No. 797,116. PATENTED AUG. 15, 1905.

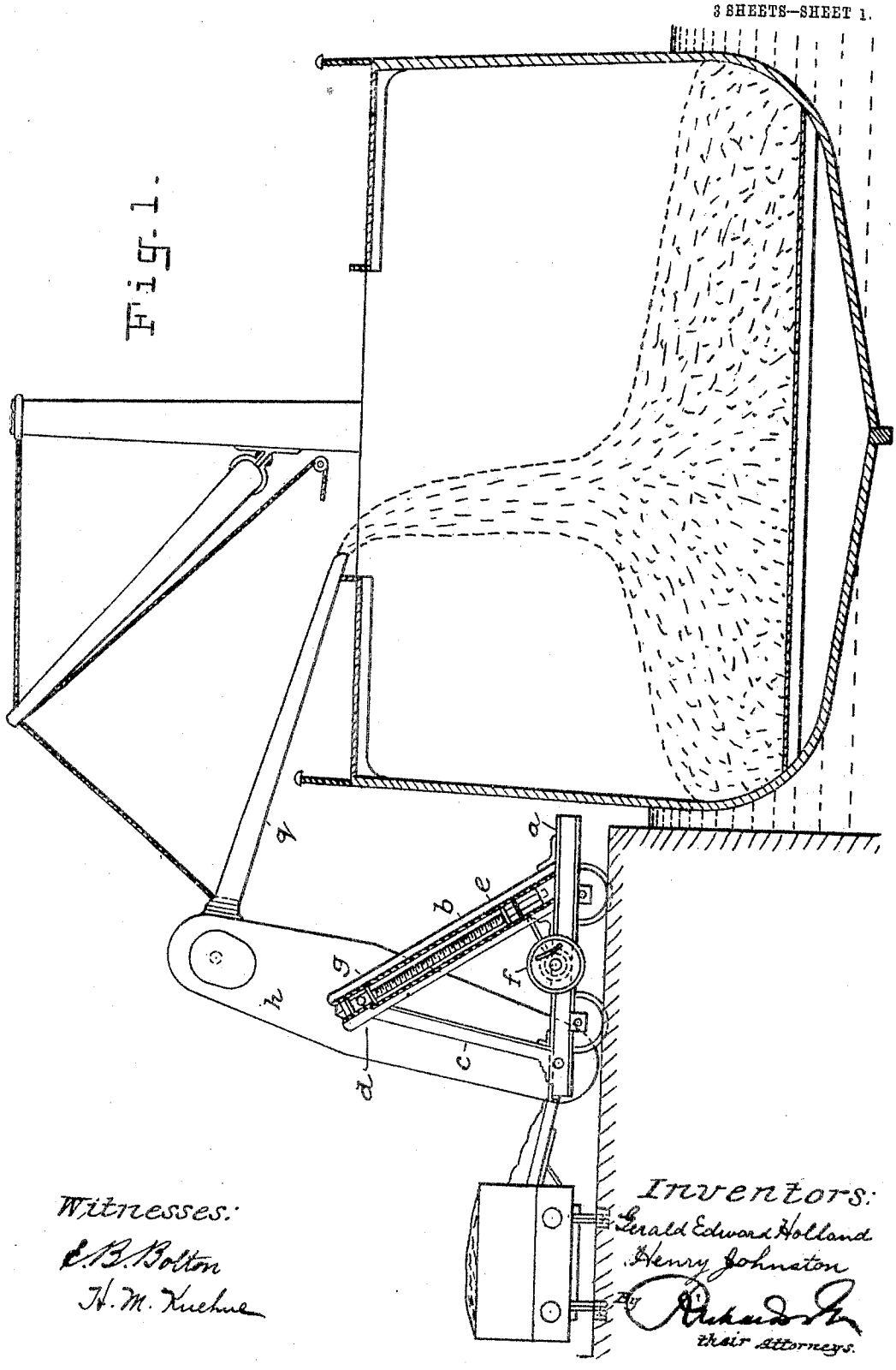
G. E. HOLLAND & H. JOHNSTON.

ELEVATOR FOR LOADING AND UNLOADING COAL, &c.

APPLICATION FILED FEB. 7, 1903.

3 SHEETS—SHEET 1.

Fig. 1.



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ANDREW, B. GRAHAM CO. PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

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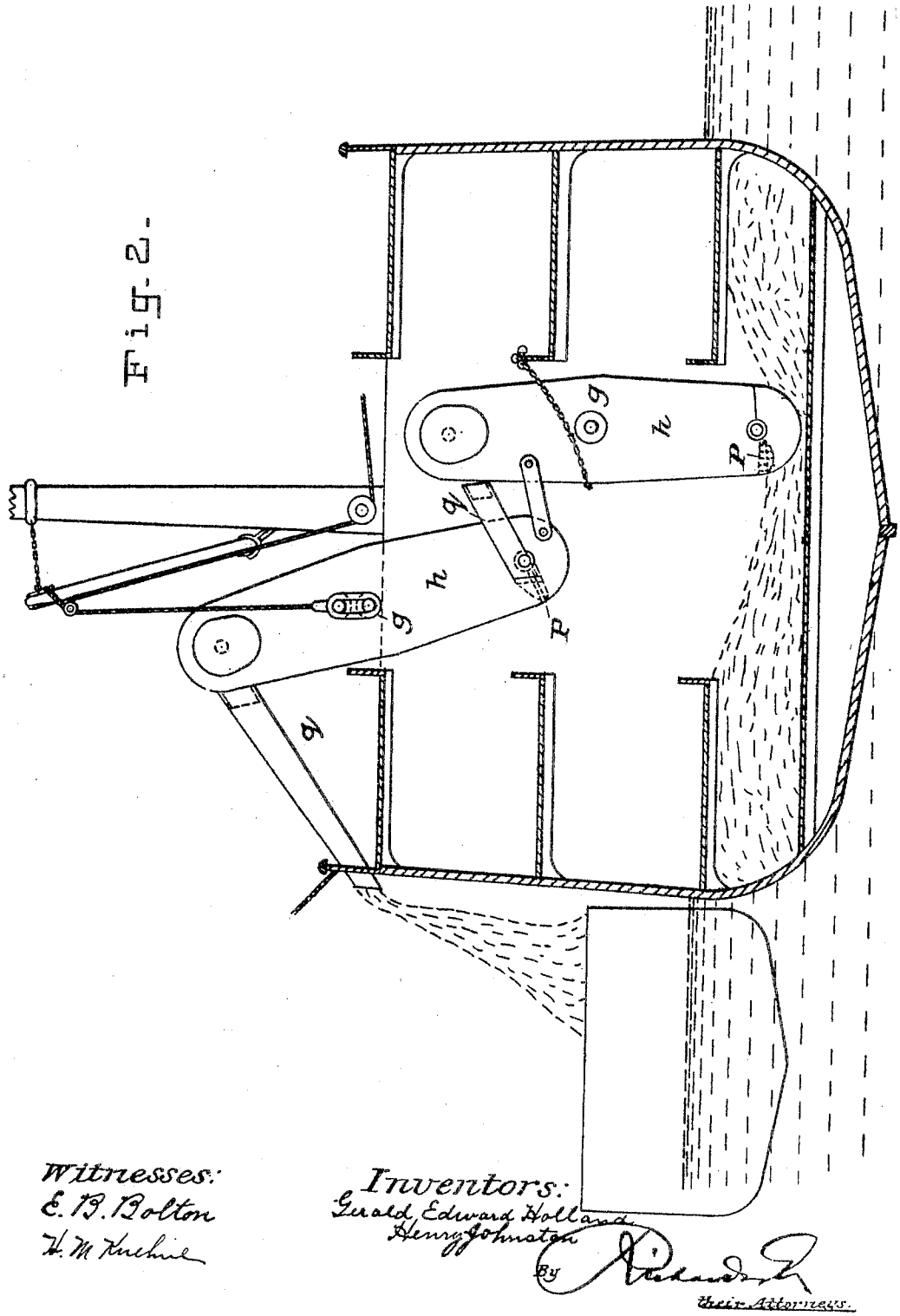
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 5.

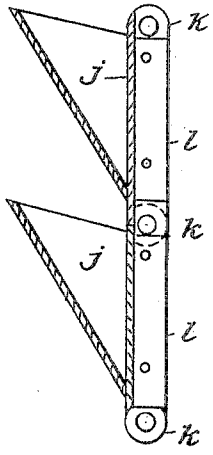


Fig. 3.

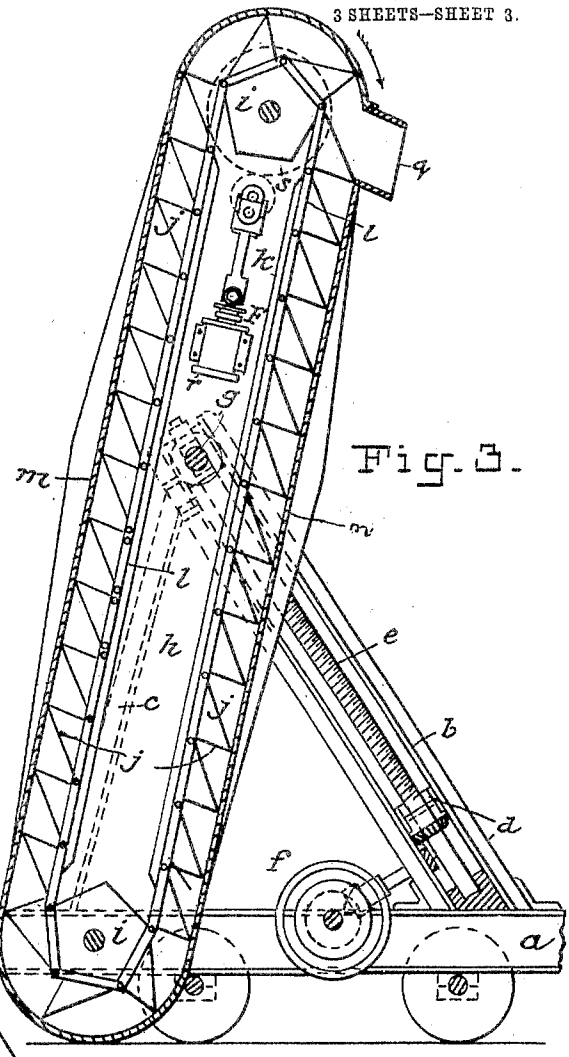
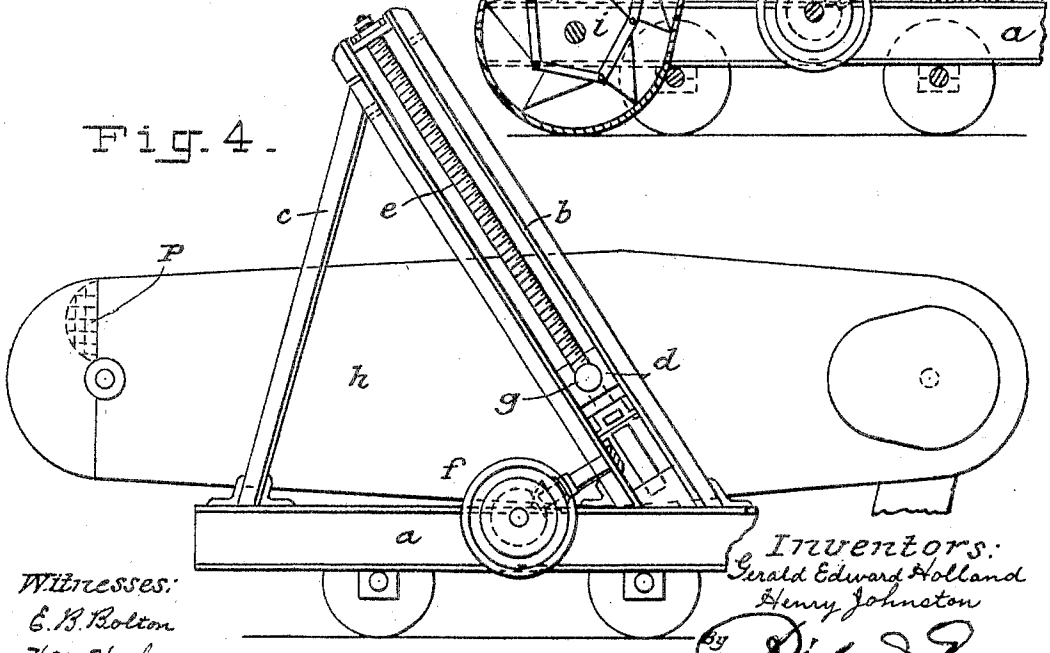


Fig. 4.



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UNITED STATES PATENT OFFICE.

GERALD EDWARD HOLLAND AND HENRY JOHNSTON, OF RANGOON, BURMA, INDIA, ASSIGNORS TO THE HOLLAND JOHNSTON PATENTS, LIMITED, OF LONDON, ENGLAND.

ELEVATOR FOR LOADING AND UNLOADING COAL, &c.

No. 797,116. Specification of Letters Patent. Patented Aug. 15, 1905.

Application filed February 7, 1903. Serial No. 142,416.

To all whom it may concern:

Be it known that we, GERALD EDWARD HOLLAND and HENRY JOHNSTON, subjects of the King of England, and residents of Rangoon, Burma, India, have invented certain Improvements in Elevators for Loading and Unloading Coal, &c., of which the following is a specification.

Our invention relates to an elevator which can be moved from place to place and by which coals or other fragmentary materials can be rapidly delivered into a ship's hold from a truck or barge or raised from the hold and delivered into a truck or barge, as we shall describe, referring to the accompanying drawings.

Figure 1 is an elevation, partly in vertical section, showing the elevator according to our invention loading coals into a vessel. Fig. 2 is a similar view showing two of the elevators raising coals from the hold of a deep vessel. Fig. 3 is a part transverse section of one side of the elevator. Fig. 4 is a side view of the elevator lowered upon its truck. Fig. 5 shows two of the buckets in section to a large scale.

a is a truck which has fixed on it two triangular frames having sloping sides *b*, supported by struts *c*. The sloping sides *b* are formed as guides along which can slide blocks *d*, forming the nuts of screws *e*, which can be turned in either direction by hand-gear *f*. In the blocks *d* are bearings for a shaft *g*, to which are fixed at about their middle the sheet-metal sides *h* of an elevator having at its ends bearings for pentagon wheels *i*, round which passes a chain of buckets *j*, which are jointed to side links *k*, fixed to flanges *l* of the buckets. Between the sides *h* are fixed face-plates *m* and back plates *n*, these forming, with the sides *h*, casings which inclose the chain of buckets *j*. At the bottom of the elevator the sides of the casing are open to a hopper P and the casing on one side of the pentagon wheel at the top is open to a chute *q*, which may be covered by a grating to prevent entrance of fragments too large. An engine *r*, for which an electric motor might be substituted, is connected through suitable reducing-gear *s* to the shaft of the upper pentagon wheel, causing it to revolve in the direction of the arrow. Coals or other fragmentary materials being shoveled or otherwise delivered into the hopper P, the buckets *j* as they travel through the hopper carry them up the elevator and deliver them to the chute *q*. By means of the screw *e* the shaft *g* of the elevator can be swung on this shaft to a position more or less inclined, in which it can be held by tackle or otherwise. When the apparatus is to be moved from place to place, it is lowered down onto the truck, as shown in Fig. 4. The blocks *d* may be taken off the screws *e*, leaving the elevator free to be raised or lowered and held in any position by tackle, as indicated in Fig. 2, where two of the elevators are shown applied to raise coals from the hold of a deep vessel, the lower elevator feeding the upper one.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare what we claim is—

1. An elevator comprising an endless chain of buckets, a casing forming a continuous trunk for said chain of buckets and having an opening at each end thereof, a driving-motor mounted between the walls of the said trunk and means attached to the casing for supporting the said elevator, substantially as described.

2. An elevator comprising an endless chain of buckets, a casing inclosing the same, a driving-motor mounted upon the said casing within the same, a movable frame and means for supporting the elevator on the movable frame and tilting it to various working positions, substantially as described.

3. An elevator comprising an endless chain of buckets, a casing forming a continuous trunk for said chain of buckets and having an opening at each end thereof, a driving-motor mounted between the limbs of said trunk, a suspension-shaft secured to the casing above the center of gravity of the elevator, a frame having movable bearings for said shaft, and means for raising and lowering said bearings to tilt the elevator, substantially as described.

4. The combination, in an elevator, of drums carried thereby, an endless chain of carriers passing over said drum, a motor situated in the space formed by the bottoms of the carriers and at the upper part of the elevator, and a suspending means consisting of a shaft passing through the elevator a slight distance above the center thereof.

5. In combination with an elevator, a truck carrying the same, incline frames on said truck forming guides, blocks adapted to slide in said guides, a shaft passing through said elevator, a slight distance from the middle thereof, the ends of said shaft being held in the blocks, screws secured in said inclined frames longitudinally and passing through the blocks, and means for rotating the screws in one direction for raising one end of the elevator or in the other direction for placing the elevator horizontally on the truck, substantially as described.

In witness whereof we have hereunto set our hands in the presence of two witnesses.

GERALD EDWARD HOLLAND.
H. JOHNSTON.

Witnesses:
WM. H. ALLEN,
W. V. MUNELL.