A. F. MEYER.

ELEVATING DEVICE.

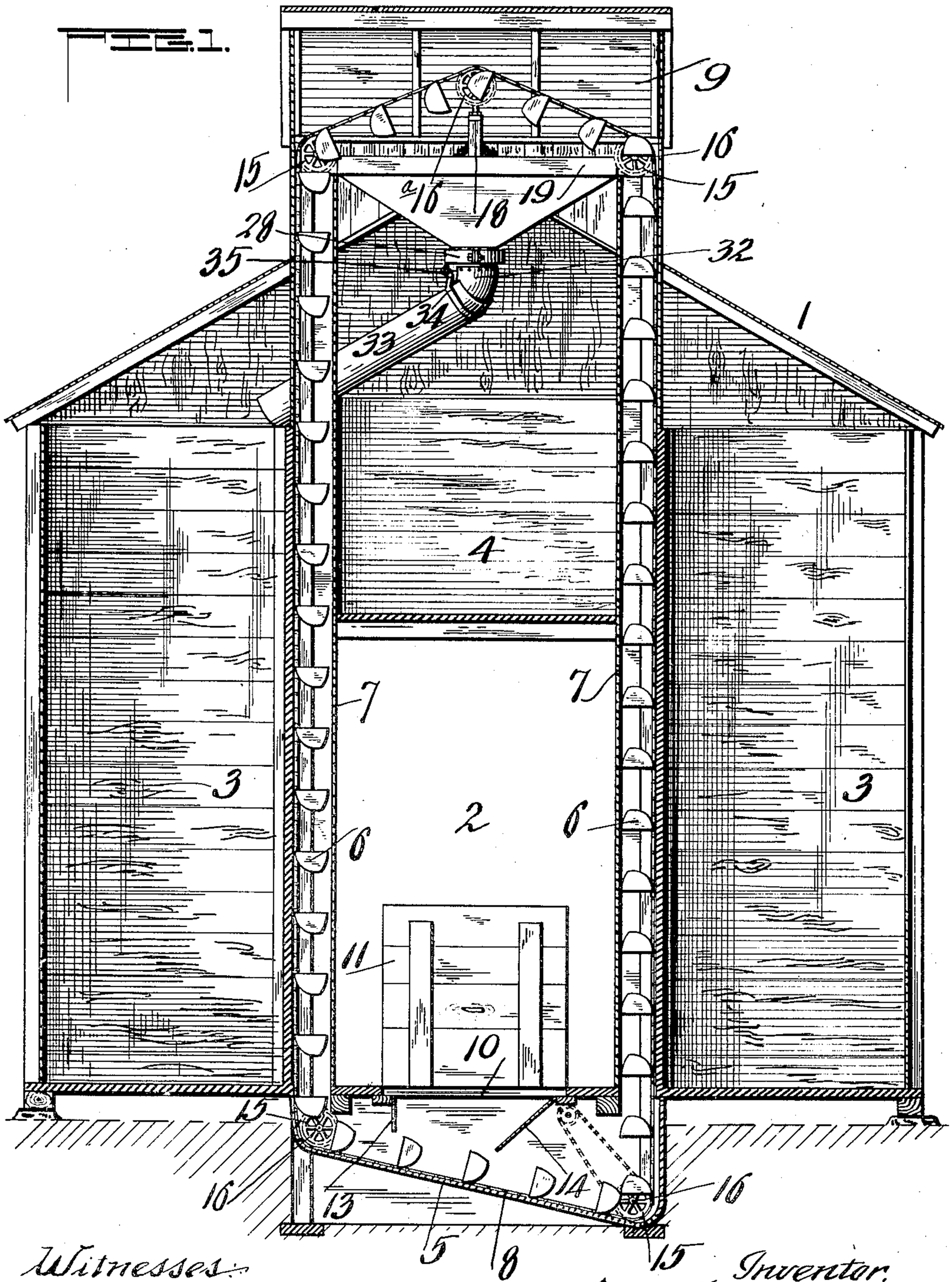
APPLICATION FILED FEB. 25, 1907.

920,602.

Patented May 4, 1909.

3 SHEETS—SHEET 1.

FIG. 1.



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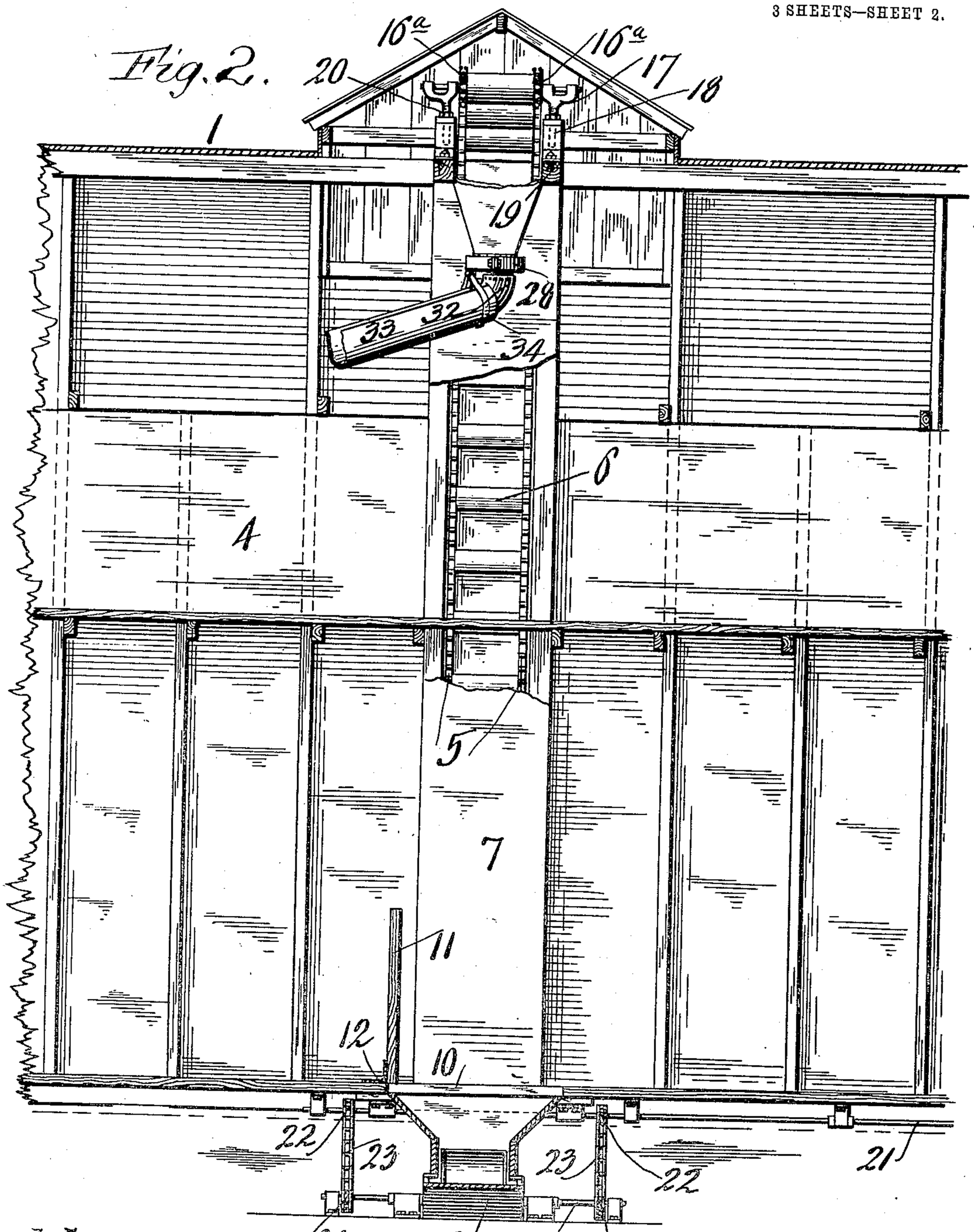
3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

FIG. 3.

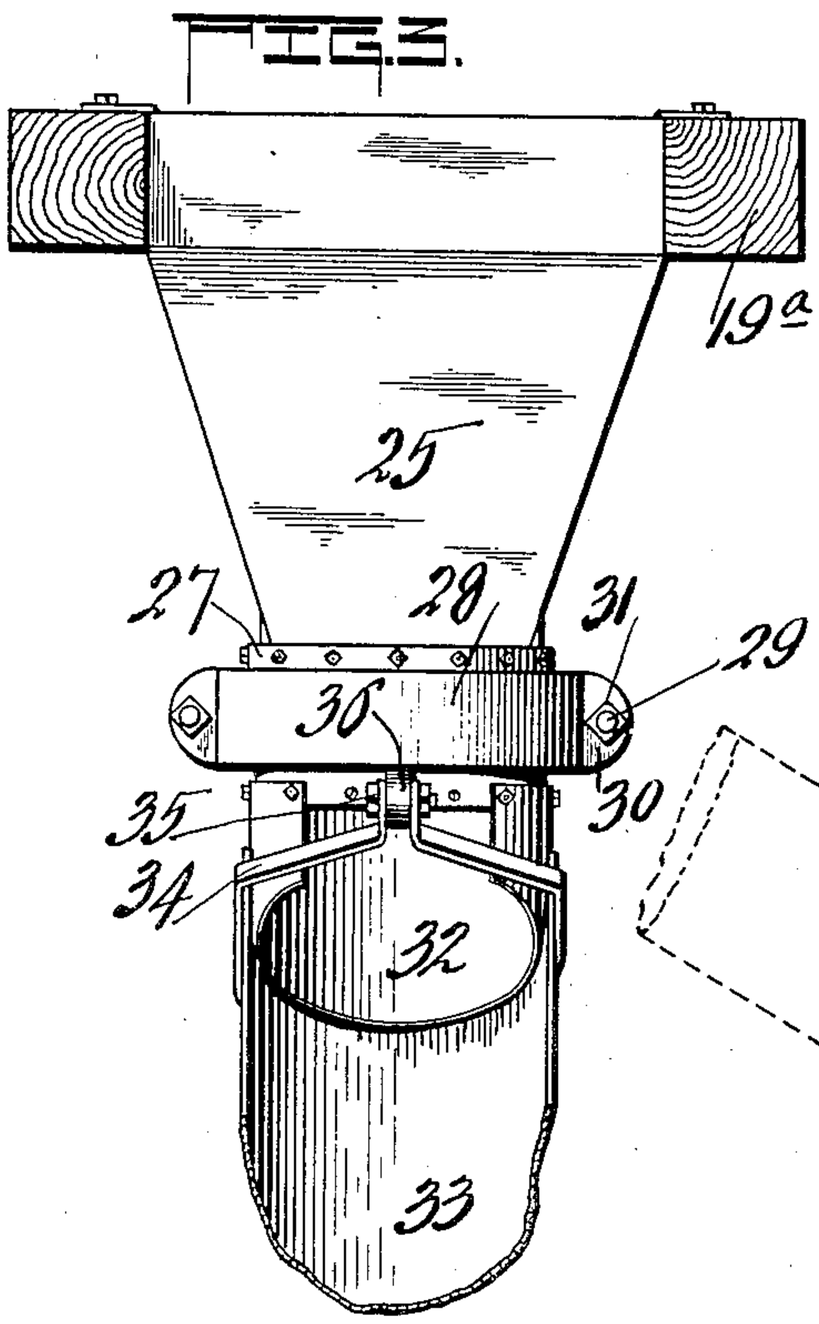


FIG. 4.

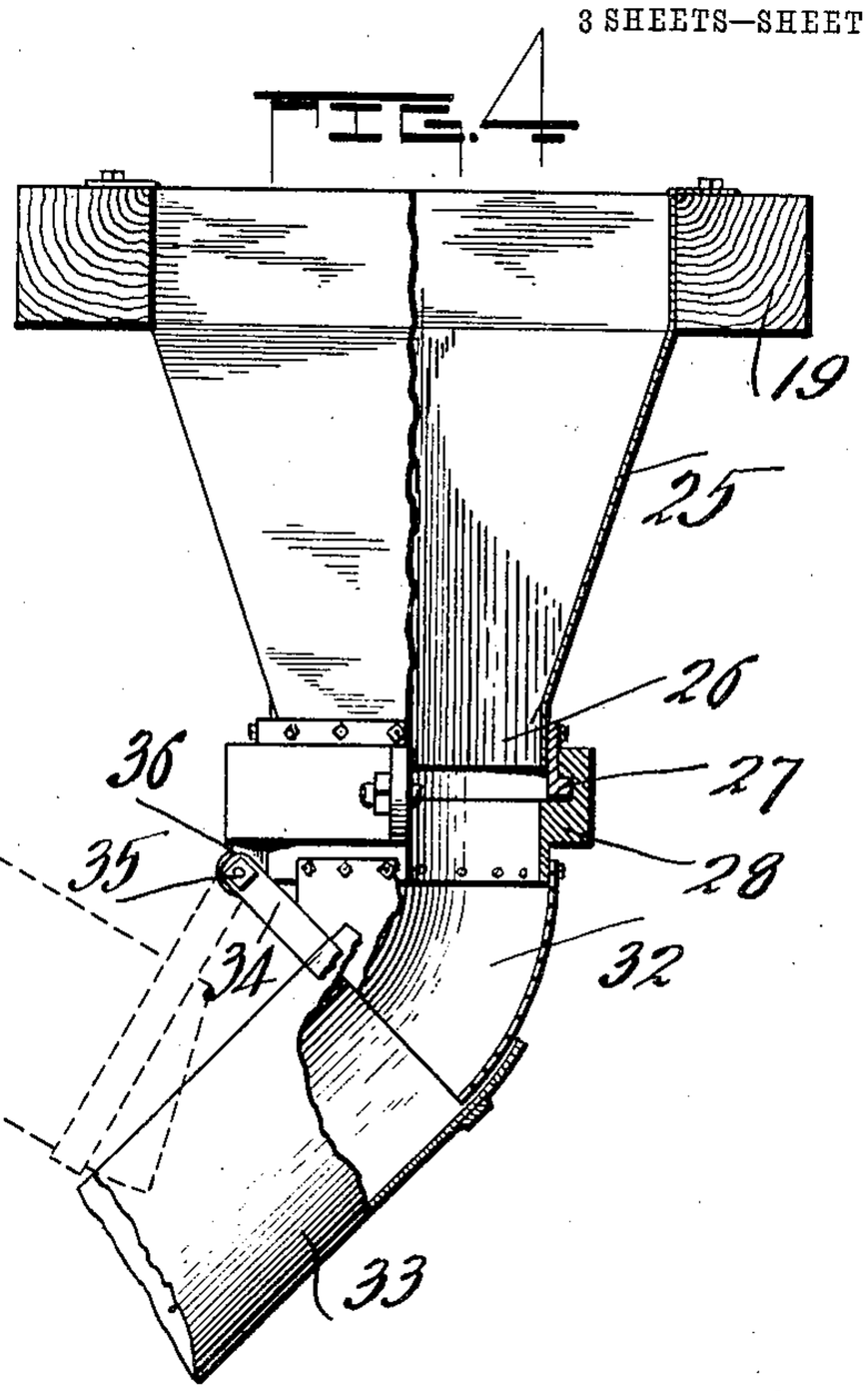


FIG. 5.

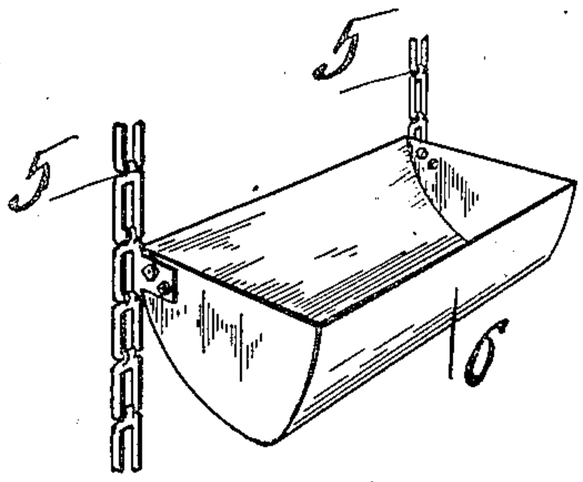
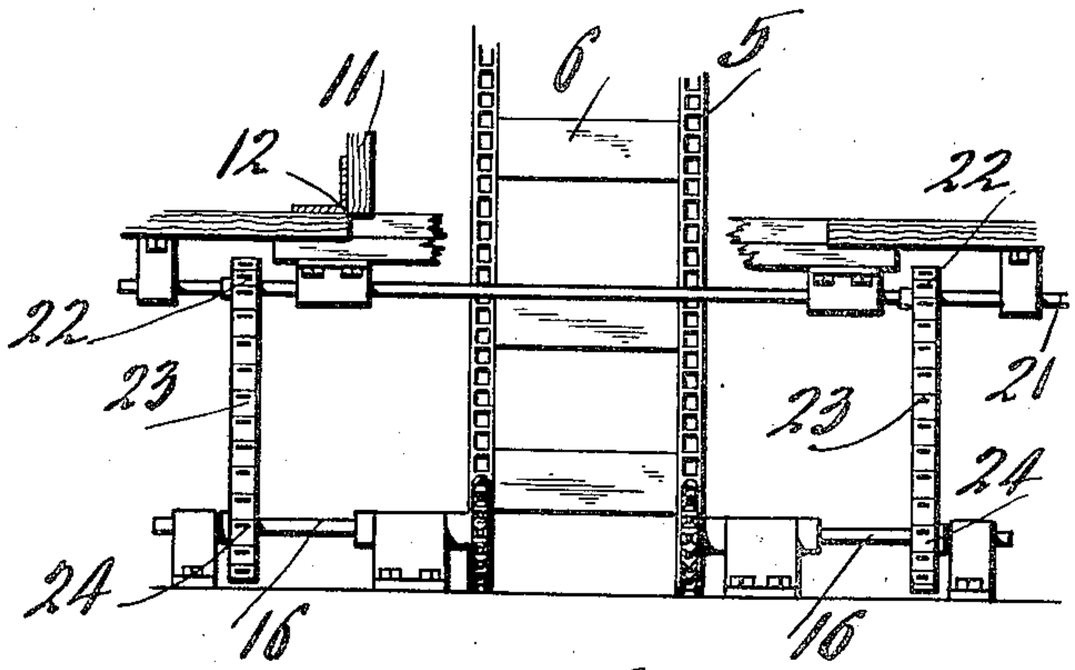


FIG. 6.



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UNITED STATES PATENT OFFICE.

ALFRED F. MEYER, OF ROANOKE, ILLINOIS.

ELEVATING DEVICE.

No. 920,602. Specification of Letters Patent. Patented May 4, 1909.

Application filed February 25, 1907. Serial No. 359,099.

To all whom it may concern:

Be it known that I, ALFRED F. MEYER, a citizen of the United States, residing at Roanoke, in the county of Woodford and State of Illinois, have invented certain new and useful Improvements in Elevating Devices; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has reference to elevators and relates particularly to that class of elevators employed in connection with cribs, barns or other housings in which it is adapted to store grain or other cereals.

The object of the present invention is to employ in connection with a crib or other housing, an elevating device which has a fixed relation with respect to said crib or housing, preferably centrally thereof and within the drive-way; and the flooring of the drive-way of said crib or housing is provided with an opening controlled by a trap door through which it is designed to discharge material which is received by said elevating device and elevated to a suitable position where the same is discharged into a hopper, with which is suitably connected a spout or other conveying means so that the material discharged into said hopper may be conveyed to and stored in any of the several bins of said crib or housing.

A further object of the invention is an elevating device suitably arranged within a crib or housing and arranged to receive material for elevating the same and discharging the said material into any of the several bins of the said crib or housing. With the arrangement of application of said elevating device to a crib or housing, there is obviated the necessity of the ordinary elevator extending into the said crib or housing from the end or side, and also the drag usually employed in connection with such an elevator which is arranged in the top of said crib or housing in the length thereof, which is adapted to receive material from the elevator and convey the same from one end to the other of said crib or housing and so arranged that the material may be discharged at intermediate points and conveyed to the several bins of the crib or housing.

With the arrangement of elevating device, such as I shall hereinafter describe, a wagon is driven into the drive-way of the crib or housing and when the same is placed in position so as to discharge material from the rear end of the wagon through the opening in the floor of the drive-way, the trap door which serves as a closure for the same is opened, and by some suitable mechanical mechanism the front end of the wagon is elevated, the end gate thereof removed, and the material therein allowed to be discharged through the opening in the floor of the crib or housing and being received by the elevator, is elevated to the top of the crib or housing and discharged into the hopper from which the material will be conveyed to any of the several bins of the crib or housing by a spout or some other suitable means.

That the invention may be more readily understood, reference is had to the accompanying drawings, in which:

Figure 1 is a transverse sectional view of a crib or housing showing my elevating device and component parts arranged therein; Fig. 2 is a partial vertical and longitudinal sectional view through a crib or housing showing my improvements applied, thereto, and the parts thereof shown in section; Fig. 3 is an enlarged detail view of the hopper into which material is discharged from the elevating device and the spout connection therewith; Fig. 4 is an opposite view of that shown in Fig. 3 and partially in section; Fig. 5 is an enlarged detail edge view of the mode of driving the elevating device; Fig. 6 is a perspective view showing a pair of chains employed in connection with my elevating device and one of the buckets or receptacles attached thereto.

In the drawings 1 refers generally to a suitable bin or housing which is provided with a drive-way 2 extending from one end of the crib to the other, and between bins 3 located upon the opposite sides thereof. In the length of the crib or housing, the cribs 3 may extend from one end to the other, or the same be sub-divided to form a series of bins if it is desired. And extending longitudinally of the crib from one end thereof to the other, may be a bin, or a series of bins 4, the floor of which is disposed a suitable height above the floor of the drive-way 2, so as not to interfere with the passage through the said drive-way of a wagon or any other suitable conveying means.

Disposed midway of the drive-way 2 I arrange my elevating device which consists preferably of a pair of elevating chains 5,

suitably spaced apart, and buckets 6, which may be of any suitable shape and width which are attached to the elevating chains 5, somewhat as seen in Fig. 6, or in any other suitable manner. The chains and buckets are adapted to travel through vertically arranged housings 7 upon the opposite sides of the drive-way, also beneath the floor of the drive-way, and at this point preferably on an incline 8 and at their upper ends are arranged to pass through a cupola 9 or any other suitable extension of the crib or housing 1, simply for the purpose of getting height to arrange for the proper discharge of material conveyed by the buckets and the conveying of the same to the bins of the crib. As will be hereinafter more particularly noted, the arrangement of the chains and the mode of attaching the buckets thereto, is such, that the buckets move across the axis of the driving and driven sprockets around which the chains to which the buckets are attached travel, and the scooping portion of the buckets is that portion of the same which travels with the chains along the incline disposed beneath the floor of the drive-way 2.

In the floor of the drive-way is provided a transverse opening 10, of suitable width which is provided with a closure in the form of a trap-door 11 hinged at one side as at 12. This trap-door as will be understood must be raised into the position shown in Figs. 1 and 2, when the wagon has been placed in position to discharge material to be received by the elevating devices, said material passing through the opening 10 and on to the inclined bottom 8, over which the conveyer chains and buckets move for taking up said material and elevating it to a point in the upper part of the crib or housing to be conveyed to the proper bins therein. To form a contracted mouth and to guide the material passing through the opening 10 in the floor of the drive-way to one point, I provide the guard plates 13 and 14, the latter being set at an angle as shown in Fig. 1.

The chains 5 travel around sprocket wheels 15, of which there are eight in number and arranged substantially as shown in Fig. 1; in said figure only four of the sprocket wheels are shown. These sprocket wheels are carried on short shafts 16, which may be journaled in any suitable bracket or support, somewhat as seen in Fig. 2. It being understood that each of said sprocket wheels particularly as they are arranged in parallel spaced relation are carried upon independent shafts to enable the buckets 6, as the chains travel over the said sprocket wheels to pass between each pair of sprocket wheels and to cross the axis of the same, it being intended as shown in Fig. 1, that the buckets return empty as they come down through the casing 7 and as they travel along the incline bottom 8 gather up the material and elevate it through the casing 7 to the left, discharging as the chains pass from a pair of sprocket wheels 15 in the upper left hand corner of the elevating device to the sprocket wheels arranged at the upper right hand corner.

It is necessary in using a device of this character to provide some means for producing or taking up slack in the chains and to do this, I employ preferably a pair of idler wheels 16ª disposed midway between the upper sprocket wheels 15 and the short shafts for said idler wheels are journaled in the upper ends of threaded arms 17, which are suitably supported in connection with brackets 18 supported upon transversely disposed sills 19, nuts 20 being employed in connection with said threaded arms to facilitate in adjusting the said arms to produce or take up slack in the chains.

The mode of driving the chains of the elevating device may be by any suitable and well known mechanical mechanism, but I prefer to employ a driving shaft 21 disposed longitudinally beneath the flooring of the drive-way 2 and having one end extending without the crib or housing adapting the same to be connected with some suitable power for driving the said shaft. On this shaft and upon the opposite sides of the housing beneath the flooring in which the elevating devices have movement, I provide the pinions 22 with which are connected chains 23 which in turn have connection with sprocket wheels 24, preferably located on the outer ends of the short shafts 16 which carry the sprocket wheels 15 as shown at the lower right hand corner of the elevating device, in Fig. 2. In this way power may be transmitted to the shaft 21 and to the devices just described, operating the chains 5 for elevating material discharged to the opening 10 in the flooring of the drive-way, to the upper end of the said crib.

Suitably supported by the transverse sills 19, previously referred to, and also longitudinal sills 19ª, which are best seen in cross section in Figs. 3 and 4, is a hopper 25 having depending and converging side and end walls, terminating in the cylindrical neck portion 26 to which is suitably attached a flanged ring 27 and to said flanged ring is attached half-sections 28 of a swiveled spout support. That is to say, it is arranged to connect a spout with the half-sections 28, and the support of the said half-sections of the flanged ring 27 is such that the upper end of the spout may have a rotatable connection with the lower end of the hopper 25. The half-sections 28 are joined by bolts 29 which pass through ears 30 of said half-sections and retained in such position by means of nuts 31; and to a lower depending portion of said half-sections is secured a short curved spout 32 with which a spout 33 at its

upper end has a telescopic connection. Said spout 33 has attached thereto at its upper end a strap 34, the free ends of which have a pivotal connection at 35 with an ear 36 on one of said half-sections 28, as seen in Figs. 3 and 4. From an examination of Fig. 4, it will be seen that the spout 33 may be swung horizontally into different positions on the lower end of the hopper 25, or the said spout through the pivotal connection of the strap 34 with one of the half-sections 28, may be swung into a vertical position and thereby disconnect the upper or inner end of the spout 33 with the short spout 32.

Elevating material to the center of the crib, such as I do, it is necessary to provide a conveying means in connection with the hopper 25 for conveying material received by the hopper to different points of the crib or to the several bins thereof disposed above the drive-way. It is understood that if the crib is not very long, a single spout may be employed for reaching any of the various bins and that if the crib is of extra length the spout 33 may be so constructed as to be extensible or made in several sections so as to reach any of the various bins throughout the length of the crib, and by providing the connection with the spout and the half-sections 28 to enable the same to be swung vertically, material may pass from the hopper through the short spout 32 into the longitudinally disposed bin 4.

It is to be noted that, if the sprocket wheels 15 are large enough in diameter, the shafts 16 may pass across the path of travel of the buckets 6 and one shaft 16 be employed where two are now shown. In this way, the buckets will be connected to travel with the chains as shown and pass beneath the shafts 16.

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

1. An elevating device for a crib having a drive way running through the same and bins upon the opposite sides thereof, comprising vertical housings adapted to be suitably disposed in said crib on opposite sides of the drive way therethrough, endless chains adapted to travel through said vertical housings, and across the upper end of the crib and across and beneath the floor of the drive way thereof, conveying means connected with said endless chains, receiving means adapted to be supported in the upper end of said crib intermediate said vertical housings, into which material may be discharged as the chains travel across the upper end thereof, and a spout depending from and suitably connected with said receiving means.

2. An elevating device for a crib, having a drive way running through the same and bins upon the opposite sides thereof, comprising endless chains having vertical runs in the drive way and transverse runs across the upper end of the crib above the drive way and across the lower end of the crib below the floor of the drive way, housings for the vertical runs of said chains, an inclined way adapted to be arranged below the floor of the drive way and over which the lower transverse runs of the chains will travel, means in the floor of the drive way for admitting material on to the inclined way therebeneath, conveying means attached to said chains, and receiving and conveying means adapted to be disposed in the upper end of the crib, below the transverse run of the conveying chains and between the vertical runs thereof.

In testimony whereof I affix my signature, in presence of two witnesses.

ALFRED F. MEYER.

Witnesses:
CHAS. W. LA PORTE,
R. L. MORAN.