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**EP 0469356 A1 EP 0464434 A1 US 4111060 A**

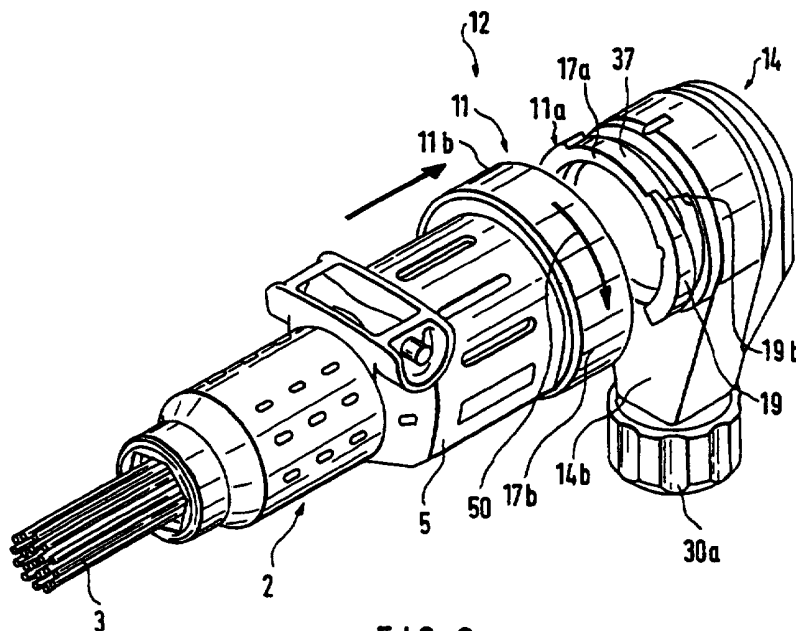
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INT CL<sup>6</sup> **B25D 17/00 17/04 17/08**

(74) Agent and/or Address for Service

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(54) **A mount of a needle chisel for a hammer drill**

(57) A mount 12 of an auxiliary device, such as a needle chisel 3, for a hand machine tool, such as a hammer drill 1, comprises a clamp-type holder (14) which can be attached to a collar of a hand machine tool in a separable manner. The auxiliary device (2) is in turn connected to the clamp-type holder (14) in a separable manner via a coupling (11). The coupling (11) is preferably formed as a bayonet joint. The coupling (11) between the auxiliary device (2) and the clamping part (14) enables the auxiliary device (2) to be easily mounted on and dismantled from the hand machine tool, and the clamping part (14) can remain stationary at the collar of the hand machine tool.



**FIG. 2**

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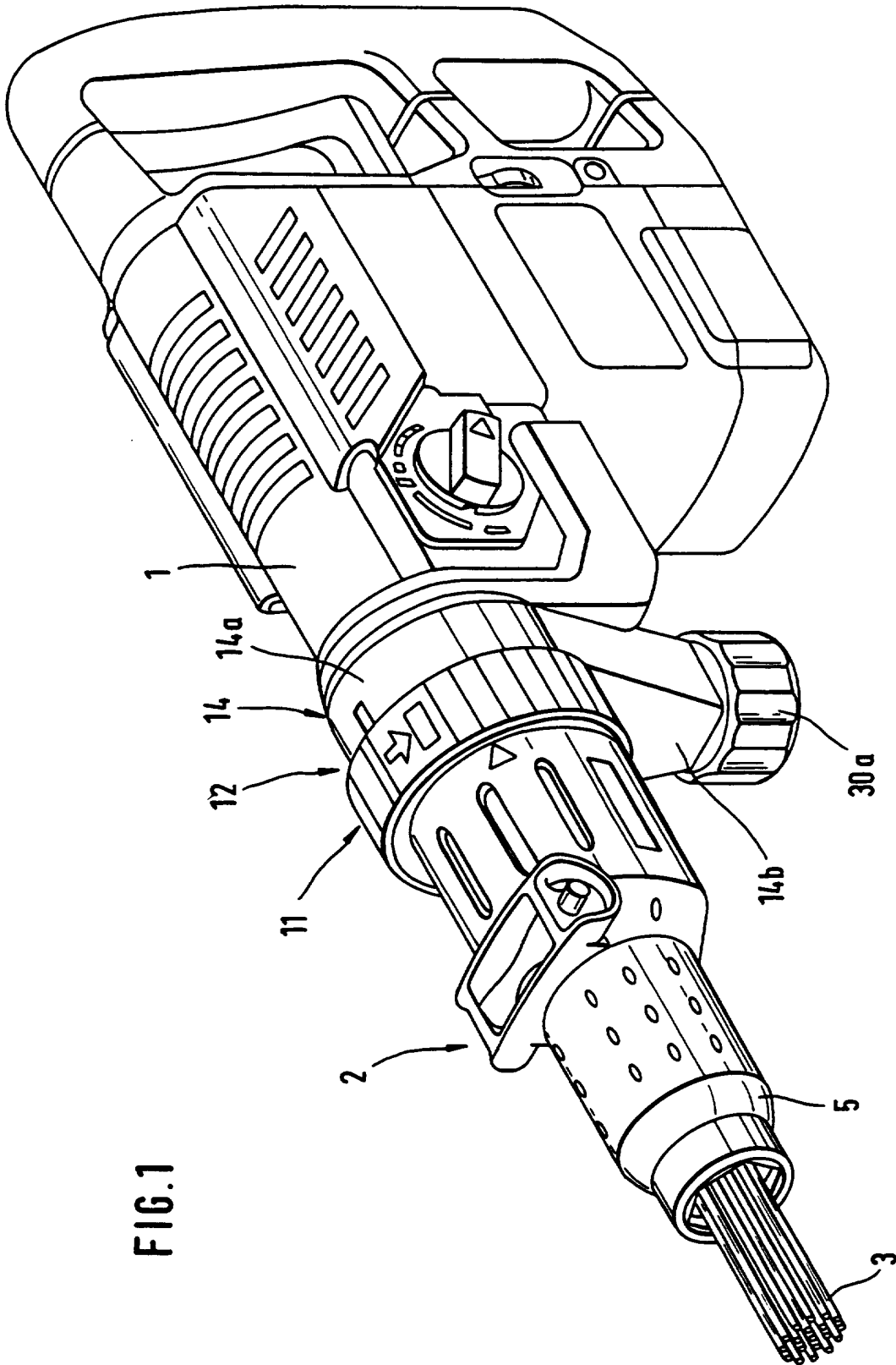


FIG. 1

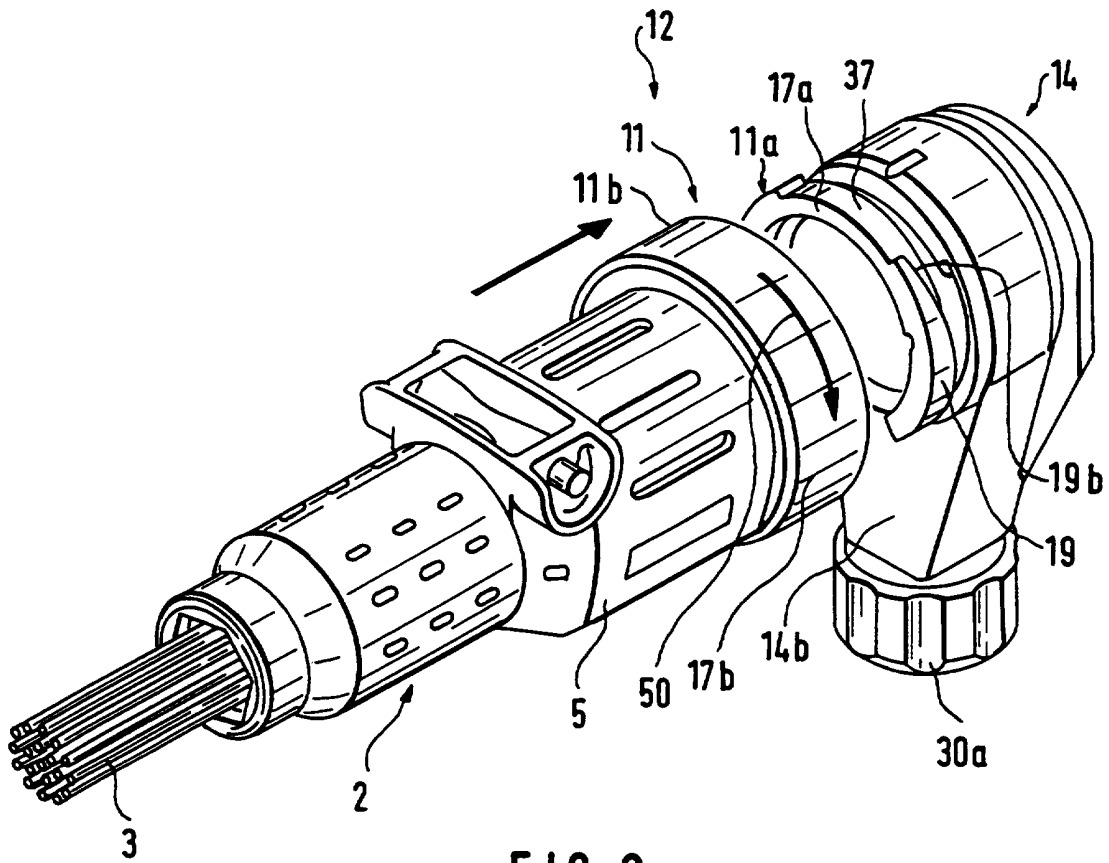


FIG. 2

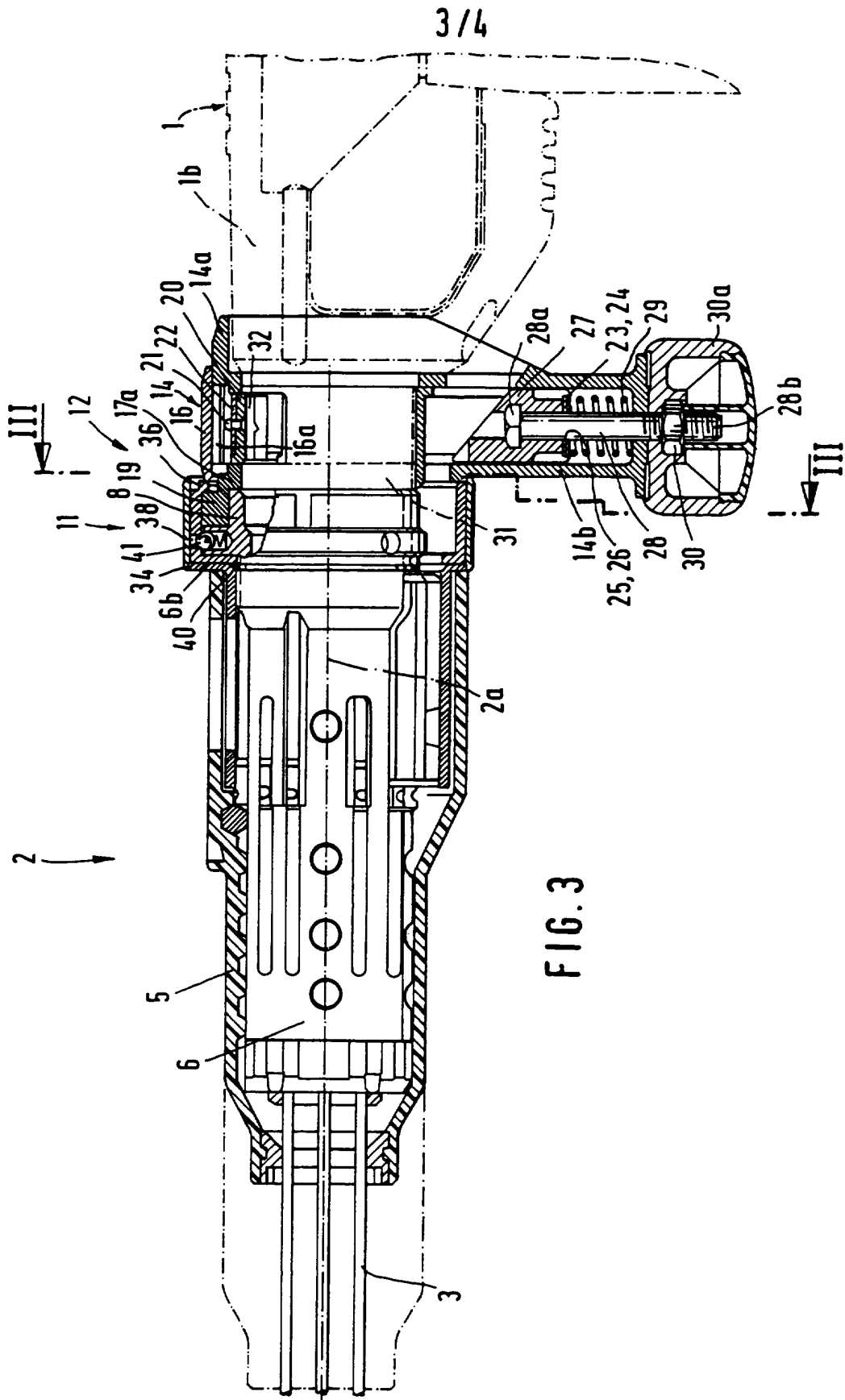


FIG. 3

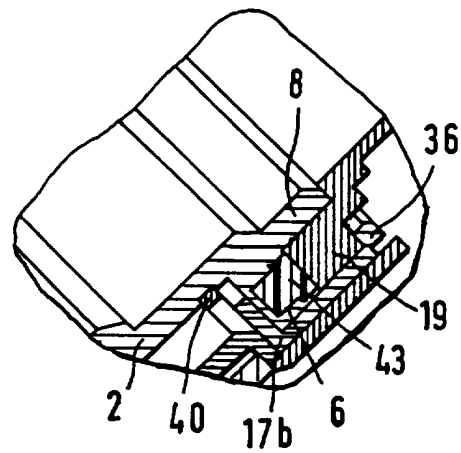
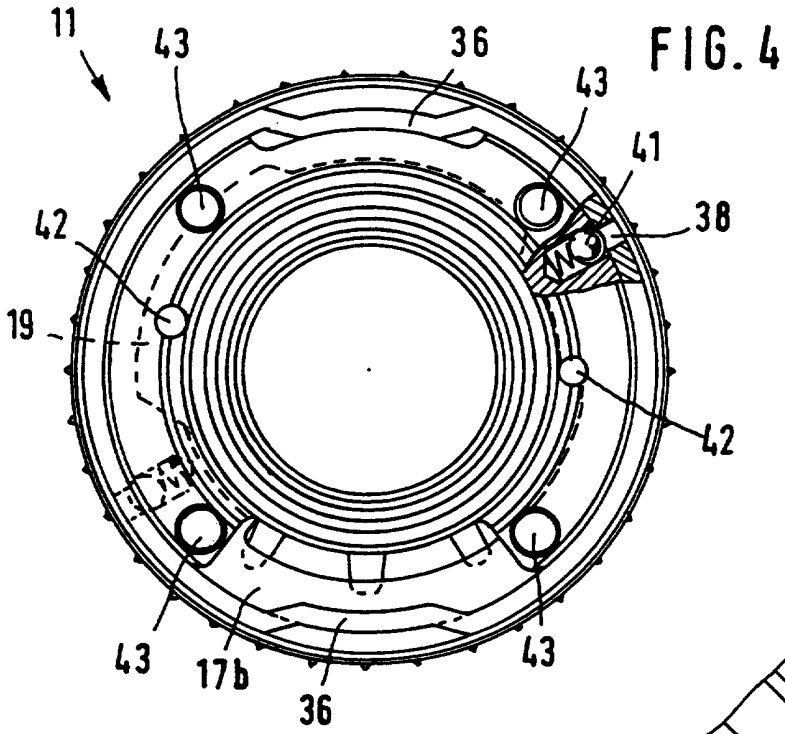


FIG. 6

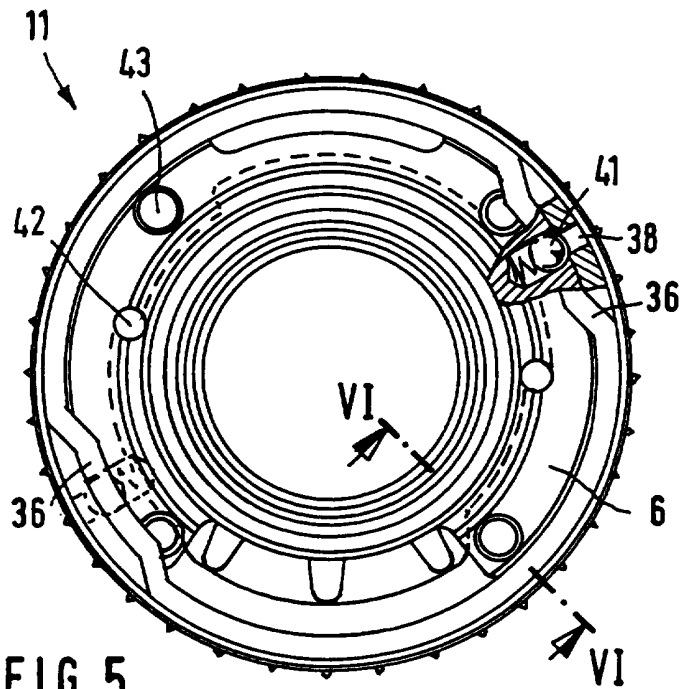


FIG. 5

**Mount of an auxiliary device for hand machine tools****Prior art**

The invention is based on a mount of an auxiliary device for hand machine tools according to the preamble of claim 1. EP-A-469 356 discloses a mount of an auxiliary device for a hammer-drill which comprises a clamping part which can be placed over a collar of the hammer-drill and firmly secured to this by means of a clamping screw. No additional steps are taken to prevent the auxiliary device from twisting or being displaced in the axial direction. The clamping screw must be tightened or loosened in order to secure or release the clamping part, for which purpose an appropriate spanner is required.

Auxiliary handles comprising a clamping screw which can be operated by way of a grip part of the auxiliary handle constitute another known example of auxiliary devices which can be attached to the collar of hand machine tools. Additional tools for tightening or loosening the clamping screw are therefore unnecessary. However the clamping force which can be applied in this case is not alone sufficient to securely attach highly stressed auxiliary devices to the collar.

Also known in the market are various mounts of auxiliary devices on the collar of hand machine tools which, in addition to simply securing the auxiliary device to the collar of the hand machine tool, also provide a positive connection. However a great deal of labour and time is involved in mounting and removing the auxiliary devices when using mounts of this kind. These known mounts are therefore unsuitable for frequent mounting and dismounting.

**Advantages of the invention**

In contrast, the mount according to the invention with the characterising features of claim 1 has the advantage of enabling the auxiliary device to be quickly mounted and dismounted. No additional tools are required for this. Moreover, the auxiliary device is always held securely on the hand machine tool even when it is frequently mounted and dismounted.

This is achieved in that the mount is formed in two parts and consists of a stationary clamping part remaining at the collar of the hand machine tool and a working part which can be removed from the clamping part and is connected to the auxiliary device. The clamping part and the working part are connected together in a separable manner by a rapid action coupling, preferably a bayonet joint, which is extremely easy to operate. Without the clamping part, the auxiliary device which has been removed from the hand machine tool is shorter and lighter and accordingly easier to handle. This is of advantage wherever there is a frequent change in working situations and it is therefore frequently necessary to change over from the basic operating modes of the hand machine tool to the optional auxiliary operating modes with auxiliary devices attached to the hand machine tool.

Advantageous developments of and improvements to the mount according to the invention are possible through the measures presented in the dependent claims. The formation of the coupling between the auxiliary device and the stationary clamping part as a bayonet joint is particularly advantageous. Also of advantage is the provision of a catch in the end positions of the coupling which informs the operator that the mounting or dismounting position has been reached and therefore counteracts incorrect operation and unintentional release of the coupling. A reliable coupling which can be subjected to high loads is achieved particularly when sliding bevels are provided which secure the parts to be connected against one another after the auxiliary device has been mounted.

## Drawings

An embodiment of the invention is represented in the drawings and explained in detail in the following description. Figure 1 is a perspective view of a hand machine tool with attached auxiliary device, Figure 2 a perspective view of the auxiliary device with mount, Figure 3 a longitudinal section through the auxiliary device according to Figure 1, Figures 4 and 5 are cross sections along the line III-III in Figure 3 and Figure 6 is a partial section along the line VI-VI in Figure 5.

## Description of the embodiments

As an example of a hand machine tool 1, Figure 1 shows a chisel hammer with an auxiliary device 2 for needle chiselling, also called a "needle chipper". An auxiliary device 2 of this kind is used particularly to restore concrete and comprises a plurality of steel needles 3 which can be displaced axially with respect to a housing 5 and subjected to blows in the axial direction via the striking mechanism of the chisel hammer 1. However the structure and operation of this auxiliary device 2 do not constitute the subject matter of this invention. The auxiliary device 2 is rather to serve just as an example of any auxiliary device 2 which can be attached to a hand machine tool 1.

The hand machine tool 1 represented in Figure 1 is connected to the auxiliary device 2 by way of a mount 12. The mount 12 consists of a clamp-type holder 14 and a coupling 11.

Figure 2 is a view of the auxiliary device 2 when removed from the hand machine tool 1, showing the clamp-type holder 14, the purpose of which is to be secured to a collar 31 (Figure 3) of the hand machine tool 1 and which can be connected via a coupling 11 to the auxiliary device 2 in a separable manner. For this purpose



the coupling 11 is formed as a bayonet joint. The coupling 11 comprises an annular projection 17a which is rigidly formed on the clamp-type holder 14 and forms a stationary coupling part 11a of the coupling 11. A locking sleeve 17b, which can rotate with respect to the housing 5 of the auxiliary device 2, forms a mobile coupling part 11b of the coupling 11.

The auxiliary device 2 is attached to the hand machine tool 1 in Figure 3. A housing 1b of the hand machine tool 1 forms the collar 31 at its front end, which is on the tool side. A collar 31 of this kind is known in hand machine tools and may be used in particular to attach an auxiliary handle. According to the invention the collar 31 is used to attach the clamp-type holder 14 to the machine housing 1b. The clamp-type holder 14 has a clamp-type holder housing 14a, which has an approximately hollow cylindrical shape and forms an approximately tubular, radially projecting extension 14b. A clamping strap 22, which embraces the collar 31, is accommodated in the clamp-type holder 14 with radial clearance, and ends 23, 24 of the clamping strap 22 overlap in the region of the extension 14b and thus form a closed loop. The two ends 23, 24 of the clamping strap 22 are provided with holes 25, 26 through which a clamping screw 28 passes. The clamping screw 28 is accommodated approximately centrally in the extension 14b. The clamping screw 28 is rigidly connected in a non-rotatable manner by one end 28a to a guide part 27 and can be displaced longitudinally inside the extension 14b. A compression spring 29, which is supported on one side at a terminal support face of the extension 14b by way of the two overlapping ends 23, 24 of the clamping strap 22, pushes the guide part 27 inwards in the direction of a longitudinal axis 2a of the auxiliary device 2. A clamping nut 30 is screwed into position at the other end 28b of the clamping screw 28, which nut is accommodated in a non-rotatable manner in a turning handle 30a. The action of screwing the clamping nut 30 into position enables the end 28b of the clamping screw 28 to move further into the turning handle 30a, so that the clamping strap 22 extends more securely around

the collar 31.

A securing element 20 is disposed on the inside of the clamping strap 22 by means of a rivet 21, which element engages radially in a recess 32 when the clamping strap 22 is tightened and positively secures the clamp-type holder 14 to the collar 31. The recess 32 is limited in the axial direction, so that the clamp-type holder 14 is secured in the axial direction. The recess 32 may also be limited in the circumferential direction, so that the clamp-type holder 14 is also secured in the circumferential direction. A cover 16 closes a mounting opening 16a in the clamp-type holder housing 14a, through which the clamping strap 22 and the clamping screw 28 can be mounted.

The annular projection 17a is moulded rigidly onto the clamp-type holder 14 on the tool side and provided with locking cams 19 projecting radially outwards. Towards its end which is on the tool side the annular projection 17a has a cylindrical widened portion in which a centring collar 8 of the auxiliary device 2 engages without play. The centring collar 8 is formed by an inner housing 6 of the auxiliary device 2. The inner housing 6 is surrounded by a protective housing 5 with a heat-insulating effect.

The mobile coupling part 11b, which is formed as a locking sleeve 17b, is secured axially in the tool direction at the centring collar 8 by means of a circlip 40. In the machine direction an annular collar 6b at the inner housing 6 prevents the locking sleeve 17b from being drawn off axially. Inward projecting locking elements 36, which engage behind the locking cams 19, are provided on the locking sleeve 17b. A ball catch 41 is accommodated in a hole in the annular collar 6b and comprises a ball which is spring-loaded outwards and which, when the locking sleeve 17b is in the end positions, snaps into corresponding locking depressions 38 made in the latter.

Figure 4 shows that two locking elements 36, which are disposed opposite one another, are provided on the locking sleeve 17b, these co-operating with two locking cams 19 (only one of which is shown in Figure 4), also disposed opposite one another. Joint sections 37, through which the locking elements 36 can pass, are provided between the locking cams 19. Figure 4 also shows the ball catch 41, which is engaged in the locking hole 38. This indicates that the coupling 11 is in the open position, in which the locking elements 36 can move axially past the locking  
cams 19.

At their back the locking cams 19 comprise bevels 19b (Figure 2) which extend in the circumferential direction and which, when the locking sleeve 17b executes a closing movement in the direction of an arrow 50 in Figure 2, progressively secure the auxiliary device 2 to the clamp- type holder 14 via the annular collar 6b. In this case resilient pads 43 (Figure 4) projecting axially from a front side of the inner housing 6 serve to secure the auxiliary device 2 to the clamp-type holder 14 without play. Pins 42 moulded onto the front face 34 of the locking sleeve 17b limit the rotational movement of the locking sleeve 17b.

Figure 5 shows the interlock position of the coupling 11, in which the locking elements 36 are engaged behind the locking cams 19. This position is also indicated by the engagement of the ball catch 41 in a locking hole 38.

Figure 6 shows how the locking cams 19 are pushed via the locking elements 36 against the pads 43 in the inner housing 6 of the auxiliary device 2. In this case the circlip 40 ensures that the locking sleeve 17b is axially secured.

## Mount of an auxiliary device for hand machine tools

### Claims

1. Mount of an auxiliary device (2) for hand machine tools (1), in particular a mount of an attachment with needle chisels on a chisel hammer, which mount comprises at least one clamp-type holder (14) for attaching the auxiliary device (2) to a collar (31) of the hand machine tool (1) in a separable manner, characterised in that the mount (12) comprises a coupling (11) which is disposed between the auxiliary device (2) and the clamp-type holder (14) and which enables the auxiliary device (2) to be removed from the hand machine tool (1) and the auxiliary device (2) to be attached to the hand machine tool when the clamp-type holder (14) is attached to the collar (31).
2. Mount according to claim 1, characterised in that the clamp-type holder (14) comprises a clamping strap (22) which embraces the collar (31), exhibits radial clearance inside a clamp-type holder housing (14a) and can be tightened against the collar (31) at the outer circumference of the latter by means of a clamping screw (28).
3. Mount according to claim 2, characterised in that a securing element (20), which projects radially inwards, is disposed on the clamping strap (22) and engages in a corresponding recess (32) in the collar (31) in order to prevent the clamp-type holder (14) from being displaced in the axial direction and/or twisting in the circumferential direction when the clamping strap (22) is tightened at the collar (31).
4. Mount according to one of the preceding claims, characterised in that the coupling (11) comprises a mobile coupling part (11b), which is preferably guided

such that it can rotate with respect to an inner housing (6) of the auxiliary device (2) and bears at least one locking element (36), and a stationary coupling part (11b), which is preferably disposed in a non-rotatable manner at the clamp-type holder (14) and on which at least one corresponding locking cam (19) is provided, behind which at least one locking element (36) can positively engage.

5. Mount according to claim 4, characterised in that the mobile coupling part (11b) is formed as a locking sleeve (17b), on which two locking elements (36) are disposed opposite one another and so as to project radially inwards, and that two corresponding locking cams (19) are moulded onto an annular projection (17a), which forms the stationary coupling part (11a), of the clamp-type holder (14), the two locking cams (19) being interrupted by two joint sections (37) for the locking elements (36).

6. Mount according to claim 5, characterised in that holes (25, 26) are provided internally in the locking sleeve (17b), in which holes at least one ball catch (41), which is mounted at the inner housing (6) of the auxiliary device (2), engages when the locking sleeve (17b) is in end positions.

7. Mount according to one of claims 4 to 6, characterised in that the locking cams (19) comprise bevels (19b) extending in the circumferential direction at their back, which is on the machine side.

8. Mount according to claim 7, characterised in that a plurality of resilient pads (50) project axially from a front side of the inner housing (6) which is on the machine side, which pads are deformed when the auxiliary device (2) is coupled to the annular projection (17a) of the clamp-type holder (14) by means of the coupling (11).

9. A mount of an auxiliary device for a head machine tool, substantially as herein described with reference to the accompanying drawings.



**Application No:** GB 9701817.0  
**Claims searched:** 1-9

**Examiner:** Hal Young  
**Date of search:** 13 March 1997

**Patents Act 1977  
Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): B4C

Int Cl (Ed.6): B25D(17/00, 04, 08)

Other:

**Documents considered to be relevant:**

| Category | Identity of document and relevant passage | Relevant to claims |
|----------|---|--------------------|
| A        | EP 0469356 A1 (BOSCH)                     |                    |
| X        | EP 0464434 A1 (SFS), see fig 1.           | 1,2                |
| X        | US 4111060 (NERINI), see figs 1 and 2.    | 1,2                |

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|---|---|---|--|
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