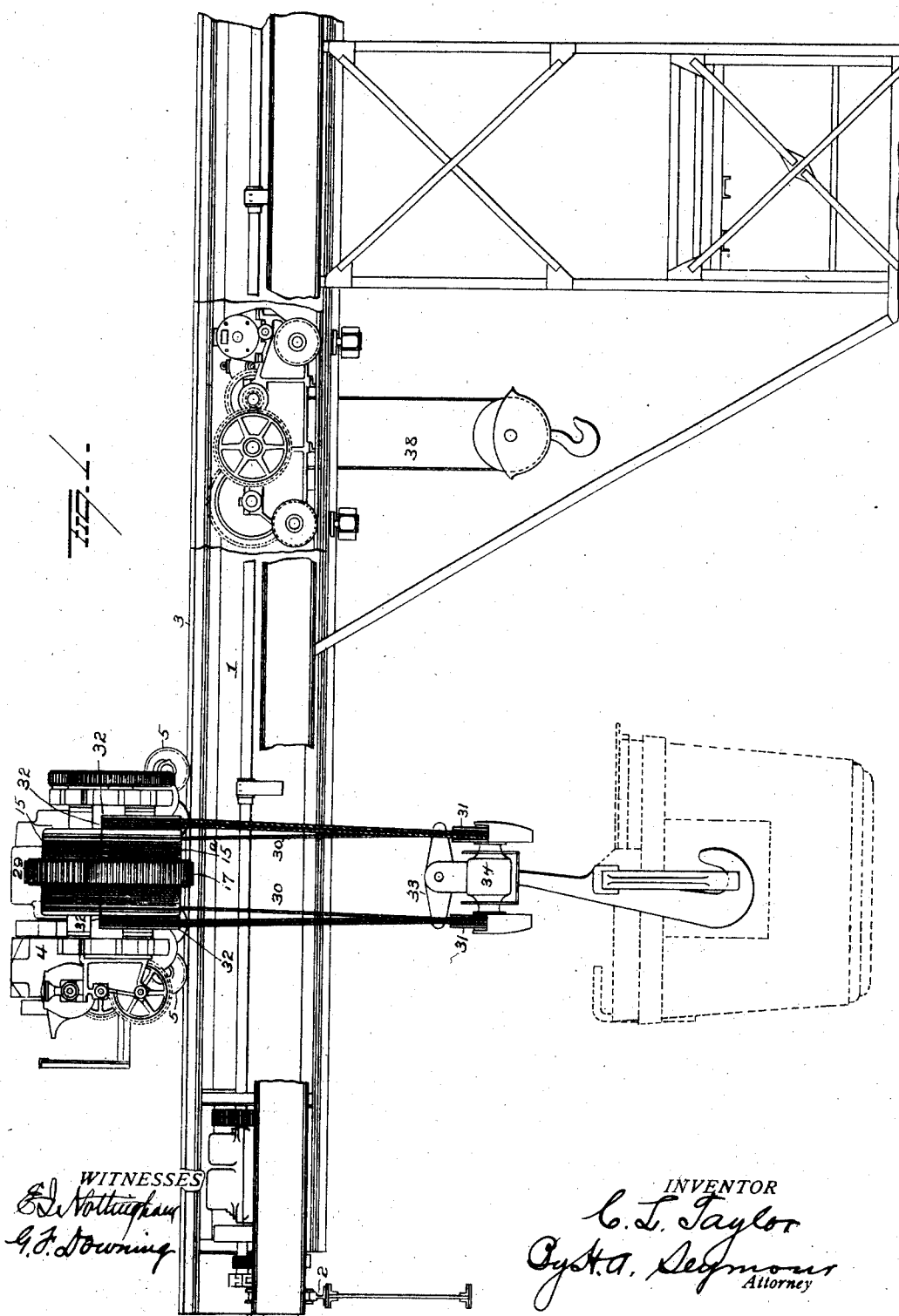


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C. L. TAYLOR. PATENTED SEPT. 3, 1907.  
CRANE FOR CARRYING LADLES.  
APPLICATION FILED MAR. 9, 1906.

3 SHEETS—SHEET 1.



WITNESSES  
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*G. J. Downing*

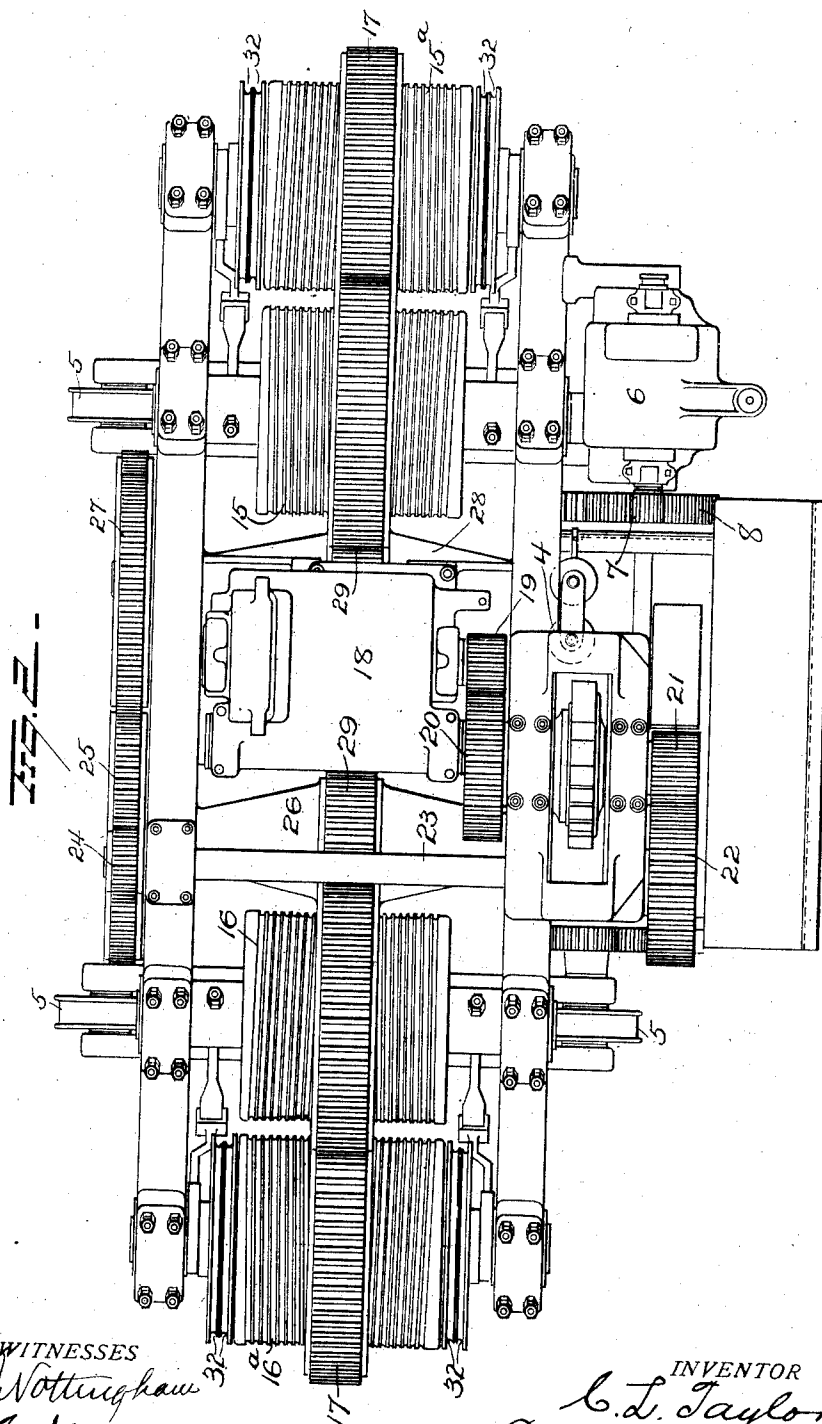
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3 SHEETS—SHEET 2.



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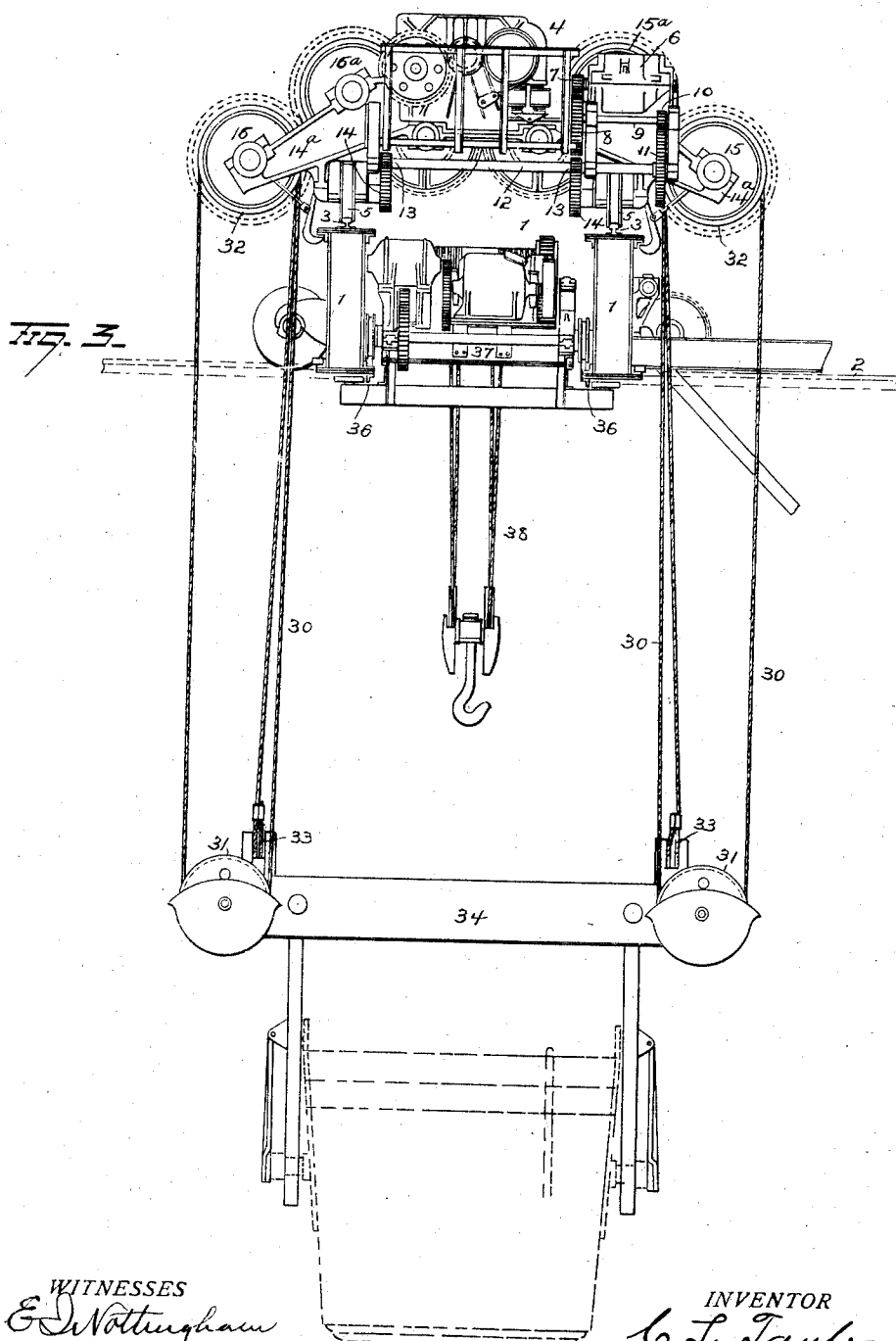
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# UNITED STATES PATENT OFFICE.

CLARENCE L. TAYLOR, OF ALLIANCE, OHIO, ASSIGNOR TO THE MORGAN ENGINEERING COMPANY, OF ALLIANCE, OHIO.

## CRANE FOR CARRYING LADLES.

No. 864,935.

Specification of Letters Patent.

Patented Sept. 3, 1907.

Application filed March 9, 1906. Serial No. 305,107.

*To all whom it may concern:*

Be it known that I, CLARENCE L. TAYLOR, of Alliance, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in  
5 Cranes for Carrying Ladles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

10 My invention relates to an improvement in cranes for carrying ladles, the object being to minimize the danger due to breaking of the hoist ropes or chains, and it consists in a novel arrangement of drums for carrying two sets of ropes or chains supporting the  
15 ladle carrying bar, each being secured to its own drum, the several drums being geared together so as to move in unison.

My invention further consists in the parts and combinations of parts as will be more fully explained and  
20 pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in front elevation of a bridge showing a trolley with my improved hoisting mechanism thereon. Fig. 2 is a view in plan of the trolley and Fig. 3 is a view in  
25 transverse section of the bridge showing the main and auxiliary trolleys in elevation.

1 represents a traveling bridge adapted to travel on the rails 2 extending lengthwise the mill or foundry. This bridge may be of any approved form or construction, and is provided on its upper surface with the rails  
30 3 on which the main trolley 4 travels. This main trolley is mounted on wheels 5, two of which are propelled by the motor 6, the armature shaft of which has a small pinion 7 meshing with a larger pinion 8 on shaft 9.  
35 This shaft carries at its opposite end the small pinion 10 which meshes with pinion 11 on shaft 12. This shaft extends across the trolley and is provided with two pinions 13 each of which engages a pinion 14 fast to a track wheel 5. By rotating the motor the trolley  
40 will be propelled lengthwise the bridge. The body or frame of this trolley projects downwardly and outwardly at its opposite sides as at 14<sup>a</sup>, so as to overhang the bridge girders 1 as clearly shown in Fig. 3. Each overhanging section of the frame carries two double  
5 drums 15 and 15<sup>a</sup> and 16 and 16<sup>a</sup>, the axes of which are parallel with the bridge girders, the double drum 15 and 16 being located with their axes in the vertical planes of the centers of the wheels 5 carrying the trolley, while the outer drums 15<sup>a</sup> and 16<sup>a</sup> are in planes  
50 wholly outside the bridge girders.

Each drum 15 15<sup>a</sup> 16 and 16<sup>a</sup> is provided centrally with a toothed gear 17, the two gears 17 on the drums at each side or rather of each pair of drums, being in mesh so that a motion imparted to one drum 15 or 16

will transmit motion in the opposite direction to its 55 companion drum 15<sup>a</sup> or 16<sup>a</sup>.

Located on the trolley is the main hoist motor 18 the armature shaft of which, carries pinion 19 meshing with pinion 20 on a shaft carrying the small pinion 21. Pinion 21 is in mesh with pinion 22 fixed on shaft 23, extending across the trolley parallel with the hoisting  
60 drums, and carrying pinion 24 meshing with the large toothed wheel 25 on shaft 26. Wheel 25 is in mesh with toothed wheel 27, the latter being of the same size as wheel 25, and is secured on a shaft 28, in all respects  
65 similar to shaft 26. Each shaft 26 and 28 has a centrally located pinion 29 the pinion 29 on the shaft 28 engaging the pinion 17 carried by the drum 15 at one side of the trolley, while the pinion 29 on shaft 26 engages the pinion 17 on drum 16 at the other side of the  
70 trolley. With this motor 18 and the arrangement of gears as above described, it will be seen that when the motor is actuated, the four double drums 15, 15<sup>a</sup>, 16 and 16<sup>a</sup> will be actuated in unison and at the same speed, the two inner drums 15 and 16 rotating in opposite  
75 directions, while the outer drums 15<sup>a</sup> and 16<sup>a</sup>, of each pair, rotate in a direction opposite the direction of rotation of its companion drum.

Each section of each double inner drum 15 and 16, has a rope or chain 30 secured thereto and adapted to  
80 be wound thereon and unwound therefrom.

The two ropes or chains from each of the double inner drums 15 and 16 at each end of the trolley, pass down outside the main girders and around double sheaves 31 located at each end of the ladle carrying bar 34, but on  
85 opposite sides of the bar, while the two ropes or chains from each of the double outer drums 15<sup>a</sup> and 16<sup>a</sup> at the opposite ends of the trolley, pass down and around double sheaves 31. These eight ropes or chains after passing around the sheaves 31 on the ladle carrying bar  
90 34, pass upwardly and around double sheaves 32 mounted on the shafts of the outer drums 15<sup>a</sup> and 16<sup>a</sup> and then down and secured to the opposite ends of the levers 33 pivotally secured to the upper surface of the ladle carrying bar 34. With this arrangement it will  
95 be seen that the ladle carrying bar 34 is supported by two independent sets of ropes or chains at each end, either set of which, will be capable of sustaining the load in the event any one rope or chain should break, thus minimizing the danger due to the breaking of a  
100 hoist rope or chain.

By having the double drums at each end coupled by intermeshing gears, and connecting the two sets of drums to a single source of power, the drums necessarily move in unison at the same speed and in their  
105 proper relative directions to wind and unwind the hoist chains.

The bridge girders are provided on their lower

flanges with the rails 36 on which the auxiliary trolley 37 travels. This trolley carries a drum arranged with its axis at right angles to the direction of travel of the trolley and its hoist chain 38 is employed for tilting the ladle or transporting tools and material of any kind.

It is evident that many slight changes might be resorted to in the relative arrangement of parts herein shown and described without departing from the spirit and scope of my invention hence I would have it understood that I do not wish to confine myself to the exact construction of parts shown and described, but,

Having fully described my invention what I claim as new and desire to secure by Letters-Patent, is:—

1. In a crane for carrying ladles, the combination with a traveling bridge, of a traveling trolley thereon, the said trolley having four drums arranged in pairs at the opposite sides thereof so as to carry the hoist ropes outside the bridge girders, the axes of the four drums being parallel with each other, and the drums of each pair geared together so as to move in unison.

2. A trolley having four drums arranged in pairs, the axes of the four drums being parallel with each other and also with the direction of movement of the trolley, the drums of each pair being geared together so as to move in unison.

3. In a crane for carrying ladles the combination with a traveling bridge, of a traveling trolley thereon, the said trolley carrying four drums arranged in pairs, the drums of each pair being geared together, and the axes of all of said drums being parallel and a motor and gearing for actuating both pairs of drums.

4. A trolley having four drums arranged in pairs the axes of the four drums being parallel with each other and also with the direction of movement of the trolley, the drums of each pair being geared so as to rotate in unison and a motor and gearing for actuating the four drums.

5. The combination with a trackway for a trolley, of a trolley on said trackway, and four drums arranged in pairs, at the opposite sides of the trolley, the drums of each pair being side by side with the axis of each in the direction of travel of the trolley, and a motor and gearing for rotating the drums in unison.

6. The combination with a traveling bridge, of a trolley thereon, four drums arranged in pairs at the opposite sides of the trolley so as to carry the hoist ropes outside the bridge girders, the drums of each pair being parallel side by side with the axis of each in the direction of travel of the trolley, and means for rotating said drums in unison.

7. A trolley having four drums arranged in pairs, the drums of each pair being geared together so as to move in unison, and a series of sheaves loosely mounted adjacent to both ends of one drum of each pair.

8. The combination with a bridge, of a trolley having four drums arranged in pairs at opposite sides of the trolley, with their axis parallel with the bridge, and a series of sheaves loosely mounted adjacent to both ends of the outer drum of each pair.

9. The combination with a bridge, of a trolley thereon, four hoist drums arranged in pairs at the opposite sides of the trolley, gearing connecting the drum of each pair and a single motor, and gearing connecting said motor with the inner drum of each pair.

10. The combination with a bridge, of a trolley thereon,

four double drums arranged in pairs on the opposite side of the trolley, the drums of each pair being geared together, a motor, and gearing connecting said motor with the inner drum of each pair.

11. The combination with a bridge, of a trolley thereon, four double drums arranged in pairs on opposite sides of the trolley, gearing connecting the two double drums of each pair, sheaves loosely mounted adjacent to the outer ends of the outer double drum of each pair, a motor, and gearing connecting said motor and the inner double drum of each pair.

12. The combination with a traveling bridge, of a main trolley mounted thereon, four drums arranged in pairs on said trolley the two drums of each pair being geared together, a motor, gearing connecting said motor and the two inner drums of each pair and an auxiliary trolley adapted to travel on the bridge in a plane below the main trolley.

13. The combination with a traveling bridge, of a main trolley having four drums arranged in pairs at the opposite sides of the trolley, the axes of the four drums being parallel with each other, gearing for actuating the drums, and an auxiliary trolley mounted on the bridge in a plane below the main trolley.

14. The combination with a traveling bridge, of a main trolley having four drums, the axes of the said drums being parallel with each other and with the direction of travel of the trolley, gearing for actuating the drums and an auxiliary trolley mounted to travel on the bridge in a plane below the main trolley.

15. In a ladle carrying crane the combination with a trolley, of two independent ropes at each end of the trolley, a ladle carrying bar suspended from said ropes and means for winding and unwinding all of said ropes at equal speed.

16. In a ladle carrying crane a trolley having four drums arranged in pairs at the opposite sides thereof the drums of each pair being geared together, two independent sets of hoist ropes carried by each pair of drums, and a ladle carrying bar suspended from the four ropes.

17. In a ladle carrying crane the combination with a trolley having two pairs of hoist drums, of two hoist ropes carried by each pair of drums, and a ladle carrying bar carried by the said hoist ropes.

18. In a ladle carrying crane, the combination with a trolley having two pairs of hoist drums and means for rotating all of said drums in unison of two cables carried by each pair of drums and a ladle carrying bar suspended from said two pairs of cables.

19. In a ladle carrying crane, the combination with a trolley and four drums thereon, the drums being arranged in pairs, one pair at each side of the trolley, of two hoist ropes for each pair of drums, each rope being secured to both drums of the pair, and a ladle carrying bar suspended from said ropes.

20. In a ladle carrying crane the combination with a trolley and four drums thereon arranged in pairs, one pair at each side of the trolley, and means for rotating the drums in unison, of two hoist ropes carried by each pair of drums, and a ladle carrying bar suspended from the ropes of both pairs of drums.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

CLARENCE L. TAYLOR.

Witnesses:

E. E. BROSIUS,  
N. C. FETTERS.