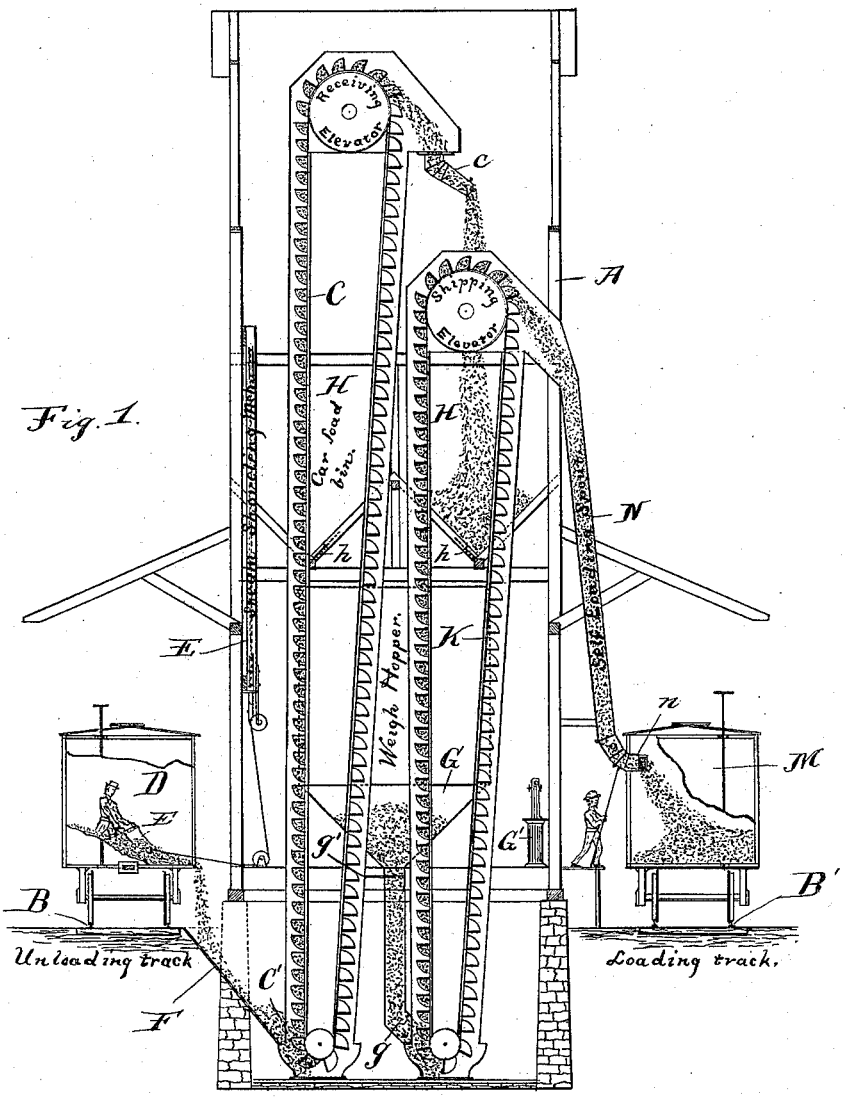
(No Model.) 4 Sheets—Sheet 1.

P. F. CHASE.

GRAIN TRANSFERRING AND WEIGHING ELEVATOR APPARATUS.

No. 383,860. Patented June 5, 1888.

Fig. 1.



Traverse Section.

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Inventor:
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(No Model.) 4 Sheets—Sheet 2.

P. F. CHASE.

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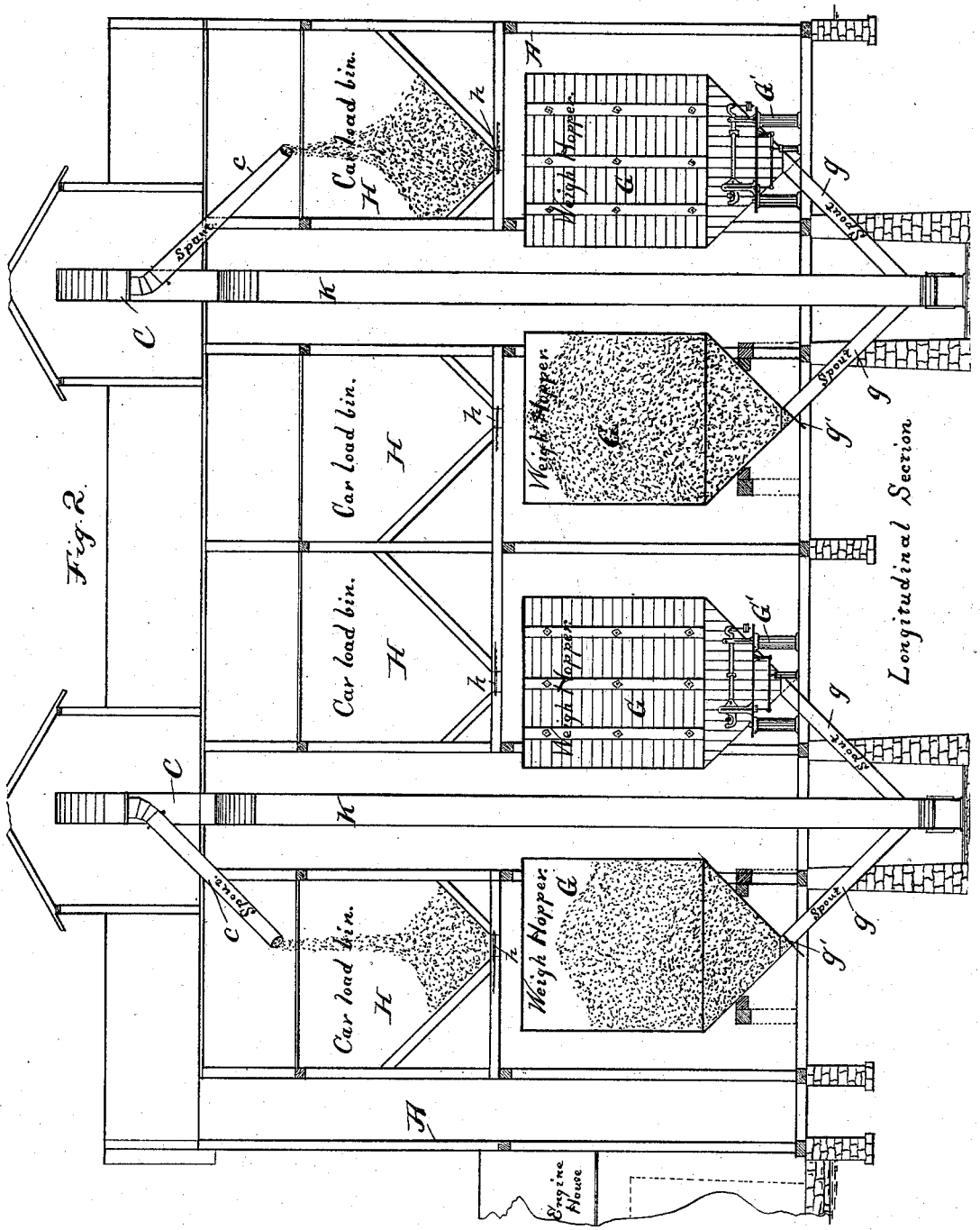

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(No Model.) 4 Sheets—Sheet 3.

P. F. CHASE.

GRAIN TRANSFERRING AND WEIGHING ELEVATOR APPARATUS.

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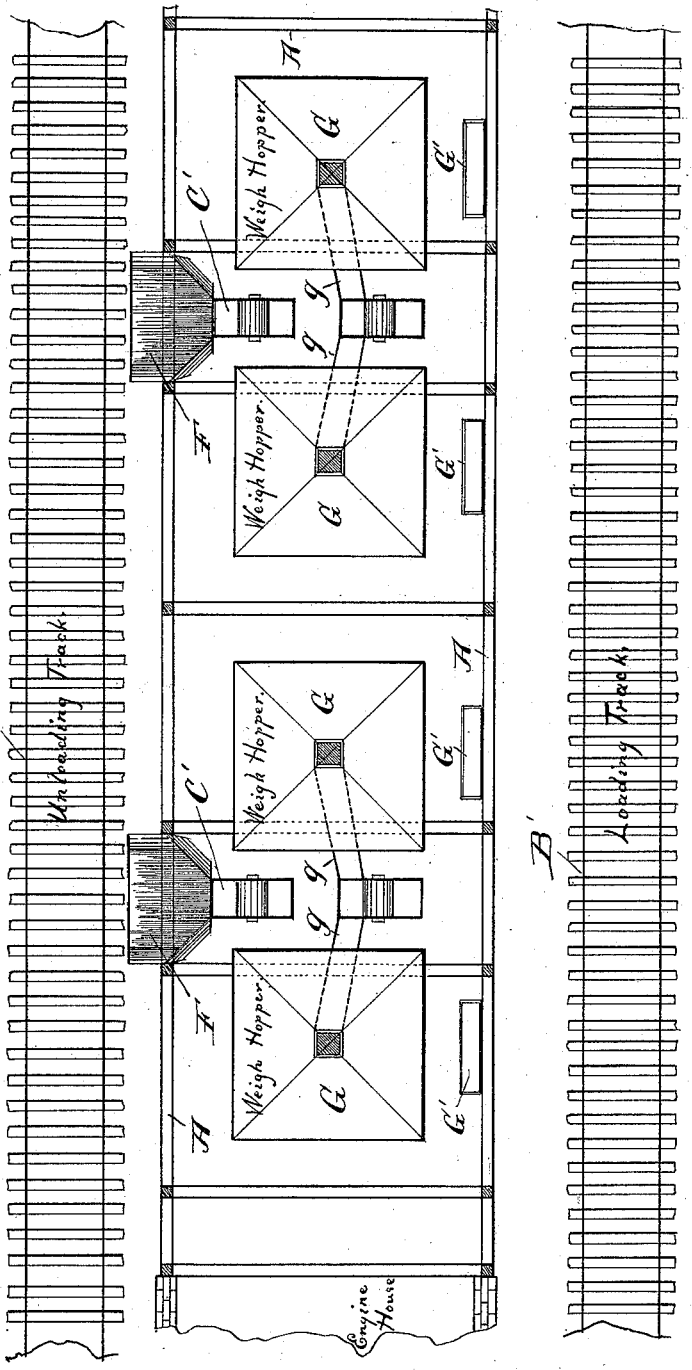

Fig. 3.

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(No Model.) 4 Sheets—Sheet 4.

P. F. CHASE.

GRAIN TRANSFERRING AND WEIGHING ELEVATOR APPARATUS.

No. 383,860. Patented June 5, 1888.

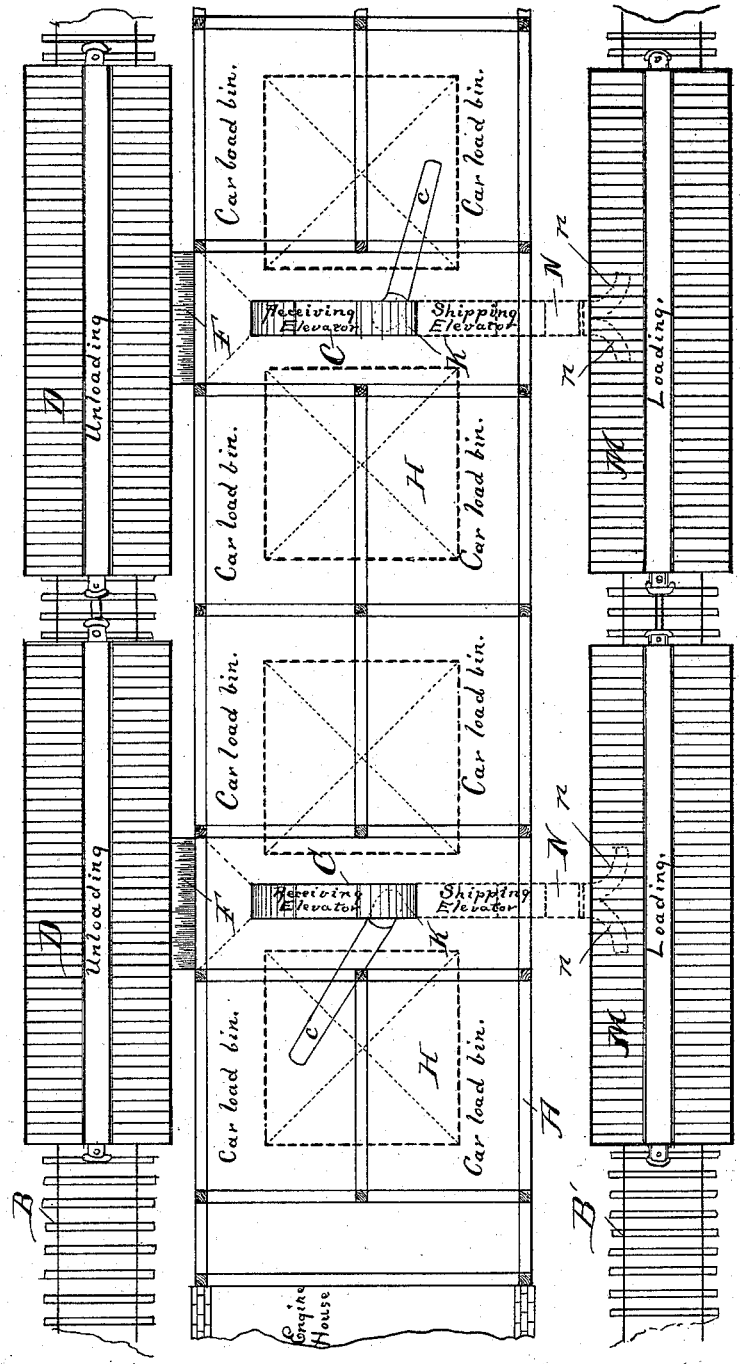

Fig. 4.

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UNITED STATES PATENT OFFICE.

PHILANDER F. CHASE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE CHASE ELEVATOR COMPANY, OF SAME PLACE.

GRAIN TRANSFERRING AND WEIGHING ELEVATOR APPARATUS.

SPECIFICATION forming part of Letters Patent No. 383,860, dated June 5, 1888.

Application filed August 29, 1887. Serial No. 248,163. (No model.)

To all whom it may concern:

Be it known that I, PHILANDER F. CHASE, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Grain Transferring and Weighing Elevator Apparatus, of which the following is a specification.

This invention relates to apparatus for transferring car-loads of grain from one car to another and weighing the car-load as it is transferred in hopper-scales.

The invention consists, in connection with the loading and unloading tracks, of a transfer-elevator building located between the tracks and provided with one or more weigh-hoppers located in the building on about a level with the cars, a receiving-elevator for elevating the grain into a car-load bin above the weigh-hopper, and a second or shipping elevator for elevating the grain discharged from the weigh-hopper, from which last elevator the grain is spouted or delivered through a self-trimming grain-spout into the car.

The invention also consists in the novel devices and novel combinations of devices herein shown and described, and more particularly pointed out in the claims.

In my invention the shipping-elevator delivers the grain directly into the self-trimming loading-spout and projects the grain forcibly downward into the spout with a velocity equal to or approximating that of the grain in the elevator, or that of the elevator buckets and belt, thus obviating the necessity of employing a self-trimming spout of the usual great length in order by the fall of the grain therein to give it the requisite velocity to properly spout the grain through the curved branches of the spout to the extreme ends of the car. As the ordinary velocity of a belt-and-bucket elevator is in practice generally about five hundred and fifty feet per minute, and necessarily so, in order to cause the grain to properly discharge from the buckets by the centrifugal action as the belt passes around the upper pulley, it will be seen that by means of this same shipping-elevator the grain already has a high initial velocity when it enters the mouth of the self-trimming loading-spout. By this means I am enabled to employ a self-trimming loading-spout of thirty feet or less in length, and to correspondingly diminish the height of the building and the height to which it is necessary to elevate every ton of grain. This diminished height of the elevator frame or building is a matter of very great consequence in the practical construction and operation of grain transferring and weighing apparatus designed for transferring each identical car-load of grain from one car to another, for the reason that it is desirable that the elevator building or frame should be made as narrow as possible and not take up any more of the valuable and limited track-space than can be helped.

By means of my invention the elevator-building need not be made more than forty feet high and not wider than twenty feet, thus taking up the space of only two tracks. Where the elevator transferring and weighing apparatus are so combined together, as heretofore, that the building must be made of great height in order to properly operate the self-trimming loading-spouts, the building is necessarily made comparatively wide in order that it may have the requisite stability, thus rendering it usually impracticable to locate such elevator transferring and weighing apparatus in the railroad track-yards, where it is desirable that the apparatus should be located for convenience in transferring from the cars of one road to those of another; and where the elevator-building is constructed with the railway-tracks running through the building the difficulty is not diminished, because such tracks cannot be used for any other than elevator purposes, as the locomotives are never permitted to run through such buildings on account of danger of fire and insurance regulations.

By my invention the elevator-building is made low and narrow, thus greatly diminishing the cost of construction, the height of the elevating, and the consequent cost of operating or driving the machinery, and at the same time, as the tracks are located on each side of the building, the locomotive can pass freely over the same, so that the tracks are not obstructed for other or general use, and thus

also greatly increasing the facility with which the cars may be handled in respect to the elevator-building.

By my invention also, as the scales and weigh-hoppers are located on the first floor of the building or on about a level with the cars from which and into which the grain is unloaded and loaded, instead of in the neighborhood of one hundred and fifty feet above the ground, as heretofore has been the case where self-trimming loading-spouts have been employed, the weigh-master, being thus on a level with the cars, can readily see the car from which the load is taken, and also the car into which it is delivered after being weighed, and thus himself note their initials, numbers, and other data, and thereby avoid customary mistakes.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts, Figure 1 is a transverse sectional view of a device embodying my invention. Fig. 2 is a longitudinal sectional view, partly in section. Fig. 3 is a plan view showing the weigh-hoppers, and Fig. 4 is a similar view indicating the car-load bins from which the grain is spouted into the weigh-hoppers.

In said drawings, A represents an elevator building or frame-work, preferably about twenty feet in width and about forty feet in height. The length of the building may be varied as it is desired to load or unload one, two, or more cars at a time, and to employ one, two, or more weigh-hoppers. The apparatus is preferably constructed of such size that it may be provided with four separate hopper-scales and eight car-load bins above the same.

B B′ are, respectively, the unloading and loading railway-tracks on each side of the elevator-building A, upon which the cars to be unloaded and loaded and their loads weighed are run.

C represents the receiving-elevator, consisting, preferably, of the ordinary belt and buckets, into the boot C′ of which the grain from the car D is unloaded by the steam-shovel unloading apparatus E. The chute F delivers the grain into the boot of the elevator.

The steam-shovel unloading apparatus E is or may be of the usual construction, which is well known and need not be here described.

G is the weigh-hopper of the scales G′. These scales are of an ordinary and well-known construction. The weigh-hopper is arranged or located in the lower story of the building A. Above the weigh-hopper G are two car-load bins, H H, each adapted to hold a car-load of grain and each provided with gates *h*, through which the contents of the bin may be delivered into the weigh-hopper. The grain is delivered from the receiving-elevator C into one or the other of the bins H by the swinging or reversible spout *c*, which is adapted to swing from one bin H to the other. The grain is discharged from the weigh-hopper G through a spout, *g*, into the boot of the shipping-elevator K, the weigh-hopper G being furnished with a valve, *g′*, for closing the same. By the shipping-elevator K the grain is again elevated, preferably to the height of about thirty feet, and delivered into the self-trimming grain loading spout N through the curved or horn-shaped branches *n*, by which the grain is spouted automatically to the ends of the car, so as to require no shoveling inside the car.

The elevator K gives the grain such an elevation as will by its fall through the spout N and its curved branches *n* spout the grain to the opposite ends of the car.

In operation the car D is run upon the track B opposite one of the receiving-elevators C. The grain is shoveled from the car by the steam-shovel E and delivered into the receiving-elevator C, by which it is elevated and spouted into the car-load bins H. Thence it is spouted into the weigh-hopper G and weighed by the scales G′. The gate of the weigh-hopper is then opened and the grain discharged from the weigh-hopper into the boot of the shipping-elevator K, by which it is again elevated and delivered into the self-loading spout N, from whence it is spouted directly into the car M to be loaded. The two car-load bins H, each of which is adapted to receive a car-load of grain and deliver it into the weigh-hopper, enable the operations of unloading and loading to be carried on both about continuously as well as simultaneously, notwithstanding the fact that the unloading and loading cars on the opposite tracks are to be moved and switched independently. For example, three cars may be continuously unloaded, one load being in the weigh-hopper and one load in each of the car-load bins, without the operation of unloading being arrested to await the switching into place of the cars to be loaded. And so in like manner the operation of loading may be carried on practically continuously as fast as the cars to be loaded are brought into place.

As illustrated in the drawings, four separate weigh-hoppers are preferably employed and eight, or four pairs, of car-load bins—two for each weigh-hopper. It will be observed that the weigh-hoppers G and scales G′ are on the first floor and preferably on about a level with the cars, so as to be conveniently accessible.

By my apparatus grain may be rapidly and quickly transferred from one car to another and weighed without any hand-shoveling of the grain, all the different steps being performed by the conjoint operation of the several parts of the apparatus.

I claim—

1. The herein-described grain-elevator, having two weigh-hoppers and scales upon the first floor in proximity to the loading and unloading tracks, two car-load bins above each weigh-hopper, the receiving-elevator having a receiving-shoe next the unloading-track and adapted to deliver to any of said car-load bins, and the independent shipping-elevator arranged to deliver to the loading-track, said elevators being located between said weigh-

hoppers, all arranged, as described, for the continuous transfer of grain from and to a series of cars.

2. The herein-described grain-elevator, having two weigh-hoppers and scales upon the first floor in proximity to the loading and unloading tracks, two car-load bins above each weigh-hopper, the receiving-elevator having a receiving-shoe next the unloading-track and adapted to deliver to any of said car-load bins, the independent shipping-elevator, the vertical self-loading spout into which the shipping-elevator delivers directly and downward, and the curved lateral branches at the lower end of the spout, said elevators being located between said weigh-hoppers, all arranged, as described, for the continuous transfer of grain from and to a series of cars.

Dated at Chicago, August 27, 1887.

PHILANDER F. CHASE.

Witnesses:
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H. M. MUNDAY.