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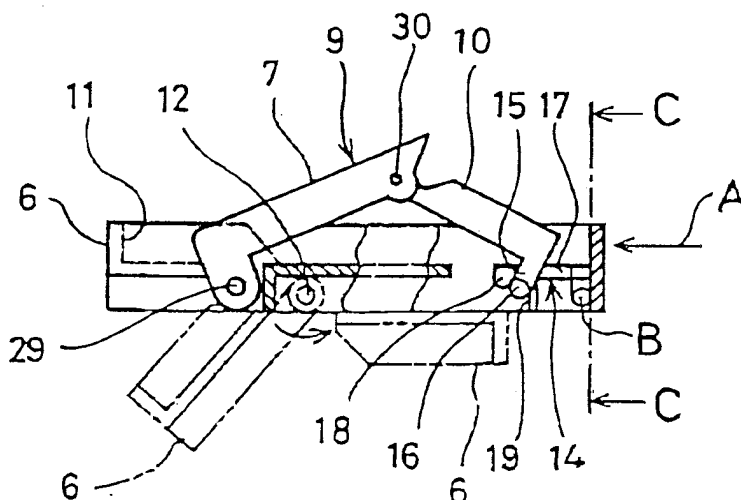
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(54) **Gauge punch**

(57) There is provided a gauge punch capable of holding a paper (1) easily while carrying a gauge (2) in one hand. The link member (10) on which the projection is formed is connected to the paper holding means and the projection is hooked with the predetermined position formed on the base plate (5). Thus being constructed, the paper holding means is kept opened while the pro-

jection (16) of the link member (10) is hooked with the hooking portion of the engaging portion (14), whereby, since by pushing the paper holding portion the projection is released from being hooked with the hooking portion (19), the paper holding portion holds the paper, the gauge (2) can easily hold the paper while carrying the gauge in hand.

FIG.1



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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a gauge punch, in particular, a gauge punch which comprises a gauge to make papers positioned and held there and a punch to pierce a given binding holes in the papers.

2. Description of the Related Art

[0002] In a case of filing papers on a file book, it is necessary to punch them with filing holes in accordance with the filing book, for example, when punching 30 of filing holes on a paper of the size JIS (Japanese industrial standard) A4, conventionally a punch disposed with a line of 30 punch members has been used. However, in the case where several number of papers have to be punched, there has been a problem, since a large force was needed to push down a handle of the punch and in addition, due to 30 pieces of punch members disposed in a line, the punch body itself has become large.

[0003] Then, the present applicant has invented, as shown in Fig. 8, a gauge punch which comprises a gauge 102 to hold a paper 101, a punch 104 to punch filing holes 103 on the paper 101. The gauge 102 comprises a scale (not shown) and a paper holding member 107 which is provided on a fulcrum 105 rotatably and holds the paper 101 positioned with the gauge 102. This gauge 102 functions as follows, first, the paper holding member 107 is made to rotate around the fulcrum 105 to be opened and the end of paper to be cut (not shown) is inserted to abut it to the scale (not shown) to position the paper 101 at the gauge 102. Then, by rotating the paper holding member 107 around the fulcrum 105 and clamping the paper 101 with the paper holding member 107 and a base plate 106 of the gauge 102, the magnets which are provided on the opposing surfaces of the paper holding member 107 and the base plate 106 respectively attract each other magnetically to cause a gauge to hold the paper 101 with the gauge 102.

[0004] Next, in the state where the paper 101 is held at a given position, by rotating a scale not shown and retreating it to a bottom portion of the base plate 106, the binding margin of the paper 101 is made to be projected from the gauge 102 and that binding margin is inserted in the insertion opening of the punch 104, and a projection 108 which is formed on the punch 104 is made to be coupled selectively in turn with the positioning portions 109 formed on the paper holding member 107 so as to position the punch 104 to the paper 101, and the binding holes 103 are punched on the paper 101.

[0005] However, if there is no table on which the gauge 102 is put, the gauge has to be operated while holding the gauge with one hand, it has been difficult to,

in particular, an operator with a small hand.

SUMMARY OF THE INVENTION

[0006] The present invention has been made in the light of the above-described problem and the object thereof is to provide a gauge punch which can hold a paper with one touch while keeping the holding member opened, and even if there is no table to be put, the binding holes can be easily opened while holding the gauge punch with one hand.

[0007] In order to attain the above-described object, according to a first aspect of the present invention, in a gauge punch which comprises a gauge which holds a paper by a paper positioning means and a punch to pierce the paper for binding holes, wherein the punch is made to be positioned to the gauge by a punch positioning means, the paper holding means is kept opened and the paper is held by pushing the paper holding portion.

[0008] Thereby, since the paper can be inserted in the gauge while the paper holding means is opened and then it is closed for holding the paper by pushing the paper holding means, even if there is no table, the paper can be easily punched for binding holes while holding the gauge with one hand.

[0009] Further, according to a second aspect of the present invention, in the first aspect of the present invention, the paper holding means comprises link members on both sides of the paper holding portion, and by hooking the link members with link hooking members, the paper holding member is kept opened while the paper holding portion is opened.

[0010] By this structure, the paper holding means is kept opened in its paper holding portion by the hooking of the link member with the link hooking member.

[0011] Further, according to a third aspect of the present invention, in the first or second aspect of the present invention, the link hooking means makes the projections formed on the link members engaged and hooked with the engaging portion formed on the base plate of the gauge, so that the paper holding portions are kept opened.

[0012] Thereby, the link hooking means is made the projections to engage with the engaging portion whereby the paper holding portion is kept opened.

Further, according to a fourth aspect of the present invention, the punch is provided with a paper guide portion for guiding a paper to be punched at an opening portion of the punch, and that guide portion is used also a handle to open a chip accommodating chamber.

[0013] By thus constituted, when disposing punched chips, the chip container can be opened by the paper guide portion as a handle, so that the chips are easily disposed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] In the accompanying drawings:

Fig. 1 shows a perspective view of an embodiment of the gauge of the present invention, in which it is kept opened while the paper holding portion is opened;

Fig. 2 is a plan view of the gauge punch in which the punch is positioned at the gauge;

Fig. 3 is a perspective view of the gauge in which the scale is going to rotate;

Fig. 4 is a perspective view showing the state where the projection is engaged with the engaging position;

Fig. 5 is a sectional view of C-C line of Fig. 1;

Fig. 6 is a sectional view of D-D line of Fig. 5;

Fig. 7 is a front view showing the state where the gauge is positioned at the gauge; and

Fig. 8 is a perspective view showing a conventional gauge punch.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0015] An embodiment of the present invention will be described with reference to Figs. 1 - 7. First, outline of a gauge punch of the present embodiment is explained. As shown in Fig. 2, the gauge punch according to the present invention comprises a gauge 2 holding a paper 1 and a punch 3 for providing a given binding holes, wherein the punch 3 is positioned at a plurality of punch positioning portions 4 provided on the gauge 2 selectively and a given binding holes are provided on the paper 1 at the selected position, whereby the desired binding holes are finally formed on the paper 1.

[0016] Next, each of the elements of the gauge 2 of an embodiment of the present invention is explained in details. As shown in Figs. 1 - 3, the gauge 2 comprises a base plate 5, a scale 6 to position the paper 1 by being abutted thereto, paper holding members 9 formed on both ends of the paper holding portion 8 holding the paper 1 held by the supporting portion 7 one end of which is connected rotatably to the base plate 5, and a link member 10 one end of which is connected rotatably to the other end of the supporting portion 7 and the other end is slidably provided on the base plate 5.

[0017] The scale 6 is, as shown in Fig. 1, provided on the base plate 5 rotatably on a fulcrum 12, and is adapted to form a positioning means for a paper 1 to be inserted along A direction of Fig. 1 and abutted to a paper positioning portion 11. Thus, the scale 6 constitutes a paper positioning means. And, the scale 6 is adapted to be retreated back to the bottom portion of the base plate by being turned around the fulcrum 12 (see two dotted chain line of Fig. 1), by retreating the scale 6, as shown in Fig. 2, a binding margin of the paper 1 is projected perpendicular to the longitudinal edge of the base plate 5.

[0018] Further, the paper holding member 9 comprises the paper holding portion 8 and the supporting portions 7 which are formed in a unitary manner, mounted

on the base plate 5 rotatably around the fulcrums 29 of the base plate 5, and provided with a stretch 13 parallel with the paper holding portion 8 and being provided with punch positioning portions 4. Now, as shown in Fig. 7, the gauge 2 and the punch 3 are adapted to be arranged in such a manner as the gauge 2 and the punch 3 are, when the scale 6 is retreated, put on a table, the paper 1 projected from the gauge 2 become coplanar with the opening of the punch.

[0019] The link members 10, as shown in Fig. 1, is connected rotatably to each of the supporting portions 7 of the paper holding member 9 with one end of the link around fulcrums 30, and the other ends of the link members 10 are engaged with engagement portions 14 formed on a given portions of the base plate 5. On each of the other ends of the link members 10, as shown in Figs. 1, 5 and 6, a pair of elastic arms 15 are provided in such a manner as those are flexible in a coming close direction with each other. Further, on the tip ends of the pair of arms 15 projections 16 are formed outward.

[0020] The engagement portions 14 are provided on both side ends of the longitudinal direction of the base plate 5, which comprises a pair of parallel rail guides 17, end stoppers 18 provided on each end of rail guide 17 and a hook portion 19 semi-circular in section extended downward from a given portion of each rail guide 17, which are molded in a unitary manner on the base plate 5. Whereby, the projections 16 formed on the link members 10 are adapted to be engaged with the engagement portions 14.

[0021] Incidentally, on the paper holding portion 8 and the base plate 5, permanent magnets not shown are provided in opposing manner, when being faced with each other, those magnets are adapted to be attracted with each other.

[0022] Next, each element of the punch 3 is explained. As shown in Fig. 7, the punch 3 comprises a frame portion 20 which forms the punch body and an opening portion 21 formed on the frame portion 20. The binding margin of the paper held by the gauge 2 is inserted into the opening 21 and a handle 22 provided on the frame portion 20 rotatably is pushed down to pierce the paper 1 by a plurality of punch members 23 in association with the handle 22. The punch chips generated by piercing the paper 1 are adapted to be accommodated in a chips container 24.

[0023] The frame portion 20 is provided on the upper portion of the opening 21 with a plate-like abutting portion 25 which abuts to the stretch 13 of the gauge 2 in projecting manner, and on the end of this abutting portion 25 a projection 26 which engages with the punch positioning portion 4 formed on the gauge 2 is formed. The punch positioning means is provided by the punch positioning portion 4 formed on the gauge 2 and the projection 26. The chips container 24 is, on one hand, provided rotatably on the frame portion 20, and on the other hand, formed in such a manner as it opposes to the abutting portion 25 to form a paper guide portion 27 which

leads the binding margin of the paper 1 to the opening 21 of the punch 3.

[0024] And, the handle 22 is biased toward its opened position with a spring member not shown, and is adapted to maintain the punch members 23 at the top dead center. Further, as shown in Fig. 7, at the rear of the punch 3, a lock portion 28 to keep the handle 22 closed is provided.

[0025] In the structure thus formed, the operation of the gauge punch is explained based on the embodiment. First, the operation of the gauge 2 is explained based on the embodiment.

(a) In the state where the paper holding portion 8 is closed, by the attraction of the magnets not shown set facing each other on the paper holding portion 8 and the base plate 5, the paper holding member 8 is kept as closed, in which the projected portion 16 on the link member 10 is adapted to be located at B position of Fig. 1.

(b) By opening the paper holding portion 8 against the attracting force of the magnets not shown, the supporting portion 7 is made to be rotated in an anti-clockwise direction in Fig. 1 around the fulcrum 29 and the link member 10, in response to the rotation of the supporting portion 7, one end of which is turning around the fulcrum 30 and the other end of which makes the projected portion 16 formed on the other end guided along the rail guide 17 formed on the engaging portion 14 and displaced toward the end stopper 18 from the B position of Fig. 1.

(c) The projected portion 16, after being displaced at a predetermined volume, is made to be abutted to the engagement portion 19 formed in the engaging portion 14, and further displacing makes an reaction force from the hooking portion 19 functioned on the projected portion 16, and the projected portion 16 gets over the hooking portion 19 by making the arm 15 bent. And, the projected portion 16 is restricted in further displacing due to the end stopper 18 and also by being engaged with the hooking portion 19 the displacing toward the right side in Fig. 1 is restricted. Accordingly, the gauge 2 in this embodiment can make the paper holding portion 8 kept opened by the restricting of the displacement of the supporting portion 7 of the paper holding member 9 due to the restriction of the link member 10 by the restriction of the projected portion 16 by being engaged with the engaging portion 14.

(d) In the state where the paper holding portion 8 is opened, the paper 1 is inserted from A in Fig. 1 and the filing margin of the paper 1 is positioned by being abutted to the scale 6. And, by pushing the paper holding portion 8 a downward directional force is assigned to it around the fulcrum 30 as a point of action and the projected portion 16 of the link member 10 is pressed against the hooking portion 19 while bending the arm 15 by the reaction of the

hooking portion 19 and is displaced to the B position in Fig. 1. Thereby, the gauge 2 can hold the paper 1 by pushing the paper holding portion 8 and the attraction of the magnets not shown mounted on the paper holding portion 8 and the base plate 5 respectively. Therefore, the gauge 2 of the present invention can hold the paper 1 while positioning it by the paper positioning portion 11 formed on the scale 6 and hold the paper 1 by pressing the paper holding portion 8.

Next, with reference to Figs. 2 and 7, the operation of how to make the binding holes on the paper 1 held by the gauge 2 with the punch 3 is explained. (e) First, as shown in Fig. 7, the scale 6 of the gauge 2 is made to be rotated around the fulcrum 12 to retreat it to the bottom of the base plate 5 (two dotted chain line of Fig. 1), and the binding margin of the paper 1 is exposed from the gauge 2, and which is inserted in the opening 21 of the punch 3 while being guided along the paper guiding portion 27.

(f) As shown in Fig. 2, by coupling the projection 26 formed on the abutting portion 25 of the punch 3 with the punch positioning portion 4 formed on the stretch 13 of the gauge 2 selectively, the punch 3 is made to be positioned and at every position the handle 22 of the punch 3 is pushed down to pierce the punch members 23 through the paper 1 to form a desired binding holes in the paper 1. For example, as shown in Fig. 1, to each one of 5 pieces of punch positioning portion 4 formed on the stretch 13 the punch 3 with 6 pieces of punch members 23 is positioned in turn and by being pierced 5 times then 30 binding holes are pierced in the paper 1 finally. For reference, as shown in Fig. 7, in the case where the gauge 2 and the punch 3 are operated on a desk not shown, since the stretch 13 of the gauge 2 and the abutting portion 25 of the punch 3 are facing at their end faces due to the same height of the retreated scale 6, the positioning of the gauge 2 and the punch 3 can be easily carried out. Further, since they can be put horizontally, even if the paper to be pierced is great in number, a weight makes them easier to be pierced.

(g) The punched chips not shown generated by piercing the paper 1 is, as shown in Fig. 7, piled in the chips container 24 and when disposing such chips, the paper guiding portion 27 is used as a handle to open the chip container 24 in order to dispose the chips easily.

[0026] According to the first aspect of the present invention, since the paper holding means is formed in such a manner as the paper is held while the paper holding means is kept opened with the paper holding portion, and the paper is inserted into the paper holding means and the paper is held by paper holding means, without a table, by holding the gauge with one hand, the paper is held easily with one hand.

[0027] According to the second aspect of the present invention, the paper holding means comprises the link member in association with the paper holding portion and can hold the paper while keeping the paper holding portion opened by hooking the link member with the link hooking member. 5

[0028] According to the third aspect of the present invention, the link hooking means can hold the paper holding portion while keeping opened by making the projection portion formed by the link member coupled with the engaging portion formed on the base plate of the gauge and hooked. 10

[0029] According to the fourth aspect of the present invention, the punch comprises the punched chips container, the handle of which is provided for opening the container for disposing the punched chips and also used as the paper guiding portion. 15

Claims 20

1. A gauge punch, comprising: a gauge holding a paper with a paper holding means; and a punch to be positioned to the gauge by a paper positioning means and pierce the paper for desired filing holes, wherein the paper holding means is held while the paper holding portion is kept opened and by pushing the paper holding portion the paper is held. 25
2. A gauge punch as claimed in claim 1, wherein the paper holding means comprises a link member to be in association with the paper holding portion and the paper holding portion is held opened by hooking the link member by the link hooking means. 30
3. A gauge punch as claimed in claim 1 or 2, wherein the paper holding means is kept opened by coupling a projection portion formed on the link member with and engaged in the engaging portion formed on a gauge base plate. 35
4. A gauge punch as claimed in claim 1, wherein the punch comprises a paper guide portion for guiding the paper at the opening, which functions also as a handle for the punched chips container. 40

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FIG. 1

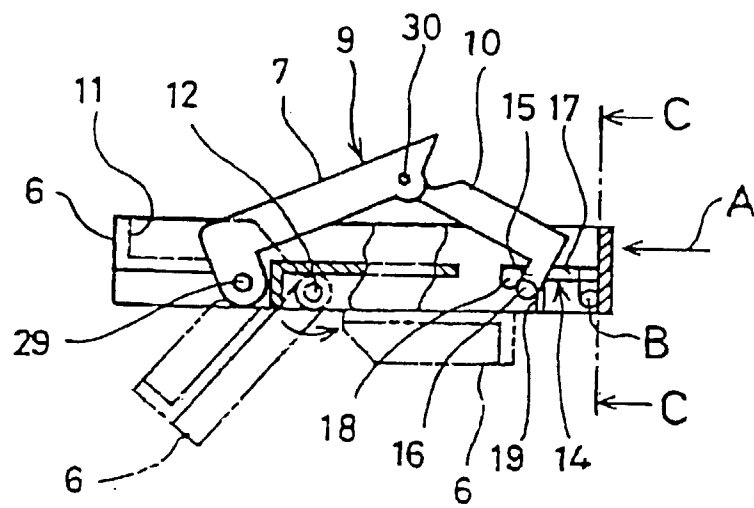


FIG. 2

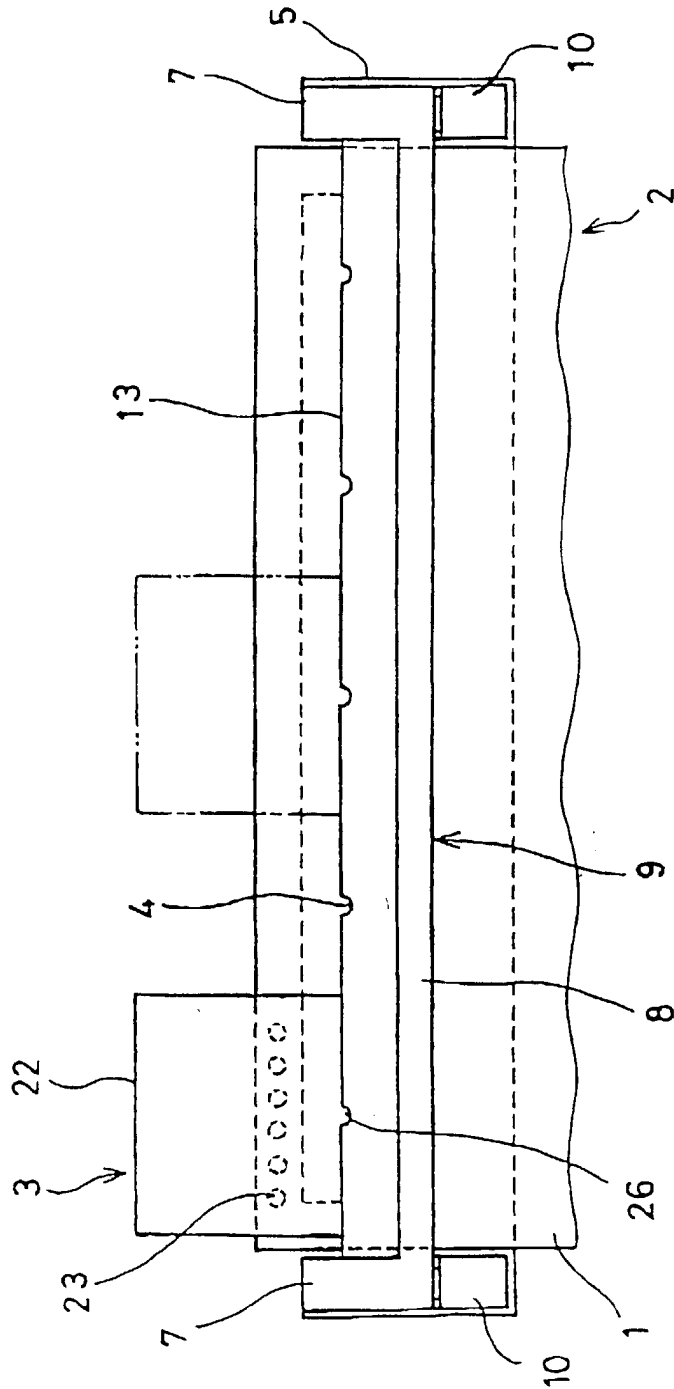


FIG. 3

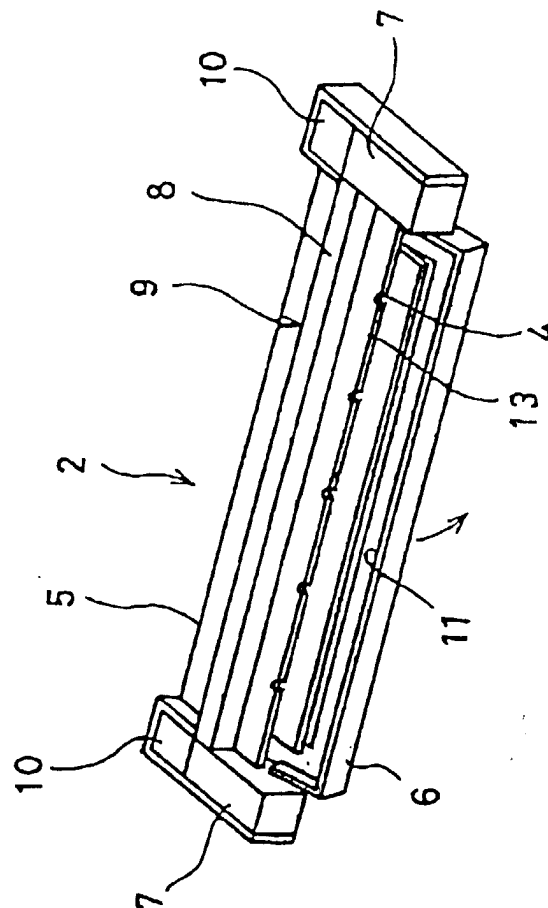


FIG. 4

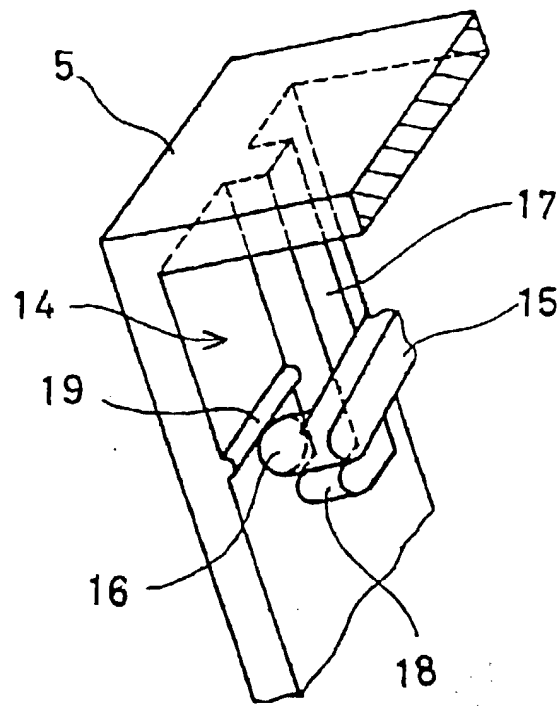


FIG. 5

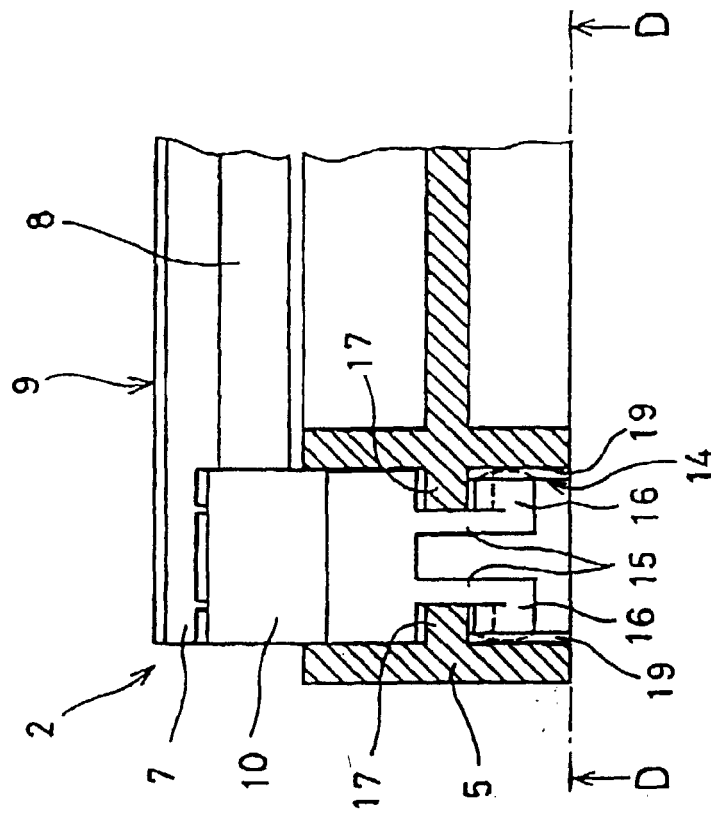


FIG. 6

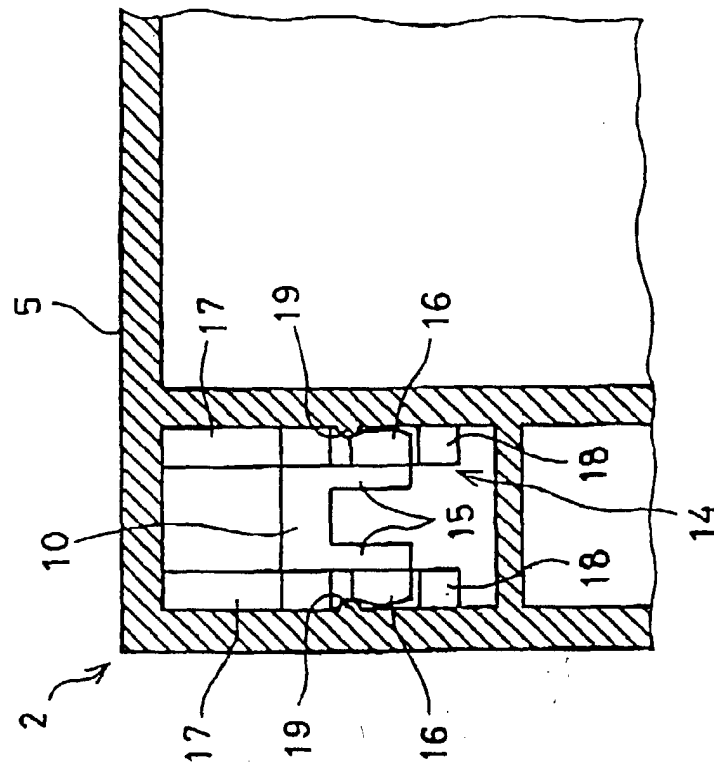
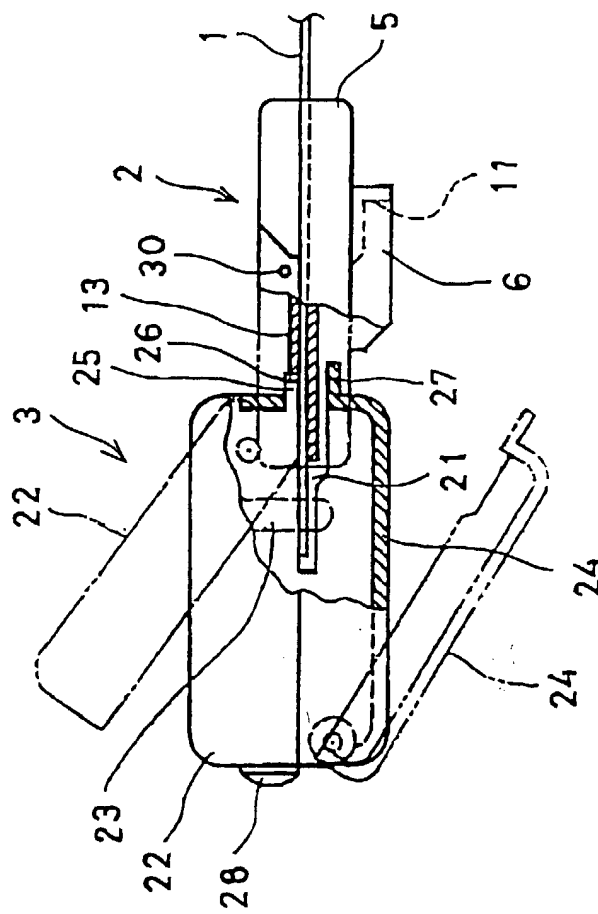


FIG. 7



F I G. 8 (Prior Art)

