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Remarks:
The reference to figure 10 in the description is deemed to be deleted (Rule 43 EPC).

(54) Hole punch having a latch member

(57) A hole punch (1) has a base (2) provided with a support element (9) which pivotally supports a handle (4) for movement about a first pivot axis (1018). A latch member (6) is connected to the handle (4) about a second pivot axis (1720) which is offset from and parallel to the first axis. The latch member (4) has a projection (21) thereon. The support element defines an abutment face (16) adjacent to the path followed by the projection (21) on movement of the handle (4) when the latch member is in a release position, the abutment face (16) being positioned to engage the projection when the latch (6) has been rotated relative to the handle to be in a locked position, and the handle is moving upwardly from a depressed position.

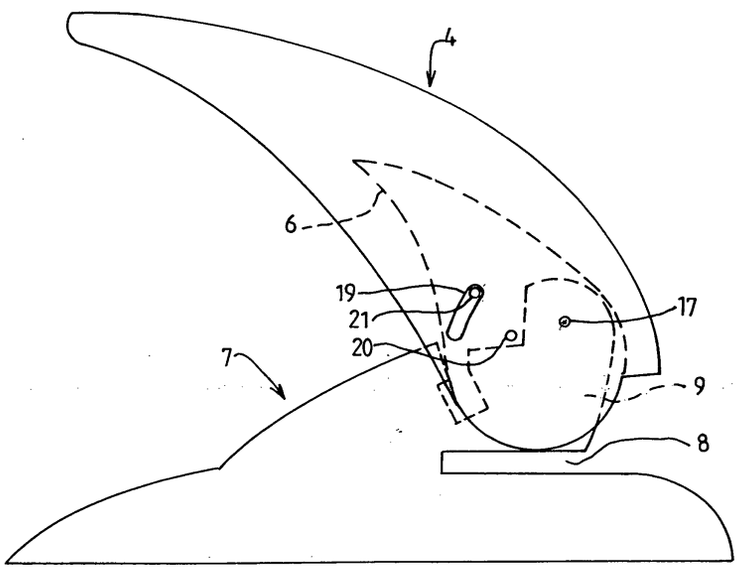

FIG 6

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Description

[0001] **THIS INVENTION RELATES** to a hole punch, and more particularly relates to a hole punch provided with a locking mechanism to lock the actuating handle of the punch in a lowered position.

[0002] A typical hole punch, for punching holes in paper, for example to facilitate the fling of the paper in a file such as a lever arch file, has a base on which there are dies defining apertures, and a pivotally mounted actuating handle which is associated with plungers that may pass through the dies. The plungers are initially in an elevated position spaced above the dies to permit paper to be introduced to the space between the plungers and the dies, and the handle may then be depressed to drive the plungers down, through the paper into the dies, thus forming holes in the paper.

[0003] It has been proposed to provide a hole punch of this type with a locking mechanism to lock the handle in a depressed condition, to facilitate storage and transport of the punch.

[0004] The present invention seeks to provide an improved punch of this type.

[0005] According to this invention there is provided a hole punch for punching holes in paper, the punch having a base and an actuating handle pivotally connected to a support element provided on the base for pivotal movement about a first axis, the handle having a latch member pivotally mounted thereon for pivotal movement about a second axis parallel to but spaced from the first axis between a release position and a locking position, the latch member having a projection thereon, the support element defining an abutment face located adjacent the path followed by the projection on movement of the handle when the latch element is in the release position, the abutment face being positioned to engage the projection when the latch is in the locked position and the handle is moving upwardly from a depressed position.

[0006] Preferably the projection is a pin which passes into an abutment slot formed in the support element, one wall of the slot defining the abutment surface.

[0007] Conveniently the wall of the slot is a cranked wall, the slot having a relatively narrow portion and a relatively wide portion, the cranked wall defining the abutment surface in the region where the narrow portion and the wide portion join.

[0008] Preferably one wall of the slot is arcuate and the centre of curvature is substantially coincident with the first pivot axis.

[0009] Conveniently the projection passes through an arcuate passage formed in the handle, the centre of curvature of the arcuate passage being substantially coincident with the second pivot axis.

[0010] In order that the invention may be more readily understood and so that further features thereof may be appreciated, the invention will now be described by way of example with reference to the accompanying drawings, in which;

FIGURE 1 is a front perspective view of a hole punch in accordance with the invention,

FIGURE 2 is a rear perspective view of the punch of Figure 1

FIGURE 3 is a side view of a support plate provided within the punch,

FIGURE 4 is a side view of the actuating handle of the punch,

FIGURE 5 is a diagrammatic view of the latch of the punch,

FIGURE 6 is a diagrammatic view showing the handle mounted on the support plate,

FIGURE 7 is a diagrammatic view showing the latch mounted to the combination of the handle and the support plate, when the punch is in a first condition,

FIGURE 8 is a view corresponding to Figure 7 showing normal operation of the punch,

FIGURE 9 is a view corresponding to Figure 8 but showing the latch moved to the latching position, and

FIGURE 10 is a view corresponding to Figure 9 showing the handle in the latched condition.

[0011] A hole punch 1 in accordance with the invention is generally of traditional design, having a base plate 2 provided with dies defining apertures 3, and a pivotally mounted actuating handle 4 that can drive plungers 5 through the dies to punch paper introduced to the space that initially exists between the plungers and the dies.

[0012] The handle 1 is provided with a catch element 6 which, as will become clear from the following description, may move, relative to the handle 4, between a release position, in which the punch may operate in the normal way, and a latching position, in which the handle will be retained in a depressed or lowered position. In Figures 1 and 2 the catch element 6 is shown in the release position.

[0013] Figure 3 shows a support plate 7 provided within the punch. The support plate defines a generally horizontal slit 8 which can receive an edge part of sheets of paper to be punched. Located above the horizontal slit 8 is a lug 9 defining a pivot axis 10. The handle 4 (as will be described below) is mounted on the support plate to pivot about the pivot axis 10.

[0014] Located behind the lug is an abutment slot 11. The slot has, on the side closest to the pivot axis 10, an arcuate wall 12, the centre of curvature being substan-

tially coincident with the pivot axis 10. The opposed wall 13 is a cranked wall, and is configured so that the lower part 14 of the slot is of greater width than the upper part 15 of the slot. At the point where the width of the slot changes the side wall 13 defines a region 16 which is an abutment region, and which lies on a line which intersects the pivot axis 10, or which is inclined to such a line by only a few degrees.

[0015] The handle 4, as shown in Figure 4, is elongate and has a pivot point 17 by means of which it will be mounted for rotation relative to the support plate 7 about the axis 10. At a point spaced from the pivot point 17 there is a mounting point 18 where the latch 6 will be mounted to the handle 4. The handle 4 also defines an arcuate passage 19 which is spaced from the mounting point 18, but which has a centre of curvature which is substantially coincident with the mounting point 18.

[0016] The latch 6, in the described embodiment, is of 'tear' shape and defines an axis 20 to be connected to the mounting point 18 so that the latch may pivot relative to the handle 4. The axis 20 is parallel with, but spaced from, the axis 10. The latch 6 also carries a pin 21 projecting therefom at a point spaced from the axis 20. The pin, as will be described, is of asuch a length that when the latch is mounted to the handle 4 and the handle 4 is mounted to the support plate 7, the pin may pass through the arcuate passage 19 in the handle 4 and into the abutment slot 11 formed in the support plate 7.

[0017] Figure 6 shows the complete assembly of the handle 4 and catch 6 when mounted on the support plate7. The handle 4 can pivot relative to the support plate 7 about the axis 10, and such a pivoting movement will actuate the plungers. The latch 6 will move together with the handle 4. The pin 21 is at the upper end of the arcuate passage 19. As the handle 4 and latch 6 move together the pin 21 will follow an arcuate path and will enter the upper part 15 of the abutment slot 11. The punch 1 will then have the condition shown in Figure 7. If the handle 4 is then release a spring biassing mechanism (not shown, but of conventional design) will return the punch to the initial condition of Figure 6.

[0018] However, if it is desired to latch the handle in a depressed condition, the catch 6 is rotated about axis 20 relative to the handle 4 while the handle is pressed down, as shown in Figure 7. This rotation of the catch 6 moves the catch to a locking position and moves the pin 21 to the lower end of the arcuate passage 19. Due to the offset between the axis 10 (the pivot axis of the handle relative to the support plate) and the axis 20 (the pivot axis of the latch 6 relative to the arm 4) the pin 21 has moved radially outwardly relative to the axis 10. The configuration of the lower part 14 of the abutment slot 11 permits this movement. The pin 21 now lies adjacent the lower part of the cranked side wall 13. This is the condition shown in Figure 8.

[0019] If the handle is now released, the handle will move upwardly under the applied spring bias, but the pin 21 will then engage the abutment surface 16 defined by the cranked sidewall 13 of the abutment slot 11, thus preventing the handle 4 from moving further in an upward direction. The handle 4 is thus locked in a depressed position, which may facilitate transport and storage of the punch.

[0020] If the punch is to be re-used the handle is depressed, returning the punch to the position of Figure 8, and the latch 6 is returned to the initial or release position, thus returning the punch to the condition shown in Figure 7. The handle 4, when released, will then move fully upwardly.

[0021] In the present specification "comprises" means "includes or consists of" and "comprising" means "including or consisting of'.

[0022] The features disclosed in the foregoing description, or the following claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, as appropriate, may, separately, or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

Claims

1. A hole punch for punching holes in paper, the punch having a base and an actuating handle pivotally connected to a support element provided on the base for pivotal movement about a first axis, the handle having a latch member pivotally mounted thereon for pivotal movement about a second axis parallel to but spaced from the first axis between a release position and a locking position, the latch member having a projection thereon, the support element defining an abutment face located adjacent the path followed by the projection on movement of the handle when the latch element is in the release position, the abutment face being positioned to engage the projection when the latch is in the locked position and the handle is moving upwardly from a depressed position.

2. A punch according to claim 1 wherein the projection is a pin which passes into an abutment slot formed in the support element, one wall of the slot defining the abutment surface.

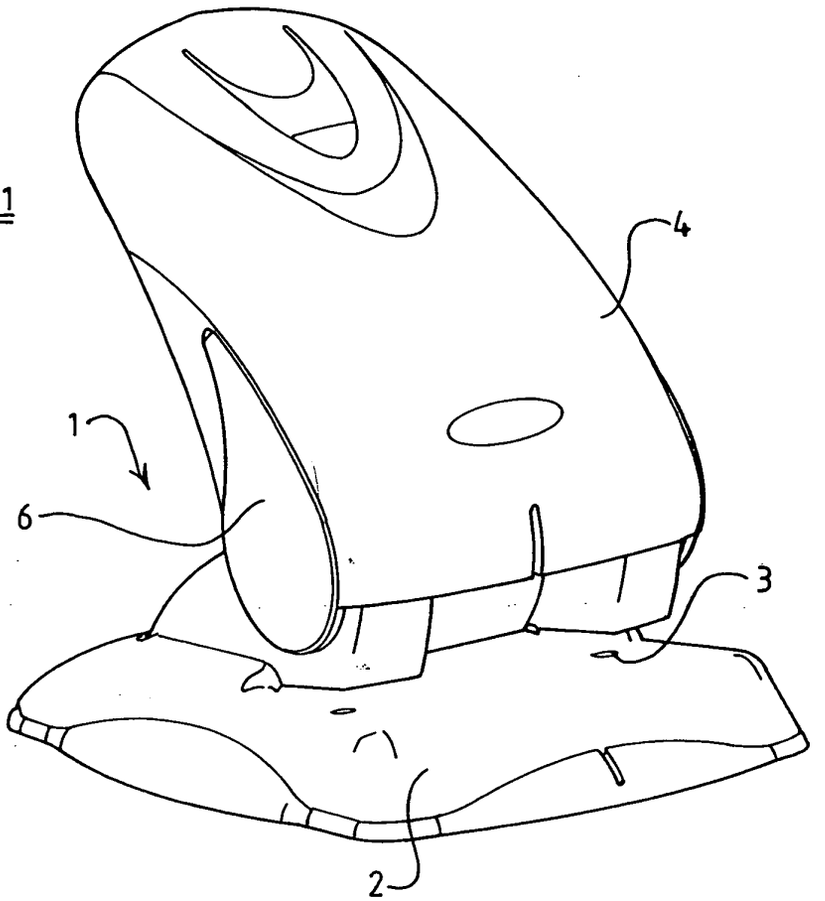
3. A punch according to claim 2 wherein the wall of the slot is a cranked wall, the slot having a relatively narrow portion and a relatively wide portion, the cranked wall defining the abutment surface in the region where the narrow portion and the wide portion join.

4. A punch according to claim 3 wherein one wall of the slot is arcuate and the centre of curvature is sub-

stantially coincident with the first pivot axis.

5. A punch according to any one of the preceding claims wherein the projection passes through an arcuate passage formed in the handle, the centre of curvature of the arcuate passage being substantially coincident with the second pivot axis.

FIG 1



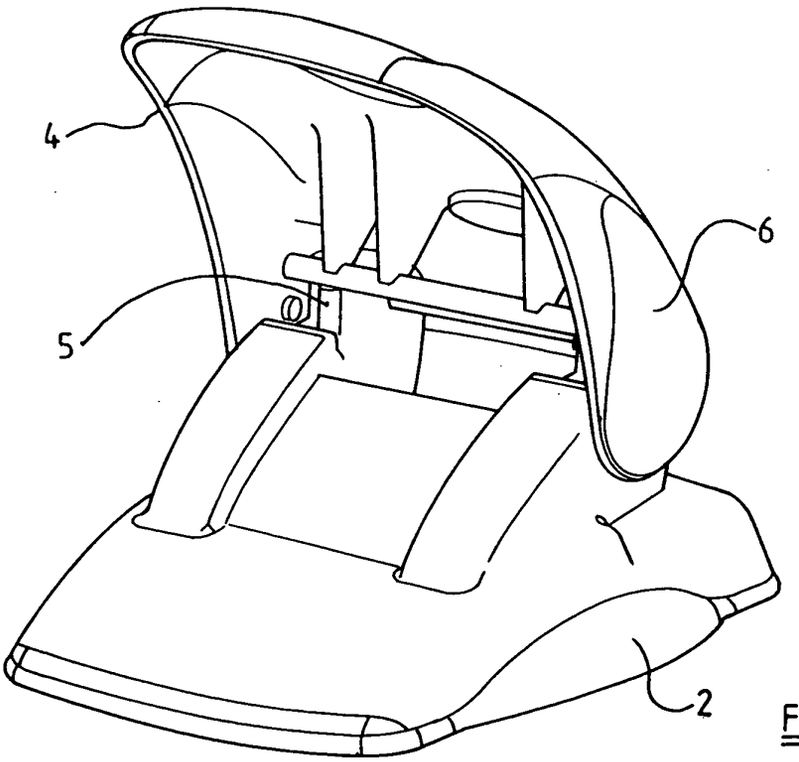


FIG 2

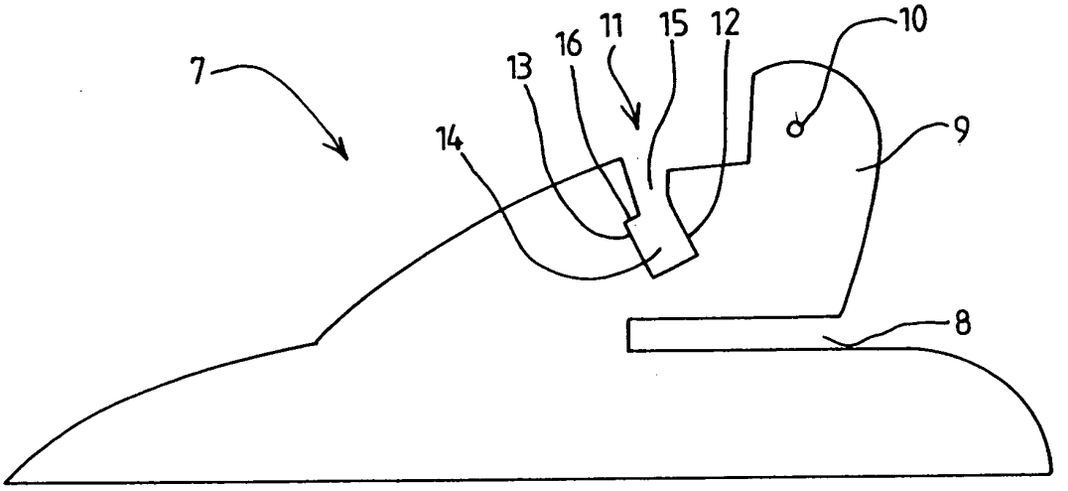


FIG 3

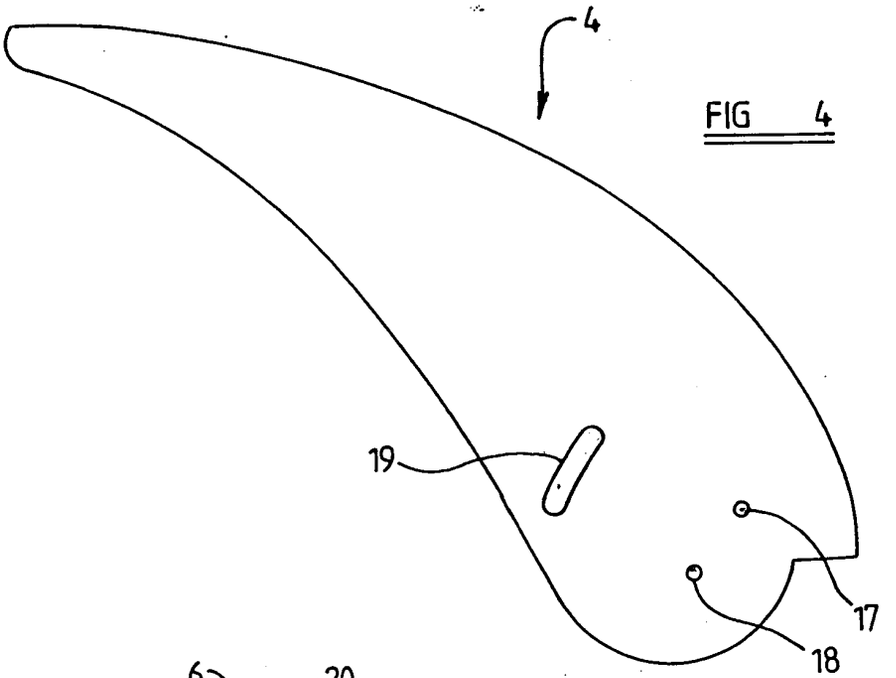


FIG 4

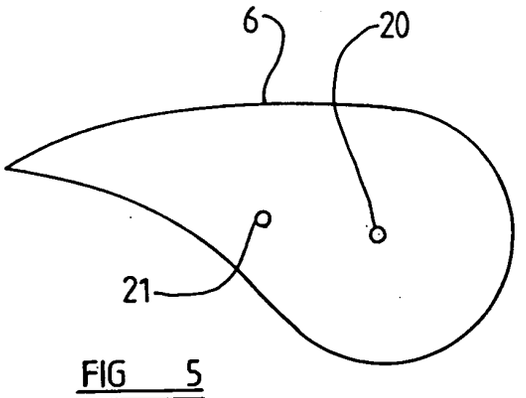


FIG 5

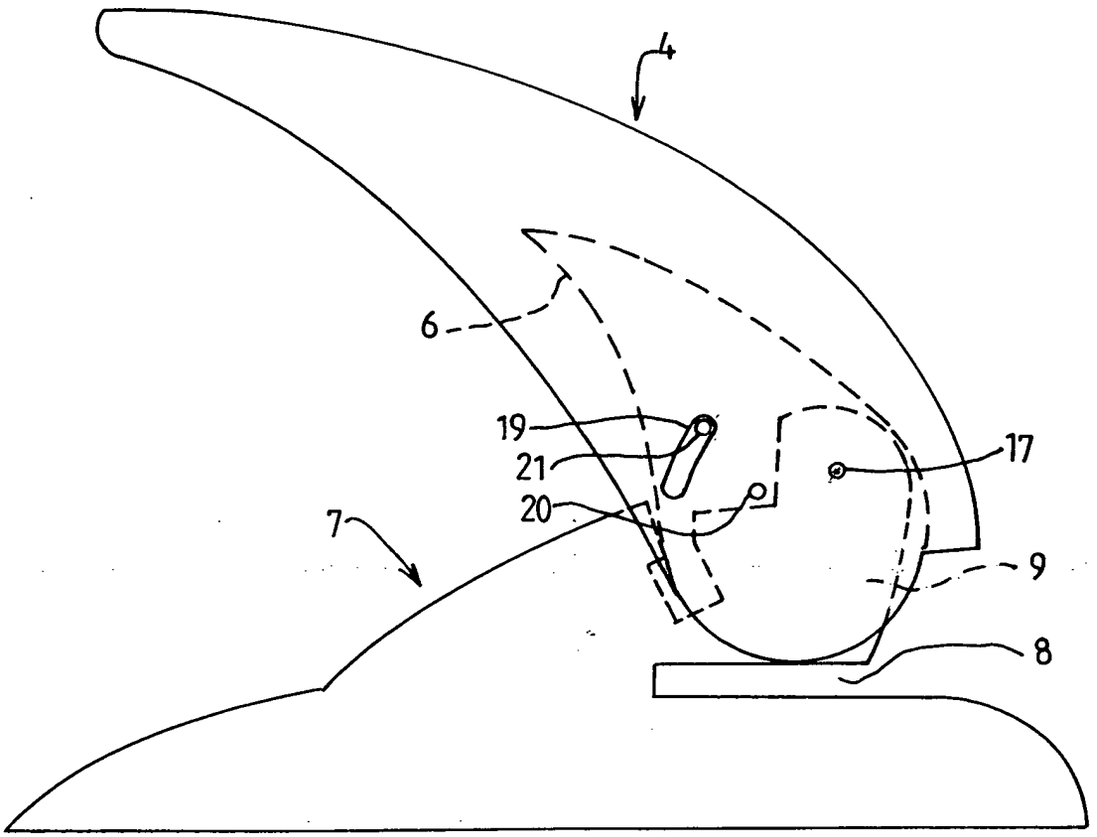


FIG 6

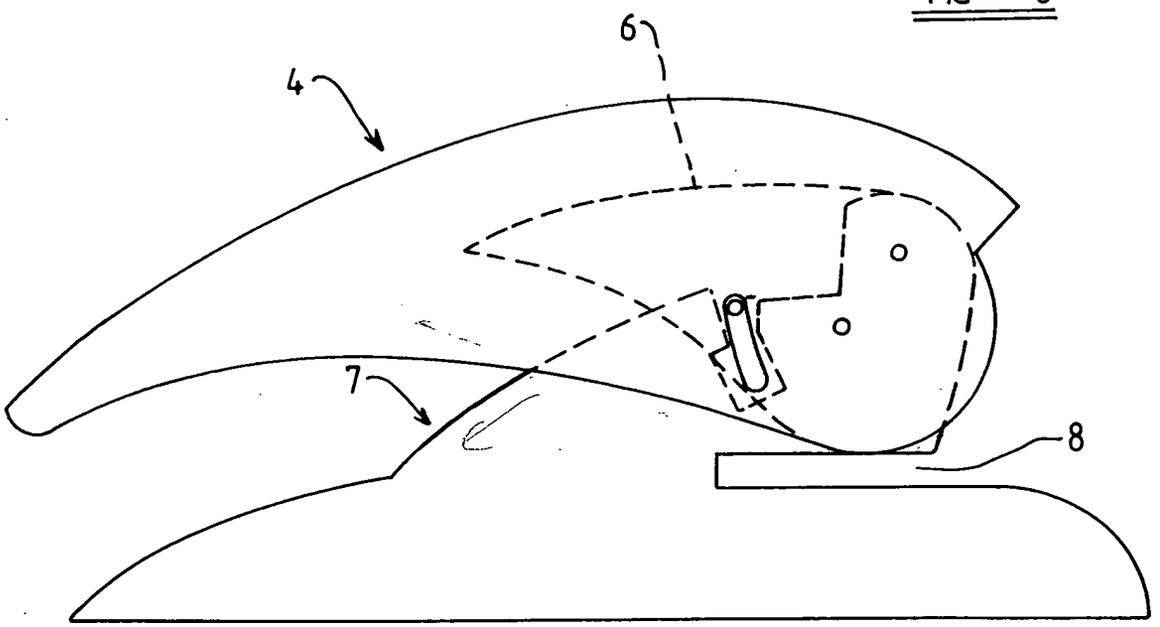


FIG 7

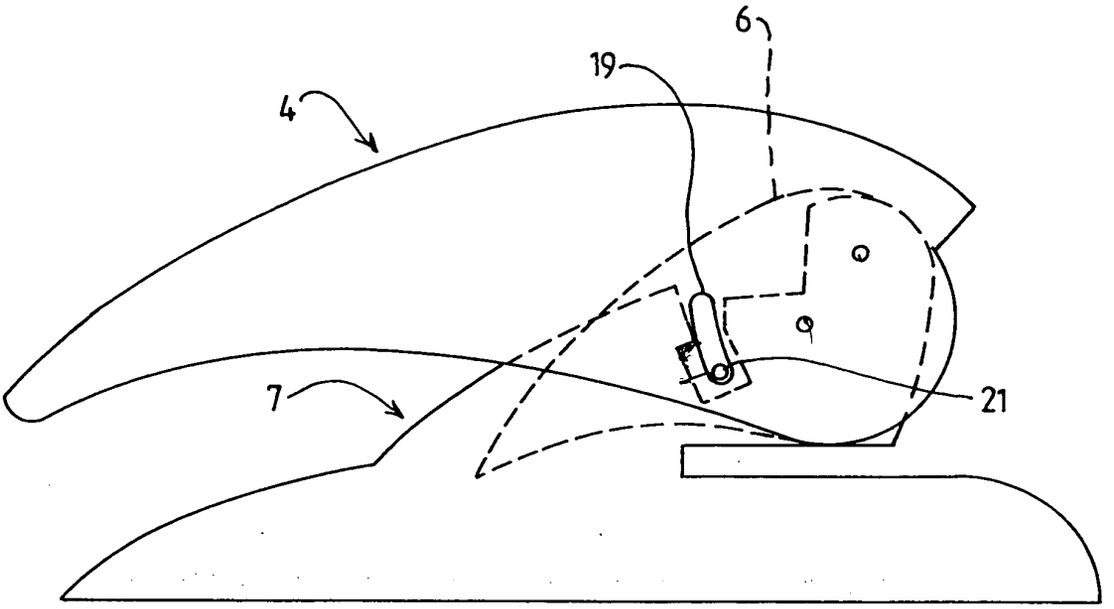


FIG 8

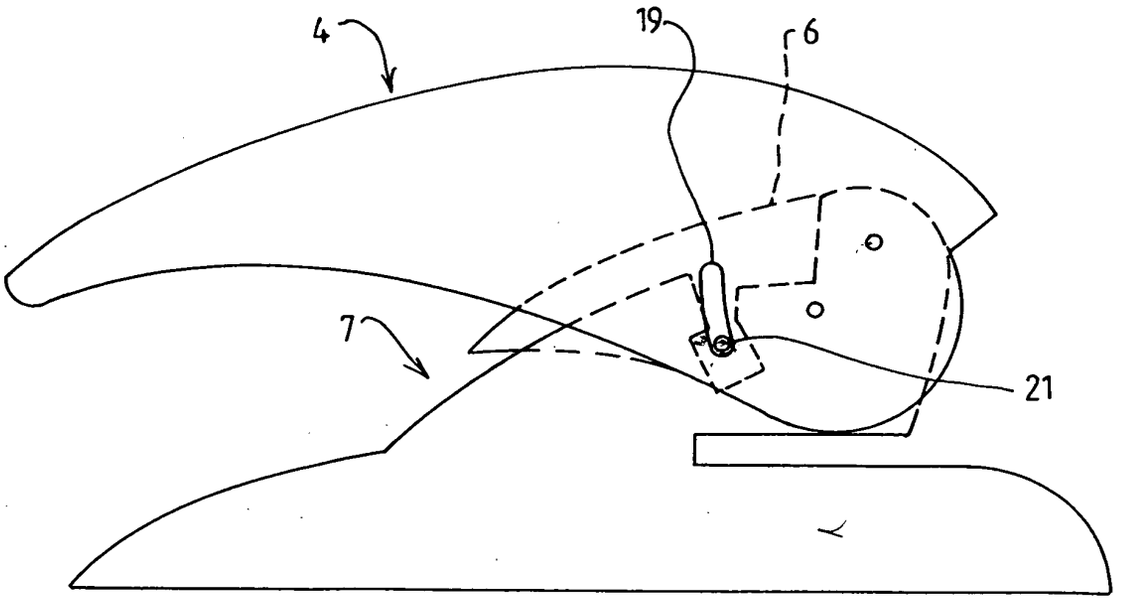


FIG 9