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EP-A1- 1 526 058
WO-A1-2008/017798
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DESCRIPTION

[0001] This invention relates to combination dolly-pallets.

[0002] Dollies which can be converted to pallets are known. An example of such a dolly is described in patent specification No. WO 2008/017798. A problem with such dollies is that the mechanism used to convert the dolly to a pallet, and vice versa, can be damaged by collisions with mechanical handling equipment.

[0003] Specification No. EP1526058A1 represents the closest prior art to the subject-matter of claim 1 and discloses a transport trolley.

[0004] Specification No. US2005/002766A1 discloses a hand truck apparatus. Specification No. DE202009009056U1 discloses a rolling device with a roll bar.

[0005] According to the invention as defined in claim 1, there is provided a combination dolly-pallet comprising: a body; two pairs of rollers to allow the dolly-pallet to be moved along the ground; a bearer arrangement movable relative to the body between a ground engaging condition in which the bearer arrangement can engage the ground and a retracted condition in which the bearer arrangement is retracted; a drive mechanism to move the bearer arrangement between the ground engaging and the retracted conditions; shielding means extending around the rollers, the shielding means being separate from the bearer arrangement, and the shielding means being detachably mounted on the body; wherein the shielding means comprises two pairs of shielding members on the body, the shielding members being arranged on the body such that each roller is shielded by a respective shielding member; characterised in that: the combination dolly-pallet comprises two of said bearer arrangements; wherein each bearer arrangement comprises an elongate bearer member having opposite ends and a respective connecting member at each of said ends to connect the bearer member to the drive mechanism..

[0006] The bearer arrangement may be substantially devoid of shielding features that extend around the roller arrangement to shield the roller arrangement against impact.

[0007] The roller arrangement comprises a plurality of rollers. The roller arrangement comprises a pair of rollers. The rollers may be spaced from each other by a first distance. The bearer arrangement may have a total length which is a second distance. The first distance may be greater than the second distance.

[0008] The rollers may be spaced from each other by a first distance and the bearer arrangement has a total length which is a second distance, the first distance being greater than the second distance.

[0009] The bearer arrangement may be disposed between the rollers of said pair. The pair of

rollers may be provided at an end region of the body. The pair of rollers may be provided at a front or a rear end region of the body.

[0010] Each shielding member extends around a respective one of the rollers of said pair. Each shielding member is detachably mounted on the body.

[0011] The drive mechanism may comprise features as described in patent specification No. WO 2008/017798.

[0012] Each bearer arrangement may be provided at a respective opposite end region of the body. In the embodiment described herein, the, or each, bearer arrangement is provided separately from, and movable independently of, the shielding means.

[0013] The combination dolly-pallet may comprise a dolly, which may be convertible to a pallet by moving the bearer arrangement to the ground engaging condition. The combination dolly-pallet is movable between a dolly condition and a pallet condition. The combination dolly-pallet may be in a dolly condition when the, or each, bearer arrangement is in the retracted condition. The combination dolly-pallet may be in a pallet condition when the, or each, bearer arrangement is in the ground engaging condition. Desirably, the roller arrangement may be lifted from the ground when the, or each, bearer arrangement moves to the ground engaging condition.

[0014] The drive mechanism may be configured to move the bearer arrangements between the ground engaging and retracted conditions substantially simultaneously with each other. The drive mechanism may be configured to lift the roller arrangements from the ground substantially simultaneously with each other

An operating member may be provided on the drive mechanism to operate the drive mechanism. Two operating members may be provided to operate the drive mechanism. Each operating member may be provided at a respective opposite end of the body. The, or each, operating member may comprise a lever. The, or each, lever may comprise a pedal.

[0015] The, or each, operating member may be movable between an operative position in which the bearer arrangement can be locked in the ground engaging condition or in the retracted condition, and an inoperative condition. Where the drive mechanism comprises two operating members, and the combination dolly-pallet comprises two bearer arrangements, the movement of either of said operating members may effect simultaneous movement of the bearer arrangements.

[0016] The, or each, connecting member may be substantially flat, and may extend upwardly from the bearer member.

[0017] The body may comprise a platform on which the load can be carried. The body may further include a skirt extending downwardly from the platform. The, or each, bearer arrangement may be provided within the skirt.

[0018] The apparatus may include first and second roller arrangements. The shielding means may be fixed relative to the, or each, roller arrangement.

[0019] Each roller arrangement comprises a plurality of rollers. Each roller arrangement comprises a pair of rollers. The first and second roller arrangements may be disposed at opposite end regions of the body. The rollers may comprise wheels or casters. The rollers of the first roller arrangement may comprise a pair of wheels. The rollers of the second roller arrangement may comprise a pair of casters.

[0020] Each of the roller arrangements may be disposed at respective front and rear end regions of the body. The roller arrangement disposed at the front end region may comprise rollers in the form of casters. The roller arrangement disposed at the rear end region may comprise rollers in the form of wheels. A respective bearer arrangement may be disposed between each pair of rollers. A respective one of the bearer arrangements may be disposed between each pair of rollers.

[0021] A respective shielding member is disposed around each roller.

[0022] Each shielding member may comprise first and second shielding portions arranged substantially at right angles to each other. Fasteners may be provided to fasten each shielding member to the body so that it extends around the roller. The fasteners may extend through the body to the respective shielding member. The fasteners may comprise bolts. The bolts may be threadably secured to the respective shielding member, or may extend through the shielding member, to be secured to the shielding member by threadably engaging a nut.

[0023] The drive mechanism may be configured to lift the, or each, roller arrangement from the ground when each bearer arrangement is moved to the ground engaging position.

[0024] An embodiment of the invention will now be described by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a front perspective view of a combination dolly-pallet with a bearer arrangement in a retracted condition, showing an operating member in an inoperative position;

Figure 2 is a front perspective view of the combination dolly-pallet in Figure 1, with the bearer arrangement in a ground engaging condition, and the operating member in an operative position;

Figure 3 is a front perspective view of the combination dolly-pallet shown in Figure 1, with the bearer arrangement in the ground engaging condition, and the operating member in an inoperative position;

Figure 4 is a side view of the combination dolly-pallet, showing the bearer arrangements in the ground engaging conditions;

Figure 5 is the same view as Figure 4, but showing the bearer arrangements in the retracted conditions;

Figure 6 is a front view of the combination dolly-pallet;

Figure 7 is a rear view of the combination dolly-pallet;

Figure 8 is a top view of the combination dolly-pallet;

Figure 9 is a perspective view from the front and below of the combination dolly-pallet;

Figure 10 is the same view of the combination dolly-pallet as Figure 9, but showing the bearer arrangements and the shielding members detached from the body; and

Figure 11 shows a shielding member.

[0025] Figure 1 shows a combination dolly-pallet 10, which is movable between a dolly condition and a pallet condition, as explained in more detail below. The combination dolly-pallet 10 comprises a body 12 having a platform 14 with a downwardly extending skirt 16.

[0026] A pair of front rollers, in the form of front casters 18, is mounted on the body 12 at a front end region thereof. The front casters 18 may be mounted on the body at front corners 20 of the body 12. A pair of rear rollers, in the form of rear wheels 22, is mounted on the body 12 at a rear end region thereof. The rear wheels 22 may be mounted at rear corners 26 of the body 12. In Figures 9 and 10, the casters 18 have been omitted for clarity.

[0027] Shielding means in the form of a plurality of shielding members 28 are attached to the body 12 at the front and rear corners 20, 26 around the front casters 18 and the rear wheels 22. Thus, the shielding members 28 are fixed relative to the front casters 18 and the rear wheels 22. Each shielding member 28 comprises first and second shielding portions 30, 32 arranged substantially at right angles to each other. Each shielding member 28 has a generally L-shaped profile.

[0028] The combination dolly-pallet 10 further includes a front bearer arrangement 34 and a rear bearer arrangement 36. The front bearer arrangement 34 is disposed on the body 12 between the front casters 18. The rear bearer arrangement 36 is disposed on the body 12 between the rear wheels 22.

[0029] Each of the front and rear bearer arrangements 34, 36 is movable relative to the body 12 between a retracted condition, shown in Figures 1 and 5, and a ground engaging condition, shown in Figures 2, 3 and 4. The front and rear bearer arrangements 34, 36 are independent of the shielding members 28 and are movable relative to the shielding members 28.

[0030] The bearer arrangements 34, 36 are substantially the same as each other, and each

comprises a horizontal bearer member 38 having opposite ends, and two connecting members 40 that extend upwardly from the bearer member. The connecting members 40 connect the bearer arrangements 34, 36 to a drive mechanism (not shown) provided within the body 12.

[0031] The drive mechanism is provided to move the bearer arrangements 34, 36 between the ground engaging and retracted conditions. The drive mechanism comprises the features described in prior specification No. WO 2008/017798.

[0032] Operating members in the form of front and rear pedals 42 are provided at the front and rear of the body 12. The front and rear pedals 42 are operatively connected to the drive mechanism, as explained in WO 2008/017798, and can be moved between an inoperative position, shown in Figures 1 and 3, and an operative position, shown in Figure 2.

[0033] The operation of the drive mechanism is such that when the bearer arrangements 34, 36 are in their retracted conditions, one of the pedals 42 can be moved from the inoperative position to the operative position. This movement of the pedal 42 causes the drive mechanism, in a manner described in WO 2008/017798, to move the bearer arrangements 34, 36 from their retracted positions to their ground engaging conditions, and to lock the bearer arrangements 34, 36 in their ground engaging conditions. The pedal 42 can then be released, and the drive mechanism moves the pedal 42 to the inoperative position.

[0034] When the bearer arrangements 34, 36 are in their ground engaging conditions, one of the pedals 42 can be moved from the inoperative position to the operative position to unlock the bearer arrangements 34, 36 from the ground engaging condition. Thereafter, moving the pedal 42 to the inoperative position returns the bearer arrangements 34, 36 to their retracted conditions.

[0035] As described in WO 2008/017798, the drive mechanism is such that movement of one of the pedals 42 causes the drive mechanism to move both of the bearer arrangements 34, 36 between the ground engaging and retracted conditions.

[0036] When the bearer arrangements 34, 36 are in the ground engaging conditions, the front casters 18 and the rear wheels 22 remain in contact with the ground.

[0037] Alternatively, if desired, when the bearer arrangements 34, 36 are in the ground engaging conditions the front casters 18 and the rear wheels 22 may be lifted slightly off the ground to ensure that the body 12 is fully supported by the bearer arrangements 34, 36.

[0038] As shown in Figure 1, when the bearer arrangements 34, 36 are in their retracted conditions, the bearer members 38 are level with the lower edges of the shielding members 28. In the embodiment described herein this provides the advantage that it is immediately visible to the user, whether the bearer arrangements 34, 36 are in their ground engaging or retracted conditions.

[0039] As can be seen from Figures 1 to 4, the bearer arrangements 34, 36 are substantially devoid of any shielding features that extend around the front casters 18 and the rear wheels 22. As described above, the front casters 18 and the rear wheels 22 are shielded by shielding members 28, detachably mounted on the body 12.

[0040] The front casters 18 are spaced from each other by a first distance and the rear wheels 22 are spaced from each other by the first distance L1. Each of the first and second bearer arrangements 34, 36 is of a length that is a second distance L2. As can be seen from the drawings, the first distance L1 is greater than the second distance L2.

[0041] Referring to Figure 10, it can be seen that the shielding members 28 are detachable from the body 12. One of the shielding members 28 is shown in Figure 11. The shielding member 28 shown in Figure 11 comprises first and second attaching portions 44, 46 extending inwardly from the first and second shielding portions 30, 32 respectively, at right angles thereto. Each attaching portion 44, 46 is generally flat.

[0042] The first attaching portion 44 defines two apertures 48, 50, and the second attaching portion 46 defines an aperture 52. Respective fasteners, such as bolts, can be inserted through the apertures to fasten the shielding members to the body 12. The body 12 defines respective threaded recesses which can threadably receive the bolts to effect the aforesaid fastening of the shielding members to the body. Alternatively, each shielding member 28 defines the threaded recesses which can threadably receive the bolts to effect the aforesaid fastening of the shielding members to the body.

[0043] There is thus described a combination dolly-pallet 10, an embodiment of which has shielding members 28 on the main body 12. In the embodiment described herein, this provides an advantage over prior art combination dolly-pallets. This advantage is that, in the event of an impact on one of the shielding members by, for example, mechanical handling equipment, the force of collision is transmitted to the body 12, rather than to the drive mechanism. This helps to prevent damage to the drive mechanism, and reduces consequent repair costs.

[0044] In addition, in the embodiment described above, the detachable shielding members 28 provide the additional advantage that they can be replaced if damaged. This reduces repair costs, over prior art combination dolly-pallets for several reasons. For example, with some prior art combination dolly-pallets, the shielding members are provided on the bearer arrangements. Therefore, the embodiment of the present invention described herein has the advantage that, if a shielding member 28 is damaged it is necessary only to replace the shielding member 28, whereas with the aforesaid prior art apparatus, the whole bearer arrangement would need to be replaced.

[0045] Moreover, by the shielding means being attached to the bearer arrangements as in the prior art, an impact on the shielding members could cause damage to the drive mechanism. This is avoided in the above described embodiment by detachably securing the shielding members 28 to the body 12.

[0046] Similarly, because the shielding members 28 are detachable from the body 12, in the above described embodiment, any damage to the shielding members 28 will not necessitate replacement of the body 12. Repair of such damage could be effected by simply replacing the shielding member 28.

[0047] The provision of detachable shielding members 28 in the embodiment described above provides an initial increase in the cost of manufacture, in that additional tooling is needed to manufacture the shielding members 28. There is also an initial increase in the time spent during assembly, in order to fit the shielding members 28 to the body 12. However, it was realised that there would be an overall benefit, in that repair costs are minimised, because it is only necessary to replace a damaged shielding member, rather than a damaged bearer arrangement or drive mechanism. Various modifications can be made without departing from the scope of the invention as defined in the claims.

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO2008017798A [0002] [0011] [0031] [0032] [0033] [0035]
- EP1526058A1 [0003]
- US2005002766A1 [0004]
- DE202009009056U1 [0004]

P A T E N T K R A V

1. Vogn-palle-kombination (10) omfattende:

et legeme (12);

to par ruller (18, 22) til at muliggøre, at vogn-pallen kan bevæges langs underlaget;

5 et bærearangement (34, 36), som kan bevæges relativt til legemet mellem en underlagsindgrebstilstand, i hvilken bærearangementet kan gå i indgreb med underlaget, og en tilbagetrukket tilstand, i hvilken bærearangementet er tilbagetrukket;

en drivmekanisme til at bevæge bærearangementet (34, 36) mellem underlagsindgrebstilstanden og den tilbagetrukne tilstand;

10 beskyttelsesmiddel (28), som udstrækker sig rundt om rullerne (18, 22), hvor beskyttelsesmidlet er adskilt fra bærearangementet, og beskyttelsesmidlet (28) er aftageligt monteret på legemet (12);

hvor beskyttelsesmidlet (28) omfatter to par beskyttelseselementer på legemet, hvor beskyttelseselementerne er arrangeret på legemet, således at hver rulle er beskyttet af et
15 respektivt beskyttelseselement;

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vogn-palle-kombinationen omfatter to af nævnte bærearangementer (34, 36), hvor hvert bærearangement (34, 36) omfatter et aflangt bæreelement (38), som har modsatte ender og et respektivt forbindelseselement (40) ved hver af de nævnte ender til at forbin-
20 de bæreelementet (38) til drivmekanismen.

2. Vogn-palle-kombination ifølge krav 1, hvor rullerne er anbragt med mellemrum til hinanden med en første afstand, og hvor bærearangementet (34, 36) har en totallængde, som er en anden afstand, hvor den første afstand er større end den anden afstand.

3. Vogn-palle-kombination ifølge krav 1 eller 2, hvor hvert beskyttelseselement omfatter et første og andet beskyttelsesafsnit (30, 32), der er arrangeret i det væsentlige retvinklet på hinanden, hvor vogn-palle-kombinationen (10) ydermere omfatter fastgørelses-
25 seslementer til at fastgøre hvert beskyttelseselement (28) til legemet (12), således at hvert beskyttelseselement udstrækker sig rundt om den respektive rulle (18, 22), og hvor fastgørelseselementerne udstrækker sig gennem det respektive beskyttelseselement til
30 legemet.

4. Vogn-palle-kombination ifølge krav 2 eller 3, hvor ét par af rullerne (18, 22) er anbragt ved ét endekområde af legemet (12) og det andet par er anbragt ved det modsatte endekområde af legemet.

5. Vogn-palle-kombination ifølge et hvilket som helst af de foregående krav, hvor ét
35 af bærearangementerne er anbragt mellem ét par ruller (18, 22), og det andet bærearangement er anbragt mellem det andet par ruller (18, 22).

6. Vogn-palle-kombination ifølge et hvilket som helst af de foregående krav, hvor forbindelseselementerne (40) forbinder bæreelementet til drivmekanismen, og hvor hvert forbindelseselement omfatter et i det væsentlige fladt element, som udstrækker sig opad-

rettet fra bæreelementet.

7. Vogn-palle-kombination ifølge et hvilket som helst af de foregående krav omfattende en vogn, som kan konverteres til en palle ved at bevæge bærearangementet (34, 36) til underlagsindgrebstilstanden, hvor drivmekanismen er konfigureret til at løfte rullearrangementet (18, 22) fra underlaget, når bærearangementet er i underlagsindgrebstilstanden.

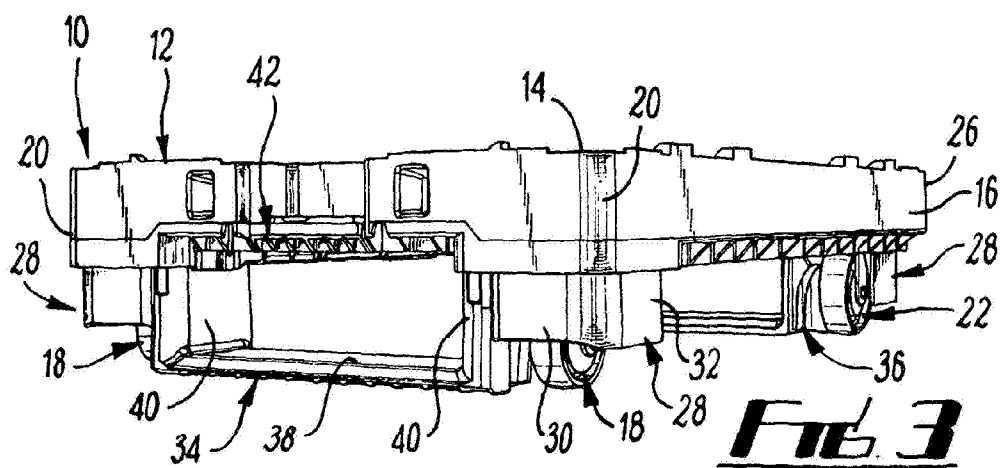
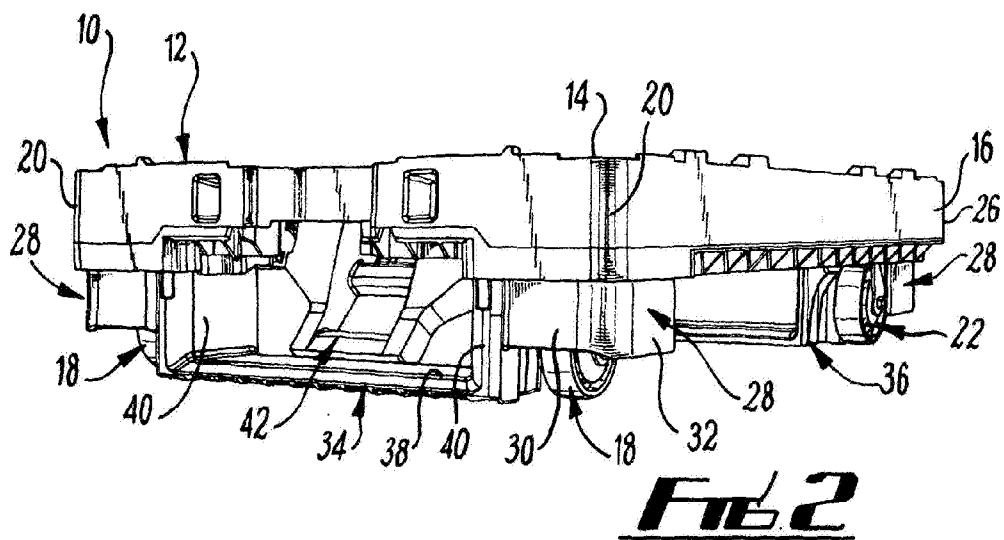
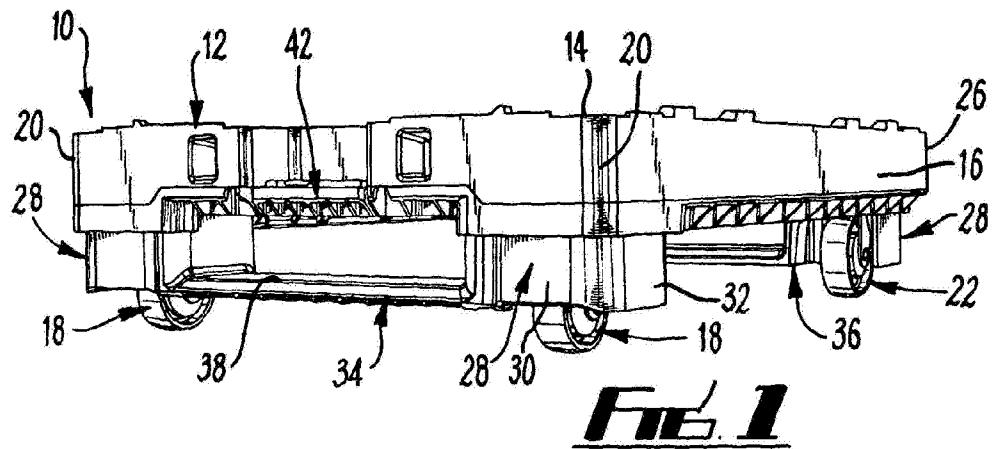
8. Vogn-palle-kombination ifølge et hvilket som helst af de foregående krav, hvor et betjeningselement (42) er tilvejebragt på drivmekanismen til at betjene drivmekanismen, hvor betjeningselementet omfatter en arm, og hvor betjeningselementet kan bevæges mellem en virksom position, i hvilken bærearangementet (34, 36) kan låses i underlagsindgrebstilstanden eller i den tilbagetrukne tilstand, og en uvirksom tilstand.

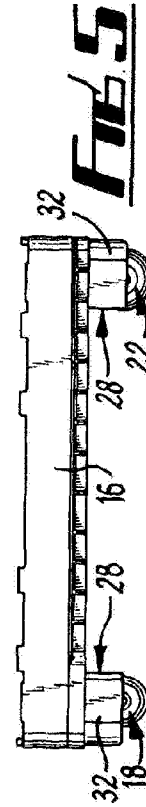
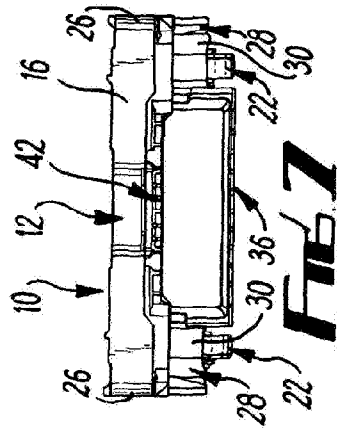
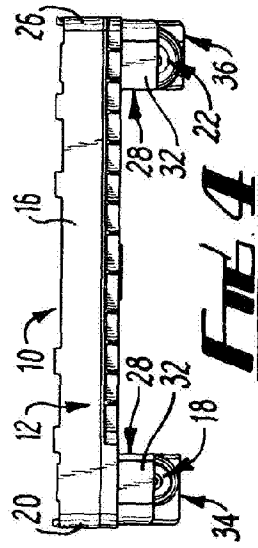
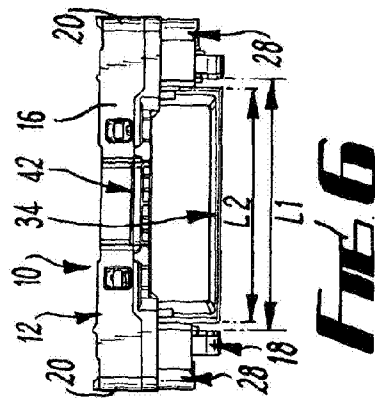
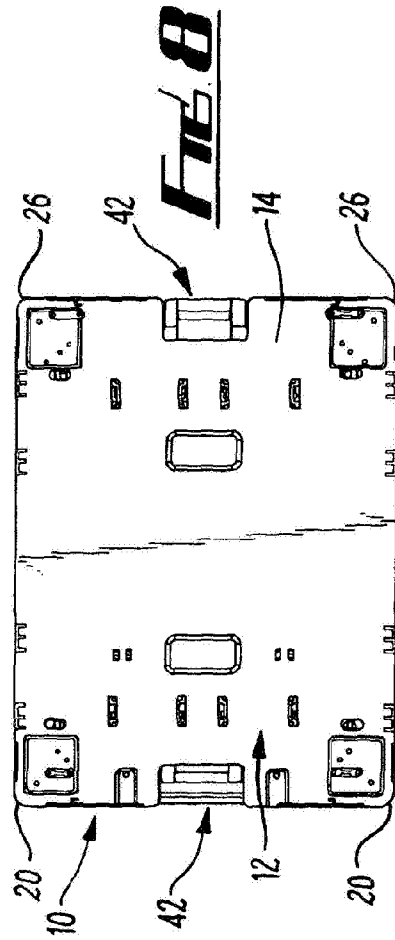
9. Vogn-palle-kombination ifølge krav 8, hvor to af betjeningselementerne (42) er tilvejebragt til at betjene drivmekanismen, hvor hvert betjeningselement er tilvejebragt ved en respektiv modsat ende af legemet (12), og hvert betjeningselement omfatter en arm, og hvor hvert betjeningselement kan bevæges mellem en virksom position, i hvilken bærearangementet kan låses i underlagsindgrebstilstanden eller i den tilbagetrukne tilstand, og en uvirksom tilstand.

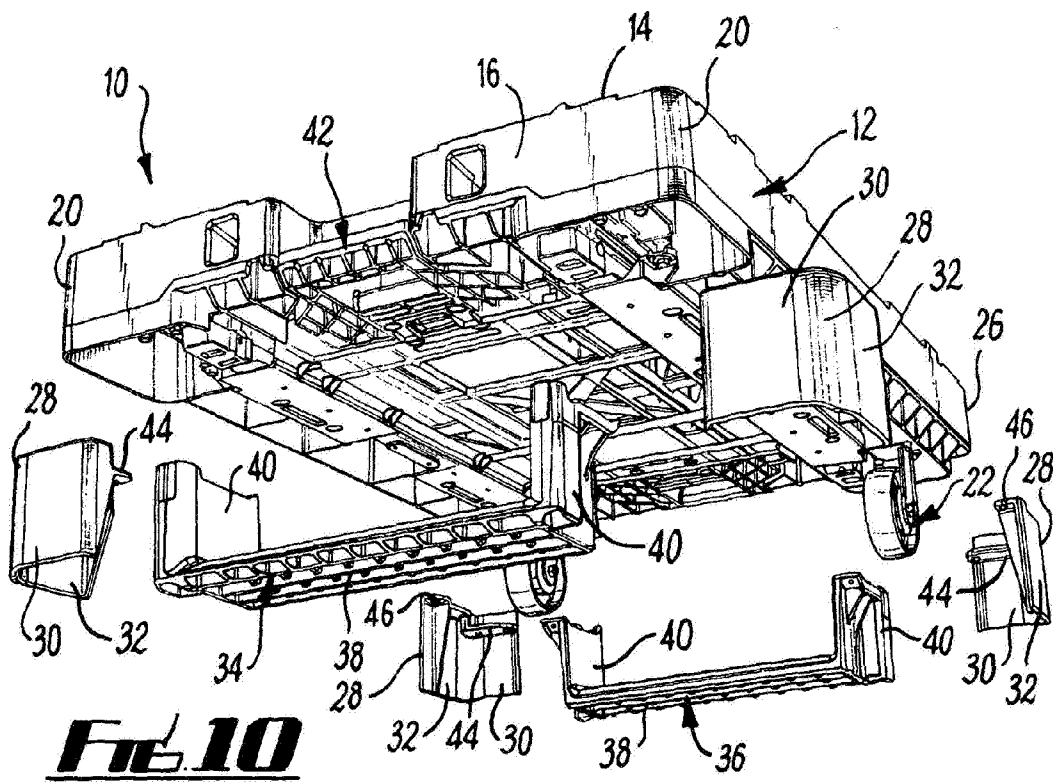
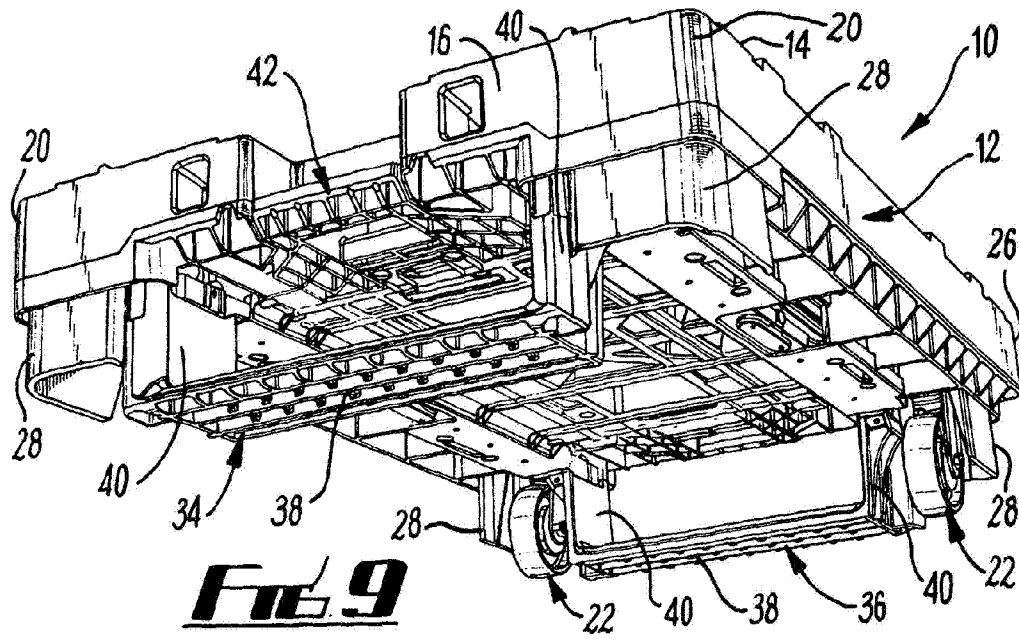
10. Vogn-palle-kombination ifølge et hvilket som helst af de foregående krav, hvor legemet (12) omfatter en platform (14), på hvilken lasten kan bæres, og hvor legemet ydermere indbefatter en krave (16), som udstrækker sig nedadrettet fra platformen, og hvor nævnte, eller hvert, bærearangement er tilvejebragt inden for kraven.

11. Vogn-palle-kombination ifølge et hvilket som helst af de foregående krav omfattende to bærearangementer (34, 36), hvor hvert bærearangement er tilvejebragt ved en respektiv modsat ende af legemet (12).

DRAWINGS







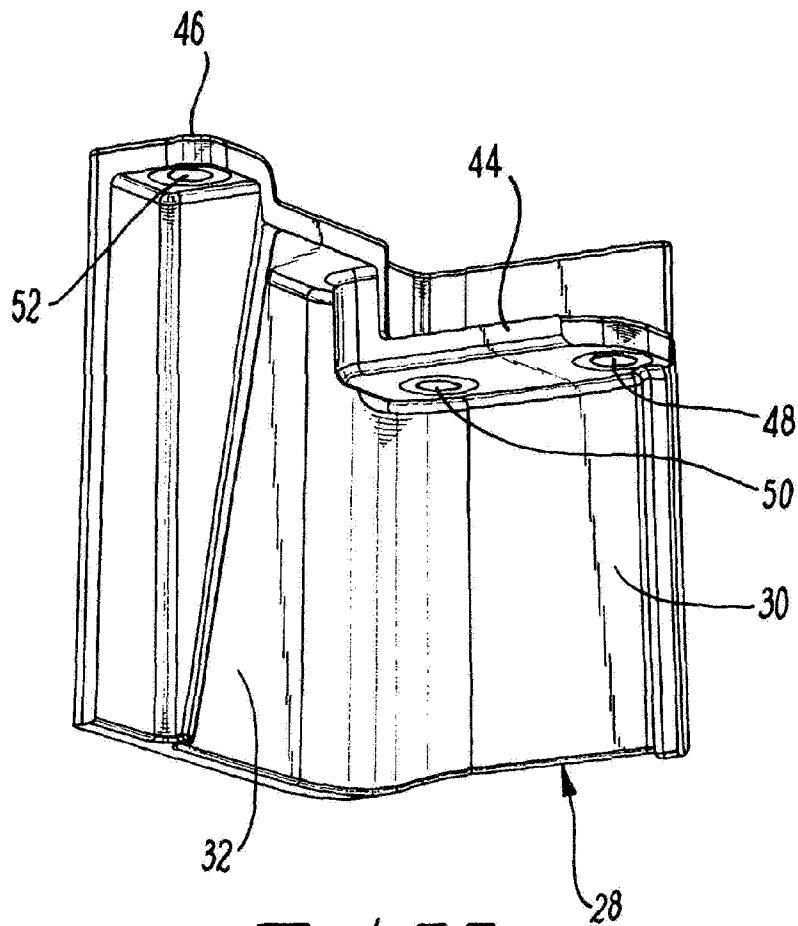


FIG. 11