

No. 822,837.

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DERRICK.
PATENTED JUNE 5, 1906.
APPLICATION FILED MAY 4, 1905.

3 SHEETS—SHEET 1.

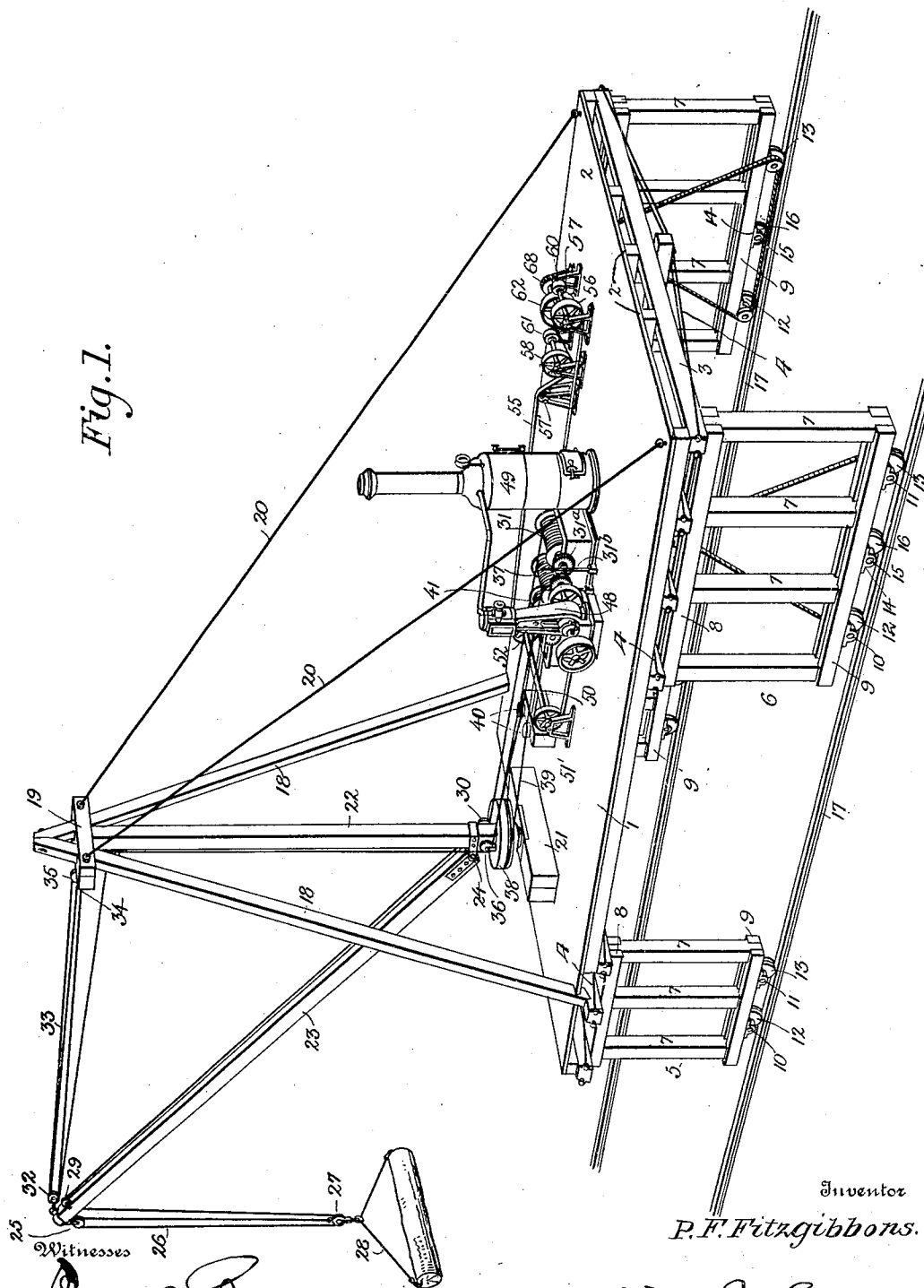


Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 2.

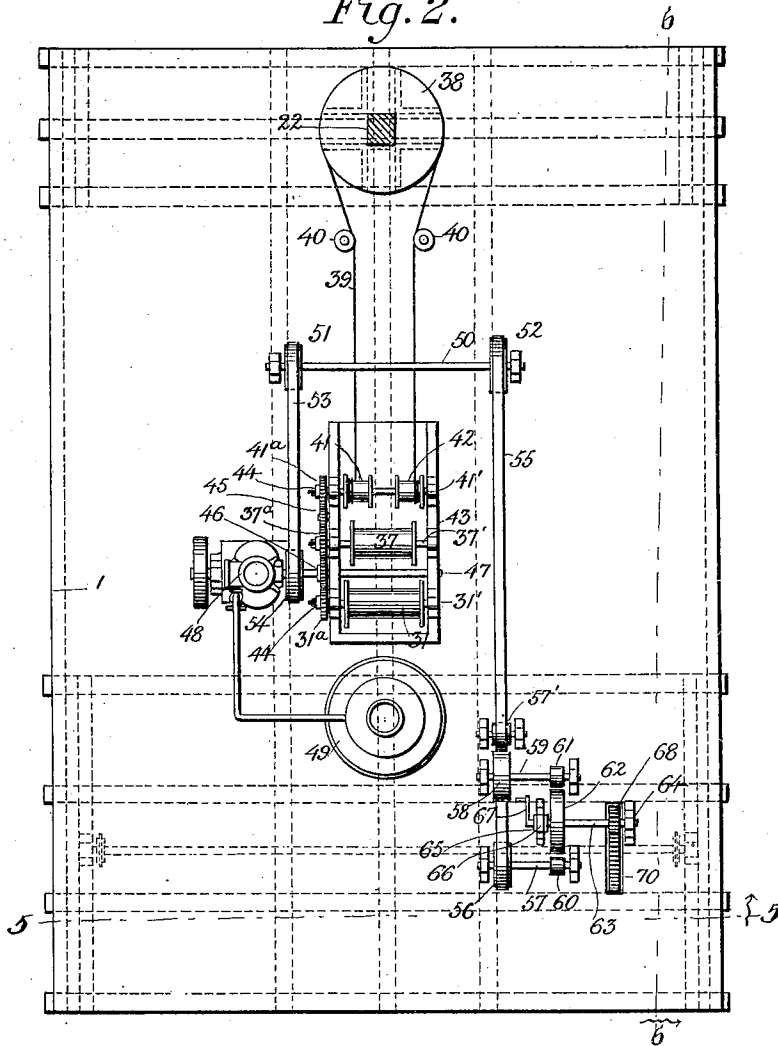


Fig. 3.

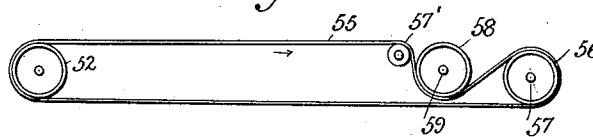
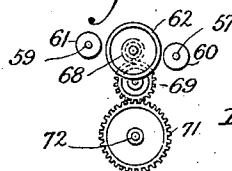


Fig. 4.



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3 SHEETS—SHEET 3.

Fig. 5.

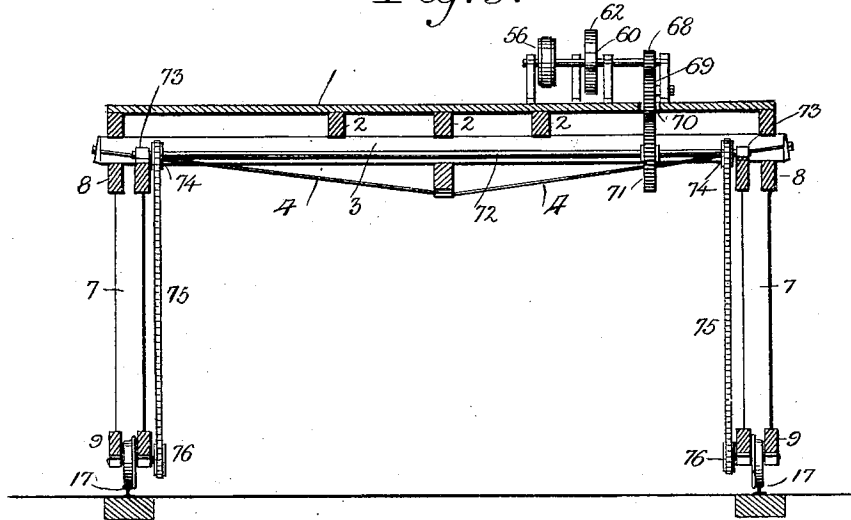
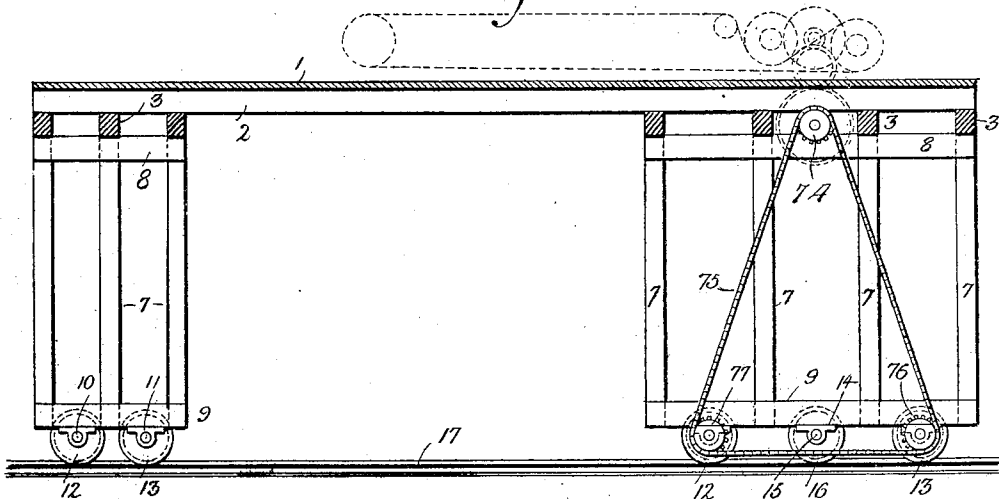


Fig. 6.



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UNITED STATES PATENT OFFICE.

PATRICK F. FITZGIBBONS, OF CHATTANOOGA, TENNESSEE.

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No. 822,837.

Specification of Letters Patent.

Patented June 5, 1906.

Application filed May 4, 1905. Serial No. 258,842.

To all whom it may concern:

Be it known that I, PATRICK F. FITZGIBBONS, a citizen of the United States of America, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented new and useful Improvements in Derricks, of which the following is a specification.

This invention relates to improvements in traveling derricks, and particularly to derricks of that class adapted for unloading logs and other heavy materials from railway-cars and stacking the same in piles alongside the track.

Derricks of this character are provided with traction-wheels to run upon the rails of a main track or siding, but usually upon a specially-constructed track arranged parallel with the main track or siding and, as ordinarily constructed, are of the "low-down" type—that is, mounted upon a frame or platform which is elevated but a short distance above the track-surface. The objection to derricks of this type is that the space between the track-rails is wasted, as the construction of such derricks will not permit of the logs or other material being piled in said space.

The object of the present invention is to provide a traveling derrick having a platform of sufficient width to run upon track-rails arranged widely apart and of sufficient height to permit of the stacking of the material between and on opposite sides of the rails and of the passage of the derrick over the stacked piles, thus securing economy in storage-space, and, further, to provide a novel construction and arrangement of gearing whereby the operation of the derrick mechanism and travel of the derrick back and forth upon the track may be readily and conveniently controlled.

With the above and other objects in view the invention consists of the construction, combination, and arrangement of parts hereinafter fully described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a traveling derrick embodying my invention. Fig. 2 is a top plan view of the deck or platform thereof with the gearing mounted thereon, the mast appearing in horizontal section.

Fig. 3 is a detail view of the drive-belt and associated pulleys of the friction-gearing for driving the traction-wheels. Fig. 4 is a detail side elevation of the friction-wheels and gears actuated thereby to drive the transmission-shaft of the traction-gearing. Fig. 5 is a vertical transverse section taken on line 5 5 of Fig. 2, and Fig. 6 is a longitudinal section taken on line 6 6 of Fig. 2.

Referring now more particularly to the drawings, the numeral 1 represents a deck or platform which may be of any preferred construction, but which, as shown, consists of a flooring laid upon parallel longitudinal beams 2, connected at suitable points by transverse bars or beams 3 and suitably braced by tie bolts or irons 4, intermediately connected to the central longitudinal beam and fastened at their ends to the side longitudinal beams and cross bars or beams. The deck or platform is supported in elevated position at each side by front and rear standards or upright frames 5 and 6, each consisting of a series of vertical bars or beams 7, fastened at their upper and lower ends to horizontal beams 8 and 9. The transverse bars or beams 3 of the deck or platform are preferably arranged in closely-related rows or series at the front and rear of the platform and rest upon and are suitably secured to the upper horizontal beams 8 of the said end standards or upright frames 5 and 6, whereby a strong and stable structure is secured.

The bottom horizontal beams 9 of the upright supporting-frames are provided with bearings for the reception of short shafts or axles 10 and 11, on which are journaled traction-wheels 12 and 13, the construction in this respect being the same upon each front and rear upright frame, except that each rear upright frame has its traction-wheels 12 and 13 spaced a greater distance apart than the wheels on the front upright frame and provided between the two with bearings 14 for an axle 15, supporting intermediate traction-wheels 16. These traction-wheels run upon track-rails 17, and mechanism is provided for driving certain of the traction-wheels of the rear upright frames for running the derrick back and forth upon the rails, as hereinafter described. In practice the track-rails 17 are arranged widely apart—say a distance of thirty feet, more or less—while the upright

supporting-frames 5 and 6 are made of such height as to support the deck or platform 1 at a considerable elevation, an elevation exceeding the height to which the logs or other material is stacked in piles, so that in the stacking operation the material—logs, for instance—may be continuously stacked on opposite sides of and between the rails without interfering with the travel of the derrick.

Mounted upon the forward portion of the deck or platform is a derrick-frame comprising beams 18, whose upper ends converge and are connected by a head-frame or cross-brace 19, to which are attached suitable guy rods or wires 20. Journaled at its upper end in a bearing in the head-block 19 and at its lower end in a bearing in a base-block 21, fastened to the deck 1, is a mast 22, to which the inner end of a boom 23 is pivoted to swing in a vertical plane, as indicated at 24. Mounted upon the outer end of the boom is a pulley 25, around which passes a fall-rope 26, one end of said rope passing around a pulley 27 upon a grapple 28, while the other end passes upward through an opening in the outer end of the boom and over a guide-sheave 29, thence downward along the upper surface of the boom and under a guide-sheave 30, fixed to one side of the mast 22, and thence to a winding-drum 31. Also attached to the outer end of the boom 23 is a guide-sheave 32, around which passes a boom-line 33, one end of said line being fixed to the head-block 19, as indicated at 34, the line thence passing over and around the pulley 32, and thence backward and downward over guide-sheaves 35 and 36, carried, respectively, by the head-block and mast and connected at its opposite end to a winding-drum 37. By means of the rope 26 and drum 31 the grapple 28 may be raised and lowered, while the rope or line 32 and drum 37 permit corresponding movement of the boom 23 on its pivotal connection 24, so that the grapple and boom may be adjusted as desired in the operation of the apparatus to be brought into position to be engaged with and to deposit the log or other object which is to be moved from point to point in the unloading and stacking operation. Fixed to the lower end of the mast 22 is a pulley 38, around which is wound the intermediate portion of a boom-swinging rope 39, the ends of said rope passing rearwardly in contact with guide-sheaves or idlers 40, mounted on the platform and being connected and reversely wound at their ends to and upon winding drums or spools 41 and 42, arranged adjacent to the drums 31 and 37.

Mounted upon the deck or platform 1 is a supporting bed or frame 43, in which are journaled shafts 31', 37', and 41', to which the drums 31, 37, 41, and 42 are keyed or otherwise rigidly connected, the drums 41 and 42 being mounted to turn in the same direction

upon the same shaft 41'. These shafts are extended at one end and carry drive-pinions 31^a, 37^a, and 41^a, each pinion being loosely mounted upon its respective shaft and adapted to be locked thereto by a suitable clutch 44, adapted to be thrown into and out of action by a suitable controlling-lever, the clutch-controlling lever of the pinion 31^a of the drive-shaft 31' being indicated at 31^b in Fig. 1. The gears 37^a and 41^a intermesh with an intermediate idler 45, while the gear 37^a is in turn arranged to mesh with a drive-pinion or gear-wheel 46, which also meshes with the pinion 31^a, thus forming a train of gears driven by the pinion 46 and through which motion is communicated to the respective winding-drums. The drive-gear 46 is carried by a drive-shaft 47, operated by an engine 48, adapted to be supplied with steam from a boiler 49 and in practice is continuously operated in one direction or the other to operate the winding-drums, which latter may be individually thrown into and out of action by means of their controlling-clutch devices.

It will be observed that while both winding-drums 41 and 42 are keyed to the same shaft 41' to turn in the same direction the reverse winding of the ends of the cable 39 thereon will effect the movement of said cable in one direction or the other, according to the direction in which the shaft revolves, so that motion may be communicated to the mast 22 to swing the same with the boom 23 laterally on either side of the derrick-frame. In order to impart motion to the driving traction-wheels of the derrick, suitable driving-gearing driven by the drive-shaft 47 is provided, and this gearing is constructed and arranged so as to be conveniently reversed, so that the derrick may be moved along the track-rails 17 in either direction. Arranged in advance of the bearing-frame 43 and parallel with the drive-shaft 47 is a counter-shaft 50, carrying pulleys 51 and 52, the pulley 51 being connected by a drive-belt 53 with a pulley 54, fixed to one end of the shaft 47. Arranged longitudinally at one side of and in parallel relation to the frame 43 is a drive-belt 55, which passes around the pulley 52 and also around a pulley 56, mounted upon a shaft 57. The upper stretch of the pulley 55 also passes over a guide-sheave or idler 57' and under a friction drive-pulley 58, fixed to a shaft 59, arranged in advance of and parallel with the shaft 57, this arrangement of the belt causing the two pulleys 56 and 58 to be driven in unison in opposite directions. The shafts 57 and 59 are provided with oppositely-disposed friction-wheels 60 and 61, adapted to transmit motion to an intermediate friction drive-gear 62, mounted upon a reversing counter-shaft 53, disposed on a line between the said shafts 57 and 59. The shaft 63 is journaled

at one end in an ordinary bearing 64 and at its opposite end in an eccentric bearing 65, journaled in a bearing-block 66, said eccentric bearing being provided with an adjusting handle or lever 67, by which it may be adjusted to change the position of the shaft 63 and throw the friction-wheel 62 into engagement with either friction drive-gear 60 61, thus permitting the shaft 63 to be driven in either direction at will without changing the direction of movement of the shafts 50 and 57.

The shaft 63 carries a spur-pinion 68, which meshes with an idler 69, which turns in its course of movement in a slot 70, formed in the deck or platform 1, and meshes with a gear-wheel 71, arranged below the deck and fixed to a transverse traction or drive shaft 72, journaled at its opposite ends in bearings 73, fixed to the upper horizontal bars 8 of the rear standards or upright supporting-frames 6. The shaft 72 carries at each end a sprocket-pinion 74, around which passes a sprocket chain belt 75, which also engages and passes around sprocket-wheels 76 and 77, fixed to the axles 10 and 11 of the front and rear traction-wheels 12 and 13 upon the said rear upright supporting-frames 6. By this arrangement the chain belt 75 is arranged in the form of a triangular loop and imparts motion from the shaft 72 to the rear sets of traction-wheels 12 and 13 to run the derrick in either direction along the track-rails 17, according to the direction of movement of the shaft 63.

From the foregoing description, taken in connection with the accompanying drawings, the construction and mode of operation of the device will be readily understood, and it will be seen that in operation the boom 23 may be raised and lowered and swung laterally of the trackway or at either side of the derrick to engage the grapple 28 with a log or other object to be piled and that the adjustment of the fall-rope 26 through the medium of the drum connected therewith also permits the grapple to be adjusted as occasion requires for convenient engagement with and deposit of the load.

In the use of the present device the track-rails 17 are laid a wide distance apart, as before described, alongside the main track or siding of a railway on which the cars containing the logs or other material to be unloaded and piled are arranged, and the logs or other objects are successively removed from the cars and stacked into piles. The construction of the ordinary low-down type of unloading-derrick does not permit logs or other objects to be stacked in a continuous pile on both sides of and along and across the tramway, as the deck or platform of such derricks is not arranged at a sufficient elevation to clear the pile. By, however, mounting the deck or platform 1 of the pres-

ent device at a comparatively high elevation 65 upon the elongated upright supporting-frames 5 and 6 the logs or other material to be stacked or piled may be deposited in the space between the track-rails 17, as well as on opposite sides thereof, thus utilizing a large amount of space ordinarily wasted. In practice it is preferred to space the track-rails at least thirty feet apart and to employ a fifty-foot boom which will permit the logs or other material to be piled in a space approximately one hundred feet in width including the width of the track, the elevated height of the deck or platform 1 permitting the derrick to be run back and forth over the stack or pile of logs disposed between the track-rails. In this way economy of space is secured, as the space between the track-rails may be used for storage purposes.

Having thus described the invention, what is claimed as new is—

1. In a traveling derrick, the combination of an elevated deck or platform, front and rear end frames supporting said platform, track-wheels carried by said end frames, each rear end frame being provided with a pair of spaced track-wheels and an intermediate track-wheel, the former having sprocket-pinions connected therewith, a drive-shaft upon the platform, a counter-shaft below the platform, gearing between said shaft including a member extending through an opening in the platform, sprocket-gears upon the respective ends of the counter-shaft disposed above the intermediate wheels on the rear end frame, and looped triangular chains connecting said pinions on the counter-shaft with the pinions on the pair of spaced track-wheels of each rear end frame.

2. In a derrick, the combination of a deck or platform, front and rear end supports at the opposite sides of said platform, each of said supports comprising uprights and horizontal beams connecting said uprights at their upper and lower ends, cross-beams supporting the platform and resting upon the upper horizontal beams of the end supporting frame, a central longitudinal beam bearing against said cross-beams, tie-bolts intermediately connected to said central longitudinal beam and fastened at their ends to the transverse beams, wheels carried by the end supporting uprights, gears connected with certain of the wheels, and driving mechanism for imparting motion to said wheels, in either direction.

3. In a traveling derrick, the combination of track-rails, a derrick-frame provided with traction-wheels to travel on the track-rails, said rails and frame being relatively arranged to form a wide and deep stacking-space between the rails, derrick mechanism carried by said frame, a drive-shaft for operating said mechanism, derrick-controlling

mechanism actuated by said shaft, counter-shafts arranged above and below the supporting-frame, a driving connection between the driving-shaft and upper counter-shaft,
5 drive-gearing between said upper and lower counter-shafts, said gearing including connecting elements operating in an opening in the platform, a reversible friction-gearing, and propelling mechanism actuated by the

lower counter-shaft and operatively connected with certain of said traction-wheels.

In testimony whereof I affix my signature in presence of two witnesses.

PATRICK F. FITZGIBBONS.

Witnesses:

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