N. G. SIMONDS.

Grain-Conveyers.

No. 157,423. Patented Dec. 1, 1874.

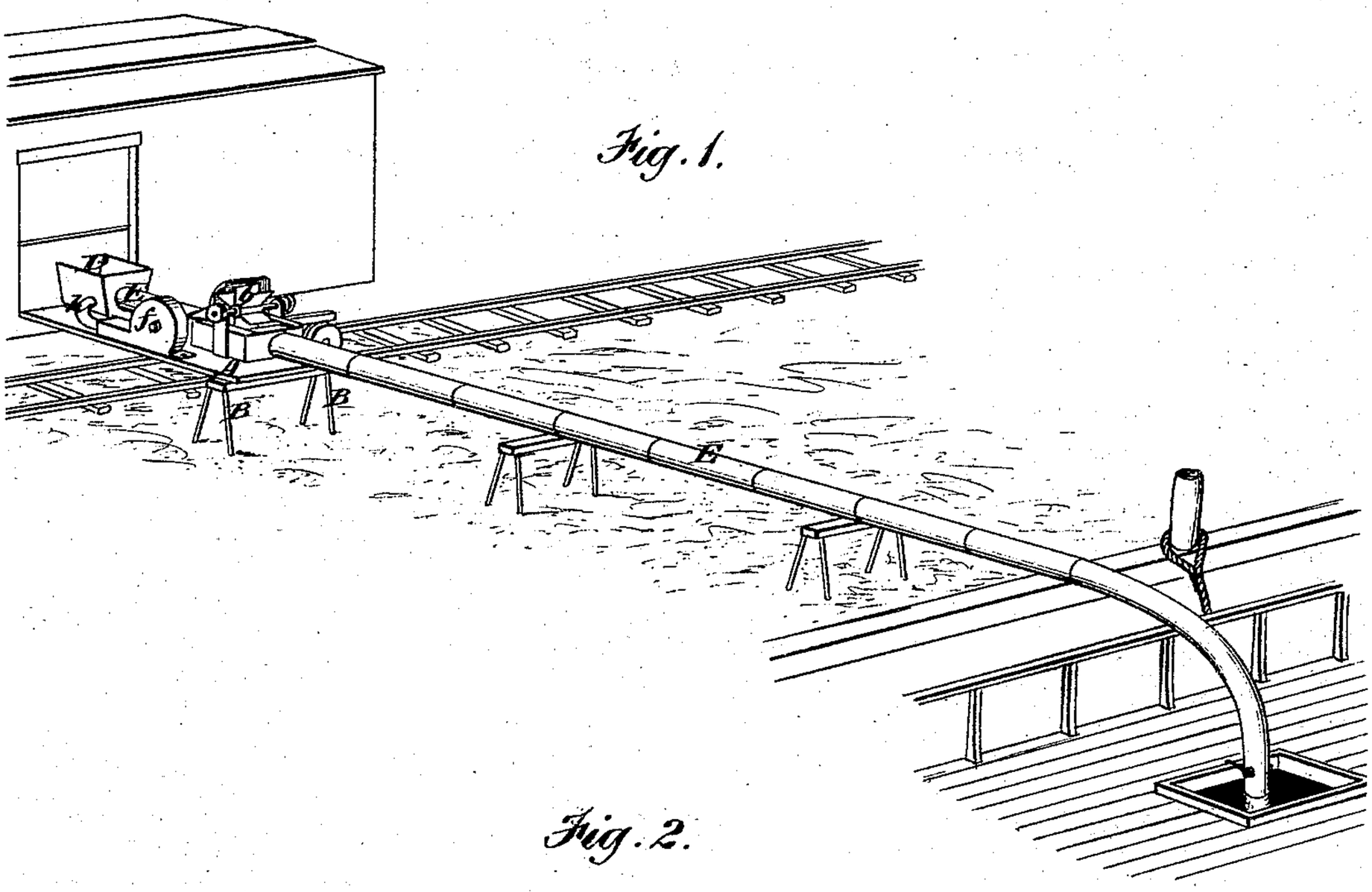


Fig. 1.

Fig. 2.

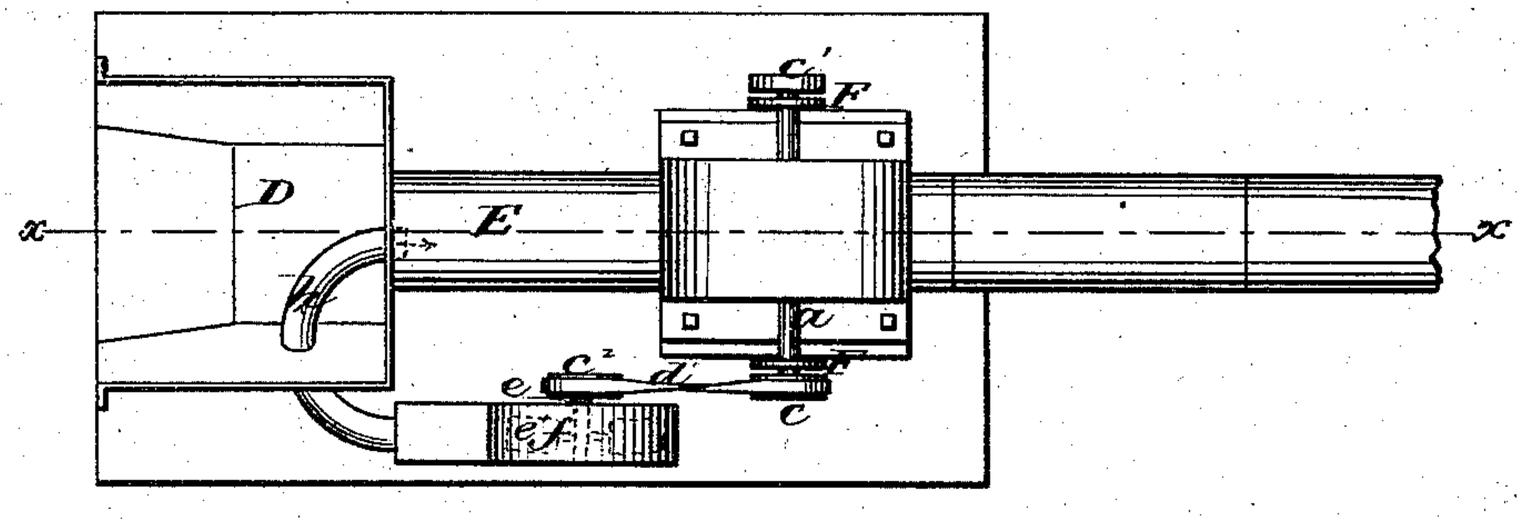
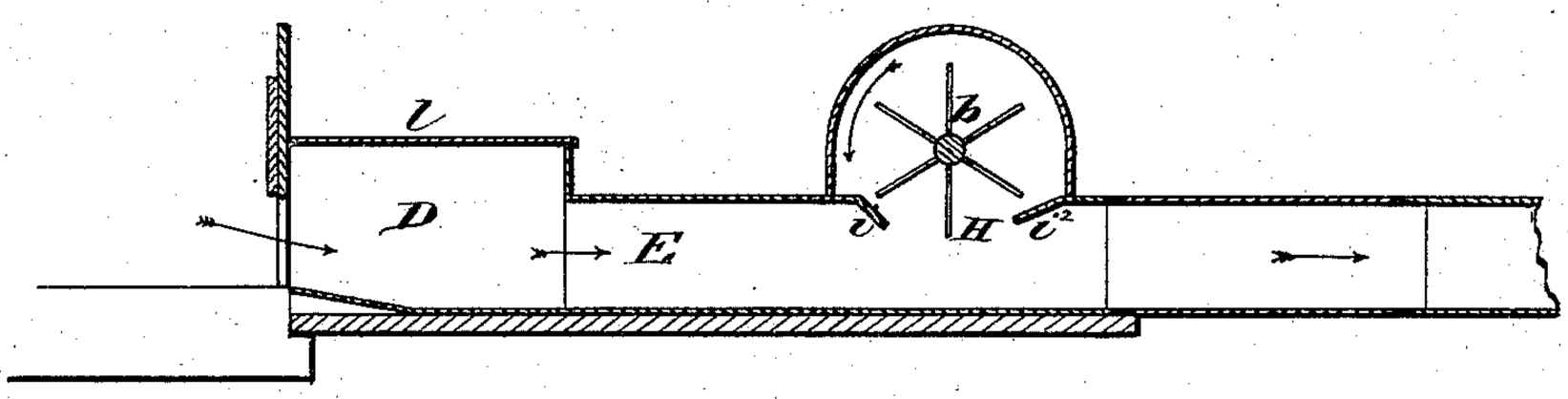


Fig. 3.



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UNITED STATES PATENT OFFICE.

NATHANIEL G. SIMONDS, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN GRAIN-CONVEYERS.

Specification forming part of Letters Patent No. **157,423**, dated December 1, 1874; application filed June 3, 1874.

To all whom it may concern:

Be it known that I, NATHANIEL G. SIMONDS, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Grain-Conveyer; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings forming part of this specification, in which—

Figure 1 is a perspective view; Fig. 2, a top-plan view; and Fig. 3, a section through line *x x*, Fig. 2.

Similar letters of reference in the accompanying drawings denote the same parts.

My invention relates to improvements in grain-conveyers; and consists, first, in the employment of a tube for conveying the grain provided with an opening having inclined edges or deflectors, over which operates a fan for exhausting the air contained therein, a blower being also applied to the mouth of the conveying-tube, by means of which the grain is forced from a car or other receptacle to a vessel.

In the accompanying drawings, A is a platform or table supported by legs B B, which are provided with slots at their upper ends, through which suitable screws may pass, by means of which construction the platform may be raised or lowered as desired. D is a hopper for the reception of the grain, which is introduced therein from a car or other grain-receptacle by a sliding door in one of its sides, thereby forming a channel or passage between the interior of the car or other receptacle containing the grain and the hopper D. The opposite face or side of the hopper is provided with an orifice for the reception of the tube E for conveying the grain from the hopper to a vessel or other receptacle provided for it. F F are uprights attached to the top of the platform A, in the upper ends of which are journaled the shaft *a*, carrying the exhaust-fan *b*, which is securely attached thereto, and revolving with it. The conveyer E is provided with an opening, H, in its upper part sufficiently large to allow free passage of the fan *b* in its revolution upon its axis. The outer ends of the fan-shaft *a* are provided with pulleys *c c'*, to the latter of which a band is applied to give the requisite rotary motion to the fan. An endless belt, *d*, passes around the pulley *c*, and thence around the pulley c^2 on the fan-shaft *e*, supported in bearings attached to the top of the platform. The fan-shaft *e* is provided with the ordinary fan-blades *e'*, and is surrounded by a casing, *f*, terminating in a chute for the concentration of the air, the outer end of the chute being closed and provided with a bent tube, *h*, leading through an orifice in one of the sides of the hopper to the mouth of the conveyer E.

By this construction it will be seen that the fans rotate in opposite directions, one operating to exhaust the air in the conveyer and the other forcing a current of air into the mouth of the conveyer, whereby the grain will be rapidly carried through the conveyer.

In order to prevent the grain thus carried through the conveyer from being raised by the currents of air engendered by the revolution of the fan up into its blades, I employ two inclined planes or deflectors, $i\,i^2$, projecting downwardly into the opening H, for the passage of the fan in the conveyer, the inclined plane *i* deflecting the current of air and grain toward the bottom of the conveyer, and the inclined plane i^2 preventing the grain from rising into the fan-blades.

The conveyer is preferably galvanized, to prevent rusting and for its better protection against the action of salt-water, and is made in sections, one fitting over the other, to adapt it to the distance between the car and vessel. To the lower section of the conveyer is attached a flexible hose at the hatchway-line, the hose being moved to discharge the grain in different parts of the hold and trim the vessel. *l* is the hopper-lid, which is kept open in the operation of the parts until the grain in the car becomes very low, when the lid is placed upon the hopper to create a suction in the car through its connection with the hopper, and thereby force the grain into the conveyer.

It will be seen that, by adjusting the table by the devices above described, the conveying-tube may be raised or lowered as the vessel rises or falls with the tide.

I am aware that an exhaust fan and blower have been heretofore employed in conveying grain through a tube, and I therefore lay no claim to such combination, *per se;* but in the

use heretofore of the exhaust fan and blower disclaimed they have been so applied that the blades of the fans are brought in direct contact with the grain, injuring it materially by breaking it, and so impeding and choking up the spaces in which the fans revolve as frequently to render the machine inoperative, all of which defects are obviated in my construction. I am also aware that a blower has been employed in connection with a conveying-tube having an opening provided with a single deflecting lip projecting downward into the tube, or, in lieu of the single deflecting lip, two deflecting lips, the one projecting upwardly and the other downwardly into the tube, the grain being fed into said opening in the tube, and I therefore lay no claim to such deflector or deflectors, as their object is entirely different from the deflecting lips employed by me, both of which project down into the conveying-tube, to prevent the grain from being brought up into the fan-blades and broken thereby, while the deflectors disclaimed are intended for an entirely different purpose.

I claim as my invention—

The conveyer E, leading into the hopper D and provided with an opening, H, having inclined edges i i^2, both projecting downward, and fan b, operating immediately over said opening H, in combination with the blast-fan e, casing f, and bent tube h, substantially as described, and for the purpose set forth.

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Witnesses:

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