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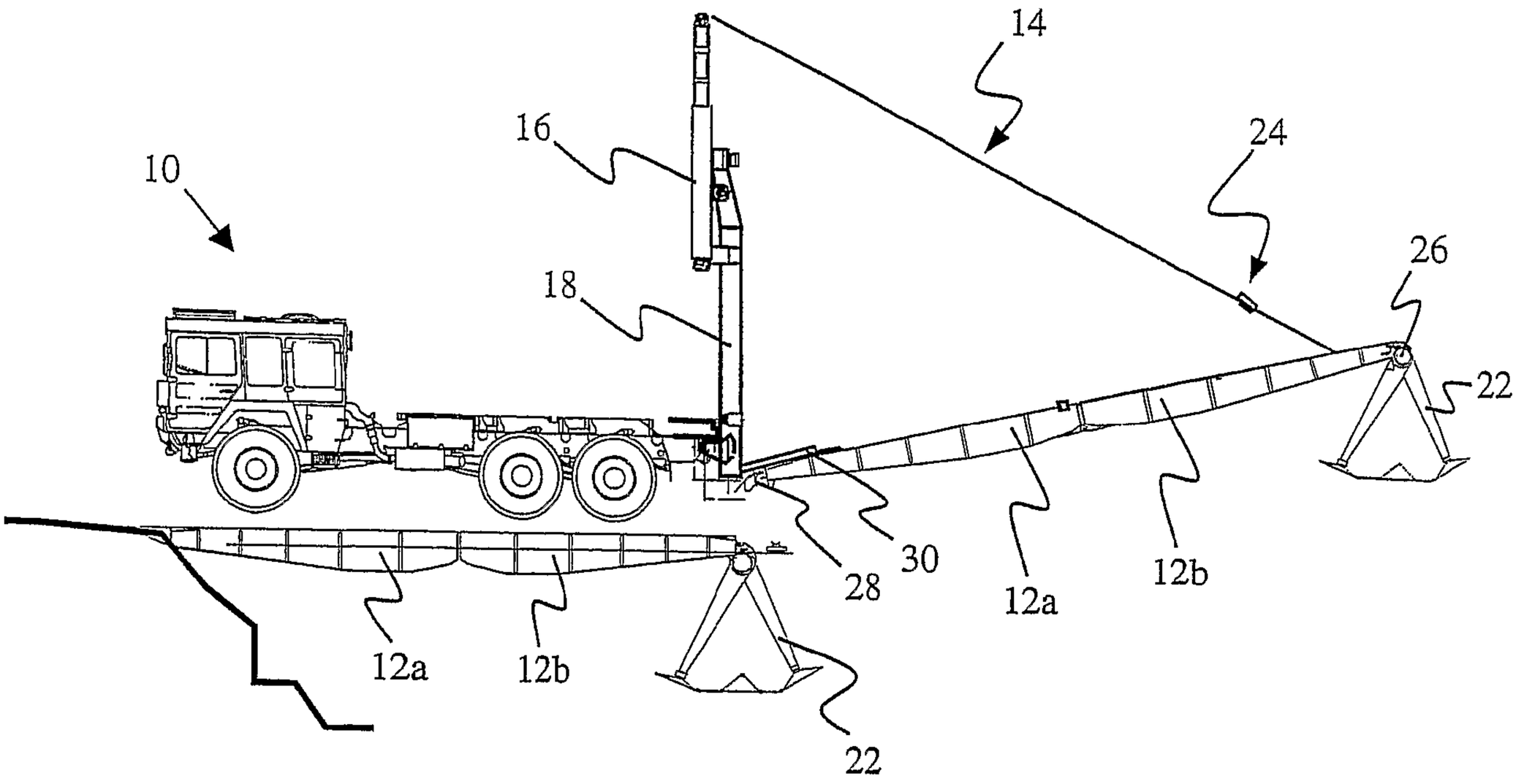
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(54) Titre : SYSTEME DE PONT MOBILE
(54) Title: TRANSPORTABLE BRIDGE SYSTEM



(57) Abrégé/Abstract:
The invention relates to a transportable bridge system, with at least one bridge span (10), made up of two sections (12a, 12b), connected together at a joint and a bridge-laying vehicle (12), provided with a hoisting frame (18), supported on the above such as to pivot, which may be hydraulically extended from the horizontal transport position into a vertical laying position and which supports a lowering frame (16) on which a laying cable (14) runs. A section (12a) of the bridge span (12) lies on the hoist frame (18) and is locked thereto during transport thereof with a downward-facing road surface, whereby the other section (12b) of the bridge span (12) lies with an upward facing road surface on the other section (12a) during transport. The lowering frame (16) is arranged on the hoisting frame (18) such as to be displaced beyond the free end thereof and the other section (12b) of the bridge span (12) is provided with trestle legs (22) which are mounted to pivot outwards and are adjustable for length.

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Zur Erklärung der Zweibuchstaben-Codes und der anderen Abkürzungen wird auf die Erklärungen ("Guidance Notes on Codes and Abbreviations") am Anfang jeder regulären Ausgabe der PCT-Gazette verwiesen.

(54) Title: TRANSPORTABLE BRIDGE SYSTEM

(54) Bezeichnung: MOBILBRÜCKENSYSTEM

(57) Abstract: The invention relates to a transportable bridge system, with at least one bridge span (10), made up of two sections (12a, 12b), connected together at a joint and a bridge-laying vehicle (12), provided with a hoisting frame (18), supported on the above such as to pivot, which may be hydraulically extended from the horizontal transport position into a vertical laying position and which supports a lowering frame (16) on which a laying cable (14) runs. A section (12a) of the bridge span (12) lies on the hoist frame (18) and is locked thereto during transport thereof with a downward-facing road surface, whereby the other section (12b) of the bridge span (12) lies with an upward facing road surface on the other section (12a) during transport. The lowering frame (16) is arranged on the hoisting frame (18) such as to be displaced beyond the free end thereof and the other section (12b) of the bridge span (12) is provided with trestle legs (22) which are mounted to pivot outwards and are adjustable for length.

(57) Zusammenfassung: Mobilbrückensystem mit wenigstens einer Brückenstrecke (10), die aus zwei miteinander gelenkig verbundenen Abschnitten (12a, 12b) besteht, und einem Brückeniegefahrzeug (12), das mit einen auf diesem verschwenkbar aufliegenden, einen ein Verlegeseil (14) führenden Senkrahmen (16) tragenden, hydraulisch aus der horizontalen Transportposition in eine vertikale Verlegeposition verschwenkbaren Hubrahmen (18) versehen ist, wobei der eine Abschnitt (12a) der Brückenstrecke (12) bei deren Transport mit nach unten weisender Fahrbahnfläche auf dem Hubrahmen (18) mit diesem verriegelt aufliegt, bei der der andere Abschnitt (12b) der Brückenstrecke (12) bei deren Transport mit nach oben weisender Fahrbahnfläche auf dem einen Abschnitt (12a) aufliegt, der Senkrahmen (16) an den Hubrahmen (18) über dessen freies Ende hinaus verschiebbar angesetzt ist und der andere Abschnitt (12b) der Brückenstrecke (12) im Bereich seines freien Endes mit ausschwenkbar gelagerten, längenverstellbaren Bockbeinen (22) versehen ist.

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TRANSPORTABLE BRIDGE SYSTEM

The invention relates to a mobile bridge system with at least one bridge section comprising two articulatedly interconnected parts, and a bridge laying vehicle provided with a lifting frame pivotably resting thereon, carrying a lowering frame guiding a laying cable and hydraulically pivotable from the horizontal transportation position into a vertical laying position, one part of the bridge section during the transportation thereof resting with downwardly directed roadway surface locked to and resting on the lifting frame. Such a mobile bridge system is known from DE 31 45 582 A1.

The known mobile bridge system suffers from the disadvantage that it is unsuitable for erecting a link bridge, i.e. a mobile bridge comprising several bridge sections. It is also disadvantageous that the bridge section length is only slightly longer than the bridge laying vehicle loading surface and several bridge sections cannot be placed on one another.

Therefore the problem of the invention is to provide a mobile bridge system enabling the erection of a bridge comprising several sections, each section being significantly longer than the loading surface of the bridge laying vehicle.

The invention solves this problem in that the other part of the bridge section during the transportation thereof rests with upwardly directed roadways surface on one part, the lowering frame being displaceably fixed to and beyond the free end of the lifting frame and the other part of the bridge section is provided in the vicinity of its free end with outwardly pivotably mounted, length-adjustable trestle legs.

The bridge laying vehicle is to be provided with a vehicle support fixed to its rear end. The two parts are to have an identical construction, so that it is possible for the bridge laying vehicle to take up the bridge on the other bank of the watercourse to be bridged.

The invention also relates to a method for laying a mobile bridge of a mobile bridge system having the following method steps:

- moving up to the location where one end of the part of the bridge section is to be located,

- extending the vehicle support of the bridge laying vehicle,

- pivoting out the lifting frame together with the two parts of the bridge section carried by it out of the horizontal by more than 90°,

- drawing up the laying cable secured close to the free end of the other part into a position aligned with the first part,

- unlocking the upper end of the first part from the lifting frame,

- pivoting out the extended bridge section after lowering the laying cable accompanied by the pivoting of the first part about the lower end of the lifting frame,

- adjusting the length of the trestle legs,

- further pivoting out of the bridge section and the placing thereof on the trestle legs,

- lowering the lifting frame articulatedly connected to the proximal end of one part of the bridge section and optionally passing the distal end of the first part into the bracing tube of the trestle legs of the other part of a previously laid bridge section and

- releasing the proximal end of the first part from the lifting frame.

The invention is explained hereinafter relative to the drawings showing the different stages of laying the mobile bridge in side view.

Fig. 1 shows the bridge laying vehicle 10 with the bridge section comprising two articulatedly connected parts 12a, 12b resting thereon. The two parts 12a, 12b rest on a lifting frame 18, which can be hydraulically pivoted from the horizontal transportation position into a vertical laying position. The lifting frame 18 also carries a lowering frame 16 shoved into the transportation position shown in fig. 1.

In said transportation position a first part 12a of bride section 12 rests with downwardly directed roadway surface on lifting frame 18 being twice locked thereto, whilst the other part 12b of bridge section 12 in the transportation position rests on the first part 12a with upwardly directed roadway surface.

The other part carries on its surface opposite to the roadway surface length-adjustable trestle legs pivotable to the other part 12b, which has a winch for adjusting the trestle leg length.

At its rear end the bridge laying vehicle 10 is provided with a pair of vehicle supports 20, which are only shown in fig. 1 so as not to overburden representation.

The two parts 12a, 12b have an identical construction, but only the other part is provided with trestle legs.

Fig. 2 shows how the two bridge section parts 12a, 12b can be hydraulically pivoted up into the vertical position by pivoting up lifting frame 18. Fig. 3 shows the stage in which the other part 12b articulatedly connected to the first part 12a is drawn up by means of a laying cable 14 over the lowering frame 16 extended from the lifting frame 18, said cable being fixed in the vicinity of the free end of the other part. The laying cable is guided by means of an only intimated roll-equipped crossbar 24, which ensures a load compensation.

In fig. 4 the bridge section 12 is fully extended, lifting frame 18 assuming an angle of more than 90ø to the loading surface of bridge laying vehicle 10. Bridge section 12 is lowered (after releasing first part 12a from lifting frame 18) on drawing off laying cable 14 away from vehicle 10 (fig. 5) until the position shown in fig. 6 is reached. In this position the length of the trestle legs 22 provided with a bracing tube 26 articulatedly locked to the other part 12a by claws 28 is so adjusted by means of a not shown trestle leg winch in the vicinity of the distal end of the other part 12b that on

reaching the bottom of the watercourse to be bridged a horizontal course of the roadway is ensured. The bridge section is then pivoted down further until the trestle legs reach the bottom of the watercourse.

Fig. 6 shows the laying of a first bridge section in which its distal end is laid on the bank. Fig. 7 shows the laying of a further bridge section, where the bridge laying vehicle is standing rearwards on an already laid bridge section and lays on and extends the latter by a further bridge section.

Fig. 8 shows the lowering of lifting frame 18 by a device 30 carrying the lifting frame 18, the claws 28 of the proximal end of the part 12a, i.e. that pointing towards the bridge laying vehicle, is passed into the bracing tube 26 of the trestle legs 22 of a previously laid bridge section 12a, 12b and is locked thereto, the claws 28 on a first part 12a being displaced relative to the other bridge section part 12b. It is obvious that this does not occur with the first bridge section to be laid (fig. 6). The proximal end of the first part 12a is then released from the lifting frame 18 and the bridge laying vehicle is moved away.

The taking up of the bridge section occurs in corresponding reverse order, the trestle legs on whose bracing tube the other part of the last laid bridge section is deposited remains locked thereto and the locking thereof with the other part of the previously laid bridge section is released.

The adjustability of the spacing of the roadways forming parts 12a, 12b is not shown in the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a side view of a bridge laying vehicle and bridge section according to an exemplary embodiment of the invention, the bridge section resting on the bridge laying vehicle for transport;

Figure 2 is a view similar to Figure 1, with the two bridge section parts pivoted up into a vertical position;

Figure 3 is a view similar to Figure 2, with one of the bridge section parts pivoted up in the vertical position and the other part partially drawn up therefrom;

Figure 4 is a view similar to Figure 3, with the other part fully drawn up from the one bridge section part such that the bridge section is fully extended;

Figure 5 is a view similar to Figure 4, with the bridge section partially lowered;

Figure 6 is a view similar to Figure 5, with the distal end of the bridge section laid on a bank;

Figure 7 is a view similar to Figure 6, but with the bridge laying vehicle disposed on a previously laid section of bridge; and

Figure 8 is a view similar to Figure 7, with the proximal end of the bridge section dropped into position.

CLAIMS

1. Mobile bridge system with at least one bridge section comprising two articulatedly interconnected parts (12a, 12b), and a bridge laying vehicle (10), which is provided with a lifting frame (18) pivotably resting thereon, carrying a lowering frame (16) guiding a laying cable (14) and pivotable hydraulically from the horizontal transportation position into a vertical laying position, one part (12a) of the bridge section (12) during the transportation rests with downwardly directed roadway surface on lifting frame (18) and is locked thereto, characterized in that

the other part (12b) of bridge section (12) during the transportation thereof rests with an upwardly directed roadway surface on first part (12a),

lowering frame (16) is displaceably fixed to lifting frame (18) over and beyond its free end and

the other part (12b) of bridge section (12) is provided in the vicinity of its free end with outwardly pivotably mounted, length-adjustable trestle legs (22).

2. Mobile bridge system according to claim 1, characterized in that the bridge laying vehicle (12) is provided with a vehicle support (20) fixed to its rear end.

3. Mobile bridge system according to claim 1 or 2, characterized in that the two parts (12a, 12b) have an identical construction.

4. Method for laying a mobile bridge of a mobile bridge system according to one of claims 1 to 3, characterized by

- moving up to the location where one end of the part (12a) of the bridge section (12) is to be located,

- extending the vehicle support (20) of the bridge laying vehicle,

- pivoting out the lifting frame (18) together with the two parts (12a, 12b) of the bridge section (12) carried by it out of the horizontal by more than 90°,

- drawing up the laying cable (14) secured close to the free end of the other part (12b) into a position aligned with the first part (12a),

- unlocking the upper end of the first part (12a) from the lifting frame (18),

- pivoting out the extended bridge section (12a, 12b) after lowering the laying cable (14) accompanied by the pivoting of the first part (12a) about the lower end of the lifting frame (18),

- adjusting the length of the trestle legs (22),

- further pivoting out of the bridge section (12a, 12b) and the placing thereof on the trestle legs (22),

- lowering the lifting frame articulatedly connected to the proximal end of one part (12a) of the bridge section (12a, 12b) and optionally passing the distal end of the first part (12a) into the bracing tube of the trestle legs of the other part (12b) of a previously laid bridge section and

- releasing the proximal end of the first part (12a) from the lifting frame (18).

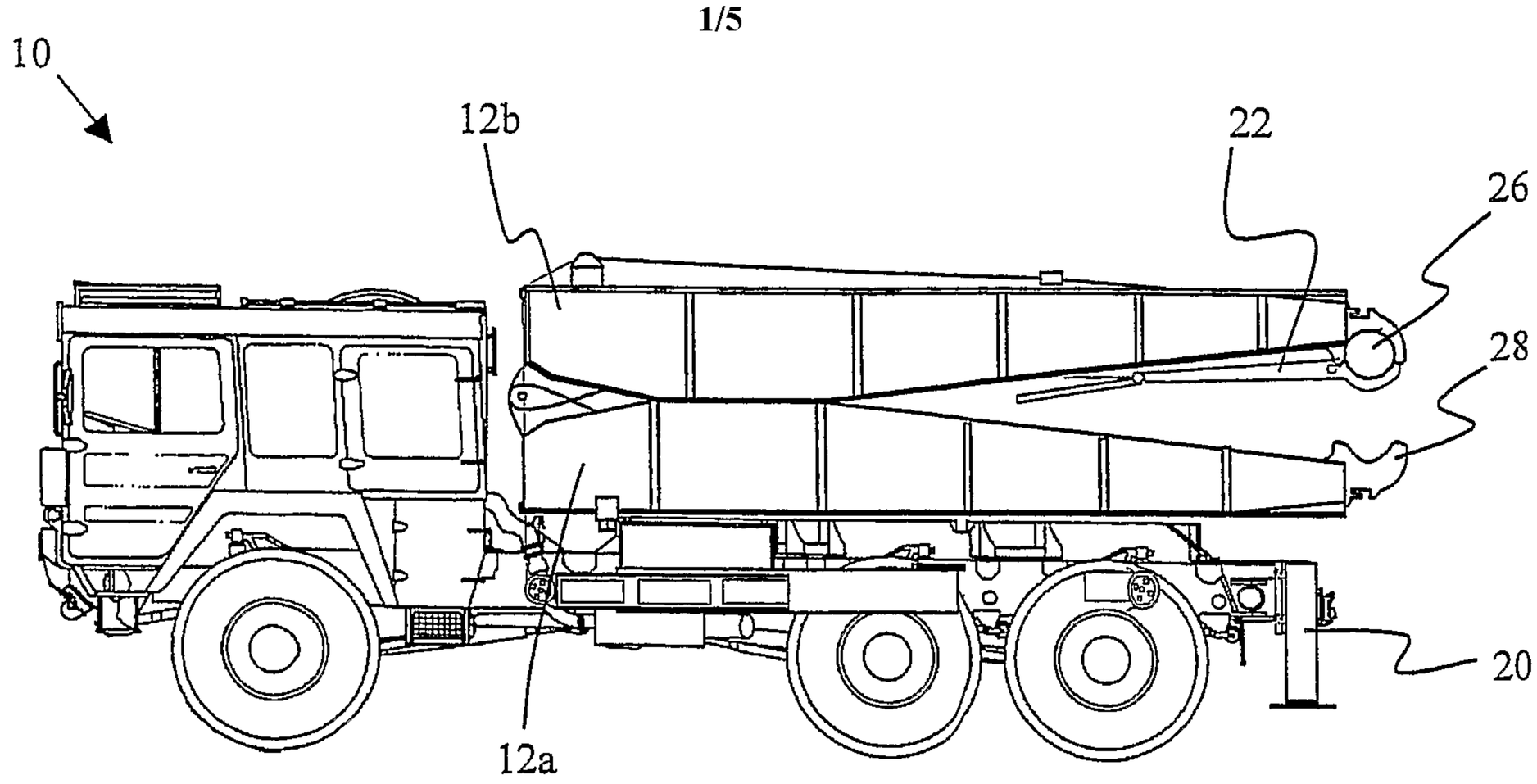


FIG. 1

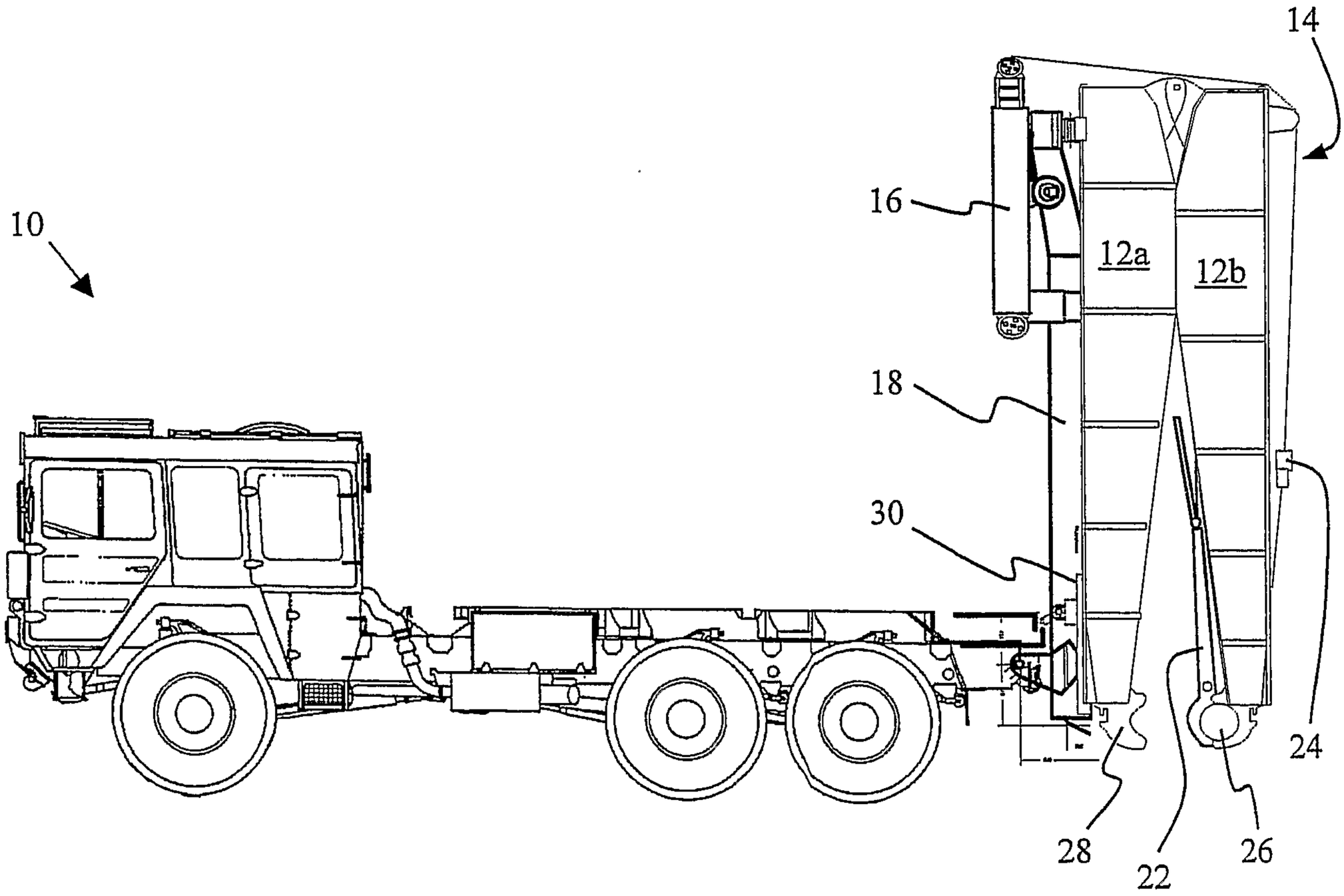


FIG. 2

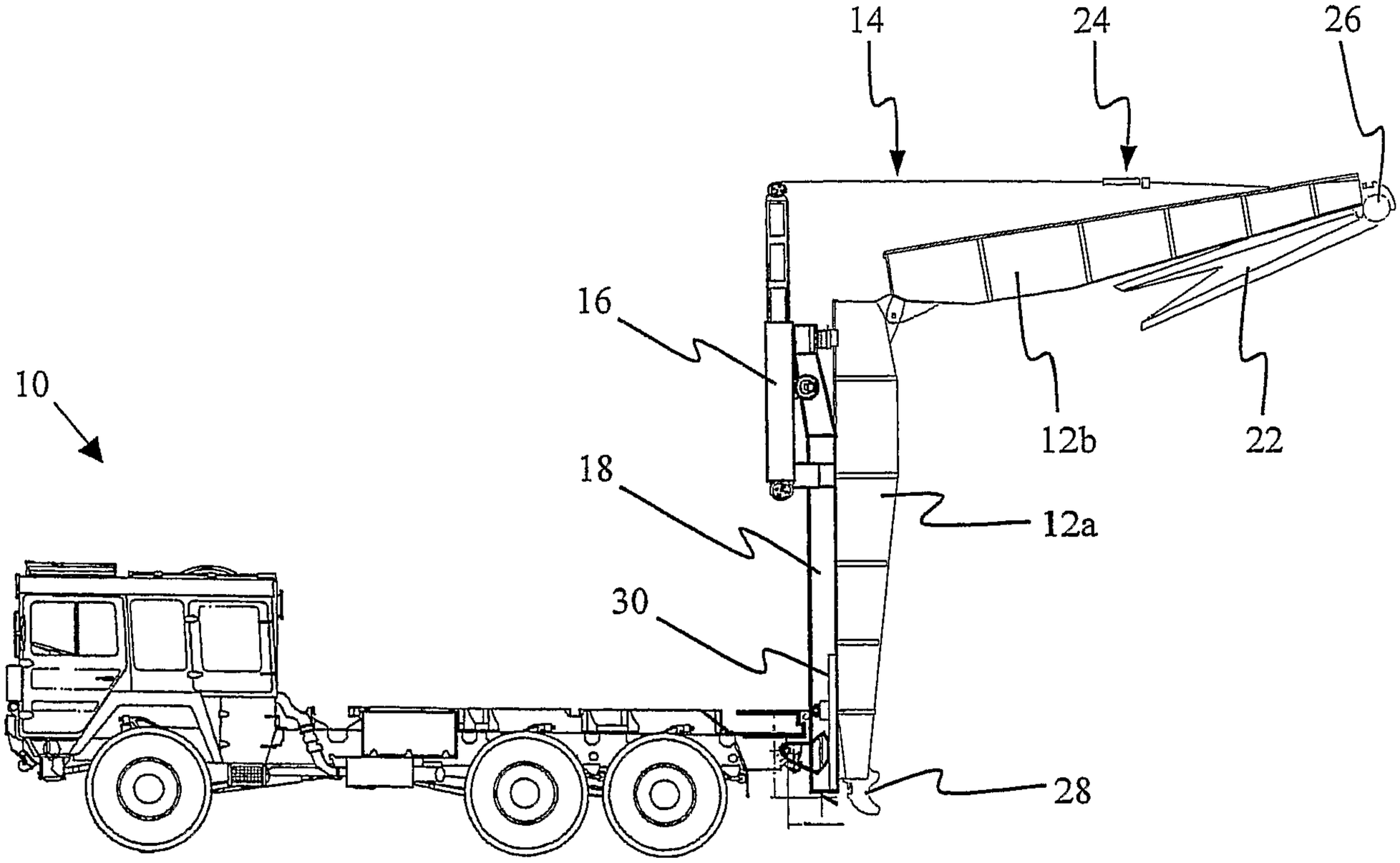


FIG. 3

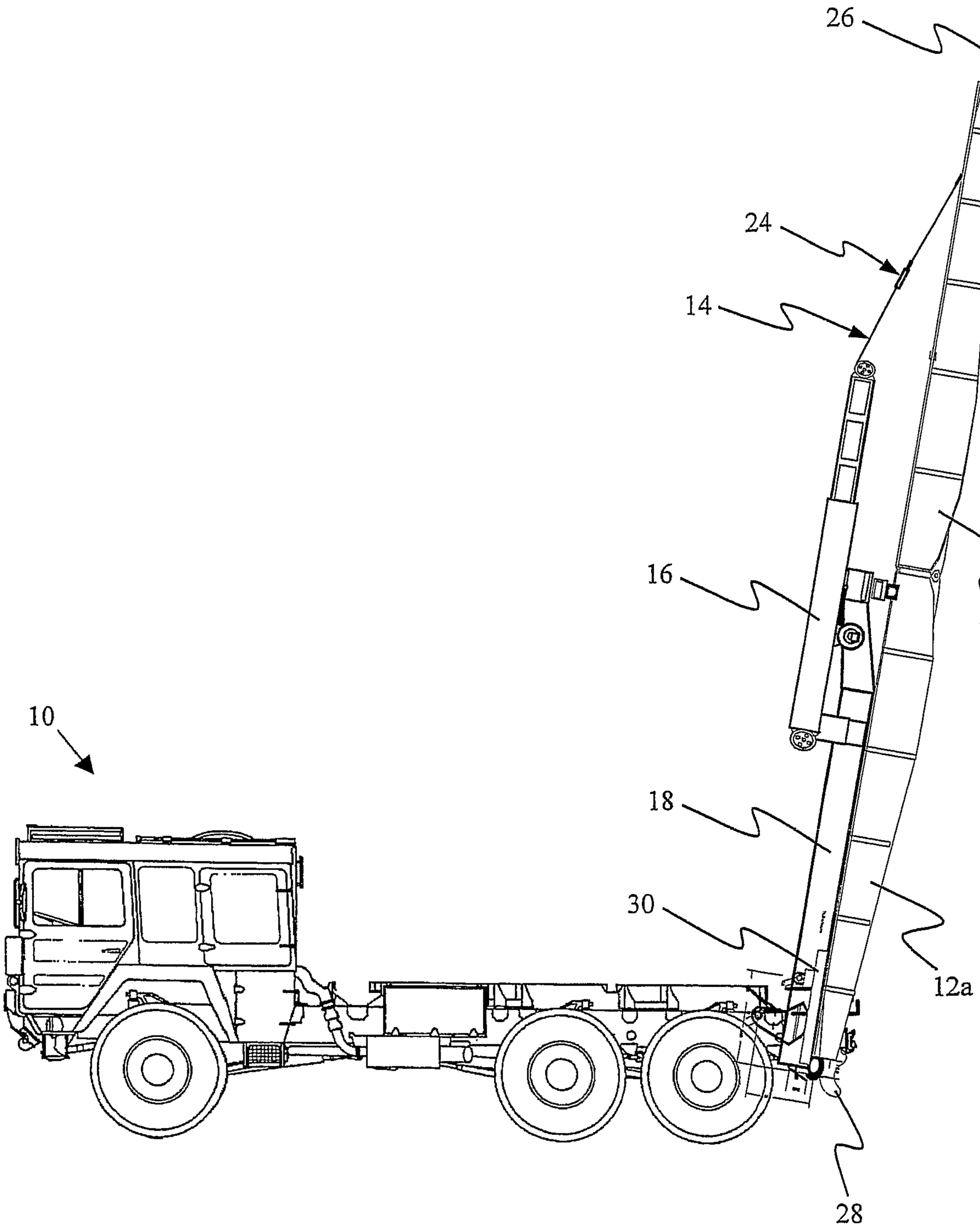


FIG. 4

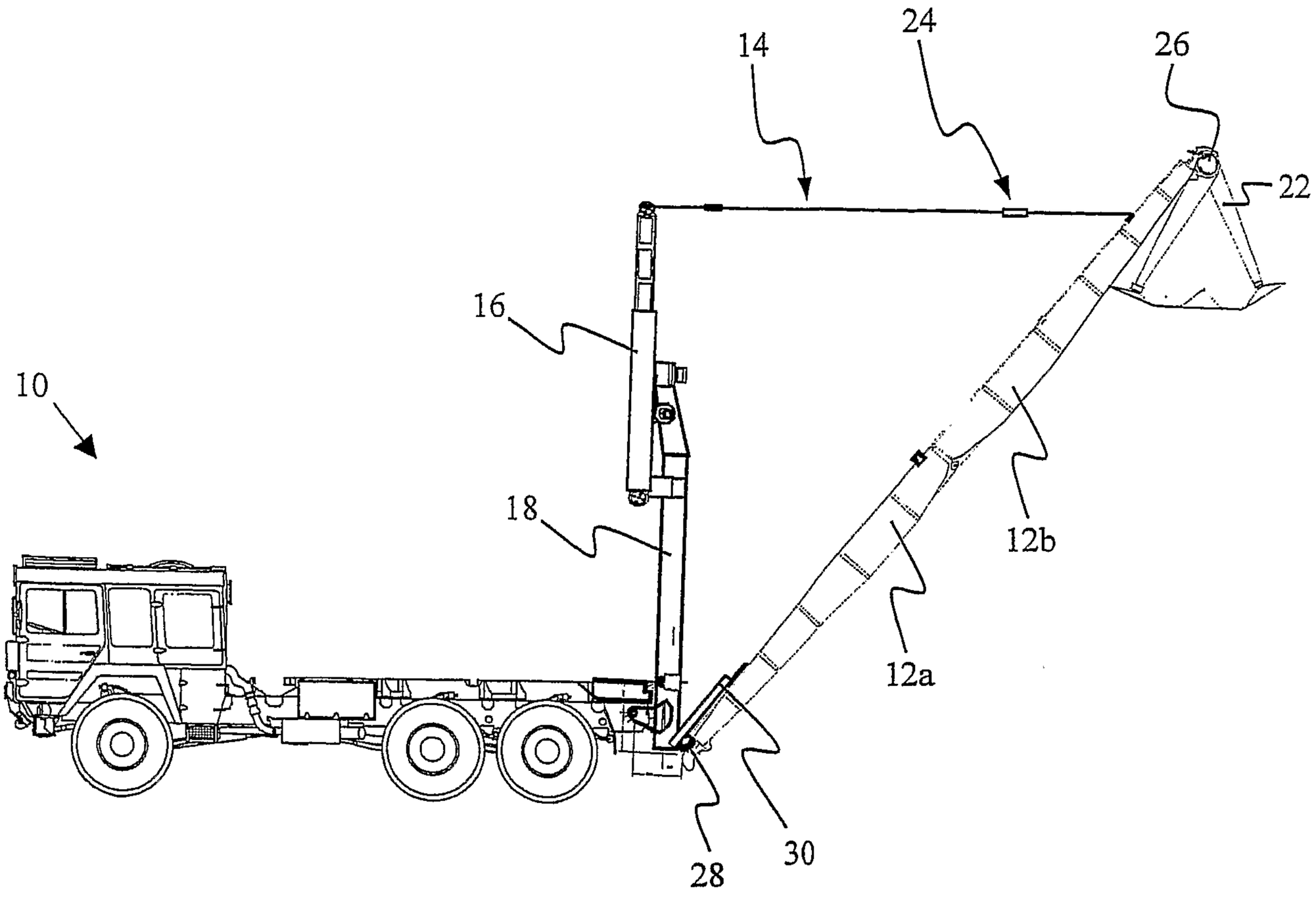


FIG. 5

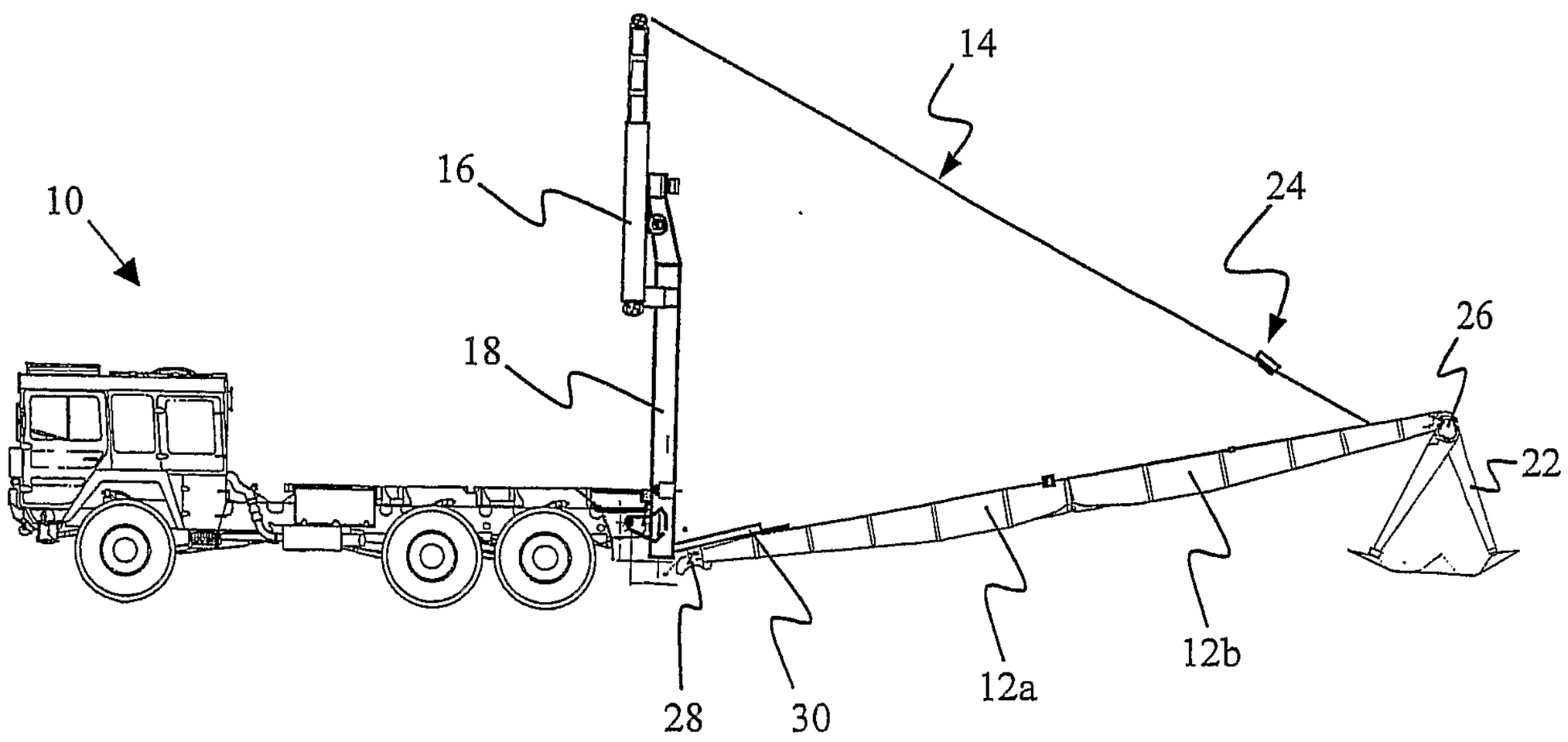


FIG. 6

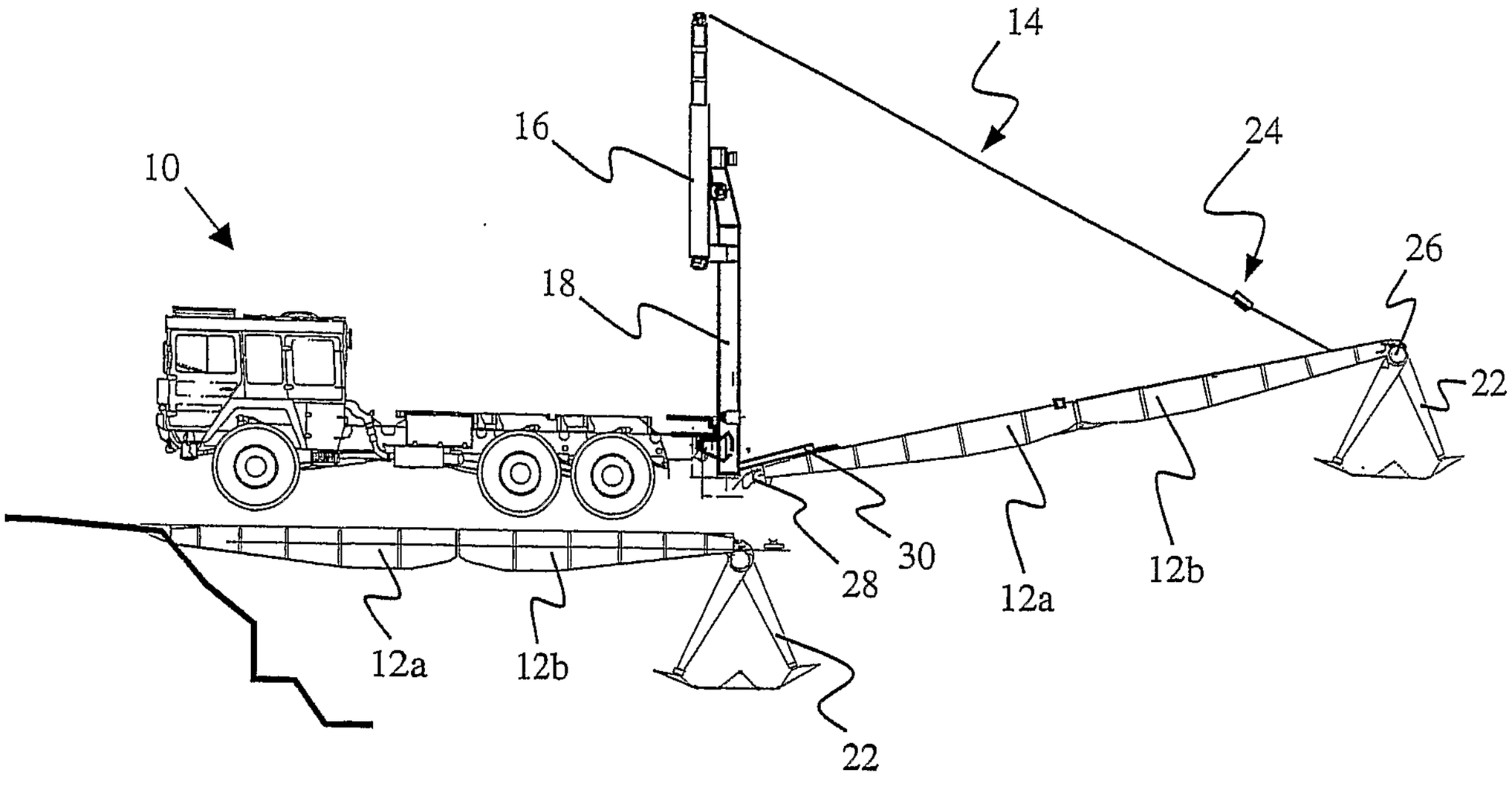

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16
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18
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12a
12b
28
30
12a
12b
22

FIG. 7

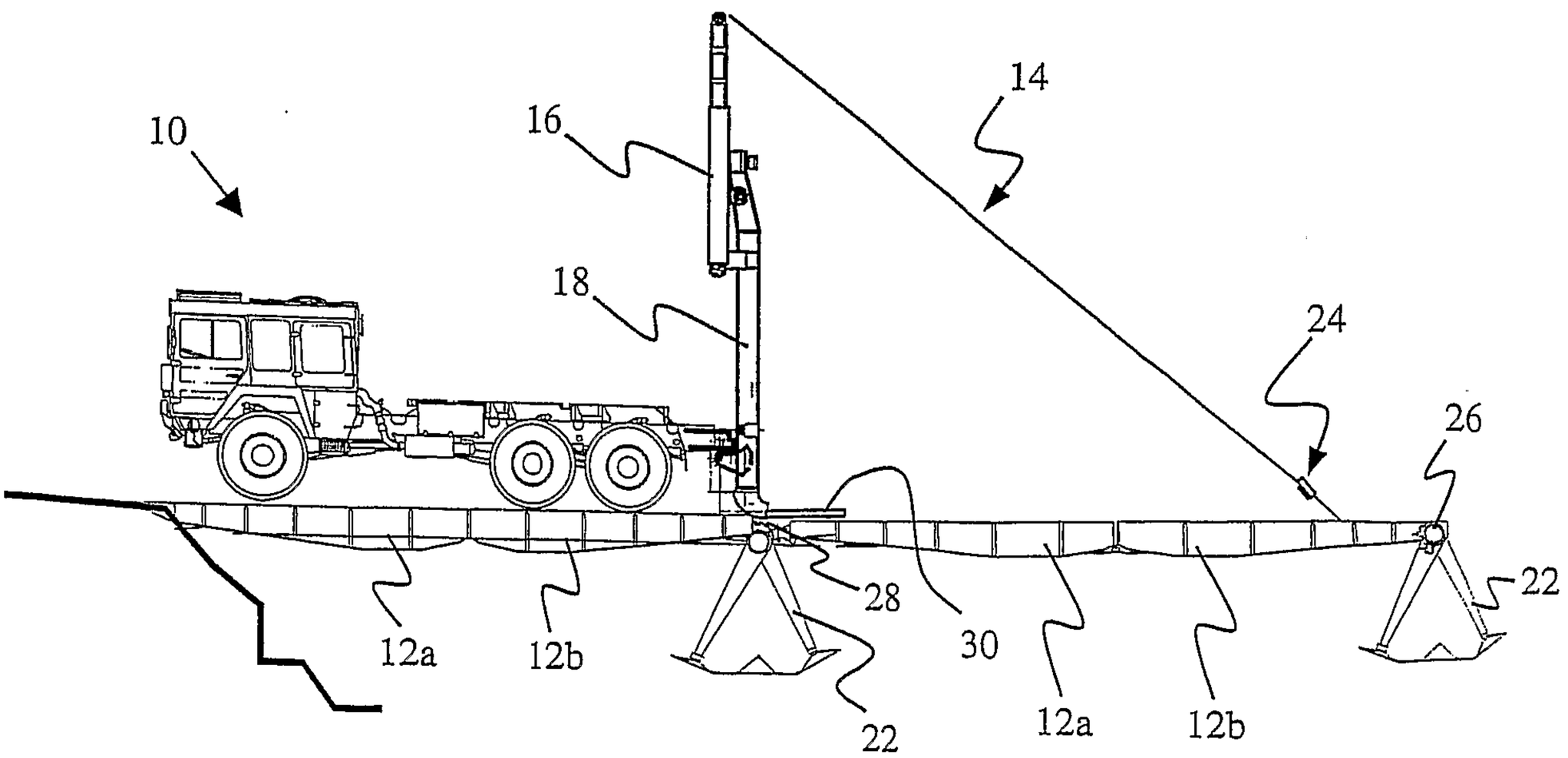
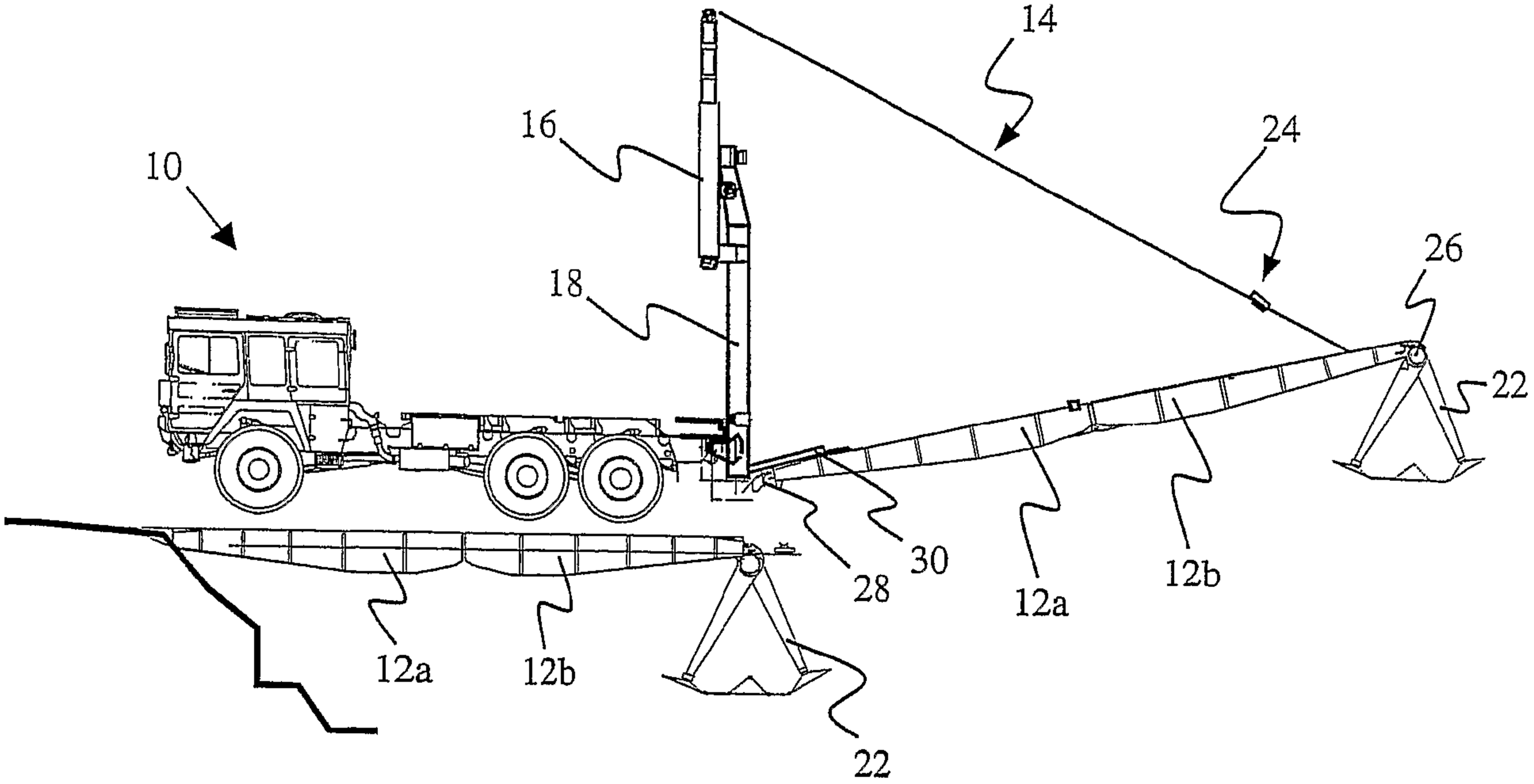

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12a
12b
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12a
12b
22

FIG. 8


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12a
12b
12a
12b
22