

(No Model.)

2 Sheets—Sheet 1.

V. WEBER & J. R. HARRISON.
GRAIN ELEVATOR.

No. 518,084.

Patented Apr. 10, 1894.

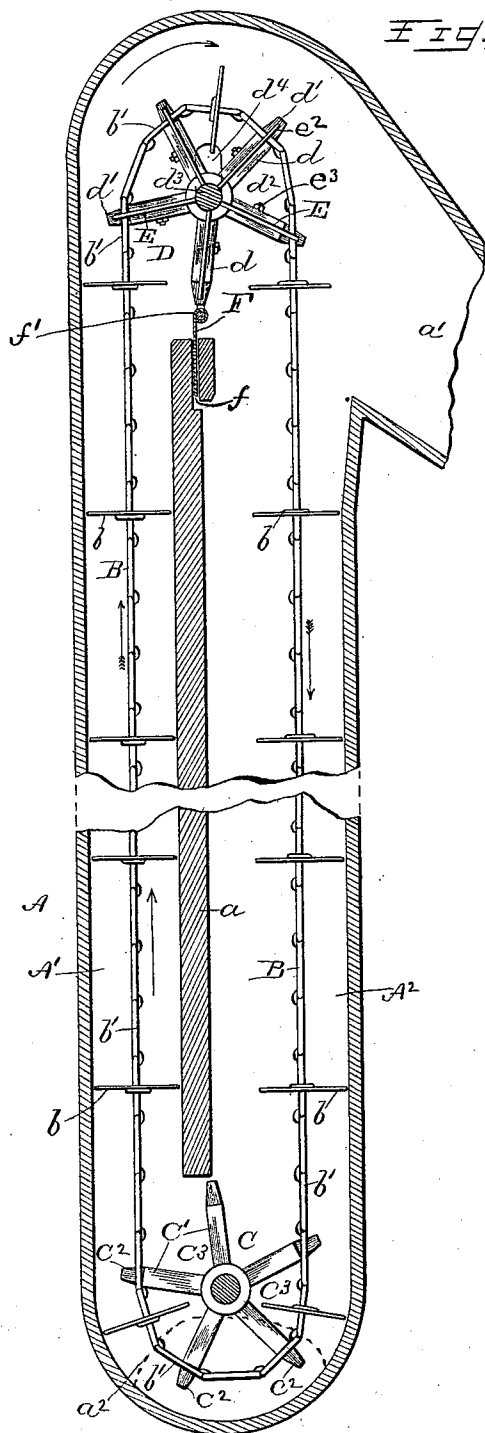


Fig. 1.

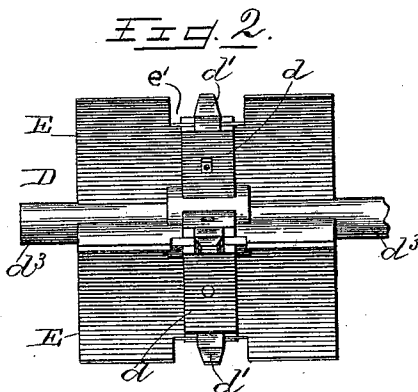


Fig. 2.

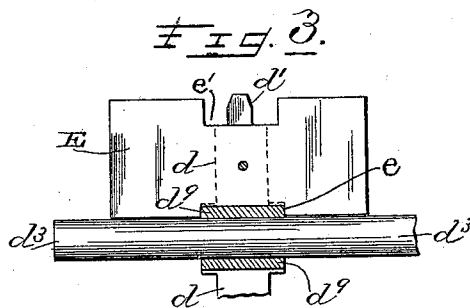


Fig. 3.

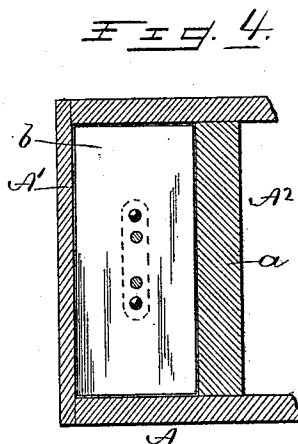


Fig. 4.

Witnesses:
Oscar D. Dumas,
Charles Hultgren

INVENTORS:
V. Weber and
J. R. Harrison,
By O. H. Richards,
their atty.

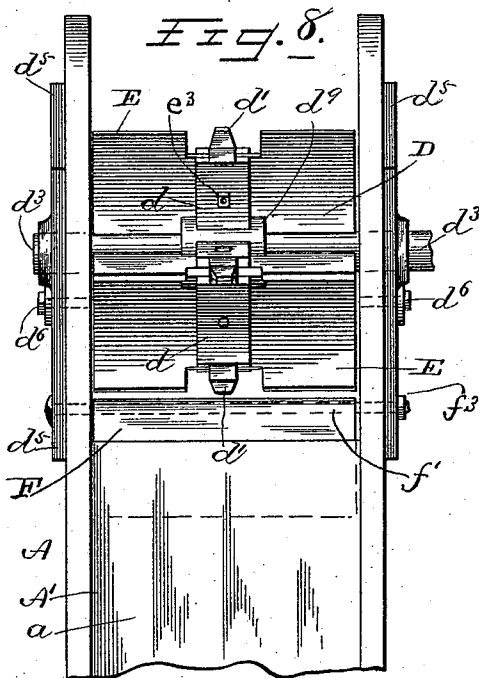
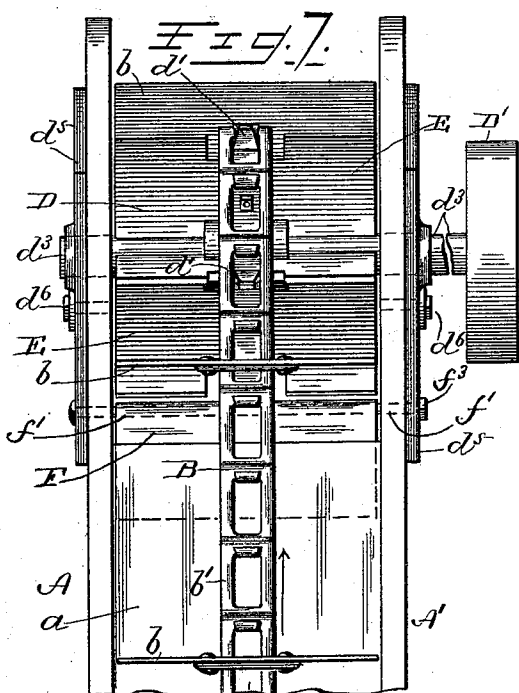
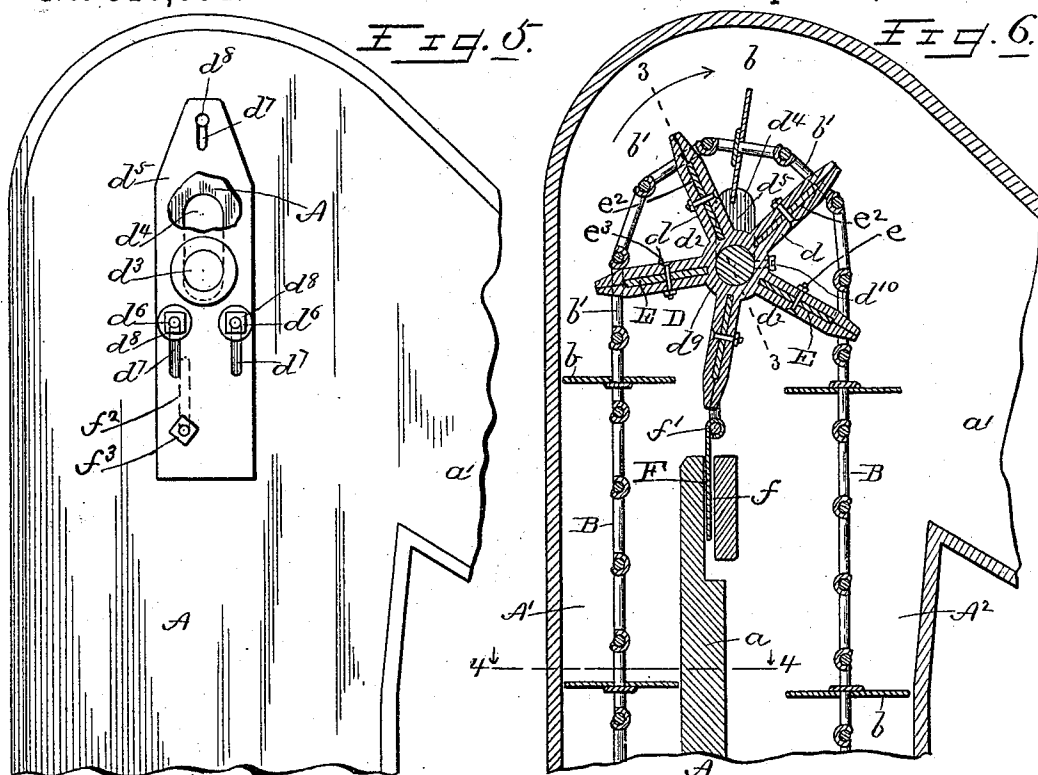
(No Model.)

2 Sheets—Sheet 2.

V. WEBER & J. R. HARRISON.
GRAIN ELEVATOR.

No. 518,084.

Patented Apr. 10, 1894.



Witnesses:
Oscar D. Duxford,
Charles Mulliperry

Inventors:
V. Weber and
J. R. Harrison
By W. B. Richards, Atty

UNITED STATES PATENT OFFICE.

VALENTIN WEBER, OF PRINCEVILLE, AND JAMES R. HARRISON, OF PEORIA,
ASSIGNORS OF ONE-THIRD TO WILLIAM HARRISON, OF PEORIA, ILLINOIS.

GRAIN-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 518,084, dated April 10, 1894.

Application filed January 6, 1893. Serial No. 457,493. (No model.)

To all whom it may concern:

Be it known that we, VALENTIN WEBER, residing at Princeville, and JAMES R. HARRISON, residing at Peoria, county of Peoria, State of Illinois, citizens of the United States, have invented certain new and useful Improvements in Grain-Elevators, of which the following is a specification.

Our present invention pertains to improvements in grain elevators of that general type in which the grain is elevated or carried upwardly through a hollow trunk or tube by means of grain lifts formed of flat plates or disks, which are fixed to and carried by an endless sprocket chain running upon sprocket wheels, and which grain lifts discharge their contents as they are inverted or tilted in passing over and with the sprocket wheel at the upper end of the hollow trunk or tube.

The main object of our invention is to provide means in said class, or type of grain elevators whereby all of the grain which is carried upwardly in the trunk or tube by the lifts, will be delivered to the discharge spout, and not a portion of it be discharged into that division of the trunk or tube, through which the lifts descend, as is the case with ordinary elevators of the general type hereinbefore referred to. In carrying out this main object of our invention other subsidiary improvements are evolved, which consist in novel structural features and combinations of devices, the operation of which devices separately and in combination will be found hereinafter fully described, and the novel structural features and combinations of which devices are expressed in claims of this specification; while the novel combinations pertaining to the main features of our invention are specified in other claims thereof.

The preferred construction of parts and arrangement thereof, are illustrated in the accompanying drawings, in which—

Figure 1 is a sectional elevation of the trunk or tube partly broken away for evident purposes, and side elevation of the grain elevating mechanism embodying our improvements; Fig. 2, an enlarged elevation of the upper sprocket wheel, and parts of its shaft, seen in same position as at Figs. 1, 6, 7,

and 8; Fig. 3, an enlarged sectional elevation of the upper sprocket wheel, in the line 3, 3, in Fig. 6; Fig. 4, an enlarged sectional plan, in the line 4, 4, in Fig. 6; Fig. 5, an enlarged side elevation, partly broken away, of the upper end of the trunk or tube and accessories; Fig. 6, an enlarged sectional elevation of the upper part of the trunk or tube, elevating mechanism, and of our means for securing delivery of all of the grain to the discharge spout; Fig. 7, an enlarged rear elevation of the upper end of the trunk or tube, with its rear side removed, and of the grain elevating and delivering mechanism; Fig. 8, same elevation as Fig. 7, without the sprocket chain, and drive pulley.

The same reference letter indicates the same part in the different figures of the drawings.

The trunk or tube A is divided lengthwise of itself into two tubes A', A², by a division plate, or partition a, and has a grain discharge opening a' at its upper end and a grain receiving opening a² at its lower end. The sprocket chain or carrier belt B has lifts or disks b fixed thereto, which lifts correspond in form with the cross sectional form and area of the tube A' in which they fit snugly but loose enough to move therethrough, as shown at Fig. 4. The sprocket wheel C at the lower end of the elevator has radial arms C' with cogs C² on their outer ends, with which cogs the links b' of the sprocket chain, or carrier belt engage; and has interdental spaces C³ for the reception of the lifts b in their passage consecutively around and with said sprocket wheel. This construction of elevator including the carrier belt, and sprocket wheel, is an ordinary type thereof, and the description hereinafter of one method of applying our improvements thereto will enable any one skilled in the art to apply them to any elevator to which they are applicable. The sprocket wheel D at the upper end of the elevator also has radial arms d, with cog-shaped outer ends d' with which cogs d' the links b' of the sprocket chain engage; and has interdental spaces d² for the reception of the lifts b in their passage around and with the sprocket wheel. This construction of upper

sprocket wheel is also an ordinary type thereof, and one method of applying our improvements thereto will be hereinafter described.

The shaft d^3 of the sprocket wheel D, as shown, extends through the trunk A, and outward thereof and carries the drive-pulley D', if preferred, however, the drive-pulley may be placed on an extended end of the shaft of the sprocket wheel C. The shaft d^3 passes through a slot d^4 in each side of the elevator trunk and has bearings in blocks d^5 one of which is at each side of said trunk. At Fig. 5 the block d^5 is broken away to show one of the slots d^4 . The blocks d^5 are adjustable vertically on the trunk A, for the purpose of adjusting the sprocket wheel D to tighten the carrier belt, and are fixed in place after such adjustment by bolts d^6 which pass through slots d^7 in the blocks d^5 , and are held by nuts d^8 , as shown fullest at Fig. 5. The radial arms d , as shown, are integrant with a collar d^9 which encircles the shaft d^3 , see Fig. 3, and is fixed thereto by a set screw d^{10} , see Fig. 6. The arms d may however be fixed to the shaft d^3 in any other manner preferred, as my invention is not limited to the specific manner in which said arms are fixed to the shaft which carries them.

The deflector plates E, one of which is shown best in connection with a fragment of the shaft d^3 , and the collar d^9 in section at Fig. 3, extend across the upper part of the trunk A, as shown at Figs. 7, and 8, and are fixed, one to each arm d , in radial positions in reference to the sprocket wheel D. The deflector plates E are preferably of such width as to extend from the shaft d^3 to or beyond the outer ends of the cogs d' , and are notched at e to fit over the collar d^9 and at e' to permit the links b' seating and operating on the cogs d' . Each arm d has a slot e^2 in which a plate E is seated and the plates E are fixed securely to the arms d by nutted bolts e^3 , one of which passes through each arm d and through the plate E which it carries.

A grain guard plate F extends across the trunk A and is preferably adapted to slide in a vertical slot f , (see Fig. 6) in the upper end of the partition a , but in so far as its principal function is concerned it may slide in contact with one side of said partition. A rod f' projects from the outer side of the guard plate F, and each end of said rod f' extends through a slot f^2 in the adjacent wall of the trunk A, and thence through the adjacent block d^5 to which it is fixed by a nut f^3 .

The shaft d^3 and sprocket wheel D are carried by the blocks d^5 , in which the shaft d^3 is journaled, and the guard plates F being also carried by the blocks d^5 , when said blocks are adjusted or raised to elevate the sprocket wheel D into a higher plane, for the purpose of tightening the carrier belt, the guard plate F will be simultaneously elevated with the sprocket wheel, and thus be retained with its upper edge or side at a uniform distance from

the line along which the lower edges of the deflector plates E sweep as they pass through the lower parts of their orbits to pass successively over the guard plate F. By the means described the distance between the guard plate F, (which is in reality an extension of the partition a), and the edges of the plates E as they sweep over it, is not changed and remains at a minimum when the sprocket wheel D is elevated, and hence the plate F serves to prevent grain or other material being elevated escaping from the flights or disks b over the top of the partition a , and into the chute A^2 , when the sprocket wheel D is raised to tighten the carrier belt, and as the flights or disks b move upwardly past the upper end of the partition a .

The arrangement of the flights or disks b , in reference to the radial positions of the deflector plates E, is such that after each flight b in its ascent has passed the guard plate F a short distance, one of the deflector plates E in its orbital revolution is brought beneath the adjacent unprotected edge of said flight, and will as it ascends with and below the flight, receive any grain that may slide off of that side of the flight, and assist in retaining the grain on the flight until it has reached such position with reference to the sprocket wheel, and such inclined position, that it will discharge the grain, impelled or carried by it up the tube A' , into the interdental space between two of the deflector plates E, from which it will be discharged as the plates E are revolved, by sliding off the lower inclined plate E, and being thrown forwardly by the plate E in rear of it, in such manner as to cause substantially all of the grain to reach the discharge spout a' and thus prevent a considerable quantity of it falling into the tube A^2 as is common with ordinary elevators.

It will be seen that an elevator embodying our grain deflector plates can be used in an upright position, which in many cases is a great advantage, and that it is not necessary to incline it, as is common, in order to cause the grain to be delivered to the discharge spout a' , and to prevent a considerable part of it being discharged into the tube A^2 to be re-elevated.

We have shown one way of carrying out the broad invention made by us which we have thus far devised, and put into practical operation; but we desire to be understood as considering the scope of our invention as covering not only the particular means shown for extending the partition a independently of the inextensible tubes A' A^2 to adjust it to correspond with adjustments independently of the upper ends of said tubes of the upper sprocket wheel, but also any organization of devices in which our described novel principle, or mode of operation is embodied, that is, the use of means for extending the partition when the sprocket wheel is elevated,

whether or not such means are connected with and raised simultaneously with the sprocket wheel or not.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In an elevator, the combination substantially as hereinbefore described, with a trunk, a partition which divides said trunk into two tubes and which partition has a fixed lower main part and a slidable extension or upper end part, upper and lower sprocket wheels, the upper one of which is adjustable vertically with reference to the trunk, and means for connecting said slidable extension with the adjustable sprocket wheel shaft, whereby said extension is adjusted in higher or lower planes in unison with adjustments of the sprocket wheel.

2. In an elevator, in combination substantially as hereinbefore described with a trunk and a partition dividing said trunk into two tubes, upper and lower sprocket wheels, the upper one having grain deflector plates, and a carrier belt having flights or disks, a slidable extension of the upper end part of the partition adapted for sliding upwardly when the upper sprocket wheel is elevated.

3. In an elevator, in combination substantially as hereinbefore described, with a trunk and a partition dividing said trunk into two tubes, upper and lower sprocket wheels, the upper one having grain deflector plates, and a carrier belt, a slidable extensible upper end part of the partition, and means for connecting the upper sprocket wheel and sliding extension whereby they are simultaneously adjusted.

4. In an elevator, in combination substantially as hereinbefore described, with a trunk and a partition dividing said trunk into two tubes, upper and lower sprocket wheels, the upper one having grain deflector plates E, and a carrier belt having lifts as *b*, a slidable plate as F, and adjustable blocks *d*⁵ to which the slidable plate F is connected and to which the upper sprocket wheel is journaled, whereby said sprocket wheel and sliding plate are

simultaneously adjusted by adjustment of the sliding blocks.

5. In an elevator, in combination substantially as hereinbefore described, with a trunk and a partition dividing said trunk into two tubes having a slot in its upper end, upper and lower sprocket wheels the upper one having grain deflector plates E, and a carrier belt having lifts as *b*, a plate F adapted to slide vertically in the slotted partition, and blocks *d*⁵ adjustably fixed to the trunk, and connected with the upper sprocket wheel and the sliding plate whereby simultaneous adjustments are given thereto by adjustments of the blocks *d*⁵.

6. In an elevator, in combination substantially as hereinbefore described, with a trunk and a partition dividing said trunk into two tubes and provided with a discharge spout, a carrier belt having lifts or disks for impelling or carrying grain or other material upwardly through one of said tubes, and an upper and a lower sprocket wheel, the upper sprocket wheel having slotted arms with sprocket teeth or cogs on their outer ends, and grain deflector plates, as E fixed in the slots of the arms.

7. In an elevator, in combination substantially as hereinbefore described, with a trunk, a partition dividing said trunk into two tubes, a discharge spout, an upper and a lower sprocket wheel, and sprocket chain provided with lifts, or disks, and deflector plates extending laterally from each side of the upper sprocket-wheel and radially from the shaft on which it is mounted and by which it is revolved in such relation to the lifts on the sprocket chain as to aid in retaining the grain thereon, and to facilitate and insure its passage therefrom and to the discharge spout.

In testimony whereof we affix our signatures in presence of two witnesses.

VALENTIN WEBER.
JAMES R. HARRISON.

Witnesses:

CHAS. HULTGREN,
H. M. RICHARDS.