F. IMHORST.

Merchandise-Elevator.

No. 222,137. Patented Dec. 2, 1879.

Fig. 1.

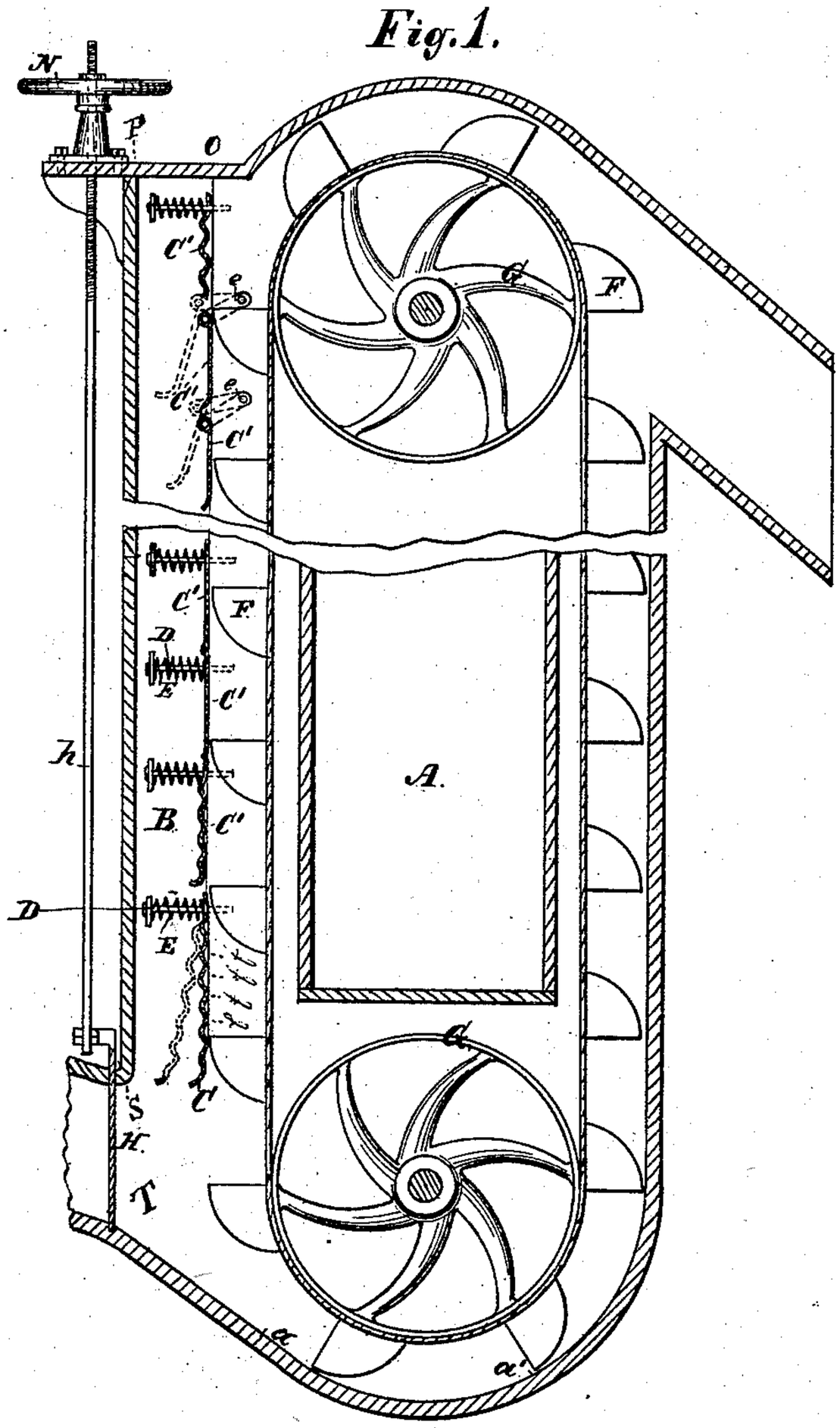
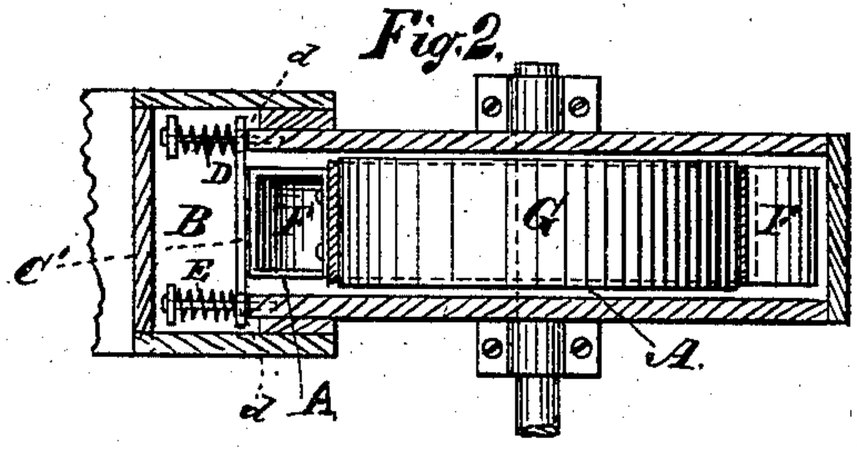


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

FERDINAND IMHORST, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN MERCHANDISE-ELEVATORS.

Specification forming part of Letters Patent No. **222,137**, dated December 2, 1879; application filed August 19, 1879.

To all whom it may concern:

Be it known that I, FERDINAND IMHORST, of Baltimore, State of Maryland, have invented a new and useful Improvement in Merchandise-Elevators, of which the following is a specification.

The nature of my improvements, taken in connection with the drawings, will enable any one skilled in the art to comprehend and construct such improved elevators.

This class of elevators, as used for grain, &c., are well known as to their method of operation. The elevator is sunk into the mass to be moved and the buckets are set in motion directly against the mass, which yields and fills the buckets. It is obvious that this old form of elevator would not operate if the merchandise were of larger or heavier particles than grain, and would not be at all adapted to lifting ores in bulk or similar merchandise, for the edge of the buckets could not be driven through such a mass of unyielding material.

Figure 1 is a vertical longitudinal section of the elevator and devices embodied in my invention, and Fig. 2 is a plan view or horizontal projection of the same apparatus.

The old form of elevator is shown by the portion marked A, consisting of the ordinary series of buckets, such as F, and the usual exterior box, as shown in Fig. 1. My attachments to permit the safe handling of ores and other heavy merchandise in bulk consist of the feed-gate H, and the protection-box O P S is built outside of the ordinary elevator-case, and forms, in connection with the same, a chamber terminating in the feed-chamber T.

The feed-gate H is adjustable and operated by the rod *h* and the wheel N. By these devices I can regulate the supply of material in the elevator in accordance with the capacity of the revolving buckets. The outer protection-box, O P S, is continued and curved at its lower extremity, as shown by *a*. By this means I have the edges of the buckets revolve in close proximity to the box, and thus imitate the action of an ordinary shovel, and scoop up the material from underneath. This movement is necessary in handling such articles as ores, &c., and is superior, in handling grain, to the present form of box.

I am aware that ores have been lifted by bucket-elevators, but only by having the ore shoveled in by workmen. My devices are essentially automatic, so far as the direct feeding of the elevator is concerned, and are intended to make the elevator self-feeding, in which the chief economy of the operation consists.

In order to prevent clogging and stoppage while the mass is being lifted in the buckets, I have devised an automatic regulating-blind, C. This blind works upon pins D by means of the holes or slots *d d*, which are larger than the pins, so that the entire blind may either open in a curved direction or laterally, according to the amount of pressure upon the opposite side. E E are springs of requisite tension to bring the blinds back to their beds when the pressure ceases to operate. *f f f* are corrugations or ridges on the surface of the blind, which will serve to catch against and separate any particles which project over the edges of the buckets, and thus prevent clogging in the elevator-case. The surplus mass pushing against the corrugations *f f f* will, for the most part, be pushed loose from the buckets, and any remaining surplus will open the blind C and find egress through the opening afforded thereby.

To prevent clogging if one bucket should be overfilled by chance droppings from neighboring buckets, I have constructed a series of similar blinds, C′ C′ C′, and arrange them along the surface of the elevator-case, as shown. In many instances, however, ordinary holes or slots would answer this latter purpose, so that I do not limit myself to attaching blinds to these openings. My device is essentially a series of openings in an inner elevator-case for conducting any overflow from without the bucket-chamber.

What I claim as new, and desire to have secured to me, is—

1. In elevators for moving merchandise in bulk, an outside and secondary case or box, which forms, in connection with the inner and usual case of the elevator, an open chamber, as shown, as and for the purposes substantially as described.

2. In combination with the elevator, as described, a movable gate, H, permitting a larger or smaller opening, as desired, substantially as described.

3. In combination with merchandise-elevators, the blind C, hung on a hinge or pin, which opens freely and is located so that the buckets will pass by this blind immediately after they have received the merchandise to be lifted, all substantially as described.

4. The springs E E, in combination with an elevator-blind, and adapted to return the blind to its bed or normal position, substantially as described.

5. The corrugations or projections *f f f*, arranged horizontally on the surface of the blinds, as and for the purposes substantially as described.

6. On the surface of an elevator-frame, openings, as shown, adapted to discharge any overload contained in the buckets, substantially as described.

7. In combination with co-operating devices in said elevator, a series of blinds, C′ C′ C′, hung on hinges or pins, and which may be closed by springs, substantially as described.

8. An elevator consisting, essentially, of revolving buckets, a frame in which is inserted one blind or more, which act as outlets for overloads, and an adjustable feed-gate, H, substantially as described.

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