

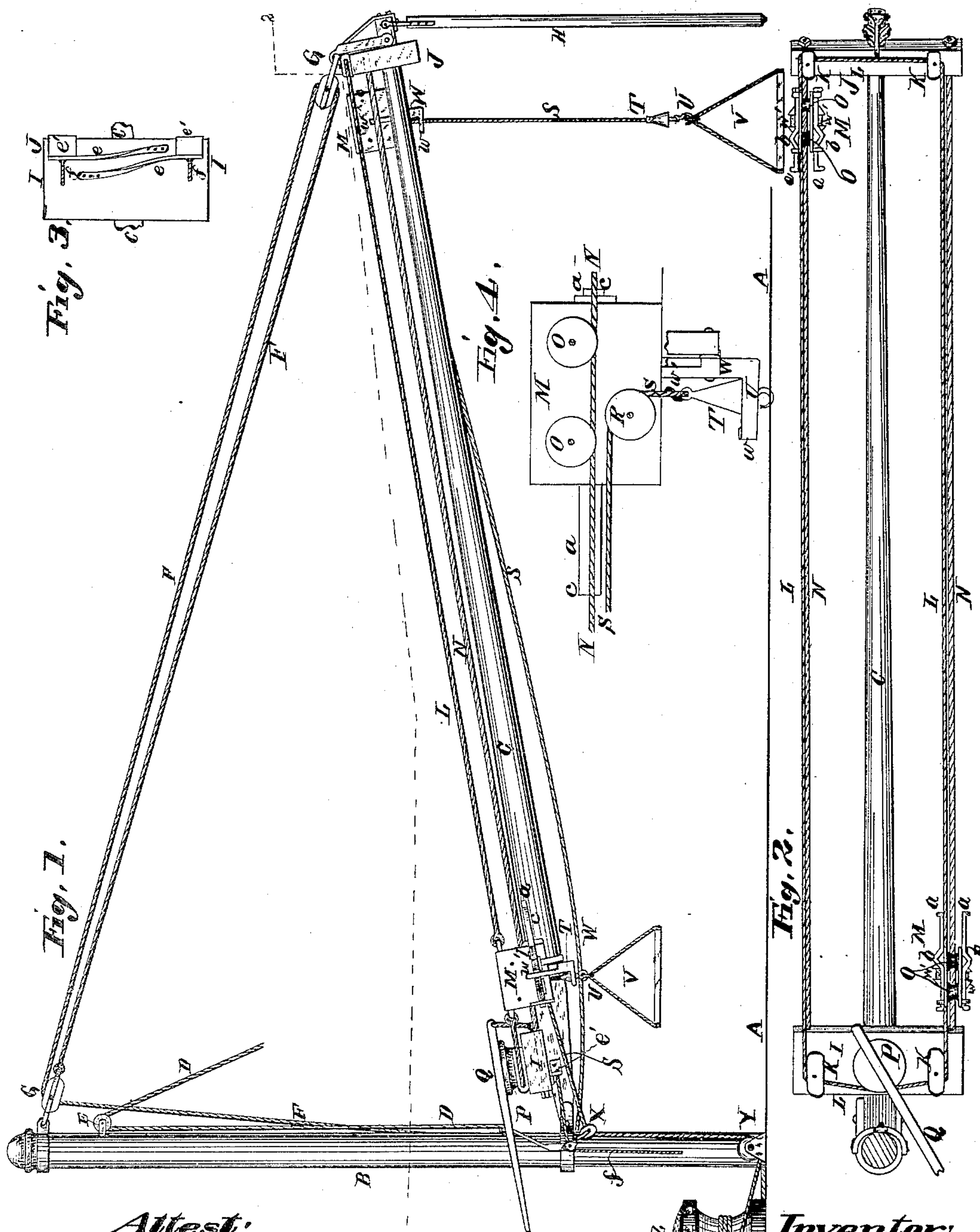
(No Model.)

L. GRAFF.

## APPARATUS FOR HANDLING FREIGHT.

No. 338,951.

Patented Mar. 30, 1886.



*Attest;*

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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR HANDLING FREIGHT.

SPECIFICATION forming part of Letters Patent No. 338,951, dated March 30, 1886.

Application filed September 28, 1885. Serial No. 178,432. (No model.)

*To all whom it may concern:*

Be it known that I, LOUIS GRAFF, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Apparatuses for Handling Freight, &c., of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My improvement is intended more especially for use in loading and unloading freight in connection with steamboats and other water craft, but may be used in other situations. The carriage on which the freight is supported is carried by rollers which run on a track, cord, or cable. The carriages are preferably two in number, and are so connected to an endless rope that they travel in opposite directions.

Figure 1 is a side elevation of the apparatus. Fig. 2 is a horizontal section of same at 2 2, Fig. 1. Fig. 3 is a bottom view of one of the cross-bars of the boom. Fig. 4 is an enlarged longitudinal section of a carriage.

The line A may represent the deck of a steamboat, or any other floor or ground line. B is an upright timber or mast.

C is a boom whose end is vertically movable on the mast, and which is supported by a cord, D, attached to the end of the boom and passing over a pulley, E, to a clamp or other fastening. The free end of the boom is supported by a cord or rope, F, passing through pulleys G and G', attached to the mast and boom, respectively, and extending to a clamp or other fastening device. By means of the rope F the free end of the boom may be raised or lowered. The pulley-block G' may be dispensed with, and the end of the rope attached to the boom directly, instead of attachment to the pulley-block G'.

H is a hinged leg which may be used to support the free end of the boom.

I and J are cross-bars upon the boom, such cross-bars having near their ends pulleys K, around which is passed an endless rope, L, which is connected to the carriages M, upon which the freight is carried. These carriages are supported on two parallel track ropes or cables, N, which extend from block to block. The carriages have supporting grooved wheels O, which travel on the cables N. The endless rope L passes around a brake-pulley, P, upon

whose upper side bears a lever-brake, Q, by whose depression the movement of the carriages upon the endless rope is either checked or stopped.

R is a pulley in each carriage M, over which passes a rope, S, having at one end a conical or other suitable head, T, which has at its larger and lower end a hook, U, upon which freight or a platform, V, may be supported.

W are jaws hinged to the carriages M, so as to have movement in a plane transverse to the carriage in opening and closing. The jaws have side hooks, w, which, when closed, may engage beneath the lower end of the head T and sustain it, whereas when the hooks are thrown apart the head T is released and allowed to descend, the rope S running out over the pulley R. Each rope S passes from the carriage-pulley R over a pulley, X, and beneath a pulley, Y, to a capstan, Z. This capstan may be run by steam or hand or other power, and may be used to draw in either of the ropes S.

To move the hooks w apart and release the head T, I have upwardly-extending arms w', which may be forced asunder by sliding cams a when the carriage reaches either of the cross-bars I or J. The cams a have outward bends b at the middle, which by the endwise movement of the cams push the arms w' onward from the carriage, and thus open the hooks w. The cams a have ends projecting beyond the fore end of the carriage, and brought by the movement of the carriage against the cross-bar K, the further movement of the carriage causing the cams to slide, for the purpose stated. Such movement leaves the cam ends projecting in the opposite direction from the carriage, so that they are acted on by the other cross-bar when the carriage reaches the other end of the boom, and the hooks w are again opened.

The head T and the hooks w are so constructed that the head forces the jaws open as it is drawn up between them, and then the jaws close, engaging the head, under the influence of the springs. (Not shown.)

It will be seen that when the boom is inclined that carriage which is moving upward must be impelled by some power. This may be applied to the carriage itself or to the other carriage. For, if one carriage is drawn toward the capstan, the other carriage will move



away therefrom. Supposing the outer end of the boom to be the higher, and the platform at that end to be lowered, as shown, and the other carriage to be held at the inner end of the boom, then the first action of the rope S of the outer carriage, as it is drawn in, will be to lift the platform and engage the head T on the hooks *w*. After the head has been drawn up to the carriage, then the other carriage must be left free to move outward, and as the said rope S is drawn in the carriages will move simultaneously in opposite directions. If both carriages are loaded equally, they may be left free to move as the rope impels; but if the carriage which is moving downward is more heavily loaded than the other no strain upon said rope S need be used after the head T has been engaged to the carriage, and the brake Q may be used to check the descent of the loaded carriage. From the above it will be seen that if the freight is being moved downward, either to or from the vessel, it will not be necessary to use the capstan and ropes S where the articles can be put on the platforms or otherwise suspended from the hooks U by hand, for the loaded carriage, by its gravity, will cause the upward movement of the unloaded carriage.

Upon the block I are springs *e*, against whose heads *e'* the ends of the cams *a* impinge as the carriage is about to reach the end of its movement in that direction, to slide the cam and release the head T from the supporting jaws or hooks *w*.

*f* are cords secured to the free ends or heads of the springs, by which the heads may be drawn backward to remove them from the course of the cam, as seen in Fig. 1, and when this is done the head will not be relieved from the jaws, so that the platform or freight remains in suspension from the carriage.

I have described my invention as having a boom, C; but it will be readily seen that this is not a necessary feature, as the block J may be securely fixed in position at one place and the block I at another place, and connected by track-cables as described, and the carriages arranged to run upon the cables, as set forth. The use of the boom would, however, much enhance the value of the apparatus for most purposes, as it would be portable and always in preparation for immediate use.

The apparatus has special value where the freight has to be moved to or from a high bank to a vessel on a much lower level and at a considerable distance from the edge of the bank.

I have described herein a manner of relieving the head T from the jaws or hooks *w*; but I disclaim the same in this connection, as this is made the subject-matter of another application bearing even date herewith, the detaching device being thought to form a separate invention applicable to other devices than that above described.

I have spoken of the rope L as an "endless" rope, which it is, essentially. As shown, however, the carriages M form part of the same, as the rope has two pieces connected to the ends of the carriages.

I claim as my invention—

1. The combination of two track-ropes with two carriages running thereon and rope-connection arranged to cause the simultaneous movement of the carriages on the track-ropes in opposite directions, substantially as set forth.

2. The combination of a boom with cross-bars, as I and J, connected by track-ropes, and two carriages running upon said ropes and having rope-connection insuring simultaneous movement in opposite directions, substantially as set forth.

3. The combination of two track-ropes, two carriages traveling thereon, an endless-rope connection between the carriages, insuring their simultaneous movement, substantially as set forth, and a brake mechanism constructed to act on the endless rope which connects the carriages.

4. The combination of the two track-ropes, two carriages running thereon, an endless-rope connection between the carriages, for the purpose set forth, a pulley around which the endless rope is coiled, and a brake acting on the pulley, for the purpose set forth.

5. The combination of two track-ropes, two carriages connected by an endless rope stretched by pulleys at the bends of the rope, a hoisting-rope running over a pulley on each carriage, and a capstan or equivalent hoisting device.

6. The combination of a mast, a boom connected to said mast and vertically adjustable thereon, a track-rope stretched by connection to the boom, and a carriage running upon the track-rope.

7. The combination of a mast, a boom connected to the mast and vertically adjustable thereon, cross-bars at or near the ends of the boom, track-ropes connecting the cross-bar at one end to the cross-bar at the other end, carriages running on the track-ropes, and continuous rope-connection between the carriages passing around pulleys at the cross-bars, for the purpose set forth.

8. The combination of a mast, a boom connected to the mast and vertically adjustable thereon, cross-bars at or near the ends of the boom, track-ropes connecting the cross-bars, carriages running on the track-ropes, continuous rope-connection between the carriages, for the purpose set forth, said connecting rope passing around pulleys at the cross-bars, and a hoisting-rope extending through each carriage, for the purpose set forth.

LOUIS GRAFF.

In presence of—

SAML. KNIGHT,  
JOSEPH WAHLE.