E. L. Evans.

Ballast.

No. 7,184. Patented Mar. 19, 1850.

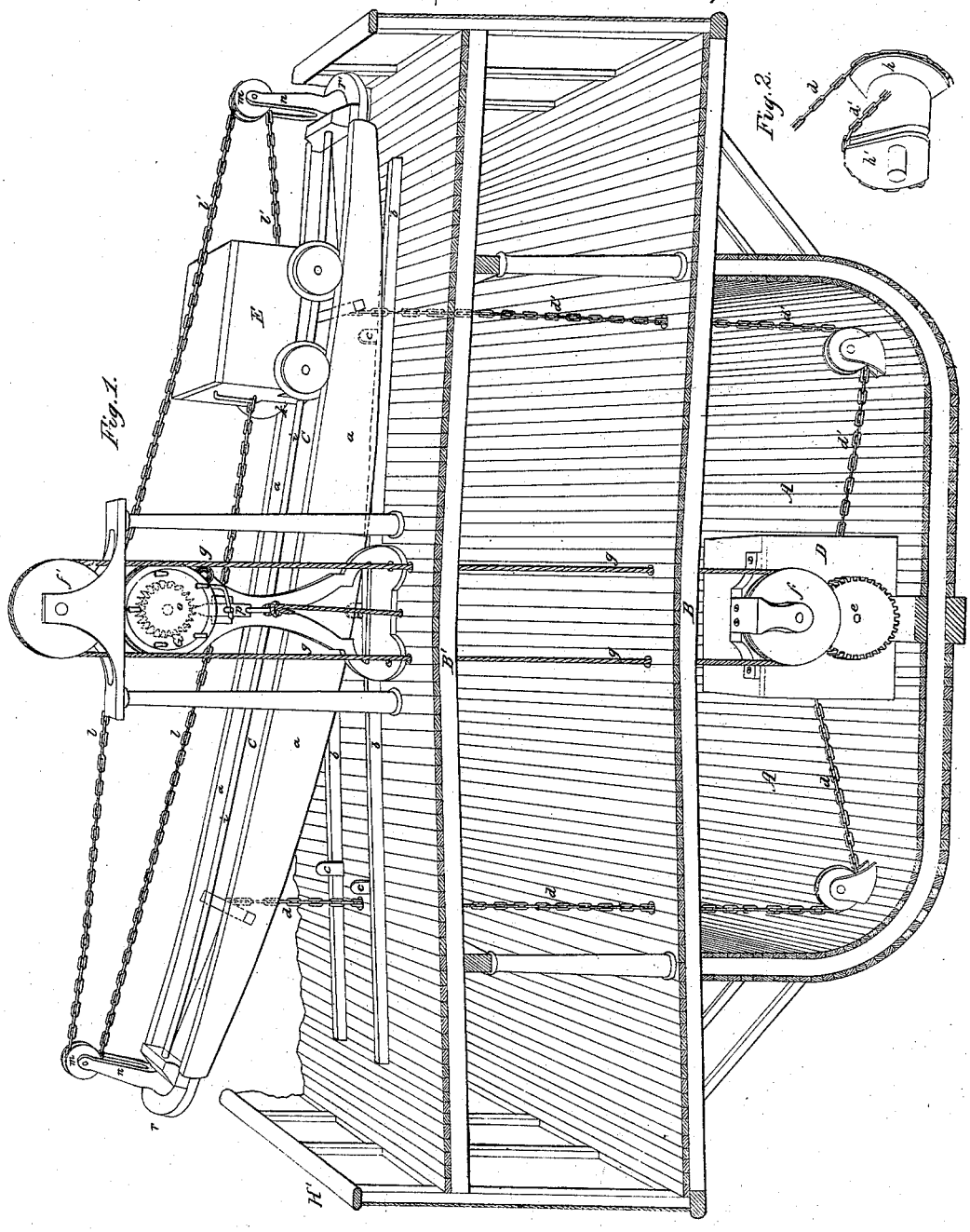

Fig. 1.

Fig. 2.

UNITED STATES PATENT OFFICE.

EVAN L. EVANS, OF MOUNT HOLLY, NEW JERSEY.

IMPROVED APPARATUS FOR TRIMMING VESSELS.

Specification forming part of Letters Patent No. **7,184**, dated March 19, 1850.

To all whom it may concern:

Be it known that I, EVAN L. EVANS, of Mount Holly, in the county of Burlington and State of New Jersey, have invented a new and useful Apparatus for Trimming Vessels, Especially Applicable to Steamboats; and I do hereby declare that the following is a full, clear, and exact description of my invention, reference being had to the accompanying drawings, which form part of this specification, and in which—

Figure 1 represents a view in perspective of my apparatus applied to a steamboat, and Fig. 2 is a similar view of the cam-drum detached therefrom.

My invention consists in a shifting weighted car running upon a railroad supported on a cradle which is extended from one side of the vessel to the other and is arranged in such manner that either of its extremities can be raised to give a sufficient inclination to the rail track to cause the car to run by its own weight to that side of the vessel which requires to be weighted to bring her to an even bearing.

In the drawings, A is the hold of a steamboat, having a main B and upper deck B′. The trimming apparatus is mounted upon the latter. It consists of a cradle and weighted car and of the various devices by which the two are operated. The cradle C consists of two strong rails or rockers *a a*, extending from one side of the vessel to the other and suitably framed together. The rockers are curved convexly at their lower edges and rest upon a pair of ways *b b*, secured to the vessel's deck.

In order to prevent the cradle from sliding endwise, snugs *c c* are projected upward from the ways, and sockets corresponding in size and position are formed in the lower sides of the rockers.

The cradle is kept in place in a transverse direction by flanges formed on the rockers.

The extremities of the cradle are raised or lowered by means of two chains *d d′*. These are attached to its opposite extremities and are extended downward into the hold of the vessel, where they are passed round pulleys, and, being brought to the center of the vessel, are wound in opposite directions and secured to a drum within the case D, directly above the vessel's keel. One gudgeon of this drum is fitted with a cog-wheel *e*, which is acted upon by a pinion secured to the shaft of a pulley *f*. A second pulley *f′* is supported above the deck of the vessel, and the two are surrounded by an endless rope *g*, to which power is applied whenever it is necessary to change the inclination of the cradle. As the rope is moved the lower pulley and pinion are turned. The latter, acting upon the wheel of the drum within the case, turns it and winds up the one chain while the other is let out, thus depressing the one extremity of the cradle and allowing the other to rise. The bottoms of the rockers are curved, and the points upon which they turn will be continually varying from one extremity of the cradle to the other. Hence the relative velocity with which the two chains *d d′* are moved will be continually varying with the inclination of the cradle, and if the drum within the case was a perfect cylinder the chains would be alternately slack and taut. To obviate this disadvantage I do not wind the chains directly upon a cylinder, but upon two cams *h h′*, Fig. 2, of such shape that the length of the chain wound up and that of the chain unwound are always exactly equal to the spaces described by the parts of the cradle to which they are secured. The upper edges of the rockers *a a* are curved concavely and form a track on which the shifting car E runs from one side of the vessel to the other. The car is heavily weighted and is prevented from rising from the track by a guide-bar *i*, extending from one end of the cradle to the other and passing through two arms *k*, projected beneath the car-body. The car is moved, when necessary, by means of two chains *l l′*, which are extended in opposite directions to the ends of the cradle, and are there passed round pulleys *m m*, supported by standards *n n*. They are then returned toward each other and wound in opposite directions upon a drum in the center of the vessel. The latter is fitted with a hand-wheel G, by which it can be turned, and also with a ratchet-wheel *o* and spring-pawl *p*, by which it can be locked in any desired position.

In order to exemplify the operation of this trimming apparatus, I shall suppose the vessel to be keeled over to the side H. It will then be necessary to transfer the weighted

car to the opposite side of the vessel. This is effected by first applying power to the endless rope *g*, by which the end *r* of the cradle is depressed and the opposite end *r'* correspondingly raised, thus changing the inclination of the track at the point where the car rests toward the upper side H' of the vessel. The release of the ratchet-wheel by the withdrawal of the pawl will then allow the car to run by its own weight toward the side H' of the vessel, and as it runs the position of the cradle is progressively changed by the continued application of power to the endless rope *g* until the car has changed its position sufficiently to bring the vessel to an even bearing, at which point it is secured by releasing the pawl, which enters beneath the teeth of the ratchet-wheel and locks the cam-drum in its position.

In order that the car may not run by jerks, the hand-wheel G is added, by means of which its motion can be regulated.

It will be perceived that by this apparatus a very small amount of power is required to shift the position of the weight, because the chains of the cradle are always acting upon levers the fulcra of which are beneath the car and which shift as the car moves from side to side. It will also be perceived that as the endless rope *g* extends through the several decks of the vessel it may be operated by the deck-hands on either deck or by the pilot in the wheel-house.

It is obvious that the apparatus I have thus described admits of many modifications in both structure and arrangement without affecting the principle of the invention, and therefore I wish it to be understood that the devices herein particularly described for operating the weighted car and cradle are merely designed to exemplify one of the methods by which my invention may be carried into effect.

What I claim as my invention, and desire to secure by Letters Patent, is—

The herein-described method of trimming vessels by means of a shifting weight operated by an adjustable cradle, substantially as herein set forth.

In testimony whereof I have hereto subscribed my name.

E. L. EVANS.

Witnesses:
E. S. RENWICK,
P. H. WATSON.