

Sept. 9, 1958

W. F. GEHRING

2,851,182

ATTACHMENT FOR MATERIAL HANDLING EQUIPMENT

Filed July 10, 1956

5 Sheets-Sheet 1

FIG. 1

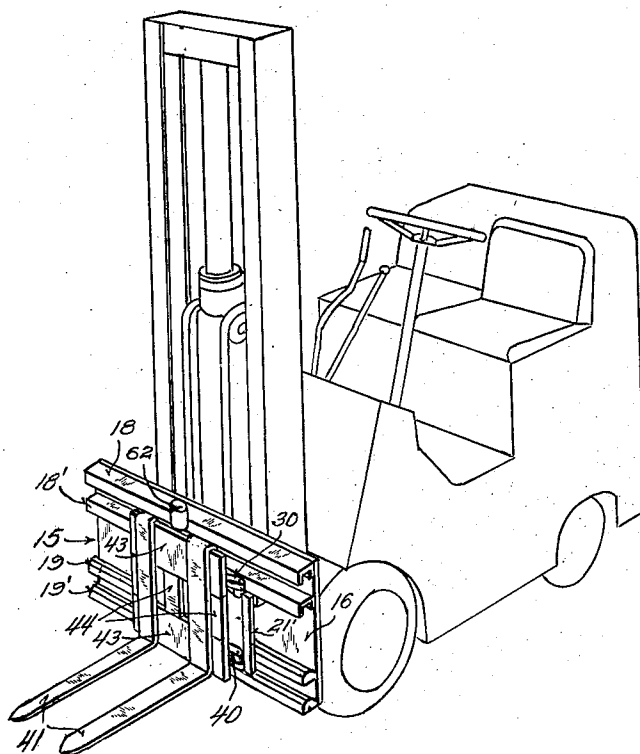


FIG. 2

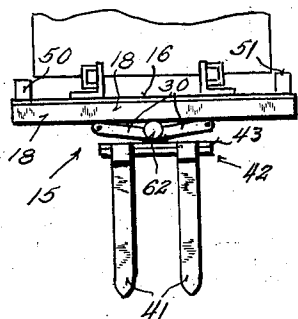


FIG. 3

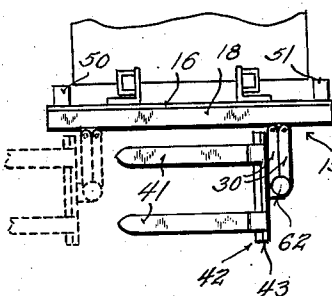
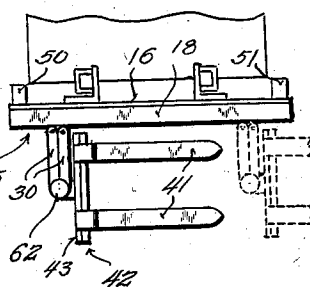


FIG. 4



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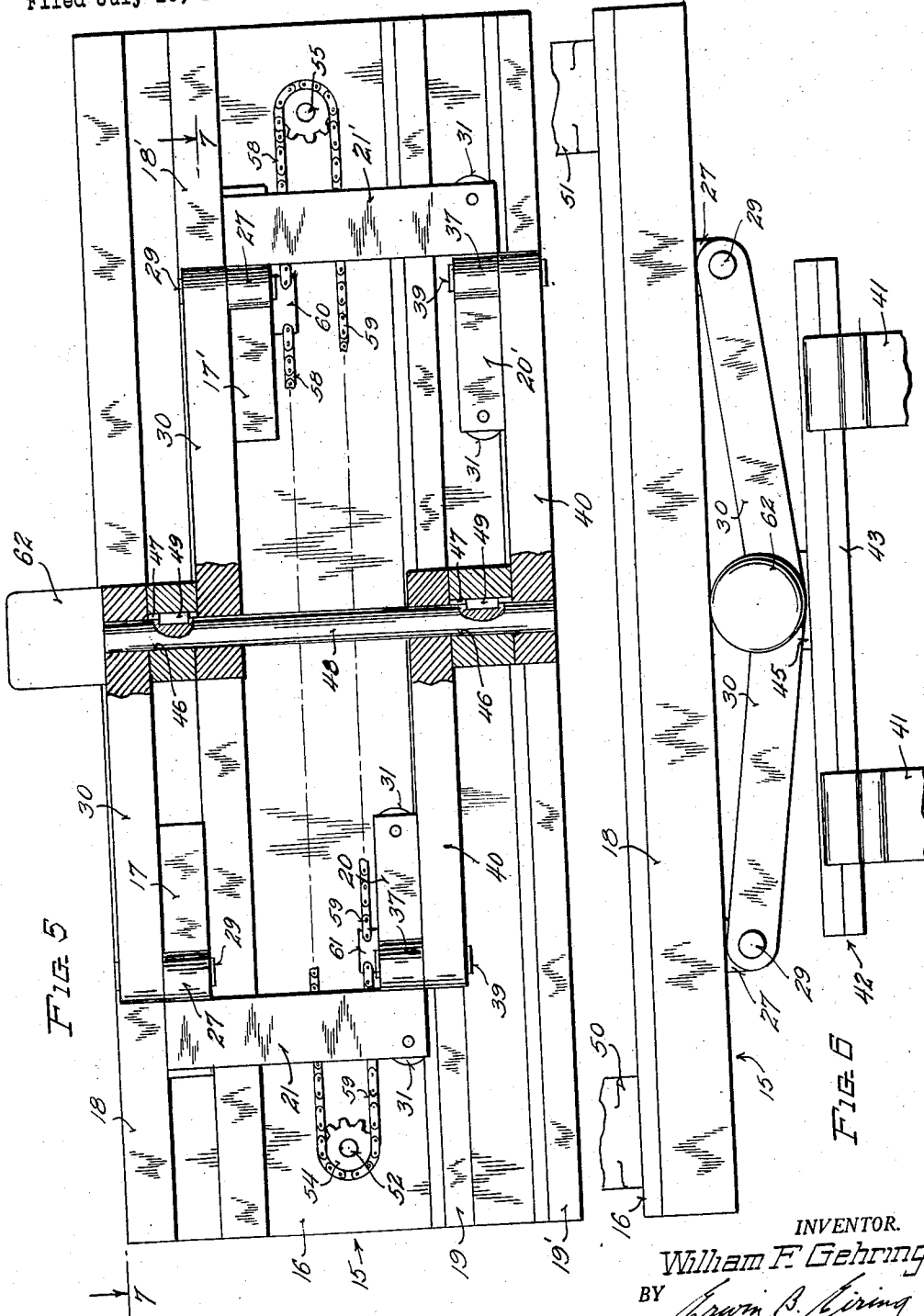
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ATTACHMENT FOR MATERIAL HANDLING EQUIPMENT

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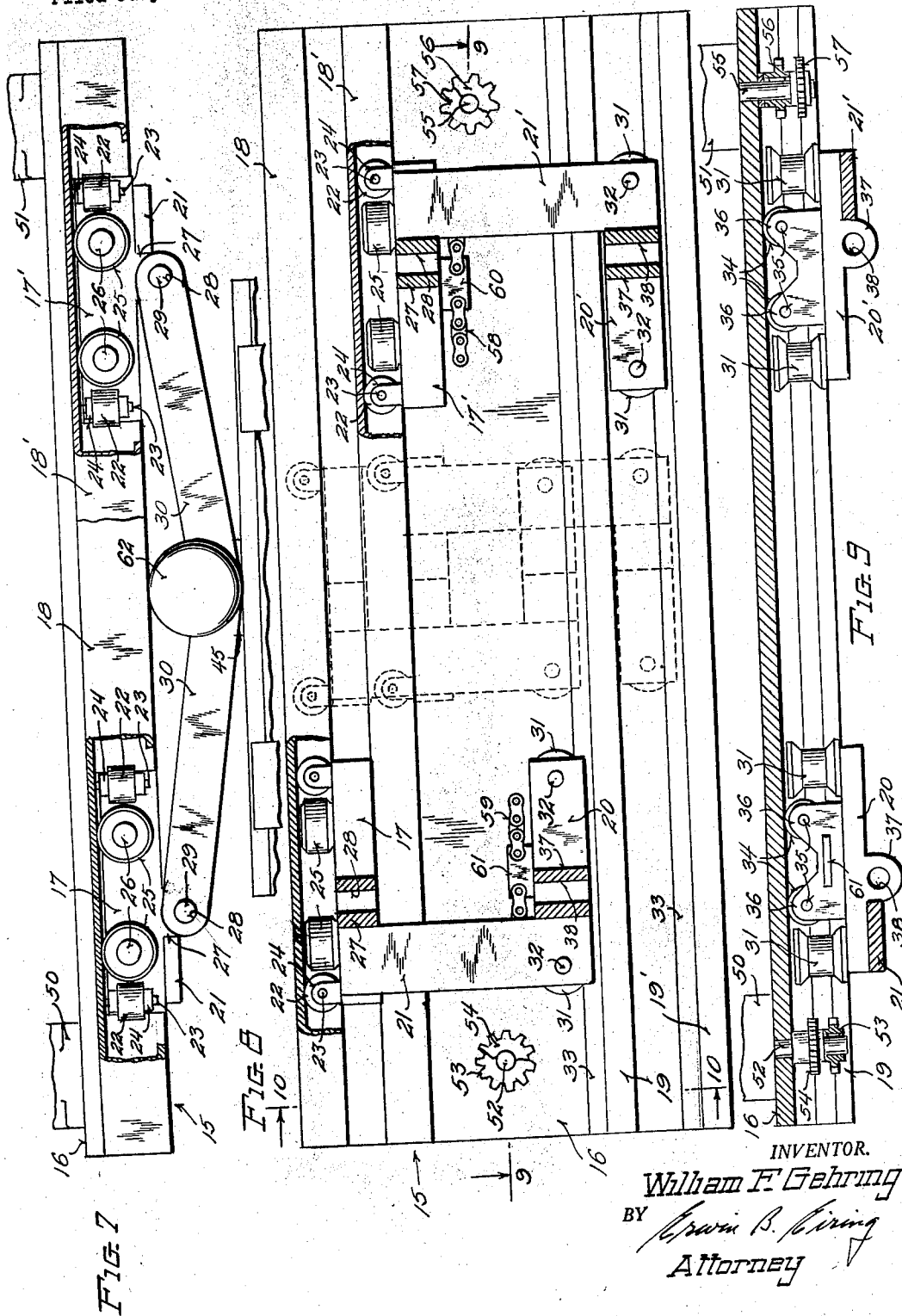
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Filed July 10, 1956

ATTACHMENT FOR MATERIAL HANDLING EQUIPMENT

2,851,182

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Sept. 9, 1958

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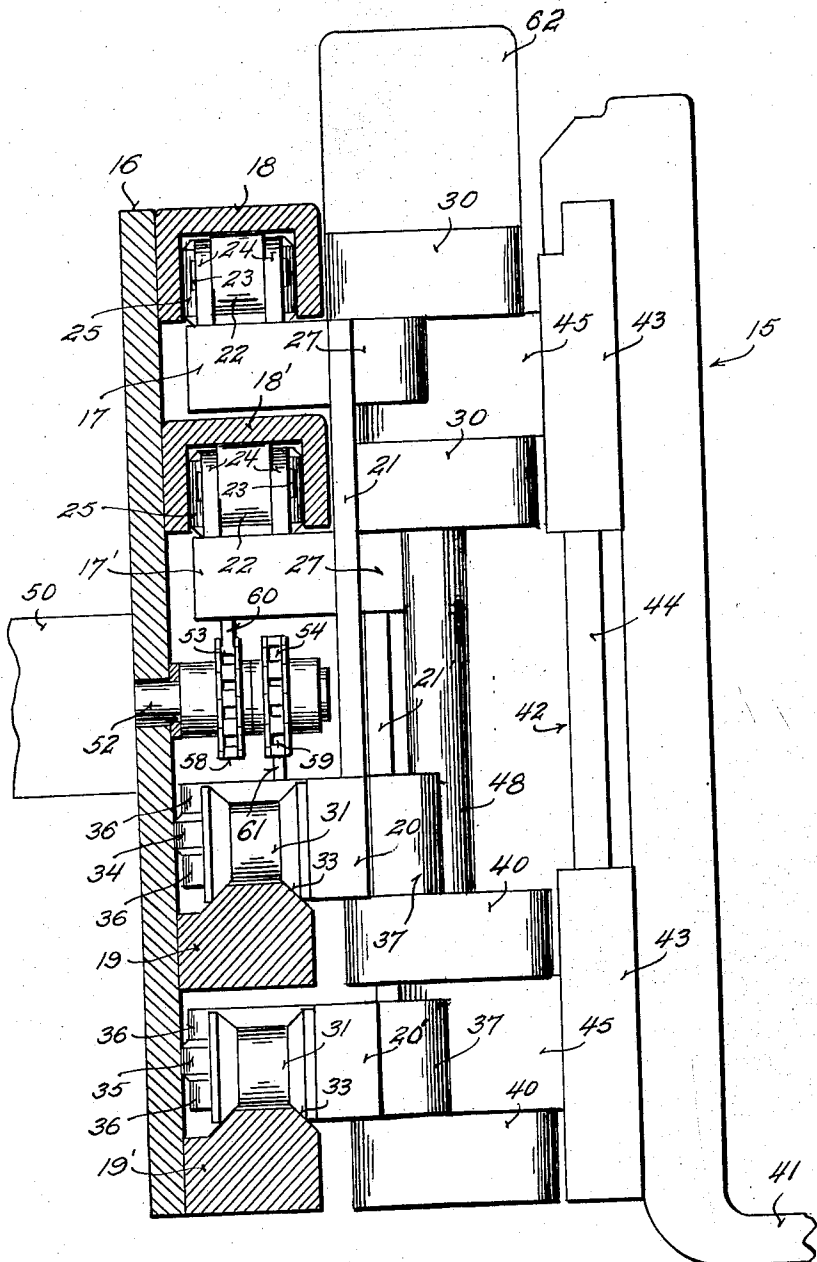
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ATTACHMENT FOR MATERIAL HANDLING EQUIPMENT

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5 Sheets-Sheet 4

Fig. 10



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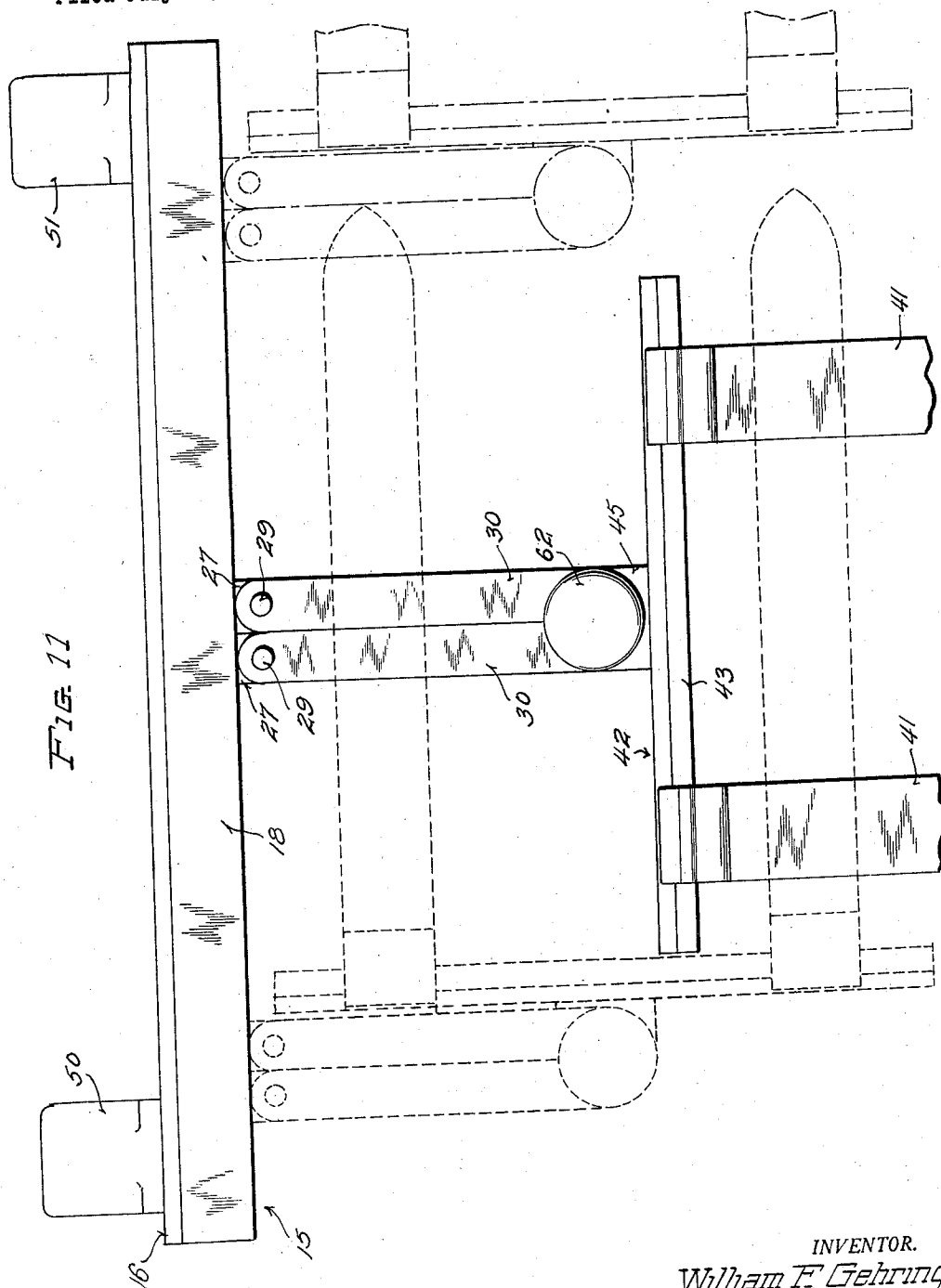
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ATTACHMENT FOR MATERIAL HANDLING EQUIPMENT

Filed July 10, 1956

5 Sheets-Sheet 5



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2,851,182

ATTACHMENT FOR MATERIAL HANDLING EQUIPMENT

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Application July 10, 1956, Serial No. 597,004

12 Claims. (Cl. 214-730)

This invention relates to material handling equipment and more particularly to an attachment therefor adapted for use to facilitate the picking up of loads selectively from the front or either side of the equipment and the selective discharging of the loads from the front or either side of the equipment.

While the present invention is intended primarily for use in conjunction with industrial trucks of the elevating fork lift type, it is to be understood that it is readily adaptable for use in conjunction with industrial trucks of the non-elevating type and also various other types of material handling equipment.

Many industrial trucks and similar material handling equipment have been provided with various types of load carriers which are movably mounted on the equipment. For the most part, the devices now in common use are designed as special purpose machines and not infrequently their adaptability for general purpose use is materially curtailed.

To the best of applicant's knowledge, each of these devices now in general use has certain inherent shortcomings which limit the scope of use of the devices.

The primary object of the present invention resides in the provision of a new and improved attachment for material handling equipment which will permit the operator to selectively pick up loads from the front or either side of the equipment, transport the load in a centrally disposed position on the attachment and unload or discharge the load selectively either at the front or either side of the equipment.

The further object of the present invention resides in the provision of a new improved attachment for a piece of material handling equipment which includes a load carrier adapted to be swung horizontally through an angle of 180° to position the load carrier at any desired horizontal angular position with respect to the material handling equipment to permit the loading or unloading of the same from one or the other side of the equipment or any position intermediate the two extreme positions.

Another object of the present invention resides in the provision of a new and improved attachment for material handling equipment which includes a dirigibly mounted load carrier that may be moved laterally to facilitate the centralizing of the load on the attachment or the picking up or discharging of a load disposed ahead or beyond one or the other of the sides of the material handling equipment.

Another object of the present invention resides in the provision of a new and improved attachment for material handling equipment which includes a plurality of members having one of their ends pivotally mounted on said load carrier and their other ends pivotally mounted on laterally spaced carrier blocks adapted for joint transverse movement toward each other on a track to effect the forward movement of the load carrier to permit its rotation through an angle of 90° in either direction from

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a straight forward position to one in which the load carrier is selectively directed toward either side of the equipment. The carrier blocks may then be moved laterally in unison along a track in order to centralize the supported load to facilitate its transportation or to project the load carrier selectively beyond either side of the equipment to facilitate the loading or unloading of the carrier from a lateral position beyond the sides of the material handling equipment.

Another object of the present invention resides in the provision of means for effecting the rotating movement of the dirigibly mounted load carrier with respect to its supporting members.

Another object of the present invention resides in the provision of power operated means for effecting simultaneous movement of the carrier blocks in opposite directions along the track to effect the forward movement of the dirigibly mounted load carrier to a position in which the same may be selectively rotated through an included angle of substantially 180° to direct the load carrier to any desired angular position with respect to the material handling equipment.

Another object of the present invention resides in the provision of power means for effecting the unitary lateral movement of the guide blocks selectively in either direction along the track to either centralize the load to facilitate its being transported from one place to another or to project substantially all of the load carrier beyond extremity of the track to facilitate the loading or unloading of the carrier from a position disposed at one or the other side of the material handling equipment.

A further object of the present invention resides in the provision of operator controlled means for effecting the desired movements of the several cooperating elements of the device in a manner which will permit the picking up of a load disposed at the front or either side of the equipment, moving the load to a central transporting position immediately in front of the truck, and discharging the load selective at the front or either side of the equipment or in any position intermediate these extreme positions.

Other objects and advantages of the present invention will become apparent from the following description of its illustrative embodiments:

In the drawings:

Figure 1 is a perspective view of a fork lift truck provided with an attachment embodying the teachings of the present invention;

Fig. 2 is a diagrammatic top plan view of the truck and dirigible attachment illustrating the straight forward loading or unloading position of the load carrier;

Fig. 3 is a diagrammatic top plan view, similar to Fig. 2, showing the load carrier, in full lines, in a centrally disposed load carrying position and illustrating, in dotted lines, one extreme position of the load carrier wherein the same may be loaded or discharged at a position beyond one side of the truck;

Fig. 4 is a diagrammatic top plan view, similar to Fig. 2, showing the load carrier in full lines, in a centrally disposed load transporting position and illustrating, in dotted lines, the extreme displacement of the load carrier to pick up or discharge a load from the side of the truck opposite to that shown in Fig. 3;

Fig. 5 is an enlarged front elevational view of the dirigibly mounted attachment with the pivotal mounting of the load carrier shown in section and the remainder thereof omitted for the purpose of more clearly illustrating the means for effecting its movement with respect to the material handling equipment;

Fig. 6 is a top plan view of the structure shown in Fig. 5;

Fig. 7 is a horizontal sectional view, taken substantially on the line 7—7 of Fig. 5, showing the laterally movable carrier blocks in top plan;

Fig. 8 is a front elevational view of the mounting plate of the attachment with its associated elements some of which are partially sectioned to illustrate in front elevational view the form of the laterally movable carrier blocks;

Fig. 9 is a horizontal sectional view, taken on the line 9—9 of Fig. 8, showing the lower portion of the laterally movable carrier blocks together with means for moving the same;

Fig. 10 is an enlarged vertical sectional view, taken on the line 10—10 of Fig. 8, showing the mounting and guide means for laterally movable carrier blocks on which the remaining portion of the load carrying mechanism is pivotally mounted; and

Fig. 11 is a top plan view of the attachment showing the load carrier, in full lines, moved forwardly to a position wherein it may be rotated in a horizontal plane selectively to one or the other side of its supporting members to swing the load to one or the other side of the supporting members; the dotted line showing indicates the unitary movement of the carrier blocks to position the load centrally of the material handling equipment to facilitate its transportation; and the dot-dash showing indicates the unitary lateral movement of the carrier blocks to an extreme position wherein substantially all of the load carrier projects beyond the side of the material handling equipment to facilitate the loading or unloading of the carrier selectively from one or the other side of the material handling equipment.

Before entering into a detailed description of the structure and operation of the attachment for material handling equipment, it is deemed advisable to emphasize the several advantages of the present invention over other devices which are now in common use.

With the cost of warehousing space at the high level that it has now reached, it is imperative that all available space be used to its full capacity. Currently, it is common practice to provide aisles or lanes having a width in excess of nine feet in order to provide adequate space within which industrial trucks may be manipulated so that they may be nosed into bins or racks located at one or the other side of the aisle for the purpose of loading or unloading material which is to be transported to or from the racks or bins. The width of the aisles now required for truck travel and manipulation frequently represents considerably more floor space than that occupied by the racks or bins for storage purposes.

By utilizing the device embodying the teachings of the present invention, it is possible to materially reduce the required width of the aisle and thereby gain considerable useable storage space which has hitherto not been available.

It has been found that an aisle having a width of six feet is adequate when an industrial truck is equipped with the attachment of the present invention. In addition to increasing the available storage space for any given area by permitting more rows of racks or bins, the present invention provides a simple, and effective means by which loads may be placed in or removed from storage racks or bins selectively from either side of the industrial truck without requiring the time or effort to move the truck from its forward path of travel along the aisle. By utilizing a device constructed in accordance with the teachings of the present invention, it is possible to handle, store, and transport material with a facility which has hitherto been unknown. The marked savings in time, labor, and expense accomplished by the use of a device embodying the teachings of the present invention is of such magnitude as to effect a considerable reduction in the cost of the operation of the warehouse facilities of a plant.

The marked savings in the handling and storing of material is directly attributable to the basic concept of the

present invention which provides a simple and effective means for picking up or depositing the material selectively from either side of the industrial truck without requiring the maneuvering of the truck from its normal straight forward path of movement along the aisle.

Referring more particularly to Fig. 1 of the accompanying drawings, it will be noted that the device of the present invention has been applied to a standard fork lift truck. To prepare the standard fork lift truck to receive the attachment of the present invention, the load carrying forks and associated members are removed from the front end of the truck, leaving the usual roller carriages within the upright channels of the truck.

The device of the present invention comprising an attachment 15 including a mounting plate 16 fixedly secured in any suitable manner upon the laterally spaced vertically movable roller carriages of the material handling truck. The mounting plate 16 has a width which is slightly greater than the over-all width of the industrial truck and a height which is sufficient to provide an adequate surface on which transversely disposed parallel guide means are applied to permit lateral movement of a pair of oppositely formed carrier blocks or carriages 17 and 17' of the attachment 15 throughout substantially the entire length of the mounting plate 16. In the present instance, the guide means for carriages 17 and 17' respectively comprise a pair of vertically spaced transversely extending parallel disposed inverted U-shaped channel members 18 and 18' located adjacent the upper portion of the mounting plate 16. Additional guide means in the form of a pair of vertically spaced transversely extending parallel disposed rails 19 and 19' are secured in any suitable manner on the lower portion of the front face of the mounting plate 16. The rails 19 and 19' provide a track on which a pair of oppositely formed carrier blocks or carriages 20 and 20' are supported and guided for lateral movement. It is to be understood that the pair of channel members 18 and 18' and the pair of rails 19 and 19' are disposed in parallel relationship to insure smooth and easy travel of the pairs of carrier blocks or carriages 17 and 17' respectively in the channel members 18 and 18' and the carriers 20 and 20' on the respective rails 19 and 19'.

The upper and lower carrier blocks 17 and 20 are located in fixed spaced parallel relationship by being secured to a vertically disposed member 21. The upper and lower carrier blocks 17' and 20' are similarly fixedly secured in parallel vertically spaced relationship on a member 21'.

Each of the upper carrier blocks 17 and 17' is provided with a pair of laterally spaced rollers 22 journaled for free rotation in a common vertical plane on shafts 23 mounted in laterally spaced ears 24 projecting upwardly from the top surface of the carriers 17 and 17'. The peripheral surfaces of the laterally spaced rollers 22 are disposed in rolling contact with the inner base surface of the inverted U-shaped channel members 18 and 18' to provide a simple and effective means by which lateral canting movement of the upper carrier blocks 17 and 17' is precluded. A second pair of laterally spaced rollers 25 are journaled for rotation in a horizontal plane on vertically disposed shafts 26 projecting upwardly from the top surface of the carriages 17 and 17'. The peripheral surfaces of the rollers 25 engage and are in rolling contact with the inner surface of the outer flange of the inverted U-shaped channel members 18 and 18' to preclude any forward canting movement of the carriages 17 and 17'. Each of the upper carriages 17 and 17' is further provided with a boss 27 which projects forwardly from the carriers 17 and 17'. Each boss 27 is provided with a vertically disposed bore 28 adapted to receive a pin 29 on which one end of a horizontally disposed arm or link 30 is swingably mounted for a purpose to be hereinafter more specifically described.

Each of the lower carriages 20 and 20' is provided

with a pair of laterally spaced vertically disposed load supporting rollers 31 which are journaled for free rotation on stub shafts 32 projecting from the rearward surfaces of the carriages 20 and 20'. The peripheral surfaces of the load supporting rollers 31 are preferably grooved in a manner to cooperate with tapered surfaces 33 formed on the rails 19 and 19' to insure a smooth-rolling contact therewith. The lateral spacing with the load supporting rollers 31 serves to provide a simple and effective means by which lateral canting movement of the carriages 20 and 20' is precluded. A second pair of laterally spaced rollers 34 are journaled on vertically disposed shafts 35 which are mounted in spaced ears 36 projecting rearwardly from the rear surface of the carriages 20 and 20'. The laterally spaced rollers 34 are disposed in a rolling contact with the front surface of the mounting plate 16 to provide a simple and effective means for preventing the vertical canting movement of the carriages 20 and 20'. Each of the carriages 20 and 20' are provided with a boss 37 which projects forwardly from the front surface of the carriages 20 and 20'. A vertically disposed bore 38 formed in the boss 37 is adapted to receive a pin 39 on which one end of an arm or link 40 is mounted for swinging movement in horizontal plane for a purpose to be hereinafter specifically described.

The load carrying portion of the attachment 15 includes standard lifting forks 41 which originally constituted a portion of the industrial truck to which the device of the present invention is applied. The forks 41 are removably attached in laterally spaced parallel relationship on a vertically disposed member 42 including a pair of vertically spaced horizontally extending plates 43 fixedly attached to spacer elements 44. Each of the plates 43 is provided with a boss or ear 45 projecting rearwardly from the vertically disposed plates 43.

The bosses 45 are each provided with a vertically disposed bore 46 and having a keyway 47. The bores 46 in the bosses 45 lie in vertical alignment to receive a shaft 48 which includes keys 49 to provide a driving connection between the shaft 48 and the vertically disposed member 42 for a purpose to be hereinafter more specifically described.

The upper portion of the load carrier of the attachment 15 is connected with the movable carriages 17 and 17' by means of the arms or links 30. The lower portion of the load carrier of the attachment 15 is connected to the movable carriages 20 and 20' by means of the arms or links 40. As previously stated one end of each of the arms or links 30 are mounted for horizontal swinging movement on the pin 29 secured in each boss 27 and, in like manner, one end of each of the arms or links 40 are mounted for horizontal swinging movement on the pin 39 in each boss 37. The free ends of each of the arms 30 and 40 are receivable on the shaft 48 to provide the load supporting connection between the several carriages and the load carrier portion of the attachment 15. It should be noted at this point, that the rigid connection between the pairs of movable carriages disposed on either side of the vertical center of the attachment and the arms 30 and 40 disposed on either side of the vertical center of the attachment provide a structure of adequate strength to support the load carrying portion of the attachment 15.

Suitable means is provided for effecting controlled movement of the connected carriages 17 and 20 and 17' and 20' normally disposed at opposite sides of the vertical center of the attachment 15. A pair of independently mounted reversible motors 50 and 51 which may be of any desired type such as electric or hydraulic are mounted upon the rear face of the plate 16 adjacent its opposite ends. The motor 50 disposed adjacent one end of the mounting plate 16 includes a drive shaft 52 which projects forwardly through the mounting plate 16 and carries a pair of chain sprockets 53 and 54. The

sprocket 53 is keyed to the drive shaft 52 of the motor 50. The motor 51 disposed adjacent the other end of the mounting plate 16 includes a drive shaft 55 which projects forwardly through the mounting plate 16 and carries a pair of chain sprockets 56 and 57. The sprocket 56 is keyed to the drive shaft 55 of the motor 51. It should be noted that the drive shafts 52 and 55 lie in a common horizontal plane. A chain 58 is trained about the sprockets 53 and 57 and a chain 59 is trained about the sprockets 54 and 56. The chain 58 is secured in any suitable manner to an ear or flange 60 which depends from the lower surface of the carrier block 17'. Similarly, the chain 59 is connected in any suitable manner to an ear or flange 61 projecting upwardly from the top surface of the carrier block 20. In view of the mechanical connection between the chain 58 and the carrier block 17' and the mechanical connection between the chain 59 and the carrier block 20, it will readily be understood that the rotation of either motor 50 or 51 will effect lateral movement of the associated carriage on the transversely extending guide means on the mounting plate 16. With the several parts of the attachment 15 in the position shown in Fig. 7 of the accompanying drawings simultaneous rotation of the motors 50 and 51 in opposite directions will cause the carriages to move toward each other with the result that the shaft 48 and its associated load carrying means will move forwardly away from the mounting plate 16 of the attachment 15 to a position shown in full lines in Fig. 11.

Suitable means in the form of a reversible motor 62, which may be of any suitable type such as electric or hydraulic, which is drivingly connected to the upper extremity of the shaft 48 provides a means for effecting the horizontally swinging movement of the load carrying portion of the attachment 15 on the extended supporting arms 30 and 40.

Referring more particularly to Fig. 11, if it is desired to pick up or discharge material to the right side of the machine, the motor 62 is energized to rotate in a counter clockwise direction to swing the load carrying portion of the attachment toward the right of the machine to a position in which the lifting forks 41 are substantially parallel with the mounting plate 16 of the attachment 15. The motors 50 and 51 may then be energized to rotate in the same direction which will cause the unitary movement of the carriages to the dot-dash position shown in Fig. 11, wherein substantially the entire length of the load carrying portion of the attachment projects beyond the side of the material handling equipment. The standard lifting and lowering mechanism of the fork lift truck may then be manipulated in the usual manner to effect the loading or unloading of the material to or from the lifting forks 41 of the attachment 15. If a load has been picked up on the forks 41, the motors 50 and 51 may be energized to effect the withdrawal of the load from its storage position and move the same in a leftward direction to the position shown in dotted lines of Fig. 11, wherein the load is centrally disposed with respect to the attachment 15 and the material handling truck to facilitate its transportation to any desired point. If it is desired to discharge the load to the same side of the machine on which it was picked up, the motors 50 and 51 may be energized to effect the unitary right-hand movement of the carriages in the manner previously described. Should it be desired to discharge the load to the opposite side of the machine, the motor 62 may be energized to effect the clockwise rotation of the load carrying portion of the attachment 15 through an angle of 180° wherein the load is in a position to be discharged at the opposite side of the industrial truck. Should forward discharging of the load be desired, motors 50 and 51 may be energized to effect movement of the load carrying portion of the attachment to the full line position shown in Fig. 11, wherein the load is in a position to be discharged directly ahead of the industrial truck.

While the means for effecting lateral movement of the carriages 17, 17' and 20, 20' have been specifically described as comprising motor driven chains 58 and 59, it is to be understood that other means such as power-driven feed screws or hydraulic cylinders may be employed with equal facility to accomplish the desired result.

It is also to be understood that any appropriate control means for effecting the desired movement of the several parts of the attachment may be located on the equipment within convenient reach of the operator in the manner of the controls for effecting the raising and lowering of the standard fork lift equipment. In view of the fact that the present invention is directed primarily to the structural and functional operation of the present device, a detailed description of suitable control means, adapted to function in a well known manner, has been intentionally omitted.

While the structure and operation of the attachment for material handling equipment has been described in considerable detail in the foregoing specifications, it is to be understood that various changes may be made in its embodiments without departing from or sacrificing any of the advantages hereinafter claimed.

I claim:

1. An attachment for a piece of material handling equipment, said attachment comprising a mounting member for fixed application to the front of the equipment, transversely extending parallel upper and lower guide means on said mounting member, said upper guide means comprising a pair of inverted U-shaped channel members, said lower guide means comprising a pair of tracks, an upper carrier mounted for movement in each of said U-shaped channels, a lower carrier for movement along each of said tracks, a connecting member joining in pairs one upper and one lower carrier into laterally spaced movable units, upper and lower elements pivotally mounted for horizontal swinging movement on each of said movable units, a forwardly extending load supporting member pivotally mounted for horizontal swinging movement on said elements, actuating means connected with said laterally spaced units for moving them toward each other to effect advancing movement of the load supporting member away from said mounting member, actuating means connected with said load supporting member to effect lateral swinging movement of said member selectively through an angle of substantially 90° from its advanced forwardly directed position to direct the free end of said load supporting member toward one or the other side of the material handling equipment, and actuating means connected with said carriers to effect their unitary movement along said guide means to project the free end of said load supporting member a substantial distance beyond one side of the material handling equipment whereby material may be selectively loaded onto or discharged from said load supporting member from a position disposed laterally of said material handling equipment without requiring the turning of said material handling equipment.

2. An attachment for a piece of material handling equipment, said attachment comprising a mounting member for fixed application to the front of the equipment, said mounting member having a length substantially equal to the width of the material handling equipment, transversely extending horizontal guide means on the face of said mounting member having a length substantially equal to the length of said mounting member, laterally spaced carriers mounted for movement along said guide means, an element pivotally mounted for horizontal swinging movement on each of said laterally spaced carriers, a forwardly extending load supporting member pivotally mounted for horizontal swinging movement on said elements, actuating means connected with said laterally spaced carriers for moving them toward each other to effect advancing movement of the load supporting mem-

ber away from said mounting member, actuating means connected with said load supporting member to effect lateral swinging movement of said member selectively through an angle of substantially 90° from its advanced forwardly directed position to direct the free end of said load supporting member toward one or the other side of the material handling equipment, and actuating means connected with said carriers to effect their unitary movement along said guide means to project the free end of said load supporting member a substantial distance beyond one side of the material handling equipment whereby material may be selectively loaded onto or discharged from said load supporting member from a position disposed laterally of said material handling equipment without requiring the turning of said material handling equipment.

3. An attachment for a piece of material handling equipment, said attachment comprising a mounting member for fixed application across the front of the equipment, said mounting member having a length substantially equal to the width of the material handling equipment, parallel upper and lower guide means extending transversely of and substantially equal in length to said mounting member, a pair of laterally spaced carriers mounted for movement along each of said guide means, a connecting member joining in pairs one upper and one lower carrier into laterally spaced movable units, upper and lower elements pivotally mounted for horizontal swinging movement on each of said movable units, a forwardly extending load supporting member pivotally mounted for horizontal swinging movement on said elements, actuating means connected with said laterally spaced carriers for moving them toward each other to effect advancing movement of the load supporting member away from said mounting member, actuating means connected with said load supporting member to effect lateral swinging movement of said member selectively through an angle of substantially 90° from its advanced forwardly directed position to direct the free end of said load supporting member toward one or the other side of the material handling equipment, and actuating means connected with said carriers to effect their unitary movement along said guide means to project the free end of said load supporting member a substantial distance beyond one side of the material handling equipment whereby material may be selectively loaded onto or discharged from said load supporting member from a position disposed laterally of said material handling equipment without requiring the turning of said material handling equipment.

4. An attachment for a piece of material handling equipment, said attachment comprising a mounting member for fixed application to the front of the equipment, said mounting member having a length substantially equal to the width of the material handling equipment, transversely extending parallel upper and lower guide means on the face of said mounting member having a length substantially equal to that of said mounting member, said upper guide means comprising an inverted U-shaped channel, said lower guide means comprising a track, a pair of laterally spaced carriers mounted for movement in said inverted U-shaped channel, a pair of laterally spaced carriers mounted for movement along said track, a connecting member joining superimposed upper and lower carriers to form a pair of laterally spaced movable units, upper and lower elements pivotally mounted for horizontal swinging movement on each of said movable units, a forwardly extending load supporting member pivotally mounted for horizontal swinging movement on said elements, actuating means connected with said laterally spaced carriers for moving them toward each other to effect advancing movement of the load supporting member away from said mounting member, actuating means connected with said load supporting member to effect lateral swinging movement

of said member selectively through an angle of substantially 90° from its advanced forwardly directed position to direct the free end of said load supporting member toward one or the other side of the material handling equipment, and actuating means connected with said carriers to effect their unitary movement along said guide means to project the free end of said load supporting member a substantial distance beyond one side of the material handling equipment whereby material may be selectively loaded onto or discharged from said load supporting member from a position disposed laterally of said material handling equipment without requiring the turning of said material handling equipment.

5. An attachment for a piece of material handling equipment, said attachment comprising a mounting member for fixed application to the front of the equipment, transversely extending guide means on said mounting member, laterally spaced carriers mounted for movement along said guide means, an element pivotally mounted for horizontal swinging movement on each of said laterally spaced carriers, a forwardly extending load supporting member pivotally mounted for horizontal swinging movement on said elements, independent reversible actuating means connected with each of said laterally spaced carriers for operation in opposite directions to move said carriers toward each other to effect advancing movement of the load supporting member away from said mounting member, and independent reversible actuating means operatively connected with said load supporting member to effect lateral swinging movement of said member selectively in either direction from its advanced forwardly directed position to direct the free end of said load supporting member toward one or the other side of the material handling equipment, said first named actuating means being operable in the same direction to effect unitary movement of said carriers along said guide means to selectively locate the supported load in central position on said attachment or to project the free end of said load supporting member a substantial distance beyond one side of the material handling equipment whereby material may be selectively loaded onto or discharged from said load supporting member from a position disposed laterally of said material handling equipment without requiring the turning of said material handling equipment.

6. An attachment for a piece of material handling equipment, said attachment comprising a mounting member for fixed application to the front of the equipment, transversely extending parallel upper and lower guide means on said mounting member, a pair of laterally spaced carriers mounted for movement along each side of said guide means, a connecting member fixedly attached to the superimposed upper and lower carriers to form a pair of laterally spaced movable units, upper and lower elements pivotally mounted for horizontal swinging movement on each of said movable units, a forwardly extending load supporting member pivotally mounted for horizontal swinging movement on said elements, independent reversible actuating means connected with each of said laterally spaced carriers for operation in opposite directions to move said carriers toward each other to effect advancing movement of the load supporting member away from said mounting member, and independent reversible actuating means operatively connected with said load supporting member to effect lateral swinging movement of said member selectively in either direction from its advanced forwardly directed position to direct the free end of said load supporting member toward one or the other side of the material handling equipment, said first named actuating means being operable in the same direction to effect unitary movement of said carriers along said guide means to selectively locate the supported load in central position on said attachment or to project the free end of said load supporting member a substantial distance beyond one side of the material

handling equipment whereby material may be selectively loaded onto or discharged from said load supporting member from a position disposed laterally of said material handling equipment without requiring the turning of said material handling equipment.

7. An attachment for a piece of material handling equipment, said attachment comprising a mounting member for fixed application to the front of the equipment, transversely extending parallel upper and lower guide means on said mounting member, said upper guide means comprising an inverted U-shaped channel, said lower guide means comprising a track, a pair of laterally spaced carriers mounted for movement in said inverted U-shaped channel, a pair of laterally spaced carriers mounted for movement along said track, a connecting member joining superimposed upper and lower carriers to form a pair of laterally spaced movable units, upper and lower elements pivotally mounted for horizontal swinging movement on each of said movable units, a forwardly extending load supporting member pivotally mounted for horizontal swinging movement on said elements, independent reversible actuating means connected with each of said laterally spaced carriers for operation in opposite directions to move said carriers toward each other to effect advancing movement of the load supporting member away from said mounting member, and independent reversible actuating means operatively connected with said load supporting member to effect lateral swinging movement of said member selectively in either direction from its advanced forwardly directed position to direct the free end of said load supporting member toward one or the other side of the material handling equipment, said first named actuating means being operable in the same direction to effect unitary movement of said carriers along said guide means to selectively locate the supported load in central position on said attachment or to project the free end of said load supporting member a substantial distance beyond one side of the material handling equipment whereby material may be selectively loaded onto or discharged from said load supporting member from a position disposed laterally of said material handling equipment without requiring the turning of said material handling equipment.

8. An attachment for a piece of material handling equipment, said attachment comprising a mounting member for fixed application to the front of the equipment, transversely extending parallel upper and lower guide means on said mounting member, said upper guide means comprising a pair of inverted U-shaped channel members, said lower guide means comprising a pair of tracks, an upper carrier mounted for movement in each of said U-shaped channels, a lower carrier for movement along each of said tracks, a connecting member joining in pairs one upper and one lower carrier into laterally spaced movable units, upper and lower elements pivotally mounted for horizontal swinging movement on each of said movable units, a forwardly extending load supporting member pivotally mounted for horizontal swinging movement on said elements, independent reversible actuating means connected with each of said laterally spaced carriers for operation in opposite directions to move said carriers toward each other to effect advancing movement of the load supporting member away from said mounting member, and independent actuating means operatively connected with said load supporting member to effect lateral swinging movement of said member selectively in either direction from its advanced forwardly directed position to direct the free end of said load supporting member toward one or the other side of the material handling equipment, said first named actuating means being operable in the same direction to effect unitary movement of said carriers along said guide means to selectively located the supported load in central position on said attachment or to

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project the free end of said load supporting member a substantial distance beyond one side of the material handling equipment whereby material may be selectively loaded onto or discharged from said load supporting member from a position disposed laterally of said material handling equipment requiring the turning of said material handling equipment.

9. An attachment for a piece of material handling equipment, said attachment comprising a mounting member for fixed application to the front of the equipment, said mounting member having a length substantially equal to the width of the material handling equipment, transversely extending horizontal guide means on the face of said mounting member having a length substantially equal to the length of said mounting member, laterally spaced carriers mounted for movement along said guide means, an element pivotally mounted for horizontal swinging movement on each of said laterally spaced carriers, a forwardly extending load supporting member pivotally mounted for horizontal swinging movement on said elements, independent reversible actuating means connected with each of said laterally spaced carriers for operation in opposite directions to move said carriers toward each other to effect advancing movement of the load supporting member away from said mounting member, and independent reversible actuating means operatively connected with said load supporting member to effect lateral swinging movement of said member selectively in either direction from its advanced forwardly directed position to direct the free end of said load supporting member toward one or the other side of the material handling equipment, said first named actuating means being operable in the same direction to effect unitary movement of said carriers along said guide means to selectively locate the supported load in central position on said attachment or to project the free end of said load supporting member a substantial distance beyond one side of the material handling equipment whereby material may be selectively loaded onto or discharged from said load supporting member from a position disposed laterally of said material handling equipment without requiring the turning of said material handling equipment.

10. An attachment for a piece of material handling equipment, said attachment comprising a mounting member for fixed application across the front of the equipment, said mounting member having a length substantially equal to the width of the material handling equipment, parallel upper and lower guide means extending transversely of and substantially equal in length to said mounting member, a pair of laterally spaced carriers mounted for movement along each of said guide means, a connecting member joining in pairs one upper and one lower carrier into laterally spaced movable units, upper and lower elements pivotally mounted for horizontal swinging movement on each of said movable units, a forwardly extending load supporting member pivotally mounted for horizontal swinging movement on said elements, independent reversible actuating means connected with each of said laterally spaced carriers for operation in opposite directions to move said carriers toward each other to effect advancing movement of the load supporting member away from said mounting member, and independent reversible actuating means operatively connected with said load supporting member to effect lateral swinging movement of said member selectively in either direction from its advanced forwardly directed position to direct the free end of said load supporting member toward one or the other side of the material handling equipment, said first named actuating means being operable in the same direction to effect unitary movement of said carriers along said guide means to selectively locate the supported load in central position on said attachment or to project the free end of said load supporting member a substantial dis-

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tance beyond one side of the material handling equipment whereby material may be selectively loaded onto or discharged from said load supporting member from a position disposed laterally of said material handling equipment without requiring the turning of said material handling equipment.

11. An attachment for a piece of material handling equipment, said attachment comprising a mounting member for fixed application to the front of the equipment, said mounting member having a length substantially equal to the width of the material handling equipment, transversely extending parallel upper and lower guide means on the face of said mounting member having a length substantially equal to that of said mounting member, said upper guide means comprising an inverted U-shaped channel, said lower guide means comprising a track, a pair of laterally spaced carriers mounted for movement in said inverted U-shaped channel, a pair of laterally spaced carriers mounted for movement along said track, a connecting member joining superimposed upper and lower carriers to form a pair of laterally spaced movable units, upper and lower elements pivotally mounted for horizontal swinging movement on each of said movable units, a forwardly extending load supporting member pivotally mounted for horizontal swinging movement on said elements, independent reversible actuating means connected with each of said laterally spaced carriers for operation in opposite directions to move said carriers toward each other to effect advancing movement of the load supporting member away from said mounting member, and independent reversible actuating means operatively connected with said load supporting member to effect lateral swinging movement of said member selectively in either direction from its advanced forwardly directed position to direct the free end of said load supporting member toward one or the other side of the material handling equipment, said first named actuating means being operable in the same direction to effect unitary movement of said carriers along said guide means to selectively locate the supported load in central position on said attachment or to project the free end of said load supporting member a substantial distance beyond one side of the material handling equipment whereby material may be selectively loaded onto or discharged from said load supporting member from a position disposed laterally of said material handling equipment without requiring the turning of said material handling equipment.

12. An attachment for a piece of material handling equipment, said attachment comprising a mounting member for fixed application to the front of the equipment, transversely extending parallel upper and lower guide means on said mounting member, said upper guide means comprising an inverted U-shaped channel, said lower guide means comprising a track, a pair of laterally spaced carriers mounted for movement in said inverted U-shaped channel, a pair of laterally spaced anti-friction rollers mounted on each of said carriers for rolling contact with the inner surface of the outer flange of the inverted U-shaped channel, a pair of laterally spaced carriers mounted for movement along said track, a pair of laterally spaced load supporting rollers mounted on each of said last named carriers for rolling contact with said track, a connecting member joining superimposed upper and lower carriers to form a pair of laterally spaced movable units, upper and lower elements pivotally mounted for horizontal swinging movement on each of said movable units, a forwardly extending load supporting member pivotally mounted for horizontal swinging movement on said elements, actuating means connected with said laterally spaced carriers for moving them toward each other to effect advancing movement of the load supporting member away from said mounting member, actuating means connected with said load supporting member to effect lateral swinging movement

of said member selectively through an angle of substantially 90° from its advanced forwardly directed position to direct the free end of said load supporting member toward one or the other side of the material handling equipment, and actuating means connected with said carriers to effect their unitary movement along said guide means to project the free end of said load supporting member a substantial distance beyond one side of the material handling equipment whereby material may be selectively loaded onto or discharged from said load supporting member from a position disposed laterally of said material handling equipment without requiring the turning of said material handling equipment.

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