

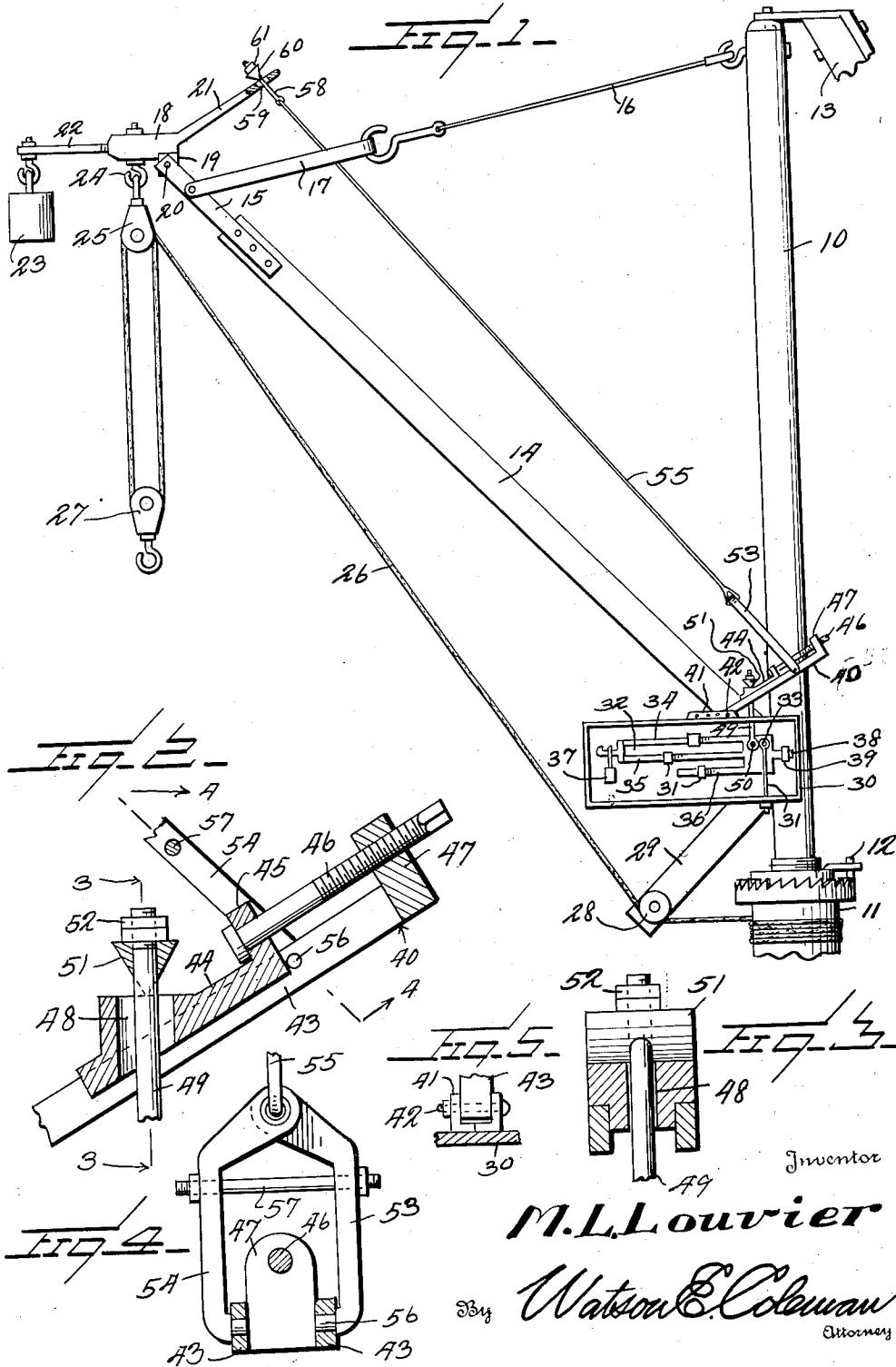
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1,967,622

WEIGHING DERRICK

Original Filed Dec. 20, 1932



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1,967,622

WEIGHING DERRICK

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Original application December 20, 1932, Serial
No. 648,131. Divided and this application June
24, 1933, Serial No. 677,515

5 Claims. (Cl. 265—52)

This invention relates to derricks and particularly to means whereby materials supported by the derrick boom may be weighed, this application being a division of my application filed December 20, 1932, Serial No. 648,131.

One of the objects of my invention is to provide means supported by the mast of the derrick and upon the extremity of the boom whereby material being carried by the extremity of the boom may be weighed upon a scale supported on the mast or other like part of the derrick and in this connection provide means whereby proper compensation may be made for the weight of the cable, the bucket or other article supporting means carried by the cable, or, in other words, to provide means whereby the net weight of the material supported by the cable may be indicated.

Another object is to provide a scale mounted upon the derrick mast and connections leading from the scale to a lever mounted upon the extremity of the boom and supporting the weight of the article carried by the boom, which scale connection is adjustable for variations in the work to be done and adjustable in order to correct the accuracy of the scale from time to time.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawing, wherein:—

Figure 1 is a side elevation of a portion of a derrick shown fully in my application for Patent 648,131 filed December 20, 1932;

Figure 2 is a fragmentary longitudinal section through the sliding connection between the scale beam and the lever mounted upon the extremity of the boom;

Figure 3 is a section on the line 3—3 of Figure 2;

Figure 4 is a section on the line 4—4 of Figure 2;

Figure 5 is a detailed cross section through the lever supporting means on the scale frame.

Referring particularly to the drawing, 10 designates the mast of the derrick which may be mounted upon any suitable base, this mast carrying a winding drum 11 rotatable with relation to the mast. This drum is held from reverse movement by the pawl 12. I have not illustrated any means whereby this drum may be rotated as this forms no part of my invention but is fully shown in my before mentioned pending application. The upper end of the mast is supported by means of a brace designated

13. 14 designates a boom which projects upward and outward from the mast and which at its upper end carries a pair of irons 15. A guy wire 16 is connected at its upper end to the upper end of the mast and at its lower or outer end is connected to the links 17 which are pivoted or otherwise connected to the irons 15. So far I have described one particular form of derrick but it will be understood that I do not wish to be limited to this particular form.

Pivotally mounted between the irons 15 is a lever 18. This lever has a downwardly extending portion 19 as shown in Figure 1 disposed between the irons 15 and pivoted thereto at 20. This lever 18 at its rear end has a rearwardly and upwardly projecting portion 21, extending outward and away from the pivot at 22, this portion 22 carrying a removable weight 23. To the under face of the lever 18 forward of the pivot 20 there is attached a hook 24 supporting a block 25 over which a cable 26 extending from the drum 11 passes, this cable extending through a lower block 27 adapted to support a bucket, bale or any other article, which may be handled by the derrick. The cable 26 passes to a drum 27 over a pulley 28 carried by a bracket 29.

Mounted upon the mast 10 or supported in any other suitable manner is a scale frame 30 having an upwardly extending support 31 upon which the scale beam designated generally 32 is pivoted at 33. The scale beam 32 has three scale arms 34, 35 and 36 upon which weights 37 are slidably disposed, the extremity of the arms 34 and 35 being connected and supporting a pea 37. The rear end of the scale beam is formed with the outwardly projecting arm 38 upon which a counterweight 39 is mounted. So far I have described an ordinary scale beam.

Pivotally mounted upon the upper face of the frame 30 is a lever 40. This is disposed at its lower end between two upwardly extending ribs 41 and there are a plurality of pivot holes through these ribs through one of which the pivot pin 42 for the lever may be disposed.

The lever 40 is longitudinally slotted at 43 and slidably mounted upon the lateral walls of this slot is a slide 44 shown in Figure 2. This slide at its rear end has an upwardly extending lug 45 and extending through this lug and having swiveled engagement therewith is the screw 46. The rear end of the lever 40 is provided with an upwardly projecting lug 47 with which the screw 46 has threaded engagement so that as the screw is turned in one direction, or the other,

the slide will be pulled upward or forced downward. Below the lug 45, the slide 44 as shown in Figure 3 is provided with a vertical slot 48, the slot extending transversely of the slide and passing downward through this slot is a link 49, the lower end of which is pivoted at 50 to the scale beam 32, the upper end of the link passing through a fulcrum member 51, V-shaped in cross section as shown in Figure 2, which has a rocking bearing upon the lateral walls of the slot 48 as shown in Figures 2 and 3. The upper end of the link 49 is screw-threaded and carries adjusting nuts 52. Thus it will be seen that as the lever 40 is drawn upward at its rear end, it will pull upward on the link 49 and pull upward on the scale beam 32. The lever 40 is pivotally connected to a yoke formed of two sections 53 and 54 as shown in Figure 4, these sections being pivoted to an eye formed on the lower end of the cable 55. The lower end of the sections 53 are formed with inwardly projecting studs 56 which engage in apertures formed in the side bars or walls of the lever 40. A bolt 57 extends across two sections of the yoke provided with nuts at its opposite ends so that the two sections of the yoke may be held in conjoined relation to the lever 40.

The upper end of the cable 55 is connected to a bolt 58 which in turn passes loosely through a slot 59, the bolt at its upper end carrying the V-shaped fulcrum member 60 against which a nut 61 engaging the bolt bears.

With this construction, it will be obvious that there will be a fixed weight upon the outer end of the lever 18 comprising the weight of the counter-weight 23, the blocks 25 and 27 and the weight of the cable. The weight 23 is designed to counter-weight the weight of the arm 21 and this weight 23, of course, may be varied to suit any circumstances of operation and keep the cable 55 taut. It will be obvious that as the slide 44 is adjusted toward the pivotal end of the lever 40, it will depress the scale beam but this may be compensated for by adjusting the adjustable support 31. As the slide 44 is adjusted nearer to or further from the fulcrum, the leverage of the lever 40 will be increased or decreased and by changing the fulcrum point of connection between the scale beam and the lever 40, the scale may be adjusted to weigh correctly. This adjustment may be secured coarsely by shifting the pivotal connection between the lever 40 and the rib 41 and more delicately by adjusting the slide 44 by means of the adjusting screw 46.

It will be obvious that when weight is carried upon the block 27, this weight will act to depress the forward end of the lever 18 raising the tail end 21, pulling upward on the cable 55 and upward on the lever 40, thus pulling upward on the scale beam 32 against the action of the several weights. Thus the object, material or article supported by the cable 26 through block 27 may be accurately weighed upon the scale beam.

With this derrick, a load may be weighed and the net load indicated and thus does not make it necessary to weigh the load carrier, whatever that may be, separate from the load carried, thereby saving time and bookkeeping and making the recording of the net weight very easily accomplished.

The scale beam 32 will preferably have three separate weighing beams, one of them for weighing weights from ten to two thousand pounds,

another for weights from two thousand to ten thousand pounds, and one from a quarter of a pound to ten pounds. The scale is preferably made of metal and may be protected by the frame 30 or entirely housed by said frame. The scale, it will be seen, has no platform on which dirt or other objects may accumulate and thus throw it out of balance.

I claim:—

1. In a derrick, a boom, a weighing scale mounted on the derrick, a lever pivotally supported on the boom, an object support carried by the lever on one side of its fulcrum, a lever pivotally supported above the pivotal point of the scale beam, a connection between the last named lever and the first named lever on the other side of its fulcrum, a link extending from the scale beam of the weighing scale and pivotally connected to the scale beam in front of the pivot of the scale beam, said link engaging said second named lever, and means for adjusting the point of engagement of the link with said lever nearer to or further from the fulcrum of the said last named lever.

2. In a derrick, a mast, a boom, a scale mounted upon the derrick and including a pivoted scale beam extending therefrom, a frame supporting the beam, a lever pivoted upon the frame, a slidably adjustable member mounted upon said lever, a link carried by the slidable member and pivotally engaging the scale beam forward of the pivot thereof, a lever pivoted upon the outer end of the boom, one end of said last named lever having a connection to the first named lever, and means for supporting weight from the second named lever said means being located on the other side of the fulcrum of the second named lever from said connection.

3. In a derrick, a mast, a boom extending outward from the mast, a scale mounted upon the mast including a frame and a pivoted scale beam, a lever mounted upon the boom and pivoted intermediate its ends, a weight detachably mounted upon the outer end of the lever, a material supporting means connected to the lever outward of its pivotal point, a second lever pivoted upon the frame of the scale beam, the lever extending upward and inward, a slide mounted upon said lever, a link connecting the slide to the scale beam outward of its pivotal point, means for adjusting the slide toward or from the fulcrum of the lever, and a connection between said second named lever and the inner end of the first named lever.

4. In a derrick, a mast, a boom, a lever pivoted intermediate its ends upon the boom, article supporting means carried by said lever on one side of its fulcrum, a weighing scale mounted upon the derrick and having a pivoted scale beam, a lever pivoted immediately above the scale beam, a connection between the inner end of the first named lever and the outer free end of the second named lever on the other side of its fulcrum from the article supporting means, a slide mounted upon the second named lever for longitudinal movement therealong, means for adjusting said slide, the slide having a vertically extending slot, a link pivotally connected to the scale beam and extending upward through said slot, a V-shaped bearing member through which the link passes and nuts engaging the upper end of the link with the upper face of the fulcrum member.

5. In a derrick, a boom, a lever pivoted upon the free end of the boom, and article supporting

means connected to said lever outward of its pivotal point, an arm extending inward from the lever, a weighing scale mounted upon the derrick and including a frame, a scale beam 5 pivoted upon the frame, a lever adjustably pivoted upon the frame immediately above the rear end of the scale beam, an operative connection between the rear end of the first named lever and the free end of the second named lever, a slide mounted upon the second named lever, means for adjusting the slide along the lever, a link pivotally connected to the scale beam forward of its pivotal support and extending upward through the slide, the slide having 80 a slot to accomodate said link and a V-shaped bearing member carried by the link and resting upon the walls of the slot.

MARIUS LEWIS LOUVIER.

10	85
15	90
20	95
25	100
30	105
35	110
40	115
45	120
50	125
55	130
60	135
65	140
70	145
75	150