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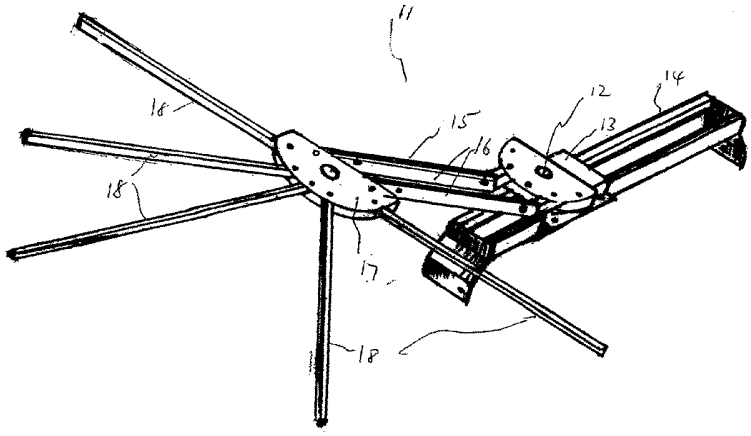
(54) Title: COLLAPSIBLE AWNING



(57) Abstract: A collapsible awning (11) which has a normally upright support post or equivalent support member(13). The awning has a flexible cover having either generally the overall shape of a sector or comprising triangular sections assembled to approximate the shape of a sector extends over a plurality of support arms(18) which extend between the support post or support member and the periphery of the cover. Cover attachment means are provided to secure the cover to the upper part of the support post or support member at the point from which the radii of the sector extend. Arm attachment means (17) attached to the support post or member are provided whereby the arms are either each pivotally rotatable about the support post or rotatable about individual axes (29) adjacent to or in the vicinity of the support post or other support member. The arms being thus operable between an open position for the awning in use when the arms are extended radially away from each other, and a closed position when the support arms are brought into proximity with each other. In one particularly preferred embodiment lifting (18) or extension means are disclosed to raise the effective height of the awning in use.

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COLLAPSIBLE AWNING

FIELD OF THE INVENTION

This invention relates to awnings, and in particular to large, collapsible awnings, especially awnings which may be used as an annexe in conjunction with caravans, vans and other vehicles or buildings to provide shade or protection from the elements such as sun and rain.

Whilst the following description refers primarily to large collapsible awnings used in conjunction with vehicles or buildings, other generally free standing awning structures akin to umbrellas are also included where, by suitable adaptation, the invention may also be utilized.

BACKGROUND OF THE INVENTION

Various awning and umbrella type structures are well known and have been utilised to provide shelter or shade in outdoor areas. A conventional umbrella structure by definition generally encompasses a light circular canopy or other material attached to a radiating folding frame which slides on a central shaft (between an open and a collapsed position) and although originally intended to be carried in the hand to provide personal protection against the sun or rain, the term umbrella has taken on wider meaning in recent times to encompass larger free standing structures performing the same function.

However, whilst it is generally convenient for umbrellas by their very nature and design to collapse about the central shaft, other quite different arrangements are herein proposed in which an awning having at least some of the other characteristics of an umbrella-like structure would be useful.

OBJECT OF THE INVENTION

It is therefore an object of the present invention to provide an improved collapsible awning retaining some of the more useful characteristics of a conventional umbrella, but wherein it is adapted to extend, not necessarily in a full circle but for example in a semi circular

arrangement or some other desired radial section from a vehicle, building or other suitable support structure, by virtue of having the support frame for the cover collapsibly rotatable around a support shaft or, where appropriate, some other suitable support, rather than slidably collapsible on that shaft. In other words, when collapsed, the frame members for supporting the cover will lie generally perpendicular to the support shaft or other support member, rather than generally along the axis of the shaft as would be the case in a conventional umbrella structure.

One such structure therefore would be the provision of an awning having in one sense the overall appearance of say one half of a conventional umbrella which could be located in such a way that it extends from a vehicle or other suitable building or edifice to provide the desired shade or cover. However, in order to provide a suitable support frame structure for the fabric covering, rather than utilise a conventional umbrella mechanism, an alternate arrangement is provided herein in which the support arms for the cover are rotatable about a support post or other support member.

At the very least the awning of the present invention provides an alternative to previously known structures.

DISCLOSURE OF THE INVENTION

According to the present invention there is provided a collapsible awning comprising a normally upright support post or equivalent support member; a flexible cover having either generally the overall shape of a sector or comprising triangular sections assembled to approximate the shape of a sector; cover attachment means whereby the cover is secured to the upper part of the support post or support member at the point from which the radii of the sector extend; a plurality of support arms extending between the support post or support member and the periphery of the cover; arm attachment means attached to the support post or member whereby the arms are either each pivotally rotatable about the support post or rotatable about individual axes adjacent to or in the vicinity of the support post or other support member; the arms being thus operable between an open position for the awning in use when the arms are extended radially away from each other, and a closed position when the support arms are brought into proximity with each other.

Preferably, additional support means are provided in the form of support legs, which depend from the support arms at suitable locations, preferably about the periphery of the awning, and which are adjustably extendible to reach the ground or other base above which the awning is being utilised, in order to provide additional support for the support arms and cover. It will be appreciated that the larger the awning span, the more likely it is that the awning will benefit from such additional support. These support legs may be conveniently hinged so as to fold up along the general axis of the support arms and so lie in a tidy arrangement therewith when the awning is in the collapsed state.

The support arms may be of any suitable design, eg they may themselves be shaped to provide a curved surface for the cover reminiscent of a conventional umbrella or they may be straight. In any event, it is preferred that they not only extend generally radially from the support post or other support structure, but that they extend downwards at least slightly to assist in water run-off in inclement weather. The arms themselves may be single struts or more complex frame like structures to assist in supporting the weight of the cover. These more complex arrangements may themselves be either rigid or collapsible as required according to the design and function of the individual awning.

Rather than a long central post as is commonly found in a conventional free standing umbrella, it will be readily appreciated that preferred embodiments of the present invention will utilise instead either a short post or other equivalent support member which may be conveniently adapted as required to fit onto or adjacent the roof of a vehicle, van, caravan etc, either directly thereon or onto roof racks or some other suitable fitting attached thereto. Depending on the vehicle or van to which the awning is fitted, it may be located on the top or on the side of the vehicle. Similarly, the support post or support member may be fitted instead to any building or edifice as required utilising generally known means for attaching same.

For example, one preferred means of affixing the support member, when it is in the form of a post, would be to provide a tube arrangement attached to means by which it can be affixed to a vehicle or building. It is then a simple matter to slide the short post of the awning into the tube when required for use. A suitable locking mechanism, eg a suitably

strong pin inserted through the walls of the tube and post would suffice to keep the awning in place, especially considering use of the awning in windy conditions.

Provision of the support member in the form of a post will of course be particularly relevant in those embodiments where the support arms for the cover are each rotatable about the support post itself. In other words, in this arrangement, a plurality of arms each having suitable means of being fitted to the post, eg by having collars at the inner ends of the arms which can be fitted over the post in stacking arrangement, are thereby accommodated on the post. However, as there would be the likelihood of pinching the cover as the arms are brought into alignment in the closed position if there were no clearance therebetween, it is preferred that spacer elements be provided between the collars of respective arm members to allow collapsing of the arms and cover without consequent damage to the cover.

Alternatively, in those arrangements where the arms are rotatable about individual axes adjacent the axis from which the radii of the cover sector extend (that is to say the notional "centre" of the circle from which the sector is itself formed), it will be appreciated that instead of a support post, a suitable bracket arrangement or other support means will suffice. In this case, for example, a preferred embodiment involves the use of an upper and lower plate, each semicircular, spaced apart by a suitable spacing element, with hinge elements extending between the plates about the periphery thereof, to which each of the support arms may be individually attached. Once again the relative spacing of these hinge elements will allow for space to be left between the collapsed support arm so as to avoid damage to the cover which will be located between adjacent support arms.

When used in conjunction with a vehicle, it will be appreciated that a particularly useful arrangement for a van, four wheel drive vehicle or other station sedan would be to locate the support member for the awning at or adjacent the rear corner of the vehicle so as to maximise by the area over which the awning may extend. In the collapsed state, the awning could, if remaining on the vehicle, extend for the maximum length of the vehicle, typically five metres, so that on being opened, ie the support arms being extended out radially, a sector having a radius of five metres would be achieved. This of course would translate to an awning, if a semicircular arrangement were used, which would extend for ten metres along its diameter, ie double the length of the vehicle to which it is fitted.

It will also be appreciated that in many circumstances it would be desirable to not only have the awning extend from the point of attachment, eg the corner of a vehicle, but especially where that vehicle is not particularly high, eg a conventional motor vehicle, it would be desirable to provide means whereby the awning may be raised or lowered relative to the point of said attachment. Thus in one particularly preferred embodiment, there is provided an adjustable extension or lifting means, to adjust the height of the awning relative to the point of attachment, ie ultimately in relation to the ground, to provide suitable clearance etc.

One particularly suitable means for achieving this is by means of secondary support arms extending from the post or primary support member to a secondary support member for the radially extending arms. With advantage, the secondary support arms may be assisted in their movement upwardly by, for example, a gas cylinder or cylinders which not only facilitates lifting but allows the mechanism to remain in an upwardly extended position, in much the same way as gas cylinders are utilised to facilitate raising, and maintaining in that position, a rear door of a station wagon or the boot of a sedan or the like.

Although in many arrangements it will be preferred to provide a simple semicircular awning, of course any arcuate dimension may be employed. Thus in the internal corners of buildings it may be useful to provide an awning which extends only for a quarter of a circle. On the other hand in the vehicle situation described above, or indeed at external corners of buildings, a three quarter circle arrangement would provide additional shade or protection, in the case of the vehicle - not only along the side but also along the rear of thereof.

Furthermore, it will also be readily appreciated that a full circle of cover, that is in fact providing the equivalent of a full umbrella-type cover may also be utilised where appropriate. In such an arrangement, additional protection against the elements may be provided by having the adjacent edges of the cover (ie the radial edges) once they are brought into proximity, joined in some suitable manner, eg by zip fastening or Velcro arrangement as required.

Once collapsed, the cover material of the awning may be usefully wound around the collapsed frame support for transport or storage, and where appropriate even left in place

on say the vehicle to which it attached. With advantage, suitable ties may be provided on the cover itself at appropriate positions or independent straps or ropes etc may be utilised.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view of a support bracket and radially extending arms forming the skeletal structure of an awning according to one embodiment of the present invention,

Figure 2 is a side view of the support bracket and radially extending arms of the embodiment shown in Fig 1,

Figure 3 is a side elevation showing the detail of the support post as used in one embodiment of the invention wherein the awning structure is attached to a building,

Figure 4 is a side elevation showing the detail of the support post as used in an embodiment of the invention wherein the awning structure is attached to a vehicle.

Figure 5 is a detailed top view of the bearing housing from which the arms extend radially for an awning according to one aspect of the invention,

Figure 6 is a side view of the support bracket and extension means for use with an embodiment of the invention suitable for mounting on a vehicle, and

Figure 7 is plan view of the extension arms as shown in Fig. 6.

BEST MODE OF CARRYING OUT THE INVENTION

Referring generally to the Figures and particularly to Figures 1 and 2, there is illustrated a skeletal structure for an umbrella generally referenced 11, which consists of a support post 12 mounted on a primary support bracket arrangement 13 suitable for fixing to the bar 14 of a roof rack, by suitable means such as nut and bolt or the like (not specifically shown). Mounted on the support post 12 is an extension arrangement generally referenced 15 comprising a pair of secondary support arms 16 rotatable about pivot points at each end allowing the raising (and subsequent lowering) of the radial arm support plate arrangement

17. Preferably these support arms 16 may be supported by a gas cylinder 18 to raise and lower the arms 16 as shown in Figures 6 and 7 and to help maintain the arms 16 in raised position as required.

Plate arrangement 17 provides rotatable support to radially extending arms 18 which support the fabric of the awning (not shown).

Figure 3 shows in more detail a support post 12 as used in one embodiment of the invention, wherein the awning structure is attached to a part of a building (eg wall 22). The support post 12 is located on a bracket 19 having a support gusset 20, the bracket being affixed by suitable means, eg dyna-bolts 21 to a wall 22 or other suitable portion of a building structure. The top of the support post 12 may be provided with a threaded region 23 to allow the rest of the support structure for the awning to be screwed thereto to prevent it being accidentally removed etc.

Figures 4 and 5 show in more detail a support post 12 for mounting on a vehicle and in particular the roof rack of a vehicle. A support means 24 in the form of a pair of plates 25, 26 is mounted on a bearing housing 27 fitted over the support post 12. Each radially extending support arm which supports the awning fabric, one of which is illustrated as item 28, is located on a support pin 29 extending between the upper and lower plates 25, 26. In this arrangement, unlike to that shown in Figures 1 and 2, the support for the radially extending arms is located directly on the support post, rather than being remotely adjustable relative thereto as shown in Figures 1 and 2 (and discussed further in Figures 6 and 7 below).

Although the radial arm support plates 25, 26 are rotatable about the support post 12, with advantage they may be locked in position once the desired location for the awning has been achieved by means of locking pin 30.

The support post 12 in this embodiment is itself mounted on a bracket arrangement 13 for affixing as mentioned above in relation to Figures 1 and 2, but here shown in more detail.

Figures 6 and 7 show in detail a preferred arrangement in which the fabric support arms 28 extend from a secondary radial arm support plate 31 which is remote from the primary support post and connected thereto by means of a lifting or extending mechanism 15 in the form of a pair of secondary support arms 16 (as described above in relation to Figures 1 and 2) pivotable at each end to allow the secondary support plate arrangement 17 to be raised or lowered as required. A gas cylinder 32 may be fitted to the arrangement to facilitate lifting and supporting the mechanism in the raised position. A locking pin 33 may also be utilised to ensure that the structure does not collapse or lower under its own weight.

Throughout the specification the word "comprise" and its derivatives are intended to have an inclusive rather than exclusive meaning unless the context requires otherwise.

INDUSTRIAL APPLICABILITY

The invention has industrial applicability at least in relation to the awning industry, and more particularly, in relation to alternate means of providing awning structures to those previously known.

The foregoing describes only some embodiments of the present invention, and it will be readily appreciated that modifications obvious to those skilled in the art can be made thereto without departing from the scope of the present invention.

CLAIMS

1. A collapsible awning comprising a normally upright support post or equivalent support member; a flexible cover having either generally the overall shape of a sector or comprising triangular sections assembled to approximate the shape of a sector; cover attachment means whereby the cover is secured to the upper part of the support post or support member at the point from which the radii of the sector extend; a plurality of support arms extending between the support post or support member and the periphery of the cover; arm attachment means attached to the support post or member whereby the arms are either each pivotally rotatable about the support post or rotatable about individual axes adjacent to or in the vicinity of the support post or other support member; the arms being thus operable between an open position for the awning in use when the arms are extended radially away from each other, and a closed position when the support arms are brought into proximity with each other.

2. A collapsible awning according to claim 1, wherein additional support means are provided in the form of support legs, which depend from the support arms at suitable locations, preferably about the periphery of the awning, and which are adjustably extendible to reach the ground or other base above which the awning is being utilised, in order to provide additional support for the support arms and cover.

3. A collapsible awning according to claim 2 in which the support legs are hinged so as to fold up along the general axis of the support arms and so lie in a tidy arrangement therewith when the awning is in the collapsed state.

4. A collapsible awning according to either claim 2 or claim 3 in which the support arms are shaped to provide a curved surface for the cover reminiscent of a conventional umbrella.

5. A collapsible awning according to either claim 2 or claim 3 in which the support arms are straight.

6. A collapsible awning according to any one of the previous claims in which the support arms are single struts,

7. A collapsible awning according to any one of claims 1 to 5 in which the support arms are complex frame like structures to assist in supporting the weight of the cover.

8. A collapsible awning according to any one of the preceding claims in which the support member is a short post adapted to fit onto or adjacent the roof of a vehicle, van, caravan etc, either directly thereon or onto roof racks or some other suitable fitting attached thereto, or onto a suitable location on a building.

9. A collapsible awning according to claim 8 in which the means for affixing the support member, when it is in the form of a post, is provided by a tube arrangement which may be slid over said post for removal as required.

10. A collapsible awning according to claim 9 in which a locking mechanism, such as a suitably strong pin, is inserted through the walls of the tube and post to keep the awning in place in use.

11. A collapsible awning according to any one of the preceding claims in which the support arms for the cover are each rotatable about the support post, a plurality of arms each having suitable means of being fitted to the post thus being accommodated on the post.

12. A collapsible awning according to claim 11, wherein the means for accommodating the support arms on the post are provided in the form of collars at the inner ends of the arms which can be fitted over the post in stacking arrangement.

13. A collapsible awning according to claims 12 in which spacer elements are provided between the collars of respective arm members to allow collapsing of the arms and cover, ie by bringing the arms into alignment from the extended in use position, without consequent damage to the cover.

14. A collapsible awning according to any one of claims 1 to 10, wherein the arms are rotatable about individual axes adjacent the axis from which the radii of the cover sector extend (that is to say the notional "centre" of the circle from which the sector is itself formed) and where such individual axis are located in a bracket arrangement located on the support the post.

15. A collapsible awning according to claim 14, in which the bracket arrangement consists of an upper and lower plate, each semicircular, spaced apart by a suitable spacing element, with hinge elements extending between the plates about the periphery thereof, to which each of the support arms are individually attached.

16. A collapsible awning according to any one of the preceding claims in which the awning, in the collapsed state, remains in situ.

17. A collapsible awning according to any one of the preceding claims wherein means are provided whereby the awning may be raised or lowered relative to the point of the awning to the vehicle or building or the like.

18. A collapsible awning according to claim 17 wherein there is provided an adjustable extension or lifting means, to adjust the height of the awning relative to the point of attachment, ie ultimately in relation to the ground.

19. A collapsible awning according to claim 18 wherein adjustable extension or lifting means is provided by means of secondary support arms extending from the post or primary support member to a secondary support member for the radially extending arms.

20. A collapsible awning according to claim 19 wherein the secondary support arms are assisted in their movement upwardly by means of one or more gas cylinders which not only facilitates lifting but allows the mechanism to remain in an upwardly extended position.

21. A collapsible awning according to any one of the preceding claims in which the arcuate shape of the awning material when extended is semicircular.

22. A collapsible awning according to any one of claims 1 to 20 in which the arcuate shape of the awning material when extended is a quarter of a circle.

23. A collapsible awning according to any one of claims 1 to 20 in which the arcuate shape of the awning material when extended is three-quarters of a circle.

24. A collapsible awning according to any one of claims 1 to 20 in which the arcuate shape of the awning material when extended is a full circle and in which adjacent edges of the cover (ie the radial edges) once they are brought into proximity, may be joined in suitable manner.

25. A collapsible awning according to any one of the preceding claims in which the cover material of the awning is wound around the collapsed frame support for transport or storage, when the awning is collapsed for transport or storage.

26. A collapsible awning according to claim 25 in which ties are provided on the cover itself at appropriate positions to secure the cover about the collapsed frame.

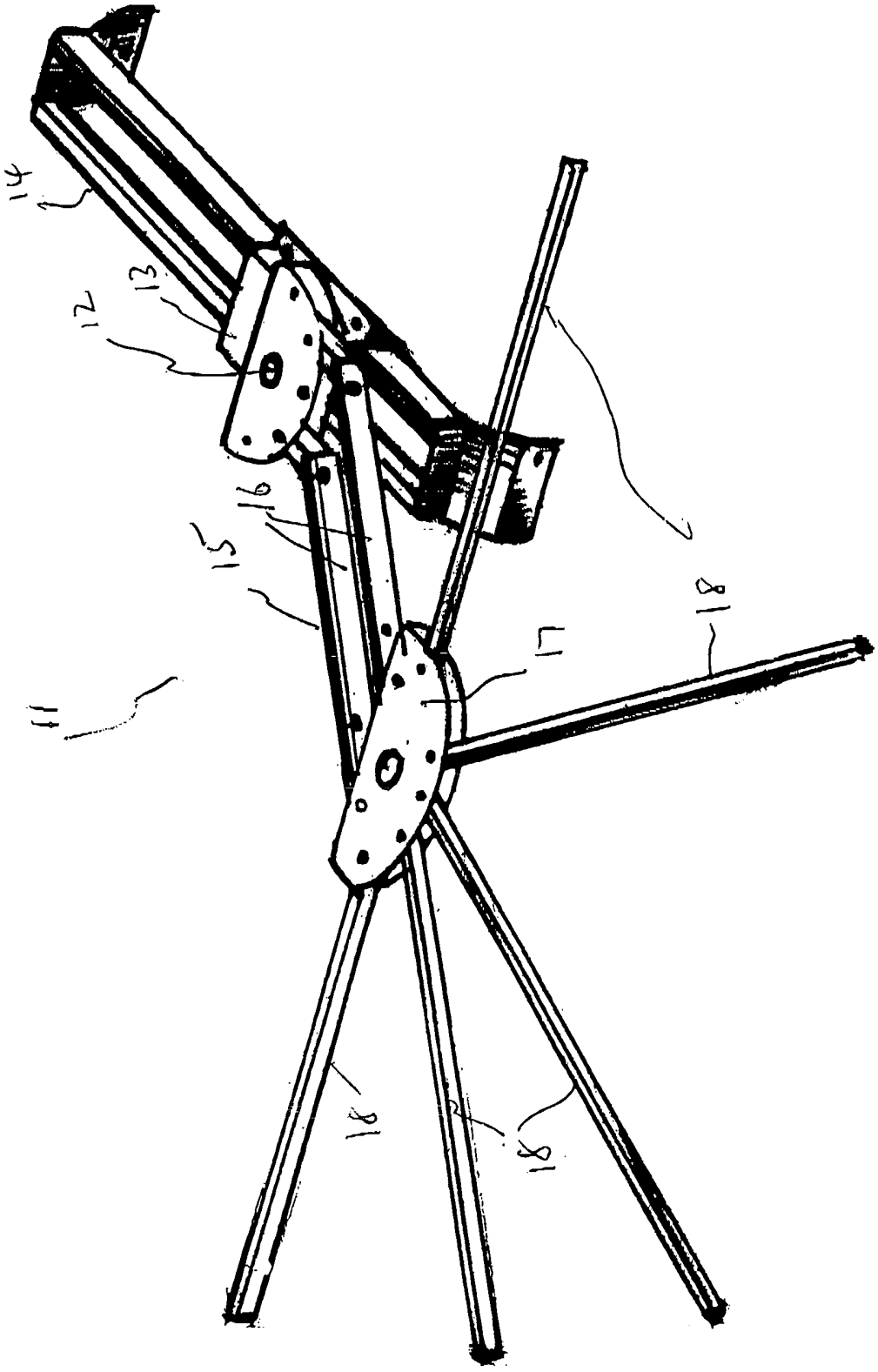

Fig 1

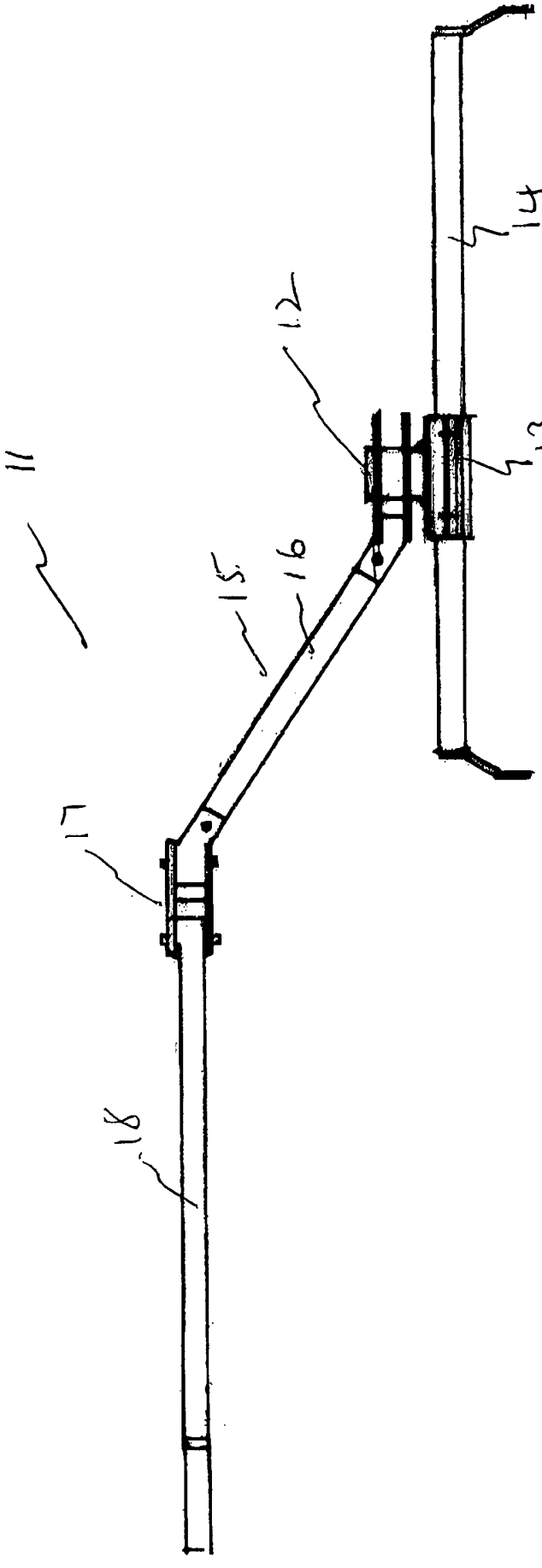

Fig 2

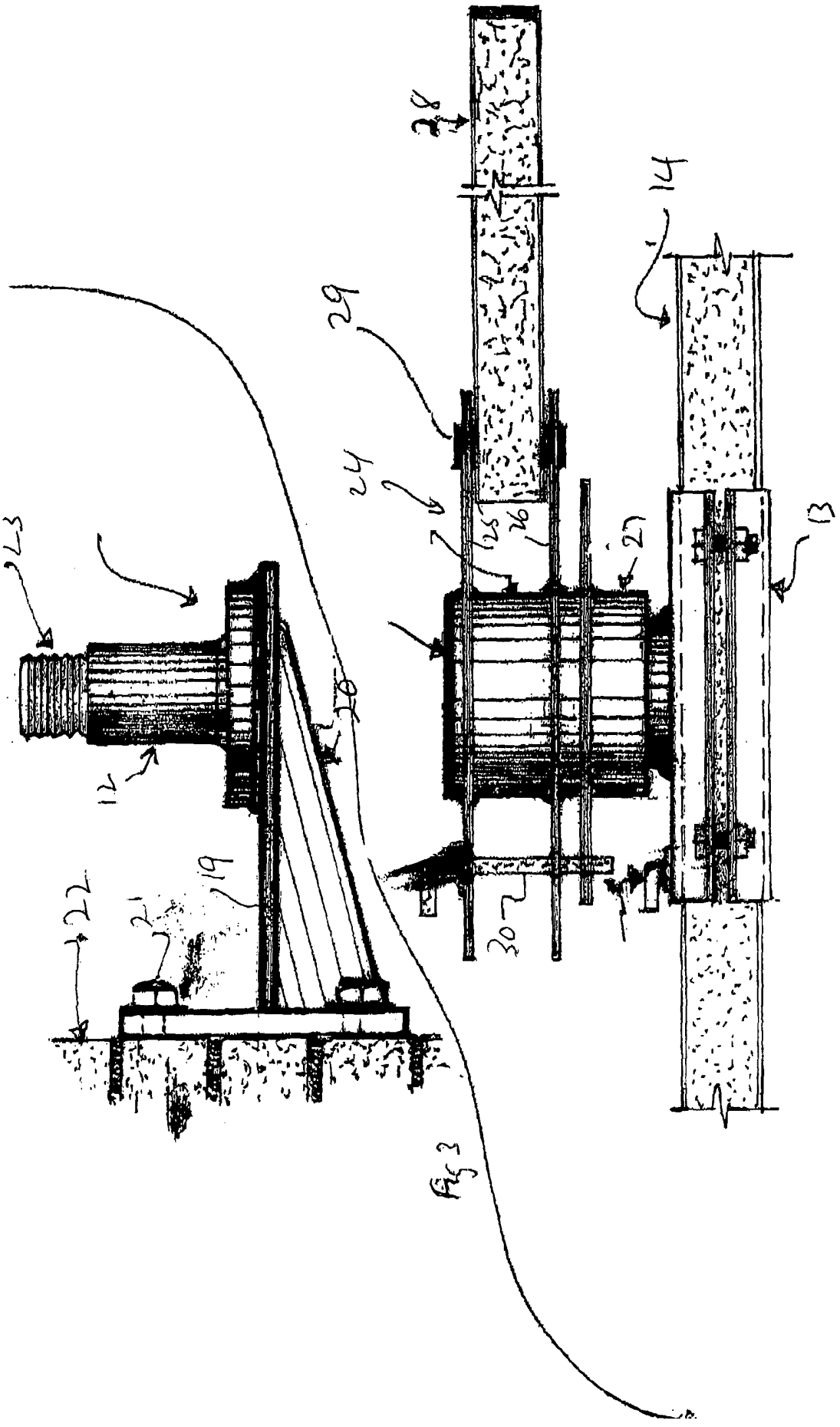

Fig 3

Fig 4

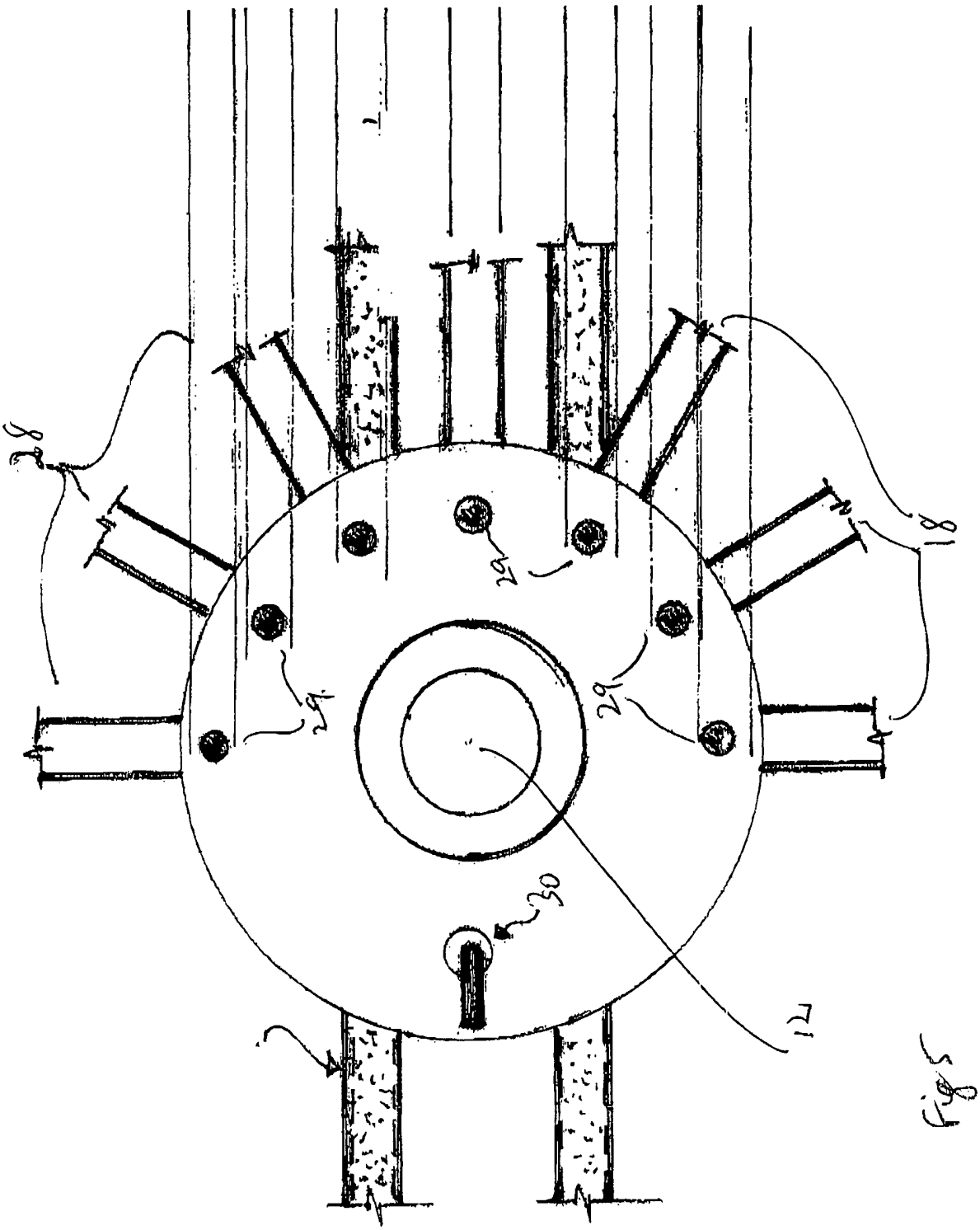

Fig 5

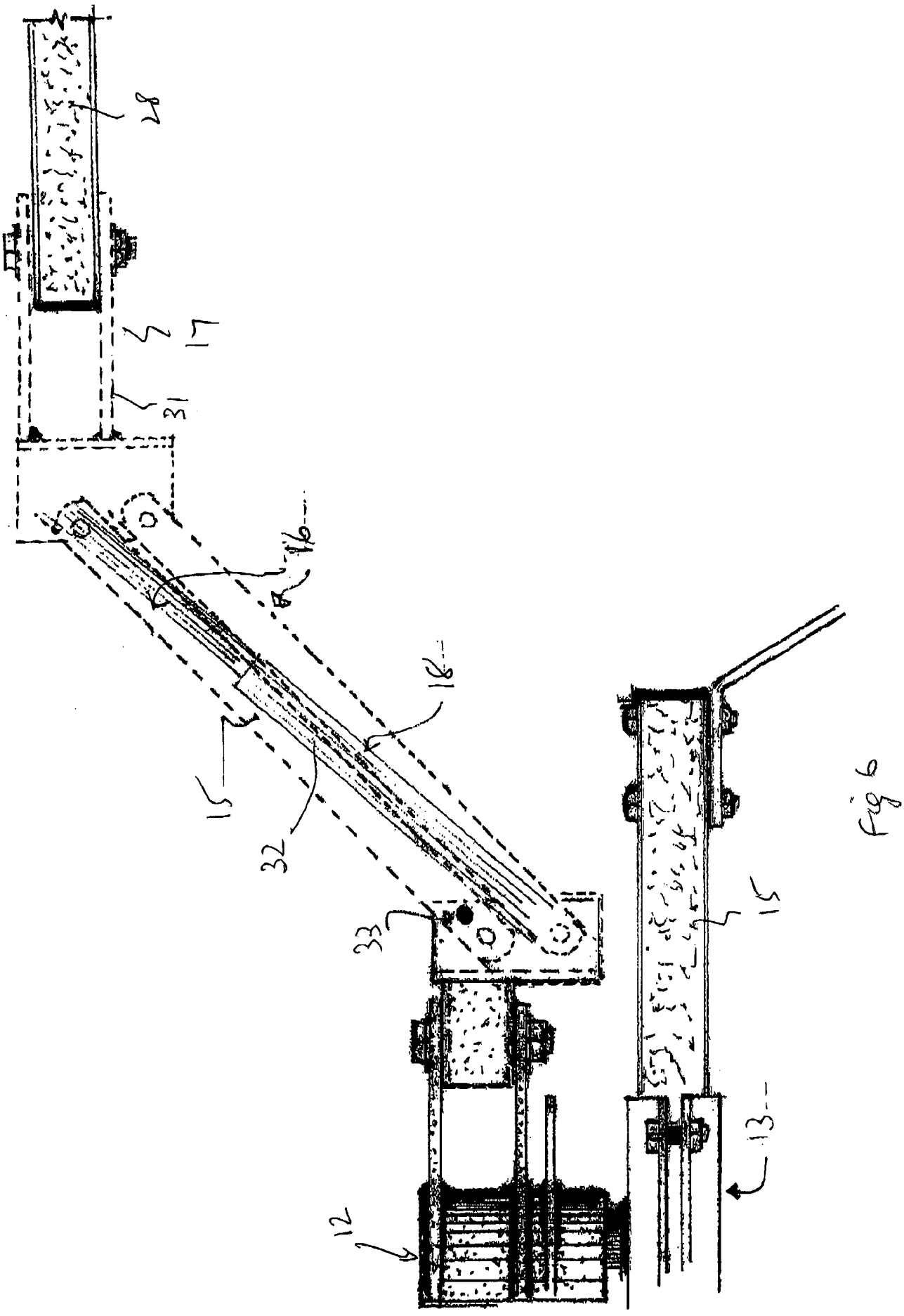

Fig 6

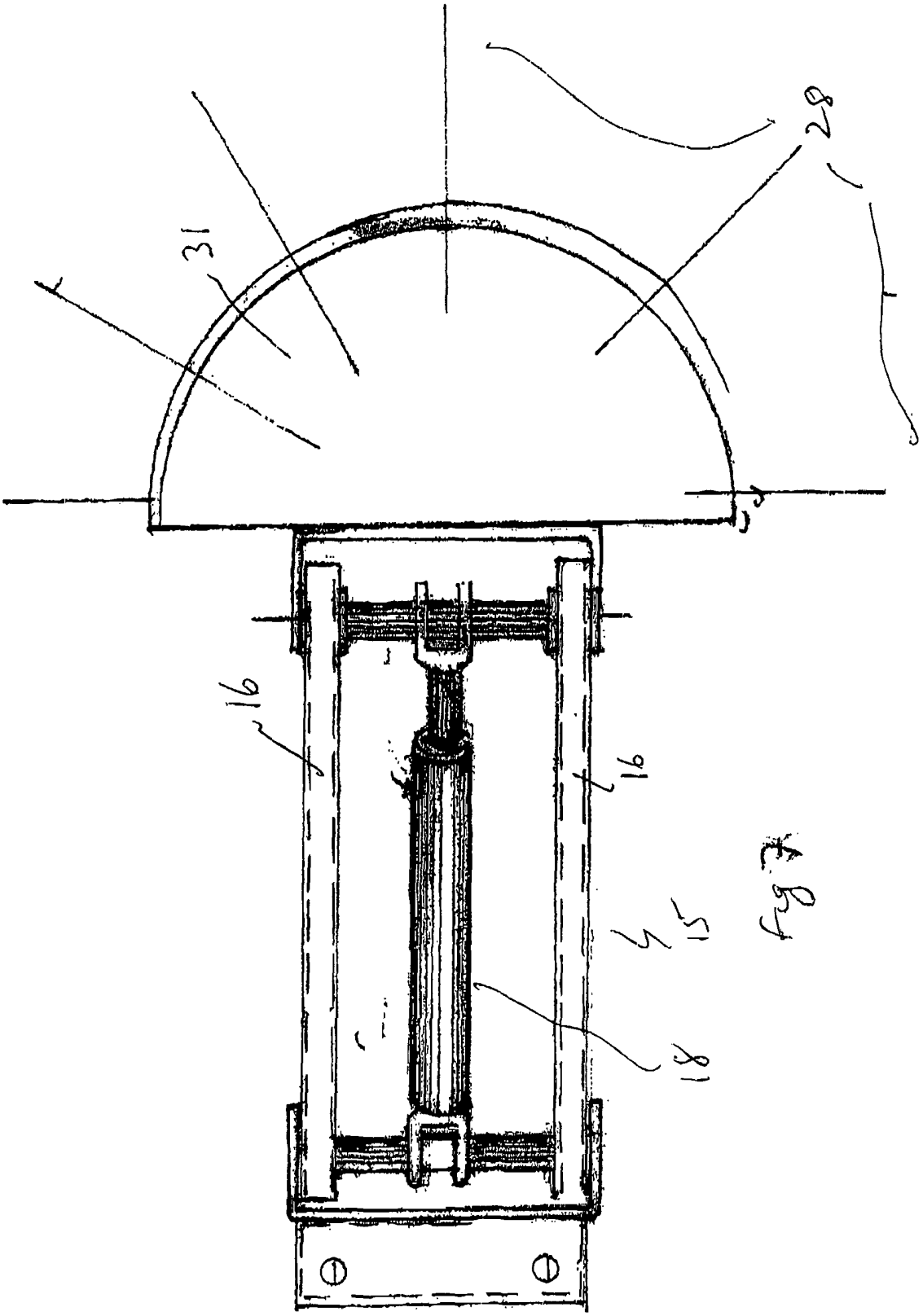

Fig 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU02/01439

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. [7]: E04F 10/04, E04H 15/06, 15/58

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
SEE ELECTRONIC DATA BASES CONSULTED BELOW

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
AU: IPC E04F 10/04, E04H 15/58, 15/06, 15/08

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
DWPI: E04F 10/-, E04H 15/-, post, pole, upright, support, shaft, mast, column, pivot, rotat, swing, hinge, fold, collaps, arm, radi, finger, strut, frame, awning, canop, shelter, shield, protect and similar terms.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	AU 200022498 A1 (RYAN et al) 28 September 2000 See figures.	
X	WO 00/36246 A1 (GALE) 22 June 2000 See figures.	
X	WO 98/38400 A2 (GUGGISBERG) 3 September 1998 See figures.	

[X] Further documents are listed in the continuation of Box C [X] See patent family annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
28 January 2003	31 JANUARY 2003 (31-01-03)
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized officer **SUE THOMAS** Telephone No : (02) 6283 2454

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU02/01439

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98/07937 A1 (KOEHN) 26 February 1998 See figures.	
X	AU 71898/96 A (SOMERVILLE) 29 May 1997 See figures.	
X	US 4836232 A (DE ROSA et al) 6 June 1989 See figures.	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/AU02/01439

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
AU	200022498	NIL					
WO	00/36246	AU	200025258	CA	2355691	EP	1151172
WO	98/38400	AU	59800/98	EP	963495	US	6273115
WO	98/07937	AU	34216/97				
AU	71898	NIL					
US	4836232	NIL					
							END OF ANNEX