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(54) Titre : UNITE DE SOUDAGE DESTINEE A SOUDER LES RAILS D'UNE VOIE
 (54) Title: WELDING UNIT FOR WELDING RAILS OF A TRACK

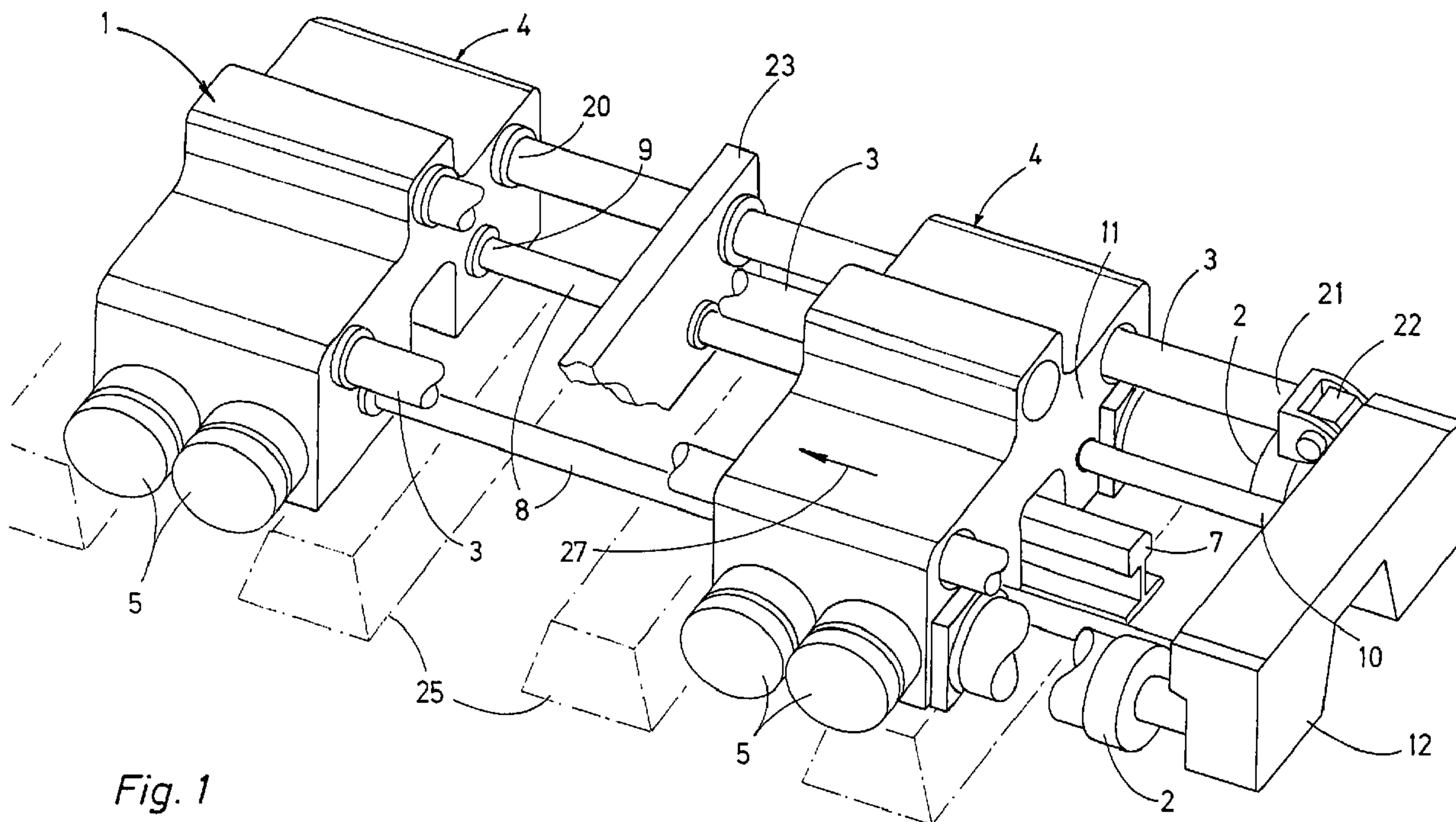


Fig. 1

(57) **Abrégé/Abstract:**

A welding unit (1) for welding rails (7) of a track comprises two unit bodies (4) that can be moved in relation to each other by displacement cylinders (2) along unit guides (3) running parallel to the rails (7). The displacement cylinders (2) are connected both to tie rods (8) and to a cross-bar (12). Thus a simple design having high tensile forces is possible.

Abstract

A welding unit (1) for welding rails (7) of a track comprises two unit bodies (4) which are movable towards one another by means of displacement cylinders (2) along guides (3) extending parallel to the rails (7). The displacement cylinders (2) are fastened, on the one hand, to pull rods (8) and, on the other hand, to a crossbeam (12). This enables a structurally simple embodiment with strong pulling forces.

(Fig.1)

Welding unit for welding rails of a track

[0001] The invention relates to a welding unit for welding rails of a track, with a first and a second unit body, each connected to a clamping drive, which are movable towards one another by means of displacement cylinders along guides extending parallel to the rails.

[0002] Welding units of this type for so-called mobile flash-butt welding have already become known in various embodiments from a multitude of publications, such as, for example, US 3,349,216 or GB 2 185 703 A.

[0003] A further welding unit is known from EP 0 132 227 B1, in which the two unit bodies are connected to one another by means of a toggle lever. The displacement cylinders are connected to a crossbeam on which clamping drives for gripping the rail are provided.

[0004] It is the object of the present invention to provide a welding unit of the type mentioned at the beginning which – while designed with structural simplicity – can transmit to the rail especially strong pulling forces directed in the longitudinal direction of the rail.

[0005] According to the invention, this object is achieved with a welding unit of the specified kind by means of the features cited in the characterising part of claim 1.

[0006] By positioning the displacement cylinders in this way, the welding unit can be formed with minimal structural height. This enables a

cantilevered suspension on a rail vehicle without thereby impeding the view of the track as prescribed by UIC. Furthermore, it is possible due to this embodiment to pull the rail closer by extending the piston rod out from the displacement cylinder. Thus, the piston surface is not reduced by the piston rod and is available to the full extent for the pressure build-up. Further, the displacement cylinders can have a relatively small diameter while still maintaining strong pulling forces. This results in the advantage that the rail ends to be welded need only be lifted slightly from the sleepers, thus facilitating a flush alignment of the rail ends.

[0007] Additional advantages of the invention become apparent from the dependent claims and the drawing description.

[0008] The invention will be described in more detail below with reference to an embodiment represented in the drawing in which

[0009] Fig. 1 is a perspective view of a welding unit, wherein – for the sake of clarity – only the most important components are shown,

[0010] Figs. 2 und 3 are a top view and side view, respectively, of the welding unit visible in Fig. 1, and

[0011] Fig. 4 is a view of a unit body in the longitudinal direction of the rail.

[0012] A welding unit 1, shown in Figs. 1 to 3, is composed of two unit bodies 4 which are displaceable towards one another along guides 3 with the aid of displacement cylinders 2. The unit bodies 4 are connected in each case to two clamping drives 5 by means of which

clamping jaws 6 are pressed against rails 7 to be welded to one another.

[0013] Pull rods 8, extending parallel to the guides 3, have a first end 9 fastened to the first unit body 4 and are guided through the second unit body 4, wherein a respective second end 10 is positioned to protrude with regard to an exterior surface 11, extending perpendicularly to the guides 3, of the second unit body 4.

[0014] The second ends 10 of the two pull rods 8 are connected to a crossbeam 12. Each displacement cylinder 2 is fastened, on the one hand, to the said exterior surface 11 of the second unit body 4 and, on the other hand, to the crossbeam 12.

[0015] As visible particularly in Fig. 3, longitudinal axes 13, 14, 15 of the pull rods 8, of the displacement cylinders 2 and of the clamping drives 5 are positioned in a common plane 16. The latter is situated in a neutral axis 17 of the rail 7.

[0016] As shown in Fig. 4, the clamping drives 5 – extending perpendicularly to the longitudinal axis 13 of the pull rods 8 – are each equipped, in the region of piston rods 18, with an opening 19 for passage of the pull rod 8. The guides 3, having a first end 20 connected to the first unit body 4, have a second end 21 connected in each case to the crossbeam 12 by means of an articulated connection 22.

[0017] A shearing device 23 for removing a welding seam is provided between the two unit bodies 4. Fastened to each exterior surface 11 of the two unit bodies 4 is a lifting device 24 for lifting the rails 7.

[0018] In preparation of the welding procedure, both rails 7 are lifted from the sleepers 25, lying thereunder, by means of the lifting devices 24 (see Fig. 4) and pressed against stop bars 26. Subsequently, the clamping drives 5 are actuated in order to press the clamping jaws 6 against a rail web of the rail 7 with a clamping force of 350 tons.

Additionally, electrodes (not shown) are pressed against the rails 7.

[0019] To initiate the welding procedure, the second unit body 4 together with the gripped rail 7 is moved, by actuation of the displacement drives 2, with a pulling force of up to 150 tons in a direction 27 towards the second rail 7. As soon as the spacing of the two rail ends as required for the welding has been achieved, the supply of electrical current is started.

[0020] In case the ambient temperature lies above the neutral temperature, it is also possible, if desired, to move the rail 7 – by corresponding actuation of the two displacement drives 2 – in a direction opposite to the indicated direction 28.

Claims

1. A welding unit for welding rails (7) of a track, with a first and a second unit body (4), each connected to a clamping drive (5), which are movable towards one another by means of displacement cylinders (2) along guides (3) extending parallel to the rails (7), **characterized by the following features:**
 - a) pull rods (8) extending parallel to the guides (3) have a first end (9) fastened to the first unit body (4) and are guided through the second unit body (4), wherein a second end (10) is positioned to protrude with regard to an exterior surface (11), extending perpendicularly to the guides (3), of the second unit body (4),
 - b) the second ends (10) of the pull rods (8) are connected to a crossbeam (12),
 - c) each displacement cylinder (2) is fastened, on the one hand, to said exterior surface (11) of the second unit body (4) and, on the other hand, to the crossbeam (12).
2. A welding unit according to claim 1, characterized in that longitudinal axes (13, 14) of the pull rods (8) and of the displacement cylinders (2) are positioned in a common plane (16).
3. A welding unit according to claim 2, characterized in that the common plane (16) is positioned in a neutral axis (17) of the rails (7) to be welded.

4. A welding unit according to claim 2 or 3, characterized in that longitudinal axes (15) of the clamping drives (5) arranged on each unit body (4) are positioned in the common plane (16) and in a position extending perpendicularly to the longitudinal axis (13) of the pull rods (8), wherein a piston rod (18) of the clamping drive (5) has an opening (19) for passage of the pull rod (8).

5. A welding unit according to claim 1, characterized in that the guides (3), having a first end (20) connected to the first unit body (4), have a second end (21) connected in each case to the crossbeam (12).

6. A welding unit according to claim 5, characterized in that each guide (3) is connected to the crossbeam (12) by means of an articulated connection (22).

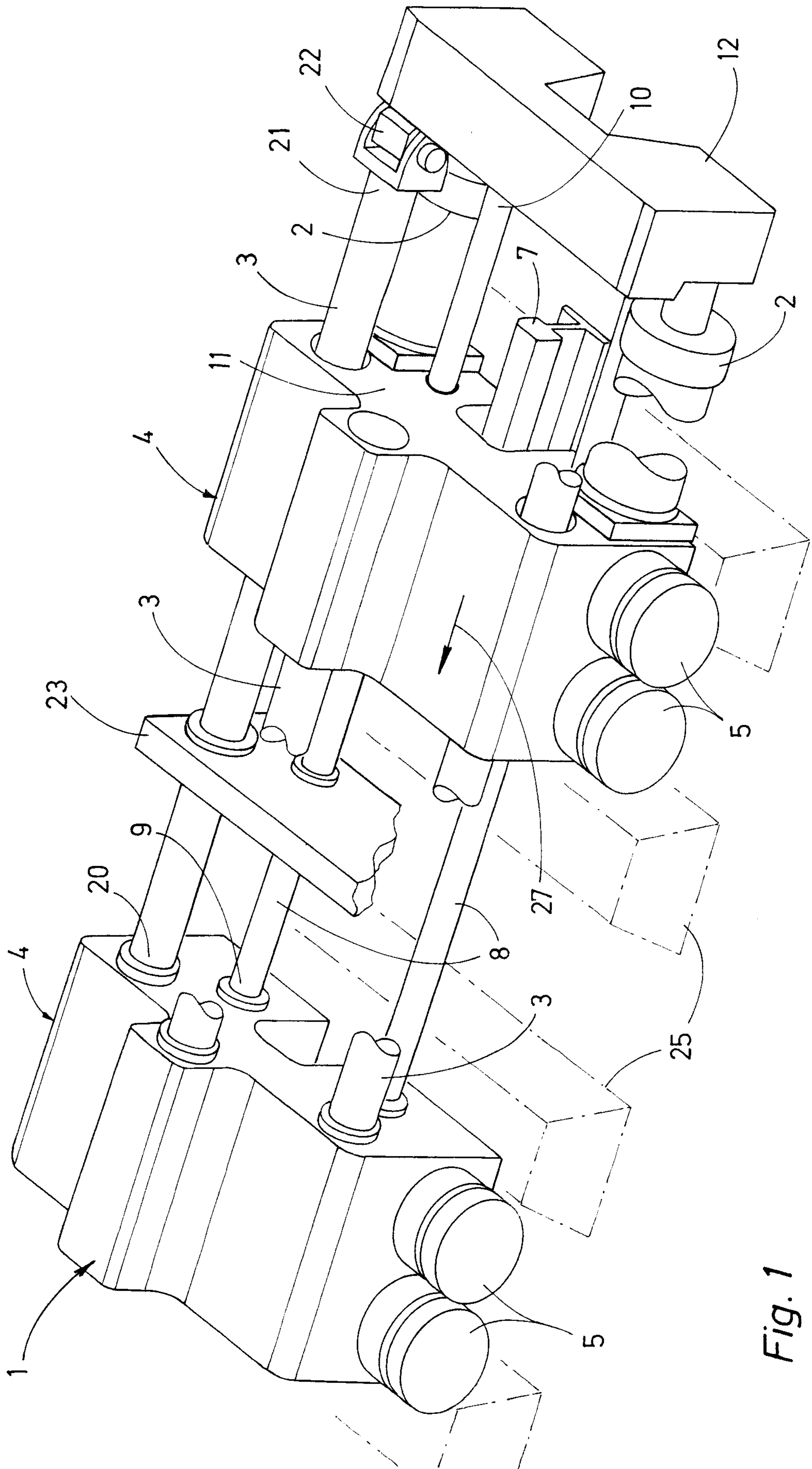
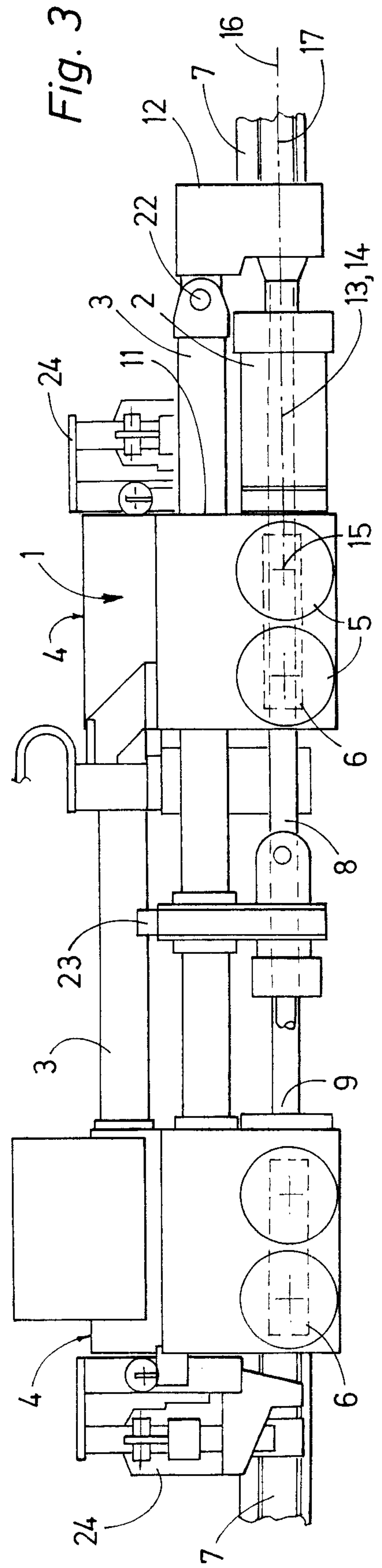
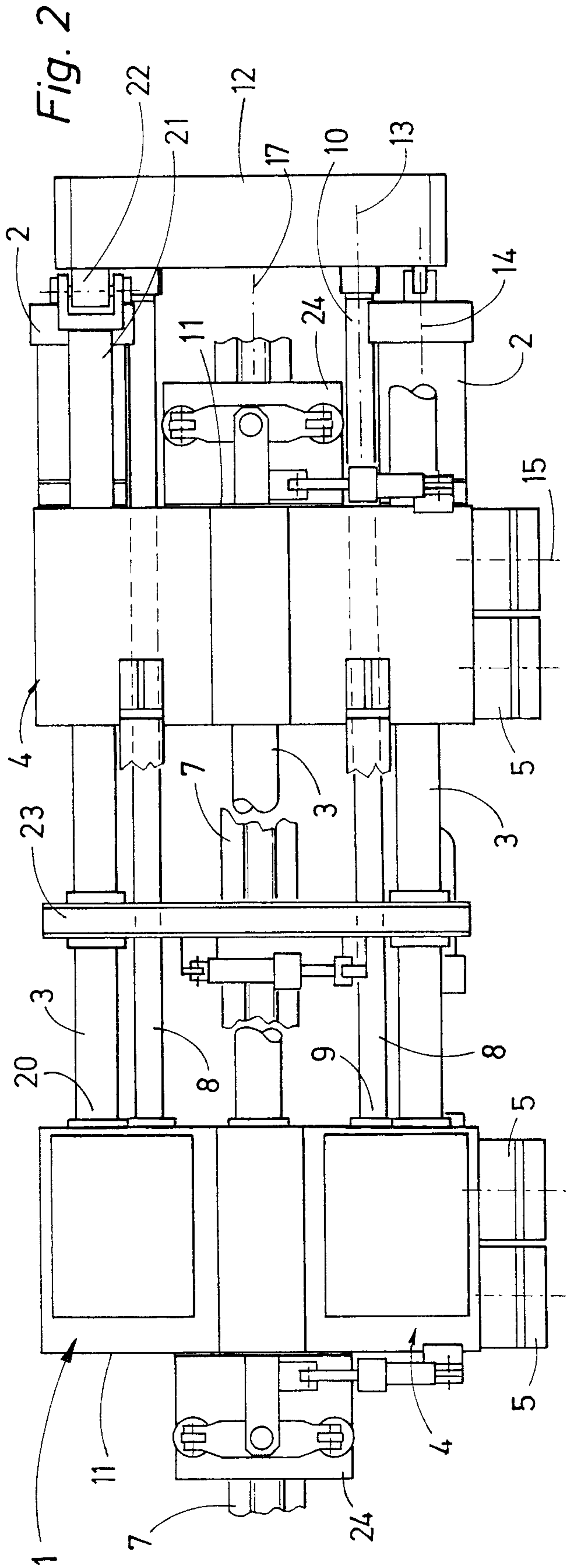


Fig. 1



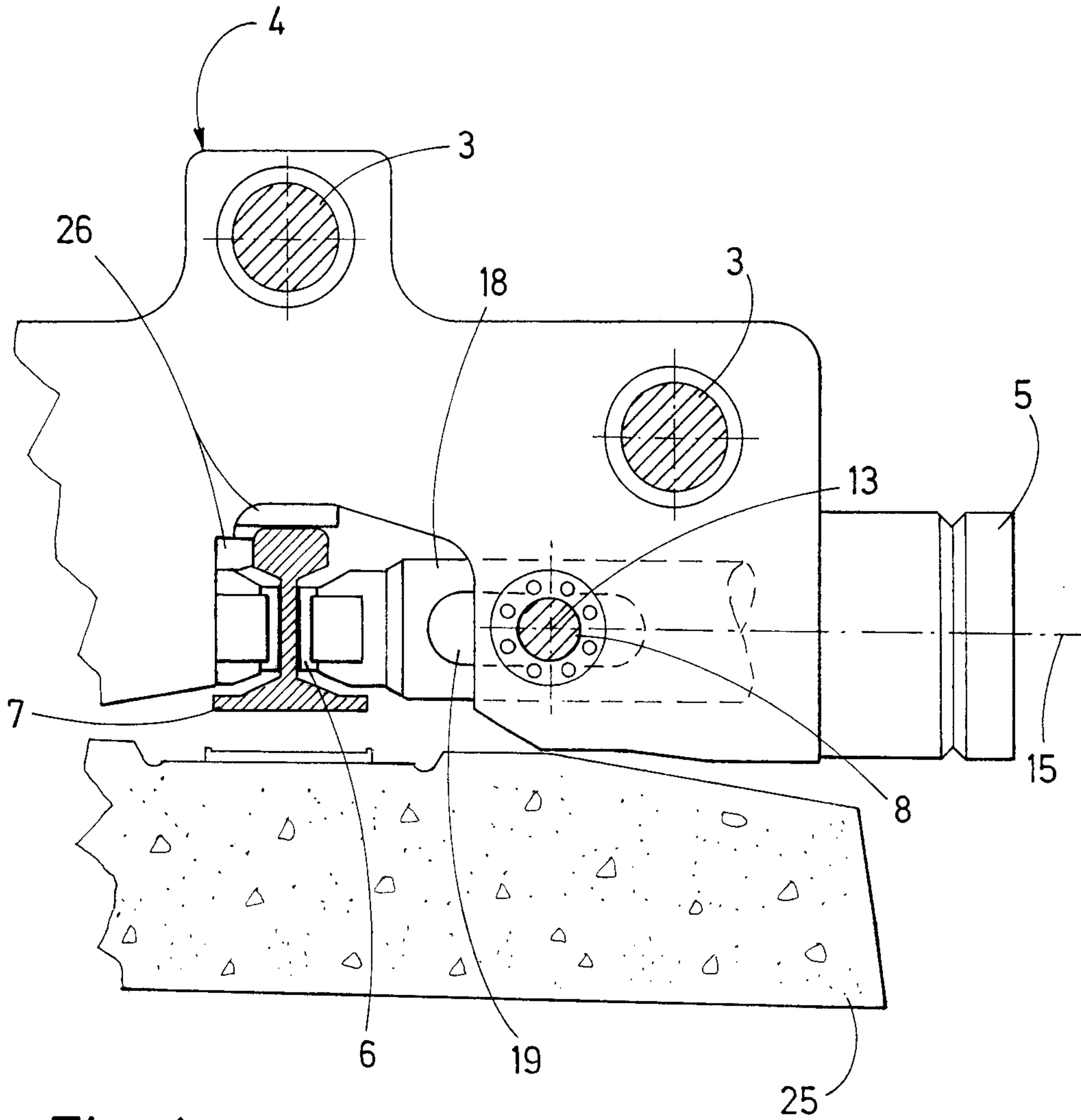


Fig. 4

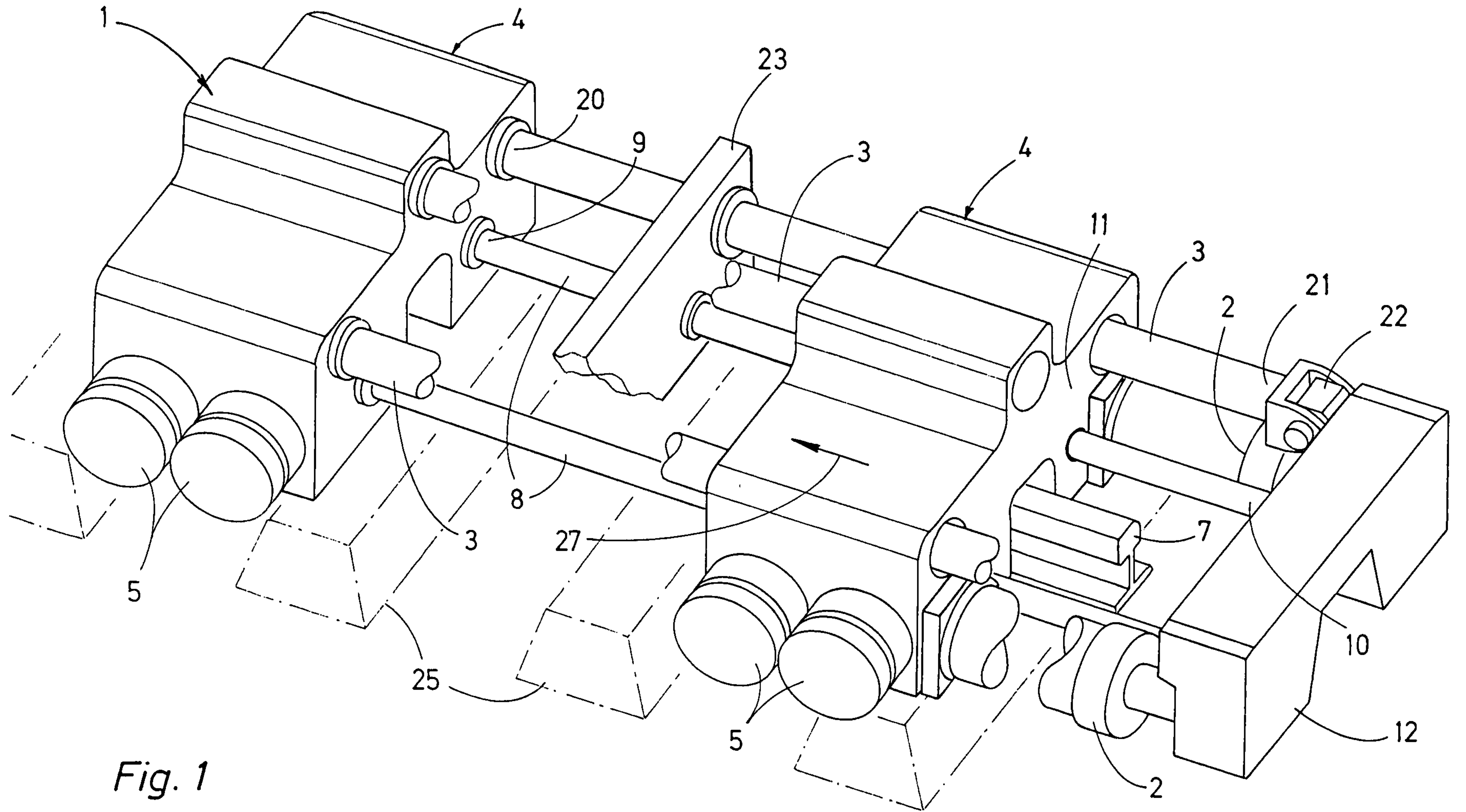


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