

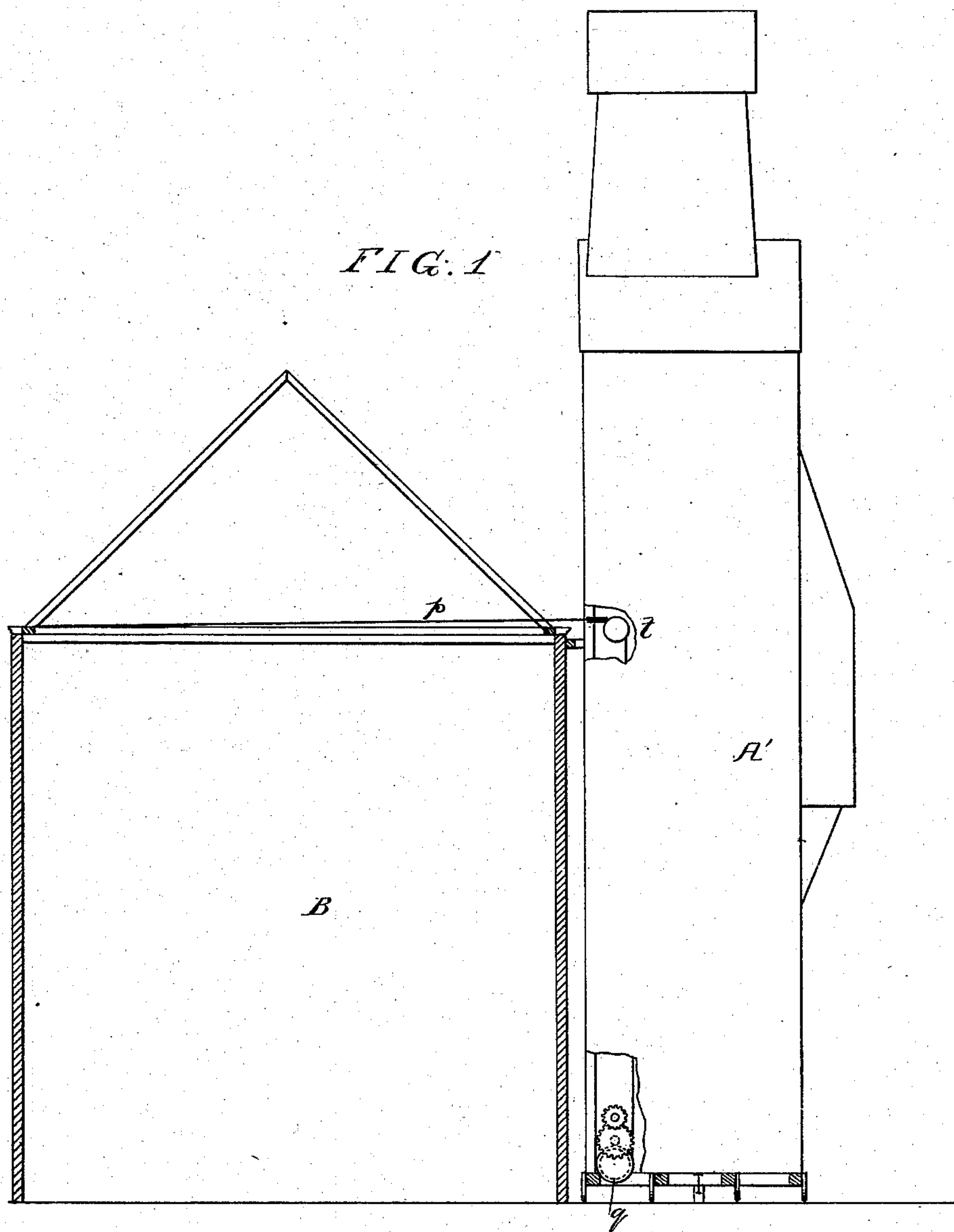
(No Model.)

3 Sheets—Sheet 1.

F. J. FIRTH.
GRAIN ELEVATOR.

No. 258,043.

Patented May 16, 1882.



Witnesses:
James T. Jobin
Hamilton D. Turner

Inventor
Frank J. Firth
by his Attorneys.
Howson and Fry

(No Model.)

3 Sheets—Sheet 2.

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FIG. 2.

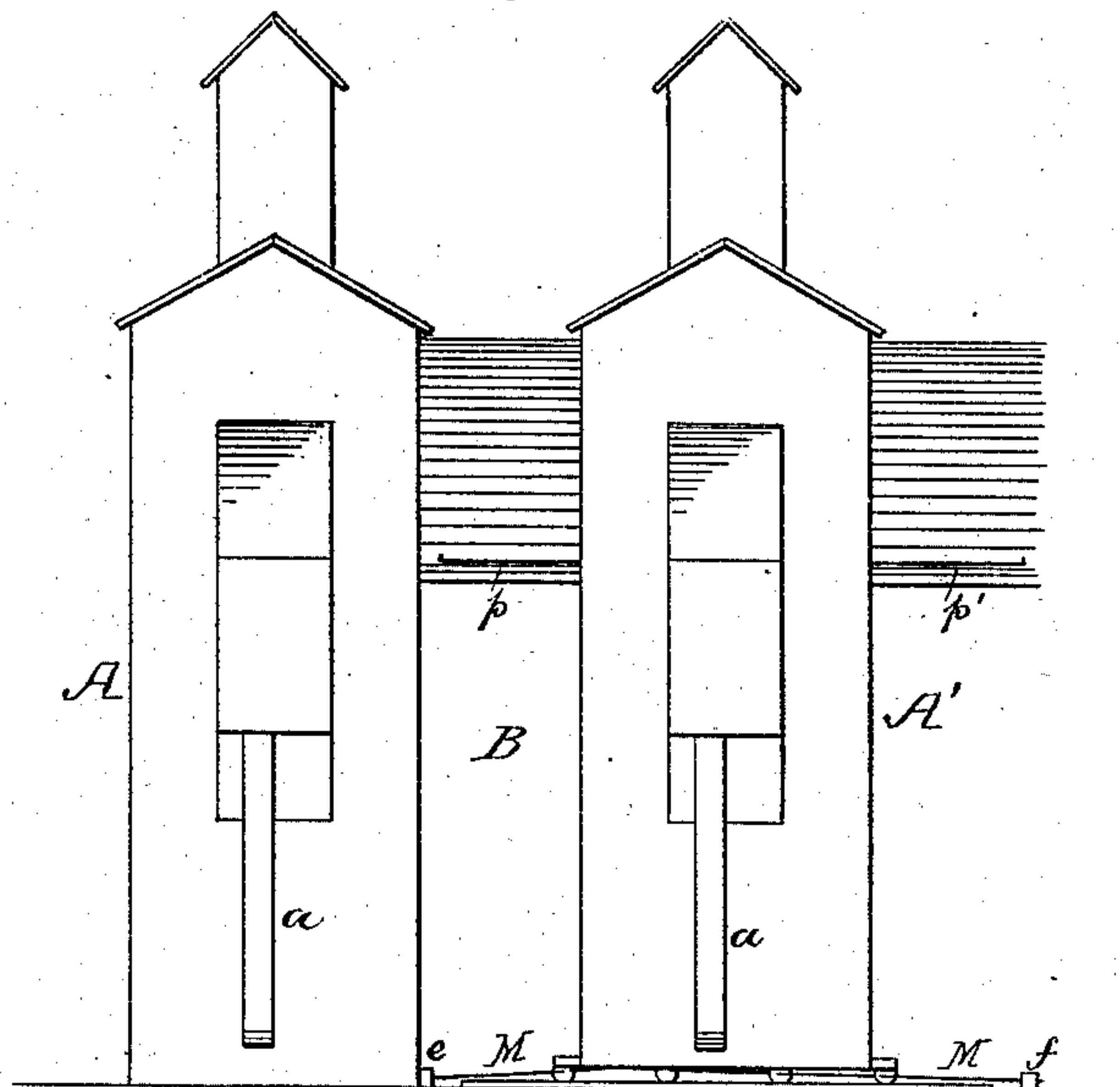
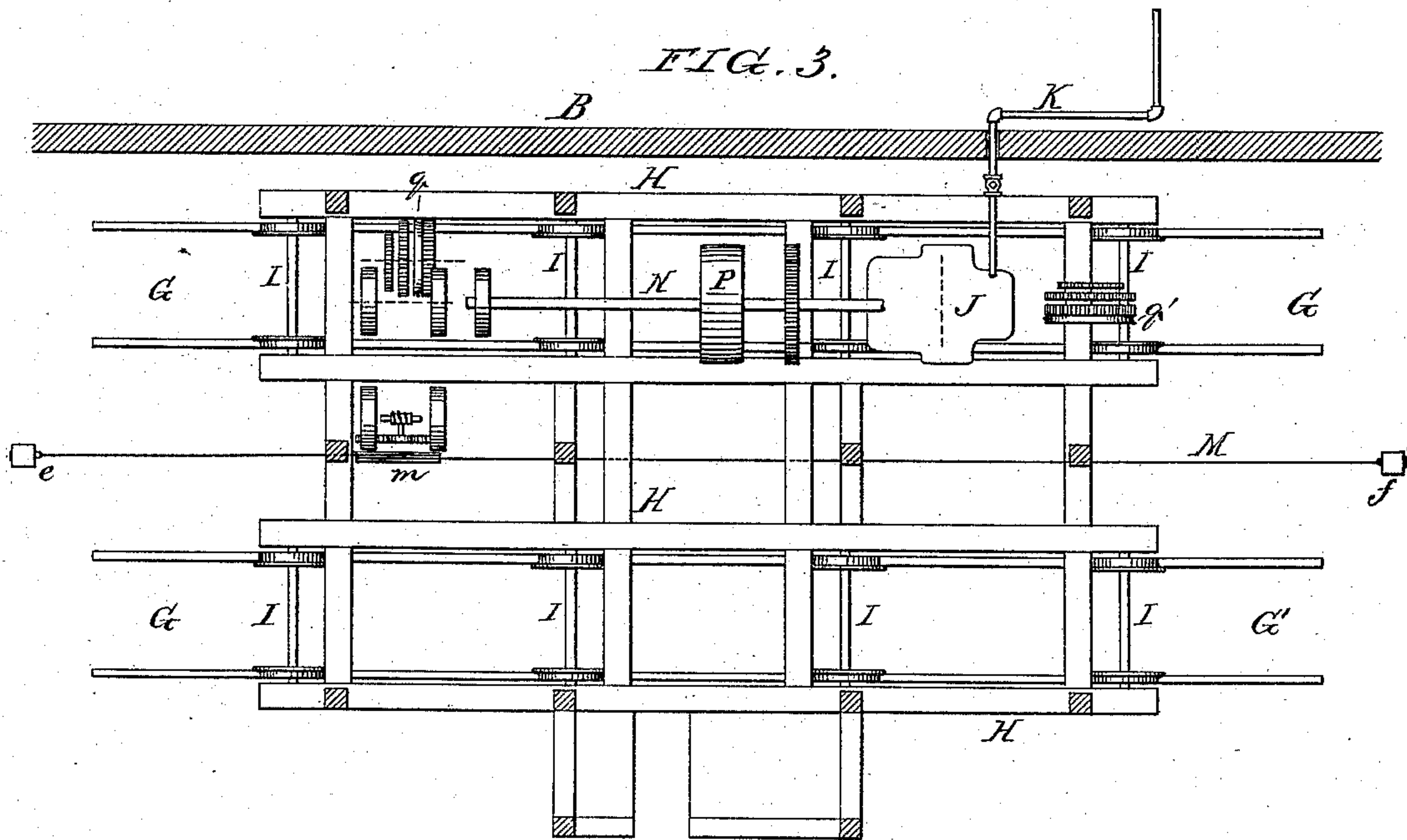


FIG. 3.



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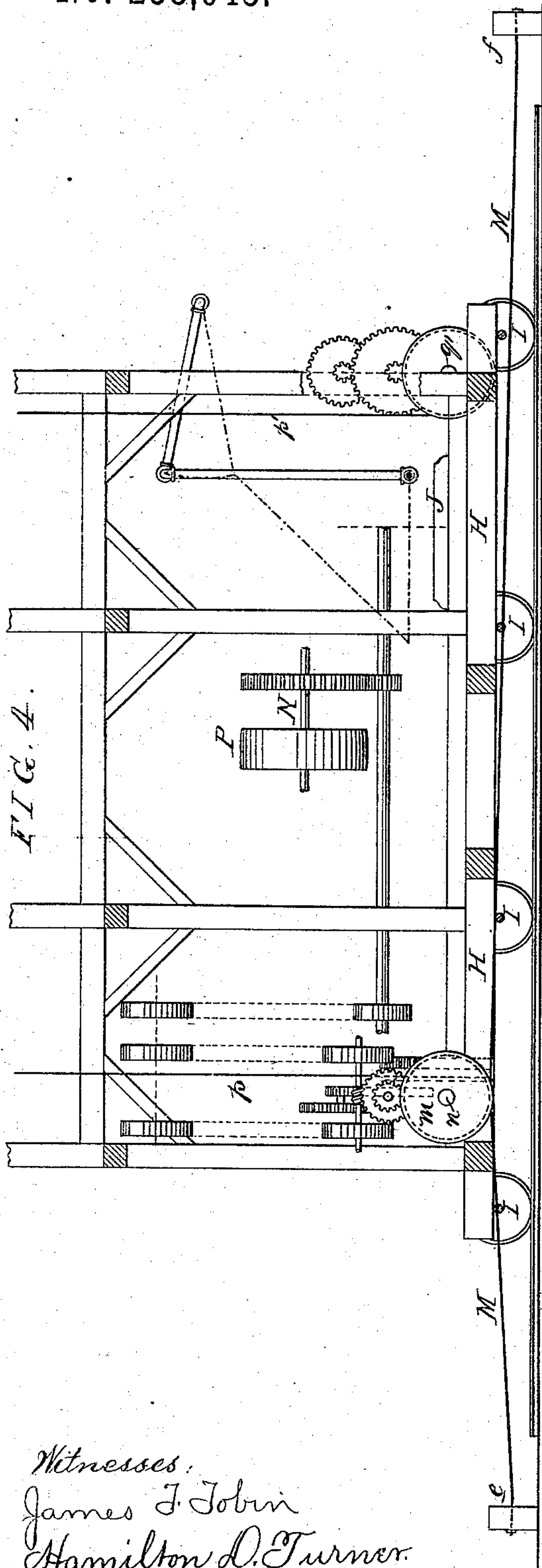
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UNITED STATES PATENT OFFICE.

FRANK J. FIRTH, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
ERIE AND WESTERN TRANSPORTATION COMPANY, OF SAME PLACE.

GRAIN-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 253,043, dated May 16, 1882.

Application filed April 10, 1882. (No model.)

To all whom it may concern:

Be it known that I, FRANK J. FIRTH, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Grain-Elevators, of which the following is a specification.

The main objects of my improvement in grain-elevators are to economize wharf-room and afford facilities for rapidly unloading vessels; and these objects I attain by combining a main building containing the bins and store-rooms with a movable elevator-tower, or with a fixed elevator-tower and a movable elevator-tower, each provided with the usual leg, so that the two legs may be readily adjusted to the hatchways of the vessel to be unloaded and both elevators caused to operate at the same time.

In the accompanying drawings, Figure 1, Sheet 1, is a side view of the movable elevator structure or tower, the adjoining building being in section; Fig. 2, Sheet 2, a front view, drawn to a reduced scale, of the fixed and movable elevator structure or tower, showing the main building in the rear; Fig. 3, a sectional plan, drawn to a larger scale, of the movable tower; and Fig. 4, Sheet, 3, a vertical section of Fig. 3.

On referring to Fig. 2 it will be seen that there are two elevator structures or towers, A A', the first of which is fixed and forms a part of the main building B in the rear, this building containing the usual bins, store-rooms, &c. The tower A' is on wheels adapted to the rails of tracks in front of the main building, so that it can be moved laterally nearer to or farther from the fixed structure. As regards the towers themselves they are similar to those in common use, each tower having the usual vertically and outwardly adjustable leg, *a*, containing the endless belt and its buckets, the novelty in this construction resting mainly in the combination of a fixed with a movable tower, and the objects of the combination being to economize wharf-room and afford facilities for the adjustment of the leg of one elevator to one hatchway of a vessel which has been so moored to a wharf that the leg of the other elevator can be adjusted to the other hatchway of the vessel. The importance of this arrangement will be understood when it is re-

membered that the hatches are generally at different distances apart in different vessels, and that it is desirable for two elevators to be at work in unloading at the same time.

On referring to Fig. 3 it will be seen that two tracks, G G', are laid in front of the main building B, and that the frame H, which forms the base of the elevator structure, is provided with a number of axles, I—eight in the present instance—the axles having flanged wheels adapted to the rails of the tracks.

The base H of the movable tower carries a steam-engine, the base-plate J only of which is shown in the drawings, as the engine may be similar to those in common use, a jointed pipe, K, conveying steam from a boiler in the main building B to the steam-chest of the engine.

Beneath the movable structure is a rope or chain, M, one end of which is anchored at *e*, the other at *f*, the rope passing round a drum or pulley, *m*, on a shaft, *n*, which has its bearings on the frame of the structure. This shaft may be driven from the engine by the system of belts and gearing shown; but as different systems of driving appliances may be used, it will be unnecessary to explain minutely those shown in the drawings.

Other means than the rope M and winding-pulley *m* may be employed for traversing the movable tower; but the rope and pulley are preferred.

There is a shaft, N, driven by the engine, and on this shaft is a pulley, P, for receiving a belt which drives the pulley for the endless belt carrying the buckets. This, however, forms no part of my invention.

It is important that the movable towers should be properly steadied after adjustment, and for this purpose two ropes or chains, *p p'*, Figs. 2 and 4, are used, one rope being attached to the barrel *q* of a suitable crab on the base H of the tower at one end of the same, and the other to the barrel *q'* of a crab at the other end of the base, and both ropes passing upward through the tower and over pulleys *t*, Fig. 1, and thence through the roof of the main building, to which the ropes are anchored. When the movable tower is traversed one of the ropes is unwound from the barrel of one crab, and

the other rope wound on the barrel of the other crab, according to the direction in which the tower is traversed; and when the tower has reached its destination both ropes are tightened and become available guy-ropes for steadying the movable tower.

There may, if desired, be two or more movable towers in connection with the fixed tower, and when wharf-room is limited, from excessive cost or otherwise, a single movable tower may be combined with the main building.

I claim as my invention—

1. The combination of the main building of a grain-elevator with an elevator-tower having wheels adapted to a track or tracks in front of the said main building, substantially as set forth.

2. The combination of the fixed elevator-tower A, the main building B, and the movable elevator-tower A', having wheels adapted to tracks in front of the main building, substantially as specified.

3. The combination of a movable elevator-tower, having wheels adapted to tracks, with a rope or chain, M, anchored at both ends and passing round a pulley carried by the elevator, and with gearing through the medium of which the said pulley may be rotated, substantially as set forth.

4. The combination of the main building B, a movable elevator-tower, guy-ropes connecting the two, and mechanism whereby said guy-ropes may be tightened and loosened, all substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK J. FIRTH.

Witnesses:

HARRY DRURY,
HARRY SMITH.