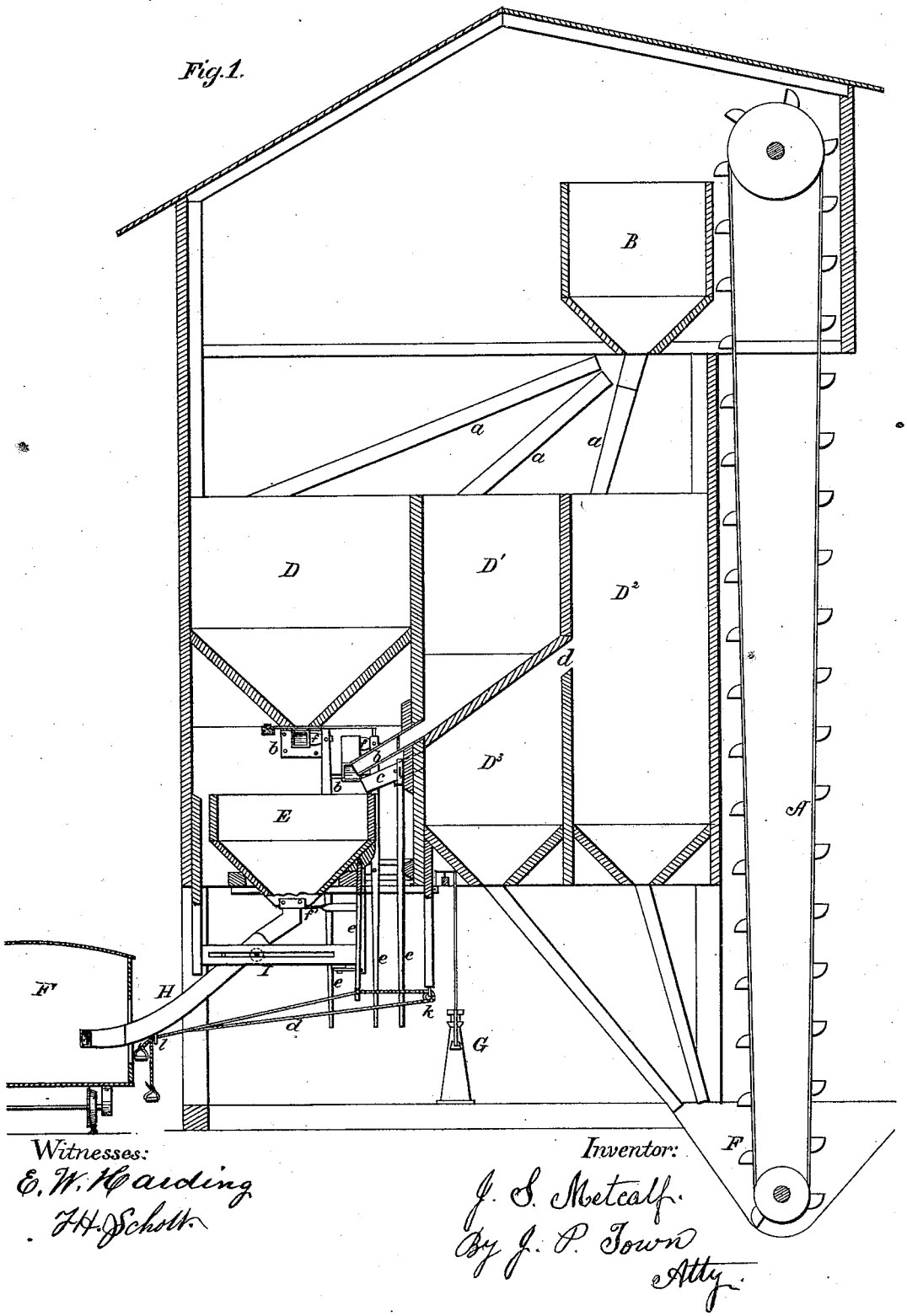
3 Sheets--Sheet 1.

J. S. METCALF.

Grain-Elevator.

No. 164,577. Patented June 15, 1875.

Fig. 1.



Witnesses:
E. W. Harding
H. H. Schott

Inventor:
J. S. Metcalf.
By J. P. Town
Atty.

3 Sheets--Sheet 2.

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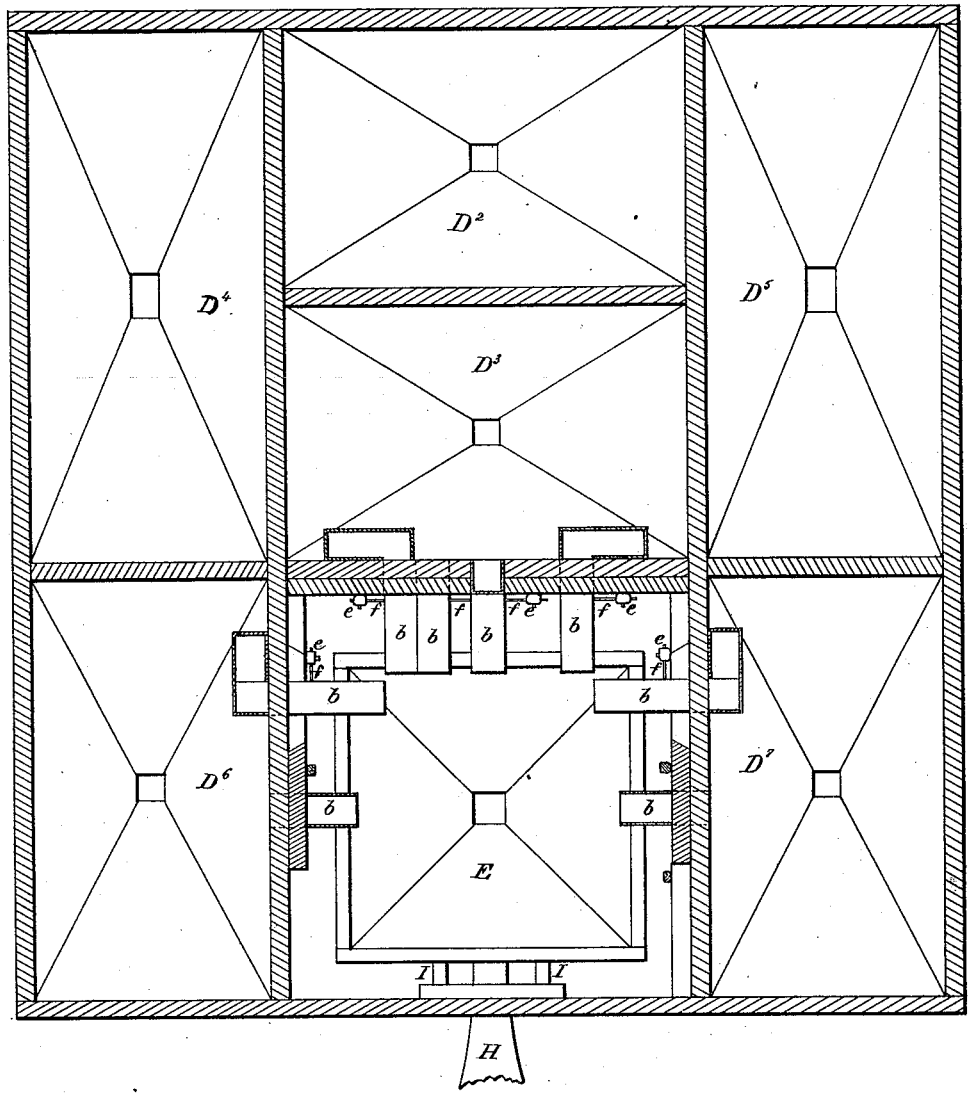
Fig. 2.



Witnesses:
E. W. Harding
H. C. Schott

Inventor:
J. S. Metcalf
By J. P. Town
Atty.

3 Sheets--Sheet 3.

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Fig. 4.

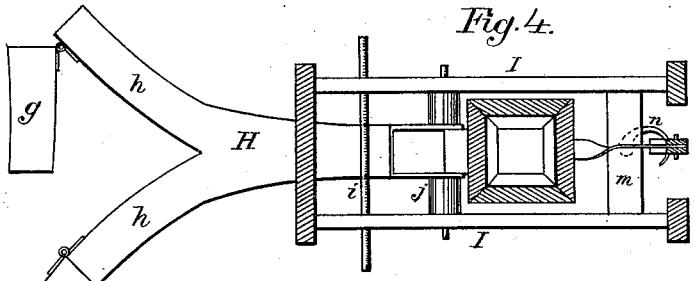
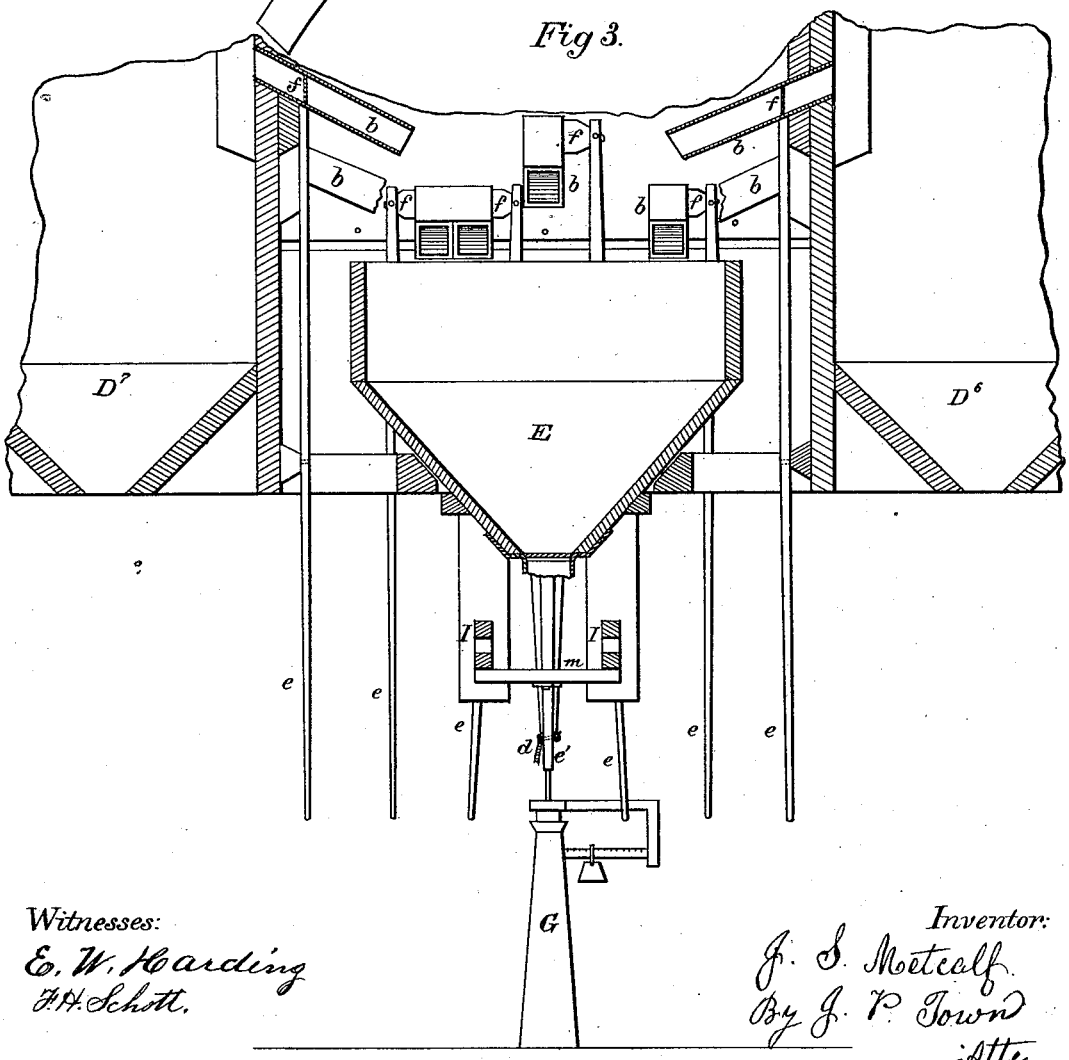


Fig 3.



Witnesses:
E. W. Harding
F. H. Schott.

Inventor:
J. S. Metcalf.
By J. P. Town
Atty.

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UNITED STATES PATENT OFFICE.

JOHN S. METCALF, OF INDIANAPOLIS, INDIANA.

IMPROVEMENT IN GRAIN-ELEVATORS.

Specification forming part of Letters Patent No. **164,577**, dated June 15, 1875; application filed May 1, 1875.

To all whom it may concern:

Be it known that I, JOHN S. METCALF, of the city of Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Elevators for Handling Grain; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to that class of constructions known as grain-elevators, which are used for storing grain as well as transferring it from one means of transportation to another, as from wagons to railway-cars, or from the latter to boats, the object in the present arrangement of devices being to avoid the necessity of elevating the grain to a weighing-hopper placed in the upper part of the building when it is to be delivered, and to render the whole more effective and less liable to derangement of the operating parts than in the elevators commonly used; and the invention consists in the arrangement and combination of the different parts, as will be hereinafter fully set forth, and specifically pointed out in the claims.

Figure 1 of the drawings represents a vertical transverse section through the building, showing the relative arrangement of the storage-bins with relation to the weighing-hopper and elevating devices. Fig. 2 is a horizontal section through the storage-bins above the weighing-hopper. Fig. 3 shows a vertical section through the weighing-hopper and the adjacent bins upon an enlarged scale. Fig. 4 presents a detailed plan of the delivering-spout and its operating mechanism.

In the grain-elevators now in common use the weighing-hopper is placed at the top of the building, rendering it necessary under all circumstances when grain is to be loaded or delivered to run it from the storage-bins, and then elevate it to the weighing-hopper, from which it comes down again through the delivering-spout to the cars or boats properly placed to receive it. This mode of handling grain is expensive, as by it all the grain received and delivered must be twice carried from the lowest to the highest part of the building, once when it is received in order to be run into the storage-bins, and again when it is delivered for the purpose of being weighed.

The means which I employ in order to avoid this expensive process will be clearly seen from the following description of my improved elevator, in which A represents the ordinary elevating-strap and its buckets, which carry the grain when received to the weighing-hopper B, placed in the upper part of the building, from which it is carried, by the spouts *a*, to either of the storage-bins D D^1 D^2, &c., in which it may be desired to place it. E represents an additional weigh-hopper, placed as low in the building as possible, and retain the requisite elevation to allow grain to be spouted from it to the cars or other conveyance.

It will be apparent that by this arrangement all the grain in the section of the building adjacent to the hopper which is stored in the bins D, D^1, D^4, D^5, D^6, and D^7 can be run into it through the spouts *b* and *c* without re-elevating, as well as that portion in the bin D^2 above the opening *d*, which can be also run through the spout *c* to the weighing-hopper, while the part of the bins D^2 and D^3 too low for delivery through the spout *c* can be used for grain on long storage, to be elevated at leisure and placed in the other bins ready for loading.

By this means, in adapting my improvement to elevators already in use, the arrangement causes no loss of room, except that of the space occupied by the hopper E, and in building new ones no additional height of the first story is required, the great bulk of the grain being loaded without re-elevating, thereby making a great saving of time and expense, as the operation of receiving and delivering can go on simultaneously in each section of the building.

The scale G is placed upon the first floor, and in convenient positions adjacent thereto are the levers *e e'*, by means of which the valves *f f'* are controlled, thus enabling one man to control the whole operation of weighing and delivering grain.

In Fig. 1 a car, F, is shown in the proper position upon a side-track for loading, the delivering-spout H being inserted into the car

through a side door, and its bifurcated end occupying such a position as to throw the grain toward each end of the car, thus avoiding the necessity of shoveling or leveling the load. This delivering-spout is bifurcated at its outer end, and has two hinged extension-pieces, *g*, hinged to the two arms *h*, which, when turned inward, allow the spout to pass through the door of a car. They are then turned outward, causing the grain to be delivered at its opposite ends, and it is so constructed as to slide in and out upon the ways I, being carried upon supporting-bars *i* and *j*, sliding in the ways I. The bar *i*, extending out on each side of the ways, also serves the purpose of handles for moving the spout. A cord or rope, *d*, provided with handles at each end, is attached to the lever *e'*, controlling the outlet-valve of the hopper E, and after passing around a sheave, *k*, the ends are carried outward and through supporting-guides *l*, near the outer end of the spout, thus enabling the man at the car to shut off or admit the flow of grain at will. Attached to the cross-piece *m* is a hook, *n*, that may be made to clasp the lever controlling the valve of the weighing-hopper by the weighman, thus effectually locking it, and preventing it from being opened by the man at the car during the operation of weighing a load.

It will also be observed that the delivering-spout has a certain amount of lateral play upon its supports, which enables it to be introduced into a car and made available even when the latter is not stopped with its door exactly opposite to the central position of the spout.

The operation of the various devices will be apparent from the foregoing description of their construction and functions.

Having thus described my invention, I claim as new—

1. The combination and arrangement of the weighing-hopper E and the storage-bins placed above it, so that the grain may be drawn from them, weighed, and loaded without re-elevating.

2. The bin D^2, provided with an opening, *d*, in one side, so placed that all the grain above it may be run into the weighing-hopper E, as and for the purpose set forth.

3. The sliding bifurcated spout H, provided with the hinged ends *g*, in combination with the ways I and hopper E, substantially as and for the purpose specified.

4. The bifurcated spout H, having a reciprocating and lateral motion, as set forth.

5. The locking-hook *n*, in combination with the lever *e'* and sliding valve *f'* of the hopper E, as and for the purpose specified.

6. The rope *d*, in combination with the spout H and lever *e'*, for the purpose of operating the valve *f'*, as set forth.

In testimony that I claim the foregoing as my own I hereunto affix my signature in presence of two witnesses.

JOHN S. METCALF.

Witnesses:

W. BELVILLE,

W. H. METCALF.