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(54) **Adjustable supporting structure, particularly for parabolic antennas.**

(57) Adjustable supporting structure, particularly for parabolic antennas, comprising a pole (2) supporting on one end suitable means for the orientation of a parabolic reflector and characterized in that said means of orientation comprise a supporting member (3) engaging coaxially said pole, a body (7) revolvingly engaging said supporting member so as to define a first axis of rotation and a pivot (10) engaging said body and revolvingly supporting a support connection (11) rigidly secured to said parabolic reflector (12), said pivot defining a second axis of rotation which is perpendicular to the first axis of rotation and said structure also comprising first and second engagement members (13,20) acting, respectively, between said body and said supporting member and between said body and said connecting member and capable of both locking and adjusting the position of said body, supporting member and support connection.

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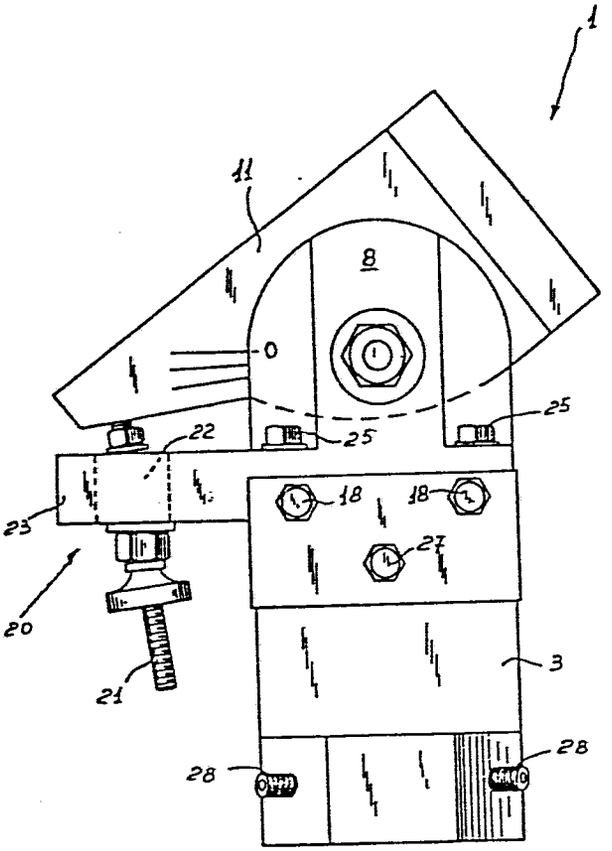

Fig 4

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This invention refers to an adjustable supporting structure designed for orienting and for keeping parabolic antennas in a determinate position.

It is a known fact that parabolic antennas in order to pick up radio and television signals sent out by satellites are provided with a supporting member and with ======== devices for orienting the parabolic reflector according to the radio-television signal to be picked up.

A good reception of a signal depends mostly on a high signal-to-noise ratio and on a high degree of directivity of the parabolic reflector, i.e. its correct pointing achieved by means of gradual displacements.

The orientation device must therefore be able to ensure

not only a stepwise orientation of the parabolic reflector but also the maintenance of its selected position under unfavourable weather conditions attempting to disorient the antenna. In fact, parabolic antennas are generally located in the open and are subject to the force exerted by the wind.

The orientation devices presently known do not fully meet both above-mentioned requirements: when they are capable of accurately positioning the parabolic reflector, they are mostly unable to keep it in this position under unfavourable weather conditions. Alternatively, the fulfilment of this latter requirement will reduce the orientation accuracy of the parabolic reflector.

Under these circumstances, the general purpose of the present invention is to overcome the above-mentioned drawbacks by producing an adjustable supporting structure ensuring both a stepwise orientation of the parabolic reflector , an absolute orientation accuracy and the maintenance of the parabolic reflector in its preset position.

Within this general purpose, the main object of the present invention is to provide an adjustable supporting structure capable of withstanding unfavourable weather conditions and especially the force exerted by the

wind on the parabolic reflector.

Yet another object of this invention is to provide an adjustable supporting structure which is both rugged and easy to use and service.

The above objects are substantially reached by a supporting structure comprising a pole supporting on one end suitable means for the orientation of a parabolic reflector and characterized in that said means of orientation comprise a supporting member engaging coaxially said pole, a body revolvingly engaging said supporting member so as to define a first axis of rotation and a pivot engaging said body and revolvingly supporting a support connection rigidly secured to said parabolic reflector said pivot defining a second axis of rotation which is perpendicular to the first axis of rotation, and said structure also comprising first and second engagement members acting respectively between said body and said supporting member and between said body and said connection and capable of both locking and adjusting the position of said body, supporting member and support connection.

Further features and advantages will result from the detailed description of a device according to the invention, illustrated for information only, in the enclosed drawings, where:

- figure 1 is an elevation side view of an orientable parabolic antenna according to the invention, shown as a whole;
- figure 2 is an elevation view from the reflector side of the body and support connection of the structure according to the invention;
- figure 3 yet shows an elevation with a partial sectional view of the supporting member of the structure according to the invention; and
- figure 4 is a side view of the structural members shown in figures 2 and 3.

With reference to the above figures, and particularly to figures 1 and 4, the supporting structure according to the invention is marked, as a whole, with the reference number 1.

The structure 1 includes a pole 2 of an essentially cylindrical shape whose top end mounts revolvingly a supporting member 3. In fact, the supporting member 3 features a recess 4 shaped to fit pole 2. The axis of recess 4 defines a first axis of rotation of the structure 1.

On the supporting member 3, on the opposite side to the recess 4, there is a seat 5, coaxial with the supporting member 3, which accommodates a lug 6 belonging to and coaxial with a body marked, as a whole, with the reference number 7.

The body 7 features two shoulders 8 and 9 provided

with holes designed to receive a pivot 10 whose axis defines a second axis of rotation which is perpendicular to the first axis of rotation.

Pivot 10 is threaded and is represented in practice by a screw. It supports a support connection 11 which can freely rock and whose width is substantially equal to the distance between the two shoulders 8 and 9 so that there is practically no side play during its rocking motion. The connection 11 is also rigidly secured at its connecting point 11a to a parabolic reflector 12 capable of picking up radio-television signals sent by a satellite.

The supporting member 3 mounts thereon the first engagement members globally marked 13, acting on body 7. These include at least one wing and possibly two opposed wings 14 and 15. Each of the wings 14 and 15 has a first portion 16 which is substantially radial to the supporting member 3 and a second portion 17 which is substantially parallel to said supporting member 3. Two adjusting screws 18 and 19 pass through the second portion of each wing 17. These screws are perpendicular to said first axis of rotation and abut against the quadrangular base of body 7 in two different areas of the latter so that the body 7 is oriented on the supporting member 3 according to the amount by which said screws 18, 19 are screwed down.

Moreover, second engagement members globally marked 20 and acting between body 7 and support connection 11 are provided.

These 20 include a rocking stay bolt 21 whose one end is connected with the end of the support connection 11 opposed to pivot 10. the end of the same connected with the parabolic reflector 12 and whose other end passes through a bore 22 provided in an extension 23 of body 7 extending substantially perpendicular to

In addition, body 7 is provided with expanded bores or circumferential slots 24 whose axes are parallel to the axis of body 7. Inside each expanded bore 24 there is a screw 25 engaging threaded holes 26 which are parallel to said first axis of rotation. Screws 25 lock body 7 onto the supporting member 3 in an axial direction only.

Figure 3 also shows the through screws 27 which connect wing 14 or wings 14 and 15 with the supporting member 3.

Setscrews 28 pass through the supporting member 3 and abut against pole 2. Setscrews 28 are radial to pole 2.

Operation of the device according to the invention is as follows:

To begin with, the supporting member 3 is oriented on pole 2 so that it assumes an approximately final position and supporting member 3 and pole 2 are fastened to each other by means of setscrews 28 extending radially with respect to the axis of said supporting member.

Subsequently, by operating screws 18 and if necessary also screws 19, the body 7 is gradually and accurately oriented with respect to supporting member 3.

Finally, by acting on stay rod 21 the parabolic reflector 12 is oriented by means of an upward or downward shift so as to obtain a perfectly accurate and stable pointing.

In practice, the device according to the invention has proved to be particularly advantageous: it allows a highly accurate orientation of the parabolic reflector and ensures an absolute stability of the latter in the position thus obtained.

All parts may be replaced with technically equivalent parts.

In practice, any type of materials and any size whatsoever may be used, according to requirements.

CLAIMS

1. Adjustable supporting structure, particularly for parabolic antennas, comprising a pole (2) supporting on one end suitable means for the orientation of a parabolic reflector and characterized in that said means of orientation comprise a supporting member (3) engaging coaxially said pole, a body (7) revolvingly engaging said supporting member so as to define a first axis of rotation and a pivot (10) engaging said body and revolvingly supporting a support connection (11) rigidly secured to said parabolic reflector (12), said pivot defining a second axis of rotation which is perpendicular to the first axis of rotation and said structure also comprising first and second engagement members (13,20) acting, respectively, between said body and said supporting member and between said body and said connecting member and capable of both locking and adjusting the position of said body, supporting member and support connection.

2. Stucture according to claim 1, characterized in that said engagement members (13) include at least one wing (14) extending from said supporting member (3) and supporting at least two adjusting screws (18,19) which are substantially perpendicular to said first axis of rotation and abut against said body.

3. Structure according to claim 1 characterized in that said second engagement members include a rocking stay bolt (21) connected with one end of said connecting member and passing across a through hole (22) provided in an extention (23) of said body which extends perpendicularly to said pivot.

4. Structure according to claim 1, characterized in that said supporting member is fastened to said pole by means of radial setscrews (28) .

5. Structure according the claim 1, characterized in that the base of said body is fastened axially to said supporting member by means of screws (25) passing through expanded holes (24) of said body and entering threaded holes (26) provided in said supporting member and parallel to said first axis of rotation.

6. Structure according to claim 1, characterized in that said body features a base of a substantially quadrangular shape.

7. Structure according to claims 6 and 4, characterized in that said adjusting screws (18,19) engage spaced out areas of said quadrangular base.

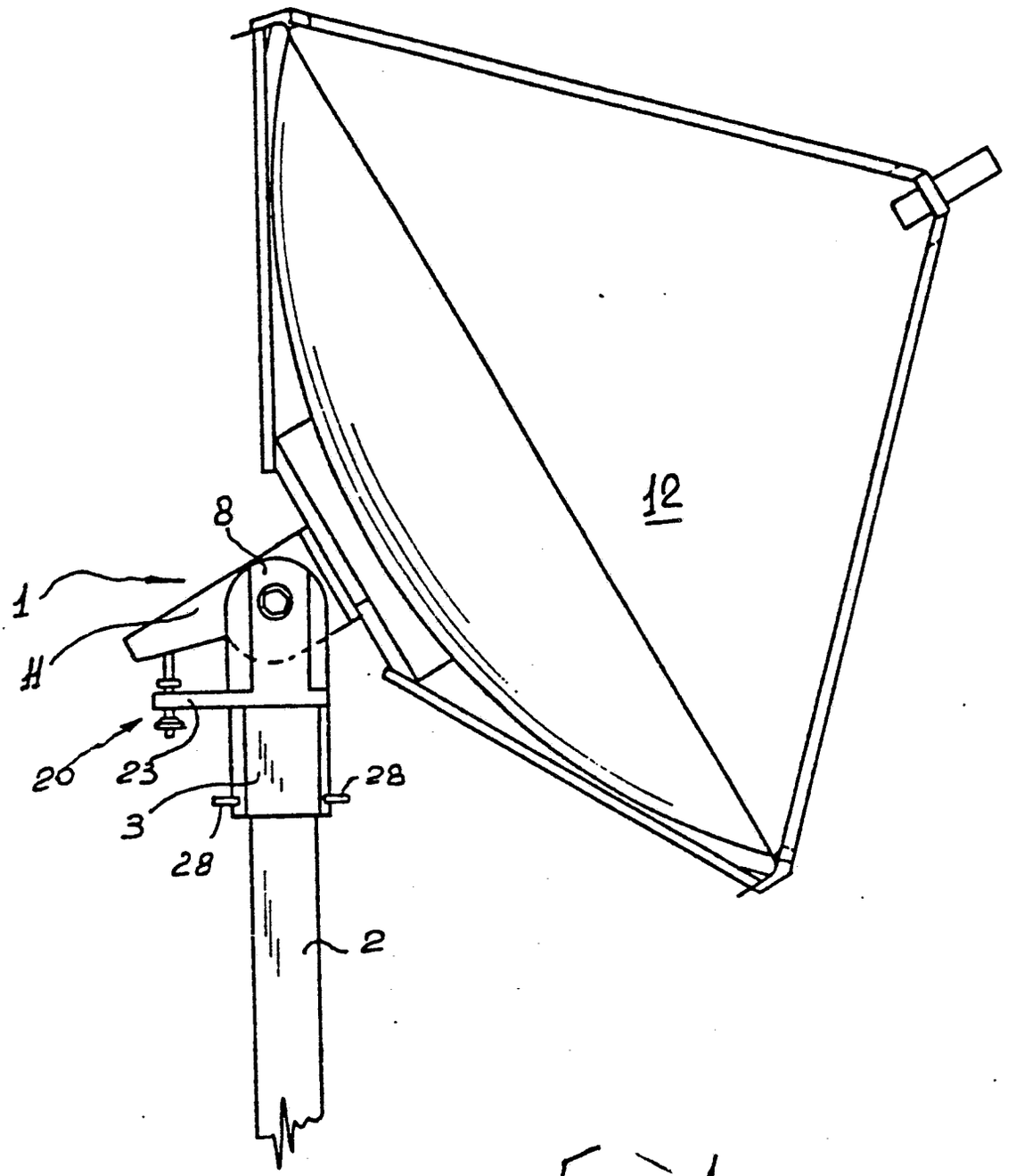

Fig 1

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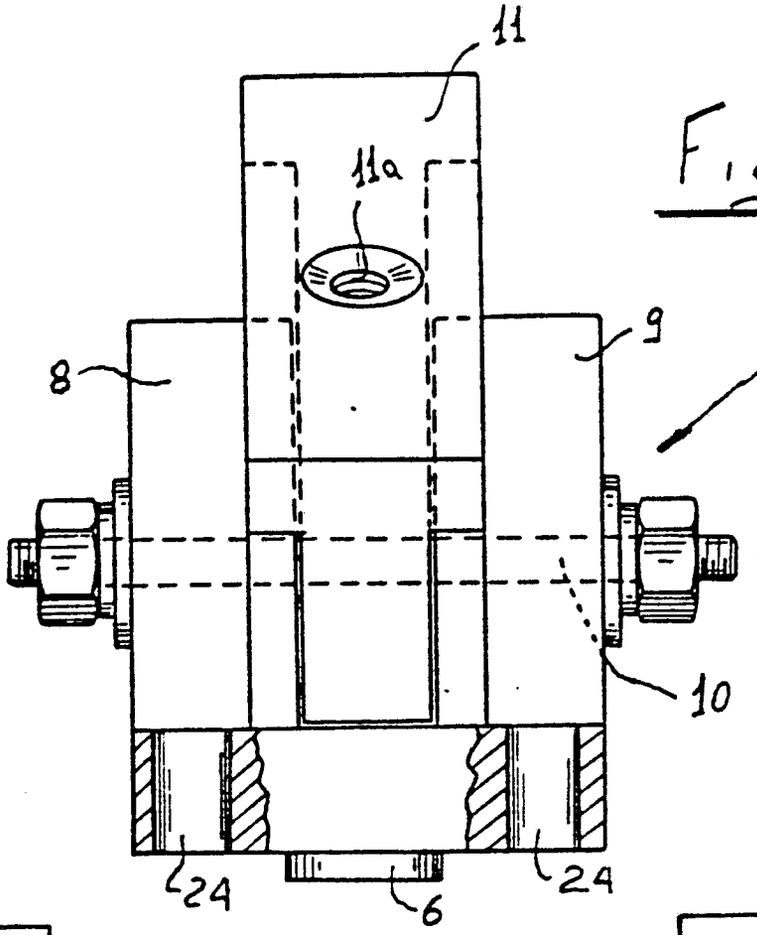
Fig 2



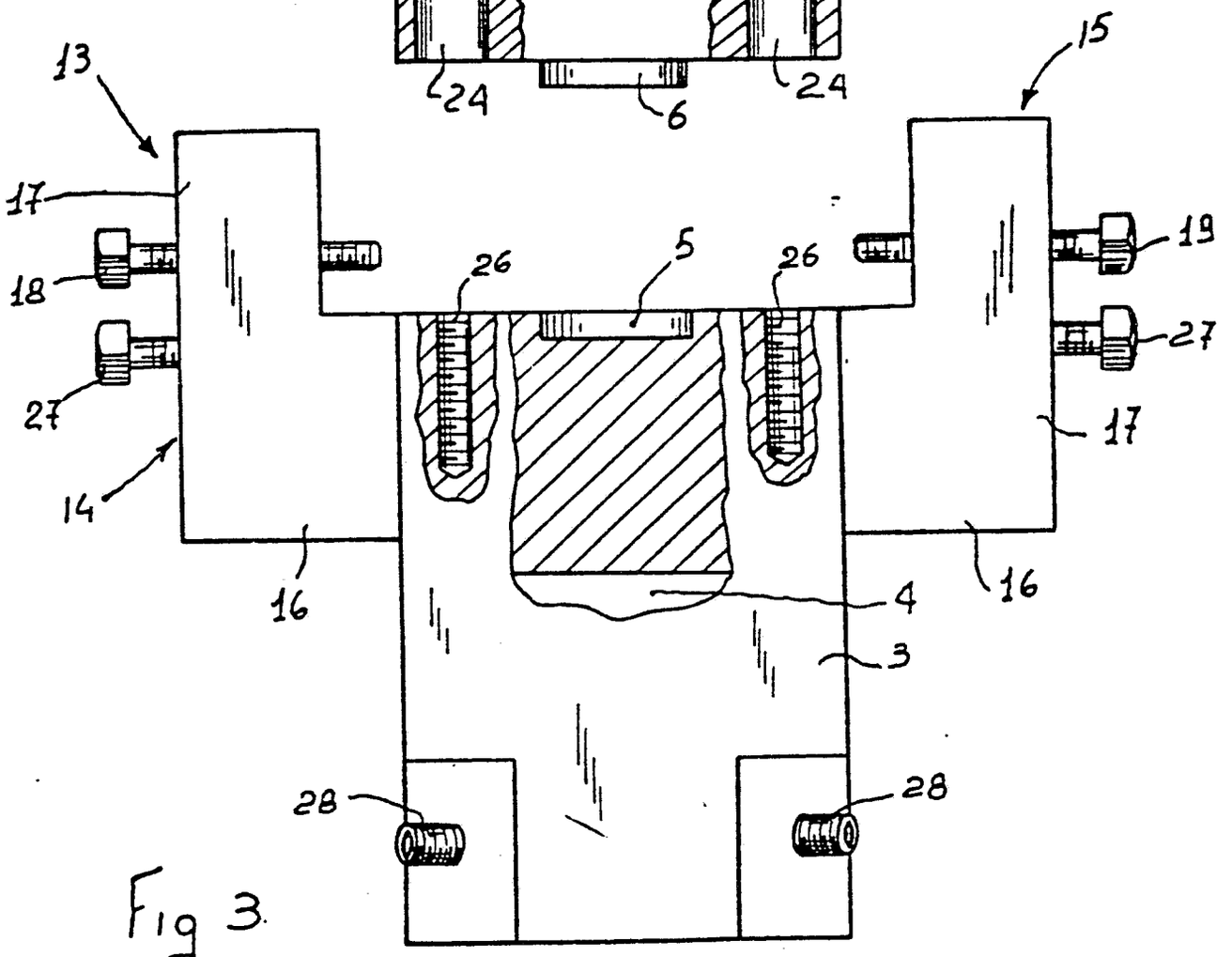


Fig 3

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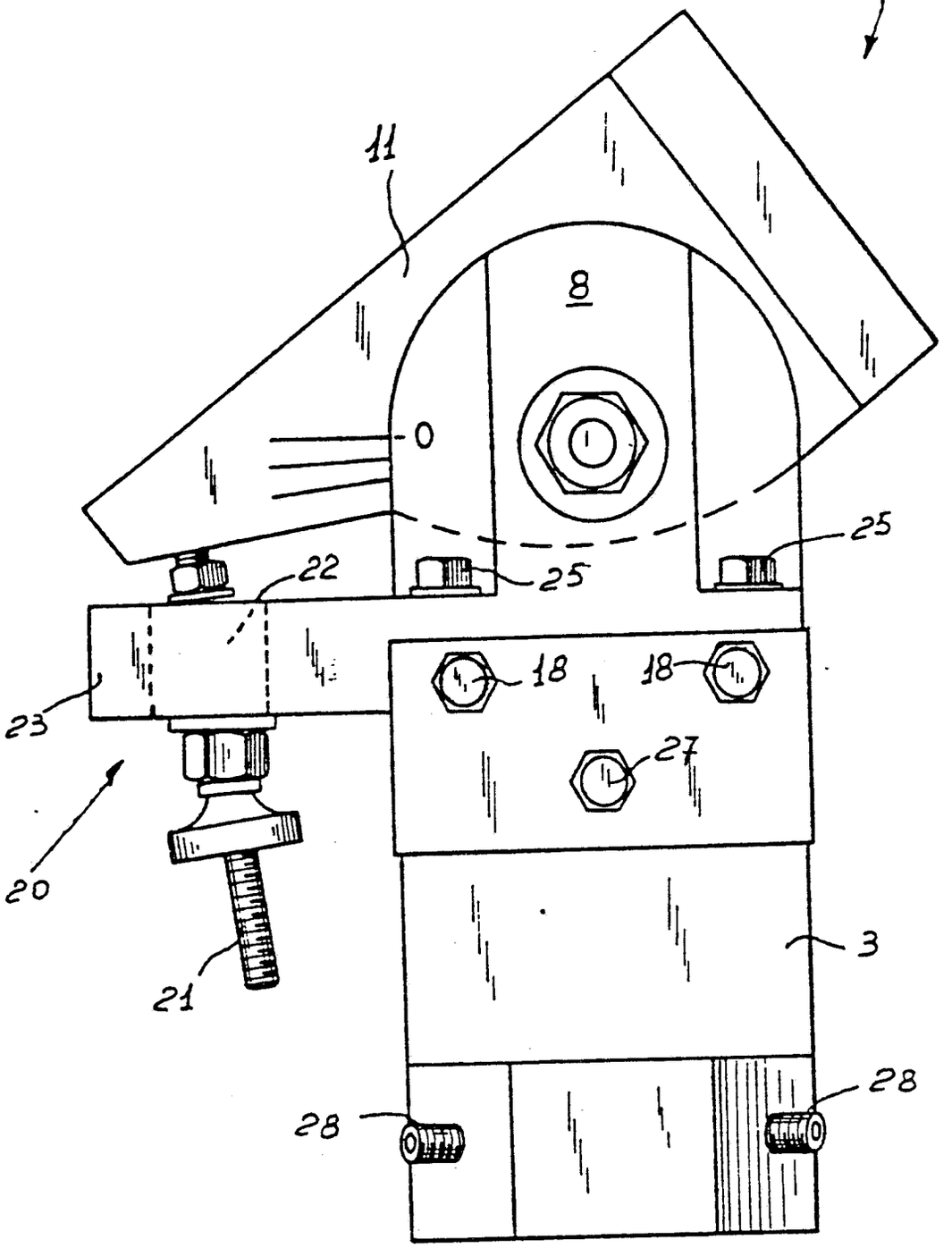

Fig 4

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