

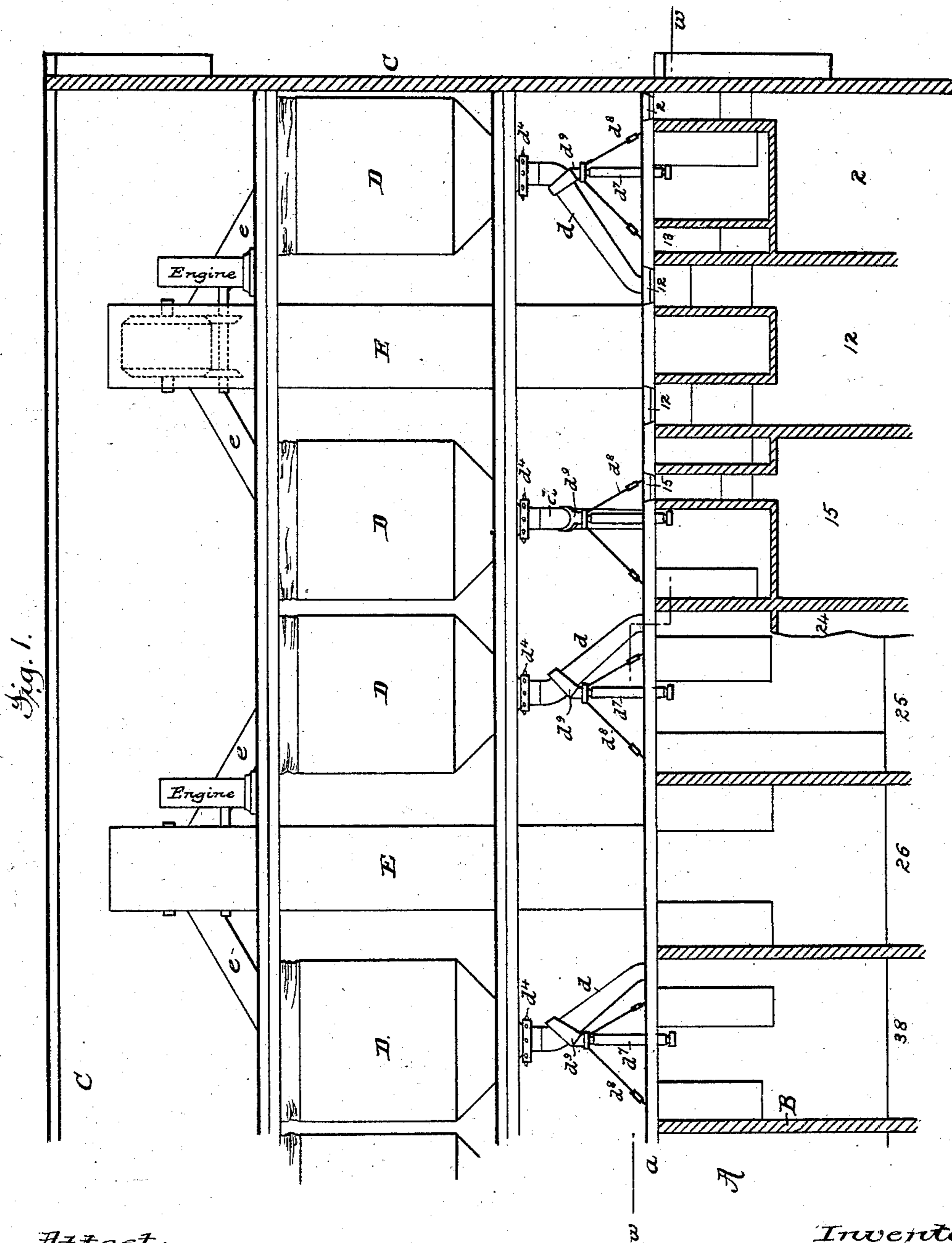
(No Model.)

3 Sheets—Sheet 1.

W. WATSON.
GRAIN ELEVATOR.

No. 282,424.

Patented July 31, 1883.



Attest:

Jacob Felbel
M. H. Smith

Inventor,

William Watson
per J. McFutere

Atty.

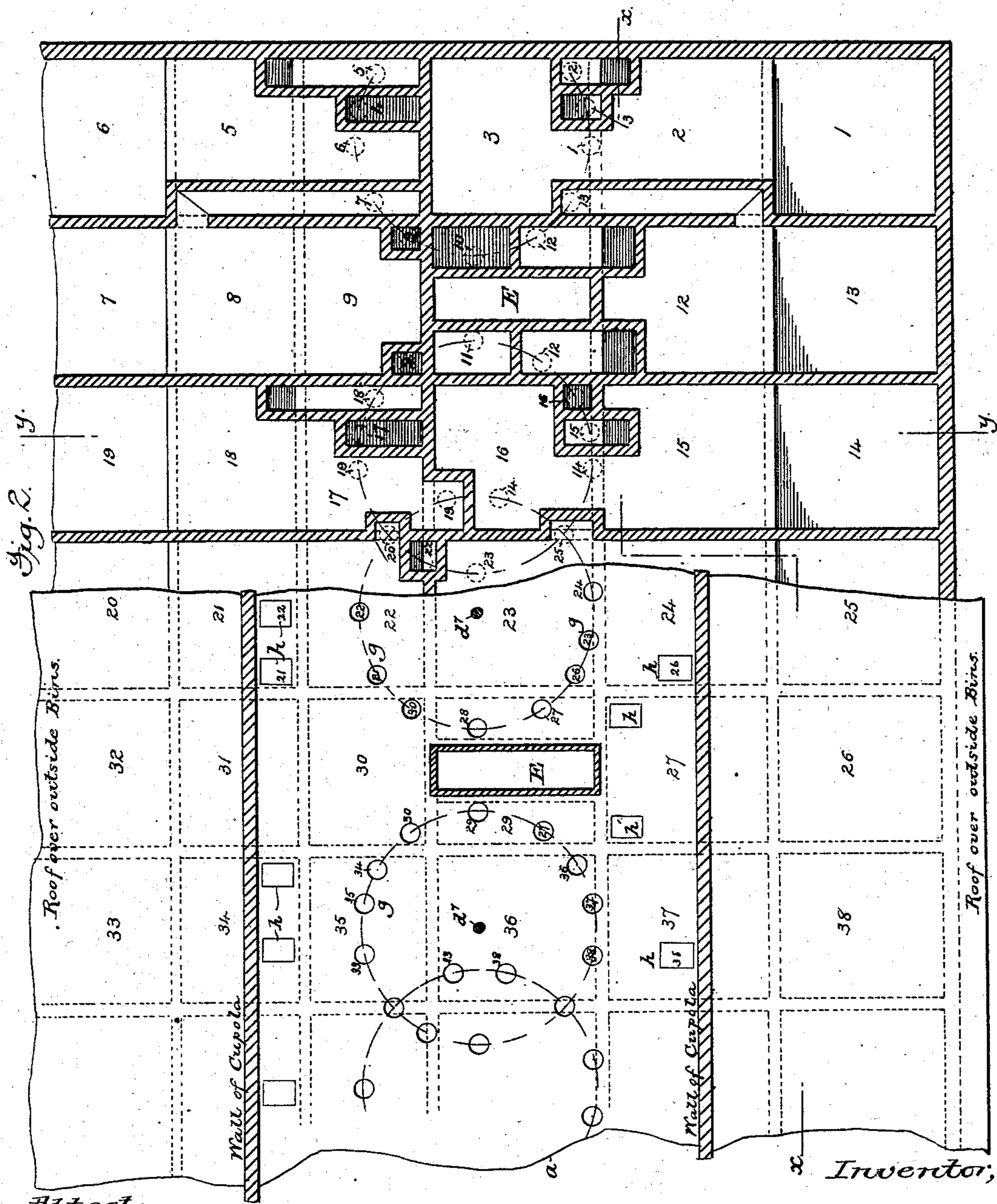
(No Model.)

3 Sheets—Sheet 2.

W. WATSON.
GRAIN ELEVATOR.

No. 282,424.

Patented July 31, 1883.



Attest:

Jacob Felbel
M. H. Smith

Inventor,

William Watson
Per J. N. McIntire
Att'y.

Acty.

(No Model.)

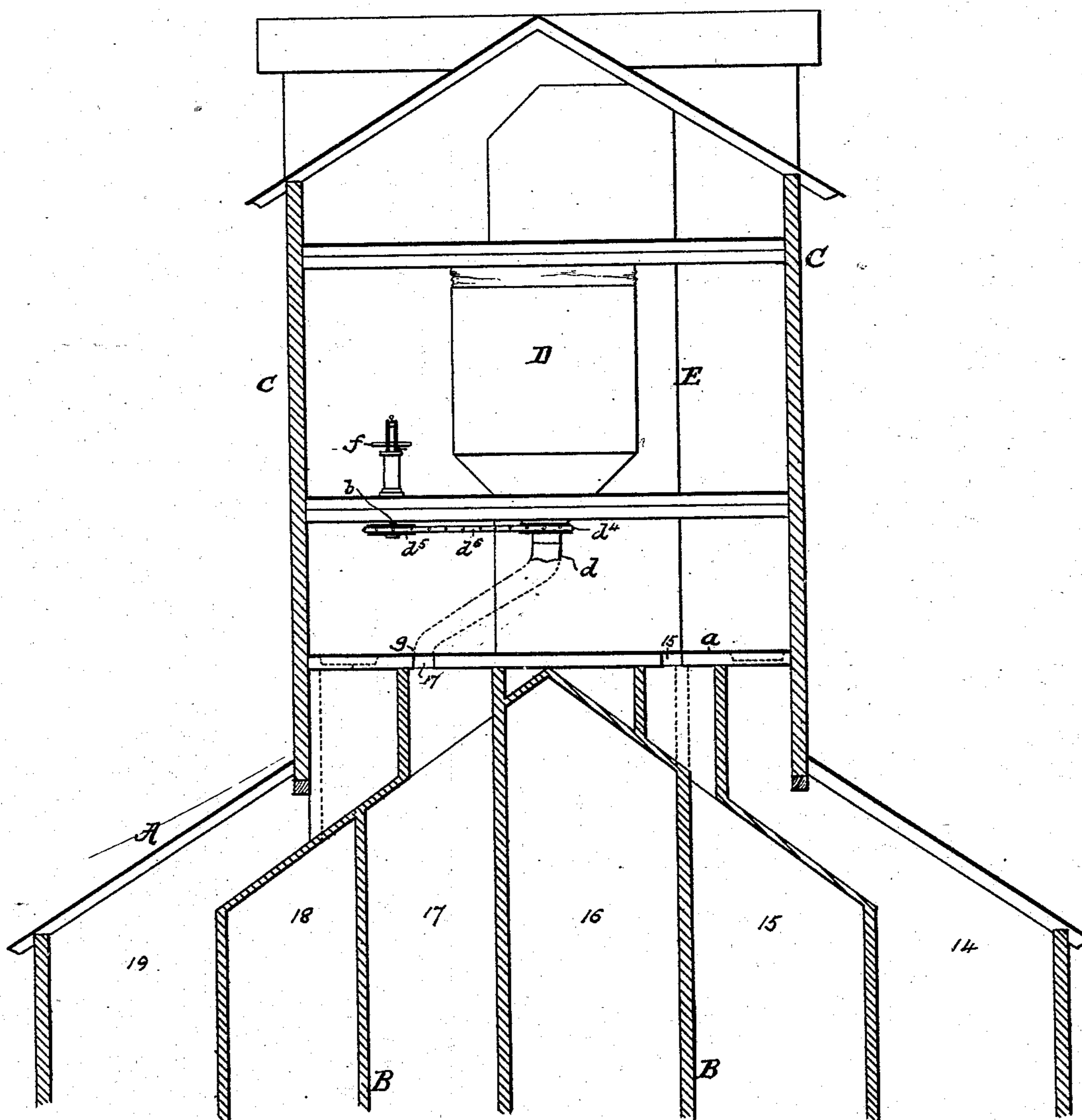
3 Sheets—Sheet 3.

W. WATSON.
GRAIN ELEVATOR.

No. 282,424.

Patented July 31, 1883.

Fig. 3.



Attest:

Jacob Felbel
M. H. Smith

Inventor,

William Watson
By J. N. McIntire
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM WATSON, OF CHICAGO, ILLINOIS.

GRAIN-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 282,424, dated July 31, 1883.

Application filed May 23, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WATSON, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful
5 Improvements in Grain-Elevator Buildings; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this application.

10 My invention relates to certain new and useful improvements in the construction of grain-elevator buildings, which will be hereinafter more fully described, and particularly pointed out in the claims.

15 In the accompanying drawings, Figure 1 is a longitudinal sectional view (taken on the line *x x* of the next-named figure) of a grain-elevator building embodying my invention. Fig. 2 is a horizontal section of the same,
20 taken at the line *w w* of Fig. 1; and Fig. 3 is a cross-section of the same at the line *y y* of Fig. 2.

Like letters of reference indicate like parts in the several views.

25 At A is seen the top portion of the elevator-building, at which terminate the upper mouth ends of the bins B, and at C is seen the usual cupola, running lengthwise of the structure, and containing the weighing-hoppers D, out-
30 let-spouts *d*, and the upper portion of the elevator-legs E.

The cupola C is divided into three stories or spaces. In the first story, which is immediately over the top of the bins B, I locate my
35 novel bin-supplying or feeder devices, and in the second story I place the weighing-hoppers D and means for operating the feeder devices below, while on the top floor I locate the upper discharging ends of the elevator-
40 legs E.

The grain-bins B are so constructed that they practically extend up to the first floor or base, *a*, of the cupola, at which point their mouths are contracted or made to converge,
45 so as to come within the range or sweep in sets of the lower ends of the series of revolving feeders *d*, attached to the bottoms of the weighing-hoppers D, as shown, and so as to be supplied through said feeders with the
50 grain that may have been fed or discharged into the hoppers from the buckets of the elevator-belt.

The series of grain-bins B, as usual, occupy the whole area of the building; and for the purposes of more clearly showing and ex- 55 plaining how those bins the bodies of which are located beyond the sweep of the revolving feeders (arranged, preferably, centrally and longitudinally of the building) are filled or supplied by said feeders, I have shown at Fig. 60 2 a part of the first floor, *a*, of the cupola broken away, so as to give a better view of the bins. I have also numbered the bins 1, 2, 3, &c., and have in like manner numbered the round openings in the floor (arranged within 65 the circles described by the lower ends of the revolving feeders) as well as the contracted mouth ends of the bins; and I shall hereinafter use these numbers of reference in de- 70 scribing the manner in which the grain, after having been elevated and weighed or measured, is conducted or supplied to any desired bin or bins.

The weighing-hoppers D are arranged in a series running lengthwise and centrally of the 75 cupola, and each of said hoppers is adapted to supply through the medium of its feeder *d* a certain number or set of the bins B comprised in the series running throughout the building. Preferably I arrange these hoppers D in pairs 80 between the elevator-legs E, which latter are provided on either side with discharge-spouts *e*, for conducting the elevated grain into the hoppers D.

Immediately beneath each scale-hopper D 85 is placed one of the feeders *d*, adapted to convey the contents of said hopper into any one of a certain set of the bins B. The upper receiving-mouth of said feeder *d* is arranged concentrically with the discharging-aperture of the 90 hopper D, while its lower discharging end is adapted to be swung around to register with any one of a certain set of the holes (cut in a circle in the floor *a* of the cupola) that communicate with a certain set of the bins. I pre- 95 fer to make the spout *d* of a single piece of wrought-iron, of about the shape shown.

On that portion of the spout *d* immediately beneath the weighing-hopper I secure a chain-wheel, *d*¹, (or pulley,) and on the lower end of a 100 vertical shaft, *b*, another chain-wheel, *d*², (or pulley,) the said two chain-wheels (or pulleys, as the case may be,) being banded together by a suitable driving-chain, *d*³, (or belt.) On the

upper end of the shaft *b* is secured a hand-wheel, *f*, by means of which said shaft may be rotated for the purpose of effecting through the medium of the aforementioned drive-chain and chain-wheels the turning around of the feeder *d*, that is located below the floor on which the attendant thus operating it stands.

The spout *d* is supported by means of a vertically-arranged post, *d'*, (braced by rods *d''*, extending from its upper end to the floor *a* of the cupola,) and a collar, *d'''*, surrounding the feeder near its upper bend, which is pivotally connected to the upper end of said post *d'* in a manner to permit the turning around of said feeder, all as clearly shown.

The first floor, *a*, of the cupola, it will be seen, forms a cover to the upper ends of all the bins, to prevent the escape of dust in filling, and the covering over thus of the tops of the bins renders work in the house more convenient and less dangerous to the men who have to be employed over the bins at the weighing apparatus, and in the performance of other duties. In the floor *a*, I cut holes arranged in circles corresponding to those described by the lower ends of the feeders *d*, as seen at *g*, said holes registering, as shown, with the mouth ends of the bins, which latter (as already explained) are converged, so as to come within the range of the revolving lower ends of said feeders. The broken-line circles indicate the sweep of the lower ends of the feeders *d*.

h, Fig. 2, are trap-doors at the roofs of the bins, for the purpose of convenient access to the latter to pull back any surplus supply of grain that may be let in from the weighing-hopper, or for other purposes. The numbers marked on the trap-doors indicate the bins with which they respectively communicate.

In the use of an elevator embodying my improvements the grain is carried up through the elevator-legs *E* (by the usual bucketed belt) to the third story of the cupola, from whence it is discharged by the spouts *e e* into the weighing-hoppers *D D* on the floor below. The hoppers are provided at their lower ends with suitable valvular devices, forming false bottoms to the hoppers while the weighing of the grain is being done. The grain discharged into the hoppers having been weighed or measured, the valves are opened and the grain permitted to descend through the feeders *d* in the first story into the bins of the building.

It will be seen that the construction and arrangement of the hoppers, feeders, and bins are such that by means of a single feeder, *d*, a large number of bins may be supplied, the mouths of the bins being made smaller and converged, so that they may come within the range of the said revolving feeder.

The feeder located over bin No. 16, it will be observed, is capable by adjustment of conducting the grain from the hopper *D* down into any one of the bins 11, 12, 14, 15, 16, 17, 18, 19, 20, and 23, the mouths of said bins, as indicated, being built toward the circle described

by the lower end of said feeder, (and toward the openings in the floor *a* of the cupola.)

Whenever it may be desired to conduct the grain to bin No. 15, the feeder *d* (shown in Figs. 1 and 3 of the drawings as set to fill bin No. 17) is simply turned or swung around until its lower end registers with hole No. 15, which (as explained) leads to bin No. 15; and it will be understood, of course, that any other bin-mouth coming within this circle may receive grain from this same hopper by a proper adjustment of said feeder *d* over the hole in the floor above such other bin-mouth.

The turning or adjustment of the feeder *d*, I prefer to do from the second floor of the cupola by the means already described.

Having fully described the construction and operation of a grain-elevator embodying my invention, I will now state the main points of advantage which accrue from the novel features of such construction.

First, by the practical extension of the bins up to the first floor of the cupola and the contraction of their mouths, all the bins may be supplied from a series of revolving feeders attached to the bottoms of a series of weighing-hoppers arranged in line through the center of the cupola, and thus not only is the expensive and laborious system of the long, stationary, and also the removable spouts avoided, but all the space necessary in the use of the old system between the tops of the bins and the first floor of the cupola dispensed with to such an extent that the cupola can be built close down over the bins, and the height of the house be thus much less, without any reduction of the capacity of the building for storage.

Second, by flooring over the contracted upper ends of the bins, the escape and accumulation of dust are prevented, and thereby the whole establishment is rendered less inflammable in case of fire, and, besides this, the work over the bins is rendered more convenient and less dangerous to the men.

Third, by dispensing with the old-fashioned spouting system and using the revolving feeders and the roofed-over contracted bins, all danger of the grain overflowing from one bin into another, and thus getting mixed in filling from the weighing-hopper, is wholly avoided.

Fourth, by the employment of the trap-doors at the roofs of the bins, access is obtained to each of the bins, so that any surplus supply of grain that may have been let in from the weighing-hopper may be pulled back.

Fifth, by operating the revolving feeders from the second floor of the cupola, (where the scales are situated,) I am enabled to effect a great saving in time and labor, since all the work of weighing and discharging the grain from the scales, as well as that for shifting the feeders, may be conveniently and expeditiously accomplished by one attendant.

Having now so fully explained my invention that those skilled in the art can make and use elevators containing all the novel features

thereof, and wishing to be understood that some one or more of said features of improvement made the subject of this application may be employed in the construction of elevators with more or less advantage without using the remainder of my improvements, what I claim as new, and desire to secure by Letters Patent, is—

1. In a grain-elevator building, the combination, with the bins and hoppers thereof, of feeders adapted to be revolved, as set forth, and to conduct the grain from the hoppers into any bin or bins in the paths of rotation of the lower ends of said feeders, as described.

2. In a grain-elevator building, a series of bins having their upper ends contracted, and thus adapted to receive the grain fed from a series of hoppers arranged in line longitudinally of the building, substantially as set forth.

3. In a grain-elevator building, a series of bins having contracted mouths, a flooring (over said mouths) in which holes are cut registering with the bin-mouths, and a series of revolving feeders adapted to conduct the grain from hoppers above them down into any bin or bins of the series within the ranges of said

circles of holes, all substantially as shown and described.

4. In a grain-elevator building, the combination, with a series of bins the mouths of which reach to the first story of the cupola, of a series of revolving feeders located on the first floor of the cupola, and means for operating said feeders, located on the second floor of the cupola, all substantially as herein set forth.

5. In a grain-elevator building, a series of weighing-hoppers arranged in line through the center of the cupola, and each adapted to supply through the medium of a revolving feeder a certain number of the bins composing the said series, as set forth.

6. In combination with the roof-like portions of the bins, trap-doors, as and for the purposes described.

In witness whereof I have hereunto set my hand this 18th day of May, 1883.

WM. WATSON.

In presence of—

C. H. CHAMBERLIN,
J. W. CARTER.