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(54) **A TOY BUILDING SET**

SPIELZEUGBAUKASTEN

JEU DE CONSTRUCTION

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(73) Proprietor: **LEGO A/S
7190 Billund (DK)**

(72) Inventor: **HØHRMANN PEDERSEN, Frank
DK-6600 Vejen (DK)**

(74) Representative: **Guardian
IP Consulting I/S
Diplomvej, Building 381
2800 Kgs. Lyngby (DK)**

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Description

FIELD OF APPLICATION OF THE INVENTION

[0001] The present invention relates to a toy building set according to claim 1.

STATE OF THE ART

[0002] Toy building sets comprising building elements or building blocks are known in many different configurations, and it applies to a large part of them that the individual building elements are provided with a number of coupling studs protruding from a surface on the building element to the effect that those coupling studs are capable of engaging with complementarily configured coupling studs on another building element, whereby the coupling studs on the one building element are received completely or partially in the complementary coupling means on the other building element.

[0003] An example of such a toy building set is known from EP patent no. 1 146 942.

[0004] Such toy building sets most often consisting of relatively hard and inflexible three-dimensional blocks and elements, the toy building sets are extremely suitable for building relatively massive structures that are to resemble buildings, machinery and other inorganic and immovable structures, whereas it is difficult, merely by use of the building elements of the toy building set, to construct light structures such as a wind shield for a toy patio, a banner on a building or a sail for a boat.

[0005] Thus, today toy building sets are known wherein the toy building set includes one or more sheet elements made of paper, plastics, foil, or some other sheet material, and wherein such sheet elements are, already by the manufacturer, punched into the shape it must have to enable use thereof in a specific context, and, also by the manufacturer, it is additionally provided with the holes it takes to mount the sheet element on the building element.

[0006] In the light of this, a perforator of the kind described above is known for use in connection with a toy building set as set forth above, which perforator is configured for punching a hole in a sheet of paper, foil, fabric or other sheet material, and wherein the hole which can be punched by means of the perforator is of such size that a coupling stud configured on one of the building elements of the toy building set can be introduced into the punched hole. Thereby it is possible to construct a structure consisting of a plurality of such building elements and to provide that structure with the sheet material which one has, on one's own, configured as a user of the toy building set.

[0007] It being thereby possible to punch holes where one desires to do so, which holes may subsequently be used for securing the sheet material to the erected structure by means of the coupling studs of the building elements, a much higher degree of freedom is achieved for

adapting and designing sheet material elements in accordance with one's own wishes, and for subsequently providing the sheet material element with precisely the holes in those positions that are most convenient for enabling mounting thereof on a given building structure.

OBJECT OF THE INVENTION

[0008] Based on this, it is the object of the present invention to provide a toy building set with associated perforator, by which it has been made even easier to shape a piece of fabric, paper or other sheet material in accordance with the shape one has imagined, said sheet being precisely provided with punched holes in the correct positions desired based on the use for which it is intended to fulfil in a given structure built by use of the building elements in the toy building set.

[0009] This is accomplished in that the perforator for the toy building set the housing comprises a substantially plane surface, wherein a number of indentations are provided that form a number of coupling means that are complementary relative to the coupling studs and are configured with the same mutually fixed distance as the distance between the coupling studs on the building element to the effect that the housing can be mounted on a building element.

[0010] In this manner it is enabled that the perforator can be mounted on a building element, following which the sheet can be introduced into the perforator with a view to punching of one or more holes in the sheet. If the user has thus built eg a given structure from a number of building elements and now wishes to mount a piece of fabric with a specific shape on that structure, the user can, by use of the perforator, mount or couple it onto the desired place on the structure built, and then punch holes in the sheet precisely where they need to be in order to enable mounting of the sheet in the same place on the structure.

[0011] Moreover, it is enabled that the manufacturer of the toy building set can draft instructions in advance as to how a user may him/herself produce various types of sheet elements, the building set as such functioning as a kind of boring template to the user, to the effect that the individual holes can easily be punched with a more accurate position than known so far.

[0012] According to a preferred embodiment of the invention, the punching tool is thus configured in such a manner that it is capable of punching one or more holes in a sheet extending essentially in a plane in parallel with the essentially plane surface of the housing of the perforator.

[0013] In this context, the punching tools are conveniently each separately configured as a rod with a longitudinal axis and a first end on which a cutter blade is configured which is capable of rupturing the sheet when the rod is shifted along its longitudinal axis and through the sheet.

[0014] According to one embodiment which will be

compatible with many known toy building sets, each coupling stud and each punching tool is configured to be essentially circular cylindrical to the effect that the centre axis of each punching tool constitutes the longitudinal axis thereof, and wherein one of the complementary coupling means is arranged such that the centre axis of the coupling stud coincides with the centre axis of one of the punching tools.

[0015] In this context the diameter of the punching tool conveniently corresponds to the corresponding diameter of the coupling stud, since a very accurate positioning of the sheet on the coupling studs is hereby accomplished.

[0016] To that end, the housing of the perforator may comprise an operating handle configured on the opposite side of the housing relative to the plane surface, and said operating handle being configured such that, when pressure is applied onto it in a direction towards the housing, one or more punching tools is/are activated for punching one or more holes in the sheet. Thereby the force to be applied to the operating handle will act essentially in parallel with the centre axis of the coupling stud to the effect that the risk of the perforator disengaging from the coupling studs during the punching effect.

[0017] Moreover, the housing of the perforator may comprise a relatively thin slot for receiving a sheet, and said slot extends into the housing essentially in parallel with the essentially plane surface to the effect that it is ensured that eg a child is not hurt by its finger or other being inserted below the punching tools during the punching process.

[0018] According to a particularly preferred embodiment, the perforator comprises at least four punching tools that are configured in a square pattern at a mutual distance corresponding to the mutually fixed distance between two adjacent coupling studs on the building element.

[0019] The coupling studs of the building element may have an essentially circular cylindrical surface with a centre and a diameter of 4.8 mm and being configured such that the distance between two adjacent coupling studs is 8 mm to the effect that the distance between the circular cylindrical surfaces on two adjacent coupling studs is 3.2 mm, this perforator is suitable in particular for use in connection with a known toy building set.

[0020] The coupling studs may have an essentially circular cylindrical surface with a centre and a diameter of 9.6 mm instead and being configured such that the distance between two adjacent coupling studs is 16 mm to the effect that the distance between the circular cylindrical surfaces of two adjacent coupling studs is 6.4 mm.

LIST OF FIGURES

[0021]

Figure 1: is a perspective view of a perforator according to the present invention, seen in an inclined view from above and from the front;

Figure 2: is a perspective view of a building element for a toy building set according to the present invention, seen in an inclined view from above;

Figure 3: is a perspective sectional view showing a part of the perforator shown in figure 1, in a section longitudinally of the perforator and seen in an inclined view from above and from the front;

Figure 4: is a perspective view of the perforator shown in figure 1, seen in an inclined view from above and from the front, and wherein the uppermost cover of the housing has been removed;

Figure 5: is a perspective view of the perforator shown in figure 1, seen in an inclined view from above and from behind, and wherein the upper cover, the operating handle, and the handle for operating the hole selector have been removed.

EMBODIMENT OF THE INVENTION

[0022] Thus, figure 1 shows a perforator 1 according to the present invention, said perforator 1 comprising a housing 2, wherein a slot 3 is configured wherein a sheet of a (not shown) thin material, such as paper, plastics, fabric, or other material can be introduced, and an operating handle 4 which, when operated, is pressed downwards in a direction towards the housing 2 of the perforator, and thereby activates a number of punching tools that are driven to shift transversally of the slot 3, whereby the punching tools are driven through the not shown sheet of a thin material and produce one or more holes in the paper depending on the number and configuration of the punching tools.

[0023] The punching tool shown in figure 1 having several separate punching tools, it further comprises a second operating tool 5 which is used to change how many of the punching tools that are activated at the same time when the operating handle 4 is depressed.

[0024] According to one embodiment of the invention, it is part of a toy building system or a toy building set, by which is intended a number of building elements or building blocks of the type which is shown eg in figure 2 showing a building element 6 having a surface 7 which is provided with a total of four coupling studs 8. It will thereby be obvious to the person skilled in the art that the perforator can be a separate product suitable for use in existing products or as a tool sold along with a number of building elements.

[0025] Moreover, it will be obvious to the person skilled in the art that the building element shown in figure 1 is one of many embodiments of building elements, and that the invention can be used in connection with building elements having more or fewer coupling studs 8 than is shown in figure 1 and optionally having studs of other configurations or mutual distances than the one shown in figure 1.

[0026] The perforator 1 as shown being provided with a number of indentations 9 on its essentially plane bottom face, said indentations being configured such that they

each form a number of coupling means that are complementary relative to the coupling studs 8 on the building element 6, it is possible to mount the perforator on a building element of a toy building set, if that building element is provided with coupling studs having the same shape and mutual distance as the one shown in figure 2. If the perforator 1 is mounted eg on a building element or a building plate having many more coupling studs 8 than the building element 6 shown in figure 2, such building plate will be able to serve as a kind of boring template for accurate mutual positioning of several groups of holes on a sheet.

[0027] Now, figure 3 shows a part of the same perforator 1 as the one shown in its entirety in figure 1. Herein it is primarily the frontmost end of the perforator that is shown, in a sectional view, wherein the sectional plane is arranged in parallel with and slightly displaced relative to the plane of symmetry of the housing 2. As will appear, the operating handle 4 is journaled, relative to the housing 2, about a shaft 11, and upon depression of the operating handle 4 in the direction of the housing 2, the operating handle 4 will press the piston 12 downwards towards a selector disc 13 that subsequently presses one or more of the punching tools 14 downwards transversally to the slot 3 to the effect that the punching tools 14 are, in a known manner, pressed through a not shown sheet that has been shifted into the slot 3 and extends below the punching tools.

[0028] According to an embodiment of the invention, it is possible to vary the number of punching tools 14 that are activated simultaneously by depression of the operating handle 4. Thus, figures 4 and 5 will show the frontmost part of the perforator shown in figure 1, where the upper shell that constitutes a part of the housing 2 in figure 1 has been removed in figure 4, and wherein the operating handle 4 and the second operating handle 5 have moreover been removed in figure 5.

[0029] Herein, it will thus appear that the second operating handle 5 is, via the piston 12, connected to a hole selector 15, herein shown in the form of a circular disc with a number of cut-outs that are configured such that, when the hole selector, when positioned as shown in figure 5, is pressed downwards towards the punching tools 14, all four punching tools 14 will be pressed simultaneously down towards the slot 3, and in this manner all four punching tools are activated to punch a hole in the sheet.

[0030] If the hole selector 15 is subsequently rotated a small distance in the counter-clockwise direction, the two pointers 16 on the hole selector 15 will be precisely clear of two of the four punching tools 14, and if the hole selector is rotated a further distance in the counter-clockwise direction, it will further be capable of occupying a position in which only one of the four punching tools is activated when the operating handle 4 is depressed.

[0031] It will be obvious to the person skilled in the art that embodiments of perforators may be suggested that are different from the one described above and shown

in the drawing. Thus, the principle of the invention can also be used in an embodiment where the perforator is configured as a pair of thongs having two operating handles that can be pressed towards each other, and more or fewer punching tools than the four provided herein can be provided.

Claims

1. A toy building set comprising at least one building element (6) having a surface (7) on which a number of coupling studs (8) are provided that extend from the surface (7), and wherein those coupling studs (8) are configured in a pattern by which there is a mutually fixed distance between adjacent coupling studs (8), **characterised in that** the toy building set further comprises a perforator (1), said perforator (1) comprising a housing (2) in which at least one punching tool (14) is configured for punching material from a sheet element configured from a thin material such as a sheet of eg paper, plastics or fabric, in such a manner that the perforator (1) is capable of punching a hole in the sheet, which hole has such expanse that one or more coupling studs (8) can be introduced into the punched hole, and where the housing (2) comprises an essentially plane surface (10) in which a number of indentations (9) are provided that form a number of coupling means that are complementary relative to the coupling studs (8) and are configured with the same mutually fixed distance as the distance between the coupling studs (8) on the building element (6) to the effect that the housing (2) can be mounted on a building element (6).
2. A toy building set according to claim 1, **characterised in that** the perforator (1), and in particular the punching tool (14), is configured such that it is capable of punching one or more holes in a sheet extending essentially in a plane in parallel with the essentially plane surface (10) on the housing (2) of the perforator (1).
3. A toy building set according to claim 2, **characterised in that** the punching tools (14) are each configured as a rod having a longitudinal axis, and a first end on which a cutter blade is provided which is capable of rupturing the sheet when the rod is shifted along its longitudinal axis and through the sheet.
4. A toy building set according to claim 3, **characterised in that** each coupling stud (8) and each punching tool (14) is essentially circular cylindrical to the effect that the centre axis of each punching tool (14) constitutes its longitudinal axis; and **in that** one of the complementary coupling means (9) is arranged such that the centre axis of the coupling stud (8) coincides with the centre axis of one of the punching

tools (14).

5. A toy building set according to claim 4, **characterised in that** the diameter of the punching tool (14) corresponds to the corresponding diameter of the coupling stud (8). 5
6. A toy building set according to claim 2, **characterised in that** the housing (2) of the perforator (1) comprises an operating handle (4) configured on the opposite side of the housing (2) relative to the plane surface (10), and which operating handle (4) is configured such that, when it is pressed in the direction of the housing (2), one or more punching tools (14) is/are activated for punching one or more holes in the sheet. 10 15
7. A toy building set according to claim 2, **characterised in that** the housing (2) of the perforator (1) comprises a slot (3) for receiving a sheet, and said slot (3) extends into the housing (2) essentially in parallel with the essentially plane surface (10). 20
8. A toy building set according to one or more of the preceding claims, **characterised in that** the perforator (1) comprises at least four punching tools (14) that are configured in a square pattern with a mutual distance corresponding to the mutually fixed distance between two adjacent coupling studs (8) on the building element (6). 25 30

Patentansprüche

1. Spielzeugbausatz, umfassend mindestens ein Bauelement (6) mit einer Fläche (7), auf der eine Anzahl von Kupplungsbolzen (8) bereitgestellt ist, die sich von der Fläche (7) erstrecken, und wobei diese Kupplungsbolzen (8) in einem Muster ausgelegt sind, durch das eine gegenseitig festgelegte Distanz zwischen benachbarten Kupplungsbolzen (8) besteht, **dadurch gekennzeichnet, dass** der Spielzeugbausatz ferner einen Perforator (1) umfasst, wobei der Perforator (1) ein Gehäuse (2) umfasst, in dem mindestens ein Stanzwerkzeug (14) ausgelegt ist, Material aus einem Schichtelement, das aus einem dünnen Material, wie z.B. einem Blatt Papier, einer Kunststoffolie oder einer Gewebeschicht, ausgelegt ist, derart zu stanzen, dass der Perforator (1) ein Loch in die Schicht stanzen kann, wobei das Loch eine derartige Ausdehnung hat, dass ein oder mehrere Kupplungsbolzen (8) in das gestanzte Loch eingeführt werden kann oder können, und wobei das Gehäuse (2) eine im Wesentlichen ebene Fläche (10) aufweist, in der eine Anzahl von Einbuchtungen (9) bereitgestellt ist, welche eine Anzahl von Kupplungsmitteln bilden, die relativ zu den Kupplungsbolzen (8) komplementär sind und mit derselben ge- 35 40 45 50 55

gegenseitig festgelegten Distanz wie der Distanz zwischen den Kupplungsbolzen (8) auf dem Bauelement (6) mit dem Effekt ausgelegt sind, dass das Gehäuse (2) auf einem Bauelement (6) montiert werden kann.

2. Spielzeugbausatz nach Anspruch 1, **dadurch gekennzeichnet, dass** der Perforator (1), und insbesondere das Stanzwerkzeug (14), derart ausgelegt ist, dass er bzw. es ein oder mehrere Löcher in eine Schicht stanzen kann, die sich im Wesentlichen in einer Ebene parallel zu der im Wesentlichen ebenen Fläche (10) auf dem Gehäuse (2) des Perforators (1) erstrecken.
3. Spielzeugbausatz nach Anspruch 2, **dadurch gekennzeichnet, dass** die Stanzwerkzeuge (14) jeweils als Stab mit einer Längsachse und einem ersten Ende ausgelegt sind, auf dem eine Schneidklinge bereitgestellt ist, welche die Schicht durchdringen kann, wenn die Stange entlang ihrer Längsachse und durch die Schicht verschoben wird.
4. Spielzeugbausatz nach Anspruch 3, **dadurch gekennzeichnet, dass** jeder Kupplungsbolzen (8) und jedes Stanzwerkzeug (14) im Wesentlichen kreiszylindrisch mit dem Effekt ist, dass die zentrale Achse jedes Stanzwerkzeugs (14) seine Längsachse darstellt; und dass eines der komplementären Kupplungsmittel (9) so eingerichtet ist, dass die zentrale Achse des Kupplungsbolzens (8) mit der zentralen Achse eines der Stanzwerkzeuge (14) zusammenfällt.
5. Spielzeugbausatz nach Anspruch 4, **dadurch gekennzeichnet, dass** der Durchmesser des Stanzwerkzeugs (14) dem entsprechenden Durchmesser des Kupplungsbolzens (8) entspricht.
6. Spielzeugbausatz nach Anspruch 2, **dadurch gekennzeichnet, dass** das Gehäuse (2) des Perforators (1) einen Bedienungshandgriff (4) umfasst, der auf der gegenüberliegenden Seite des Gehäuses (2) relativ zu der ebenen Fläche (10) ausgelegt ist, und wobei der Bedienungshandgriff (4) derart ausgelegt ist, dass, wenn er in die Richtung des Gehäuses (2) gedrückt wird, ein oder mehrere Stanzwerkzeuge (14) aktiviert wird oder werden, um ein oder mehrere Löcher in die Schicht zu stanzen.
7. Spielzeugbausatz nach Anspruch 2, **dadurch gekennzeichnet, dass** das Gehäuse (2) des Perforators (1) einen Schlitz (3) zur Aufnahme einer Schicht umfasst, und sich der Schlitz (3) in das Gehäuse (2) im Wesentlichen parallel zu der im Wesentlichen ebenen Fläche (10) erstreckt.
8. Spielzeugbausatz nach einem oder mehreren der

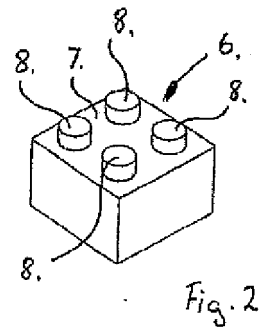
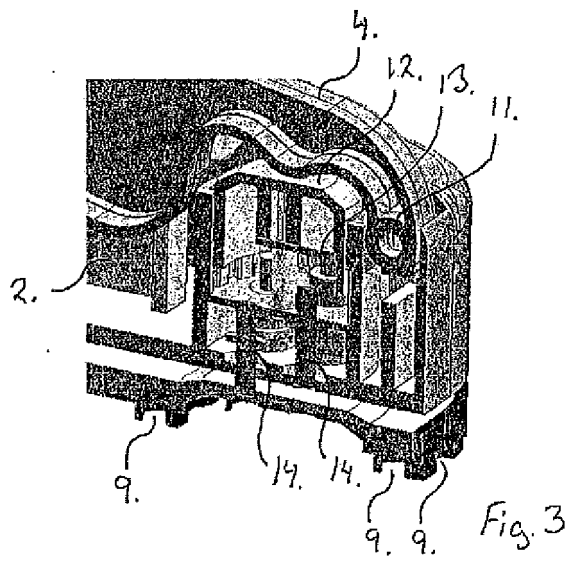
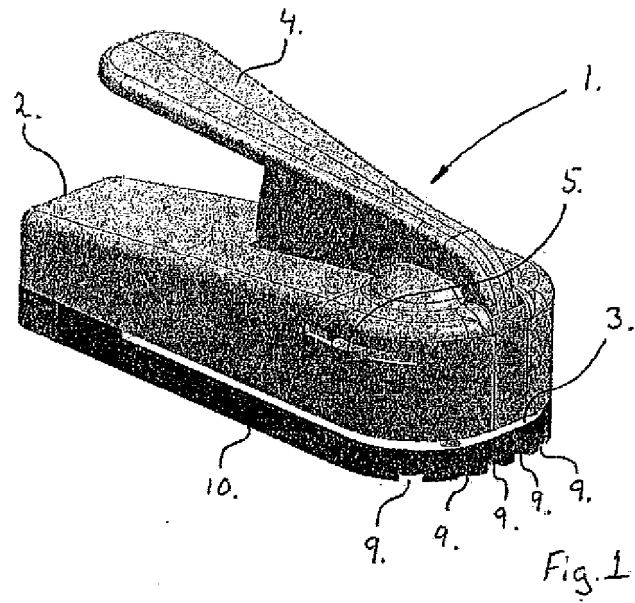
vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Perforator (1) mindestens vier Stanzwerkzeuge (14) umfasst, die in einem quadratischen Muster mit einer Distanz voneinander angeordnet sind, die der gegenseitig festgelegten Distanz zwischen zwei benachbarten Kupplungsbolzen (8) auf dem Bauelement (6) entspricht.

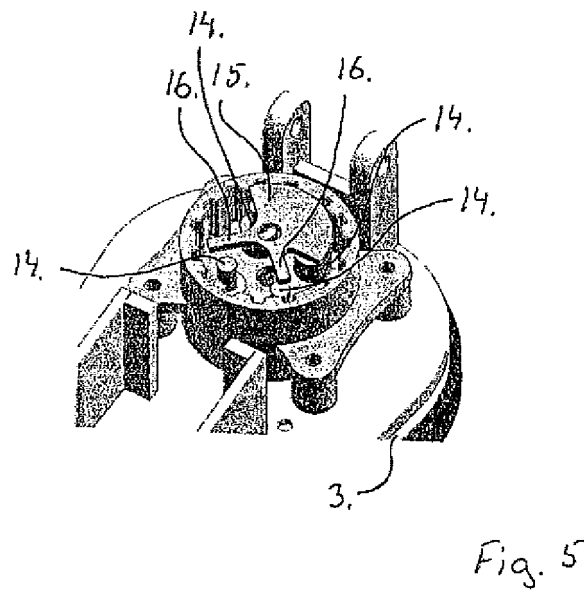
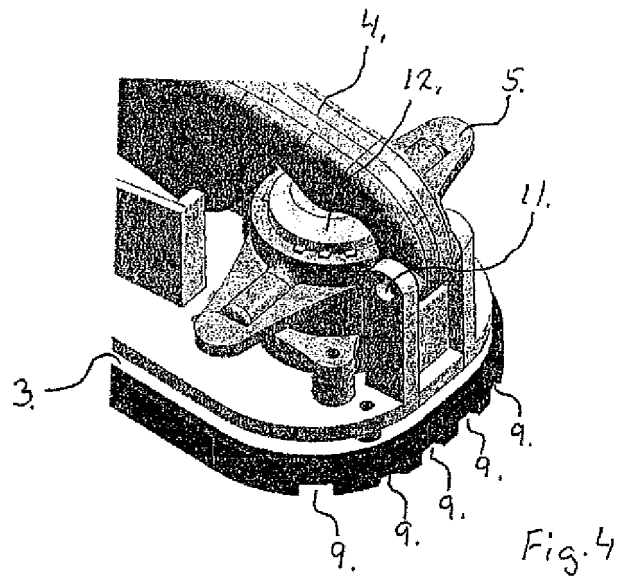
Revendications

1. Jeu de construction comprenant au moins un élément de construction (6) ayant une surface (7) sur laquelle sont aménagés un certain nombre de goujons de couplage (8) qui s'étendent depuis la surface (7), et dans lequel ces goujons de couplage (8) sont configurés selon un motif tel qu'il y ait une distance mutuelle fixe entre des goujons de couplage adjacents (8), **caractérisé en ce que** le jeu de construction comprend en outre un perforateur (1), ledit perforateur (1) comprenant un boîtier (2) dans lequel au moins un outil de perforation (14) est configuré pour perforer le matériau d'un élément en feuille configuré à partir d'un matériau mince tel qu'une feuille, par exemple, de papier, de matière plastique ou de tissu, de manière telle que le perforateur (1) soit capable de perforer un trou dans la feuille, lequel trou a une dimension telle qu'un ou plusieurs goujons de couplage (8) puisse(nt) être introduit(s) dans le trou perforé, et dans lequel le boîtier (2) comprend une surface essentiellement plane (10) dans lequel sont ménagées un certain nombre d'indentations (9) qui forment un certain nombre de moyens de couplage (8) qui sont complémentaires des goujons de couplage (8) et sont configurées à la même distance mutuelle fixe que la distance entre les goujons de couplage (8) sur l'élément de construction (6) de sorte que le boîtier (2) puisse être monté sur un élément de construction (6).
2. Jeu de construction selon la revendication 1, **caractérisé en ce que** le perforateur (1) et, en particulier, l'outil de perforation (14) sont configurés de sorte qu'ils soient capables de perforer un ou plusieurs trous dans une feuille s'étendant essentiellement dans un plan en parallèle avec la surface essentiellement plane (10) sur le boîtier (2) du perforateur (1).
3. Jeu de construction selon la revendication 2, **caractérisé en ce que** les outils de perforation (14) sont configurés chacun sous la forme d'une tige ayant un axe longitudinal et une première extrémité sur laquelle une lame de coupe est prévue, qui est capable de rompre la feuille lorsque la tige est déplacée le long de son axe longitudinal et à travers la feuille.
4. Jeu de construction selon la revendication 3, **caractérisé en ce que** chaque goujon de couplage (8) et

chaque outil de perforation (14) est cylindrique à base essentiellement circulaire afin que l'axe central de chaque outil de perforation (14) constitue son axe longitudinal ; et dans lequel l'un des moyens de couplage complémentaires (9) est aménagé de sorte que l'axe central du goujon de couplage (8) coïncide avec l'axe central de l'un des outils de perforation (14).

5. Jeu de construction selon la revendication 4, **caractérisé en ce que** le diamètre de l'outil de perforation (14) correspond au diamètre correspondant du goujon de couplage (8).
6. Jeu de construction selon la revendication 2, **caractérisé en ce que** le boîtier (2) du perforateur (1) comprend une poignée de commande (4) configurée sur le côté opposé du boîtier (2) par rapport à la surface plane (10), laquelle poignée de commande (4) est configurée de sorte que, lorsqu'elle est pressée dans la direction du boîtier (2), un ou plusieurs outils de perforation (14) soit(en)t activé (s) pour perforer un ou plusieurs trous dans la feuille.
7. Jeu de construction selon la revendication 2, **caractérisé en ce que** le boîtier (2) du perforateur (1) comprend une fente (3) pour recevoir une feuille et ladite fente (3) s'étend dans le boîtier (2) essentiellement en parallèle avec la surface essentiellement plane (10).
8. Jeu de construction selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le perforateur (1) comprend au moins quatre outils de perforation (14) qui sont configurés en motif carré avec une distance mutuelle correspondant à la distance mutuelle fixe entre deux goujons de couplage adjacents (8) sur l'élément de construction (6).





REFERENCES CITED IN THE DESCRIPTION

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