(No Model.)

M. GIBBONS.

AUTOMATIC DERRICK AND CRANE PLATFORM.

No. 349,582. Patented Sept. 21, 1886.

Fig. 1.

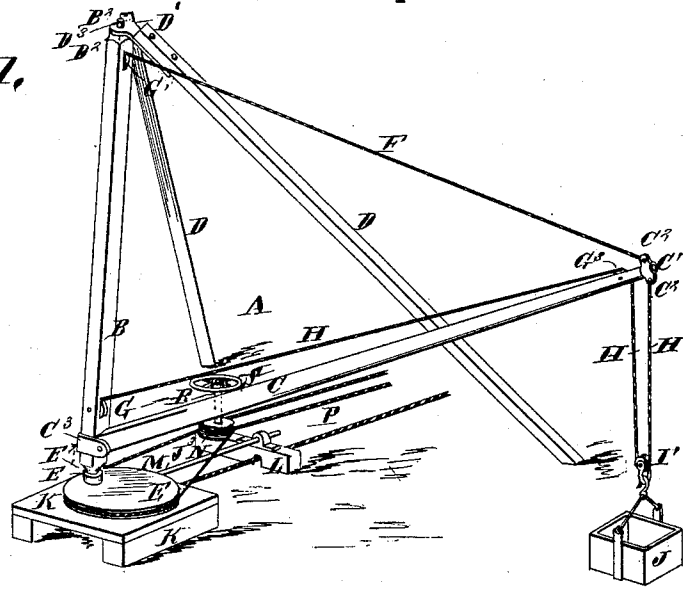


Fig. 2.

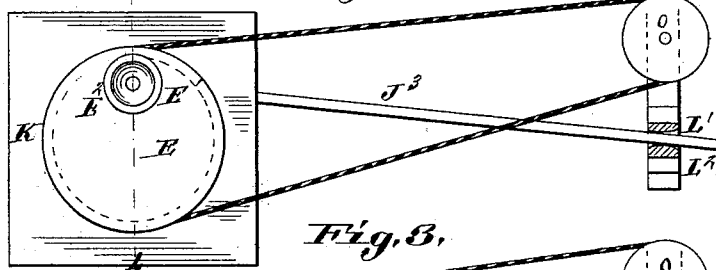


Fig. 3.

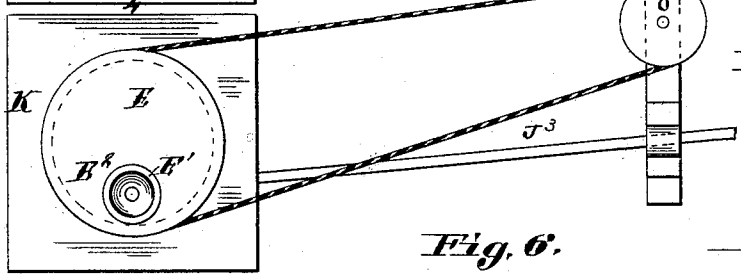


Fig. 4.

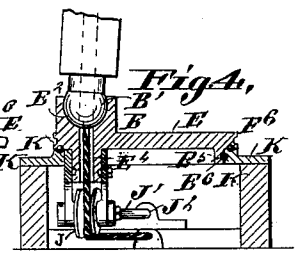


Fig. 5.

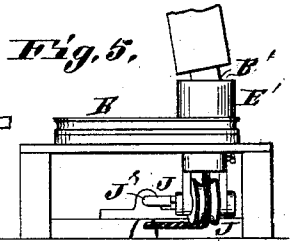
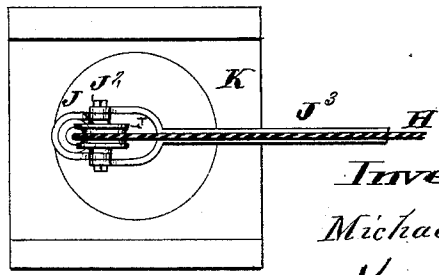


Fig. 6.



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UNITED STATES PATENT OFFICE.

MICHAEL GIBBONS, OF ST. LOUIS, MISSOURI.

AUTOMATIC DERRICK AND CRANE PLATFORM.

SPECIFICATION forming part of Letters Patent No. 349,582, dated September 21, 1886.

Application filed January 27, 1886. Serial No. 189,949. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL GIBBONS, of the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Automatic Derrick and Crane Platforms, &c., of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a perspective view of the device. Figs. 2 and 3 are plans showing the parts in different positions, Fig. 2 having part in section. Fig. 4 is a vertical section on line 4 4, Fig. 2. Fig. 5 is a detail side view, and Fig. 6 is a detail top view with the platform inverted.

My invention relates to certain improvements in derricks and cranes with their attachments; and my invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Much difficulty has heretofore been experienced in swinging round the boom of loaded cranes and derricks from the receiving-point to that of delivery, requiring the services of attendants to make the change, which is automatically effected in my device by the engine (not shown) that lifts the draft. The eccentric footing of the mast on the turn-table and the self-adjusting sheave with its steady-rod have especial advantages in this respect that will be hereinafter fully described.

Referring to the drawings, in which similar letters of reference designate like parts, A represents my automatic derrick or crane with its turn-table, &c. The mast B is hollow down from the lower sheave, G, (which works in it,) and has a ball-foot, B', that works in a socket, E^2, in a projection, E', on the turn-table E. This connection makes a ball-and-socket universal joint, allowing the mast to be adjusted in any direction, either laterally or in elevation.

D D represent stiff guys that brace the mast, which is provided with a pin, B^2, on the top, that is journaled at D^3 into the lug D^2, which projects from the head of the stiff-guy coupling or band D'. The said band iron or irons are bolted to the upper ends of the stiff guys, and may be formed of a single band that is hinged to allow the guy-braces when not in use to be folded together, or with individual bands that couple together on the pin at the head of the mast. In either case they brace the mast in the same way and allow free action for the pin in its journal. This triple connection of the mast and stiff guys makes a firmly-braced tripod, although the position of the foot of the post changes as the turn-table rotates.

E represents my automatic turn-table that carries the mast, and which is provided with curved guide flanges or projections E^4 and E^5, that turn in a circumferential groove, K', in the platform K. The table is provided with anti-friction rollers E^6 on its horizontal track and around the vertical flange of the circumferential groove.

C represents the boom, which is pivoted in the clip-band C^3 that grips the mast. The boom has a head or tip-iron, C', provided with perforated lugs C^2 C^2 above and below. The stay-brace F is secured to said upper lug, and passing round a sheave, G', running in the head of the mast and falling behind, it may be adjusted and secured in any suitable way (to elevate and hold the point of the boom.)

H represents the hoisting-cable, which starts from the lower lug, C^2, at the head of the boom and round a sheave, I', in the hitch-block I, to which the bucket J or other freight is hitched, and upward and over a sheave, G^2, journaled near the forward end of the boom, from and over which the cable passes over the sheave G, near the foot of the mast, from which it descends within the mast to a slotted way, E^3, through the table and its step E^4, and round the adjustable sheave J, whose journal J' has bearings J^2 beneath the platform K in which the turn-table works. The hoisting-cable passes direct from the adjustable sheave through the ground-block L to the engine, (not shown,) which may be placed at any suitable distance. A steady-rod, J^3, its end passing through and held in a curvilinear slot, L', of a bearing-box, L^2, steadies the adjustable sheave as its position changes with the rotation of the turn-table. It will be seen that this rod passes readily longitudinally through the slot in the bearing-box on the ground-block, accommodating itself to its varying position as the table turns. This rod is a necessary appendage to steady and adjust the

sheave. The sheave J beneath the platform is said to be adjustable because the steady-rod J^3, that commands the sheave, steadies and adjusts it to its work, keeping it in the same relative position to the hoisting-tackle as the latter is turned with the turn-table. The end of this steady-rod passes through and has free longitudinal action in a curvilinear slot in a bearing-box, L^2, in the ground-block, thus accommodating itself to its change of angle consequent on the rotation of the table.

M represents an endless belt or cord that engages around the turn-table and sheave N, that is worked by a vertical shaft, R, that rises from the ground-block L.

P is an endless belt or cord that engages with a sheave, O, on the aforesaid shaft, and around a band-wheel operated by the engine.

Sheaves O and N are twin sheaves on the same vertical shaft R, one sheave carrying the belt M from the turn-table, and the other the belt P from the band-wheel of the engine. The device would have precisely the same action if the belts were relatively changed in their positions O and N. It will be seen that by this belt-geared connection with the engine the turn-table can be rotated by the operator, and as the foot of the mast moves with the turn-table the point of the boom is carried round laterally, moving the freight from over the point of unlading to that of delivery—as in the case of unlading a vessel, from the vessel to the wharf, cars, &c.

It is evident that the inclined face of the mast necessarily changes with the turn of the table, and that the boom, which always points from the same line of presentation as the mast, has its point carried around laterally, in accordance with and just to the extent of the movement of the turn-table. Figs. 2 and 3 show the turn-table and the steady-rod of the adjustable sheave relatively in opposite directions, the one in position for unlading and elevating the freight, and the other for its delivery on the cars, warehouse, &c. It will be understood that the point of the boom is to be elevated by the stay-brace when the freight is to be delivered on the upper floors of the warehouse, &c.; but I do not claim any novelty in my means of adjusting and securing the stay-brace, which may be effected by a crank-ratchet windlass secured near the foot of the mast, or by any other suitable means.

The boom always stretches diametrically over the turn-table from the ball-and-socket joint at the foot of the mast, so that the delivery, when the turn-table is in the position of either of the aforesaid Figs. 2 and 3, would be in a diametrically-opposite direction to that of its reception, as shown in the other one.

By the use of my automatic turn-table operated by the engine all manual labor in shifting the lateral position of the freight is dispensed with, and, besides the saving of labor, it is under more perfect control than would be possible other ways.

I have shown and described a belt-geared connection from the engine to the turn-table; but I do not confine myself to the use of loose gearing, for stiff gearing could be used for the same purpose without departing from the essential features of my invention.

Although I prefer to move the turn-table by the engine, I have shown and can use a hand-wheel, S, at any time when steam is not up.

I claim as my invention—

1. In a derrick or crane, the combination of the mast B, with ball-and-socket joint working in turn-table E, boom C, pivoted in clip-band C^2, stiff guys D D, with the stay-brace F, and hoisting-cable H, all substantially as described, and for the purpose set forth.

2. In a derrick or crane, the combination of the mast, boom, stiff guys, stay-brace, and hoisting-cable, the mast stepped by a universal joint in a turn-table, which is turned by endless belts M P, engaging in sheaves O N, and with a band-wheel on the operating-engine, and arranged as the table turns to automatically adjust the boom and its freight to accord relatively with the points of unlading and delivery, all substantially as described, and for the purpose set forth.

3. In a derrick or crane, the combination of the mast, boom, stiff guys, stay-brace, hoisting-cable, and turn-table arranged to automatically change the position of the mast with its boom and give lateral movement to the freight from over the place of unlading to that of delivery, all substantially as described, and for the purpose set forth.

4. The combination of a mast, B, having a ball-and-socket connection eccentrically with a turn-table at the lower end and stationary pivotal connection at the upper end, a boom connected by one part to the lower part of the mast, and having its other end connected to the upper part of the mast by a stay, substantially as F.

5. The combination of a turn-table, a mast having universal-joint connection eccentrically on the block and fixed pivotal connection at the upper end, a boom connected to the mast, substantially as set forth, and a hoisting-cable working on the boom.

6. The combination of the turn-table, a mast having universal-joint connection eccentrically thereon, a hoisting-cable passing centrally through the joint and having bearing on the boom, substantially as and for the purpose set forth, as described.

7. The combination of the turn-table E, with crane-mast having eccentric universal-joint connection therewith, a hoisting-cable passing under a sheave whose housing is turnable upon the table, and a guide-arm, J^3, operating to hold the sheave in line with the horizontal part of the cable in all positions of the turn-table, substantially as set forth.

8. In a derrick or crane, the combination of the mast stepped by a ball-and-socket joint in a turn-table, with the hoisting-cable passing round an adjustable sheave, J, with a steady-rod, J^3, working in the circumlinear slots of

a bearing-box on a ground-block, the table operated by endless belts and sheaves in connection with a band-wheel on the engine, and arranged as the table rotates to move the boom and its load laterally from the place of unlading to that of delivery, all substantially as and for the purpose set forth.

9. The combination of an inclined mast having at its lower end a ball-and-socket connection eccentrically with a turn-table and stationary pivotal connection to stiff guys at its upper end, and a boom with pivotal connection to the mast at its lower end and adjusted by a stay-brace at its upper end, the turn-table operated by gearing from the engine and arranged to automatically turn the mast and boom and carry the suspended freight laterally from over the place of unlading to that of delivery, all substantially as described, and for the purpose set forth.

MICHAEL GIBBONS.

In presence of—
BENJN. A. KNIGHT,
SAML. KNIGHT.