Oct. 28, 1952 W. J. OLSON 2,615,748

GRAB

Filed Jan. 26, 1949 4 Sheets-Sheet 1

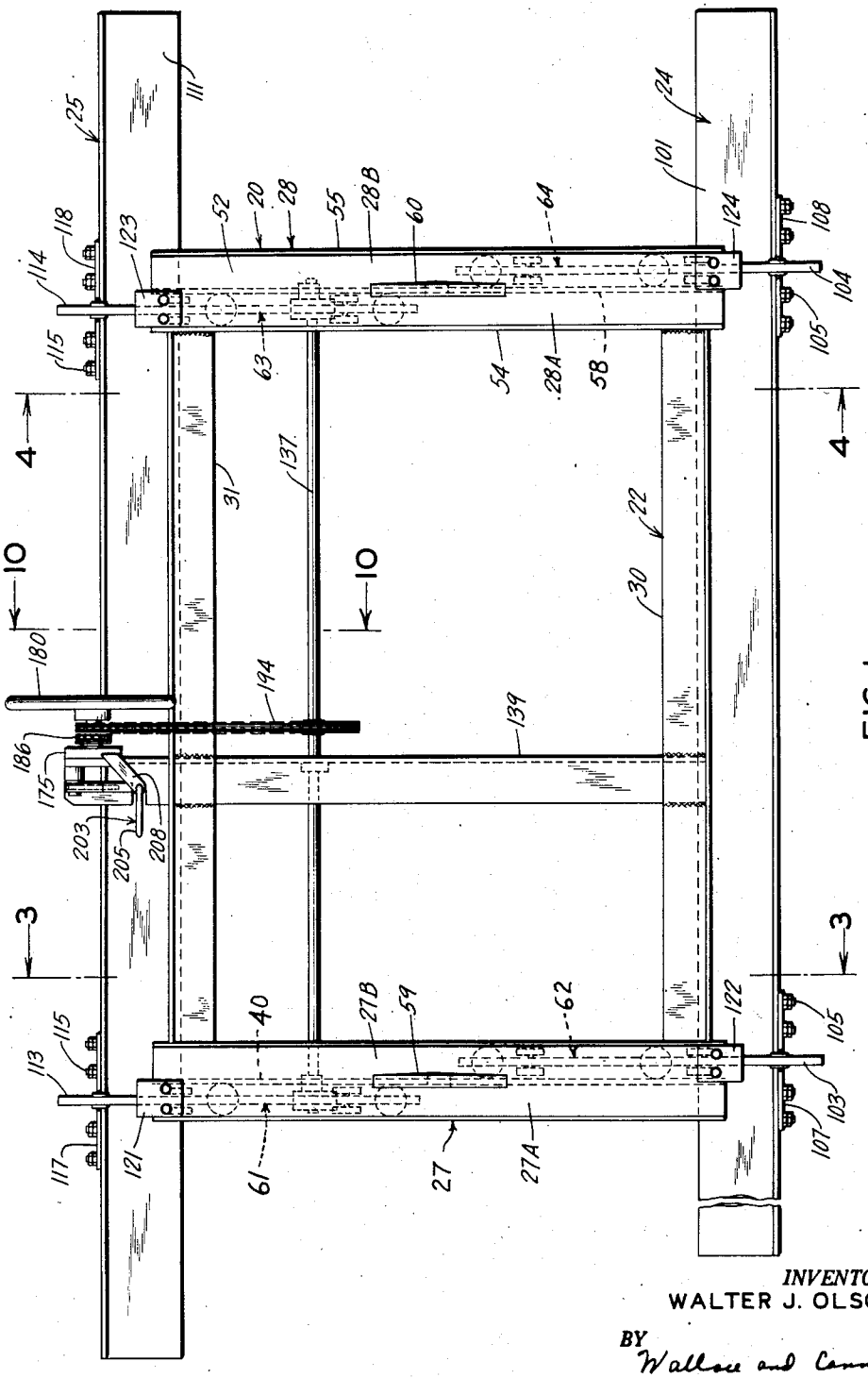


FIG. 1

INVENTOR.
WALTER J. OLSON

BY Wallace and Cannon

ATTORNEYS

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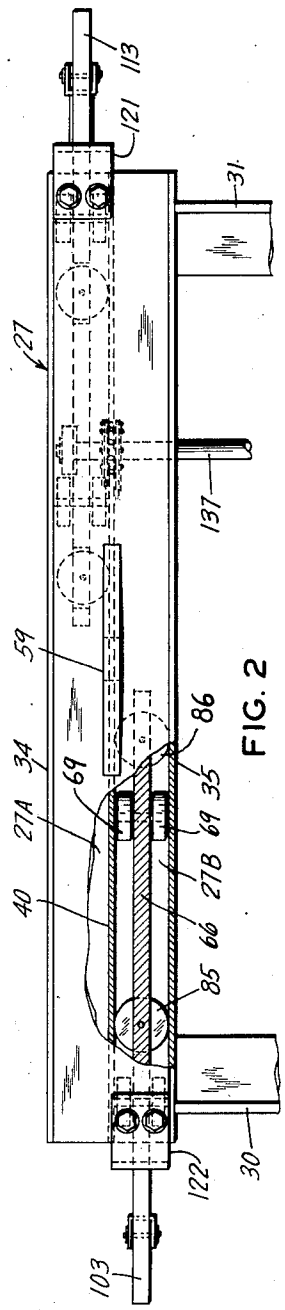


FIG. 2

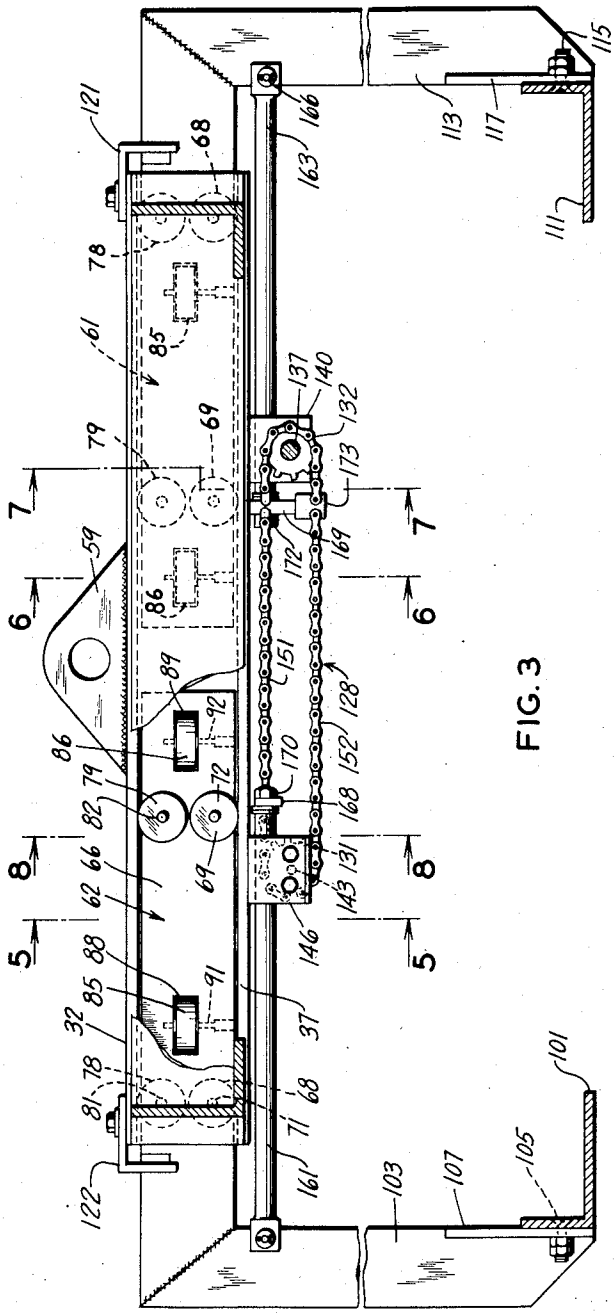


FIG. 3

INVENTOR.
WALTER J. OLSON

BY
Wallace and Cannon

ATTORNEYS

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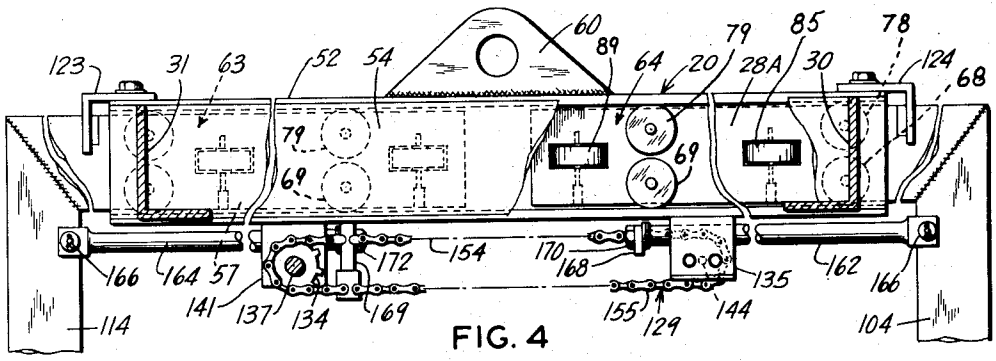


FIG. 4

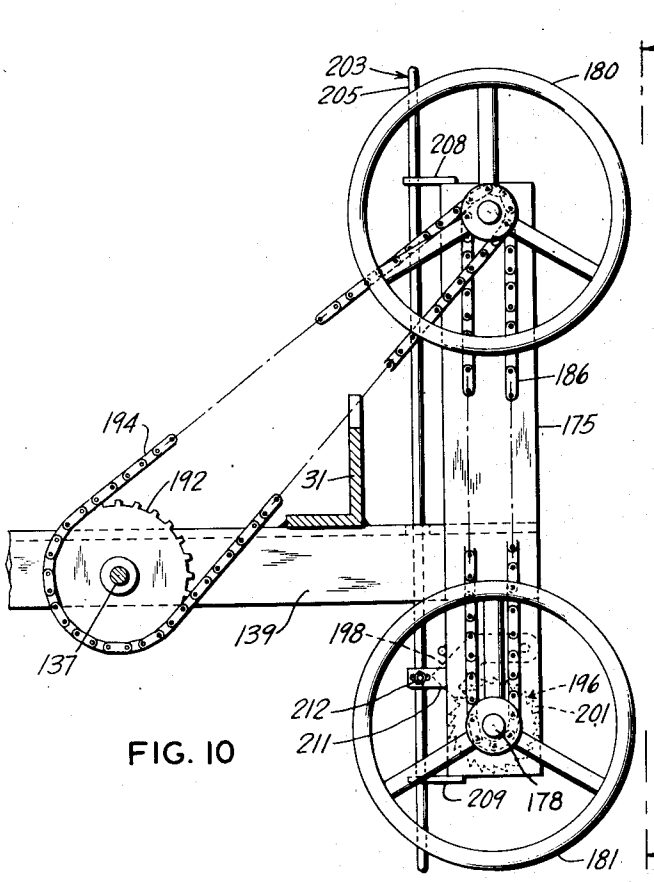


FIG. 10

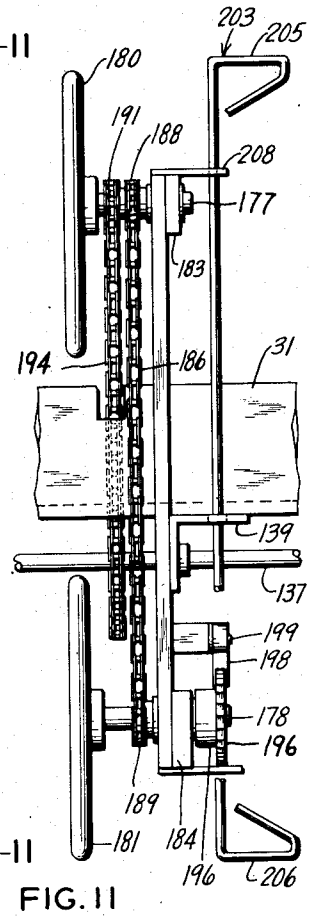


FIG. 11

INVENTOR.
WALTER J. OLSON

BY Wallace and Cannon

ATTORNEYS

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FIG. 5

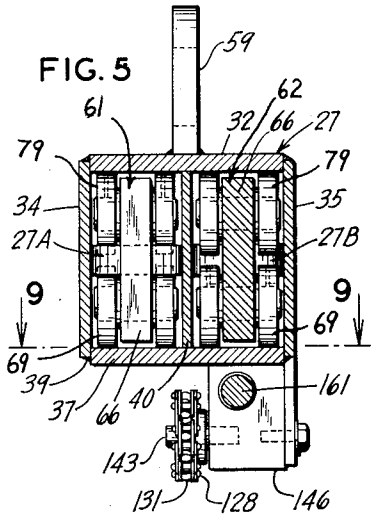


FIG. 6

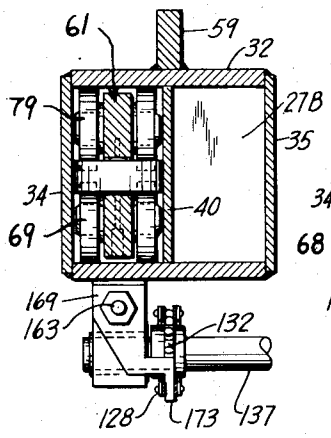
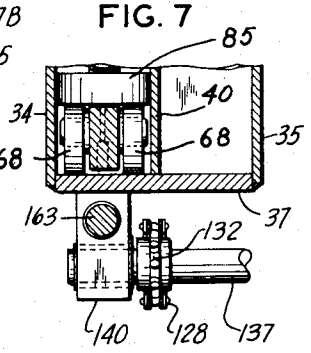
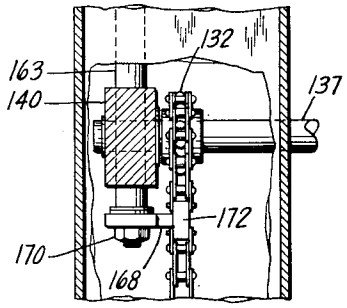


FIG. 7





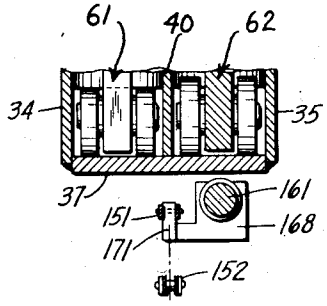


FIG. 8

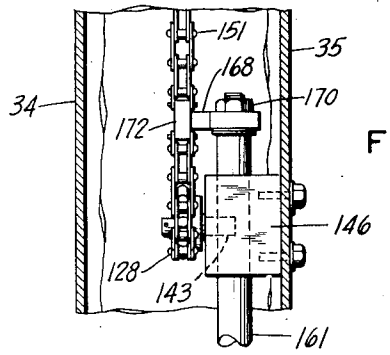


FIG. 9

INVENTOR.
WALTER J. OLSON

BY
Wallace and Cannon

ATTORNEYS

Patented Oct. 28, 1952 2,615,748

UNITED STATES PATENT OFFICE

2,615,748

GRAB

Walter J. Olson, Clifton, N. J., assignor to American Brake Shoe Company, New York, N. Y., a corporation of Delaware

Application January 26, 1949, Serial No. 72,816

6 Claims. (Cl. 294—67)

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This invention relates to grabs and more particularly to grabs of the type especially well adapted for use with power hoists in factories, foundaries, and similar places, for picking up and transporting heavy articles such as molds, flasks, heavy stacks of sheet metal, and the like.

Grabs and grapples of the general nature to which this invention relates have heretofore been employed in lifting and transporting heavy articles such as molds, flasks, stacks of material such as sheet metal, and the like, such grabs commonly being used in conjunction with hoists, gantrys, trolleys, and other types of power lifting machinery. In such use of the grabs, the grabs are normally suspended from the power lifting machinery and are used thereon as a grappling member for gripping or grabbing the work to be hoisted.

Various types of grabs have been heretofore known and used in the art. However, such grabs have had several inherent disadvantages such as, for example, being costly and difficult to manufacture; being difficult to operate, and the like.

The primary object of my invention is to overcome these disadvantages and to afford a novel grab which may be economically manufactured and is efficient in operation.

One of the primary disadvantages of grabs heretofore known in the art has been that various parts have been so constituted and arranged that excessive binding of various movable parts thereof occurred during operation of the grabs, and especially when the grab is being operated under load.

One of the principal objects of my invention is to afford a novel grab wherein the various parts thereof are constituted and arranged in a novel and expeditious manner whereby the movable parts operate efficiently and freely when the grab is being operated either with or without a load.

An object ancillary to the foregoing is to afford a grab having grappling arms for engaging the work-load, wherein the grappling arms are supported on rollers in a novel and expeditious manner whereby the arms may be relatively easily moved into and out of work-engaging position.

Another object of my invention is to afford a grab of the aforementioned type wherein the grappling arms are guided and supported by rollers in both a horizontal and vertical direction, and in a novel and expeditious manner.

A further object of my invention is to afford a novel grab embodying a frame in which the grappling arms are supported by rollers in a novel manner whereby the parts of the different grappling arms embodying the rollers may be moved past each other in the frame.

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Another common disadvantage of grabs heretofore known to those skilled in the art has been that the grabs have often been difficult to operate unless the operator could assume a more or less specific position with relation thereto.

Another object of my invention is to afford a grab wherein the operator may readily operate the grab from a number of different positions relative thereto.

An object ancillary to the foregoing is to provide a grab having novel controls for opening, closing and latching the grappling arms thereof, and which controls may be readily reached and operated by an operator disposed above, below or on the same level as the grab.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration, show a preferred embodiment and the principles thereof and what I now consider to be the best mode in which I have contemplated applying those principles. Other embodiments of the invention embodying the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claims.

In the drawings:

Fig. 1 is a top plan view of a grab embodying the principles of my invention;

Fig. 2 is a detail plan view of a portion of the grab shown in Fig. 1 and with certain parts thereof being broken away;

Fig. 3 is a sectional view taken substantially along the line 3—3 in Fig. 1;

Fig. 4 is a sectional view taken substantially along the line 4—4 in Fig. 1;

Figs. 5, 6, 7, and 8 are detail sectional views taken substantially along the lines 5—5, 6—6, 7—7, and 8—8, respectively, in Fig. 3;

Fig. 9 is a detail sectional view taken substantially along the line 9—9 in Fig. 5;

Fig. 10 is a detail sectional view taken substantially along the line 10—10 in Fig. 1; and

Fig. 11 is a detail elevational view of the mechanism shown in Fig. 10, looking in the direction of the arrows 11—11 in the latter figure.

The grab 20 shown in the drawings to illustrate a preferred embodiment of my invention, comprises, in general, a frame 22 on which are movably mounted two grappling arms 24 and 25,

the grappling arms being adapted to be moved toward and away from each other longitudinally of two elongated boxes or guide-housings 27 and 28 included in the frame 22. The boxes 27 and 28 are disposed in parallel spaced relation to each other and are connected at their end portions by two side bars 30 and 31, Fig. 1.

The box 27, Figs. 1, 2 and 3, comprises a top wall 32, two side walls 34 and 35 and a bottom wall 37, the walls being formed of suitable material such as sheet metal and being connected together by suitable means such as welding 39. A vertically disposed partition wall 40 is mounted between the top wall 32 and the bottom wall 37 substantially midway between the side walls 34 and 35, and is disposed in parallel relation to the side walls 34 and 35 to thereby divide the box 27 into two chambers 27A and 27B.

The box or guide-housing 28, Figs. 1 and 4, like the box 27, comprises a top wall 52, side walls 54 and 55 and a bottom wall 57. A vertically disposed partition wall 58 is mounted between the top wall 52 and the bottom wall 57 midway between the side walls 54 and 55 to thereby divide the box 28 into two chambers 28A and 28B.

Two lugs 59 and 60 are mounted on and extend upwardly from the top walls 32 and 52 of the boxes 27 and 28, respectively, and are adapted to be engaged by the usual hook, not shown, on a hoist or crane, whereby the grab may be lifted and transported by the hoist or crane.

Four carriages 61, 62, 63 and 64 are mounted in the chambers 27A, 27B, 28A and 28B, respectively, Fig. 1, and are operable to movably support the grappling arms 24 and 25 from the boxes 27 and 28, as will be discussed in greater detail presently. Each of the carriages 61, 62, 63 and 64 comprises an elongated body member 66, Fig. 3, having two pairs of rollers 68 and 69 rotatably mounted on shafts 71 and 72 extending through the lower portion of the body member 75, each of the rollers 68 and 69 in each of the pairs being disposed on the side of the body member 66 opposite to that on which the other roller in the same pair is disposed, and each of the rollers 68 and 69 projecting downwardly below the lower edge portion of the body member 66 to thereby afford a peripheral edge portion which may rest on the bottom wall of the guide-housing within which the carriage is disposed. Two other pairs of rollers 78 and 79 are rotatably mounted on shafts 81 and 82 which extend through the upper portion of the body member 66 in substantially vertical alignment with the shafts 71 and 72, the rollers 78 and 79, projecting above the body member 66 to thereby afford a peripheral edge portion engageable with the top wall of the guide-housing within which the respective carriage is mounted to thereby afford means for retaining the lower rollers 68 and 69 in engagement with the bottom wall of the housing.

In addition to the vertically disposed rollers 68, 69, 78, and 79, each of the carriages 61–64, includes two rollers 85 and 86 horizontally disposed in slots 88 and 89 formed in opposite end portions of the body member 66 of the carriage, the rollers 85 and 86 being rotatably mounted on pins 91 and 92, respectively, extending in a vertical direction through the slots 88 and 89, respectively. Each of the rollers 85 and 86 projects horizontally outwardly from the sides of the body member 66 past the rollers 68, 69, 78, and 79, and is adapted to engage the adjacent side wall and the partition wall of the housing within which the carriage is disposed to thereby afford guide means for guiding the carriage between the aforesaid side wall and partition wall of the housing within which the carriage is disposed to thereby afford guide means for guiding the carriage between the aforesaid side wall and partition wall of the housing during movement of the carriage longitudinally of the latter.

Hence, it will be seen that the carriages 61—64 are well supported and guided for relatively frictionless movement longitudinally of the housings 27 and 28, within the chamber in which the respective carriage is disposed, the rollers 68, 69, 78, 79, 85, and 86 on the carriage affording rolling contacts between the carriage and the walls of the chamber. Also it will be seen that with the carriages 61—64 disposed in individual chambers, the carriages may be moved in a longitudinal direction back and forth past each other without danger of striking each other.

The grappling arm 24 comprises a horizontally disposed jaw member 101, Figs. 1 and 3, connected to the lower end portions of two drop legs 103 and 104 by bolts 105 which extend through the jaw member 101 into gusset plates 107 and 108 welded to the lower end portions of the drop legs 103 and 104, respectively.

The grappling arm 27 is similar to the grappling arm 24, including a jaw member 111 which is connected to the lower end portion of drop legs 113 and 114 by bolts 115 which extend through the jaw member 111 into gusset plates 117 and 118 welded to the lower end portions of the drop legs 113 and 114.

The upper ends of the drop legs 103, 104, 113 and 114 are welded to the outer ends of the body members 66 of the carriages 62, 64, 61 and 63, respectively, Figs. 3 and 4. Guard members 121, 122, 123, and 124, Figs. 1, 3 and 4, are mounted on opposite end portions of the top walls 32 and 52 of the boxes 27 and 28, and have bifurcated lower end portions projecting downwardly over the upper edge portion of the outer end portions of the body members 66 of the carriages 61, 62, 63 and 64, respectively, the guard members 121—124 acting as end blocks engageable with the rollers 78 on corresponding carriages 61—64 to thereby prevent the carriages from being completely withdrawn from the boxes 27 and 28.

Hence, it will be seen that the grappling arms 24 and 25 are mounted on and suspended from the carriages 61—64, and are movable therewith longitudinally of the housings 27 and 28 between the outer positions wherein the rollers 78 on carriages 61—64 engage the guards 121—124, respectively, and the inner positions wherein the drop legs 103, 104, 113 and 114 engage the outer end portions of the bottom walls 37 and 57 of the boxes 27 and 28.

Also, it will be seen that in my novel grab, the grappling arms 24 and 25 and the carriages 61—64 are so constituted and arranged that the grappling arms may be readily adjusted relative to each other through a relatively wide range of positions. However, it will be understood that, if desired, the range of movement of the grappling arms 24 and 25 may be increased in various ways by those skilled in the art, such as, for example, affording slots in the bottom walls 37 and 57 of the guide-housings 27 and 28 into which the drop legs 103, 104, 113 and 114 may be moved during inward movement of the grappling arms 24 and 25, without departing from the purview of my invention.

To afford means for moving the grappling

arms 24 and 25 toward and away from each other I provide two endless chains 128 and 129, Figs. 3 and 4, which are trained over two pairs of sprocket wheels 131 and 132, and 134 and 135, respectively. A reinforcing bar 139 extends between and is welded to the central portions of the side bars 30 and 31 of the frame 22, and the sprocket wheels 132 and 134 are mounted on, and rotatable with, the opposite end portions of a shaft 137, which extends through the supporting bar 139 and is journaled in brackets 140 and 141 which are welded to, and project downwardly from, the bottom walls 37 and 57 of the guide-housings 27 and 28, respectively. The sprocket wheels 131 and 135 are mounted on, and rotatable with, stub shafts 143 and 144, which are journaled in brackets 146 and 147 also welded to and projecting downwardly from the bottom walls 37 and 57 of the guide-housings 27 and 28, respectively.

As is best seen in Figs. 3 and 4, the chain 128 is disposed on the pulleys 131 and 132, below the housing 27, in such a position that vertically spaced upper and lower runs or passes 151 and 152, respectively, are afforded thereon; and the chain 129 is so disposed on the pulleys 134 and 135, below the housing 28, that vertically spaced upper and lower passes or runs 154 and 155, respectively, are afforded. As will be described in greater detail presently, the chains 128 and 129 are connected to the legs 103, 104, 113 and 114 of the grappling arms 24 and 25 in such a manner that upon rotation of the chains 128 and 129 in one direction the grappling arms 24 and 25 are moved along the guide-housings 27 and 28 toward each other, and, when the chains are rotated in the other direction, the grappling arms 24 and 25 are moved along the housings 27 and 28 away from each other.

Interconnection of the drop legs 103, 104, 113 and 114 with the chains 128 and 129 is effected by elongated links or rods 161, 162, 163 and 164, respectively, Figs. 3 and 4, the rods 161, 162, 163 and 164 being connected at one end to the drop legs 103, 104, 113 and 119 by suitable means such as pins 166, and being connected at the other end to the chains 128 and 129 by brackets 168 or 169. As is best seen in Figs. 3 and 8, each of the brackets 168 are mounted on the last mentioned end of a respective one of the rods 161 and 162 and is held thereon by a nut 170, and includes a crossbar 171, Fig. 8, which extends through a link of one of the upper passes 151 or 154 of the chains 128 and 129 to thereby attach the rod to that chain. Similarly, as is best seen in Figs. 4 and 6, each of the brackets 169 are mounted on a respective one of the rods 163 and 164 and is held thereon by a nut 172, and includes a crossbar 173, which extends through a link of one of the lower passes 152 or 155 of the chains 128 and 129 to thereby attach the rod to that chain.

Hence, it will be seen that as best shown in Figs. 3 and 4, the legs 103 and 104 of the grab 20 shown in the drawings are connected to the upper runs 151 and 154 of the chains 128 and 129, respectively, by the rods 161 and 162, respectively, and the legs 119 and 120 are connected to the lower runs 152 and 155 of the chains by the rods 163 and 164, respectively. Therefore, it will be apparent that upon rotation of the chains 128 and 129 in a clockwise direction, as viewed in Fig. 3, the grappling arms 24 and 25 will be moved along the guide-housings 27 and 28 toward each other, whereas, when the chains are rotated in a counter-clockwise direction, the grappling arms will be moved away from each other.

The means by which I prefer to rotate the chains 128 and 129 is best shown in Figs. 1, 10 and 11 and includes a vertically disposed elongated supporting bar 175 welded to the outer end portion of the reinforcing bar 139. Two shafts 177 and 178 having hand wheels 180 and 181 mounted thereon, respectively, are journaled in bearings 183 and 184 welded to the opposite end portions of the supporting bar 175, the hand wheels 180 and 181 being secured to and rotatable with the shafts 177 and 178.

As is best seen in Figs. 10 and 11, the hand wheels 180 and 181 are operatively interconnected by an endless chain 186 trained over sprocket wheels 188 and 189 mounted on the shafts 177 and 178, respectively, so that upon rotation of either of the hand wheels 180 or 181 a like rotation of the other hand wheel is effected. A second sprocket wheel 191 is mounted on and rotatable with the shaft 177 and is operatively connected by an endless chain 194 to a sprocket wheel 192 mounted on and rotatable with the shaft 137, Figs. 1 and 10. Thus, it will be seen that upon rotation of either of the hand wheels 180 or 181, the shaft 137 is caused to rotate in the bearings 140 and 141, thereby causing the sprocket wheels 132 and 134 to be rotated and effecting rotation of the chains 128 and 129 about the two pairs of sprocket wheels 131 and 132, and 134 and 135, respectively.

A ratchet wheel 196, Figs. 10 and 11, is mounted on and rotatable with the opposite end portion of the shaft 178 from that on which the hand wheel 181 is mounted, and a pawl 198, pivotally mounted on the supporting bar 175 by a pin 199, is engageable with the teeth 201 on the periphery of the ratchet wheel 196. A control rod 203 having an upper handle 205 and a lower handle 206 is slidably mounted in brackets 208 and 209 mounted on the opposite end portions of the supporting bar 175 and is connected to the pawl 198 by a link 211 welded to the pawl 198 and connected to the control rod 203 by a pin 212.

As is best seen in Fig. 10, the pawl 198 and the teeth 201 of the ratchet wheel 196 are so constituted and arranged that when the pawl 198 is engaged with the teeth 201, as shown in Fig. 10, the pawl is effective to prevent counter-clockwise rotation of the hand wheels 180 and 181. However, it will be seen that the teeth 201 are so shaped that clockwise rotation of the hand wheels 180 and 181 may be effected even though the pawl 198 is disposed in engagement with the teeth 201, the pawl 198 riding freely over the teeth 201 during rotation of the ratchet wheel in a clockwise direction.

In the normal operation of my device, the weight of the control rod 203 and the pawl 198 is normally sufficient to maintain the pawl in engagement with the teeth 201 on the ratchet wheel 196. Therefore, it will be seen that the hand wheels 180 and 181 and, therefore, the shaft 137 and the chains 128 and 129, are normally held against counter-clockwise rotation, as viewed in Figs. 3 and 10, so that the grappling arms 24 and 25 are held from movement outwardly away from each other. However, it will be seen that if it is desired to effect movement of the grappling arms 24 and 25 away from each other, an operator may readily accomplish this by grasping either the handle 205 or 206 on the control rod 203 and moving the control rod 203 upwardly to thereby disengage the pawl 198 from the

ratchet wheel 196 and, thereafter, rotating the hand wheel 180 or 181 in a counter-clockwise direction. On the other hand, if it is desired to move the grappling arms 24 and 25 toward each other the hand wheel 180 or 181 may be turned by the operator in a clockwise direction to thereby effect the proper rotation of the chains 128 and 129 to accomplish such closing movement of the grappling arms. It will be remembered that during clockwise rotation of the hand wheels 180 and 181 it is not necessary to hold the pawl 198 out of engagement with the ratchet wheel 196, however, as a practical matter, so as to save wear on the pawl 198 and the ratchet wheel 196, it will often be desired to hold the pawl 198 out of engagement with the ratchet wheel 196 and it will be seen that this may be readily accomplished by moving the control rod 203 upwardly in the manner previously mentioned with respect to rotation of the hand wheels 180 and 181 in a counter-clockwise direction. Thus, it will be seen that opening and closing movements of the grappling arms 24 and 25 may be readily effected by an operator positioned either above or below my novel grab 20.

Operation

In the operation of the grab shown in the drawings, the grab 20 may be supported from a suitable hoist, trolley, or the like, by hooks, not shown, engaged in the openings of the lugs 59 and 60 mounted on the upper walls of the guide-housings 27 and 28.

Normally, in the operation of my device, the grab 20 will be lowered by the hoist, or the like, over the article, or articles, to be lifted and transported by the hoist and, in preparation for such lowering of the grab over the article or articles, the operator may move the grappling arms 24 and 25 away from each other by first moving the control rod 203 upwardly so as to disengage the pawl 198 from the ratchet wheel 196 and, thereafter, rotating the hand wheels 180 and 181 in a counter-clockwise direction to thereby cause the shaft 137 and the chains 128 and 129 to be rotated in a counter-clockwise direction, as viewed in Figs. 3 and 10, and effect outward movement of the links 161—164 and the grappling arms 24 and 25. The grab 20 may then be lowered over the article or articles to be lifted and transported thereby, and the operator may then rotate the hand wheels 180 and 181 in a clockwise direction to thereby move the grappling arms 24 and 25 toward each other into engagement with the work to be lifted. After the grappling arms 24 and 25 are suitably engaged with the work, the control rod 203 may either be moved downwardly by the operator, or may be released by the operator so that it falls by its own weight, to thereby engage the pawl 198 with the ratchet wheel 196 and prevent counter-clockwise rotation of the hand wheels 180 and 181, such latching of the hand wheels 180 and 181 against counter-clockwise rotation being effective to hold the grappling arms 24 and 25 against outward movement away from each other as previously discussed.

In the operation of my novel grab the work to be lifted thereby may either be gripped between the grappling arms 24 and 25 or may be disposed on the bars 101 and 111, the particular manner of supporting the work by the grab being determined primarily by the size and contour of the work. However, it will be seen that whichever manner the work is engaged by the grappling arms 24 and 25, the parts of my novel grab are so constituted and arranged that the grappling arms will be positively held against outward movement relative to each other so that they may readily be maintained in engagement with the work.

From the foregoing it will be seen that I have afforded a novel and practical grab wherein the grappling arms of the grab are supported in a novel and expeditious manner, and may be moved relatively freely in either an unloaded or loaded condition during an operation of my device.

Furthermore, it will be seen that I have provided a novel grab wherein the grappling arms may be readily moved in a novel and expeditious manner by an operator disposed either above or below the grab, and, when desired, the grappling arms may be readily latched against outward movement away from each other.

In addition, it will be seen that I have afforded a novel grab which is sturdy in construction, practical and efficient in operation, and which may be economically produced commercially.

Thus, while I have illustrated and described the preferred embodiment of my invention, it is to be understood that this is capable of variation and modification and I therefore do not wish to be limited to the precise details set forth, but desire to avail myself of such changes and alterations as fall within the purview of the following claims.

I claim:

1. In a grab, a frame including two elongated boxes, each having a top wall, a bottom wall, side walls, and a vertically disposed partition wall dividing said box longitudinally into two chambers, two pairs of carriages mounted in said boxes, each of said carriages comprising a body member and a plurality of rollers rotatably mounted thereon and projecting therefrom, each of said carriages being mounted in a respective one of said chambers in a respective one of said boxes for movement longitudinally thereof with predetermined ones of said rollers in engagement with the said bottom wall of said box, predetermined other ones of said rollers in engagement with the said top wall of said box, and other rollers in engagement with said partition wall and one of said side walls of said box, each of said carriages of each of said pairs being mounted in a chamber of a respective one of said boxes, two grappling members, each of said grappling members being mounted on and suspended from a respective one of said pairs of carriages for movement therewith longitudinally of said boxes, and means connected to said grappling members for moving said grappling members and said pairs of carriages toward and away from each other longitudinally of said boxes.

2. In a grab, a frame including two elongated boxes having a top wall, a bottom wall and side walls, and each box having a vertically disposed partition wall extending longitudinally through the center thereof, two pairs of carriages mounted in said boxes and movable longitudinally thereof, each of said carriages comprising a body member, and a plurality of rollers rotatably mounted on said body member, each of said carriages of each of said pairs being mounted in a respective one of said boxes with two carriages being mounted in each box, respective ones of said two carriages in each box being disposed on opposite sides of the said partition wall in said box, predetermined ones of said rollers on said carriages being disposed in engagement with said top and

bottom walls of said boxes for supporting said body members in said boxes, and other of said rollers on said carriages being disposed in engagement with said partition walls in said boxes for guiding the movement of said carriages through said boxes, a pair of grappling arms, each of said grappling arms being mounted in said boxes and connected to and supported by a corresponding one of said pairs of carriages for movement with said carriages longitudinally of said boxes, and means for moving said grappling members and said carriages toward and away from each other longitudinally of said boxes.

3. In a grab, an elongated frame including two elongated guide-housings each having a top wall, a bottom wall, and two side walls interconnecting said top and bottom walls, and each having a vertically disposed partition wall mounted between said side walls and extending longitudinally of said housings, two pairs of elongated carriages mounted in said housings, said two pairs of carriages being disposed in opposite end portions of said housings with each of said carriages of each of said pairs being disposed in a respective end of one of said housings, each of said carriages comprising an elongated body member disposed longitudinally in the housing within which said carriage is disposed, a plurality of rollers rotatably mounted in pairs on said body member, predetermined pairs of said rollers being mounted on opposite end portions of said body member and engaged with the bottom wall of the housing within which said carriage is disposed to movably support said body member of said carriage thereon, and other pairs of said rollers being engaged with the top wall of the housing within which said carriage is disposed to retain said predetermined pairs of rollers in engagement with said bottom wall of said housing, and other rollers rotatably mounted on said body members and engageable with a side wall and said partition wall of said housing within which said carriage is disposed to guide said carriage in said housing, grappling arms supported by said carriages for movement toward and away from each other, each of said grappling arms being supported by a corresponding pair of said carriages and comprising a jaw member and two drop legs mounted on said jaw member, each of said drop legs extending through a corresponding one of said slots in the bottom of one of said housings and being mounted on said body member of one of said carriages, and means for reciprocating said carriages and said grappling arms relative to said housings to thereby move said grappling arms toward and away from each other.

4. In a grab of the type including a frame, a pair of grappling arms movably mounted on said frame for movement toward and away from each other, a shaft rotatably mounted in said frame, and an endless chain rotatably mounted on said frame and connected to said shaft for rotation therewith, said chain being connected to said grappling arms and operable upon oscillation to move said grappling arms toward and away from each other, means for oscillating said chain to thereby move said grappling arms toward and away from each other, said means comprising supporting means connected to said frame, two hand wheels rotatably mounted on said supporting means with one of said hand wheels being disposed above said frame and the other of said hand wheels being disposed below said frame, means including an endless chain interconnecting said sprocket wheels for rotation with each other, and means including an endless chain connecting said shaft to one of said hand wheels for rotation thereby upon rotation of said hand wheels.

5. In a grab of the type including a frame, a pair of grappling arms movably mounted on said frame for movement toward and away from each other, an elongated shaft rotatably mounted on said frame, two endless chains rotatably mounted on said frame and connected to said shaft for rotation therewith, said chains being connected to said grappling arms and being operable upon oscillation to move said grappling arms toward and away from each other on said frame, the combination of an elongated supporting member mounted in vertically extending position on said frame, two shafts rotatably mounted on said supporting member on opposite end portions thereof, a hand wheel mounted on each of said shafts for rotating the latter, a sprocket wheel mounted on the said elongated shaft, two sprocket wheels mounted on one of said two shafts, a sprocket wheel and a ratchet wheel mounted on the other one of said two shafts, an endless chain trained over said sprocket wheel on said other shaft and over one of said sprocket wheels on said one shaft interconnecting said two shafts for rotation with each other, an endless chain trained over said sprocket wheel on said elongated shaft and the other one of said sprocket wheels on said one shaft for rotating said enlongated shaft upon rotation of said two shafts, and means, including a pawl engageable with said ratchet wheel, and a control member for moving said pawl into and out of engagement with said ratchet wheel, for controlling the rotation of said two shafts and, thereby, of said elongated shaft in one direction.

6. In a grab of the type including a frame, a pair of grappling arms movably mounted on said frame for movement toward and away from each other, an elongated shaft rotatably mounted on said frame, two endless chains rotatably mounted on said frame and connected to said shaft for rotation therewith, said chains being connected to said grappling arms and being operable upon oscillation to move said grappling arms toward and away from each other on said frame, the combination of an elongated supporting member mounted in vertically extending position on said frame, two shafts rotatably mounted on said supporting member on opposite end portions thereof, a hand wheel mounted on each of said shafts for rotating the latter, a sprocket wheel mounted on the said elongated shaft, two sprocket wheels mounted on one of said two shafts, a sprocket wheel and a ratchet wheel mounted on the other one of said two shafts, an endless chain trained over said sprocket wheel on said other shaft and over one of said sprocket wheels on said one shaft interconnecting said two shafts for rotation with each other, an endless chain trained over said sprocket wheel on said elongated shaft and the other one of said sprocket wheels on said one shaft for rotating said elongated shaft upon rotation of said two shafts, and means for controlling the rotation of said two shafts and, thereby, of said elongated shaft and said two chains, in one direction, said last named means comprising a pawl pivotally mounted on said supporting member and engageable with

said ratchet wheel for preventing rotation of said two shafts in one direction, and an elongated control rod connected to said pawl and having a handle disposed above said frame and another handle disposed below said frame for moving said pawl into and out of engagement with said ratchet wheel.

WALTER J. OLSON.

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