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(54) **Means for extending the arm of a swing hoist for lifting loads.**

(57) The means in question can be mounted on a swing hoist for lifting loads consisting of a vertical pole (2), which has to be arranged between a floor and a ceiling of a room and near a door window of a balcony, and a supporting arm (7) showing a telescopic end on which motor-driven lifting means (18) have to be mounted.

Accordingly, the present means are arranged between the said vertical pole (2) and the said arm (7) and comprise a parallelepiped-shaped extension (10) that is provided with diagonal reinforcements (11) and permits the arm itself to be extended, if necessary.

Further, when the arm (7) has to be raised so as to be in a higher position than the extension (10), it is possible to adjust the height of the arm itself by inserting a perforated tube (14) that is provided with longitudinal holes (15) for permitting the height of the arm to be adjusted and coupling projections (16) on which the arm (7) can be mounted.

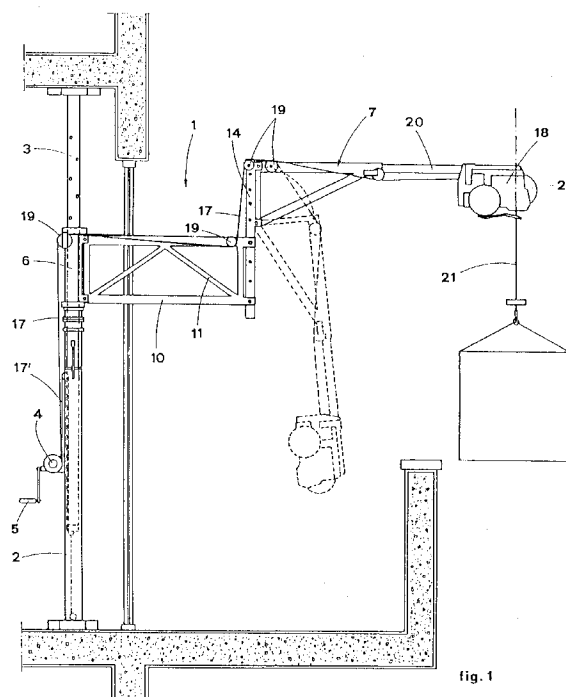


fig. 1

The present patent of invention refers to a swing hoist for lifting loads, which is provided with means for extending the swing hoist arm.

As it is known, for lifting loads, for instance from a roadway to a balcony or window of flats or the like, it is necessary to employ motor-driven hoists which draw up the objects to be lifted by means of a rope.

At the present time, for lifting loads there are hoists that, in general, are arranged between the floor and the ceiling of a room and near a window, or even on a balcony, so as to stretch an arm, which is provided with lifting means, out of a parapet of a balcony or a window-sill.

However, the above mentioned hoisting apparatuses present an inconvenience, that is when a balcony is not provided with an upper counterceiling, the hoist must be mounted inside the flat and in this case, the arm bearing the lifting motor does not present the features necessary for permitting the hoist itself to be employed when there are intermediate obstacles to overcome.

Under such conditions, it is thus necessary to arrange the swing hoist for instance near a window, which could be too small to be crossed by cumbersome objects.

The solution of the aforecited problem is proposed by the present invention, which permits a swing hoist to be mounted inside a room looking on to a balcony, this swing hoist being able to get over the door window, directed outwards, and the parapet so as to go out of the balcony itself.

By employing the device according to the present invention, it is still possible to easily lift loads from a balcony, even when the balcony is not provided with an upper clasping support for the swing hoist such as a counterceiling or the like so as to make the loading and unloading of the objects to be shifted vertically easier.

The invention relates to a swing hoist for lifting loads, which is provided with means for extending its arm, characterized in that the said means consists of a particularly shaped prolongation to be arranged between the fixed support of the swing hoist and the swing arm bearing the motor; the said extension can also co-operate with a perforated tube to be inserted, if necessary, for raising the height of the swing arm in respect of the extension itself; means for mechanically lifting the said arm being also provided.

The invention is to be better understood from the following description, set out as an example that does not limit the invention itself as well as from the accompanying drawing in which:

Fig. 1 shows a schematic side view of the invention as a whole;

Fig. 2 shows a detail with the extension mounted;

Fig. 3 shows a schematic exploded view of an extension for swing hoists, provided with a tube to be inserted for adjusting the height of the arm.

With reference to the accompanying drawing, number 1 indicates a swing hoist according to the invention as a whole, which swing hoist consists in general of a vertical pole 2 comprehending an inner telescopic tube 3 which can be extended by means of a manual small winch 4, operated through a handle 5, till reaching the wished height so as to touch the ceiling. A coupling collar 6, adjustable in height, is mounted on the telescopic tube 3. An arm 7 for supporting the motor can be directly mounted on the collar 6 in normal conditions of use. In fact, the said arm is provided with holes 8 which can be inserted in projections 9 provided on the coupling collar 6.

When it is necessary to prolong the length of the arm itself, the swing hoist must be equipped with an extension 10 so that the swing hoist itself shows for instance a structure as represented in Figg. 1 and 2.

The extension 10 is in general formed by a parallelepiped-shaped framework, provided with diagonal reinforcements 11 and coupling seats 12 and 13, opposite to each other. The first coupling seats 12 have to be inserted in the projections 9 whereas the second ones 13 house the arm 7 and hold the arm itself through its seats 8.

Further, when it is necessary to raise the arm 7 of the swing hoist in respect of the extension 10, a perforated tube 14 can be inserted, as shown in Fig. 3. The inserted perforated tube 14 consists in general of a structural, provided with a series of longitudinal holes 15 which are to be inserted in the outer coupling seats 13 of the extension 10, and coupling projections 16 which can house the arm 7 through its holes 8.

The perforated coupling parts 8, 9, 12, 13, 15 and 16, of the arm 7, the collar 6, the extension 10 and the tube 14 respectively can be crossed by pins or the like for blocking a part into another.

Now, we will describe shortly the mounting of the swing hoist according to the present invention.

The pole 2 is arranged between a floor and a ceiling by acting on the small winch 4 which draws a rope 17 lifting the telescopic tube 3 through a transmission.

The arm 7 can be directly mounted on the projections 9 of the collar 6 by centering the holes 8 into the projections 9. Otherwise, in the aforecited particular conditions, the extension 10 is intercalated so as to insert and block the holes 12 of the extension itself in the projections 9.

The arm 7 is mounted on the extension 10 by inserting the holes 8 in the coupling seats 13.

When it is necessary to raise the arm 7, that is the motor lifting group 18, the perforated tube 14 can be mounted on the extension 10 by inserting the suitable holes 15 in the coupling seats 13 whereas on the other side, the projections 16 can house the holes 8 of the arm 7.

The arm 7 without the lifting group 18 can be mounted on the relative supports with a particular kind of lifting by means of a further rope 17', moved

through the same winch 4.

In this way, only one of the holes 8, that is the hole indicated with 8', is locked on the support and at this point the small winch 4 intervenes by driving a further drawing group acting on the second rope 17' which passes through transmission wheels 19. Thus, the small winch 4 has the double function of raising the telescopic tube 3 towards the ceiling by means of the rope 17 and raising the arm 7 and its operating means through the rope 17'.

In fact, after releasing the first rope 17, the small winch 4 operates the drawing of the rope 17' which is fixed on the motor 18 when the motor is still in its container.

By acting on the same handle 5, the motor recovers the space of the telescopic part 20 of the arm 7, the telescopic part 20 being operated by an inner pressure spring. When the motor has closed the telescopic space, the arm begins to raise till inserting the upper point 8 in one of the coupling parts 9, 13 or 16. The whole is locked by means of pins or the like.

After this phase, the telescopic part 20 can be moved inside or outside the arm in opposition with the pressed spring by reversing the direction of rotation of the small winch 4 and acting on the handle 5.

The motor 18 is driven electrically through a push-button panel "rise-descent" and comprises a lifting rope 21 which can be rewinded on a drum 22 arranged on a horizontal axis. Such a drum comprises lips of transmission which permit a good rewinding and unwinding of the rope 21 itself.

The swing hoist in question has been described according to a preferred solution, however it is possible to make changes which are to be considered as included in the range of protection of the present invention.

Claims

1) Swing hoist for lifting loads provided with means for extending its arm, characterized in that the said means consist of a particularly shaped extension (10) which can be inserted between the fixed support (2) of the swing hoist and the swing arm (7) which bears the motor; a holed tube (14) can be mounted on the extension (10) for permitting the swing arm (7) to be raised; means for mechanically lifting the said arm (7) and the sliding tube (3) to be fixed on the ceiling being also provided.

2) Swing hoist according to the preceding claim, characterized in that the said extension (10) can be formed by a parallelepiped structure, provided with diagonal reinforcements (11) and coupling seats (12) and (13), the coupling seats (12) are to be mounted on a coupling collar (6) of the fixed support (2) at one side of the extension whereas at the other side, the coupling seats (13) can house the swing arm (7) or the

possible inserted tube (14).

3) Swing hoist according to the preceding claims, characterized in that the said holed tube (14) consists of a structural which is provided with a series of longitudinal holes (15), which can be inserted in the outer coupling seats (13) of the extension (10), and coupling projections (16) for housing the arm (7).

4) Swing hoist according to the preceding claims, characterized in that the said for mechanically lifting the arm (7) can consist of a rope (17) which passes along suitable transmissions (19) and can be fixed at one end on the motor (18) that has to be lifted up till reaching the arm (7) whereas the other end of the rope (17) can be fixed on a lifting means (4), for instance a winch or the like.

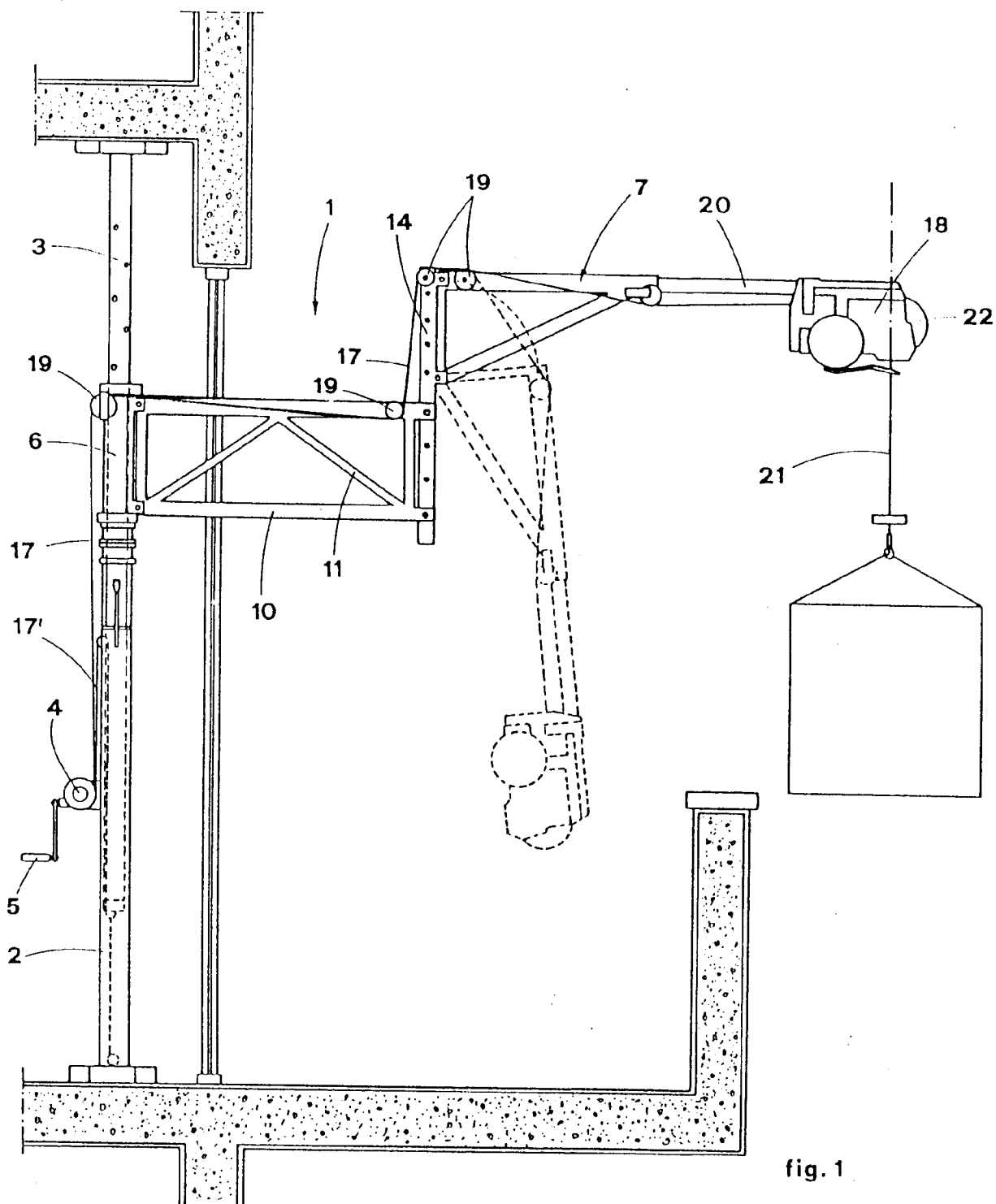
5) Swing hoist according to the preceding claims, characterized in that when the said rope (17) is stretched by means of the winch (4), the rope itself lifts the motor (18) till coupling the same with the end of the arm (20) and then, the rope lifts the arm (20) itself till inserting the upper hole (8) in the respective seat (13) or (16) of the said extension (10) or the said inserted holed tube (14).

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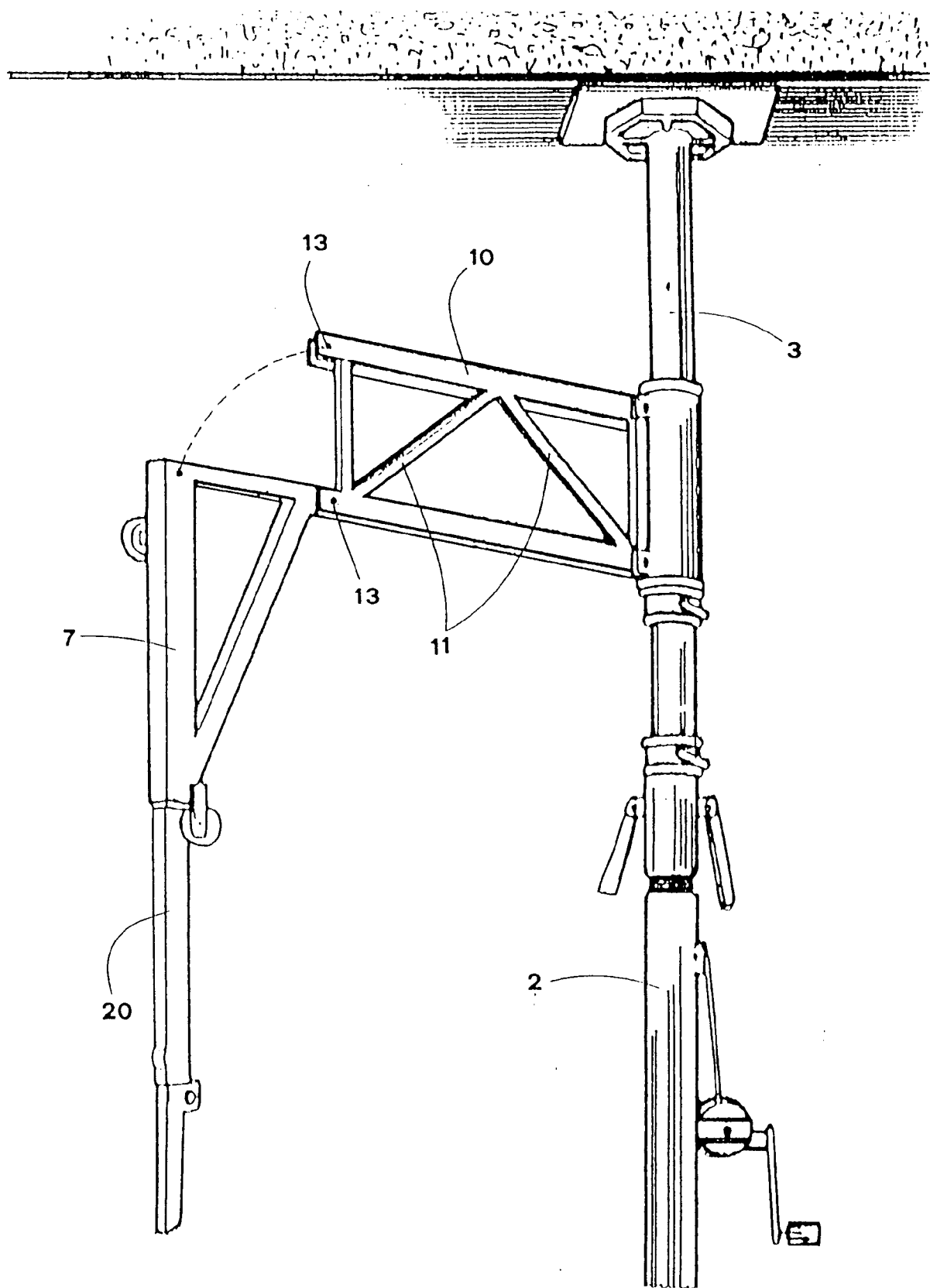
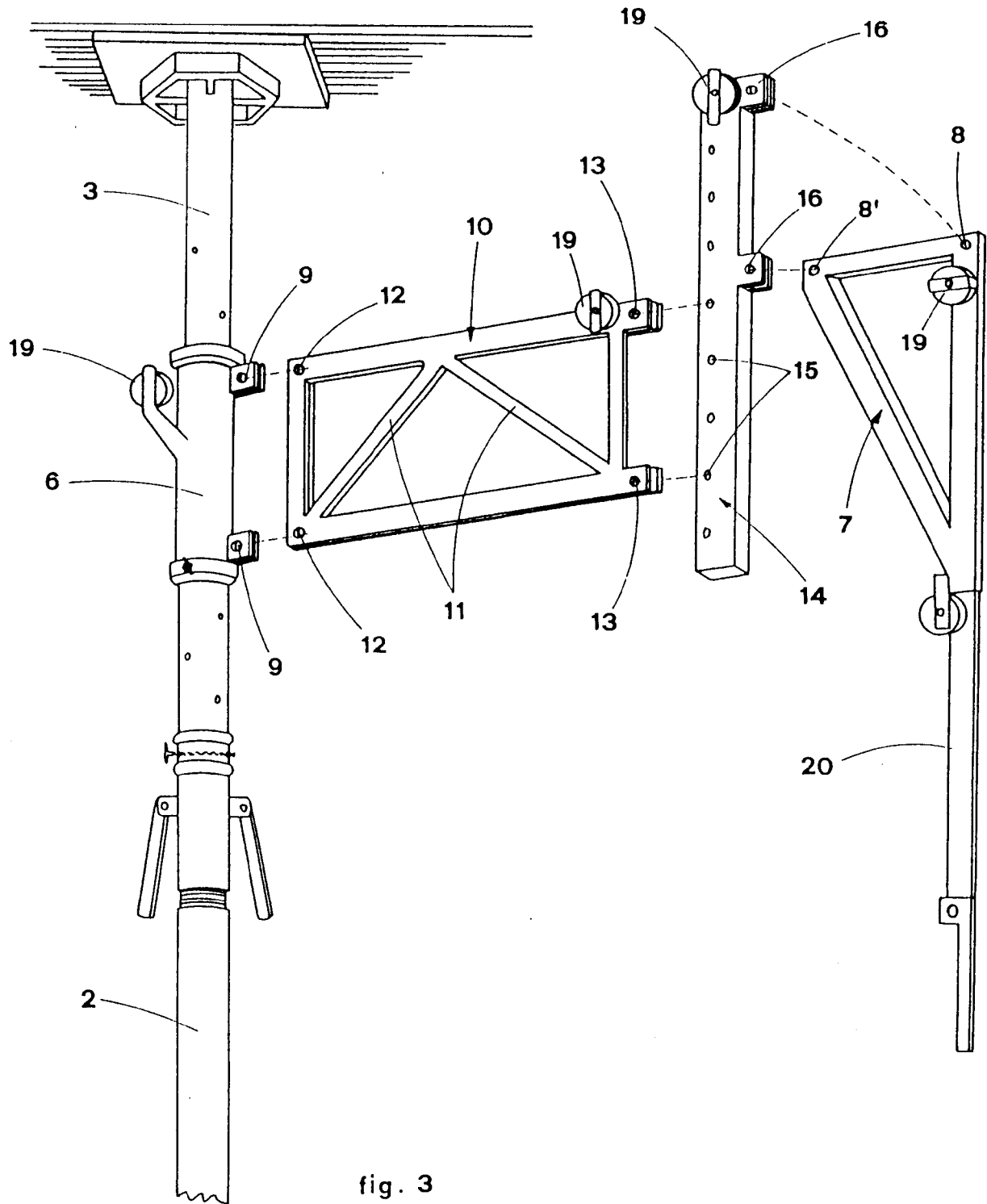


fig. 2





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 91 83 0425

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	DE-C-3 806 599 (HELMUT KEMPKE G.M.B.H.) * column 2, line 49 - line 67 * * column 3, line 11 - line 30 * * figure 3 * ---	1,2	B66C23/22
Y A	CH-A-304 484 (JOSEPH WORMSER SÖHNE) * page 1, line 29 - line 35 * * page 1, line 51 - line 55 * * page 1, line 58 - line 63 * * figures * ---	1,2 3	
Y	FR-A-1 365 378 (THIBAUT) * page 2, left column, line 15 - line 34 * * page 2, right column, line 1 - line 4 * * figures 1-3 * ---	1,2	
A	EP-A-0 261 367 (ALBERT BÖCKER G.M.B.H. & CO. K.G.) * abstract; figures * ---	1	
A	GB-A-2 209 322 (THE BRITISH PETROLEUM COMPANY P.L.C.) * abstract; figures * ---	4	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
A	FR-A-640 831 (KROL) * page 1, right column, line 57 - page 2, left column, line 17; figures * ---	4	B66C E04G B25J
A	DE-A-3 808 121 (BADER) * figure 1 * ---	1	
A	DE-A-3 024 618 (FIRMA WALTER VOM BROCKE) * page 10, line 23 - line 26 * * page 14, line 18 - line 32 * * figure 1 * -----	1,4	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 20 JANUARY 1992	Examiner GUTHMULLER J. A.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document	

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