

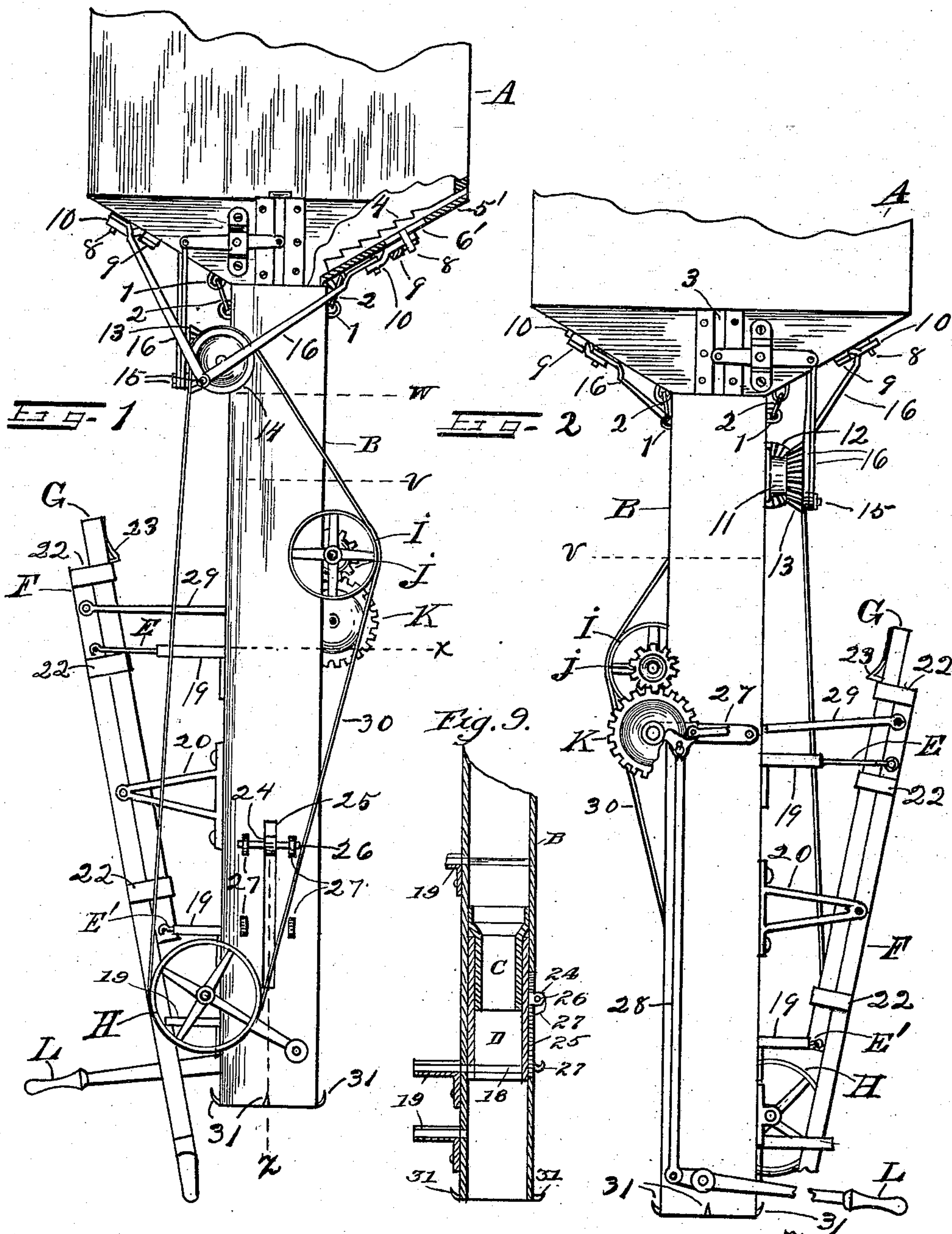
No. 858,935.

PATENTED JULY 2, 1907.

H. P. YOST.
HOPPER.

APPLICATION FILED MAR. 3, 1906.

2 SHEETS—SHEET 1.



WITNESSES.

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Verna C. Randall.

INVENTOR.

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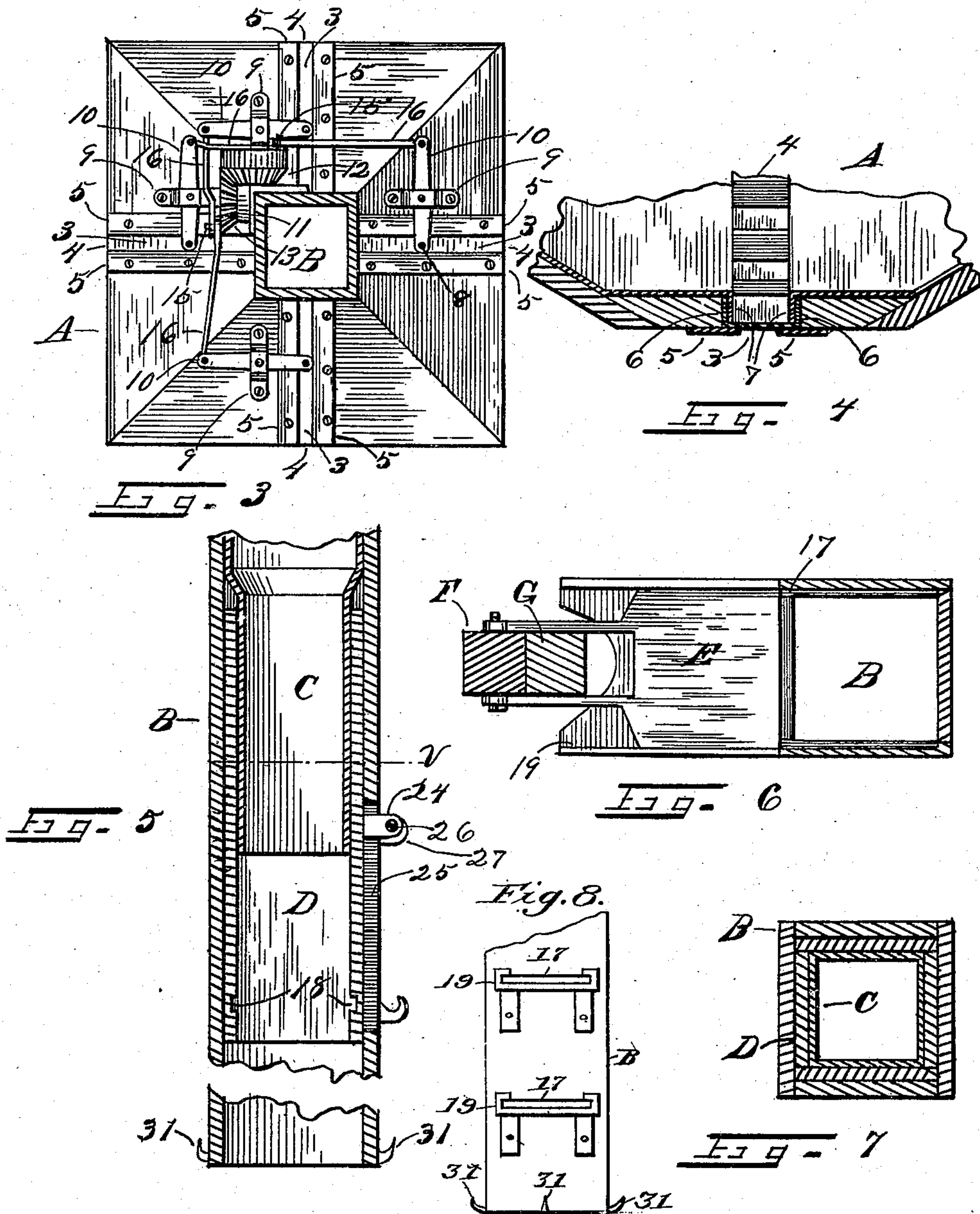
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2 SHEETS—SHEET 2.



WITNESSES.

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UNITED STATES PATENT OFFICE.

HENRY P. YOST, OF TEKONSHA, MICHIGAN.

HOPPER.

No. 858,935.

Specification of Letters Patent.

Patented July 2, 1907.

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To all whom it may concern:

Be it known that I, HENRY P. YOST, a citizen of the United States, residing at Tekonsha, in the county of Calhoun and State of Michigan, have invented certain

new and useful Improvements in Hoppers; and I do hereby declare the following to be a full, clear, and exact description thereof, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to hoppers wherein is employed a series of reciprocating agitators, and an exit tube provided with reciprocating slides or cut-offs, the same adapted to be operated either independently, or in combination by engaging gear mechanism common to both, and among other objects my invention provides for agitating the contents of the hopper so that the same will always discharge its product without clogging; whereby the exit tube in discharging its contents may be regulated to supply measures of differing quantities according to the requirements of the operator.

Other objects and advantages will hereinafter appear from the following specifications and will be particularly pointed out in the claims.

In the drawings accompanying and forming a part of this specification, Figure 1 is a side elevation of my improved hopper partially in section, and shows the reciprocating exit tube cut-off mechanism in gear with the reciprocating, agitating mechanism of the hopper the dotted line at the lower end of the exit tube being taken on a line with the cut-off slide, 19, of Figs. 8 and 9. Fig. 2 is the reverse side of Fig. 1. Fig. 3 is a view of the under or reverse side of the hopper from the line *w*, of Fig. 1. Fig. 4 is a broken section of the hopper transverse of one of the agitating slides. Fig. 5 is a broken longitudinal section of the exit tube along the line *z*, of Fig. 1. Fig. 6 is a cross section of the exit tube with the reciprocating slide or cut-off withdrawn on the line *x* of Fig. 1. Fig. 7 is a cross section of the exit tube on the line *v*, of Figs. 1 and 5. Fig. 8 is a detail of the lower extremity of the exit tube from the side through which the reciprocating slides play, and Fig. 9 is a longitudinal section detail of the same, transverse of the Fig. 8.

Like marks of reference refer to corresponding parts throughout the different views.

One of the primary objects of my invention is to provide a hopper for basement barns and the like, that will be convenient for the farmer in feeding stock rations of bran, meal, oats, etc., in stated quantities and at the same time prevent the same from clogging in the hopper and not delivering, a very common occurrence with ground feed.

My invention has for its object to overcome these disadvantages, and it consists in the hopper, A, having

an exit tube, B, suspended therefrom and to which the agitating and measuring mechanism is arranged.

The hopper may be made in any of the usual forms as at present constructed; in basement barns it is suspended from the flooring of the granary. The exit tube by preference is suspended from the hopper by means of eyelets and hooks, 1 and 2, by which means the same may be readily disconnected at will. Within the sloping bottom sides of the hopper, radial slots, 3, are arranged or made, and immediately above and over these slots, agitating slides, 4, having serrations or teeth on their upper faces are adapted to work.

As herein shown, I have provided a hopper having oppositely-disposed ways, 5, secured to the under side of the hopper at either side of the radial slots upon which the several agitating slides may work, and secured to the under side of the agitators, metallic strips having up-turned edges, 6, are provided, the edges of the strips being slightly disposed from the agitators to form grooves or channels within which the down-turned edges, 7, of the metallic hopper may be introduced, a means whereby the contents of the hopper may not escape through the bottom of the hopper along the edges of the several agitating slides. While I have shown this means of accomplishing the desired result, it would be apparent that other means than what I have shown and described would answer the purpose, and that in lieu of oppositely-disposed plates, 5, one piece as 5' having a longitudinal slot, 6', through which the stud, 8, of the agitating slide may play, as in Fig. 1, could be employed.

To one side of each of the several agitating slides secured to the bottom of the hopper clasps or brackets, 9, are provided, within which levers, 10, are pivoted. These levers, normally, are at right angles to the respective agitating slides they are adapted to work, and to the latter of which they are connected by means of studs, 8, aforesaid.

Arranged near the upper end of the exit tube and at one corner thereof, a bracket, 11, supports miter gear 12 and 13, the miter, 12, forming to the outer side thereof a belt wheel, 14, as shown in Figs. 1 and 3. Each of the wheels, 13 and 14, are provided with cranks or studs, 15, to which pitmen, 16, are pivotally united to the outer ends of the levers, 10, each of said wheels having twin pitmen attached thereto, as shown in Fig. 3, the pitmen in either instance being oppositely-disposed, the one adapted to push and the other to pull at each revolution of its respective drive wheel, and vice versa.

The exit tube, B, comprises three parts, an outer or main casing, a secondary or inner tube, C, and a telescopic tube, D, the tube C, being slightly flaring at its upper end and secured to the outer casing, as shown in Fig. 5, the tube, D, telescoping between the

outer and inner tube, for reasons hereinafter set forth. At intervals the outer tube is provided with transverse slots, 17, (see Fig. 8) and the middle, or telescopic, tube D, has an opening corresponding to an opening, 17, of the tube, B, provided with gains, 18, alined therewith, for receiving the slide, E'. The outer tube is provided with guides, 19, formed of wood or metal having upturned sides between which the reciprocating slides, or cut-offs, E, and E', may freely play and guide the slides within the slots of the exit tube and in the gains, 18, of the tube, B.

At a point below the upper slide, brackets, 20, are provided, between which is pivoted an oscillating lever, F; this lever at its lower end forms a handle by which it may be operated, should the person manipulating the same desire to do so, and at intervals of its length has straps, 22, secured thereto, through which a secondary telescopic lever, G, is adapted to work; the secondary lever being supported in position by means of a spring clasp, 23, secured thereto and which is adapted to engage the upper edges of the straps aforesaid in the adjustment of said lever in relation to the lever F.

Above the pivot of the brackets, 20, and secured to the bracket F, the main cut-off slide, E, is connected. This slide always retains a fixed location with respect to the exit tube, but the slide E', which is connected to the adjustable lever G, may be changed from a higher to a lower position, or vice versa, in the exit tube, as may be deemed expedient. Thus by disengaging the spring clasp, 23, and sliding the lever G, through the straps, 22 of the lever F, and inserting the slide E', within a slot of the exit tube other than the one from which it was detached, the clasp will engage a corresponding strap along the lever F and again lock the levers. By thus doing the quantity of material desired to be measured or discharged from the hopper, may be regulated accordingly.

The slide E', is adapted to work through one of the slots, 17, of the outer tube and to play within gains rabbeted within the sides of the secondary tube, as at 18, in Fig. 5, the tube D, in this instance being adjusted and secured in position by means of a lug, 24, passing through a slot, 25, in the outer tube, and having a pin, 26, passing therethrough and engaging eyelets or hooks, 27, either side of the slot, 25, as shown in Figs. 1 and 5.

At a point near the lower end of the exit tube B, I provide a shaft carrying a cranked wheel H; and at a point above this wheel, a shaft carrying a belt wheel I and a gear J, is located. This gear meshes with a secondary gear K, operative at the extremity of a pivotal bracket, 27, as shown in Fig. 2. The gear K, has a pitman 29 connecting it with the lever F, and may be made to operate with the gear J, by pressing a handle L, downward, to which a pitman, 28, is connected, to the bracket, 27, causing the gears to intermesh, the releasing of the handle relinquishing the gears and causing them to disengage.

Over the wheels H and I and 14, a belt, 30, is strung and causes the several shafts to which the wheels are located to operate at the turning of the crank. If at any time the operator chooses to operate the measuring or cut-off slides independently of the agitating slides of the hopper, all that it is necessary to do is to grasp the

lower extremity of the lever F, and work the respective slides E, and E'.

To the lower end of the exit tube, bag-supporting hooks, 31, may be attached.

While I have set forth my invention and its advantages, it will be apparent that various minor changes in its construction could be resorted to without departing from the spirit or sacrificing any of the advantages thereof, and I hold myself as entitled to such minor changes in its construction as would be compatible with the intent of my improvements.

Having, therefore, set forth my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a hopper, agitating slides radially disposed over the bottom thereof and means to actuate said slides simultaneously.

2. In a hopper, serrated agitating slides radially disposed within the bottom thereof, said hopper having radial slots beneath said slides, studs projecting from said slides through said slots, pitmen connecting with said studs, and means to reciprocate said slides, for the purpose set forth.

3. In a hopper having radial slots arranged in the bottom thereof, agitating slides operative within said slots, means to support said slides and means to actuate said slides simultaneously from beneath said hopper.

4. In a hopper, in combination, agitating slides radially disposed in the bottom thereof, an exit tube centrally depending from said hopper, a crank wheel arranged near the lower end of said tube, miter gears operative near the top end thereof, cranks to said gears, pitmen connecting said cranks with said agitating slides and means to convey motion from said crank wheel to said miter gears, for the purpose set forth and described.

5. In a hopper, in combination, agitating slides radially disposed within the bottom thereof, levers pivotally connected beneath said hopper and adapted to actuate said slides, an exit tube depending from said hopper, miter gears operative on said exit tube, cranks to said gears, pitmen connecting said cranks to the outer ends of said levers in such a manner that when said miters are rotated, reciprocating motion will be given to said agitating slides, and means to actuate said gears, substantially as and for the purpose set forth.

6. In a hopper, an exit tube depending from said hopper, an inner tube concentrically suspended within said tube and united thereto at the upper end thereof, a tube telescopically adapted to slide between said tubes, means to adjustably secure said telescopic tube between said tubes, said exit tube having vertically-arranged, horizontal slots, slides adapted to work within said slots, guides to support said slides secured to said outer exit tube, means to alternately reciprocate said slides, the lower of said slides adapted to be changed from a higher to a lower horizontal slot of the exit tube, and vice versa, as and for the purpose set forth.

7. In a hopper, the combination with the exit pipe having a plurality of horizontally-arranged slots and guides arranged below said slots, of a bracket, a lever pivoted to said bracket, a cut-off slide hinged to the upper end of said lever, a longitudinally-adjustable lever operative on and with said pivoted lever, a cut-off slide hinged to the lower extremity of said longitudinally-adjustable lever, means to detachably lock the sections of said lever in different positions, and means to actuate said longitudinally-adjustable lever, as and for the purpose set forth.

8. In a hopper, the combination with an exit tube telescopically adjustable, of a reciprocating slide operative in the fixed or stationary upper portion of said tube, a reciprocating slide operative within the telescopic or lower portion of said tube, a lever pivotally hinged to said stationary pipe and connectively hinged to said upper reciprocating slide, a lever longitudinally adjustable secured to said pivotal lever and connectively hinged to the reciprocating slide of said telescopic tube, means to adjustably secure said longitudinally adjustable lever, means to ad-

justably secure said telescopic tube, and means to actuate said longitudinally-adjustable lever.

9. In a hopper, the combination with reciprocating serrated agitators in the bottom thereof, an exit tube having a plurality of horizontally-arranged slots in one side thereof depending from said hopper, a lever pivoted to said tube, a slide hinged to said lever and adapted to operate within an uppermost slot of said tube, a detachably-adjustable slide hinged to said lever below the pivot thereof and adapted to operate within any one of the slots below said upper slide, guides secured to said exit tube adapted to direct said slides within said slots, and means to actuate said levers, as and for the purpose set forth.

10. In a hopper, in combination, reciprocating agitating slides in the bottom thereof, reciprocating slides or cut-offs in the exit tube thereof, means to actuate said agitators and said cut-off slides, and means to disengage the actuating connection between said agitators and said slides so that one may be operated independently of the other, substantially as, and for the purpose set forth.

11. In a hopper, the combination of an exit tube having

an interiorly-adjustable, telescopic tube, the outer tube having a series of vertically-arranged, transverse slots, the inner tube having a slot adapted to register with all but the upper slot in the outer tube, a reciprocating slide adapted to operate in each section of said tubes, a longitudinally-adjustable lever adapted to actuate said slides, one portion of said lever being pivotally attached to said exit tube and adapted to actuate the upper reciprocating slide, a longitudinally-adjustable portion of said lever adapted to actuate the reciprocating slide attached near the lower end thereof, straps encompassing said levers, a spring attached to one portion of said lever and adapted to catch over a strap secured to an opposite portion of said lever to hold said lever in longitudinal adjustment, the lower extremity of said lever forming a handle, as and for the purpose set forth.

HENRY P. YOST.

Witnesses:

WM. A. HOWARD,

H. J. LINDSEY.