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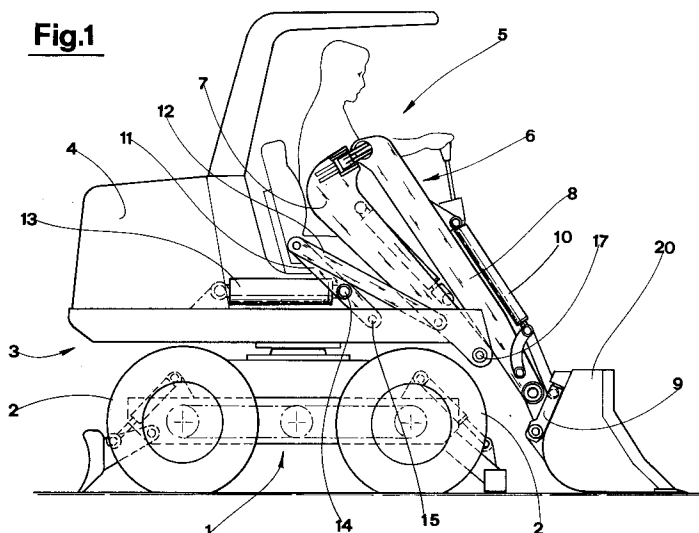
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I-41100 Modena (IT)(54) **A compact multi-use mobile work tool.**

(57) The invention relates to a compact multiuse mobile work tool, comprising a frame (1) and provided with wheels (2), whereon a rotatable platform (3) is hinged about a vertical axis. On the rotatable platform (3) are arranged: a motor (4), housed posteriorly, and a cockpit (5) for an operator, by a side of which is located, in a decentralized position, an articulated manoeuvring arm (6), composed of a first segment (7) and a second segment (8), reciprocally

hinged. The second segment (8) bears at a free end thereof, a rapid universal attachment (9) for tools or equipment, while the first segment (7) thereof is hinged to the rotatable platform (3) by means of a pivot (17) and is activated to rotate about the pivot (17) by a hydraulic lever system comprising a connecting member (12) and a lever (11) commanded by a hydraulic cylinder (13).

Fig.1**EP 0 670 391 A1**

The invention relates to a compact multiuse mobile work tool.

The prior art teaches compact multiuse mobile work tools exhibiting masses such as to enable them to be used inside buildings for all principal operations for which vehicles designed for use on building sites are designated. Thus available on the market are mini-loader blades, mini-excavators and mini-elevators, but as yet no compact work tools considered to be multi-use in the sense that they are able, when apposite work tools are applied, to perform the tasks usually associated with building sites.

According to the prior art, indeed, when excavation work or shaft-sinking (for example, with pneumatic drills) has to be combined with loading work, at least two machines must be used. The present invention, as it is characterised in the claims that follow, obviates the drawbacks in the prior art by providing a compact work machine exhibiting authentic multi-function characteristics, thanks to its general structure and to the presence of a single articulated manoeuvring arm which is so structured as to be utilizable for activating tools and equipment for all principal functions: loading, elevating, excavating, and so on.

Further characteristics and advantages of the present invention will better emerge from the detailed description that follows, of an embodiment of the invention, illustrated in the form of a non-limiting example in the accompanying drawings, in which:

figure 1 is a schematic lateral view in vertical elevation;

figure 2 is the same view as figure 1 with the tool in a different operative and functional configuration;

figure 3 is a schematic plan view from above of figure 1.

With reference to the figures, 1 denotes a frame provided with two pairs of wheels 2. For different needs, a pair of tracks might be fitted instead of the wheels.

A rotatable platform 3 is pivoted about a vertical axis perpendicular to a plane identified by the axes of the wheels 2. On the rotatable platform 3 are: a motor 4, located posteriorly thereon; a driver's cockpit 5 for the operator, and a manoeuvring arm 6, situated in a decentralized position by the side of the cockpit 5.

The manoeuvring arm 6 is constituted by two principal segments 7 and 8, which are hinged one to the other at respective ends thereof. The first segment 7 exhibits a first end hinged by a pivot 17 at a front end of the rotatable platform 3. The second segment 8 is instead provided, at a free end thereof, with a rapid universal attachment 9 for tools or equipment, said rapid universal attachment

9 being is equipped with hydraulically-activated organs 10 for manoeuvring tools and equipment in the articulation plane of the arm 6. The first segment 7 is brought to rotate in two directions about the pivot 17 by a mechanical lever system comprising:

a lever 11 hinged at a first end thereof to the rotatable platform 3 by means of a pivot 15;

a connecting member 12, hinged to a second end of the lever 11 and to the first segment 7, at a point situated at a predetermined distance from the axis of the pivot 17;

a hydraulic cylinder 13 exhibiting a bottom end which is hinged to the rotatable platform 3 and a stem end hinged, by means of a pivot 14, to an intermediate point of the lever 11.

The lever system, constituted by the lever 11 and the connecting member 12, constitutes together with the first segment 7 and the rotatable platform 3 a four-bar hinge wherein the fixed member is constituted by the rotatable platform 3 itself. The entire lever system is proportioned such that the lever 11 exhibits a shorter length than the connecting member 12, which connecting member 12 pivot axis to the first segment 7, in the position represented in figure 1, is located at a predetermined distance from the axis of the pivot 17. Said pivot 17 is located in an advanced position and situated inferiorly to (and is parallel to) the axis of the pivot 14 by means of which the lever is hinged to the rotatable platform 3.

The end of the first segment 7 hinged to an end of the second segment 8, exhibits a special arced conformation with the aim of permitting an adequate connection with said end of the second segment 8.

A complete series of tools and equipment can be coupled to the rapid universal attachment 9. In particular, as shown in figure 1, a loading scuttle 20 can be applied to the rapid universal attachment 9. The machine, fitted with the loading scuttle 20, can function as a self-propelled loader of the type known as skid steer loader. The loading scuttle 20 manoeuvrability is achieved through the arm 6. Horizontal movements are obtained by movements of the entire vehicle on the wheels 2 (or tracks), combined with rotation movements of the rotatable platform 3.

By applying a bucket 21, as shown in figure 2, the machine becomes a mini-excavator; also in this case the manoeuvring of the bucket 21 is realized by means of the manoeuvring arm 6. The ability of the rotatable platform 3 to rotate about a vertical axis with respect to the frame 1 allows operation in every direction, at 360 degrees, without having recourse to movements of the chuck 2. Thanks to its conformation and to the conformation of the mechanism producing the rotation of the first seg-

ment first segment 7, the manoeuvring arm 6 has a high manoeuvrability in a vertical plane. The rotation of the whole rotatable platform 3 about a vertical axis means that the arm 6 can operate in any direction. These abilities, together with the possibility of applying very different tools or equipment to the rapid universal attachment 9, render the machine truly multi-functional.

Claims

1. A compact multiuse mobile work tool, characterized in that it comprises:

a frame (1) provided with wheels (2);

a rotatable platform (3), hinged on said frame (1) about an axis which is practically perpendicular to a rest plane of said wheels (2);

a motor (4) housed posteriorly on said rotatable platform (3);

a cockpit (5) for an operator, located on said rotatable platform (3);

an articulated manoeuvring arm (6), predisposed on the rotatable platform (3) in a decentralized position by a side of the cockpit (5);

said manoeuvring arm (6) being constituted by a first segment (7) and a second segment (8), which are hinged one to another; said first segment (7) also being hinged, at a first end thereof, at a front end of the rotatable platform (3);

said second segment (8) being provided at a free end thereof with a rapid universal attachment (9) for tools and equipment which rapid universal attachment (9) is provided with hydraulically-activated organs (10) for manoeuvring said tools and equipment in an articulation plane of the manoeuvring arm (6);

wherein the first segment (7) is activated to rotate about a pivot (17), by means of which pivot (17) said first segment (7) is hinged to the rotatable platform (3) by a mechanical lever system, hydraulically commanded, and comprising:

a lever (11), hinged at a first end thereof to the rotatable platform (3);

a connecting member (12), hinged at a first end to a second end of the lever (11) and at a second end to the first segment (7), at a predetermined distance from a hinge axis of the first segment (7) to the rotatable platform (3);

a hydraulic cylinder (13) exhibiting a bottom end which is hinged to the rotatable platform (3) and a stem end which is hinged at an intermediate point of the lever (11).

2. A work tool as in claim 1, characterized in that the pivot (17), by which the first segment (7) is hinged to the rotatable platform (3), has a horizontal axis and is parallel to and situated

inferiorly to a pivot (15) by which the lever (11) is hinged to the rotatable platform (3).

3. A work tool as in claim 2, characterized in that said lever (11) is shorter in length than said connecting member (12).

Fig.1

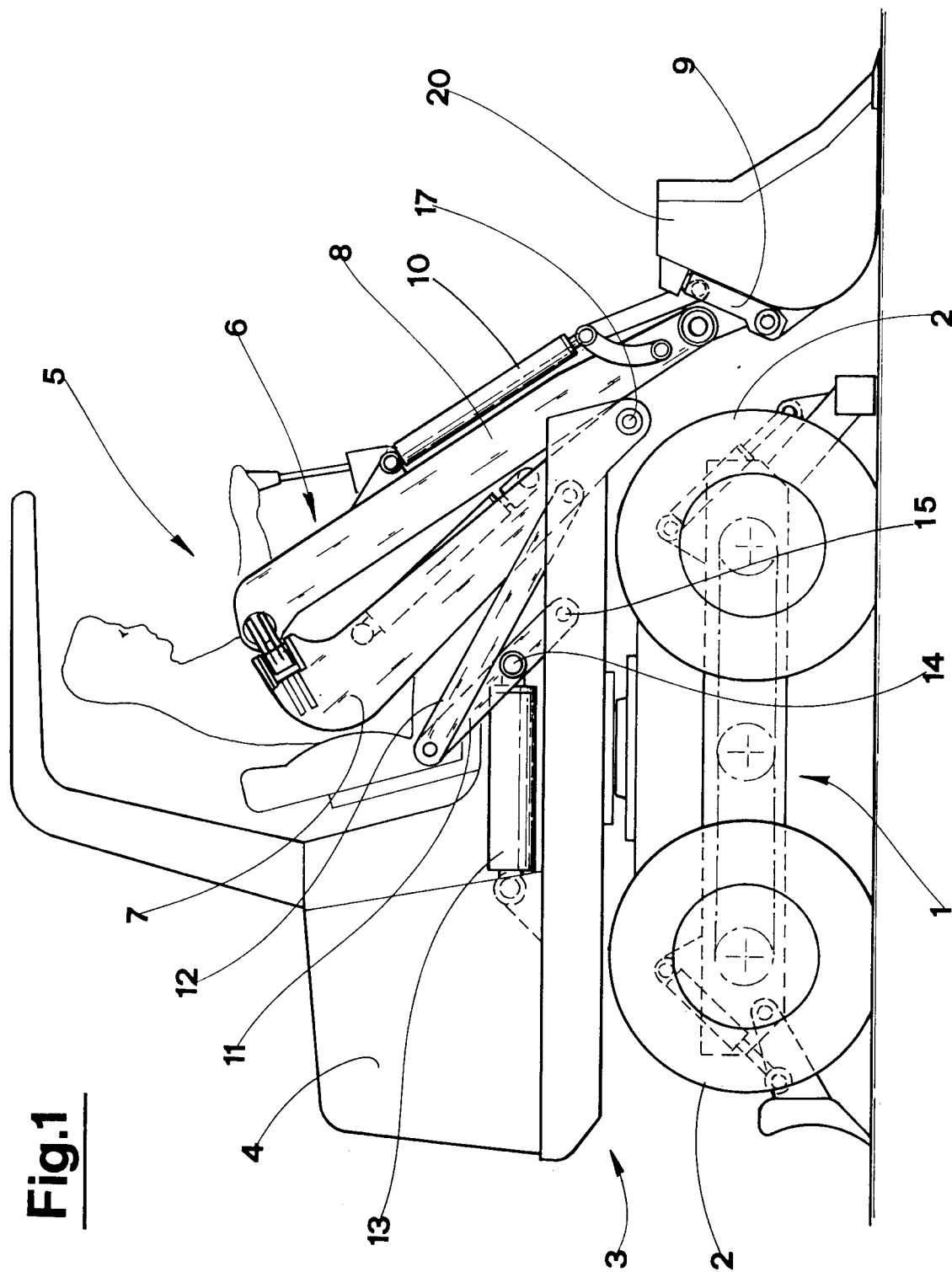


Fig.2

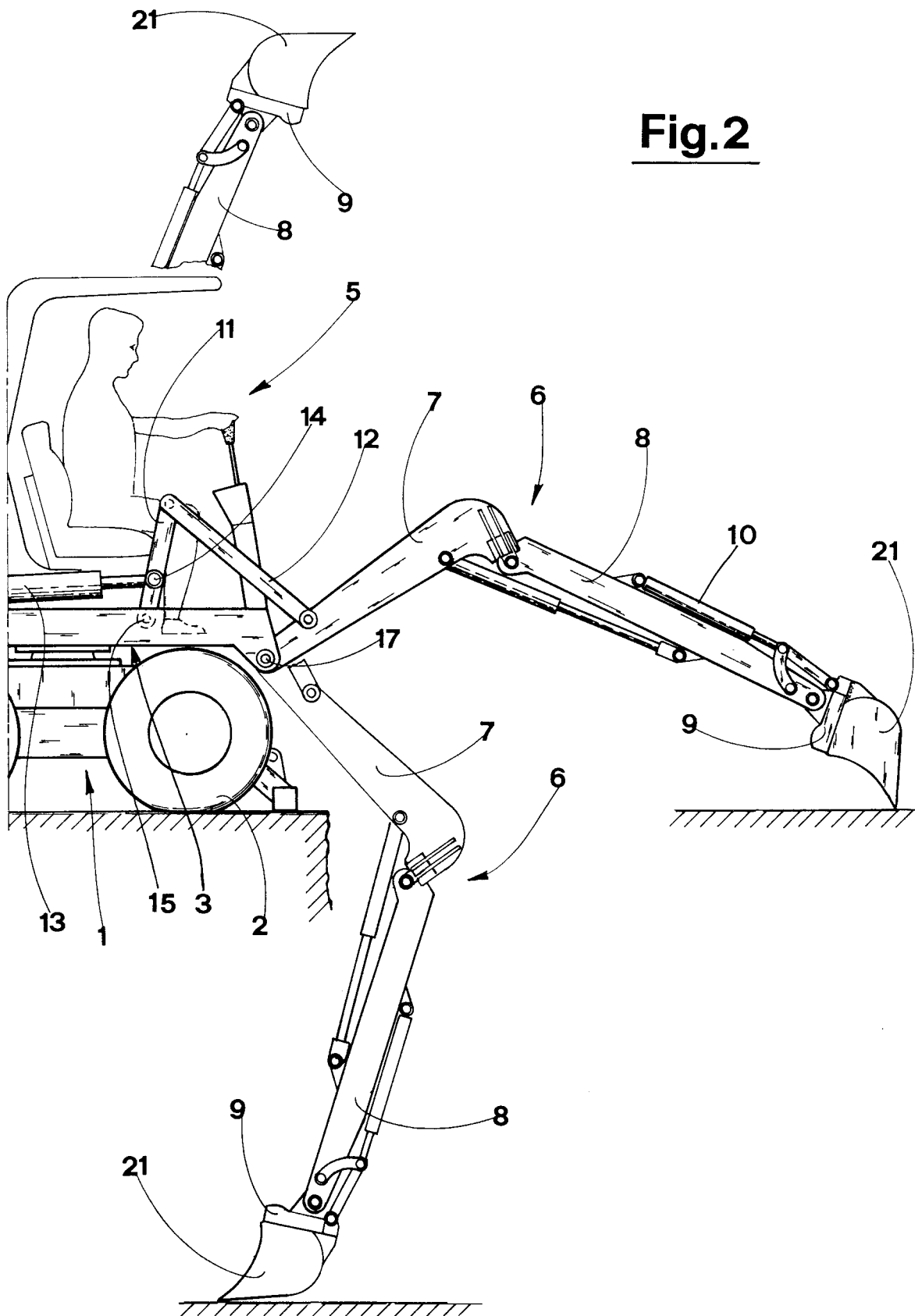
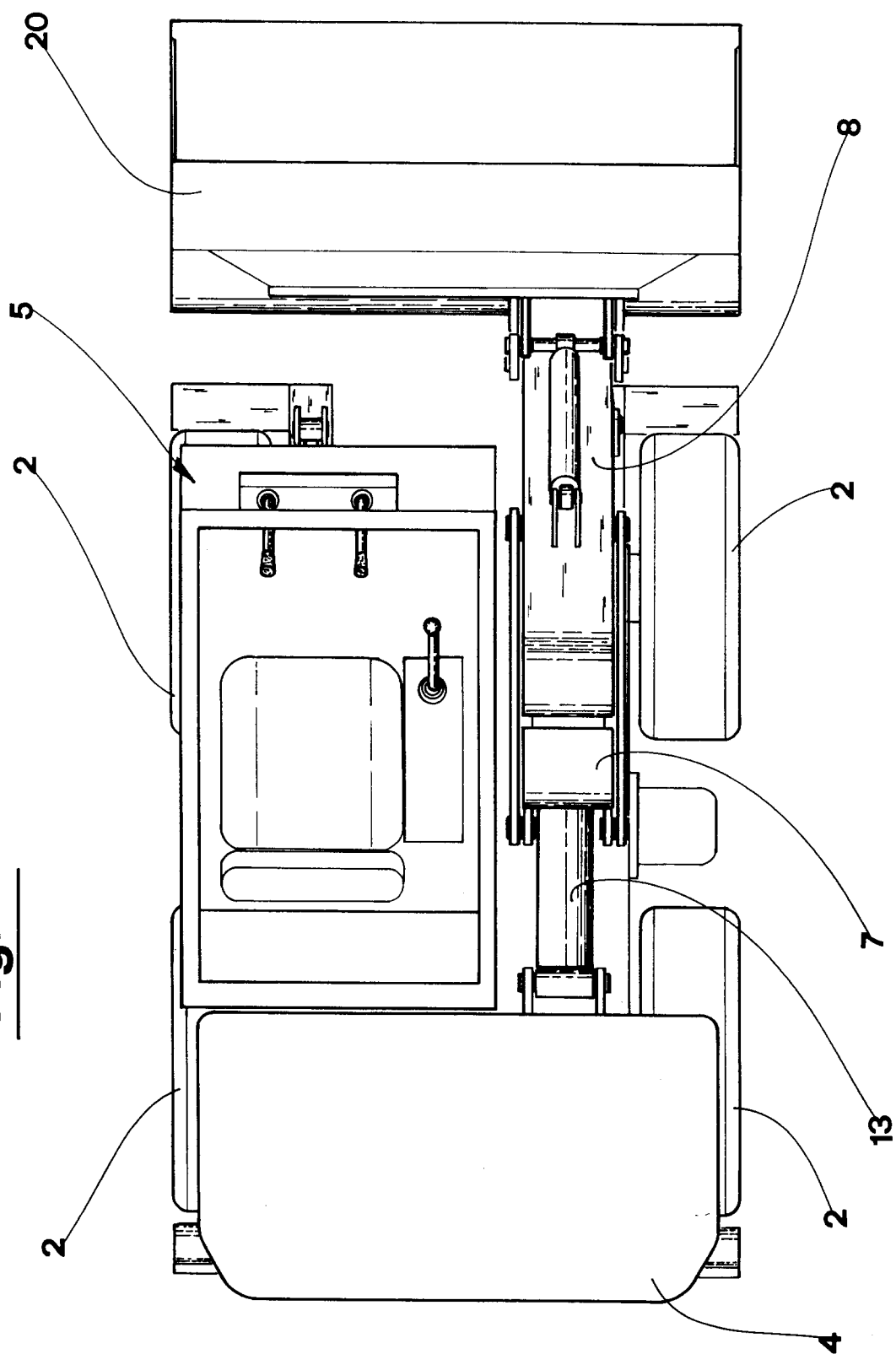


Fig.3





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EUROPEAN SEARCH REPORT

Application Number
EP 95 83 0070

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.6)
Y	FR-A-2 694 316 (GROUPE PEL-JOB) * page 2, line 29 - page 8, line 33 * * figure 1 * ---	1-3	E02F3/30
Y	EP-A-0 568 758 (MANITOU COSTRUZIONI INDUSTRIALI S.R.I.) * column 3, line 26 - line 29 * * figures * ---	1-3	
A	FR-A-2 365 008 (SOCIETE ANONYME MANUBAT PINGON) * page 1, line 31 - line 34 * * page 4, line 16 - page 5, line 3 * * page 5, line 36 - page 6, line 9 * * page 7, line 29 - line 31 * * figures * ---	1-3	
A	GB-A-2 025 360 (BREFFER S.P.A.) * figures * -----	1-3	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			E02F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 2 June 1995	Examiner Estrela y Calpe, J
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	