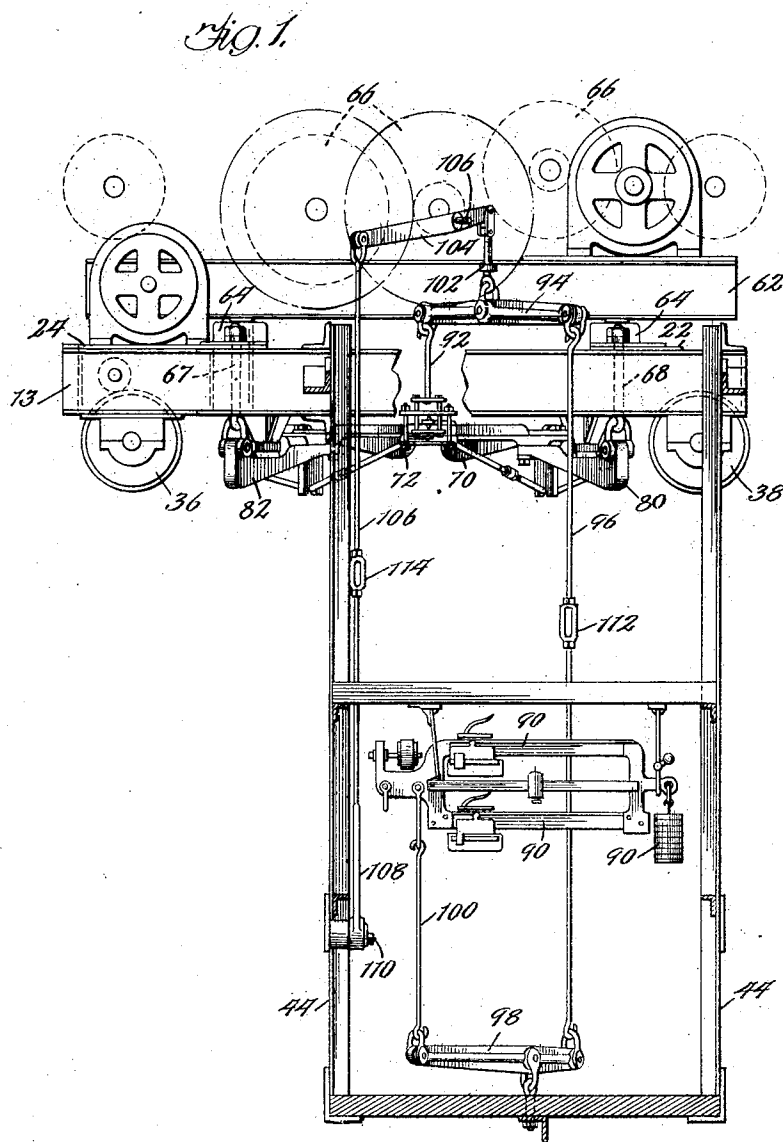


A. H. McDOUGALL.
WEIGHING MECHANISM FOR TRAVELING CRANES.
APPLICATION FILED JUNE 7, 1909.

961,888.

Patented June 21, 1910.

4 SHEETS—SHEET 1.



Witnesses:
J. D. Perry
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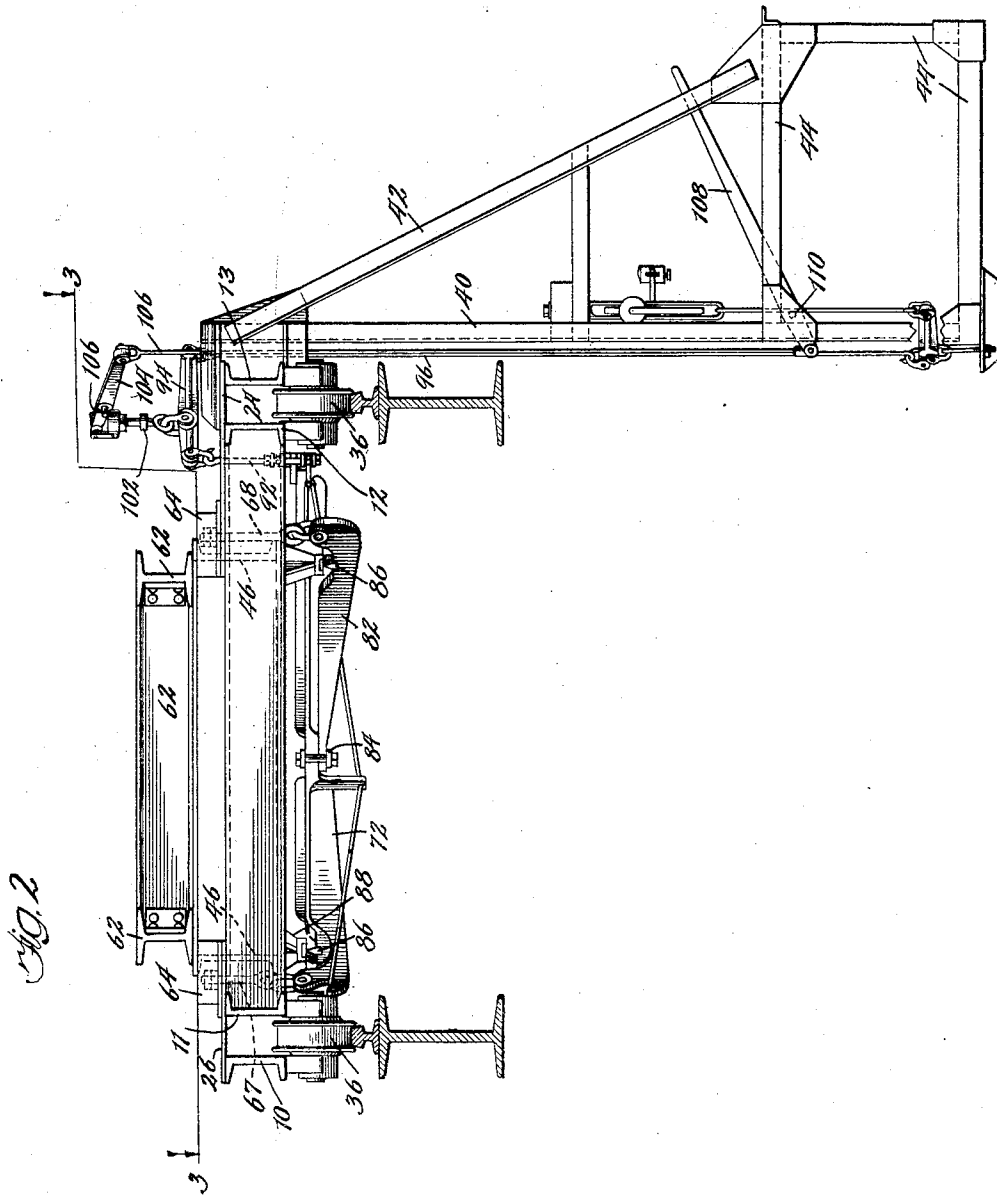
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4 SHEETS—SHEET 2.



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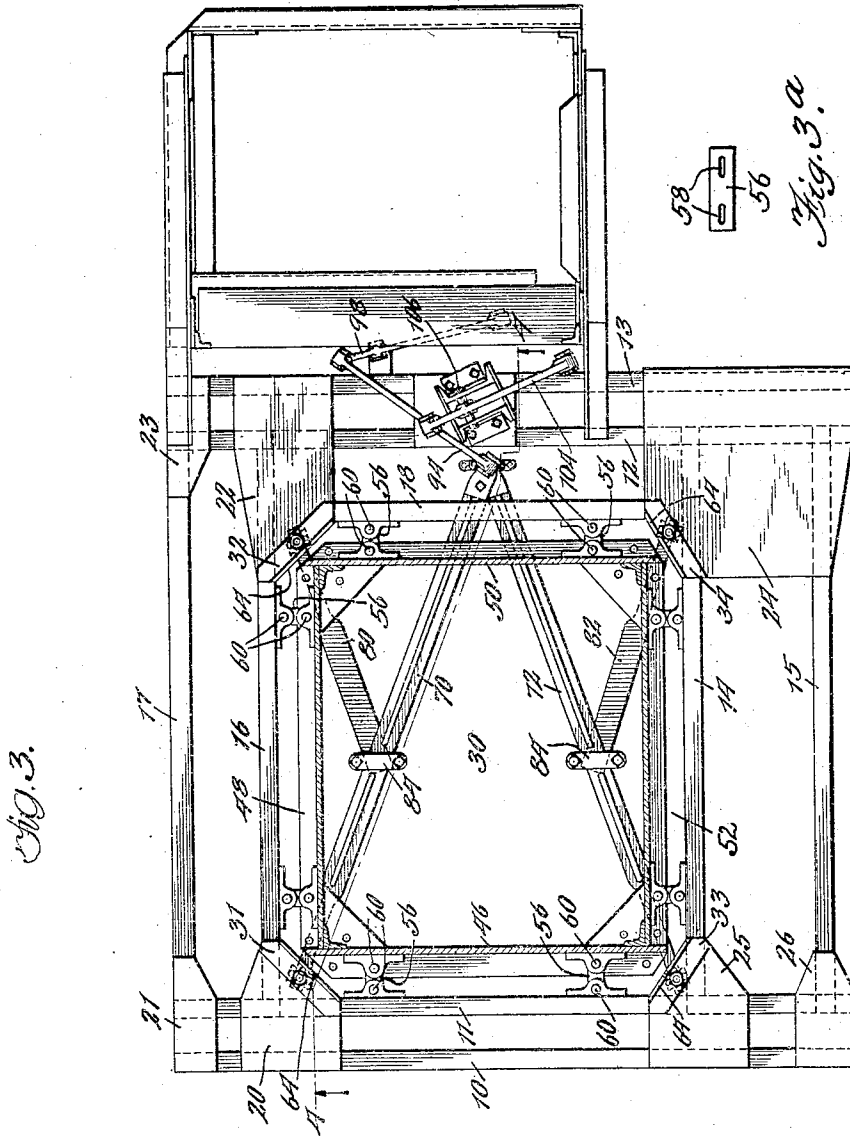
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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

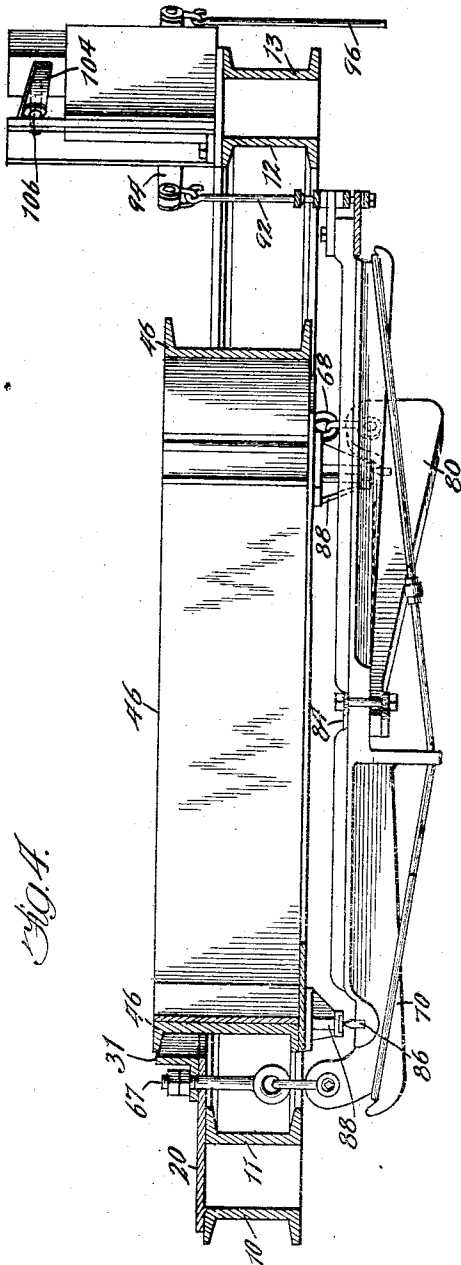


Fig. 4.

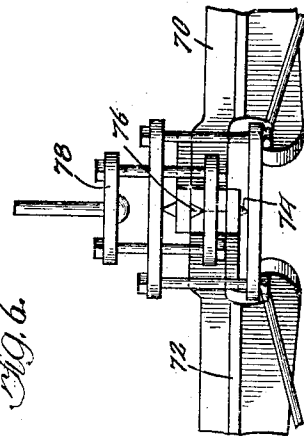


Fig. 6.

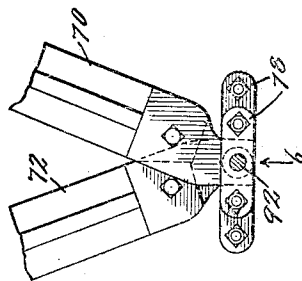


Fig. 5.

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UNITED STATES PATENT OFFICE.

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WEIGHING MECHANISM FOR TRAVELING CRANES.

961,888.

Specification of Letters Patent. Patented June 21, 1910.

Application filed June 7, 1909. Serial No. 500,679.

To all whom it may concern:

Be it known that I, ANDREW H. McDOUGALL, a citizen of the United States, residing at Harvey, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Weighing Mechanisms for Traveling Cranes, of which the following is a specification.

This invention relates to a device by which the load lifted or transported by a traveling crane may be weighed if desired by the operator controlling the movements of the crane while the same is in motion.

The object of the invention is to provide such a device which can be conveniently and economically constructed, which is efficient in operation and not readily liable to get out of order, in which the operator controlling the crane trolley may if desired throw the weight which is being handled by the crane onto weight indicating devices which are within ready access of the operator, whereby he may read the weight of each load.

A further object is to provide means by which the operator may throw the weighing mechanism proper into and out of action.

The invention consists in the application to an ordinary traveling crane trolley, provided with an operator's cage suspended therefrom and traveling therewith, of a supplemental or load carrying platform or frame mounted upon weighing levers adjacent to the trolley proper and clear of the transporting mechanism therefor, said supplemental platform carrying the lifting drums of the crane.

It further consists in means whereby the weighing mechanism just referred to is adapted to be selectively and detachably connected to weight indicating devices in the cage of the crane operator.

More in detail the invention consists in features of construction illustrated in the drawings hereafter described which render the device simple to construct, easy to handle and not readily liable to get out of order and in other features which will be hereafter more fully described and claimed.

In the drawings, Figure 1 is a side view of a traveling crane trolley equipped with the device of this invention. Fig. 2 is an end view of the parts illustrated in Fig. 3. Fig. 3 is a plan view of the same parts taken on the line 3—3 of Fig. 2. Fig. 3^a

is a detail view of one of the connecting links 56. Fig. 4 is a sectional detail view somewhat enlarged taken on the line 4—4 of Fig. 3. Fig. 5 is a detail plan view of the ends of the principal weighing levers and Fig. 6 is a corresponding detail view looking at the parts of Fig. 5 in the direction of the arrow 6 of Fig. 5.

The crane trolley proper consists of nine rectangular frame members 10, 11, 12, 13, 14, 15, 16, 17 and 18, united by suitable plates 20, 21, 22, 23, 24, 25 and 26 in the ordinary manner in such a way as to leave in its center a rectangular opening 30 which would be square but for the angularly placed angle irons 31, 32, 33 and 34 attached to their adjacent plates above mentioned. This trolley frame is mounted upon track wheels 36 and 38 by ordinary mechanism forming no part of this invention, said wheels being so located that they in no wise interfere with the open space 30 above referred to. Depending from one end of this main trolley proper are suitable supporting members 40 and 42 carrying by methods of ordinary construction the operator's cage 44 within which the workman who operates the electrical or other mechanism, not shown, for propelling the trolley along the track and for lifting the load when he is operating the crane.

In the opening 30 and adjacent to but clearing the border members 11, 14, 16 and 18 is an interior or supplemental frame composed of the members 46, 48, 50 and 52 joined together at their corners as shown or by any suitable means. This supplemental frame is loosely connected to the main frame by links 56 having in their ends elongated slots 58 through which the pins 60 pass with the result that these links guide this frame and keep it from ever coming in contact with the outer walls of the opening 30 but at the same time permitting an up and down movement of the entire inner frame for purposes to be hereafter described.

The members 46, 48, 50 and 52 are in the particular case here illustrated, channel irons of commercial form which have rigidly secured to them by bolts or rivets not shown or any other suitable means the eye beams constituting the load carrying platform 62 which as shown extends beyond the outside borders of the opening 30 and is adapted when at rest to bear upon the stops

or supports 64, being in fact the upturned flanges of angle irons 31, 32, 33 and 34 respectively, provided for the purpose. Upon this supplemental platform 62 are mounted the lifting drums and the lifting mechanism 66, shown diagrammatically as that of an ordinary traveling crane, the lifting cables not shown ordinarily passing down approximately through the center of the opening 30.

Rigidly secured in and extending below the members 31, 32, 33 and 34 as shown are two pairs of bars or bolts 67 and 68. Pivotaly mounted upon the lower ends of the bolts 67 or parts attached thereto as shown are two weighing levers 70 and 72. The opposite end of the lever 72 carries a knife edge 74 and the corresponding end of the lever 70 carries a knife edge 76 and the corresponding end of the lever 70 carries a knife edge 76 said two knife edges bearing upon the supporting device 78 illustrated in Figs. 5 and 6. Similarly pivotaly attached to the lower ends of the bolts 68 are short weighing levers 80 and 82 connected to the main levers 70 and 72 by knife edges not shown and the metallic strap mechanisms 84 of the ordinary type such as are used in ordinary platform scales. Each of the four levers 70, 72, 80 and 82 carry at the proper points knife edges 86 on which is supported, by means of depending brackets 88, the interior frame 46, 48, 50, 52 and consequently the supplemental platform 62 heretofore described. The result of this construction is that when the outer ends of the levers 70 and 72 are elevated a sufficient distance the supplemental platform 62 is lifted off from the supporting stops 64 and when this occurs any load placed upon said platform 64 causes said levers 70 and 72, in connection with the levers 80 and 82, to act like the levers of an ordinary platform scale and if the proper mechanism is applied at the outer ends of the levers 70 and 72 the weight of the load may be read. Such a load indicating mechanism is provided in the scale registering mechanism 90 of ordinary type mounted in the operator's cage 44, said weight indicating mechanism being connected to the levers 70 and 72 through the mechanism 78 heretofore described the rod 92, the lever 94, the rod 96, the lever 98 and the rod 100 of ordinary scale construction. The lever 94 is suspended at the proper point between its ends by means of the rod 102 upon the lever 104 pivoted at 106 upon any suitable stationary support. The opposite end of this lever 104 is connected by a rod 106 to one end of a lever 108 pivoted at 110.

Suitable turn buckles 112 and 114 are provided in different parts of the mechanism just described for making preliminary adjustments at the time the mechanism is installed.

When the mechanism has been installed

as described the operation of the device is as follows: When the operator leaves the lever handle 108 to itself, the load upon the platform 62 is sufficient to move all of the parts to a position in which the platform 62 engages the supports 64 and no weighing takes place. When the operator desires to weigh a load upon the crane he takes hold of the outer or longer end of the lever 106 and pulls up upon it thereby moving the rod 106 downward thus moving the rod 102 upward thus lifting the lever 94 bodily upward. The parts are so adjusted that when this lever 108 has been lifted a sufficient distance and consequently this movement of the lever 94 has gone on a sufficient distance the levers 72 and 74 are thrown into action as weighing scale beams in the ordinary manner, with the result that any load upon the platform 62 is transmitted through the weighing levers 70 and 72, 80 and 82 thence through the rod 92, lever 94, rod 96, lever 98 and rod 100 to the weighing indicating device 90 with the result that the workman or operator of the crane may read the load which is upon the platform 62. When this weighing operation is completed the operator releases his hold upon the lever 108 thereby allowing the lever 108 to drop with the result that the weighing levers are thrown out of operation and the crane operates like any ordinary traveling crane.

Having thus described the invention, the claims are:

1. In mechanism of the class described, the combination of a crane trolley proper, a supplemental platform mounted upon the main trolley, mechanism between the supplemental platform and trolley preventing substantial horizontal movement of the supplemental platform with reference to the trolley while permitting limited vertical movement, a weight indicating mechanism movable with the trolley, and means under the control of an operator for connecting and disconnecting said weight indicating mechanism with the supplemental platform whereby weighing operations may be conducted as described.

2. In mechanism of the class described, the combination of a crane trolley proper made with an open center and provided with means on which it may travel along a track, a supplemental platform above said trolley proper normally resting thereon and supported thereby, load lifting machinery upon said supplemental platform adapted to lift loads directly below the crane trolley, scale beam mechanism attached to the crane trolley, capable of supporting said supplemental platform, a weight indicating mechanism, and means connecting and disconnecting at the will of the operator, the scale beam mechanism and the weight indicating mechanism.

3. In mechanism of the class described,
the combination of a crane trolley proper,
provided with means on which it may travel
along a track, a supplemental platform
5 above said trolley proper normally resting
thereon and supported thereby, load lifting
machinery upon said supplemental platform
adapted to lift loads below the crane trolley,
scale beam mechanism attached to the crane
10 trolley, capable of supporting said supple-
mental platform, a weight indicating mech-

anism, and means connecting and discon-
necting at the will of the operator, the scale
beam mechanism and the weight indicating
mechanism. 15

In witness whereof, I have hereunto sub-
scribed my name in the presence of two wit-
nesses.

ANDREW H. McDOUGALL.

Witnesses:

A. L. WALTER,
J. A. FARRIS.