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J. RIGG.

ELEVATOR.

No. 262,692. Patented Aug. 15, 1882.

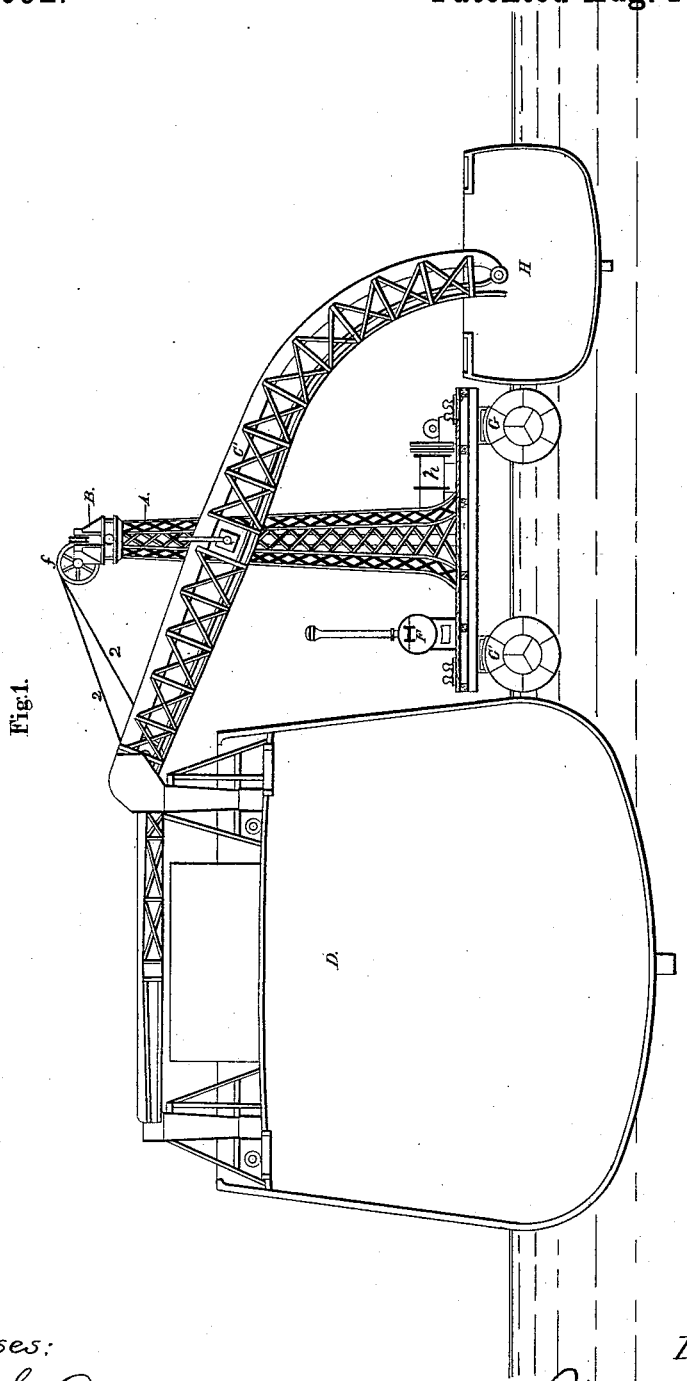

Fig. 1.

Witnesses:
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W. B. Kluppe

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James Rigg,
by Dodges Son,
Attys

(No Model.)

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J. RIGG.

ELEVATOR.

No. 262,692.

Patented Aug. 15, 1882.

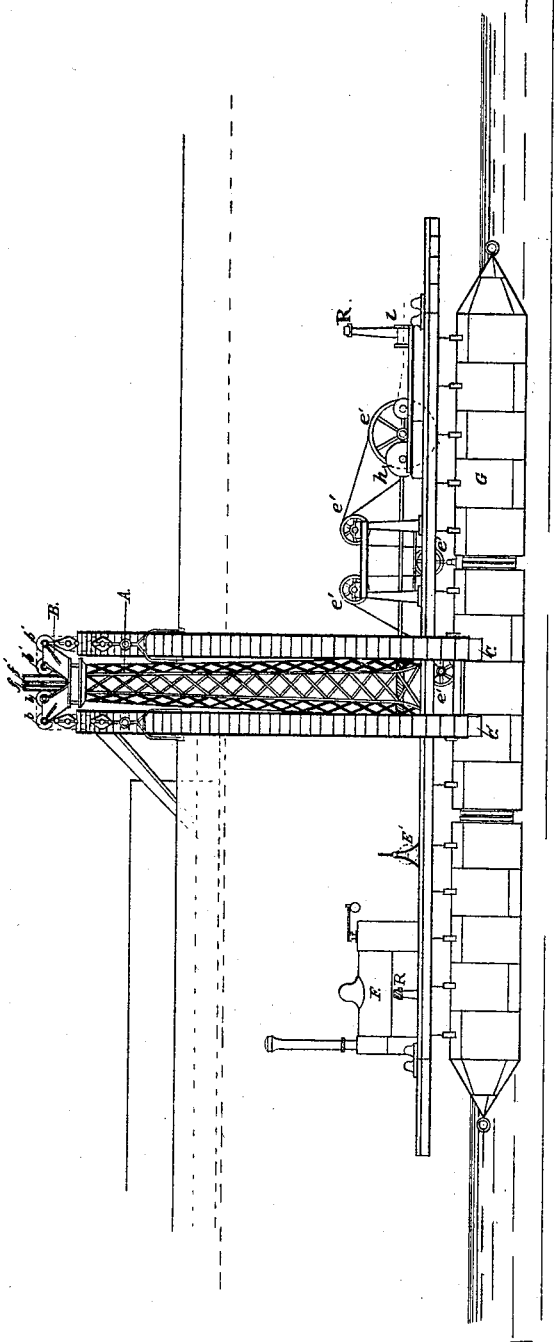

Fig. 2.

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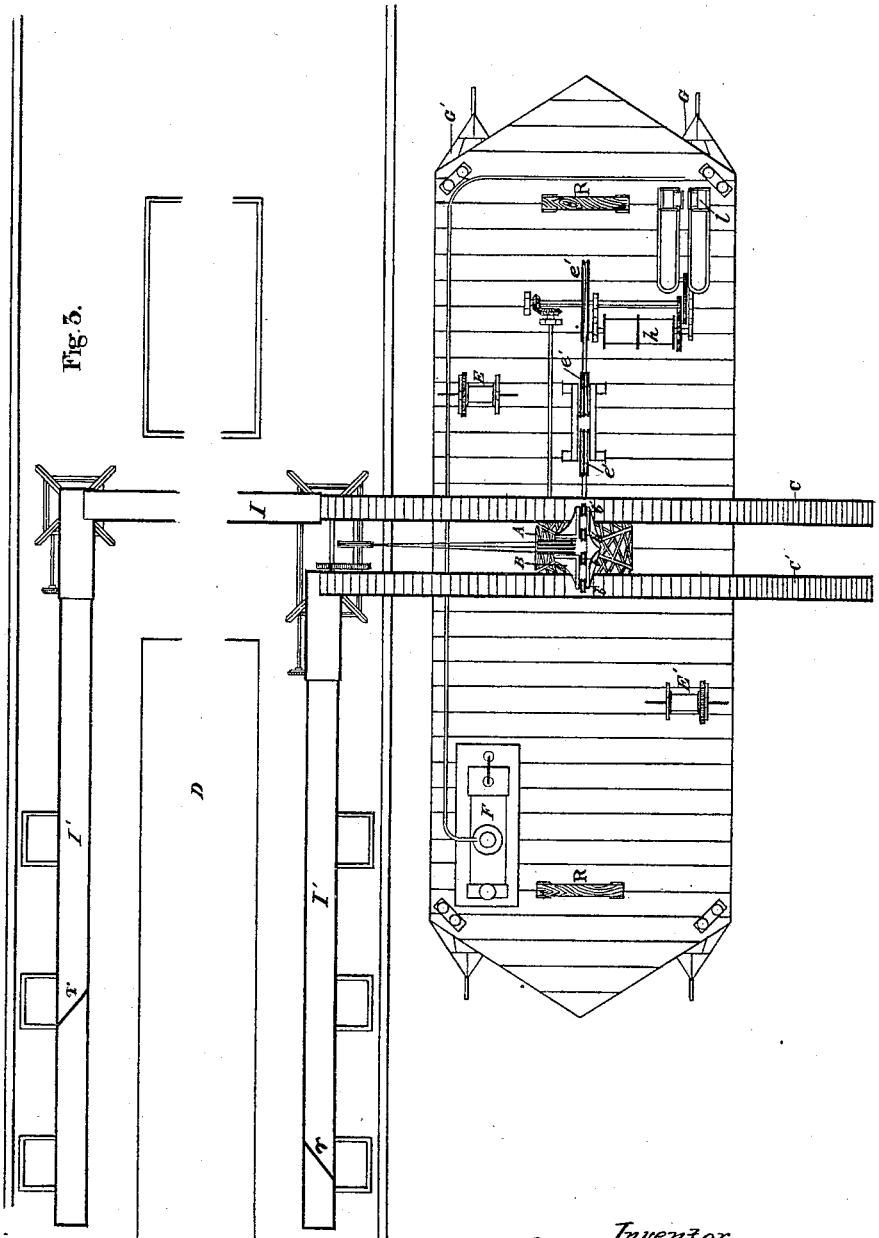
ELEVATOR.

No. 262,692. Patented Aug. 15, 1882.

Fig. 5.



Witnesses:
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(No Model.) 9 Sheets—Sheet 4.

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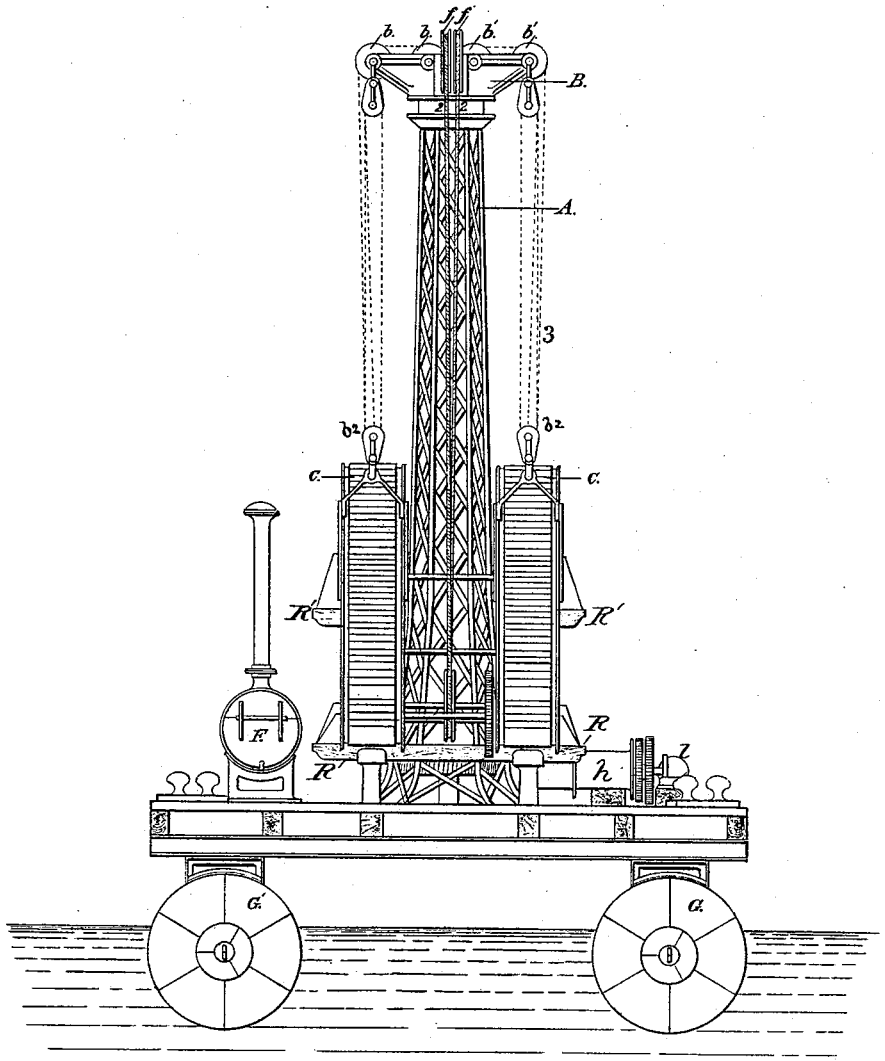
ELEVATOR.

No. 262,692. Patented Aug. 15, 1882.

Fig. 4.



Witnesses:
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(No Model.) 9 Sheets—Sheet 5.

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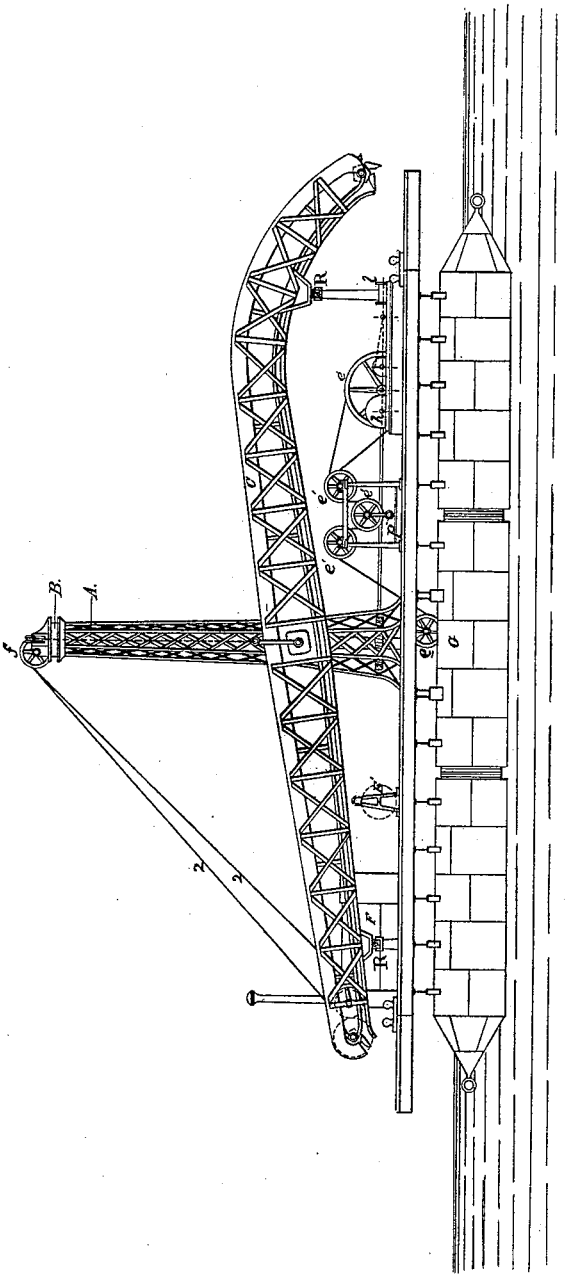
ELEVATOR.

No. 262,692. Patented Aug. 15, 1882.

Fig. 5.



Witnesses:
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9 Sheets—Sheet 6.

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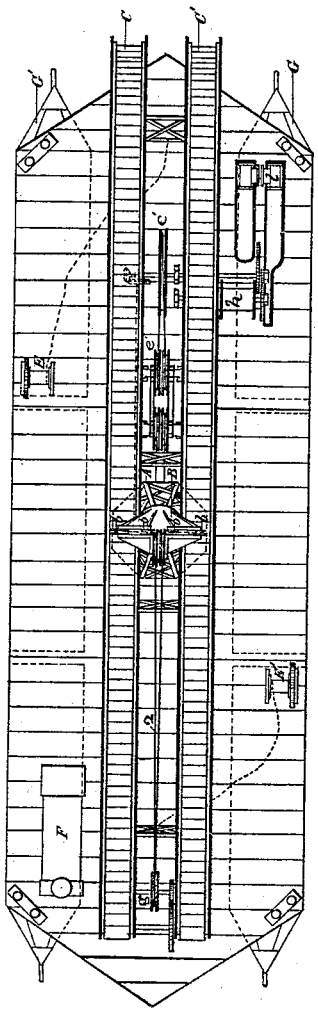

Fig6.

Witnesses:
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(No Model.)

9 Sheets—Sheet 7.

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ELEVATOR.

No. 262,692. Patented Aug. 15, 1882.

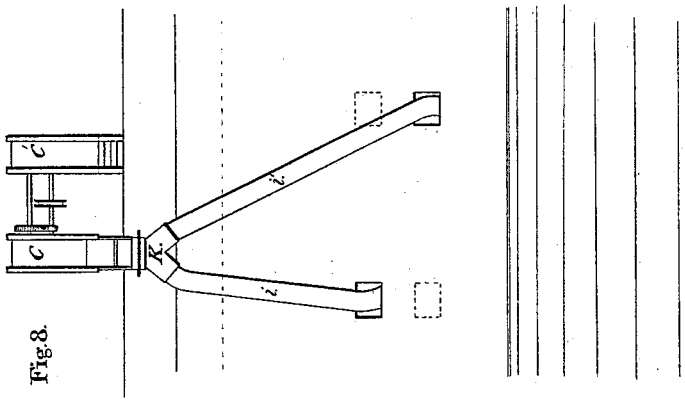

Fig. 8.

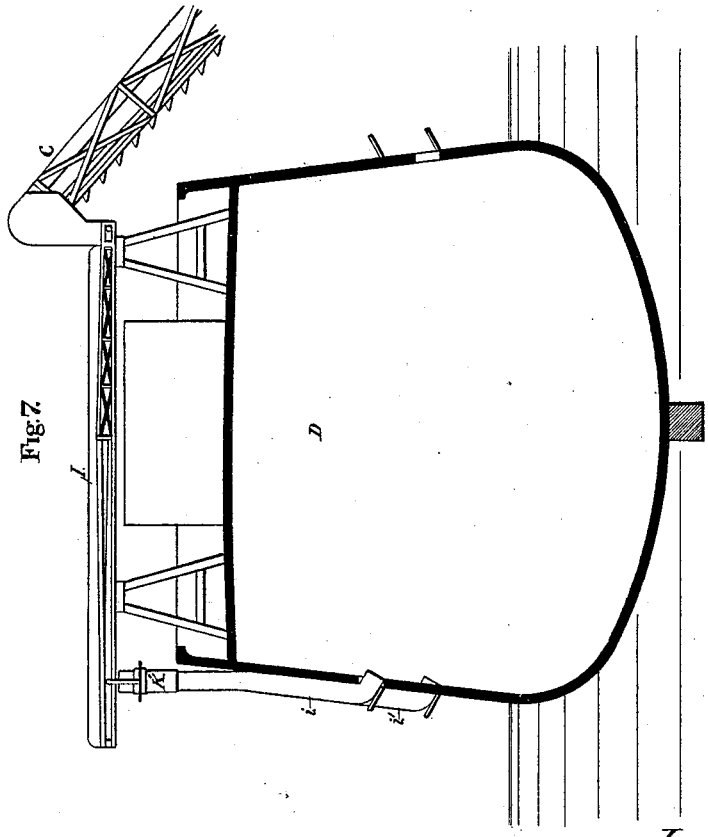

Fig. 7.

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Inventor:
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(No Model.) 9 Sheets—Sheet 8.

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ELEVATOR.

No. 262,692. Patented Aug. 15, 1882.

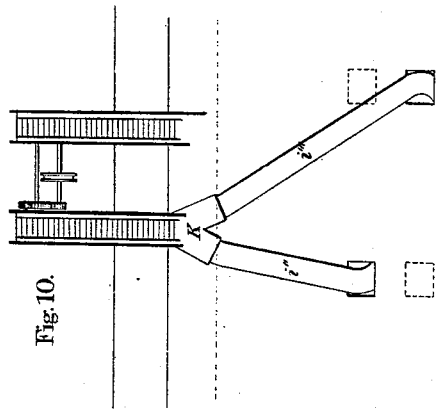

Fig. 10.

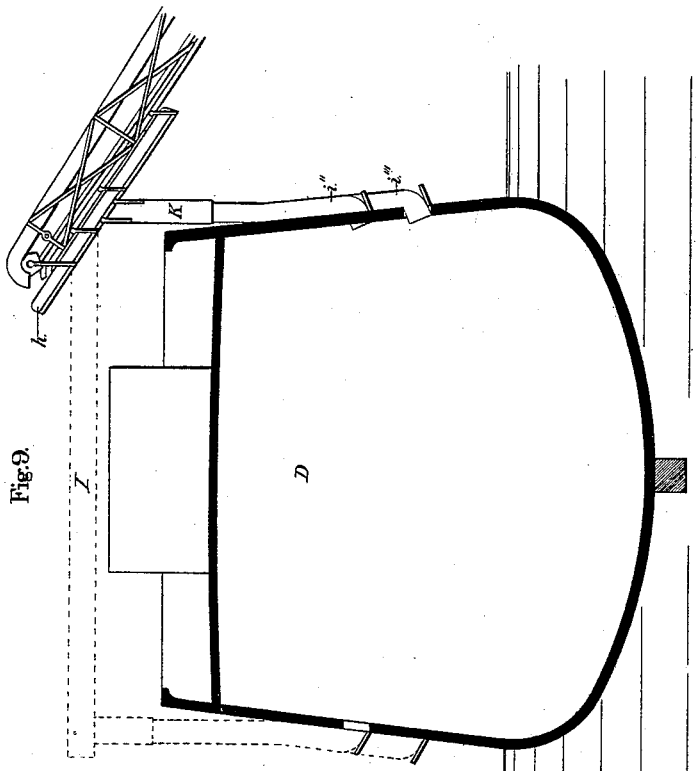

Fig. 9.

Witnesses:
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Inventor.
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Attys

(No Model.)

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J. RIGG.

ELEVATOR.

No. 262,692. Patented Aug. 15, 1882.

Fig. 12.

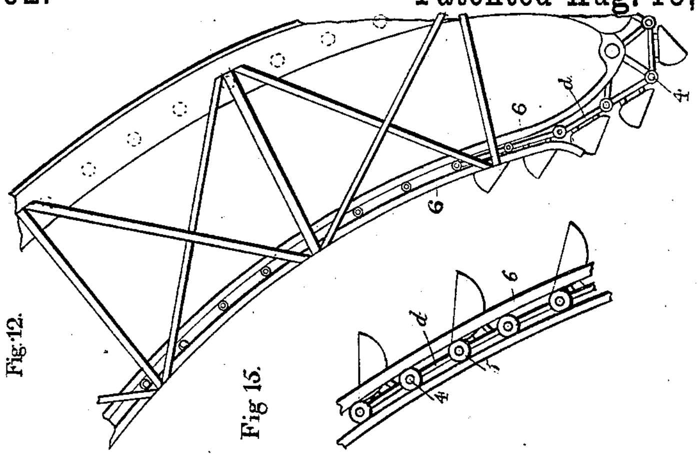


Fig 15.

Fig. 14.

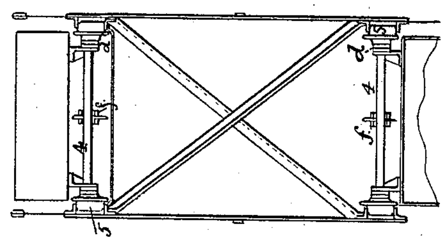


Fig. 11.

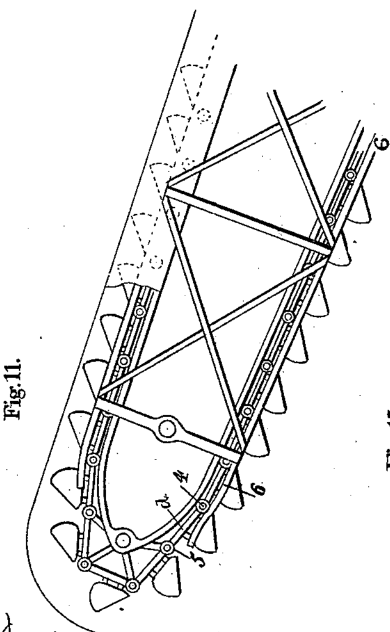
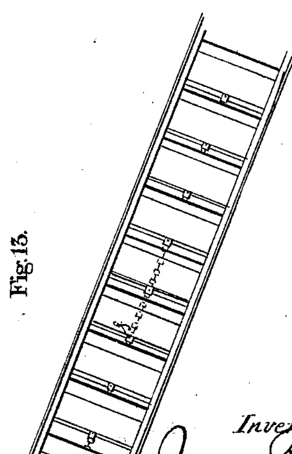


Fig. 13.



Witnesses:
Walter S. Dodge
W. C. Chaffee

Inventor:
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by Dodge & Son,
Attys.

UNITED STATES PATENT OFFICE.

JAMES RIGG, OF CHESTER, COUNTY OF CHESTER, ENGLAND.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 262,692, dated August 15, 1882.

Application filed May 5, 1882. (No model.) Patented in England October 6, 1881, No. 4,345; in France April 3, 1882, No. 148,246, and in Belgium April 11, 1882, No. 57,579.

To all whom it may concern:

Be it known that I, JAMES RIGG, of Chester, in the county of Chester, in the Kingdom of England, have invented certain new and useful Improvements in Elevators, (for which I have received Letters Patent in England, No. 4,345, dated 6th October, 1881,) of which the following is a specification.

This invention has for its principal object improvements in coaling steamers from lighters. It may, however, be also employed for loading or discharging slack, corn, salt, gravel, clay, or other minerals or materials of a fragmentary, granular, or pulverulent character.

My apparatus is set forth in the accompanying drawings, in which Figure 1 is a transverse elevation, partly in section, of the apparatus at work transhipping coal from a flat into a larger vessel through the deck-bunkers under a covered alley-way. The covers are, however, not shown in the drawings. Fig. 2 is a longitudinal elevation of same with flat removed; Fig. 3, a plan view of parts shown in Fig. 2; Fig. 4, an end elevation of elevator with frames lowered and stored away fore and aft on the ponton; Fig. 5, a side elevation of same; Fig. 6, a plan of same; Figs. 7, 8, 9, 10, sectional details, showing apparatus for conveying the coal from the elevators to the bunkers; Figs. 11, 12, 13, 14, and 15, details of elevator-frames and chains of buckets.

In the drawings, A is a hollow tower or tube placed about centrally upon a barge, or preferably two pontons, G G′, as shown in the drawings. It has a roller-path upon its head and another near the heel; or a foot-step, upon which the whole can swivel horizontally, can be used instead. These roller-paths bear the weight of the partially-revolving head B.

C C′ are frames suspended by means of blocks b^2 and chains 3, passing over the pulleys *b b b′ b′* and round guide-pulleys, (not shown in the drawings,) Sheet 4, to the barrel of a steam winch or drum, *h*, driven by a pair of winding-engines, *l*. This enables the double frame-work C C, carrying the elevator, to be raised or lowered by power.

The lower ends of the double frame-work C C may be curved downward, so as to facilitate the loading from barges which may be partially covered by their decks, as shown in Fig. 1, the chains and buckets also being suitably constructed, as described hereinafter.

The head upon the tower is made capable of revolving through somewhat more than a quadrant, and through the intervention of a worm-wheel or other gearing, or in any other well-known manner, the pair of elevator-frames may be revolved by power.

The elevators are driven by means of an endless wire or other rope, 2, which passes round a pulley upon the steam-winch, as shown in Fig. 5. This rope, guided by the pulleys *e e′* and *f f′*, drives the pulley and shaft *g*, and thus the double elevator.

The balance-weights *p* maintain the rope taut to the necessary degree and compensate for the varying length required should the elevator be in operation or stowed away.

The pulley at the head of the elevator may also be driven by one of the ship's winches, or any other convenient source of power.

Hand-winches E E′ are provided on the deck of the ponton or barge, enabling the respective ends of the pair of elevators to be corrected and readily adjusted to the positions in which they may be required.

In the case of coal or other such like material it is intended that the elevator should be fed from the lighter or other vessel by manual labor. When used for grain and other suitable matter the buckets or scoops are self-acting.

F represents the boiler on the ponton or barge, driving the winch or engines, which may also be used for its own propulsion, G G′ being the ponton or barge carrying this machinery, H the lighter about to be discharged, and D the vessel receiving the matter being loaded.

The elevator boxes, buckets, scoops, or trays may be of various forms, but for coal or material having to be similarly dealt with are preferably made as scoops or trays and of steel, somewhat as shown in Fig. 15, and bars may be placed over them at the lower end of the elevators at such distances apart as will pre-

vent the admission of pieces of coal too large to pass into the bunkers. The buckets or scoops may work with or without a trough, as shown in Figs. 11 and 15, or in a completely-inclosed boxing round them.

Figs. 4, 5, and 6 represent the manner in which the suspended frame-work of the elevator may be stowed away for its safe removal when not in operation, the beams R R′ supporting it in this position, its weight being transmitted through the brackets attached to the elevator-frames.

Figs. 1, 2, and 3 illustrate the method of distributing the coal simultaneously from both elevators into deck-bunkers by chutes or troughs I I′, having as bottoms or traveling on them carrying belts, bands, chains, or scrapers, to which motion is communicated by belts, chains, toothed gearing, or other convenient method. These troughs may be readily detached, so that any number required may be used for distribution of the coal in the various bunkers and the coal thrown off at any desired point by the deflecting plates or doors *r*. (Shown in Fig. 3.) If scrapers be used, suitable doors would be placed under the troughs for a similar purpose.

Figs. 7, 8, 9, and 10 show the method adopted for loading steamers or other vessels having the bunkers on their sides, the cross-trough I being used in Fig. 7 as in Fig. 1. For distribution of coal through the bunkers on the side next the ponton or barge, Figs. 9 and 10, a light casing, *h*, is attached below the head of the elevator, which is temporarily closed at the point at which the distributing-pipe K is attached or suspended. A similar light pipe, *h′*, is connected to the trough I, Fig. 7, and to each of these pipes flexible tubes *i i′ i″ i‴* are attached and led into four or more bunkers, which are thus fed simultaneously.

The roller-buckets, Figs. 11, 12, 13, 14, 15, are attached to "snugs" or wings on the malleable or wrought iron or steel links *d*, the spindles 4 passing through these links being preferably of steel of sufficient strength to permit of their bearing the weight of the elevator and its load. These spindles carry at their ends small flanged or grooved rollers 5, acting upon guides 6, these guides being trumpet-mouthed as they approach and leave the drums, or as they leave them only, round which they travel. The specially-constructed relieving-chain *f* will prevent serious damage or delay in the event of the possible breakage of the main links carrying the roller-buckets. These roller-buckets are mainly so constructed that they may work in the internal curves of an elevator-arm, as illustrated in Figs. 12 and 14, and may be used with or without the relief safety chain or chains *f*. The curved elevators described above may be placed in position either by the ship's tackle, a crane, or other convenient means.

Other modifications of the suspended or independent curved elevators will permit of their being attached to a portable or fixed gib-crane and for loading from barges, steamers, or other vessels into railway-trucks or other conveyances or places, or wholly on land.

I am aware that it is not broadly new to arrange elevator-spouts in a floating structure in such manner that they may be raised or lowered at will; but, so far as I am aware, such spouts have not been heretofore arranged to rotate about the central tower or support, whereby they may be brought in front or rear of said tower and out of the way when not in use.

I claim as my invention—

1. A floating or portable elevator having the elevator-frame suspended from a column or support by ropes or chains in such manner that it can be raised or lowered and swung horizontally about the column or support without moving said support.

2. The combination of the tower or pedestal A, carrying a projecting head capable of rotation, with suspension-ropes 3, hung from pulleys therefrom and carrying the elevator-frames C C′, substantially as described.

3. In a floating or portable elevator, the combination of a motor, *l*, carrying pulleys *e* and *f*, endless rope 2, actuating the elevator, and tension weight or spring to take up the varying length of rope required as the elevator-frames are raised and lowered.

4. The mode of driving an elevator by an endless driving-rope passing up the tower or trunk A and round a pulley on the shaft, from which the elevator chain of buckets is driven.

5. In a floating or portable elevator, the combination of a central tower, A, with elevator-frames E, suspended from it in such manner that they can be raised or lowered and caused to partially rotate round it, so as to be lowered down and placed fore and aft on the ponton or barge when not in use, substantially as described.

6. The elevator-frame C, curved or bent so that its end shall be capable of projecting nearly vertically into a hatchway or other space, while the remaining portion or the other end of the frame is at a considerable angle with the vertical.

7. The combination of the curved elevator-frame C, having curved guides 6, with the guide rollers or slides 5, working in the guides 6, for the purposes described.

8. The combination of the spindles 4 with the links *d*, the curved guiding device 5 and 6, and the buckets carried on the spindles 4 by lugs, substantially as described.

9. In combination with a linked chain of buckets, a safety-chain, F, through links of which the spindles of the chain of buckets pass.

10. The combination of a side trough, such as shown in Figs. 11 and 12, 13 and 14, with a chain or band of buckets of an elevator, substantially as described.

11. The combination of an elevator for elevating coal, with carrying bands or troughs, with

adjustable guides for carrying the coal to the various bunkers on board ship.

12. The combination of the elevator C, trough *k*, hopper K, and spout *i*, for leading the coal into the hopper outside the ship.

13. In combination with an elevator for elevating coals, a spout, *i*, arranged outside the skin of the ship and placed dipping into the coal-bunker port.

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