
22 and a down position. The rocking lever 20 is also operatively connected to the side
23 mount 16 by short bars 22. The rocking lever 20 shown here is made of a panel 24 with

1 two extensions 26 at each side of the panel 24. There are two sets of holes 28 on each
2 extension 26. A bar 22 extends through a set of holes 28 on the extension 26,
3 preferably the set of holes closer to the back of the base plate, as shown in Fig. 3. The
4 rocking lever has a front side and a back side. Another bar 22 extends through the
5 corresponding set of holes at the other extension 26.

6
7 [0013] A bar biasing member such as spring 30 is coiled around each bar 22. This bar
8 biasing member 30 may be a coil spring with extended legs. The bar biasing member
9 30 biases the rocking lever 20 towards the up position. The pivot axis formed by bar 22
10 is a first pivot axis. The first pivot axis is closer to the back side of the rocking lever than
11 the front side. A rod 32 extends through the second set of holes on the extension 26,
12 preferably the set of holes closer to the front of the base plate, as shown in Fig. 3. A
13 hole punch 34 is used to punch holes in sheet material. The rod 32 extends through
14 hole punch 34. A corresponding rod 32 passes through the other corresponding set of
15 holes and hole punch 34. Rods 32 are biased towards the side mounts 16, and engage
16 the side mounts when the rocking lever is at the up position. The side mounts 16 act as
17 a stop for the rod 32, thereby defining the up position of the rocking lever 20. Slots 86
18 may be provided at sides of the side mounts 16. Slots allow movement of the rods 32
19 with respect to the side mounts as the rocking lever 24 moves from the up position to
20 the down position and vice versa.

21
22 [0014] There is an operating switch 36 in the panel 24 of the rocking lever 20, shown
23 positioned in the side of the panel 24. The operating switch 36 can have a component

1 48, with a semi-circular protrusion 38 protruding sideways from the side of the operating
2 switch 36. The component 48 is preferably made of stainless steel. The protrusion 38
3 can be used as a staple remover, and is extendable beyond the panel 24 of the rocking
4 lever 20 through the side of the panel 24 through a slit 40. A flange 42 on the underside
5 of the component 48 extends downward at a right angle to the component. The flange
6 42 is preferably offset from the center of the component. A flange biasing member 44,
7 optionally a helical spring, is coiled around the flange 42. The helical spring 44 is
8 preferably a rectangular helical spring. There is a ridge 46 at the top of the component
9 48, which helps in the sliding of the operating switch. Alternatively, there is a series of
10 ridges on the top side of the component 48 to further aid in the sliding of the operating
11 switch 36. The semi-circular protrusion 38 and the flange 42 are welded to the
12 component 48. The semi-circular protrusion 38 and the flange 42 may also be glued to
13 the component 48. The semi-circular protrusion 38 and the flange 42 may also be
14 formed of a one-piece or unitary construction. The operating switch 36 may be made
15 entirely out of plastic, metal or any other materials that will be readily apparent to those
16 skilled in the art given the benefit of this disclosure.

17
18 [0015] There is an opening 50 on the panel of the rocking lever 20 which the operating
19 switch extends through and tabs 52 positioned on an underside of the panel 24. The
20 operating switch 36 can rest on the tabs 52. The operating switch 36 is slidable
21 between a stapling position and a hole punching position. For the benefit of a user of
22 the device, there may optionally be the words "Stapler" and/or "Puncher" or the like
23 labeled on the rocking lever 24 or operating switch 36 or otherwise generally adjacent

1 the operating switch. The words may also be engraved on the rocking lever 24 or
2 operating switch 36. The words are meant as a visual aid to inform the users whether
3 they are using the stapling or hole punching function of the device 10.

4
5 [0016] The side mounts 16 are positioned on either side of the base plate 14, and are
6 welded to the base plate 14 or otherwise attached. Optionally, the mounts 16 and base
7 plate 14 may be formed of a one-piece or unitary construction. There are two holes 54
8 on each side mount 16 to help to hold the side mounts 16 to the base plate 14 in place
9 during welding. There is a third hole 56 in the each of the side mounts 16, each
10 adapted to receive the hole punch 34 in the hole punching assembly. Hole 56 is aligned
11 with corresponding hole 57 in the base plate, allowing the hole punch to extend past the
12 base plate when the rocking lever is in the down position. There is an overhang 58 from
13 the side mount 16 which receives the hole punch 34.

14
15 [0017] Fig. 2 shows an isometric view of the device 10. Advantageously, stapling
16 occurs near the front 90 of the base plate and hole punching occurs near the back 88.
17 The operating switch 36 is movable from a hole punch position to a magazine
18 engagement position. When the operating switch is in the magazine engagement
19 position, pivoting of the rocking lever 20 toward the down position biases the magazine
20 74 to the stapling position. When the operating switch is in the hole punch position,
21 pivoting of the rocking lever toward the down position does not bias the magazine 74 to
22 the stapling position. Thus, in the stapling position, both stapling and hole punching can

1 occur. When in the hole punch position, only hole punching can occur since the flange
2 42 does not engage the magazine.

3
4 [0018] The base plate 14 defines an opening 60 at a top of the base plate which leads
5 into a cavity bottomed by floor 92. The stapling assembly 18 protrudes from and is at
6 least partially received by the opening 60. A staple anvil 62 is mounted on the floor 92,
7 and is adapted to receive staples from the magazine, close the legs of the staples and
8 thereby secure sheet material together. There is a slit 64 at the top of the base plate
9 14, positioned at a side of the opening 60. The slit 64 is adapted to receive the flange
10 42 when the operating switch 36 is in the hole punch position. A slot 66 is formed at a
11 side of the base plate 14, allowing sheet materials to enter into the cavity and be
12 stapled. The slot 66 is adapted to receive more than one piece of sheet material, and
13 wide enough to ensure that the sheet material is not stapled too near or too far from the
14 corner. Optionally the base plate 14 may define compartments 68 which capture debris
15 such as punched out sheet material. The debris is prevented from dropping out from
16 the base plate 14 by a covering 84, which is fitted onto the base plate 14. The covering
17 84 can be made of plastic, or any other material.

18
19 [0019] Where a compartment is defined by the base plate, second holes 70 may be
20 provided and pivot bar 72 extends between the two second holes 70. The stapling
21 assembly 18 is mounted on the pivot bar which is in turn operatively mounted on the
22 base plate and defines a second axis of pivotable movement. The stapling assembly 18
23 comprises magazine 74 having a front end and a back end such that the second axis is

1 closer to the back end than the front end. Also, the back side of the rocking lever and
2 the back end of the magazine are closer to the back 88 of the base plate than to the
3 front 90 of the base plate. A stapler catch 89 is positioned within the magazine 74.
4 Stapler catch 89 has two ends. An extension 91 is located at one end of the stapler
5 catch 89. Magazine 74 further comprises a jut 83. Jut 83 may be formed of a one-piece
6 or unitary construction. A spring 87 is attached between extension 91 and jut 83.
7 Staples are placed within the magazine and ejected into the sheet material near the
8 front end. The stapler catch 89 may be used to secure the staples, and to assist in
9 guiding the staples to move toward the front end of the stapling assembly 18. The pivot
10 bar 72 passes through holes 76 at one end of the magazine 74. As noted above, the
11 magazine 74 is pivotable about the pivot bar 72. Opposite the pivot bar 72 there is an
12 aperture 78 which allows staples to be ejected. There is optionally a center line 80
13 marked along the center of the magazine 74 which helps users to align sheet materials
14 for stapling or hole punching. There is also optionally a centre line 81 marked along a
15 center of the stapler catch 89 which helps users to align sheet materials for stapling or
16 hole punching. As shown in Fig. 3, the rocking lever is pivotable about a first axis and
17 the magazine is pivotable about the second axis. Advantageously the second axis is
18 different from the first axis, allowing for at least partially independent operation of the
19 hole punching assembly and the stapling assembly. A magazine biasing member 82,
20 such as a spring, is positioned between the base plate 14 and the magazine 74. The
21 spring 82 can be glued onto the magazine 74. The spring 82 biases the magazine 74
22 from a non-stapling position to a stapling position and vice versa. Other embodiments

1 for a magazine biasing member will be readily apparent to those skilled in the art, given
2 the benefit of this disclosure.

3
4 [0020] When the rocking lever 20 is moved from the up position to the down position (for
5 example, by pressure exerted on the rocking lever 20), and the operating switch is in
6 the hole punch position, the flange 42 passes through the slit 64 on the base plate 14
7 without engaging the stapling assembly 18. At the same time, the two hole punches 34
8 pass through the holes 56 in the base plate 14. When sheet material is placed between
9 the holes 56 and the hole punches 34, and the rocking lever 20 is moved to the down
10 position, then the hole punches 34 will cut the sheet material and creating two holes.
11 When the rocking lever 20 is moved back from the down position to the up position (for
12 example, when the pressure is released and the bar biasing spring 30 biases the
13 rocking lever 20 to the up position), the hole punches 34 move away from the base
14 plate 14.

15
16 [0021] When the operating switch 36 is moved to the magazine engagement position
17 the flange 42 is in alignment with the stapling assembly 18. When the rocking lever 20 is
18 moved from the up position to the down position, the flange 42 engages the stapling
19 assembly 18, and the magazine 74 is biased from the non-stapling position to the
20 stapling position. If there are staples in the magazine 74, when the rocking lever 20 is
21 moved to the down position, at least one staple exits the magazine 74 through the
22 aperture 78 in response to flange 42 engaging a staple in the magazine. The staple
23 contacts the staple anvil 62, and the legs close upon the contact. At the same time

1 when the magazine 74 moves from the non-stapling position to the stapling position, the
2 hole punches 34 pass through the holes 56 and extend beyond the base plate 14. This
3 allows a user to punch holes in one set of sheet materials and staple another set of
4 sheet materials simultaneously.

5
6 [0022] As shown in the Figs., the aperture 78 of the magazine 74 is positioned closer to
7 the front 90 than the magazine biasing member 82. The first pivot axis is positioned
8 closer to the back 88 than the magazine biasing member 82. Advantages of this device
9 include time saved as two sheet materials can be operated on at the same time. Also,
10 the device eliminates the need for users to use two separate devices. This reduces
11 frustrations when one of the devices is not immediately available when the user needs
12 to use it. This also reduces the total space and weight required, making the combined
13 stapling and hole punching device very convenient to carry about.

14
15 [0023] From the foregoing disclosure and detailed description of certain embodiments, it
16 will be apparent that various modifications, additions and other alternative embodiments
17 are possible without departing from the true scope and spirit of the invention. The
18 embodiments discussed were chosen and described to provide the best illustration of
19 the principles of the invention and its practical application to thereby enable one of
20 ordinary skill in the art to use the invention in various embodiments and with various
21 modifications as are suited to the particular use contemplated. All such modifications
22 and variations are within the scope of the invention as determined by the appended

- 1 claims when interpreted in accordance with the breadth to which they are fairly, legally,
- 2 and equitably entitled.

1 CLAIMS

2 What is claimed is:

3
4 1. A device for both punching holes in sheet material and stapling the sheet
5 material, comprising in combination;

6 a base plate having a front and a back opposite the front;

7 a hole punching assembly comprising a rocking lever, mounted on the base plate
8 and pivotable between an up position and a down position, and at least one hole punch;

9 a stapling assembly comprising a magazine mounted on the base plate and
10 pivotable between a non-stapling position and a stapling position, adapted to store
11 staples, wherein the magazine defines an aperture for the staples to exit from the
12 magazine; and

13 a magazine biasing member positioned between the base plate and the
14 magazine, and biasing the magazine toward the non-stapling position;

15 wherein the aperture is positioned between the front of the base plate and the
16 magazine biasing member and the at least one hole punch is positioned between the
17 magazine biasing member and the back of the base plate.

18
19 2. The device of claim 1, wherein the hole punching assembly further comprises an
20 operating switch movable from a hole punch position to a magazine engagement
21 position, wherein

1 when the operating switch is in the magazine engagement position, pivoting of
2 the rocking lever toward the down position biases the magazine to the stapling position,
3 and

4 when the operating switch is in the hole punch position, pivoting of the rocking
5 lever toward the down position does not bias the magazine to the stapling position.

6
7 3. The device of claim 2 further comprising a flange attached to the operating
8 switch, wherein when the operating switch is in the magazine engagement position,
9 pivoting of the rocking lever urges the flange to engage the magazine.

10
11 4. The device of claim 3 further comprising a flange biasing member attached to the
12 flange.

13
14 5. The device of claim 4 wherein the flange biasing member is a rectangular helical
15 spring.

16
17 6. The device of claim 3 further comprising a slot in the rocking lever and at least
18 one tab attached on the bottom of the rocking lever, wherein the operating switch is
19 positioned between the slot and the at least one tab.

20
21 7. The device of claim 6, further comprising a protrusion on the operating switch,
22 wherein the protrusion extends beyond the rocking lever.

1 8. The device of claim 2, wherein the hole punching assembly further comprises at
2 least one side mount extending from the base plate, the side mount having at least one
3 hole punch aperture, and the at least one hole punch is able to extend through at least
4 one hole punch aperture.

5
6 9. The device of claim 8, wherein the hole punching assembly further comprises at
7 least one bar, the rocking lever is pivotable around the at least one bar, and a bar
8 biasing member biases the rocking lever towards the up position.

9
10 10. The device of claim 9, wherein the hole punching assembly further comprises at
11 least one rod operatively connected to the at least one hole punch, wherein the rod
12 engages the at least one side mount when the rocking lever is at the up position.

13
14 11. The device of claim 6, wherein "Stapler" and "Puncher" are present at least
15 adjacent the operating switch.

16
17 12. The device of claim 4, wherein the base plate has a slot adapted to receive the
18 flange, and the base plate receives the flange when the operating switch is in the hole
19 punch position and the rocking lever is in the down position.

20
21 13. The device of claim 11, wherein the base plate defines at least part of at least
22 one compartment, and the at least one hole punch is extendable into the at least one
23 compartment when the rocking lever is in the down position.

1

2 14. The device of claim 13, wherein the stapling assembly further comprises a pivot
3 bar and the magazine is pivotable about the pivot bar.

4

5 15. The device of claim 14, further comprising a staple anvil on the base plate.

6

7 16. The device of claim 15, wherein the base plate defines an opening adapted to at
8 least partially receive the stapling assembly.

9

10 17. The device of any of claims 1-16, wherein a cover is attached to the base plate.

11

12 18. The device of any of claims 1-17 wherein the rocking lever is pivotable about a
13 first axis and the magazine is pivotable about a second axis different from the first axis.

14

15 19. The device of claim 18 wherein the rocking lever has a front side and a back side
16 and the first axis is closer to the back side than the front side, and the magazine has a
17 front end and a back end, and the second axis is closer to the back end than to the front
18 end.

19

20 20. The device of claim 19 wherein the back side and back end are closer to the
21 back of the base plate than the front of the base plate.

22

1 21. A device for both punching holes in sheet material and stapling the sheet
2 material, comprising in combination;
3 a base plate having a front and a back opposite the front;
4 a hole punching assembly comprising a rocking lever, mounted on the base plate
5 and pivotable about a first axis between an up position and a down position, and at least
6 one hole punch; and
7 a stapling assembly comprising a magazine mounted on the base plate and
8 pivotable about a second axis different from the first axis between a non-stapling
9 position and a stapling position, adapted to store staples, wherein the magazine defines
10 an aperture for the staples to exit from the magazine.