C. W. T. Krausch,

Grain Conveyer.

No. 38,004. Patented Mar. 24, 1863.

Fig: 1.

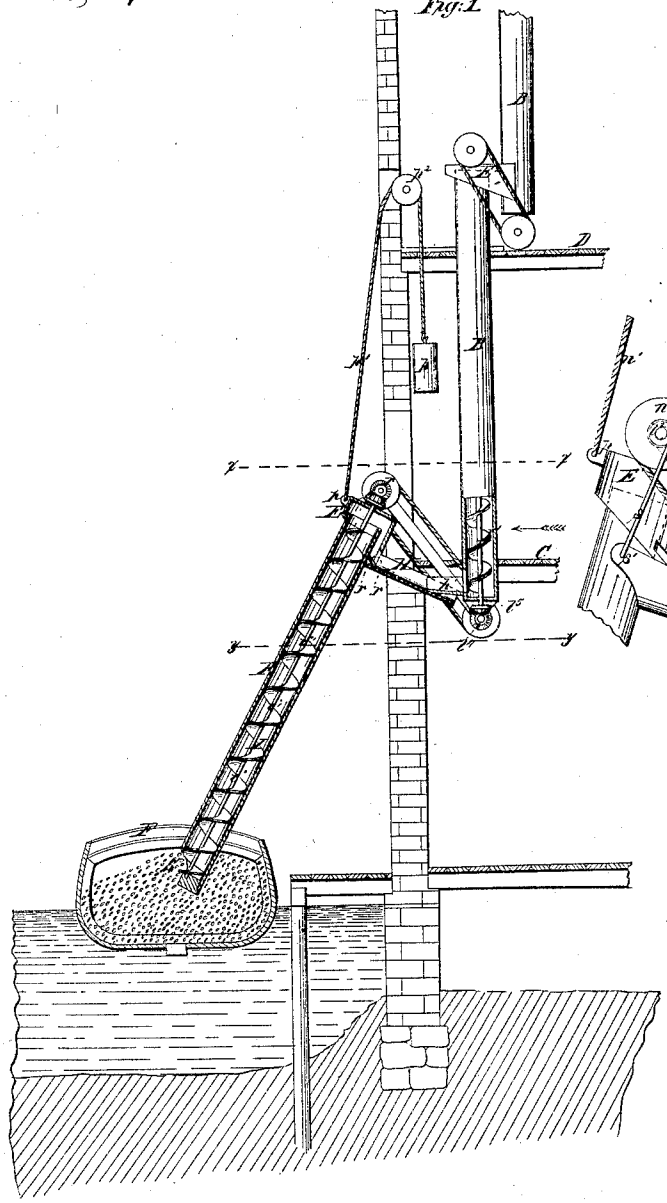


Fig: 2.

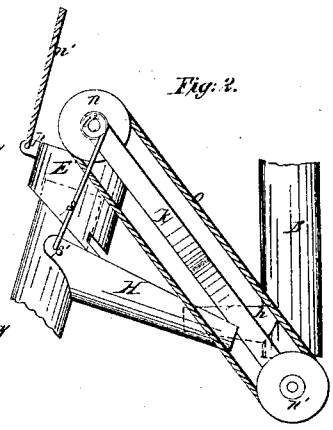
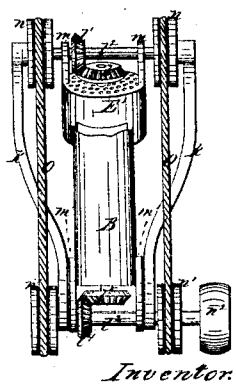


Fig: 3.



Witnesses.

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A.M. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS)

UNITED STATES PATENT OFFICE.

C. W. THEODORE KRAUSCH, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF AND ROBERT McCABE, ASSIGNORS TO SAID KRAUSCH AND DAVID HOWES, OF SAME PLACE.

IMPROVEMENT IN GRAIN-ELEVATORS.

Specification forming part of Letters Patent No. **38,004**, dated March 24, 1863.

To all whom it may concern:

Be it known that I, C. W. THEO. KRAUSCH, of the city of Chicago, county of Cook, and State of Illinois, have invented a new and Improved Grain-Elevator; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, like lettters in the several figures indicating the same parts, and in which drawings—

Figure 1 is a sectional elevation showing the arrangement of my improved grain-elevator in a warehouse in which grain is to be stored, said elevator being shown in proper position preparatory to the act of transferring grain from a vessel thereto. Fig. 2 is an enlarged-side elevation of a portion of the elevator embraced between lines *x x* and *y y*, Fig. 1, and Fig. 3, an enlarged view of said portion between lines *x x* and *y y*, looking in the direction of the arrows shown in Figs. 1 and 2.

In the drawings, A, Fig. 1, indicates the front wall of the warehouse, in which the elevator is situated, a vertical screw-cylinder, B, being permanently secured through the second and third floors, C and D, of the building in any proper manner, as indicated.

E represents a swinging screw-cylinder, it being the lowest one of the series employed for the purpose of elevating grain from the vessel F or other receptacle from which the grain is to be transferred to the warehouse. This swinging cylinder E connects with the foot of the stationary screw-cylinder B, which in turn connects into the foot or extreme lower end of a second stationary screw-cylinder, B′, a succession of vertical stationary screw-cylinders being arranged, as indicated, so as to convey grain to the highest point desirable in the warehouse, from whence it may be "spouted" to any of the grain-rooms within the building.

The cylinder E at its lower extremity is cut away at *g*, as shown, in order to allow the grain *h* to fall in contact with the screw I at such point, said screw being stepped at the bottom of the cylinder, as represented, and having the upper end of its shaft *i′* passing through a cap or bonnet, E′, which incloses the upper extremity of said cylinder.

The devices employed for connecting the swinging cylinder E to the stationary cylinder B are clearly shown in Fig. 3. They consist of bent arms or supports *k k*, attached to pulley-shaft z^2 and driving-shaft z^3 in such manner as to allow their lower ends to articulate freely upon shaft z^3, said shafts, respectively, having bearings in projections *m m* of the bonnet E′ at the upper extremity of swinging cylinder E and supports *m′ m′*, attached to the lower extremity of stationary cylinder B, as shown. On shaft z^2 pulleys *n n* are made to connect with pulleys *n′ n′* by endless cords *o o*, said pulleys being securely attached to their shafts z^2 and z^3, the former of said shafts having a gear-wheel, z', engaging with wheel *z* on screw I of swinging cylinder E, and the latter having a gear-wheel, z^4, engaging with wheel z^5, situate on the lower extremity of screw I′ in stationary cylinder B. By these means it will be seen that when power is applied to the drum n^2 motion is communicated to the screw I′ of cylinder B, and the succeeding screws above it, as indicated, as well as to the screw I of the swinging cylinder E, and that as the arms *k k* freely articulate upon the shaft z^3 and always maintain the shaft z^2 and z^3 a given distance from each other, the swinging cylinder E, with its attachments, may rise and fall, and the cylinder itself may be swung toward or from the wall A in order to accommodate itself to the receptacle from which the grain is to be elevated.

To facilitate the manipulation of the receiving-tube or swinging cylinder E in the process of transferring grain, the cap or bonnet E′ is provided with an eye, *p*, to which a cord, *p′*, is attached, the cord passing over a friction-pulley, p^2, secured to the wall A above, as indicated, and provided with a weight, p^3, to counterbalance the weight of the receiving-tube E and its appurtenances.

As represented in Figs. 1 and 2, it will be observed that the bonnet E′ is of greater diameter than the cylinder to which it is attached, and that it is applied so as to inclose the upper end of the cylinder. It thus affords a receptacle for the grain as the latter rises and falls over the upper end of the cylinder on all sides, and at the same time by means of its

inclined bottom r acts as a chute to direct the grain through its mouth r' into the spouts which connect the cylinders E and B. One of those spouts, as shown at H, is hinged to the shaft z^2 by connecting-rods s, and at its hinged connections s' is contracted, so as to come in contact with the bottom of the bonnet E, and so be swung or drawn out into the bonnet as the cylinder E is thrown out more or less from the wall A. This spout is also made at one of its ends to conform to the cylinder E where it adjoins said cylinder, as represented in Fig. 2, and thus gives proper direction to the flow of the grain under the varying articulations of said cylinder. A second spout, as at h', is permanently attached to the stationary cylinder B, and connects with the bottom thereof, as clearly shown in Fig. 1, thus enabling the grain to flow from cylinder E to cylinder B, and in the operation of my elevator the spout H will ordinarily have its outer end resting within the outer end of spout h^3, although such positions can be reversed, as indicated in the figures. I would here state that the connections or gearing between the stationary cylinders for giving motion to their screws may be the same as that shown in Fig. 3, with the exception of the arms k k, which are dispensed with; and, further, that in such case the bonnet, as at E^2, is made to spout the grain directly into the bottom of the adjoining cylinder, as indicated in Fig. 1, above the floor D, and, further, that such gearing is stationary instead of movable or "swinging," as fully shown in Fig. 3.

As I have now described my elevator so far as its particular construction is concerned, I would also state that the object of my invention is, first, to provide means whereby grain may with facility and speed be transferred to its storehouse, which means are compact, easily managed, and not liable to get out of repair; second, that such means, while they afford the advantages just named, shall also cool, dry, and free the grain from dust, while in the act of transfer, thus overcoming the objections heretofore obtaining to the elevation of grain in compact bulk of greater or less quantities, according to the capacity of the cups in which such bulks are usually elevated. To this end, therefore, I employ screws, as shown, which are to be driven at a high rate of speed—that is to say, they are to be made to revolve at a rate of speed which, while it is sufficient to overcome the gravity of the berries of the grain being elevated, will also throw the berries from the shaft i', Fig. 1, outward against the inner surface of the inclosing-tube, so that said screws I I', by the action of their inclined planes and centrifugal force, shall cause the grain to ascend their inclosing-tubes, the grain in its ascent being in constant agitation and necessarily scoured in its passage through the tubes, while at the same time a current of air being drawn up by the screws with the grain through the tubes, not only cools and dries the grain, but frees it from dust and impurities thrown off from the berry. I thus by a simple apparatus for elevating grain combine the advantages of cooling, drying, and smutting the grain so elevated, and for the free passage of the ascending current of air and escape of the dust the top of the bonnets E' and E^2 may be perforated, as indicated in Fig. 3, or be made of wire-cloth or left open altogether.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. Providing the tube E with a receiving and discharging bonnet, E', substantially as and for the purpose set forth.

2. So connecting the receiving swinging tube E with the stationary tube B, that a revolution may be simultaneously imparted to the screws of both tubes, and such motion continued, whether the tube E be elevated or depressed or swung out from or swung in toward the wall A during the act of elevating the grain.

3. Connecting the swinging receiving-tube E with the stationary tube B by means substantially as and for the purpose described.

4. The combination, by the swinging receiving tube E, screw I, and cap E', and counterbalancing-weight p^3, for the purpose set forth.

5. The combination of a series of tubes, E, B, and B', and a series of elevating-screws I and I', the whole being combined, arranged, and operating substantially in the manner and for the purpose set forth.

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Witnesses:
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