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(54) **A DEVICE FOR ATTACHING SHEETS TOGETHER**

VORRICHTUNG ZUM BINDEN VON BLÄTTERN

DISPOSITIF POUR FIXER DES FEUILLES ENSEMBLE

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(56) References cited:

CH-A- 674 727

US-A- 3 577 575

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Description

This invention relates to a device of the kind for attaching together sheets of paper, plastics and similar materials solely by interengagement of the materials of the sheets. It also concerns apparatus for simultaneously perforating and attaching together sheets.

BACKGROUND OF THE INVENTION

The constant development of modern office equipment has made available numerous devices and apparatus for attaching and filing documents.

Many devices for attaching sheets together employ staples, adhesive paper or plastic reinforcing rings, eyelets of metal or plastics materials, foldable metal corner pieces, deformable metal clips and so forth.

Most of the available devices employ securing elements that are often stored in a magazine of the device body so that the devices can only be used if a supply of the securing elements is available. Moreover, the use of metal staples for food packaging has been forbidden in many countries because of the potential danger that staples may become detached and accidentally consumed. Also, if metal staples and eyelets are placed on envelopes, these may be rejected by automatic sorting machines. Furthermore, staples, eyelets and other metal fasteners need to be removed before documents are destroyed in shredding machines.

Because of these problems, it would be desirable to have a device for attaching together sheets of paper and the like solely by interengagement of the materials of the sheets, i.e. without staples or other securing elements.

Over the years, there have been numerous proposals for such devices. Early proposals for slit-and-tongue attachments wherein a tongue in one sheet is inserted in a slit in another sheet are described in UK patent specifications 206,941, 465,812 and 508,663 and in US patents 1,065,904 and 2,016,052. UK patent specification No. 792,852 proposed a punching device for attaching the folded corners of documents by generally circular tongues.

Another device, comprising an anvil carried by a base and a punch carried by a pivotally mounted arm, is described in PCT published patent application WO 80/01778. In this device, superposed parts of sheets to be attached can be placed between the punch and anvil which, when they are brought together, punch T-shaped tongues that remain connected to the sheets by the base of the T's with the wide end of the T's serving to connect the sheets together. Securing together of the sheets is, however, not entirely satisfactory unless one of the sheets is made of strong material like cardboard.

Swiss patent specification 674,727 describes a hand-held device for attaching documents together, having two pivoted levers on opposite sides of a central body having a slot for receiving the documents. The upper lever carries a pivoted cutter one end of which cuts tongues in the sheets and the other end cuts a slit. A

pusher is carried by the lower lever for pushing the tongues through the slits after retraction of the upper lever and the cutter. Despite considerable efforts to develop such a device, no practical and reliable way could be found for coordinating movements of the parts.

US patent No. 3,577,575 describes a device for binding sheets of paper having a base on which there is a pivoted member carrying two cutters. One cutter is a fixed U-shaped piece designed to cut tongues in the sheets when the movable member is moved down. The second cutter is designed to pass down through the paper to cut a slit, receive in an aperture the tongues folded on the other side and, when the movable member is moved back up, pull the tongues through the slits and thereby attach the sheets together. After they have been cut, the tongues are pushed down, folded back under the sheets and thrust through the eyelet by a pawl carried by a cam pivotally mounted on the first cutter which is fixedly mounted on the first member. When the pawl is fully pivoted, its end projects into the aperture in the second cutter, driving with it the tongues. In operation, there is a risk that the tongues may frequently be ripped, thereby damaging the documents and jamming the device. There is also a risk of the pawl jamming in the aperture of the second cutter. The device is thus complicated and its operation is not reliable. Furthermore, the device is designed only to rest on a supporting surface, which limits its possible uses.

SUMMARY OF INVENTION

An object of the invention is to provide a simple and reliable version of the last mentioned type of device for attaching together sheets of paper, plastics and similar materials solely by interengagement of the materials of the sheets.

According to the invention, a device of the type defined in the pre-characterising part of claim 1 is characterised in that :

the first cutter is pivotally mounted for cutting and folding the tongues, the first cutter having a leading cutting edge for cutting the free ends of the tongues and initiating folding of the tongues, and a trailing edge adjacent the attached ends of the tongues for folding the tongues into said aperture ; and

means are provided for pivoting the first cutter as the first member reaches the closed position while said trailing edge has moved part way down the tongues, the first cutter being spaced apart from the second cutter and remaining spaced from the second cutter during pivoting of the first cutter.

In operation, upon pivoting of the first cutter, its trailing edge pushes an intermediate part of the tongues to fold the tongues about their attached ends until the free ends of the tongues project into said aperture in the second cutter without penetration of the first cutter in said aperture. The device thus employs a pivoted first cutter that provides both functions of cutting and folding the tongues but does not protrude into the path of the second

cutter and therefore cannot impede movement of the second cutter. Several sheets may thus adequately be secured together without the use of metal or plastics securing elements by this handy-to-use device which is of relatively simple design and is reliable.

In a preferred embodiment, the first and second members of the device are pivotally connected together, the first member comprising an upper lever carrying the first cutter and the second cutter, and a lower lever having an abutment forming part of the pivoting means for the first cutter. These upper and lower levers are pivotally mounted together for limited relative movement between (a) a rest position, (b) an intermediate pushed-in position and (c) a fully pushed-in position, in which, respectively :

(a) the first and second cutters protrude down adjacent to, but not below, the lower face of the lower lever, whereby when the first and second members are in their open position, sheets to be attached can be inserted between the second member and the lower lever of the first member, and the first member can be lowered until its lower lever presses the sheets against and is arrested by the second member ;

(b) the first and second cutters protrude down from the lower lever and a part of the first cutter comes to abut against said abutment of the lower lever, this intermediate position being reached when the upper lever is pressed down relative to the lower lever, in normal operation after downward movement of the lower lever has been arrested by the second member ; and

(c) the first cutter is pivoted by said abutment whereby said trailing edge thrusts the tongues into said aperture, this fully pushed-in position being reached in normal operation when the upper lever is fully pressed down beyond the intermediate position after the lower lever has been arrested against the second member.

In this embodiment, a spring or other means may be provided for biasing the first member to the open position and another spring or other means is provided for biasing its upper lever to the rest position. These biasing means are preferably so arranged that when the upper lever is pressed in, firstly the entire first member pivots until the lower lever is arrested by the second member, then the upper lever pivots to its intermediate and fully pushed-in positions.

Preferably, the first cutter has two arms at an angle to one another, for instance about a right angle, the first arm carrying an oblique cutting surface between the leading and trailing edges, and the second arm having a part which abuts against said abutment surface of the lower lever, for instance a downward projection that abuts against an upper surface of the lower lever, or an

end part of the second arm abuts against an upstanding projection on the lower lever.

The first cutter is preferably biased to a rest position by a spring.

The second member of the device usually has a flat bottom surface so the device can rest on a generally flat support, and may be operated while it is resting on a support.

The device is preferably a small hand-held device adapted for operation while being held in a hand. Whether operated in the hand or when resting on a support surface, the device is very convenient to use because its handling is quite similar to well known staplers.

It is possible to make the device of any desired shape, e.g. as a promotional item in the shape of an emblem or design to be promoted, and/or with its upper surface or sides shaped to receive specific advertising materials.

It is also possible to have a plurality of first cutters with associated second cutters and means for pivoting the first cutters, the first cutters being arranged for simultaneously cutting and folding tongues at a plurality of discrete locations. For instance, two first cutters having a common pivoting axis could be placed side-by-side facing two corresponding side-by-side second cutters, so as to simultaneously cut two tongues in spaced parallel relationship. Or two first cutters could be arranged back-to-back for pivoting in opposite directions towards respective second cutters. In this case, two tongues would be cut in alignment with one another.

The invention also provides an apparatus for perforating and simultaneously attaching together sheets of paper, plastics and similar materials comprising at least two devices as set out above. These devices are spaced apart from one another and adapted and arranged to receive an edge part of superposed sheets to be attached and to cut tongues at locations spaced from one another along said edge part leaving corresponding perforations at these locations, i.e. in the edge part of the sheets adjacent the folded attached ends of the tongues. For example, two devices can be mounted side-by-side in a combined perforator/attaching device producing generally square or rectangular perforations adapted to cooperate with a conventional ring binder or other document filing system.

The device may optionally include means for embossing the attached sheets preferably in the area where the tongues are folded over. For example, the first and second members can carry complementary matrices that produce a distinctive embossment or seal on the attached sheets and at the same time reinforce their attachment.

As mentioned above, the tongues cut in the sheets, and the corresponding perforations left in the attached sheets, are usually generally rectangular but may also be of generally trapezoidal shape for example with the free end wider than the attached end about which the

tongues are folded. Other shapes of tongues and perforations are possible.

The slit or similar opening cut in the sheets by the second cutter usually has a length about equal to the width of the free end of the tongues, but it can be narrower so that the free end of the tongues must be bent as it is inserted through the slit. This is preferred if the tongues are of trapezoidal or other shape with an enlarged free end.

The device according to the invention has many uses. It is intended mainly for connecting together a few sheets and can be used in offices for attaching together several documents, especially documents that may need to be destroyed in a shredding machine. It can also be used for closing paper or plastic bags, e.g. at supermarket outlets, or for attaching receipts. This is particularly important for packaged foods, where metal staples could be dangerous. Further uses include attaching large sheets or webs along their sides and for attaching display cards to goods packed in plastic or paper sheets. Also, as mentioned above, the device can be used to simultaneously perforate and attach documents to be filed.

BRIEF DESCRIPTION OF DRAWINGS

In the drawings:

Figure 1 is a side elevation of a preferred embodiment of the device according to the invention;

Figure 2 is a digrammatic view showing the internal parts of the device of Figure 1 in an intermediate pushed-in position, and also showing sheets of paper being attached;

Figure 3 is a similar view in a fully pushed-in position;

Figure 4 is an end view of a detail of Figures 1 to 3; and

Figure 5 illustrates the manner of attachment of sheets using this device.

DETAILED DESCRIPTION

The device illustrated by way of example in Figures 1 to 4 is suitable for attaching together sheets 1 of paper, plastics and similar materials solely by interengagement of the materials of the sheets 1. As illustrated in Figure 5, tongues 2 each having a free end 3 and an attached end 4 are cut in superposed parts of the sheets 1 by the device, and are folded and pushed through slits 6 in the sheets 1 to interlock and hence attach the latter, the slits 6 being spaced from the attached ends 4 of the tongues 2 by a distance D which is less than the length L of the tongues 2 and the corresponding perforations 5.

The device has a first member 10 pivotally mounted on a second member 20. First member 10 is made up of an upper lever 11 of inverted U cross-section and a lower

lever 12 of U cross-section, with lever 11 fitting into lever 12. At one end, member 20 has a pair of side plates 21 in which the levers 11 and 12 are pivotally mounted about a common pivot 22 situated at about the level of the upper face of member 20.

Towards its free end, the upper lever 11 carries internally a pivotally-mounted first cutter 30 for cutting and folding the tongues 2 and a second cutter 40 for cutting the slits 6.

Members 10 and 20 are shown in Fig. 1 in an open position, towards which they may be biased for example by means of a spring such as a blade spring (not shown) located between member 20 and lever 12 adjacent pivot 22. Alternatively, it is possible for the open position to be defined by indents in the side plates 21. In this open position, sheets 1 to be connected can be placed in a gap 18 between the bottom surface of lever 12 and the upper surface of member 20.

The first cutter 30 is lodged in a recess 13 in upper lever 11 to which it is pivoted about a pivot 31. Cutter 30 has two arms 32 and 33 approximately at right angles to one another. Arm 33 is generally horizontal and, in the illustrated example, has a downwardly-projecting end 34. Arm 32 projects downwardly and has a lower, leading cutting edge 35 and a trailing edge 36 joined by an oblique cutting surface 37. The trailing edge 36 points in the direction of the downwardly-projecting end 34 and is facing but spaced apart from the second cutter 40. Cutter 30 is biased to a rest position, as in Figure 2, with its arm 32 in contact with a generally vertical surface of recess 13, by means of a compression spring 38 acting between arm 33 and a recess 14 in lever 11.

The second cutter 40 is a fixed knife having a downwardly-projecting blade 41 with a pointed lower cutting edge 42 and an opening 43 (Figure 4) for receiving tongues 2. The side edges of wall 41 may be bent at right angles to the plane of Figure 4. Cutter 40 is secured to the upper lever 11 by screws 44.

The lower lever 12 has an opening 19 for passage of the cutting arm 32 of cutter 30. Adjacent the opening 19, the upper surface of lever 12 forms an abutment 17 for cooperation with the end 34 of cutter 30, as described below. Also, in the upper surface of member 20 is a recess 24 for receiving the cutters 30, 40 during operation. The recess 24 is preferably a cruciform slot having a main part just wide enough to receive the first cutter 30, and a transverse part for receiving the edges of second cutter 40.

Levers 11 and 12 are pivotally mounted together for limited relative movement between a rest position, shown in Figure 1, an intermediate pushed-in position shown in Figure 2 and a fully pushed-in position shown in Figure 3.

The relative movement of levers 11 and 12 is for example limited by means of an internal groove, about mid-way along the inside of one of the sides of lever 12, receiving a pin carried by lever 11. Lever 11 is biased to the rest position by means of a compression spring 16 having one end lodged in a recess 15 in lever 11 and its

other end acting against the inside of the bottom of lever 12.

In the rest position, as shown in Figure 1, the cutters 30, 40 do not protrude from the bottom surface of lower lever 12. Thus, when the members 10, 20 are in their open position, sheets 1 to be attached can be inserted in the gap 18. Member 10 can then be lowered, with levers 11 and 12 remaining in their rest position, until lever 12 presses the sheets 1 against member 20 and is arrested thereby.

In the intermediate pushed-in position shown in Figure 2, cutters 30 and 40 protrude down from lever 12 and end 34 of cutter 30 comes to abut against said abutment surface 17 of lever 12. This intermediate position is reached, without pivoting of cutter 30, when the lever 11 is pressed down relative to lever 12 i.e., in normal operation, after downward movement of the lever 12 has been arrested by member 20, with sheets 1 firmly held between member 20 and lever 12.

In the fully pushed-in position shown in Figure 3, cutter 30 is pivoted by abutment 17 whereby its trailing edge 36 thrusts the tongues 2 into aperture 43. This fully pushed-in position is reached when lever 11 is fully pressed down beyond the intermediate position.

Member 20 has a flat bottom 23 by which it can be placed on a flat supporting surface, while the device is at rest. The device can be operated while it rests on a supporting surface, but is so dimensioned that it can easily be held in a single hand and operated by a single hand while being held.

Operation of the device is very simple. Sheets 1 to be attached are placed in gap 18 with the device in its rest position. The user then simply presses the members 10 and 20 together. In the first part of the movement, the sheets are pressed between member 20 and lever 12 and the movement of lever 12 is arrested. The sheets are thus firmly held for the subsequent cutting and folding operations. As the lever 11 is pressed in further, tongues 2 are cut in the sheets 1 by the leading edge 35 and oblique cutting surface 37 of cutter 30, and slits 6 are cut by the cutting edge 42 of cutter 40. During downward movement to the intermediate position, the cutter 30 does not pivot, but folding of the tongues 2 is nevertheless initiated by surface 37. In the intermediate position, the tongues 2 are at an approximately vertical position and the trailing edge 36 has already begun to move part way down the folded tongues. When pivoting of cutter 30 is initiated, the trailing edge 36 moves abruptly to the right (looking at the drawings) and folds the free ends of tongues 2 into the opening 43. This is accomplished without the edge 36 penetrating into opening 43. There is thus no risk of jamming.

As soon as the pressure on member 10 is released, lever 11 springs out of lever 12 under the action of spring 16 until it is stopped by the aforementioned pin engaging in the groove in lever 12, the cutter 40 pulls the ends of tongues 2 up through slits 6, and cutter 30 springs back to its rest position, the cutter arm 32 passing up through the perforations 5 and opening 19. Then the entire mem-

ber 10 moves back to its rest position, by the action of a biasing spring, if provided, or by manual actuation.

The described device is simple, convenient to use and can be used repeatedly without a need to recharge it with any external attaching elements. The device can be made entirely or partly of suitable plastics materials. The first and second cutters 30, 40 can be made of metal or hard plastics materials such as Delrin®. The levers 11, 12 and member 20 can each be made of single moulded pieces or several connected parts leaving suitable internal cavities for the operating mechanism. Instead of being generally parallel to the members 10, 20, the first cutter(s) 30 and hence the tongues 2 could be transverse to these members. Also, the projection 34 extending down from cutter 30's arm 33 could advantageously be replaced by a pin or other piece projecting up in the place of abutment 17.

Claims

1. A device for attaching together sheets (1) of paper, plastics and similar materials solely by interengagement of the materials of the sheets, comprising first and second members (10, 20) moveably mounted relative to one another between an open position, in which superposed parts of sheets (1) to be attached can be placed between the members, and a closed position for attachment of the sheets, the first member carrying the following components which are actuated to cut and fold tongues when the members (10, 20) are brought to the closed position :

- a first cutter (30) for cutting in said parts tongues (2) each having a free end (3) and an attached end (4) ;
- a second cutter (40) having a cutting edge (42) for cutting in said superposed parts slits or similar openings (6) behind the tongues and spaced from said attached ends (4) of the tongues (2) by a distance (D) less than the length (L) of the tongues, the second cutter having a lower end part (41) that cuts and passes through the openings (6) in said parts of the sheets and projects below said parts when the members (10, 20) are brought to the closed position, there being a tongue-receiving aperture (43) in said lower end part of the second cutter (40) ; and
- means for folding the tongues (2) about their attached ends (4) into said aperture (43) in the second cutter (40) ;

the second cutter (40) being fixed on the first member (10) so that when the first member is retracted from the closed position towards the open position, tongues (2) engaged in said aperture (43) are drawn by the second cutter through said openings (6) in the sheets (1) to attach the sheets

together,

characterised in that :

the first cutter (30) is pivotally mounted for cutting and folding the tongues (2), the first cutter having a leading cutting edge (35) for cutting the free ends (3) of the tongues and initiating folding of the tongues, and a trailing edge (36) adjacent the attached ends (4) of the tongues for folding the tongues into said aperture (43) ; and

means are provided for pivoting the first cutter (30) as the first member (10) reaches the closed position while said trailing edge (36) has moved part way down the tongues (2), the first cutter (30) being spaced apart from the second cutter (40) and remaining spaced from the second cutter during pivoting of the first cutter.

2. The device of claim 1, wherein the first and second members (10, 20) are pivotally connected together, the first member comprising an upper lever (11) carrying the first cutter (30) and the second cutter (40), and a lower lever (12) having an abutment (17) forming part of the pivoting means for the first cutter, the upper and lower levers being pivotally mounted together for limited relative movement between (a) a rest position, (b) an intermediate pushed-in position and (c) a fully pushed-in position, in which, respectively :

(a) the first and second cutters (30, 40) do not protrude from the lower lever (12), whereby when the first and second members are in their open position, sheets (1) to be attached can be inserted between the second member (20) and the lower lever (12) of the first member, and the first member can be lowered until its lower lever (12) presses the sheets (1) against and is arrested by the second member (20) ;

(b) the first and second cutters (30, 40) protrude down from the lower lever (12) and a part (34) of the first cutter comes to abut against said abutment (17) of the lower lever, this intermediate position being reached when the upper lever (11) is pressed down relative to the lower lever (12), in normal operation after downward movement of the lower lever has been arrested by the second member (20) ; and

(c) the first cutter (30) is pivoted by said abutment (17) whereby said trailing edge (36) thrusts the tongues (2) into said aperture (43), this fully pushed-in position being reached in normal operation when the upper lever (11) is fully pressed down beyond the intermediate position after the lower lever (12) has been arrested against the second member (20),

there being means for biasing the upper lever (12) to the rest position and, optionally, means (16) for biasing the first member (10) to the open position.

3. The device of claim 2, wherein the first cutter (30) has two arms at an angle to one another, a first arm (32) carrying an oblique cutting surface (37) between said leading and trailing edges (35, 36), and a second arm (33) having a part (34) which abuts against said abutment surface (17) of the lower lever (12).
4. The device of claim 3, wherein said part of the second arm (33) is a downward projection (34) that abuts against an upper surface (17) of the lower lever (12), or an end part of the second arm (33) that abuts against an upstanding projection on the lower lever.
5. The device of claim 2, 3 or 4, comprising a spring (38) biasing the first cutter (30) to a rest position.
6. The device of any preceding claim, wherein the second member (20) has a bottom surface (23) adapted to rest on a generally flat support.
7. The device of any preceding claim, which is adapted for operation while being held in a hand.
8. The device of any preceding claim, comprising a plurality of first cutters with associated second cutters and means for pivoting the first cutters, the first cutters being arranged for simultaneously cutting and folding tongues at a plurality of discrete locations.
9. An apparatus for perforating and simultaneously attaching together sheets of paper, plastics and similar materials comprising at least two devices as claimed in any of claims 1 to 6, spaced apart from one another and adapted and arranged to receive an edge part of superposed sheets (1) to be attached and to cut tongues (2) at locations spaced from one another along said edge part leaving corresponding spaced-apart perforations in said edge part adjacent the folded attached ends of the tongues.

Patentansprüche

1. Vorrichtung zum Zusammenheften von Blättern (1) aus Papier, Kunststoff und ähnlichen Materialien ausschliesslich durch gegenseitiges Eingreifen der Materialien der Blätter, enthaltend ein erstes und ein zweites Glied (10, 20), die in Bezug zueinander zwischen einer offenen Lage, in welcher übereinander liegende Teile von zum Zusammenheften bestimmten Blättern (1) zwischen diese Glieder einfügbar sind, und einer geschlossenen Lage, in welcher die Blätter zusammengefügt werden, bewegbar mon-

tiert sind, wobei das erste Glied folgende Komponenten, die betätigt werden, um Zungen zu schneiden und zu falten, wenn die Glieder (10, 20) in die geschlossene Lage gebracht werden, enthält:

- ein erstes Schneidelement (30) zum Schneiden der Zungen (2) in die genannten Teile, wobei jede Zunge ein freies (3) und ein anhaftendes (4) Ende aufweist; 5
- ein zweites Schneidelement (40) mit einer Schneidkante (42) zum Schneiden von Schlitz- 10
zen oder ähnlichen Öffnungen (6) in die übereinander liegenden Teile hinter den Zungen mit einem Abstand (D) von den anhaftenden Enden (4) der Zungen (2), welcher Abstand kleiner ist 15
als die Länge (L) der Zungen, wobei dieses zweite Schneidelement einen unteren Endteil (41) aufweist, der die Öffnungen (6) in die erwähnten Blätterteile schneidet, diese Öffnungen passiert und unter die Blätterteile ragt, 20
wenn die Glieder (10, 20) in die geschlossene Lage gebracht werden, wobei ein Loch (43) zur Aufnahme der Zunge im erwähnten unteren Endteil des zweiten Schneidelements (40) vorhanden ist; und 25
- Mittel zum Falten der Zungen (2) um deren anhaftende Enden (4) in das genannte Loch (43) im zweiten Schneidelement (40) hinein;

wobei das zweite Schneidelement (40) derart am ersten Glied (10) befestigt ist, dass beim Rückführen des ersten Gliedes aus der geschlossenen in die offene Lage, das zweite Schneidelement in das erwähnte Loch (43) eingreifende Zungen (2) durch die erwähnten Öffnungen (6) in den Blättern (1) zieht, um diese letzteren zusammen zu haften, 30
dadurch gekennzeichnet, dass:

das erste Schneidelement (30) zum Zwecke des Schneidens und Faltens der Zungen (2) schwenkbar gelagert ist, wobei dieses erste 40
Schneidelement eine vordere Schneidkante (35) zum Schneiden der freien Zungenenden (3) und zum Einleiten des Faltens der Zungen, und eine hintere Kante (36) in der Nähe der anhaftenden Zungenenden (4) zum Falten der Zungen in das 45
genannte Loch (43) aufweist; und

Mittel vorhanden sind zum Schwenken des ersten Schneidelements (30), sobald das erste Glied (10) seine geschlossene Lage erreicht hat, während die erwähnte hintere Schneidkante (36) sich ein Stück entlang den Zungen (2) fortbewegte, wobei das erste Schneidelement (30) einen gewissen Abstand vom zweiten Element (40) aufweist und dieser Abstand während des Schwenkvorgangs des ersten Schneidelements erhalten bleibt. 55

2. Vorrichtung nach Anspruch 1, bei welcher das erste und das zweite Glied (10, 20) eine gegenseitig drehbare Verbindung aufweisen, wobei das erste Glied

einen oberen Hebel (11) mit dem ersten (30) und dem zweiten (40) Schneidelement und einen unteren Hebel (12) mit einer, einen Teil der Schwenkmittel des ersten Schneidelements bildenden Auflagefläche (17) enthält, und wobei der obere und untere Hebel drehbar zusammenmontiert sind, um eine beschränkte Bewegung in Bezug zueinander zwischen a) einer Ruhelage, b) einer Einschub-Zwischenlage und c) einer vollen Einschublage zu ermöglichen, in welchen:

- a) das erste und das zweite Schneidelement (30, 40) aus dem unteren Hebel nicht herausragen, wodurch, in offener Lage des ersten und zweiten Glieds, zum Zusammenheften bestimmte Blätter (1) zwischen das zweite Glied (20) und den unteren Hebel (12) des ersten Glieds einschiebbar sind, und das erste Glied gesenkt werden kann, bis sein unterer Hebel (12) die Blätter (1) gegen das zweite Glied (20) presst und durch dieses Glied gestoppt wird;
- b) das erste und das zweite Schneidelement (30, 40) aus dem unteren Hebel (12) hinunterragen und ein Teil (34) des ersten Schneidelements gegen die Auflagefläche (17) des unteren Hebels (12) stösst, wobei diese Zwischenlage erreicht wird, wenn der obere Hebel (11) in Bezug auf den unteren Hebel (12) hinuntergedrückt wird, bei normaler Arbeitsweise, nachdem die Bewegung nach unten des unteren Hebels gegen das zweite Glied (20) gestoppt wurde; und
- c) das erste Schneidelement (30) durch die Auflagefläche (17) geschwenkt wird, wodurch die erwähnte hintere Schneidkante (36) die Zungen (2) in das Loch (43) stösst, wobei diese volle Einschublage bei normaler Arbeitsweise erreicht wird, wenn der obere Hebel (11) über die Zwischenlage hinaus voll hinuntergedrückt wird, nachdem der untere Hebel (12) durch Anstossen gegen das zweite Glied (20) gestoppt wurde,

wobei Mittel, die den oberen Hebel (12) in die Ruhelage und, als weitere Möglichkeit, Mittel (16), die das erste Glied (10) in die offene Lage zu bringen trachten, vorgesehen sind.

3. Vorrichtung nach Anspruch 2, bei welcher das erste Schneidelement (30) zwei Arme, die einen Winkel einschliessen, aufweist, wobei ein erster Arm (32) eine schräge Schneidfläche (37) zwischen der vorderen (35) und der hinteren (36) Schneidkante hat, und ein zweiter Arm (33) einen Teil (34) trägt, der gegen die Auflagefläche (17) des unteren Hebels (12) stösst.
4. Vorrichtung nach Anspruch 3, bei welcher der erwähnte Teil des zweiten Arms (33) ein nach unten

gerichteter Vorsprung (34), welcher gegen die obere Fläche (17) des unteren Hebels (12) stösst, oder ein Endteil des zweiten Arms (33) ist, der gegen einen nach oben gerichteten Vorsprung des unteren Hebels stösst.

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5. Vorrichtung nach Anspruch 2, 3 oder 4, enthaltend eine Feder (38), die das erste Schneidelement (30) in eine Ruhelage zu bringen trachtet.

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6. Vorrichtung nach irgendeinem vorangehenden Anspruch, bei welcher das zweite Glied (20) eine untere Fläche (23) aufweist, die ausgebildet ist, um auf einer praktisch flachen Unterlage zu ruhen.

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7. Vorrichtung nach irgendeinem vorangehenden Anspruch, die während der Arbeit in der Hand haltbar ist.

8. Vorrichtung nach irgendeinem vorangehenden Anspruch, enthaltend eine Mehrzahl von ersten Schneidelementen mit zugeordneten zweiten Schneidelementen und Mittel zum Schwenken der ersten Schneidelemente, wobei diese letztgenannten Elemente zum gleichzeitigen Schneiden und Falten von Zungen an einer Anzahl von bestimmten Orten ausgebildet sind.

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9. Gerät zum Perforieren und gleichzeitigen Zusammenheften von Blättern aus Papier, Kunststoff und ähnlichen Materialien, enthaltend mindestens zwei, eine bestimmte Distanz voneinander aufweisenden Vorrichtungen, nach irgendeinem der Ansprüche 1 bis 6, die angepasst und angeordnet sind, um einen Randteil von übereinander liegenden, zum Zusammenheften bestimmten Blättern (1) aufzunehmen, und um Zungen (2) an voneinander getrennten Stellen entlang dem erwähnten Randteil zu schneiden, wobei entsprechende, voneinander getrennte Perforationen im erwähnten Randteil in der Nähe der gefalteten, anhaftenden Enden der Zungen entstehen.

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Revendications

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1. Dispositif pour fixer ensemble des feuilles (1) de papier, de plastique et de matériaux analogues uniquement par interengagement des matériaux dont sont formées les feuilles, comprenant des premier et deuxième organes (10,20) montés de façon à pouvoir se déplacer relativement l'un à l'autre entre une position ouverte, dans laquelle des parties superposées de feuilles (1) devant être fixées ensemble peuvent être placées entre les organes, et une position fermée de fixation des feuilles, le premier organe portant les composants suivants, ceux-ci étant actionnés de façon à découper et plier des languettes lorsque les organes (10, 12) sont amenés dans la position fermée :

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- un premier élément de coupe (30) pour découper dans lesdites parties, des languettes (2) présentant chacune une extrémité libre (3) et une extrémité rattachée (4);
- un deuxième élément de coupe (40) présentant une arête tranchante (42) pour découper dans lesdites parties superposées des fentes ou des ouvertures analogues (6) derrière les languettes (2) à l'écart desdites extrémités rattachées (4) d'une distance (D) inférieure à la longueur (L) des languettes, ce deuxième élément de coupe comportant une partie terminale inférieure (41) qui découpe et traverse les ouvertures (6) dans lesdites parties des feuilles et fait saillie au-dessous desdites parties lorsque les organes (10,20) sont amenés dans la position fermée, une fenêtre (43) réceptrice de languettes étant ménagée dans ladite partie terminale inférieure du deuxième élément de coupe (40); et
- des moyens pour plier les languettes (2) autour de leurs extrémités rattachées (4) et les amener à pénétrer dans ladite fenêtre (43) que présente le deuxième élément de coupe (40);

le deuxième élément de coupe (40) étant fixé au premier organe (10) de telle façon que lorsque le premier organe est retiré de la position fermée vers la position ouverte, les languettes (2) qui sont engagées dans ladite fenêtre (43) sont entraînées par le deuxième élément de coupe à travers lesdites ouvertures (6) ménagées dans les feuilles (1) pour fixer ces dernières ensemble,

caractérisé en ce que :

le premier élément de coupe (30) est monté de façon pivotante pour permettre la découpe et le pliage des languettes (2), ce premier élément de coupe comportant une arête tranchante antérieure servant à découper les extrémités libres (3) des languettes et à amorcer leur pliage, et une arête postérieure ou suiveuse (36) au voisinage des extrémités rattachées (4) des languettes, susceptible de plier les languettes et les introduire dans ladite fenêtre (43); et

des moyens sont prévus pour faire pivoter le premier élément de coupe (30) lorsque le premier organe (10) arrive dans la position fermée alors que ladite arête postérieure (36) s'est déplacée le long des languettes (2) sur une partie de leur longueur, le premier élément de coupe (30) étant situé à l'écart du deuxième (40) et restant à l'écart de ce dernier lors de son pivotement.

2. Le dispositif de la revendication 1, dans lequel les premier et deuxième organes (10,20) sont articulés l'un sur l'autre, le premier organe (10,20) comprenant un levier supérieur (11) portant le premier élément de coupe (30) et le deuxième élément de coupe (40), et un levier inférieur (12) présentant une

butée (17) faisant partie des moyens de pivotement pour le premier élément de coupe, ces leviers supérieur et inférieur étant articulés l'un sur l'autre de façon à permettre un mouvement relatif limité entre (a) une position de repos, (b) une position enfoncée intermédiaire et (c) une position enfoncée maximale, dans lesquelles, respectivement :

(a) les premier et deuxième éléments de coupe (30,40) ne dépassent pas le levier inférieur (12) de manière que lorsque les premier et deuxième organes se trouvent dans leur position ouverte, les feuilles (1) devant être fixées ensemble puissent être insérées entre le deuxième organe (20) et le levier inférieur (12) du premier organe, et le premier organe puisse être abaissé jusqu'à ce que son levier inférieur (12) vienne presser les feuilles (1) contre le deuxième organe (20) et soit arrêté par lui;

(b) les premier et deuxième éléments de coupe (30,40) dépassent le bas du levier inférieur (12) et une partie (34) du premier élément de coupe vient buter contre ladite butée (17) du levier inférieur, cette position intermédiaire étant atteinte lorsque le levier supérieur (11) est pressé vers le bas relativement au levier inférieur (12), en cours de fonctionnement normal, après que l'abaissement du levier inférieur a été arrêté par le deuxième organe (20); et

(c) le premier élément de coupe (30) est pivoté par ladite butée (17) de manière que l'arête postérieure (36) pousse les languettes (2) dans ladite fenêtre (43), cette position enfoncée maximale étant atteinte, en cours de fonctionnement normal, lorsque le levier supérieur (11) est pressé vers le bas au maximum au-delà de la position intermédiaire après que le levier inférieur (12) est venu s'arrêter contre le deuxième organe (20),

des moyens étant prévus pour solliciter le levier supérieur (12) vers la position de repos et, le cas échéant, des moyens (16) pour solliciter le premier organe (10) vers la position ouverte.

3. Le dispositif de la revendication 2, dans lequel le premier élément de coupe (30) comporte deux bras formant entre eux un angle, un premier bras (32) portant une surface de coupe oblique (37) entre lesdites arêtes antérieure et postérieure (35,36), et un deuxième bras (33) ayant une partie (34) venant buter contre ladite surface de butée (17) du levier inférieur (12).

4. Le dispositif de la revendication 3, dans lequel ladite partie du deuxième bras (33) est une saillie (34) dirigée vers le bas venant buter contre une surface supérieure (17) du levier inférieur (12), ou une partie

terminale du deuxième bras (33) venant buter contre une saillie tournée vers le haut sur le levier inférieur.

5. Le dispositif de la revendication 2,3 ou 4, comprenant un ressort (38) sollicitant le premier élément de coupe (30) vers une position de repos.

6. Le dispositif de l'une quelconque des revendications précédentes, dans lequel le deuxième organe (20) présente une surface inférieure (23) apte à prendre appui sur un support de forme générale plate.

7. Le dispositif de l'une quelconque des revendications précédentes, apte à être actionné pendant qu'il est tenu dans une main.

8. Le dispositif de l'une quelconque des revendications précédentes, comprenant une pluralité de premiers éléments de coupe, avec lesquels sont associés des deuxièmes éléments de coupe, et des moyens pour faire pivoter les premiers éléments de coupe, ces derniers étant disposés de manière à pouvoir simultanément découper et plier des languettes dans une pluralité d'emplacements distincts.

9. Appareil permettant de perforer et de fixer ensemble de façon simultanée des feuilles de papier, de plastique et de matériaux analogues comprenant au moins deux dispositifs selon l'une quelconque des revendications 1 à 6, espacés les uns des autres, aptes et disposés de manière à recevoir une partie marginale de feuilles superposées (1) devant être fixées ensemble et à découper des languettes (2) en des emplacements espacés les uns des autres le long de ladite partie marginale laissant des perforations espacées correspondantes dans ladite partie marginale au voisinage des extrémités rattachées, pliées, des languettes.

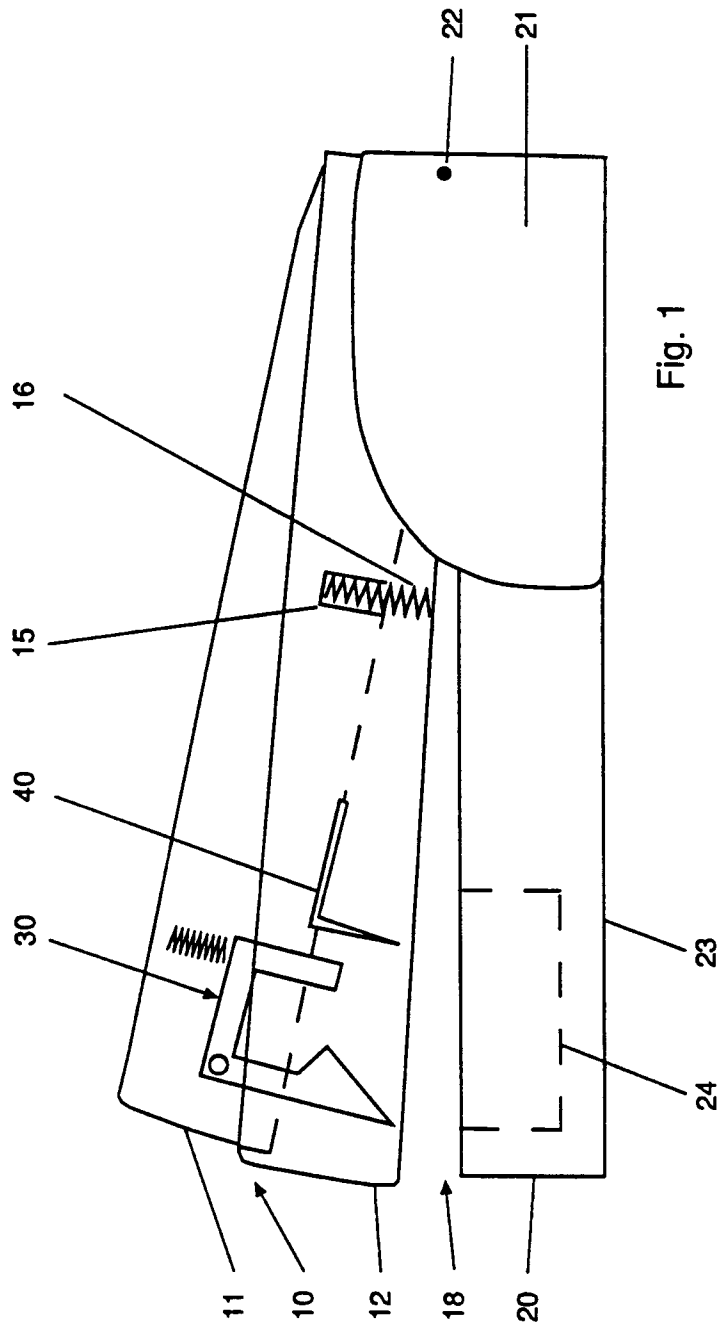


Fig. 1

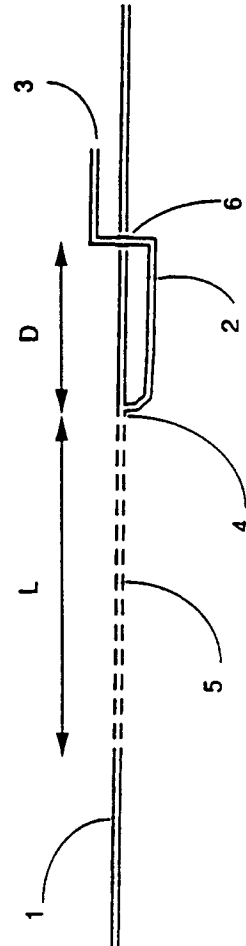
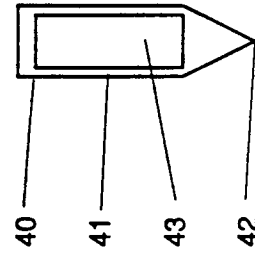


Fig. 5

Fig. 4



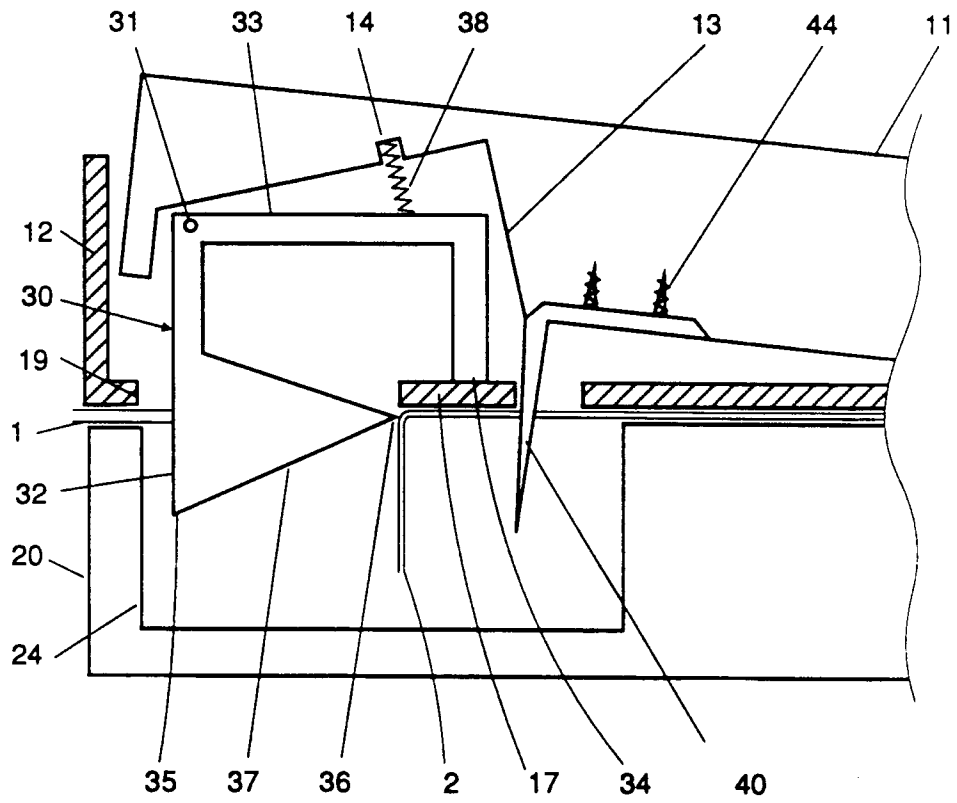


Fig. 2

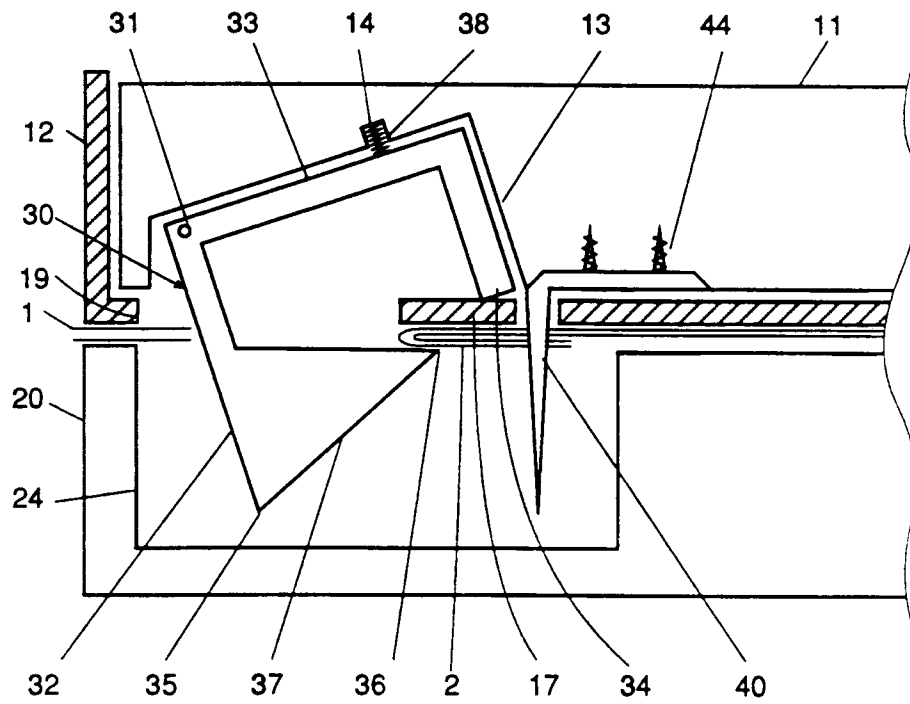


Fig. 3