

**ATTACHABLE FORKLIFT FRAME AND METHOD OF USING THE
SAME**

FIELD OF INVENTION

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The present invention relates to a spreader and a method for lifting and transporting goods using a forklift, particularly although not solely to a spreader and a method for lifting and transporting sheet material using a forklift.

10 **BACKGROUND**

Forklifts have been widely used to transport goods from one place to another. Most forklifts are equipped with a pair of forks for lifting and transporting goods. The narrow forks of the forklifts are at times inadequate in lifting and
15 transporting large sized or oversized goods, for example sheet of material.

In a conventional method for transporting large sheet material, a trailer is used instead. The forklift is used to lift the sheet of material onto the trailer on which the sheet material is to be transported. The forklift is then used again to lift
20 the sheet material for unloading the sheet material from the trailer. When the sheet material is lifted by the forklift, bending of the sheet material occurs as the narrow forks of the forklift are unable to support the large sheet material. Bending that occurs during loading and unloading of the sheet material may damage the sheet material. Further, when lifting the sheet material using this conventional method,
25 care must be taken to ensure that the load is distributed equally at both sides of the forks otherwise the sheet material may not remain on the forks, or be unsteady and hinder the lifting operation of the sheet material.

Forklifts with forks that are adjustable for widening the area between the
30 pair of forks and therefore extending the area onto which the sheet of material is

placed, can be used to lift and transport the sheet material. However, when the sheet material is loaded onto the extended forks, the sheet material tends to extend beyond the extended area laterally and when a substantially portion of the sheet of material is extended, bending of the sheet material occurs. The area extended by the forks is not wide enough to support a substantial surface area of the large sized sheet material. When bending of the sheet materials occurs, the vertical lifting range of the forklift is sacrificed as the sheet material needs to be lifted higher above ground level to prevent the edges from touching the ground.

Various prior art devices, arrangements, adaptors and attachments have been devised to allow the use of conventional forklifts to lift, load and transport goods of all sizes and shapes. However, the known devices cannot effectively transport sheet material, as such devices is unable to support the large surface area of the sheet material. These devices also have complicated structures.

If is accordingly an object of the present invention to provide a spreader and a method for lifting and transporting goods, particularly sheet material, which addresses the abovementioned disadvantages or which will at least provide industry or the public with a useful choice.

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SUMMARY OF INVENTION

In a first aspect of the invention comprises a spreader for a forklift having a pair of forks for the lifting and transporting of oversized goods, said spreader comprising:

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a platform frame having a first elongated bar, a second elongated bar disposed parallel to the first elongated bar, a first side bar and a second side bar each extending from the first elongated bar to said second elongated bar to define a first area;

at least two channels extending from said first elongated bar parallel to and between said first and the second side bars; and

a support frame extending from said first elongated bar and perpendicular to said platform frame.

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Preferably said spreader further includes a means for securing said goods to said spreader, said means for securing comprising:-

a first member extending from said support frame towards said platform frame to

10 define a gap between said first member and said platform frame to receive said goods.

Preferably the means for securing is provided with a wedge removably positioned within said gap to secure said goods to said spreader.

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Preferably the means for securing further includes a second member extending from one end of said first member to said support frame.

Preferably said support frame includes at least one beam disposed within said support frame, said beam extending from said first elongated bar and is perpendicular to said platform frame.

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Preferably at least two beams are provided and said at least two beams each extends from said first elongated bar where said channels are situated.

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Preferably said platform frame further includes:-

at least one bracket extending from any one of said elongated bars to any one of said side bars within said first area,

Preferably said platform further includes at least one bracket extending from any one of said elongated bars to any one of said channels.

5 Preferably said spreader further includes a means to fasten said spreader to said forklift.

Preferably said means to fasten is a “L” shaped clamp disposed on said first elongated bar.

10 Alternatively said means to fasten is a “L” shaped clamp disposed on said beam of said support frame.

Preferably said oversized goods is sheet of material.

15 Preferably said oversized goods is sheet of steel.

In a second aspect of the invention comprises a method for lifting and transporting oversized goods such as sheet of material using a forklift having a pair of forks from first location to second location, said method comprising the steps
20 of:

attaching a spreader to said forklift;

lifting said goods at first location to create a space for receiving a part of said spreader,

loading said goods onto said spreader by moving said part of said spreader
25 through said space, said goods having a portion extending from said spreader when said goods is loaded onto said spreader; and

transporting said goods with said spreader to said second location;
engaging said extended portion of said goods with a means for unloading said goods by sliding said goods onto said second location.

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BRIEF DESCRIPTION OF DRAWINGS

The invention will be further described by way of example only and without intending to be limiting with reference to the following drawings, wherein

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Figure 1 is a perspective view of the spreader;

Figure 2 is a plan view of the platform frame of the spreader;

Figure 3 is a plan view of the support frame of the spreader; and

Figure 4 is a plan view of the securing means affixed to the support frame
10 of the spreader.

DETAILED DESCRIPTION

The present invention relates to a spreader 10 and a method for lifting and
15 transporting goods, particularly large sized or oversized goods such as sheet material 11, using a forklift 2.

The sheet material 11 to be carried can be of any suitable material, for example, a metal plate, a plastic sheet.

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The spreader 10 as shown in Figure 1 is designed for use with any standard forklift 2 having a pair of forks 4, 6. The spreader 10 comprises a platform frame 12 and a support frame 13. The platform frame 12 having a first and a second elongated bars 14, 15 positioned in opposing direction parallel to one another, a
25 first side bar 16 extending from one end of the first elongated bar 14 and a second side bar 17 extending from another end of the first elongated bar 14 to the corresponding ends of the second elongated bar 15 to form a rectangular frame structure. The platform frame 12 further includes at least two channels 18, 19 adapted to receive the forks 4, 6 of the forklift 2. The channels 18, 19 each extends
30 from the first elongated bar 14 to the second elongated bar 15 and are positioned

symmetrical about the center of gravity of the platform frame 12. The distance between the two channels 18, 19 is equal to the distance between the pair of forks 4, 6 of the forklift 2.

5 The dimensions of each channel 18, 19 are dependent on the dimensions of the forks 4, 6 of the forklift 2 that each channel engages with. Each channel 18, 19 has an internal height and an internal width that conform closely to the height and width of the forks 4, 6 of the forklift 2 to enable the spreader 10 to receive the
10 channels 18, 19. This provides a firm engagement between the spreader 10 and the forklift 2. Preferably, the internal height of the channels 18, 19 is 8 to 10 cm and the internal width of the channels 18, 19 is 25 cm.

 The platform frame 12 is made of steel or any other suitable material. It is
15 preferably made of suitable material of sufficient strength so as to be able to support the large mass of the sheet material 11. The platform frame 12 is of a size sufficient to support the sheet material 11 without causing the sheet material 11 to bend at both ends when the sheet material 11 is placed onto the platform frame 12. In the preferred form, the platform frame 21 has a length of 500 cm to 700 cm and
20 a width of 150 cm to 200 cm, more particularly, the platform frame is 700 cm by 170 cm.

 To reinforce the strengthen of the platform frame 12, brackets 20 are provided within an area 21 defined by the elongated bars 14, 15 and the side bars
25 16, 17 and positioned in the same plane as the platform frame 12. The brackets are disposed at corners where the elongated bars 14, 15 and the side bars 16, 17 are joined and at areas where the channels 18, 19 engage with the elongated bars 14, 15. In the preferred form, twelve brackets are provided and positioned as shown in Figure 2. Preferably the brackets 20 do not overlap each other. The brackets 20 can
30 also serve the purpose of reducing the surface areas defined by the channels 18, 19

and the side bars 16, 17 and the surface area defined by the two channels 18, 19, so as to prevent any part of the sheet material 11 from bending through the defined areas when the sheet material 11 is loaded onto the platform frame 12.

- 5 In an alternate form, at least one bracket 20 is provided at corners formed by the intersection between the channels 18,19 and the second elongated bar 15, outside the defined area 21.

10 The support frame 13 of the spreader 10 extends perpendicularly from one longitudinal edge of the first elongated bar 14 of the platform frame 12. The support frame 13 can be of any suitable configurations. Preferably, the height of the support frame 13 is within the range from 150 cm to 180 cm. The support frame 13 provides support to the platform frame 12 to prevent the platform frame 12 from topping off the forks 4, 6 of the forklift 2 due to the heavy weight of the
15 sheet material 11 when sheet material 11 is loaded onto the support frame 13. The support frame 13 is preferably reinforced by at least two beams 22 to support the structure of the support frame 13. In one configuration, at least four beams 22, 23 in the direction from which the support frame 13 extends from the platform frame 12 are provided, as shown in Figure 3.

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 The spreader 10 further includes a means for securing the sheet material 11 to the spreader 10. In the preferred form, the securing means comprises a tube 24 extending substantially perpendicular from the beam 22 towards the platform frame 12 and lies substantially parallel to the platform frame 12. The tube 24 and
25 the platform frame 12 define a gap 26 for accommodating suitable thickness of the sheet material 11. When the gap 26 is larger than the thickness of the sheet material 11 or a plurality of sheets material to be transported, the sheet material 11 is further secured to the spreader 10 by a wedge 28 (not shown). The wedge 28 is placed between the sheet material 11 and the tube 24 in such a manner that there is
30 no gap between the sheet material 11 and the tube 24. This secures the sheet

material 11 to the spreader 10 to prevent the sheet material 11 from sliding off the spreader 10 during transportation, especially when the forklift 2 is traveling on uneven ground.

5 The wedge 28 can be a wooden or metal block of any suitable size. It can be of any suitable height but not more than the height of the gap 26. The wedge 28 has a tapered surface on at least one side of the block to cater for varying thickness, for use with different thickness of the sheet material 11. In a secured positioned, the thickness of the wedge 28 plus the thickness of the sheet material
10 11 equal to the height of a gap defined by the tube 24 and the sheet material 11 when the sheet material 11 is placed onto the platform frame 12.

To prevent the tube 24 from bending after long use, a second tube 25 is provided. The second tube 25 extends from one end of the first tube 24 to the beam
15 22 to form a “V” shape structure with the first tube 24. The first tube 24 and the second tube 25 can be of a unitary unit or they can be of two parts affixed by suitable fastening means.

In an alternate form, the first tube 24 of the securing means can be replaced
20 with an elongated beam 30 or a plane 32 (not shown) with its longitudinal side running alongside the longitudinal edge of the support frame 13 proximate the platform frame 12. The width of the alternate securing means extends substantially perpendicular from the beam 22 towards the platform frame 12 and lies substantially parallel to the platform frame 12.

25 The first and second tubes 24, 25, the elongated beam 30 or the plane 32 can be welded to the beam 22 of the support frame 13 or it can be of an adjustable type that moves along the height of the beam 22 for accommodating different thickness of the sheet material 11.

The length of the first tube 24 and the widths of the elongated beam 30 and the plane 32 are less than the width of the platform frame 12. Preferably, the length of the first tube 24 and the widths of the elongated beam 30 and the plane 32 are within the range from 24 cm to 30 cm.

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The spreader 10 can be secured to the forklift 2 by securing devices such as clamps, bolts, chains, brackets, straps or other suitable means, depending on the types of forklift that is being used. In the preferred form, at least two "L" shaped clamps 29 are used. The "L" shaped end of the clamp 29 engages with a horizontal
10 bar 34 provided at the front of the forklift 2 from which the forks 4, 6 of the forklift 2 extends, to secure the spreader 10 to the forklift 2. The clamp 29 is provided on either the first elongated bar 14 of the platform frame 12 or at lower end of the beam 22 of the support frame 13. The clamp 29 is positioned within the width of the forklift 2 to enable the clamp 29 to engage with the horizontal bar 34
15 of the forklift 2.

The method of transporting the sheet of material is herein described as follow:-

20 The sheets material stack is first prepared for transportation by lifting the top sheet of material using any suitable lifting devices, such as a forklift 2, or manually if weight permits. At least one chock block is placed between the top sheet and the sheet material stack to create a space sufficient to receive the forks 4, 6 of the forklift 2.

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The spreader 10 of the present invention is then attached to the forklift 2. To attach the spreader 10, the forks 4, 6 of the forklift 2 engage with the respective channel 18, 19 of the spreader 10. Once the forks 2, 4 are fully engaged with the channels 18, 19, the spreader 10 is lifted. The spreader 10 may be secured to the
30 forklift 2 using securing devices before the spreader 10 is transported.

When the forklift 2 with the spreader 10 is in close proximity with the sheet material 11 to be lifted, the end of the platform frame 12 distant from the forklift 2 moves within the space until a substantial portion of the top sheet of material rests on the platform frame 12. For a more secured loading of the sheet material 11, the spreader 10 preferably moves until one edge of the sheet material 11 abuts with the support frame 13. In the preferred form, the sheet material 11 is loaded such that a suitable portion of the sheet material 11 extends from the longitudinal side of the platform frame 12 so as to aid in unloading the sheet material 11.

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The sheet material 11 is secured to the spreader 10 by a wedge 28. The wedge 28 is inserted between the first tube 24 of the securing means and the sheet material 11 in such a manner so as to fit tightly between the first tube 24 and the sheet material 11. Thus the sheet material 11 is secured between the first tube 24 and the platform frame 12.

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After the sheet material 11 is secured to the spreader 10, the forklift 2 is driven to an unloading bay. A sliding track with rollers is provided at the unloading bay. The extended portion of the sheet material is placed onto the sliding track. One end of the sliding track is elevated such that when the sheet material 11 is first placed onto the elevated end of the sliding track, the rollers of the sliding track rolls the sheet material 11 towards a lower end of the sliding track to unload the sheet material 11 fully onto the unloading bay.

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In an alternate form, instead of using a sliding track, an upright standing rack 36 may be provided at an edge of the unloading bay where the forklift 2 unloads the sheet material 11. When the forklift 2 approaches the unloading bay, the extended portion of the sheet material rests on the top end of the upright standing rack 36. As the forklift 2 moves closer to the unloading bay, the forklift 2 pushes the sheet material 11 forward until a stage where a portion of the sheet

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material 11 that is now hanging above the unloading bay weighs down onto the unloading bay. The height difference between the tip of the rack 36 and the unloading bay allows the whole of sheet material 11 to slide down from the spreader 10 to the unloading bay.

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The upright standing rack 36 may be of any form as long as it is tough enough to withstand the weight of the sheet material 11. The upright standing rack 36 may be an integral part of the unloading bay or it may be a rack separate from the unloading bay. The tip of the rack is preferably 30 to 80 cm above top surface of the unloading bay such that it is sufficient to allow the sheet material 11 to slide onto the unloading bay when the extended portion of the sheet material 11 is placed onto the tip of the rack.

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The foregoing describes the invention including preferred forms thereof. Alterations and modifications as will be obvious to those skilled in the art are intended to be incorporated in the scope hereof as defined by the accompanying claims.

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What is claimed is:

1. A spreader for a forklift having a pair of forks for the lifting and transporting of oversized goods, said spreader comprising:
 - 5 a platform frame having a first elongated bar, a second elongated bar disposed parallel to the first elongated bar, a first side bar and a second side bar each extending from the first elongated bar to said second elongated bar to define a first area;
at least two channels extending from said first elongated bar parallel to and
10 between said first and the second side bars; and
a support frame extending from said first elongated bar and perpendicular to said platform frame.
2. A spreader as claimed in claim 2, wherein said spreader further includes a
15 means for securing said goods to said spreader, said means for securing comprising:-
 - a first member extending from said support frame towards said platform frame to
define a gap between said first member and said platform frame to receive
20 said goods.
3. A spreader as claimed in claim 2, wherein the means for securing is provided with a wedge removably positioned within said gap to secure said goods to said spreader.
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4. A spreader as claimed in claim 3, wherein the means for securing further includes a second member extending from one end of said first member to said support frame.

5. A spreader as claimed in any one of the preceding claims, wherein said support frame includes at least one beam disposed within said support frame, said beam extending from said first elongated bar and is perpendicular to said platform frame.

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6 A spreader as claimed in claim 5, wherein at least two beams are provided and said at least two beams each extends from said first elongated bar where said channels are situated.

10 7. A spreader as claimed in any one of the preceding claims, wherein said platform frame further includes:-

at least one bracket extending from any one of said elongated bars to any one of said side bars within said first area.

15 8. A spreader as claimed in claim 7, wherein said platform further includes at least one bracket extending from any one of said elongated bars to any one of said channels.

9. A spreader as claimed in any one of the preceding claims wherein said
20 spreader further includes a means to fasten said spreader to said forklift.

10. A spreader as claimed in claim 9 wherein said means to fasten is a "L" shaped clamp disposed on said first elongated bar.

25 11. A spreader as claimed in claim 9 wherein said means to fasten is a "L" shaped clamp disposed on said beam of said support frame.

12. A spreader as claimed in any one of the preceding claims wherein said oversized goods is sheet of material.

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13. A spreader as claimed in any one of the preceding claims wherein said oversized goods is sheet of steel.

14. A method for lifting and transporting oversized goods such as sheet of material using a forklift having a pair of forks from first location to second location, said method comprising the steps of:-

attaching a spreader to said forklift;

lifting said goods at first location to create a space for receiving a part of said spreader,

10 loading said goods onto said spreader by moving said part of said spreader through said space, said goods having a portion extending from said spreader when said goods is loaded onto said spreader;

transporting said goods with said spreader to said second location; and

engaging said extended portion of said goods with a means for unloading
15 said goods by sliding said goods onto said second location.