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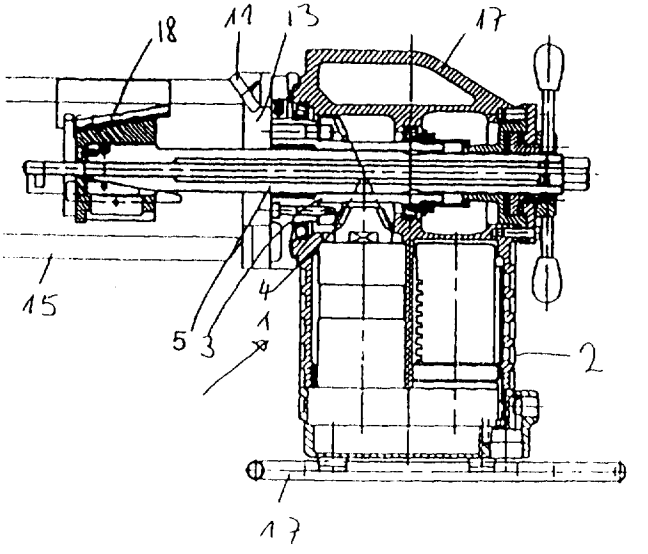
(54) **APPAREIL POUR L'USINAGE DES EXTREMITES DE TUBES**
(54) **DEVICE FOR MACHINING PIPE ENDS**



(57) L'invention a pour objet un appareil pour l'usinage des extrémités de tubes (1), comprenant un moteur, un dispositif de transmission et un dispositif de serrage (17, 18) pour la fixation, sur l'appareil (1), d'une extrémité de tube à usiner, ledit appareil présentant une barre creuse (7), un élément porte-outil muni d'un porte-outil. Cet appareil est caractérisé en ce que le moteur et le dispositif de transmission sont disposés l'un à côté de l'autre, et en ce que tous les dispositifs, à l'exception de l'élément porte-outil, sont logés dans un carter, formant ainsi un ensemble compact et maniable, et en ce que le carter présente une surface de base servant de surface d'appui et simplifiant la manipulation de l'appareil. Le porte-outil est équipé d'une matrice de découpage réalisée sous la forme d'une plaquette amovible et présentant au moins deux arêtes de coupe actives.

(57) The invention relates to a device for the machining of tube ends (1) comprising a motor, with a gear arrangement and a clamping device (17,18) for the fixing of the a tube end on the machining device (1) in order to be processed. The machining device (1) possesses a hollow rod (7) and a tool support with a tool holder, and is characterized by the fact that the motor and the gear arrangement are arranged next to each other and all other devices apart from the tool support, are encompassed by a housing, thereby forming a compact arrangement that is easy to handle and one in which the housing comprises a base surface which can be used as a support surface and facilitates handling of the unit. The tool holder is fitted with a cutting insert, designed as an indexable insert with at least two active cutting edges.

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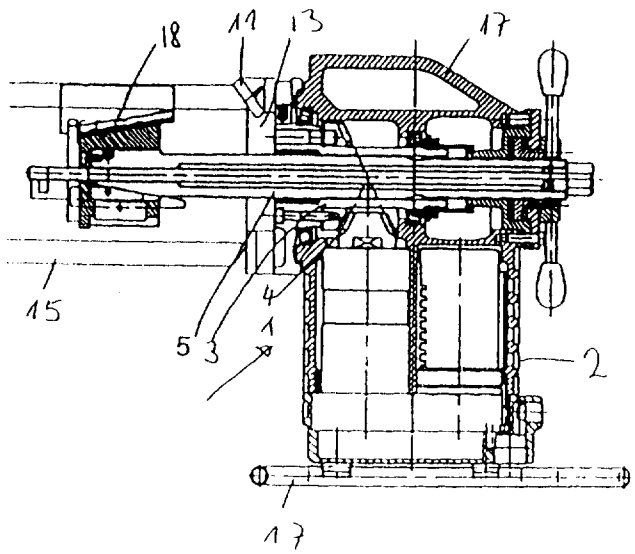
(54) Title: DEVICE FOR THE MACHINING OF TUBE ENDS

(54) Bezeichnung: ROHRENDENBEARBEITUNGSGERÄT

(57) Abstract

The invention relates to a device for the machining of tube ends (1) comprising a motor, with a gear arrangement and a clamping device (17,18) for the fixing of the a tube end on the machining device (1) in order to be processed. The machining device (1) possesses a hollow rod (7) and a tool support with a tool holder, and is characterized by the fact that the motor and the gear arrangement are arranged next to each other and all other devices apart from the tool support, are encompassed by a housing, thereby forming a compact arrangement that is easy to handle and one in which the housing comprises a base surface which can be used as a support surface and facilitates handling of the unit. The tool holder is fitted with a cutting insert, designed as an indexable insert with at least two active cutting edges.



(57) Zusammenfassung

Es wird ein Rohrendenbearbeitungsgerät (1) vorgeschlagen, mit einem Motor, einer Getriebeanordnung und einer Spanneinrichtung (17, 18) zum Festspannen eines zu bearbeitenden Rohrendes am Rohrendbearbeitungsgerät (1), wobei das Gerät eine Hohlstange (7), einen Werkzeugträger mit einem Werkzeughalter aufweist, dadurch gekennzeichnet, dass der Motor und die Getriebeanordnung nebeneinander angeordnet sind und dass alle Aggregate mit Ausnahme des Werkzeugträgers von einem Gehäuse umschlossen sind und so eine kompakte und handliche Anordnung bilden und dass das Gehäuse eine Bodenfläche aufweist, die als Standfläche dient und die Handhabung des Gerätes vereinfacht. Der Werkzeughalter ist mit einer Schneidplatte ausgerüstet, die als Wendeplatte ausgebildet ist und mindestens zwei Aktivschneidkanten aufweist.

DEVICE FOR MACHINING PIPE ENDS

The present invention relates to a device for the machining of pipe ends, provided with a clamping device which serves for clamping the device for machining pipe ends securely on a pipe end to be machined.

Portable machining devices for machining the ends of tubular work pieces, such as pipes for instance, as preparatory step for welding or for other processing operations are known. These devices are used mainly for the on-the-spot working of endless pipes or pipes which have already been laid, for example in case of repair. Thereby, it is necessary that the corresponding working devices be compact and easy to handle and use, but nevertheless of versatile development. Moreover, known devices for machining pipe ends are equipped with tool holders and cutting tools in order to hold the pipe end surfaces in fixed position and machine them by means of the cutting tool. As a rule, known devices for machining pipe ends have a drive unit by which the drive torque is transmitted transverse to the drive axis via a bevel gearing to a driven hollow shaft. A tool holder is firmly attached to the hollow shaft. The hollow shaft is mounted for rotation around a rod. This rod is hollow and contains a spindle which is operatively connected with a clamping device. By rotating the spindle, clamping jaws in the interior of the pipe are pressed radially against the inner wall of the pipe and the device for machining pipe ends is thus positioned on the pipe. At the end of the hollow rod there is provided a thread by which the device for machining pipe ends with the tools arranged on the tool holder is fed by a feed mechanism towards the pipe end.

Proceeding from the prior art described, the object of the present invention is so to improve known portable devices for machining pipe ends such as to provide easier handling

for the user both with regard to the operation of the device itself and upon the changing of the tool.

This object is achieved by the characterizing features set forth in claim 1.

Further advantageous features of the invention can be noted from the dependent claims.

A preferred embodiment will be explained in detail with reference to the accompanying drawings.

In the drawings:

Fig. 1 shows a device for machining pipe ends in accordance with the invention, partially in section;

Fig. 2 is a top view of a tool support of the device for machining pipe ends;

Fig. 3 is a section through the tool support with the cutting tool clamped in position, seen along the line A-A;

Fig. 4 is a section through the cutting tool.

Fig. 1 shows a device 1 for machining pipe ends in accordance with the invention. A drive unit 2 has a pneumatic or electric motor with a drive shaft 3. The transmission of the torque is effected from the drive shaft 3 to a driven hollow shaft 5 by means of a gearing assembly 4. The shaft arrangement is mounted free of clearance, which leads to an improved quality of the cutting. The hollow shaft 5 is rotatably mounted by means of a plain bearing 6 on a hollow rod 7. At one end of the hollow shaft 5 there is provided, at the end side, a tool support 13. In the interior of the hollow rod 7 there is provided a spindle which cooperates

with clamping jaws 18 within a pipe 15 to be machined, so as to position the pipe for the machining. By rotating a screw 17, the clamping jaws 18 located in the pipe are pressed against the inside wall of the pipe. The device 1 for machining pipe ends is now securely clamped on the pipe 15.

The hollow shaft 5 is supported in axial and radial directions with respect to the housing 8 by a rolling bearing assembly.

Motor and gearing are arranged alongside of each other and are operatively connected to each other by a toothed belt drive. The devices described are enclosed by a housing 16. The housing has two handles 17 and 18. The handle 18 is designed as a loop and is fastened to the lower portion of the housing 16.

The loop-shaped part serves as resting or supporting element for the entire device for machining pipe ends. On the bottom portion of the housing, there is provided an operating element (not shown) which serves for mechanical unlocking and locking in the form of an open and closed choke.

The tool holder 11, as can be noted from Fig. 2, is fastened in the tool support 13 by means of a wedge-shaped part 12. By tightening the screw 14, the wedge-shaped part 12 is moved in radial direction into the tool support, as a result of which the tool holder 11 is clamped in position. The advantage of this design over traditional clamping screws is that the tool is fixed in position better due to the larger clamping surface, which leads to a reduction of vibration and thus to a machining of a better quality. Possibly dimensional settings of the cutting tool in accordance with the diameter of the pipe to be machined are possible in infinitely variable manner.

Fig. 3 is a section through the tool support 13 with the tool holder 11 held in position by means of the wedge-shaped part 12. The wedge-shaped part is tapered in radial direction. Thus, also the depth wise pulling action is assured. A cutting plate 20 is provided in the tool holder 11 by means of a screw 21. The cutting plate is developed as a reversible tip member and has four active cutting edges. This can be noted from Fig 4. All four cutting edges are ground for use in a machining operation. If necessary, i.e. when the edge becomes dull, the new, unused cutting edge can be brought into use within a very short period of time by simply turning it. Since four cutting edges are provided, there is a four-times longer life than in the case of traditional cutting elements where, as a rule, only a single use of the cutting element is provided for. Moreover, it is merely necessary in each case to loosen a screw and tighten it again. In this way the repositioning of the tool holder which is customarily necessary upon the changing is dispensed with. Time and money are saved.

PATENT CLAIMS

1. A device for machining pipe ends (1) having a motor, a gearing assembly and a clamping means (17, 18) for securely clamping a pipe end to be machined on the device (1) for machining the pipe end, the device comprising a hollow rod (7), a tool support, characterized in that the motor and the gearing assembly are arranged alongside of each other and that all units, with the exception of the tool holder, are enclosed by a housing and thus form a compact and handy arrangement, and that the housing has a bottom surface which serves as standing surface and simplifies the handling of the device.

2. A device for machining pipe ends according to claim 1, characterized in that the housing has at least one handle which is designed such that it forms a support element, in the form of a loop, below the bottom portion of the housing.

3. A device for machining pipe ends according to claim 1, characterized in that a locking element is arranged on the bottom portion of the housing.

4. A device for machining pipe ends according to claim 1, characterized in that the tool support (13) comprises at least one tool holder (11) which is guided in a groove and which has a cutting plate (20) fastened therein.

5. A device for machining pipe ends according to claim 4, characterized in that the tool holder (11) can be positioned, by a wedge-shaped part (12) displaceable in the groove, on the tool support (13) by a screw assembly so as to obtain a depth wise pulling action.

6. A cutting plate for use in a device for machining pipe ends for the machining of pipe end surfaces, characterized in that the cutting plate is developed as a reversible tip member and has at least two active cutting edges.

7. A cutting plate according to claim 6, characterized in that, the cutting plate can be fastened in the tool holder and replaced, respectively, by means of a screw assembly.

8. A device for machining pipe ends (1) having a motor, a gearing assembly and a clamping means (17, 18) for securely clamping a pipe end to be machined on the device (1) for machining the pipe end, the device comprising a hollow rod (7), a tool support with a tool holder, characterized in that the motor and the gearing assembly are arranged alongside of each other and that all units, with the exception of the tool holder, are enclosed by a housing and thus form a compact and handy arrangement, and that the housing has a bottom surface which serves as standing surface and simplifies the handling of the device, and that the tool holder comprises a cutting plate which is designed as reversible tip member having at least two active cutting edges.

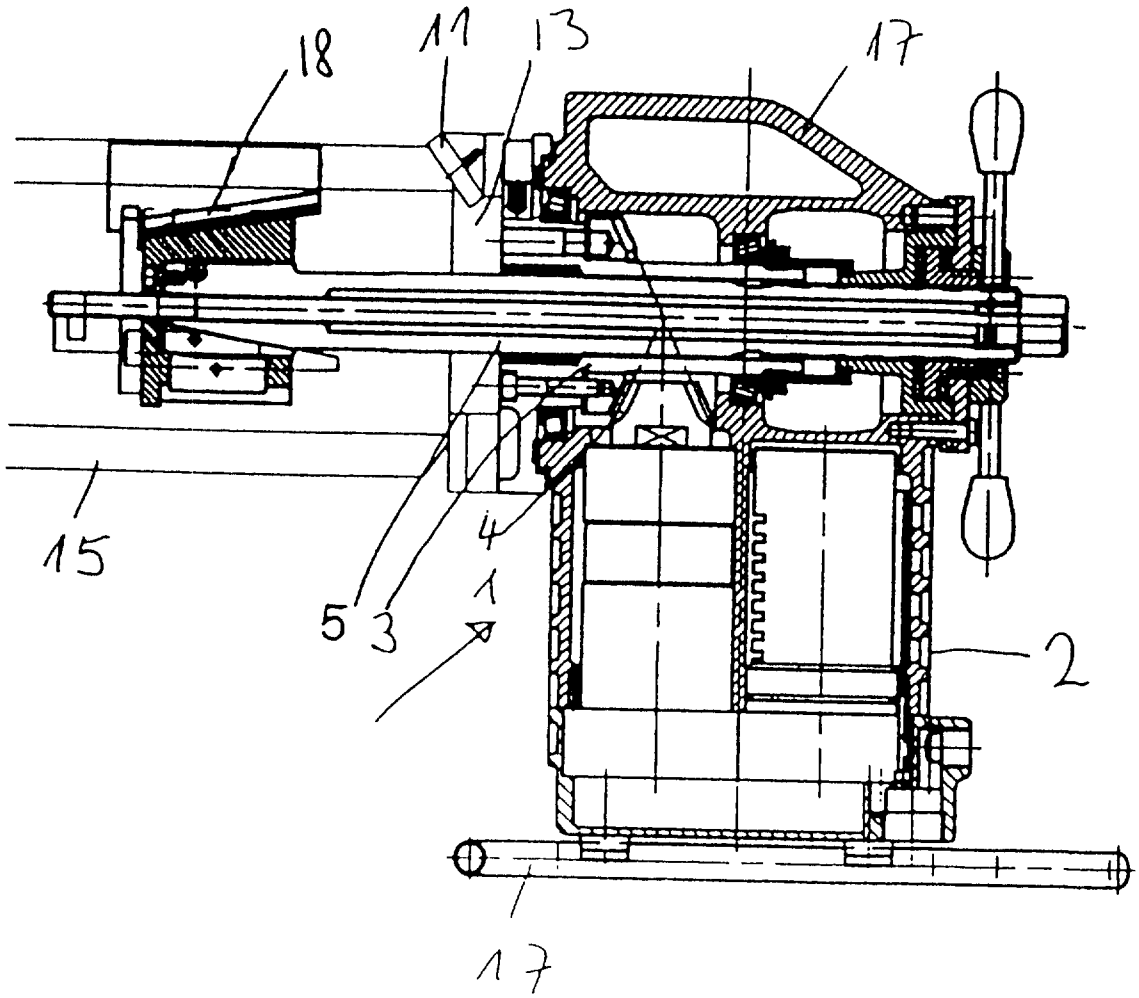


FIG. 1

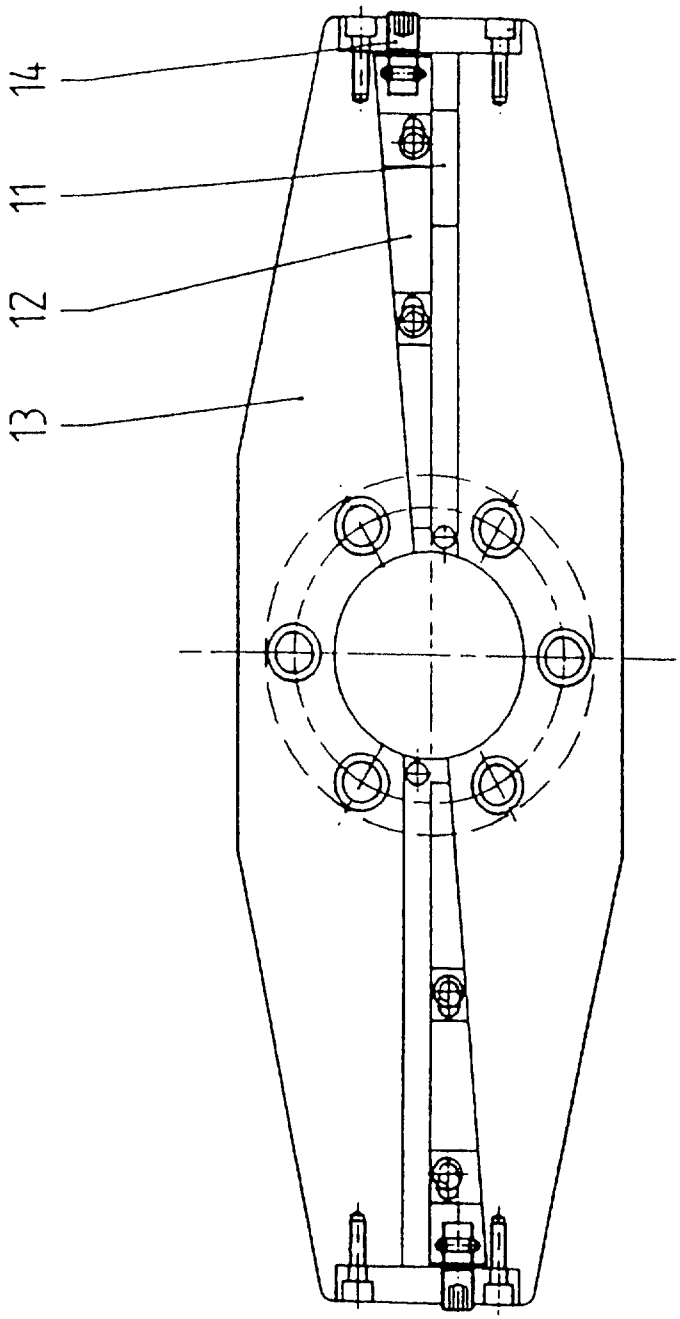


FIG. 2

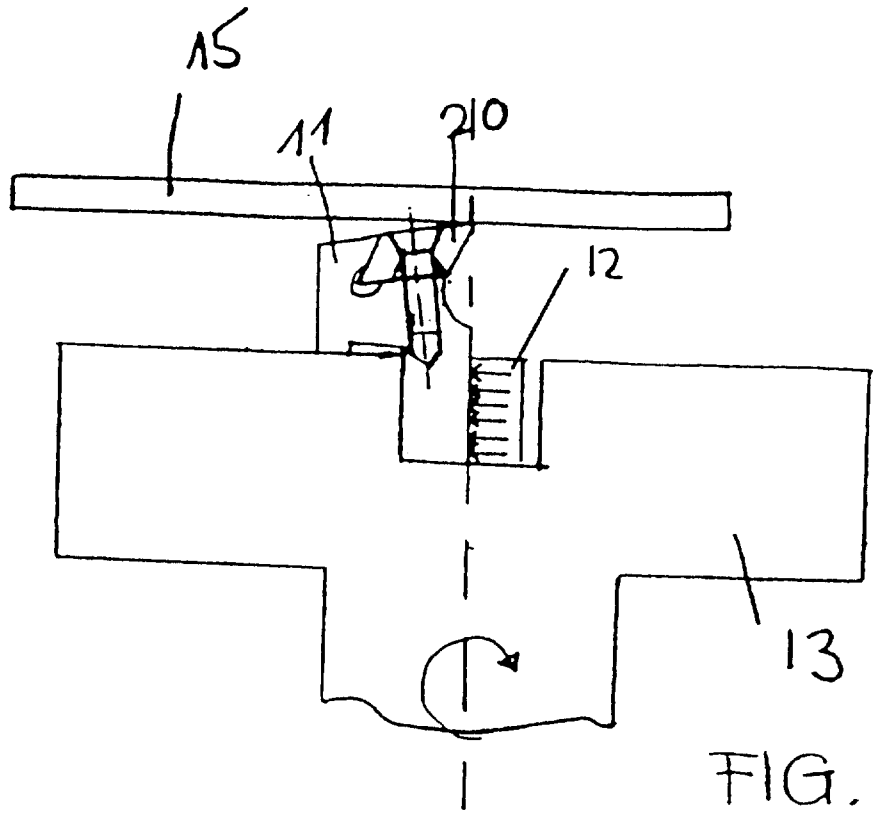


FIG. 3

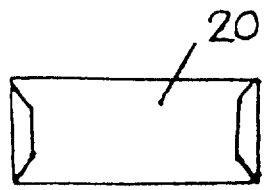
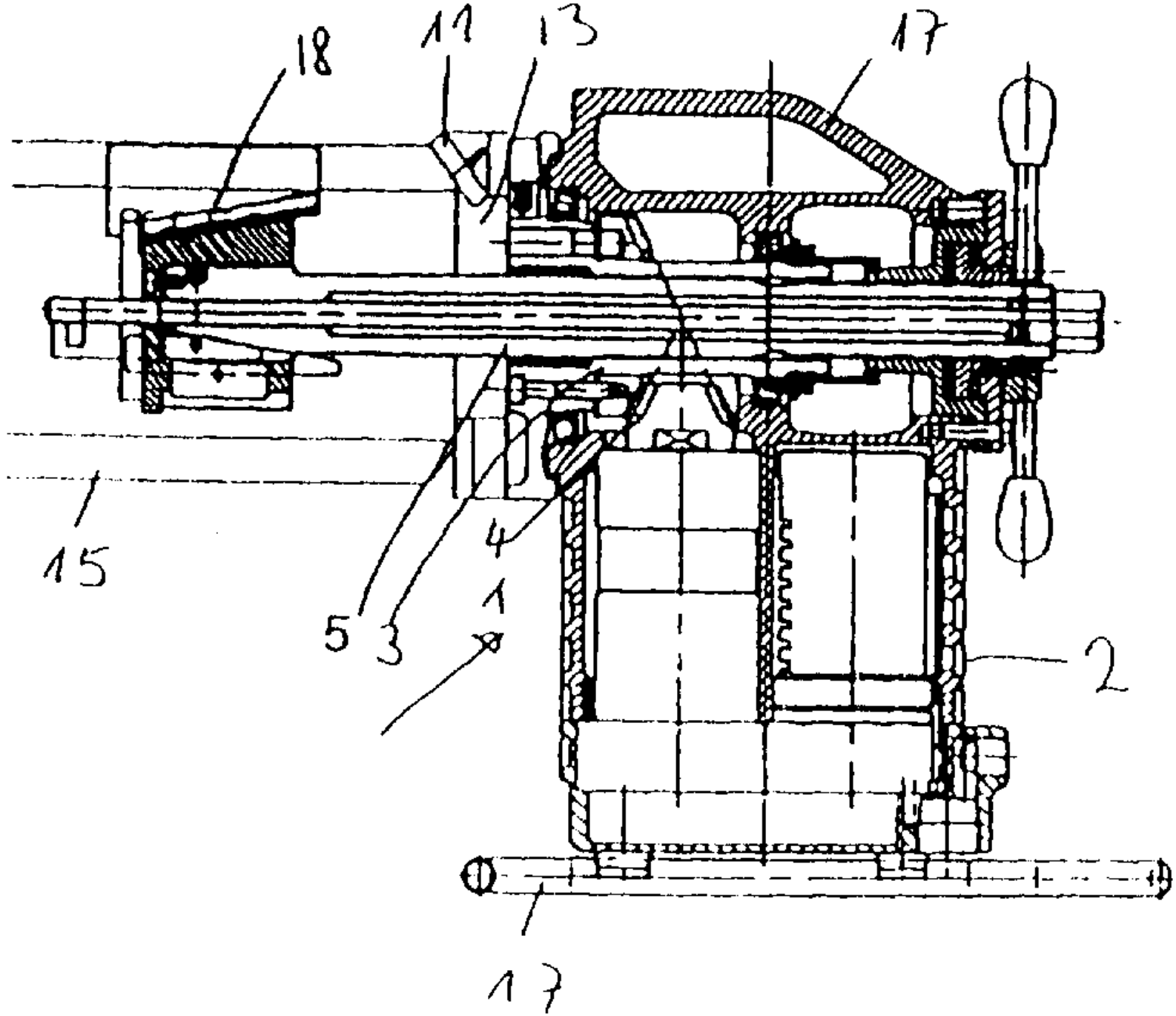


FIG. 4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