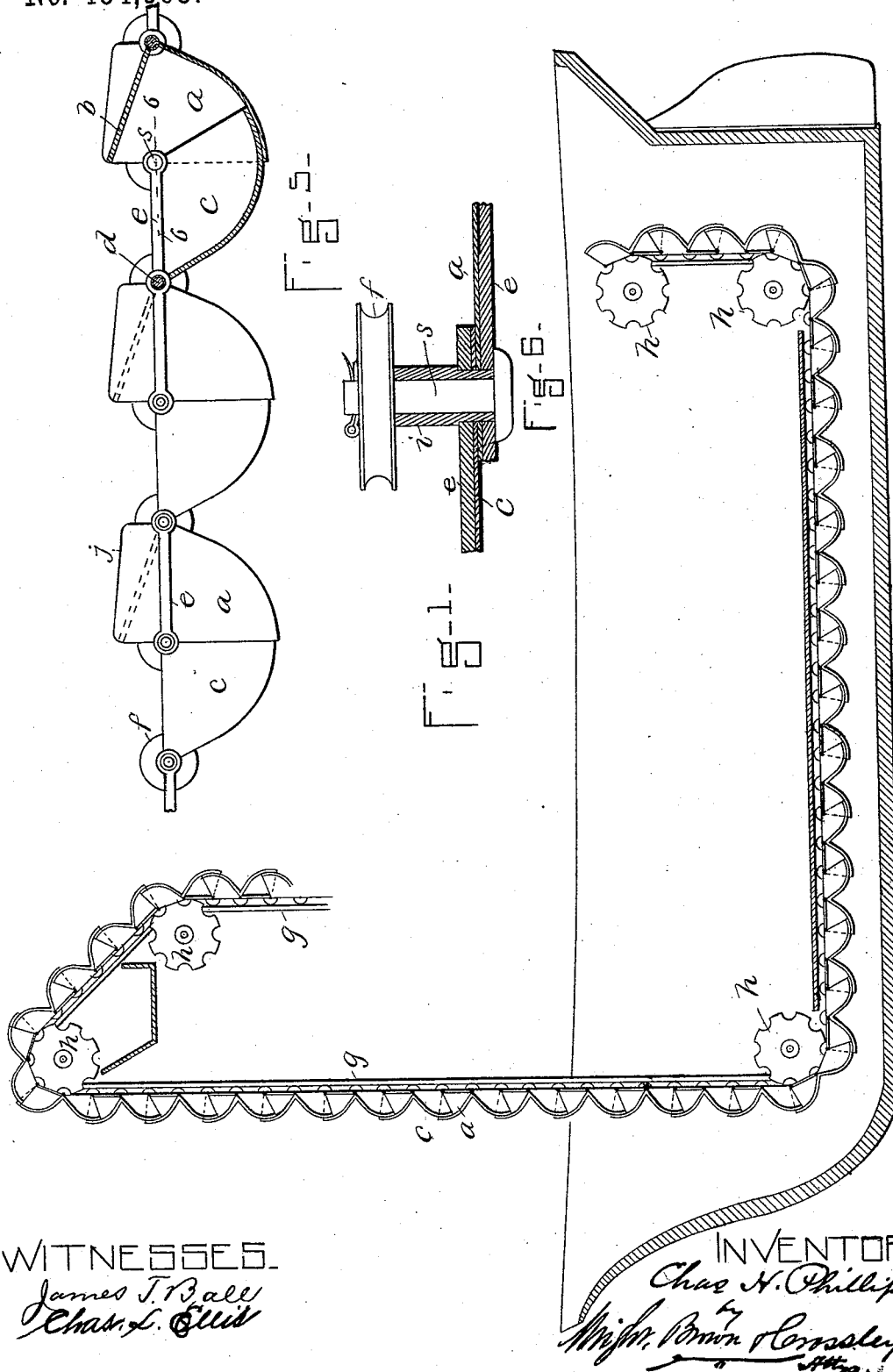


2 Sheets—Sheet 1.

No. 454,663.

Patented June 23, 1891.



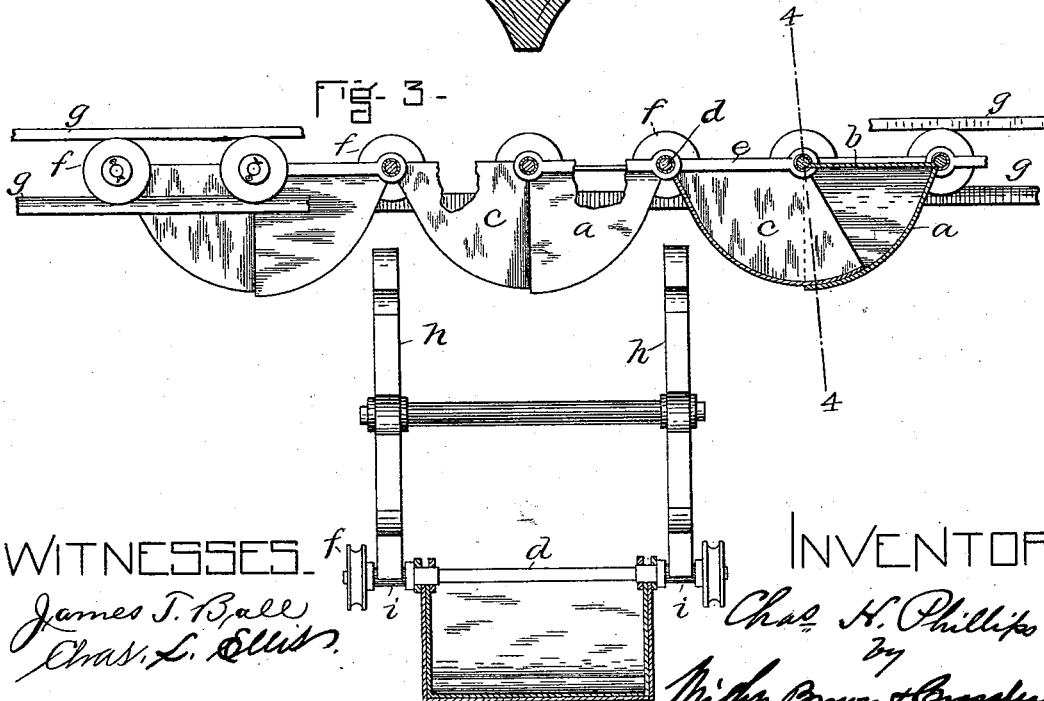
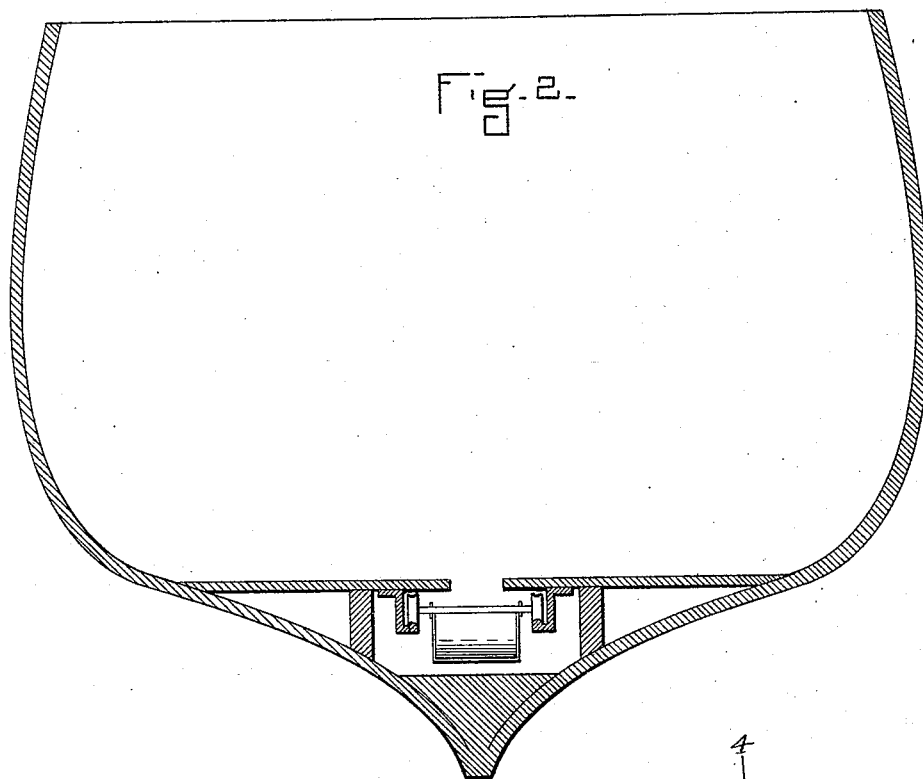
(No Model.)

2 Sheets—Sheet 2.

C. H. PHILLIPS.
ELEVATOR AND CONVEYER.

No. 454,663.

Patented June 23, 1891.



WITNESSES.

James T. Ball
Chas. L. Ellis

INVENTOR.

Chas. H. Phillips

Wm. Brown & Co.
2 " Atty.

Fig. 4.

UNITED STATES PATENT OFFICE.

CHARLES H. PHILLIPS, OF BOSTON, ASSIGNOR TO CHARLES J. SEYMOUR, OF
BROOKLINE, MASSACHUSETTS.

ELEVATOR AND CONVEYER.

SPECIFICATION forming part of Letters Patent No. 454,663, dated June 23, 1891.

Application filed June 5, 1890. Serial No. 354,350. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. PHILLIPS, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Elevators and Conveyers, of which the following is a specification.

My invention relates to elevators and conveyers generally, wherever and however employed, though it has been contrived with particular regard to the loading and unloading and transferring of coal and grain, (especially the former,) where "buckets" and "pans," so called, are employed, the term "pan" being given to that part of the elevating and conveying devices which receives the material while the line or chain of such devices is traveling horizontally, and the term "bucket" being applied to that part of the said devices provided with a hood, and which receives and conveys the load of material as the line of devices travels upward.

It is the object of the invention to provide improvements in the conveying devices; and the invention consists in pivotally connecting the bucket and pan constituting such conveying devices, so that one may overlap the other and each have a bottom at the overlapping points of circular form struck with the point of pivotal connection as the center.

Reference is to be had to the annexed drawings and the letters of reference marked thereon, forming a part of this specification, the same letters designating the same parts or features, as the case may be, wherever they occur.

Of the drawings, Figure 1 represents in side elevation a chain or line of buckets and pans embodying my improvements, a sectional outline of a boat or vessel being also represented. Fig. 2 represents a boat or vessel in cross-section, showing the manner in which a chain or line of buckets and pans constructed in accordance with my improvements may be arranged beneath the floor or a false floor of the hold and above the keel. Fig. 3 represents in side elevation, partially in section and upon an enlarged scale, the form of buckets and pans shown in Fig. 1. Fig. 4 is a cross-sectional view of Fig. 3, taken on the line 4 4 of the latter figure, and showing also a

sprocket-wheel for engaging and moving the line or chain. Fig. 5 is a side elevation, partly in section, of a modified form of bucket, or rather a modified form of the hood of the bucket. Fig. 6 is a sectional detail taken on the line 6 6 of Fig. 5 and drawn to an enlarged scale.

In the employment of my invention I may make up a chain or line of buckets and pans and arrange them in any suitable or desired way for transferring coal, grain, or other material or substance either from a boat or vessel to a receptacle upon the land, or from one part of a boat or place on land to another, or in any other way that may be required or desired, so that while a boat or vessel is represented in the drawings a use of the improvements therewith is not an essential part of the invention.

In the drawings, *a* designates a bucket provided with a hood *b*, and *c* designates a co-operating pan, the two being pivotally connected by an axle *d*, which passes through the eyes of eye-bars *e*, connected with the upper edges of the buckets and pans. Pairs of buckets and pans so made up are pivotally connected with each other by means of axles similar to axles *d*, so as to form a chain or line of buckets and pans, as is commonly done in the construction of elevating and conveying devices.

The ends of the axles are provided with wheels *f*, which travel upon and are guided by tracks *g*, and are moved by sprocket or other wheels *h*, which engage the sleeves *i* on the ends of the axles, as shown.

As is herein shown, each bucket *a* overlaps its co-operating pan to a slight extent, so that in passing a curve or angle the bucket and pan may not be separated at their meeting point, as will be readily understood. To this end it will be seen that the pan might be made to overlap the bucket, as well as that the construction should be as shown and just described.

The bottoms of the buckets and pans are given the form of a segment of a circle to the extent to which they overlap, such form being struck with the point of pivotal connection as a center, so that in passing angles or curves, and at all other times for that matter,

the overlapping parts of the buckets and pans will be maintained in close contact, and so that the coal in the buckets and upon the pans will not materially affect the operation of the chain or line.

The hood *b* of the buckets may be made parallel with the line of travel of the chain, as is shown in Figs. 1 to 4, inclusive, though in most instances I prefer to construct it at an angle thereto, as shown in Fig. 5, so that coal or other material or substances falling thereon may readily slide off therefrom into the next pan and so that when the buckets are partially inverted the contents will be quickly discharged, since the hood will be inclined downward to a greater degree than when the construction is as that first described.

With an inclined hood as shown in Fig. 5 I may organize the buckets with angular side strips *j* at each side of the hood to prevent the material lodging thereon from falling over the sides upon the track or into the traversing-ways; and with this last-mentioned construction, instead of pivotally connecting the pairs of buckets and pans by means of an axle *d*, extending through from side to side of the line, as is shown in Figs. 1 to 4, inclusive, I may employ studs *s*, which may extend through the eye-bars and sides of the buckets and pans and be provided on their outer ends with wheels *f*, so that the axles will not interfere with the dumping of the buckets.

It is to be further observed that with my invention I may provide a boat, barge, or other vessel with a false floor or bottom, forming a passage-way therebeneath and extending longitudinally of the vessel, the said false bottom extending over the wheels and tracks at all points, as is shown in Fig. 2, so as to completely protect the same from the coal, grain, or other substance being transferred.

It is obvious that changes may be made in the form and arrangement of parts compris-

ing my improvements without departing from the nature or spirit of the invention.

Having thus explained the nature of my improvements and in what manner the same may be made and used, I declare that what I claim is—

1. A pivotally-connected bucket and pan, one overlapping the other and each having at the overlapping points a bottom of the form of a segment of a circle, with the point of pivotal connection as the center, as set forth.

2. A pivotally-connected bucket and pan, one overlapping the other and each having at the overlapping points a bottom of the form of the segment of a circle, with the point of pivotal connection as the center, and the bucket being provided with a hood arranged at an angle to the line of travel, as set forth.

3. A line of buckets and pans for elevators and conveyers, axles *d* for pivotally connecting the pairs of buckets and pans, studs *s*, connecting each bucket with its co-operating pan, and wheels on said studs and axles, as set forth.

4. The combination, with the buckets and pans pivotally connected, as described, and having bottoms made in the form of a segment of a circle, with the point of pivotal connection as the center, of eye-bars secured to the upper edges of the buckets and pans and forming the chain proper, as set forth.

5. A bucket and pan pivotally connected, as described, the former having a hood inclined with respect to the line of travel of the bucket and pan, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 27th day of May, A. D. 1890.

CHARLES H. PHILLIPS.

Witnesses:

ARTHUR W. CROSSLEY,
A. D. HARRISON.