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(54) **Nail driving device, attachment therefor and method**

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Description

[0001] The present invention relates to a nail driving device. The present invention also relates to an attachment for a nail driving device. The present invention further relates to a method for driving nails using a nail driving device.

[0002] Use is made in per se known manner of for instance, gas-firing hammers to drive in tacks or nails. An example of such a gas-firing hammer is a gas-firing hammer from the applicant of this patent application, such as the "Powers Trak-It".

[0003] Using such a gas-firing hammer driven by a combustion engine, it is possible to successively drive strips of nails placed in a magazine into the object to be nailed. In the example stated in the foregoing use is made of nails arranged at a mutual distance by means of plastic. It is possible in alternative manner to attach nails arranged against each other into a strip using for instance paper. Known gas-firing hammers are suitable for nails of a length of for instance five to ten centimetres.

[0004] In addition to such long nails, use is also made in, for instance the roofing trade of relatively short nails with a proportionally large head, for instance for the purpose of fixing relatively soft roof covering material, and/or 'haften' with a length of for instance 2.5 to 3.5 cm, which are for instance known as 'haften' nails. A known drawback of applying relatively long nails and relatively short nails is that different devices are required for both the long and the short nails at the working location. This is time-consuming and costly in practice.

[0005] US5 437 404 discloses a nail driving device for driving at least a first relatively long type of nail and a second relatively short type of nail into an object, said nail driving device comprising: a drive unit for driving a thrust or pushing member for driving the nail into the object, a magazine for holding a supply of said nails, a barrel through which said thrust or pushing member drives the nail into the object, the barrel having a side inlet for receiving nails from the magazine, and an actuator movable in response to pressure produced when the nail gun is pushed against the object for actuating the driving operation. The magazine is provided with an integrally connected shear block that can be pivoted from a first position when a longer nail is used to a second position when a shorter nail is used to assist with shearing a nail from a strip of nails in the magazine during a nail firing operation.

[0006] US6 896 165 discloses nail driving device for driving a first relatively long type of nail and a second relatively short type of nail into an object. The nail driving device has a barrel through which nails are driven into the object and a magazine from which nails are fed into the barrel via a side inlet in the form of a slot defined by the barrel. The nail driving device is provided with a slot sealing member used to seal the side inlet. The slot sealing member has a slot sealing portion that fits exactly into an accommodating groove provided in the barrel.

The accommodating groove extends parallel to the longitudinal axis of the barrel. The slot sealing portion is connected with an offset pivotal portion that includes an elongate slot. The slot sealing member is secured to one side of the barrel by a bolt that extends through the elongate slot. The configuration of the slot is such that when the bolt is loosened, the slot sealing member can be slid in a direction perpendicular to the barrel axis to move the slot sealing portion in and out of the accommodating groove. When the slot sealing portion is received in the accommodating groove it seals the side inlet of the barrel and provides a nail guiding surface for nails driven through the barrel.

[0007] The invention provides a nail driving device as specified in claim 1.

[0008] An advantage of such a device is that both the long type of nails and the short type of nails can be processed by means of the nailing driving device. The long type of nails can be processed by making use of the open side inlet of the barrel. It is also possible for the device, making use of the attachment, to be reliably suitable for use with the short type of nail, such as the so-called 'haften' nails.

[0009] Advantageously the attachment can be secured in simple manner on the actuator, for instance by means of tightening a screw element. It is likewise possible to apply a different securing principle.

[0010] The guide member makes it possible for the barrel to be substantially closed on all sides, or for the barrel to provide a guide surface on substantially all sides for short nails which, if an open side wall in the barrel were open, could exit in askew position. It is important to note that a further advantage is that, after removal of the attachment and therefore the guide, the side inlet of the barrel is once again open, whereby the relatively long first type of nail can be inserted therethrough into the barrel.

[0011] Preferably, the attachment comprises a substantially protective actuation end part as specified in claim 2. A known gas-firing hammer is provided close to the head of the barrel with protrusions for preventing displacement during the actuation operation. The protection provided by the attachment is particularly suitable for performing an actuation operation in the case of a relatively vulnerable or soft roof covering, such as strips comprising tar. Such tar strips are usually fastened using the relatively short type of nail.

[0012] Preferably, the attachment comprises a stop surface as specified in claim 3. An advantage of such a stop surface is that one or more nails in the magazine, in addition to the nail which is situated in the barrel and which will be struck by the thrust or pushing member, will be orientated by means of the stop surface. The orientation of the nails in the magazine is hereby improved due to an improved positioning of the foremost nails relative to the side inlet of the barrel. The tips of the nails are here preferably pressed by means of the stop surface.

[0013] Preferably, the stop surface extends in the

lengthways direction of the magazine at an angle to the barrel substantially corresponding to the angle of the magazine relative to the barrel. It hereby becomes possible to press a number of nails simultaneously, whereby the positive effect of the stop surface on the nails in the magazine is enhanced.

[0014] Preferably, the magazine is adapted to guide at least the tip ends of both said long and short type of nails. Particularly the relatively short, second type of nails are hereby prevented from moving into a tilted position relative to the guiding direction of the magazine, which could impede or obstruct the through feed at some point in the magazine. It is recommended that the magazine is adapted to guide at least the outer ends of both the first and the second type of nails. It is important here that the pressing mechanism of the nails has sufficient space in a magazine which, as specified in the foregoing, is suitable for the short 'haften' nails or tacks.

[0015] Preferably, the attachment comprises at least one flattened portion in a side wall thereof. This enables a relatively short nail distance relative to parts protruding from the workpiece.

[0016] Preferably attachment comprises:

- a substantially cylindrical or flattened cylindrical body releaseably mountable on said actuator,
- a substantially flat end surface with a through-passage that is in line with the barrel when the body is mounted on the actuator, and
- wherein said guide member comprises a substantially plate-like or flat member that defines a guide surface cooperable with the barrel for guiding the short type of nail.

[0017] An advantage of such an attachment is that it is suitable for simple positioning at the outer end of the barrel of the nail driving device. The substantially plate-like or flat member is oriented such that it can serve on the side of the barrel as a guide for short nails to be driven through the barrel. Such a plate-like flat member can also provide a stop surface for the nails in the magazine, or at least those close to the barrel. The flat end surface can also serve as protection for the object during the driving operation, or pressing of the head of the barrel against the object whereby the drive unit is also actuated.

[0018] The invention also provides an attachment for a nail driving device as specified in claim 9.

[0019] The invention also provides a method for driving in nails comprising securing an attachment as specified in the last preceding paragraph to a said actuator of a nail driving device. It is possible to use the nail driving device with the attachment. It is further possible to use the nail driving device without the attachment. Advantages of the present invention are therefore, among others, that short nails can be inserted into an object while making use of a readily placeable attachment with a nail driving device which would in general be unsuitable for such short nails.

[0020] Further advantages, features and details of the present invention will be described hereinbelow with reference to the accompanying figures, in which:

Fig. 1 shows a schematic, partly cut-away side view of a nail driving device according to the present invention in a rest position;

Fig. 2 shows the same view of the nail driving device of figure 1 in an actuated operating position;

Fig. 3 is a front view of an attachment according to the present invention;

Fig. 4 shows a cross-section of the attachment of figure 3 along the line IV-IV;

Fig. 5 is a top view of the attachment of figure 3; and
Fig. 6 shows a bottom view of the attachment of figure 3 in combination with a schematic view of a magazine of a nail driving device.

[0021] Figures 1 and 2 show a nail driving device in the form of a gas-firing hammer 1 comprising, amongst other parts, housing 24 comprising a combustion engine and a fuel container, a handle 26, a battery 27, a trigger 23. Such a device is per se known and the operation of these parts will not be described in detail in this text. The gas-firing hammer 1 further comprises a per se known barrel 3 with an actuator 25 which is arranged therealong and which debouches at the end of the barrel into an actuator head arranged around the barrel and having pointed tips which will, for instance, prevent shifting when the gas-firing hammer 1 is actuated.

[0022] The gas-firing hammer 1 further comprises a magazine 4 which is suitable for holding nails arranged in strips. These nails are arranged in the magazine such that the heads 21 of the nails are situated in the head guide channel 22. The shank of the nail, with the tip arranged on the other end relative to the head, extends from the head guide channel 22 into the magazine. The length of the nail is herein such that it extends no further than the bottom edge 19 of the magazine. The shank herein extends between side walls 20 of the magazine, these side walls being provided with openings 18 which on the one hand save weight and on the other provide a view into the magazine. A pressure slide 17 is further provided in the magazine for the purpose of pressing the strip and nails in the direction of the barrel.

[0023] Because of the presence of this slide 17 a relatively large part of the magazine is necessarily open at the position of this slide. The relatively short nails 13 shown in the figure can hereby tilt transversely of the guide direction of the slide. In order to prevent this tilting of the nails 13 a fastening member 15 is mounted at the beginning of the slide, wherein a guide rod 16 extends in the guide direction of the magazine from this fastening member. This preferably takes place in the manner shown in figure 2, wherein guide rod 16 extends behind the slide 17. The slide 17 is preferably held under bias by means of a flat spring which can be wound up.

[0024] An attachment 2 is placed over the actuator 25

and subsequently fixed in place by means of a screw element extending through an opening 7 provided in the attachment 2. The screw element may, for instance, be a screw having an M6 thread. As best seen in figure 6, the attachment 2 comprises a substantially flattened circular wall 5 which is placed around the actuator 25. Attachment 2 also comprises an end wall 6 having therein an opening 9 which is shown in figure 1 in line with the barrel 3. The attachment 2 also comprises a guide member in the form of a flat plate 8, which extends partially through the substantially cylindrical wall 5 on the side of the magazine when the attachment is placed on the actuator 25. Flat plate 8 defines guide surface 10, which defines a part of the barrel of the gas-firing hammer. The shown relatively short nails 13 are hereby guided through the barrel, whereby there is no risk they will egress through the open side of the barrel suitable for allowing a long shank of the nail extending to a position close to the bottom edge of magazine 19.

[0025] Flat plate 8 defines a stop surface 11 which has an angle relative to the barrel 3 such that it can press a number of, such as for instance the shown four nail tips, in the actuation position of the attachment 2 shown in figure 2. At each actuation of the gas-firing hammer 1 the strip with nails is hereby once again positioned as well as possible relative to the barrel.

[0026] Figure 1 shows the gas-firing hammer 1 in the passive state, wherein actuator 25, the nail driving rod 12 and the attachment 2 are situated in the rest position. As shown in figure 2, in order to drive a nail into a workpiece 28 the attachment and the actuator 25 are pressed upward relative to the barrel 3 in the direction of arrow C by pressing the gas-firing hammer 1 downward in the direction of arrow A. The actuator 25, a pin of which extends along the barrel, is hereby driven into the gas-firing hammer 1 and the combustion engine is activated in per se known manner when trigger 23 is also actuated.

[0027] The nail driving rod 12 is then thrust downward by the combustion engine and pushes the nail 13 downward through the barrel. Through actuation of attachment 2, the stop surface 11 of plate 8 of the attachment is pressed against the nail array, whereby the nail situated in the barrel is oriented as well as possible just before the nail driving rod 12 tears it from the strip and drives it into workpiece 28. During this driving operation the nail is guided downward by the barrel and also by guide wall 10 of plate 8 in appropriate manner through the barrel and eventually through opening 9 on the underside of end plate 6 of the attachment.

[0028] The attachment 2 is shown in greater detail in figures 3-6. Figure 6 shows a bottom view of the attachment with the two side walls 20 of the magazine 4 shown extending on either side along plate 8 in the position of use of the attachment. The outer ends of side walls 20 of the magazine are shown with broken lines since in bottom view they have to be situated above the shown position of the attachment.

[0029] As shown in figures 1 and 2, the walls of the

magazine 4 are provided for this purpose with a recess or opening 29. The shanks of long nails are hereby situated partially in this free space as they approach the open side of the barrel 3. Because such long nails are also guided through a higher part of the magazine, such long nails will hereby remain oriented in the lengthwise direction.

[0030] The open side of the barrel 3 results in a further advantage of the present invention. By applying the attachment 2 on such a long barrel open on the side there is the advantage that a possible disruption during the feed and/or throughfeed of short nails in particular can be obviated in simple manner in that, because of the presence of much free space due to, among other things, the opening 29 in the magazine, the disruption can be remedied using the fingers and/or with a tool. Certainly when the attachment 2 is removed there is, owing to such an arrangement, much space available for gaining access to the barrel. Such a significant advantage is not possible in a gas-firing hammer specifically suitable for the short tacks or 'haften' nails, among other reasons because there is very little space available in such a relatively short barrel.

[0031] A further advantage of the shown embodiment is that the wall of the attachment 2 is flattened on two sides, whereby the distance of the nail to be inserted relative to the outer side of the wall is relatively small. Nails can hereby be inserted closely against a standing edge or wall. The same flattened wall can be envisaged on the front side of the attachment or for instance at any conceivable angle along the periphery of the wall subject to the application of the gas-firing hammer. The strength of the hereby weakened side wall can be obtained by the end plate and/or thickened portions in other parts of the attachment.

[0032] The present invention is described in the foregoing on the basis of several preferred embodiments. The described device is for instance described on the basis of nails with a round head and at a determined angle. The invention is not limited hereto and can likewise be applied with nails having a D-shaped head and at any random angle. The invention is also described on the basis of a gas-firing hammer. The invention is however also suitable for a nail driving device with a powder-firing hammer or a nail driving device driven for instance by air pressure or an electric motor.

[0033] The embodiment provides an attachment for a fastener gun having a barrel along which fasteners are fired and a magazine for holding fasteners having a first length and from which said first length fasteners are fed one by one into said barrel, said attachment being releasably securable to said nail gun and including a stop surface arranged such that when, in use, the attachment is secured to a said nail gun and the magazine of the nail gun is holding fasteners having a second length that is shorter than said first length, the stop surface is positioned to restrict movement in the firing direction of the fastener gun of at least the fastener in the magazine that

is positioned to be next fed into the barrel.

[0034] The nail gun comprises an actuator member slidable on said barrel and the attachment is releasably securable to the actuator member.

Claims

1. A nail driving device for driving at least a first relatively long type of nail and a second relatively short type of nail into an object, said nail driving device comprising:

a drive unit for driving a thrust or pushing member (12) for driving the nail into the object, a magazine (4) for holding a supply of said nails, a barrel (3) along which said thrust or pushing member drives a said nail into the object, the barrel having a side inlet for receiving said nails from the magazine,

and

an actuator (25) movable along the barrel in response to pressure produced when the nail gun is pushed against the object for actuating the driving operation, **characterised by**

an attachment (2) that is releaseably mountable on said actuator (25) for facilitating driving of the short type of nail (13) along said barrel into the object, said attachment comprising

a guide member (8) having a guide surface (10), the guide surface being arranged such that when said attachment is mounted on said actuator (25) it is received in said side inlet to cooperate with said barrel (3) for guiding the short type of nail when driven along said barrel.

2. A device as claimed in claim 1, wherein the attachment (3) comprises a substantially protective actuation end part for protecting the object when said pressure is applied to said actuator upon actuation of the driving operation.

3. A device as claimed in any one of the preceding claims, wherein the attachment (2) comprises a stop surface (11) arranged such that when said attachment is mounted on said actuator (25) and said magazine (4) holds said short type of nail the stop surface can restrict movement in the firing direction of the nail driving device of at least the nail in the magazine that is positioned to be next fed into the barrel.

4. A device as claimed in claim 3, wherein the stop surface (11) extends in the lengthways direction of the magazine (4) at an angle to the barrel substantially corresponding to the angle of the magazine relative to the barrel (3).

5. A device as claimed in any one of the preceding

claims, wherein the magazine (4) is adapted to guide at least the tip ends of both said long and short type of nails.

6. A device as claimed in claim 5, wherein the magazine (4) is provided with one or two guides (16) for preventing tilting of the short type of nails in a direction which differs from the feed direction of the magazine.

7. A device as claimed in any one of the preceding claims, wherein the attachment (2) comprises at least one flattened portion in a sidewall thereof.

8. A device as claimed in claim 1, wherein the attachment further comprises:

a substantially cylindrical or flattened cylindrical body releaseably mountable on said actuator (25),

a substantially flat end surface with a through-passage that is in line with the barrel when the body is mounted on the actuator (25), and wherein said guide member (8) comprises a substantially plate-like or flat member (8) that defines said guide surface.

9. An attachment for a nail driving device having a barrel (3) along which nails having a first length and nails having a second length that is shorter than said first length are fired, an actuator (25) slideable along said barrel in response to a reaction force produced when the nail driving device is pressed against an object into which a nail is to be fired, a magazine (4) for holding a supply of said nails and from which said nails can be fed one by one into said barrel through a side inlet of said barrel, said attachment (2) comprising a substantially cylindrical or flattened cylindrical body releasably mountable to said actuator and a guide member (8) having a guide surface (10), the guide surface being arranged such that when said body is mounted on said actuator the guide surface is received in said side inlet to cooperate with said barrel for guiding the second length nail when driven along said barrel for facilitating firing along said barrel of nails having said second length.

10. An attachment as claimed in claim 9, wherein said substantially cylindrical or flattened cylindrical body is a substantially protective actuation end part (5) that receives a portion of the actuator therein and said guide member (8) projects from said substantially protective actuation end part to define a stop surface (11) extending transverse to a longitudinal axis of said substantially protective actuation end part for restricting movement in the firing direction of the nail driving device of at least a first second length nail in said magazine that is positioned to be next fed into the barrel.

11. An attachment as claimed in claim 10, wherein said guide surface (10) extends parallel to said longitudinal axis of the substantially protective actuation end part (5).
12. An attachment as claimed in claim 11, wherein said substantially cylindrical or flattened cylindrical body defines an opening for the passage of said second length nails fired along said barrel, said substantially cylindrical or flattened cylindrical body and an end wall thereof define a lengthways extending slot in which said guide member (8) is received such that a portion of an edge of said guide member that defines said guide surface (10) extends into said substantially protective actuation end part.
13. An attachment as claimed in claim 9, wherein said substantially cylindrical or flattened cylindrical body is a substantially protective actuation end part which receives a free end portion of said actuator (25) such that the object into which a nail is to be fired is not contacted by said free end portion for protecting said object during a nail firing operation.
14. A method for driving in nails comprising securing an attachment as claimed in any one of claims 9 to 13 to a said actuator (25) of a nail driving device.

Patentansprüche

1. Nageltreibvorrichtung zum Treiben von mindestens einem ersten und relativ langen Typ von Nagel und von einem zweiten und relativ kurzen Typ von Nagel in einen Gegenstand, wobei die genannte Nageltreibvorrichtung umfasst:
- eine Antriebseinheit zum Antrieb eines Schub- oder Stoßelements (12), das zum Treiben des Nagels in den Gegenstand dient,
 - ein Magazin (4), das zur Sicherung der Zufuhr an besagten Nägeln dient,
 - ein Rohr (3), längs dessen das genannte Schub- oder Stoßelement den genannten Nagel in den Gegenstand treibt, wobei dieses Rohr eine seitliche Eintrittsöffnung für die Aufnahme der genannten Nägel aus dem Magazin aufweist, und
 - ein Betätigungsorgan (25), welches sich längs des Rohres bewegen kann als Reaktion auf den Druck, der erzeugt wird, wenn die Nagelpistole zum Zweck der Auslösung des Treibvorgangs gegen den Gegenstand gedrückt wird,
- gekennzeichnet durch**
- einen Vorsatz (2), welcher auf abnehmbare Weise an das genannte Betätigungsorgan (25) montiert werden kann und dazu dient, das Treiben des kurzen Typs von Nagel (13) längs des

genannten Rohres in den Gegenstand zu unterstützen, wobei der genannte Vorsatz ein Führungselement (8) umfasst, welches eine Führungsfläche (10) aufweist, wobei diese Führungsfläche dergestalt angeordnet ist, dass, wenn der genannte Vorsatz an das genannte Betätigungsorgan (15) montiert ist, es in der genannten seitlichen Eintrittsöffnung Aufnahme findet, um im Zusammenwirken mit dem genannten Rohr (3) den Kurztyp von Nagel zu führen, wenn dieser längs des genannten Rohres getrieben wird.

2. Vorrichtung nach Anspruch 1, bei welcher der Vorsatz (2) ein Endstück aufweist, welches dem Wesen nach eine Schutzfunktion ausübt und welches dazu dient, den Gegenstand zu schützen, wenn nach dem Auslösen des Treibvorgangs der genannte Druck auf das genannte Betätigungsorgan ausgeübt wird.
3. Vorrichtung nach irgend einem der vorangehenden Ansprüche, bei welcher der Vorsatz (2) eine Anschlagfläche (11) umfasst, welche dergestalt angeordnet ist, dass, wenn der genannte Vorsatz an das genannte Betätigungsorgan (25) montiert ist und das genannte Magazin (4) den genannten Kurztyp von Nagel enthält, diese Anschlagfläche die Bewegung der Nageltreibvorrichtung in der Treibrichtung von zumindest demjenigen Nagel im Magazin einschränken kann, der so positioniert ist, dass dieser der nächste Nagel ist, der dem Rohr zugeführt wird.
4. Vorrichtung nach Anspruch 3, bei welcher die Anschlagfläche (11) sich in Längsrichtung des Magazins (4) unter einem solchen Winkel zum Rohr erstreckt, der dem Wesen nach dem Winkel des Magazins relativ zum Rohr (3) entspricht.
5. Vorrichtung nach irgend einem der vorangehenden Ansprüche, bei welcher das Magazin (4) dergestalt ausgelegt ist, dass es zumindest die vorderen Enden sowohl des Lang- als auch des Kurztyps von Nagel führt.
6. Vorrichtung nach Anspruch 5, bei welcher das Magazin (4) mit einer oder zwei Führungen (16) ausgestattet ist, damit das Schrägstellen des Kurztyps von Nagel in einer Richtung verhindert wird, welche von der Zuführungsrichtung des Magazins abweicht.
7. Vorrichtung nach irgend einem der vorangehenden Ansprüche, bei welcher der Vorsatz (2) in einer seiner Seitenwände mindestens einen abgeflachten Bereich umfasst.
8. Vorrichtung nach Anspruch 1, bei welcher der Vorsatz ferner umfasst:

- einen im Wesentlichen zylindrischen oder abgeplatteten zylindrischen Körper, welcher auf abnehmbare Weise an das Betätigungsorgan (25) montiert werden kann,
- eine im Wesentlichen flache Endfläche mit einer Durchführung, welche sich mit dem Rohr ausgerichtet befindet, wenn der Körper an das Betätigungsorgan (25) montiert ist, und
- bei welcher das genannte Führungselement (8) ein im Wesentlichen plattenförmiges oder flaches Bauteil (8) umfasst, welches die genannte Führungsfläche festlegt.

9. Vorsatz für eine Nageltreibvorrichtung, welche umfasst:

- ein Rohr (3), längs dessen Nägel mit einer ersten Länge und Nägel mit einer zweiten Länge, die kürzer als die genannte erste Länge ist, geschossen werden,
 - ein Betätigungsorgan (25), welches längs des genannten Rohres gleiten kann als Reaktion auf eine Rückstoßkraft, welche erzeugt wird, wenn die Nageltreibvorrichtung gegen einen Gegenstand gedrückt wird, in welchen ein Nagel geschossen werden soll,
 - ein Magazin (4), welches der Gewährleistung der Zuführung der genannten Nägel dient und aus welchem die genannten Nägel nacheinander in das genannte Rohr durch eine seitliche Eintrittsöffnung des genannten Rohres zugeführt werden können,
- wobei der genannte Vorsatz (2) umfasst:
- einen im Wesentlichen zylindrischen oder abgeplatteten zylindrischen Körper, der an das genannte Betätigungsorgan auf abnehmbare Weise montiert werden kann, und
 - ein Führungselement (8), welches eine Führungsfläche (10) aufweist, wobei diese Führungsfläche dergestalt angeordnet ist, dass, wenn der genannte Körper an das genannte Betätigungsorgan montiert ist, die Führungsfläche in der genannten seitlichen Eintrittsöffnung Aufnahme findet, um im Zusammenwirken mit dem genannten Rohr den Nagel der zweiten Länge zu führen, wenn dieser längs des genannten Rohres getrieben wird, damit auf diese Weise das Schießen der Nägel mit der genannten zweiten Länge längs des genannten Rohres erleichtert wird.

10. Vorsatz nach Anspruch 9, bei welchem der genannte, im Wesentlichen zylindrische oder abgeplattete zylindrische Körper ein Endstück (5) aufweist, welches dem Wesen nach eine Schutzfunktion ausübt und welches einen Teil des Betätigungsorgans in sich aufnimmt, und bei welchem das genannte Führungselement (8) von dem genannten Endstück, das

dem Wesen nach eine Schutzfunktion ausübt, absteht, um eine Anschlagfläche (11) festzulegen, welche sich quer zur Längsachse des genannten Endstücks, welches dem Wesen nach eine Schutzfunktion ausübt, erstreckt, damit die Bewegung eingeschränkt wird, welche die Nageltreibvorrichtung in der Schussrichtung von mindestens einem ersten Nagel der zweiten Länge ausführt, der in dem genannten Magazin so positioniert ist, dass er der nächste Nagel ist, der dem Rohr zugeführt wird.

11. Vorsatz nach Anspruch 10, bei welchem die genannte Führungsfläche (10) sich parallel zur genannten Längsachse des Endstücks (5), welches dem Wesen nach eine Schutzfunktion ausübt, erstreckt.

12. Vorsatz nach Anspruch 11, bei welchem der genannte, im Wesentlichen zylindrische oder abgeplattete zylindrische Körper eine Öffnung für den Durchtritt der genannten Nägel zweiter Länge, die längs des genannten Rohres abgeschossen werden, festlegt, wobei der im Wesentlichen zylindrische oder abgeplattete zylindrische Körper und eine Endwand auf diese Weise einen sich längs erstreckenden Schlitz festlegen, in welchem das genannte Führungselement (8) dergestalt Aufnahme findet, dass ein Teil einer Kante des genannten Führungselements, welches die genannte Führungsfläche (10) bildet, sich in das genannte Endstück, welches dem Wesen nach eine Schutzfunktion ausübt, hinein erstreckt.

13. Vorsatz nach Anspruch 9, bei welchem der genannte, im Wesentlichen zylindrische oder abgeplattete zylindrische Körper ein auslösendes Endstück (5) ist, welches dem Wesen nach eine Schutzfunktion ausübt und welches einen freien Endbereich des genannten Betätigungsorgans (25) dergestalt aufnimmt, dass der Gegenstand, in welchen ein Nagel eingeschossen werden soll, sich mit dem genannten freien Endbereich nicht in Kontakt befindet, damit der genannte Gegenstand während des Vorgangs des Abschießens von Nägeln geschützt wird.

14. Verfahren zum Eintreiben von Nägeln, welches das sichere Anbringen eines Vorsatzes nach einem der Ansprüche 9 bis 13 an dem genannten Betätigungsorgan (25) einer Nageltreibvorrichtung umfasst.

Revendications

1. Dispositif d'enfoncement de clous pour enfoncer dans un objet au moins un premier clou de type relativement long et un second clou de type relativement court, ledit dispositif d'enfoncement de clous comprenant :

une unité de percussion pour chasser un élé-

- ment de fonçage ou de poussée (12) afin d'enfoncer le clou dans l'objet,
un chargeur (4) pour contenir une réserve desdits clous,
un canon (3) le long duquel ledit élément de fonçage ou de poussée dirige ledit clou dans l'objet, le canon présentant un orifice d'entrée latéral pour recevoir lesdits clous à partir du chargeur et un actionneur (25) apte à se déplacer le long du canon en réponse à une pression qui est produite lorsque le pistolet cloueur est poussé contre l'objet afin d'amorcer l'opération d'enfoncement, **caractérisé par**
un accessoire (2) qui est apte à être monté de façon détachable sur ledit actionneur (25) afin de faciliter l'enfoncement dans l'objet du clou de type court (13) le long dudit canon, ledit accessoire comportant un élément de guidage (8) présentant une surface de guidage (10), la surface de guidage étant agencée de sorte que, lorsque ledit accessoire est monté sur ledit actionneur (25), il est reçu dans ledit orifice d'entrée latéral afin d'agir en coopération avec ledit canon (3) pour guider le clou de type court lorsqu'il est chassé le long dudit canon.
2. Dispositif selon la revendication 1, l'accessoire (3) comprenant une partie extrémité d'actionnement sensiblement protectrice afin de protéger l'objet lorsque ladite pression est appliquée sur ledit actionneur lors de l'amorçage de l'opération d'enfoncement.
 3. Dispositif selon l'une quelconque des revendications précédentes, l'accessoire (2) comportant une surface d'arrêt (11) agencée de sorte que, lorsque ledit accessoire est monté sur ledit actionneur (25) et ledit chargeur (4) contient ledit type court de clous, la surface d'arrêt pourra limiter le mouvement du sens d'éjection du dispositif d'enfoncement de clous dudit au moins un clou dans le chargeur qui est positionné de façon à être le prochain à passer dans le canon.
 4. Dispositif selon la revendication 3, la surface d'arrêt (11) se prolongeant dans le sens de la longueur du chargeur (4) suivant un angle par rapport au canon qui correspond sensiblement à l'angle du chargeur par rapport au canon (3).
 5. Dispositif selon l'une quelconque des revendications précédentes, le chargeur (4) étant conçu pour guider au moins les pointes à la fois des clous de type long et des clous de type court.
 6. Dispositif selon la revendication 5, le chargeur (4) étant pourvu d'un ou de deux guides (16) pour empêcher le basculement des clous de type court suivant un sens qui diffère du sens d'alimentation du chargeur.
 7. Dispositif selon l'une quelconque des revendications précédentes, l'accessoire (2) comprenant au moins une portion aplanie dans une paroi latérale de celui-ci.
 8. Dispositif selon la revendication 1, l'accessoire comprenant en outre :
un corps sensiblement cylindrique ou cylindrique aplani monté de façon détachable sur ledit actionneur (25),
une surface d'extrémité sensiblement plane avec un passage traversant qui est aligné avec le canon lorsque le corps est monté sur l'actionneur (25), et
ledit élément de guidage (8) comportant un élément sensiblement plat ou similaire à une plaque (8) qui définit ladite surface de guidage.
 9. Accessoire pour un dispositif d'enfoncement de clous possédant un canon (3) le long duquel sont chassés des clous ayant une première longueur et des clous ayant une seconde longueur laquelle est moins importante que ladite première longueur, un actionneur (25) coulissant le long dudit canon en réponse à une force de réaction qui est produite lorsque le dispositif d'enfoncement de clous est pressé contre un objet dans lequel un clou est destiné à être enfoncé, un chargeur (4) pour contenir une réserve desdits clous et à partir duquel lesdits clous peuvent être alimentés un par un dans ledit canon à travers un orifice d'entrée latéral dudit canon, ledit accessoire (2) comportant un corps sensiblement cylindrique ou cylindrique aplani monté de façon détachable sur ledit actionneur et un élément de guidage (8) présentant une surface de guidage (10), la surface de guidage étant agencée de sorte que, lorsque ledit corps est monté sur ledit actionneur, la surface de guidage est reçue dans ledit orifice d'entrée latéral afin d'agir en coopération avec ledit canon pour guider le clou de seconde longueur lorsqu'il est chassé le long dudit canon afin de faciliter l'éjection le long dudit canon de clous ayant ladite seconde longueur.
 10. Accessoire selon la revendication 9, ledit corps sensiblement cylindrique ou cylindrique aplani étant une partie extrémité d'actionnement sensiblement protectrice (5) qui y reçoit une portion de l'actionneur et ledit élément de guidage (8) faisant saillie à partir de ladite partie extrémité d'actionnement sensiblement protectrice afin de définir une surface d'arrêt (11) qui se prolonge dans un plan transversal par rapport à un axe longitudinal de ladite partie extrémité d'actionnement sensiblement protectrice pour limiter le mouvement du sens d'éjection du dispositif d'enfoncement de clous d'au moins un premier clou de seconde longueur dans ledit chargeur qui est position-

né de façon à être le prochain à passer dans le canon.

11. Accessoire selon la revendication 10, ladite surface de guidage (10) se prolongeant dans un plan parallèle par rapport audit axe longitudinal de la partie extrémité d'actionnement sensiblement protectrice (5). 5

12. Accessoire selon la revendication 11, ledit corps sensiblement cylindrique ou cylindrique aplani définissant une ouverture pour le passage desdits clous de seconde longueur éjectés le long dudit canon, ledit corps sensiblement cylindrique ou cylindrique aplani et une paroi d'extrémité de celui-ci définissant une fente se prolongeant dans le sens de la longueur dans lequel ledit élément de guidage (8) est reçu de sorte qu'une portion d'un bord dudit élément de guidage, lequel définit ladite surface de guidage (10), se prolonge dans ladite partie extrémité d'actionnement sensiblement protectrice. 10
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13. Accessoire selon la revendication 9, ledit corps sensiblement cylindrique ou cylindrique aplani étant une partie extrémité d'actionnement sensiblement protectrice qui reçoit une portion extrémité libre dudit actionneur (25) de sorte que l'objet, dans lequel un clou est destiné à être enfoncé, n'est pas touché par ladite portion extrémité libre afin de protéger ledit objet pendant une opération d'enfoncement de clou. 25
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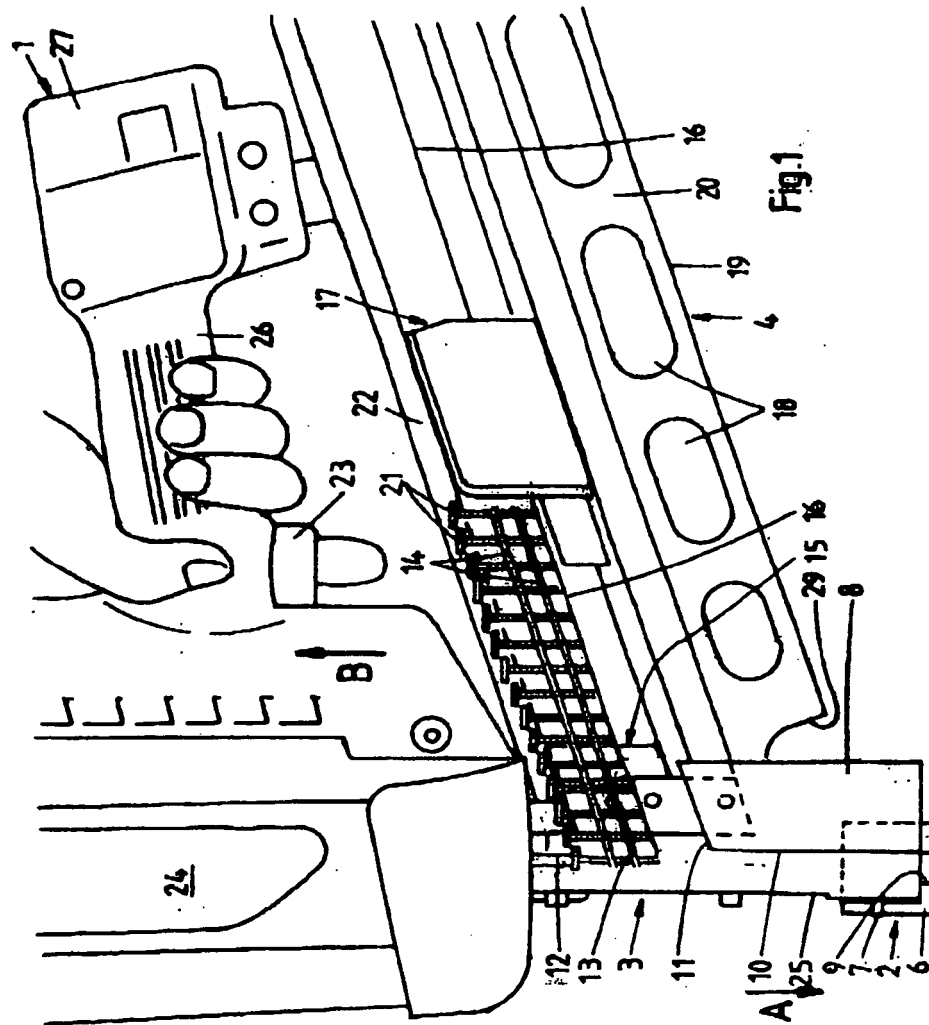
14. Procédé d'enfoncement de clous comprenant la fixation d'un accessoire, selon l'une quelconque des revendications 9 à 13, sur ledit actionneur (25) d'un dispositif d'enfoncement de clous. 35

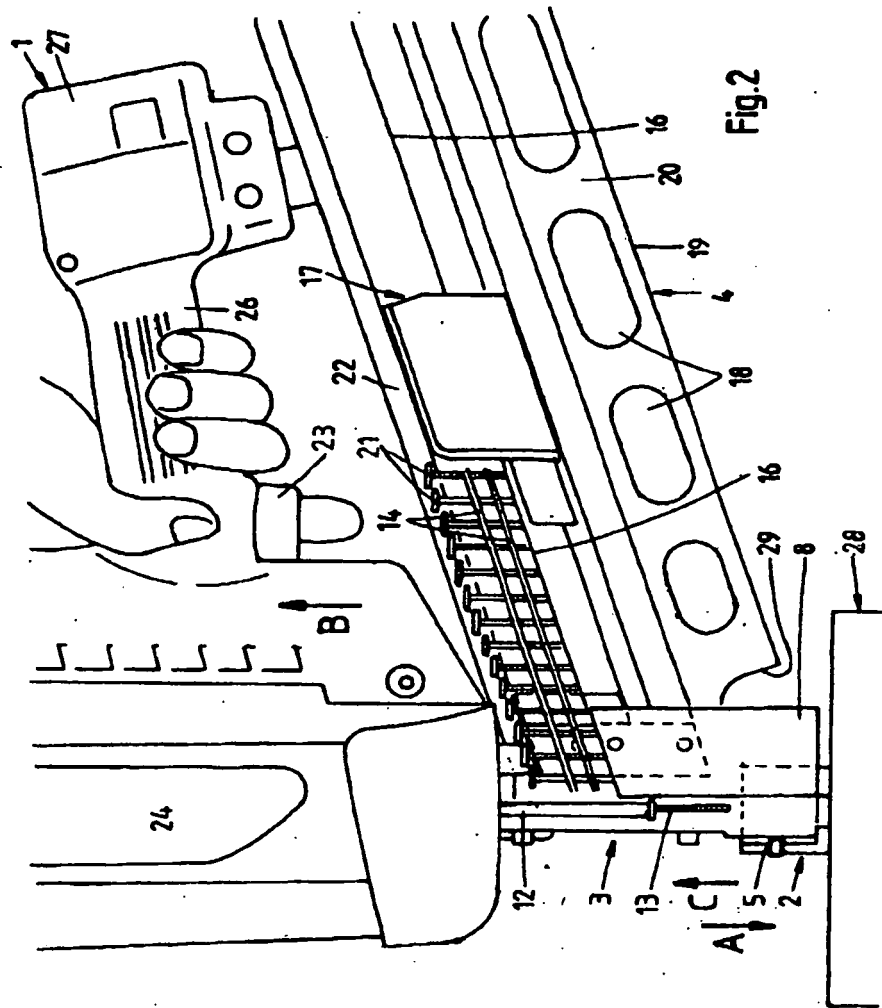
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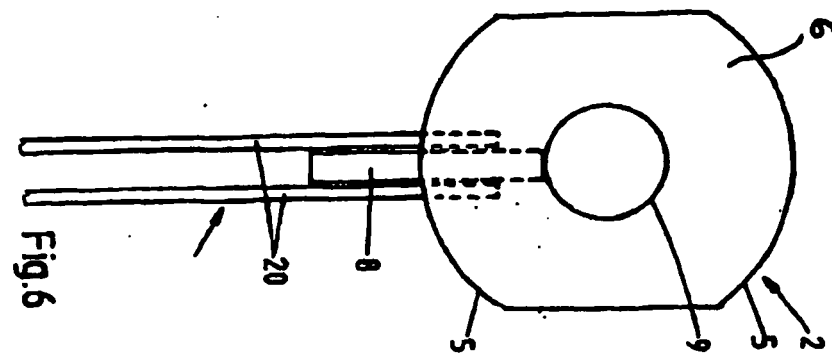
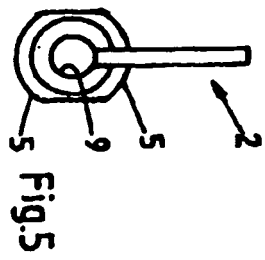
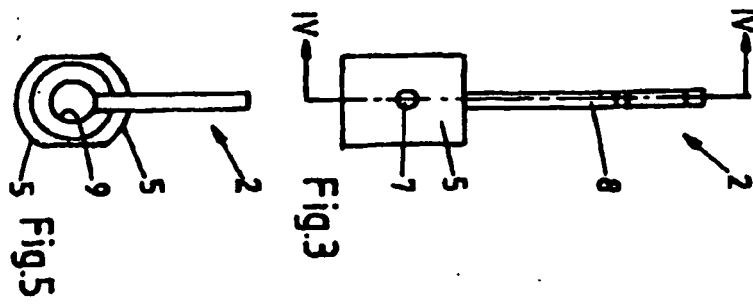
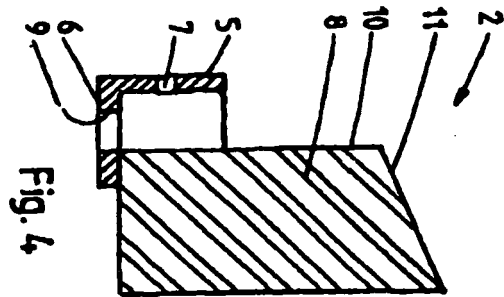
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REFERENCES CITED IN THE DESCRIPTION

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