(No Model.) 2 Sheets—Sheet 1.

C. A. WEVER.

GRAIN METER.

No. 539,560. Patented May 21, 1895.

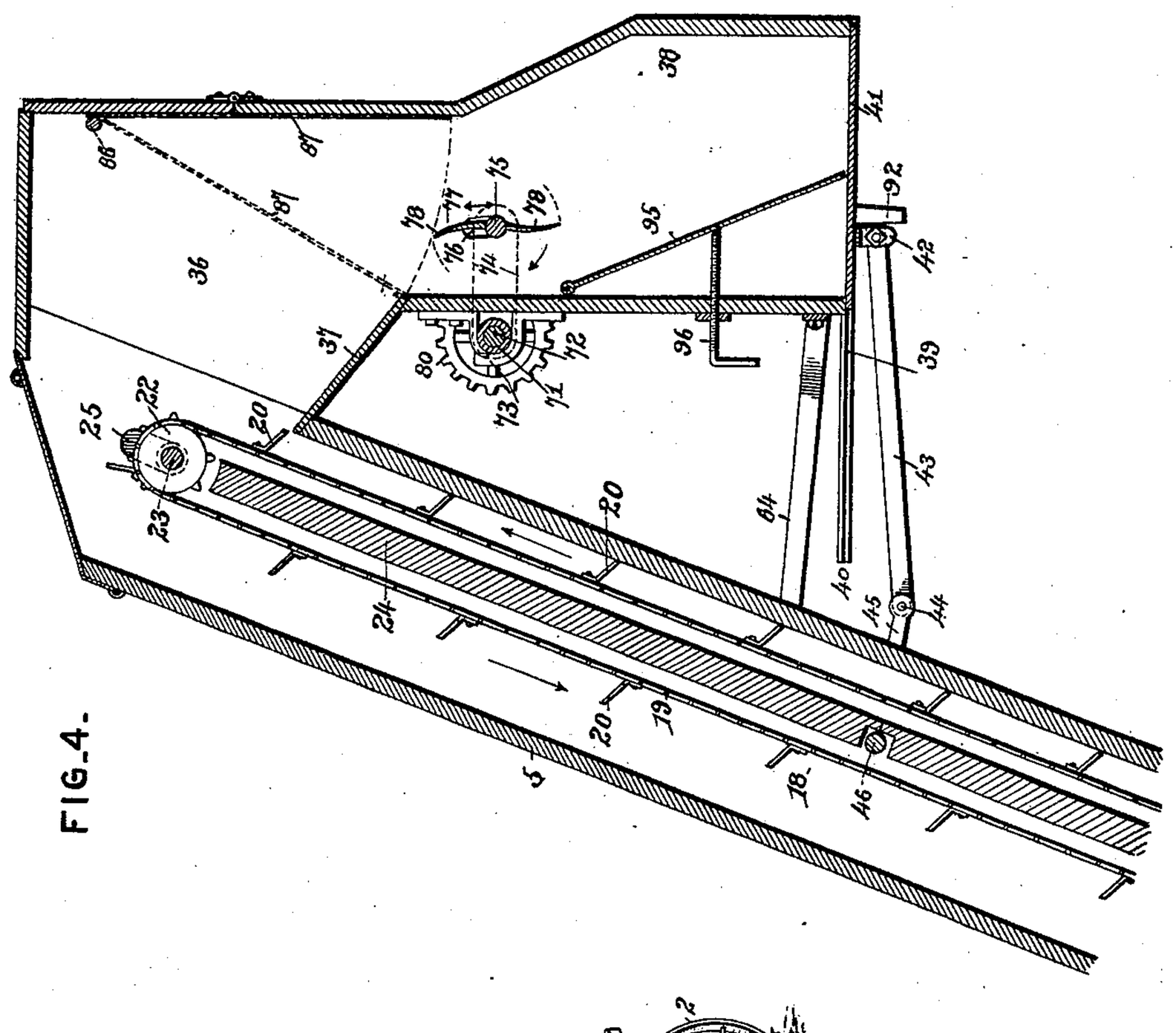

FIG. 4.

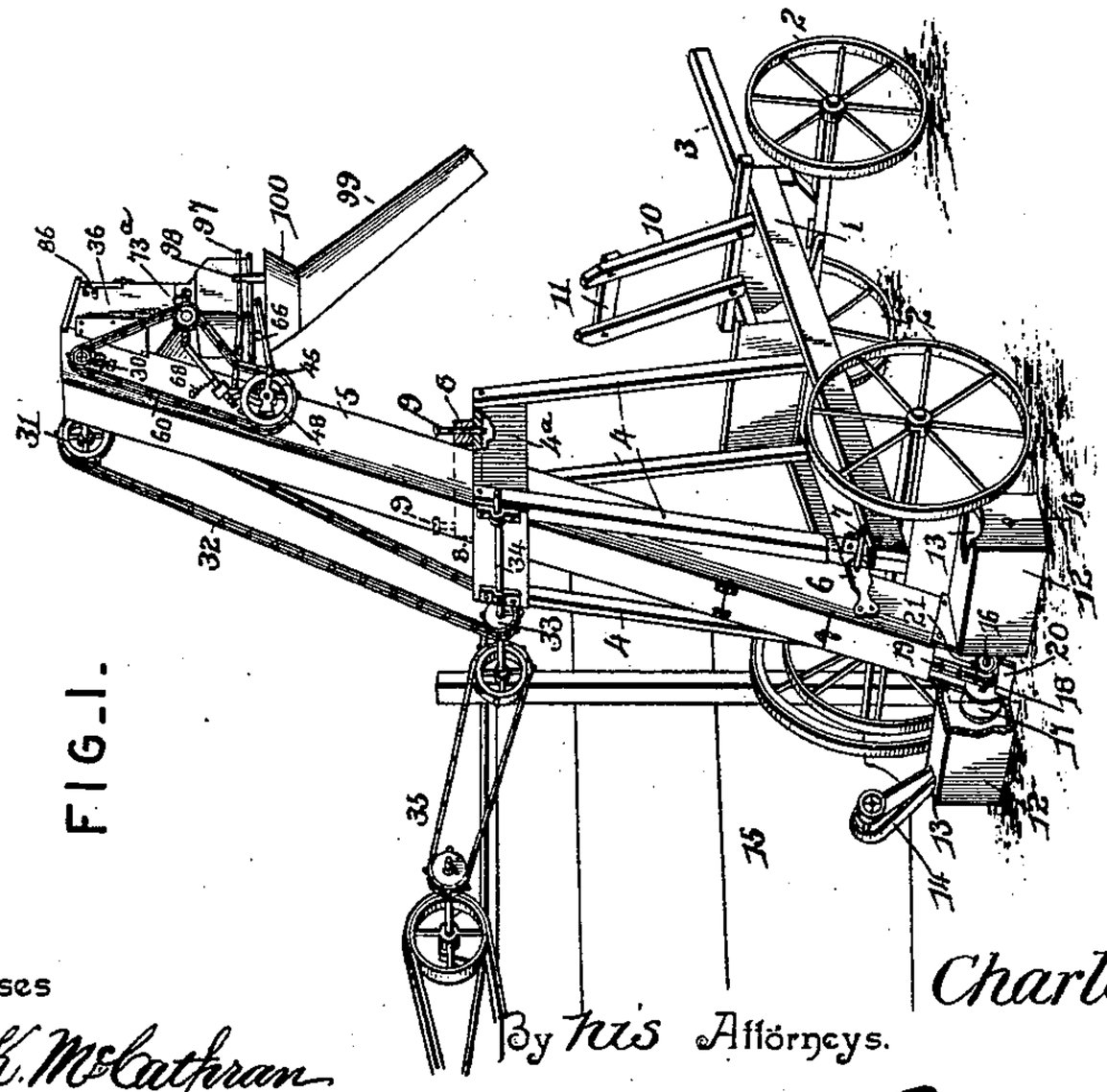

FIG. 1.

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(No Model.) 2 Sheets—Sheet 2.

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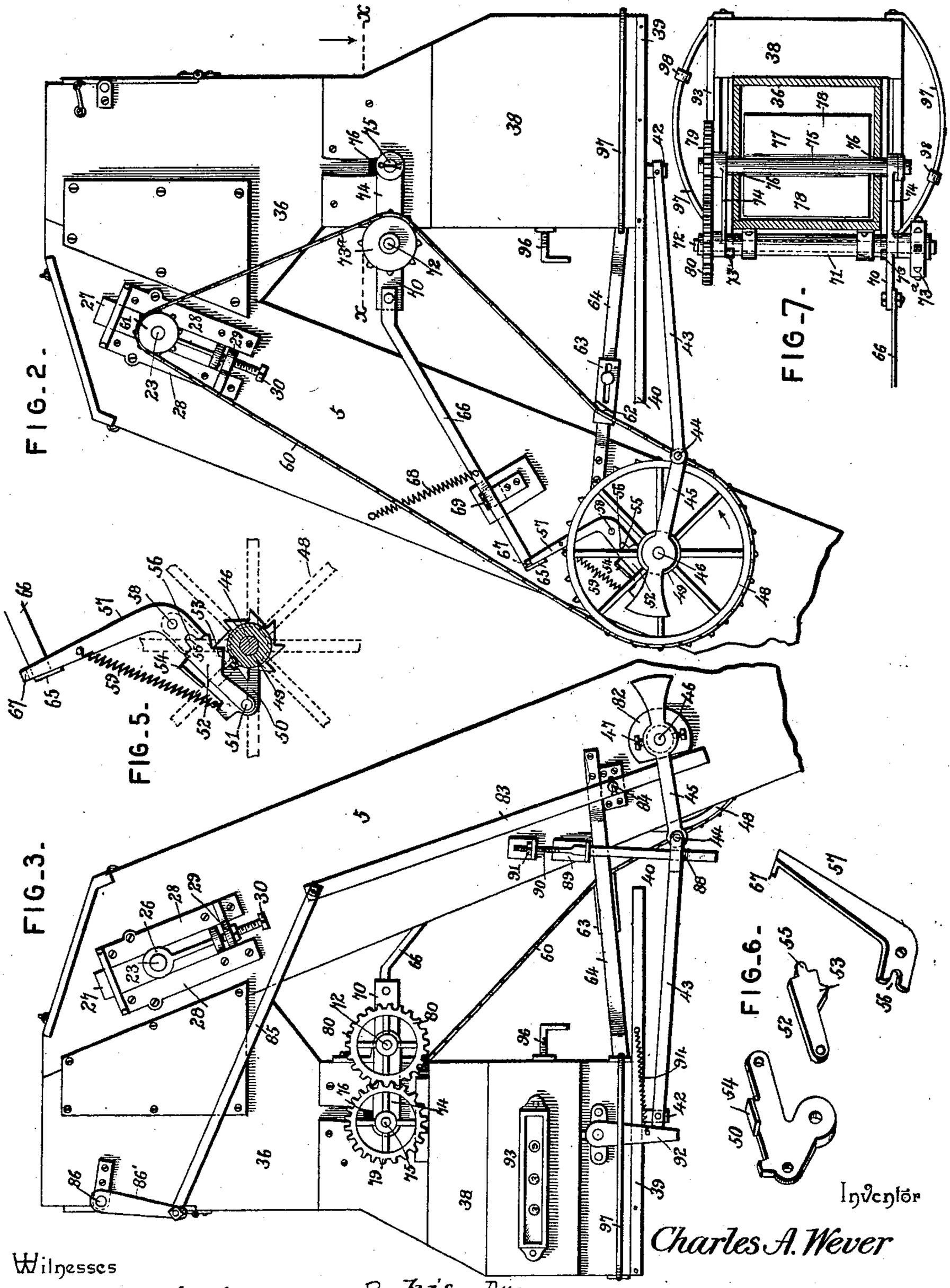

FIG. 2.

FIG. 7.

FIG. 5.

FIG. 3.

FIG. 6.

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UNITED STATES PATENT OFFICE.

CHARLES A. WEVER, OF CLAYTON, ILLINOIS.

GRAIN-METER.

SPECIFICATION forming part of Letters Patent No. 539,560, dated May 21, 1895.

Application filed April 5, 1894. Serial No. 506,478. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. WEVER, a citizen of the United States, residing at Clayton, in the county of Adams and State of Illinois, have invented a new and useful Grain-Meter, of which the following is a specification.

This invention relates to grain meters; and it has for its object to provide a portable machine of this character adapted to be readily transported from place to place, and providing means for automatically measuring the grain as it comes from the separator machine.

To this end the main and primary object of the present invention is to construct an automatically operating grain measure mounted on a truck for convenient and ready transportation as a separate machine, independent of the separator in connection with which it is employed, while at the same time insuring novel and efficient means for measuring and registering regulated quantities of grain automatically.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a perspective view of my improved grain-measure mounted in operative position at one side of a separator-machine. Fig. 2 is a side elevation of the automatic measuring devices at the upper end of the elevator-spout. Fig. 3 is a side elevation of the measuring devices from the side opposite to that illustrated in Fig. 2. Fig. 4 is a central longitudinal sectional view of that portion of the machine illustrated in Figs. 2 and 3. Fig. 5 is a detail elevation, partly in section, at one side of the clutch-gear. Fig. 6 is a detail in perspective of the clutch-gearing. Fig. 7 is a detail sectional view on the line *x x* of Fig. 2.

Referring to the accompanying drawings, the numeral 1, designates a truck frame mounted on the supporting wheels 2, and having connected to one end thereof an ordinary draft tongue 3, which provides means for readily transporting the truck from place to place independently of the separator machine in connection with which it is employed, or by suitably connecting the draft tongue to the rear end of the separator during transportation. The said truck frame has arising from opposite sides thereof the connected frame uprights 4, which together comprise an upright supporting frame 4^a in which is arranged the inclined elevator spout 5.

When in an operative position the inclined elevator spout 5, is arranged at an incline extending from the rear end of the truck frame through and above the supporting frame 4^a, and said spout has attached to opposite sides near the lower end thereof the off-standing pivot plates 6, provided at their outer extremities with the pivot pins 7, which are pivotally supported on the rear end of the truck frame 1, so that the elevator spout can be readily raised to its inclined operative position or lowered to an inoperative position resting on the truck frame with its lower receiving end lifted off the ground. When elevated or turned on its pivots to the position illustrated in Fig. 1, the said elevator spout is supported in this position by the removable supporting cross bar 8.

The removable supporting cross bar 8, is preferably removably secured to the top of the supporting frame 4^a, by the removable securing pins 9, which hold the bar in position for the elevator spout 5, to rest thereagainst. By removing or swinging the bar 8, out of position it will be obvious that the upper heavy end of the elevator can be readily lowered onto the front rest frame 10, secured to the front end of the truck frame and arising therefrom at an angle to receive the spout 5, which rests in the seat 11, at the upper end of the rest frame, and this lowering of the elevator spout may be readily effected after disconnecting certain of the gearing connections as will be easily understood.

The elevator spout 5, consists of an elongated closed box of the ordinary construction, and the same is provided with or has attached to the lower receiving end thereof the oppositely disposed conveyer boxes 12, which communicate at their inner ends with the lower end of the spout 5, and are provided at their upper outer ends with the receiving openings 13, into which the grain is delivered from the grain spout 14, of an ordinary separator machine 15, at one side of which the measuring machine herein described is arranged during

operation. The conveyer boxes 12, are arranged on both sides of the lower end of the spout 5, in order to adapt the machine for use at either side of the separator machine, and extending longitudinally of both of the boxes 12, is the lower conveyer shaft 16, on which are mounted the right and left screw conveyers 17, located in the boxes 12, and both feeding toward and into the lower ends of the spout 5, it being understood that the grain delivered into one of the boxes 12, from the separator machine, will be carried by one of these screws into the lower end of the spout 5, where it is caught up by the endless bucket or scraper elevator 18.

The endless bucket or scraper elevator 18, comprises an endless sprocket chain 19, and a series of regularly spaced buckets or scraper blades 20, attached to the chain, and the lower portion of the chain 19, passes around the lower chain or sprocket wheel 21, mounted at a central point on the conveyer shaft 16, to communicate motion thereto, and the upper portion of said chain passes around the upper chain or sprocket wheel 22, mounted within the upper end of the spout 5, on the upper elevator shaft 23, and said wheel 22, is located directly above the elevator platform or dividing board 24, which extends longitudinally of the spout 5, and separates the separate portions of the elevator in order to confine the grain in the lower side of the spout, where it can be easily elevated up to the upper discharging end thereof. The upper elevator shaft 23 has the opposite ends thereof projected through the side bearing slots 25, formed in the upper end of the spout 5, and beyond said slots the extremities of the shafts 23 are journaled in the bearing collars 26, projected from one side of the adjustable bearing plates 27 mounted to slide between the guide plates 28, secured to opposite outer sides of the spout 5, and at one end of the guide plates 28 are arranged the threaded lugs 29, to receive the adjusting set screws 30, that work therethrough and engage at one end of the bearing plates 27 to adjust the same and maintain the endless bucket or scraper elevator at the proper tension.

To one projecting end of the elevator shaft 23 is attached a chain or sprocket wheel 31, over which passes the drive chain 32, driven from the chain wheel 33, on the counter drive shaft 24, journaled at one side of the supporting frame 4^a, and adapted to be suitably geared with a shaft on the separator machine 15 by the connections 35 as clearly illustrated in the drawings, and this gearing not only provides means for communicating motion to the conveyers and the elevator, but also to the automatic measuring devices which will now be described.

At the upper end of the elevator 18, the spout 5, is provided with a top discharge chamber 36, having an inclined bottom board 37, onto which the grain falls from the buckets or scrapers of the elevator 18, as the same ascends up to that point to deliver the grain into the top discharge chamber 36, and extended below the top discharge chamber 36 and communicating directly therewith is the measure box 38, which is sufficiently large in order to accumulate and deliver any reasonable quantities of grain. The measure box 38, is open at its lower end and has attached to opposite side edges thereof the L-shaped guide plates 39, which are extended inward beyond the box to a point near the spout 5, as at 40, and said opposite guide plates 39, support for a sliding movement therebetween the sliding bottom gate 41, that is designed to cover and uncover the open bottom of the measure box 38, in order to allow regulated quantities of grain to accumulate and to then deliver or discharge such measured quantities of grain into wagons or other receptacles.

The sliding bottom gate 41, which is designed to automatically cover and uncover the bottom of the measure box 38, has attached to the under side thereof the attaching lugs 42, to which are pivotally connected one end of the opposite gate arms 43, the other ends of which are pivotally connected at 44 to the opposite crank arms 45, secured fast to the opposite projecting extremities of the transverse crank shaft 46, by means of the set screws 47, working through the hub ends of said crank arms and providing means for securing the same fast on the shaft, and for adjusting the same. The said transverse crank shaft 46 is journaled transversely of the elevator spout 5 and in suitable bearings at opposite sides thereof, and at one side of one of the crank arms 45, outside of the spout 5, a sprocket wheel 48 is loosely mounted on the shaft 46, and is provided at its inner side with a ratchet hub or disk 49, at one side of which hub or disk a revolving clutch plate 50, is secured fast on the shaft 46, and also outside of the elevator spout 5.

The clutch plate 50 that is fast on the shaft 46, has pivotally attached to one side thereof, as at 51, the clutch dog 52, which is provided at its lower side with an engaging point 53, normally engaged by the ratchet hub or disk 49, so that a rotation of the wheel 48, carrying said hub or disk, would tend to revolve the plate 50 and thereby rotate the shaft 46. The revolving clutch plate 50 is provided at its outer edge with a stop flange 54, disposed over the moving end of the dog 52, and said dog is provided at its moving end beyond the location of the engaging point 53, with a projecting rounded knuckle lug 55, which loosely engages in the rounded knuckle notch 56 in one end of the bell crank clutch lever 57. The bell crank clutch lever 57 is pivoted at its angle, as at 58, to one side of the clutch plate 50, beyond the moving end of the dog 52, and the long arm of said lever extends beyond the clutch plate and has attached thereto one end of the clutch spring 59, the other end of which is suitably connected to the outer edge of the plate 50, so as to nor-

mally move the lever 57, in a direction that holds the clutch dog 52 in engagement with the ratchet hub or disk 49, whereby motion may be given to the shaft 46, and therefore to the crank arms 45 by the rotation of the wheel 48, and motion is given to this wheel from the sprocket chain 60, which is driven from the chain wheel 61, secured to one end of the elevator shaft 23, and at a point adjacent to the wheel 48, one portion of said chain passes over the guide flange 62, projected from one side of the slotted guide plate 63, adjustably secured to one of the brace arms 64, a pair of which extend from the spout 5 and are connected to the measure box 38, to hold the same firmly in its proper position. The said guide plate and its flange serve to guide the chain so as to hold the same properly in engagement with the wheels to which it communicates motion.

When the sliding bottom gate 41, is closed and the measure box 38 is filling, the shaft 46, must be made stationary so as to not affect the closed position of the gate, and this closed position of the gate causes the crank arms 45, to assume such a position as to bring the outer free end of the bell crank clutch lever 57 at one side of the trip flange 65, disposed at one end of the trip lever 66, and at the point of engagement with the free extremity of the lever 57, the latter is also provided with a stop flange or lug 67, below which it is necessary to move the flange 65, in order to allow the clutch lever 57, to pass beyond the same, so that the shaft 46 may make a revolution to open and close the bottom gate 41.

The trip lever 66, is normally held in position which disposes the flange 65 in the path of the flange or lug 67, by means of the supporting spring 68, attached to the lever 66, and to one side of the spout 5, to normally support the lever 66 against the top portion of the U-shaped keeper plate 69, attached to one side of the spout 5, to limit the upward movement of the said lever.

The trip lever 66, is securely connected at one end to one end of a double rock arm 70 extending to both sides of one end of a turning sleeve 71, loosely mounted on a shaft 72, journaled in suitable bearings 73 at one side of the measure box 38, and said sleeve 71 has connected to the end opposite the double rock arm 70, a similar rock arm 74, working at one side of the measure box and forming a bearing support for one end of the trip shaft 75, the other end of which is journaled in one extremity of the double rock arm 70. The rock arms working at one side of the measure box 38, have an up and down movement, which is given thereto from the shaft 75, the ends of which work in the opposite side slots 76, near the upper end of the measure box, and said trip shaft 75, carries thereon within the upper end of the measure box the revolving trip paddle 77, which consists of two or more revolving blades 78 that are designed to beat down on the grain as it rises within the measure box, to provide means for elevating the shaft 75, rocking the sleeve 71, and thereby lowering the trip lever 66 out of the path of one end of the clutch lever 57, to throw the clutch gearing into gear with the wheel 48.

On one end of the trip shaft 75, is mounted the gear wheel 79, meshing with a similar gear wheel 80 mounted on one end of the shaft 72, to the other end of which is secured the chain wheel 73ª, over which passes a portion of the chain 60 to communicate motion to the revolving trip paddle already described.

On one end of the shaft 46, opposite to the clutch gearing is mounted a cam disk 82 that is almost a complete circle, with a flattened side and, while the gate 41 is opening and closing, bears against one end of the lever 83, pivotally mounted at 84 on one side of the spout 5, and connected at its other end to the connecting bar 85, the other end of which is pivotally connected to the swinging end of the rock arm 86′. The rock arm 86′, is mounted on one outer end of the cut off shaft 86, journaled at one top side of the top discharge chamber 36, and having attached thereto one end of the swinging cut-off plate 87. After the shaft 46 has commenced to move, the cam 82, quickly throws the plate 87 across the space between the chamber 36 and the box 38, to cut off the further feeding of the grain into the measure box until the gate 41 has completely opened and closed again. After the shaft 46 has made a complete revolution to secure the opening and closing of the bottom gate in the manner described, one of the gate arms 43 is brought into engagement with the spring hook catch 88, which engages at the under side of the said arm near its connection with one of the crank arms 45 and prevents these arms from dropping downward so as to affect the position of the gate 41, while the box 38 is filling. The said spring hook catch 88, is mounted for adjustment in the supporting plates 89 at one side of the spout 5, and is provided with a threaded shank 90 to receive the nut 91, for properly adjusting the position of said catch with respect to the gate arm which it engages, and one of said gate arms is also adapted to engage at one side of the tally lever 92, pivotally mounted at one side of the lever box 38, and suitably connected with the operating devices of an ordinary grain tally 93, which registers each discharge of the measure box 38, a spring 94 being connected with said tally lever 92, to retract the same when one end of the operating gate arm 43 leaves the same.

The quantity of grain to be accumulated in, and therefore measured by, the box 38, is regulated by means of the measure regulating gate 95, pivoted or hinged at its upper end to one side of the measure box and working therein. An adjusting screw 96, works through one side of the measure box and against the plate 95, to provide means for regulating or graduating the quantity of grain to be measured.

At opposite sides of the measure box 38 are attached the off-standing curved supporting loops 97, which are adapted to be loosely engaged by the hooks 98, extended above the upper end of a detachable delivering spout 99. The detachable delivering spout 99 is provided with an upper funnel end 100 and is disposed at an angle projecting to one side of the measure to provide for delivering the measured grain into wagons or other receptacles, and the loose connection of said spout with the measuring box allows the same to be shifted or turned to directs the grain into different wagons or receptacles.

With the bottom gate 41, closed, the endless bucket or scraper elevator 18, will deliver the grain into the measure box 38, which will commence to fill up, and while the box is filling, the trip lever 66, is in a position which holds the clutch gearing inactive, inasmuch as the rotation of the ratchet hub or disk 49 will simply lift up the dog 52, by breaking its knuckle joint with the clutch lever 57. When the grain reaches the revolving trip paddle 77, the said paddle will be lifted by its blade to raise the trip shaft 75 and lower the trip lever 66 out of engagement with the clutch lever 57. The shaft 46 will now be thrown into gear with the wheel 48, and the gate 41 will be slid open to discharge the contents of the measure box, and will be closed again before the clutch devices are thrown out of gear by the trip lever 66. In the meantime the cut-off plate 87, will be closed and will remain closed until the opening devices for the gate are again thrown out of gear.

From the above it will be seen that I have provided an improved measuring machine possessing many advantages over those already on the market as will be readily appreciated by those skilled in the art, and I will have it understood that changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a portable grain measure, the combination of an independent wheeled truck having an upright supporting frame at one end, and an upright front rest frame at its opposite end, an elevator spout pivotally mounted near its lower end on the truck frame and adapted, when lowered, to rest on said front rest frame, means for temporarily securing the spout within the upright supporting frame in an inclined upright position, and measuring devices connected with the upper end of said spout, substantially as set forth.

2. In a portable grain measure, the combination of an independent wheeled truck having an upright supporting frame at one end, and at its opposite end an upright front rest frame provided with a rest seat at its upper end, an elevator spout having opposite pivot pins near its lower end pivotally secured on the truck frame, a removable cross bar fitted on top of said supporting frame and adapted to be disposed at one side of the spout to support the same temporarily in an inclined upright position, and measuring devices connected with the upper end of said spout, substantially as set forth.

3. In a grain measure, an elevator spout having a fixed offstanding measure box at its upper end, a sliding bottom gate supported to work over the open bottom of said measure box, a transversely arranged crank shaft having end crank arms at its opposite ends, gate arms pivotally connected to said crank arms and to the sliding bottom gate, a gear wheel mounted loosely on one end of the crank shaft and having at one side a ratchet hub, a jointed-lever gear clutch mounted fast on the shaft and having its joint normally closed so as to engage with said ratchet hub, means for automatically tripping or breaking the joint of said gear clutch, and also for allowing the same to automatically close, substantially as set forth.

4. In a grain measure, the combination of an elevator spout having a measure box communicating with its upper end, a sliding bottom gate supported to cover and uncover the bottom of the measure box, a transversely arranged crank shaft having crank arms at its extremities suitably connected with said gate, a gear wheel loosely mounted on the crank shaft at one end and provided with a ratchet hub, a clutch plate mounted fast on the shaft at one side of the ratchet hub, and provided with a stop flange at its upper edge, a clutch dog pivoted at one end to said plate and normally engaged with said ratchet hub, said dog having at its free end a knuckle lug, a bell crank clutch lever pivoted at its angle to the clutch plate and provided at one end with a knuckle notch loosely receiving the lug of the clutch dog, a spring connected to the bell crank clutch lever and to the clutch plate to normally hold the dog in engagement with the ratchet hub, and an automatically operated trip-lever having a trip flange adapted to be thrown in and out of the path of one end of said clutch lever, substantially as set forth.

5. In a grain measure, an elevator spout having an off-standing measure box at its upper end, said measure box having slots in opposite sides thereof, a sliding bottom gate for the measure box, clutch gearing suitably connected with the gate for opening and closing the same, said clutch gearing having a bell crank clutch lever provided with a stop flange at its free extremity, a vertically movable revolving trip paddle arranged to revolve within the upper end of the measure box and having its extremities play up and down in said slots, a rocking frame suitably supported and connected at one end with said vertically movable revolving paddle, a trip lever connected to said rocking frame and having at its free

end a trip flange adapted to be moved into and out of the path of the stop lug of said clutch lever, a keeper to limit the upward movement of the trip lever, and a supporting spring connected with said trip lever, substantially as set forth.

6. In a grain measure, an elevator spout having an off-standing measure box at its upper end, said measure box having slots in opposite sides thereof, an elevator traveling within the spout, a sliding bottom gate for the measure box, clutch gearing suitably connected with the sliding bottom gate, one of the parts of said gearing being a sprocket wheel, a revolving trip paddle arranged within the upper end of the measure box and having its extremities playing in said slots, a shaft journaled at one side of the measure box and having gear wheels at both ends, one of which is suitably geared with the trip paddle shaft to revolve the same, an endless chain arranged to pass over the other one of said gear wheels, the sprocket wheel of the clutch gearing, and driven from the elevator within the spout, a rocking frame turning on the shaft at one side of the measure box and carrying said trip paddle, a spring supported trip lever extended from said rocking frame and adapted to engage and disengage the clutch gearing, and an adjustable flanged guide plate suitably supported to engage at one side of said endless chain, substantially as set forth.

7. In a grain measure, the combination of an elevator spout having an off-standing measure box at its upper end, a sliding bottom gate for the measure box, a rotating crank shaft having end crank-arms, gate arms connected to the crank-arms and to the gate, an adjustable spring-hook catch adapted to engage one of said gate arms, a swinging cut-off plate arranged within the space opening into the measure box and adapted to close and open the same, lever connections with said swinging cut-off plate, one of which lever connections is pivoted at one side of the elevator spout, and a cam disk mounted fast on one end of said crank shaft to engage one end of the said pivotally mounted lever connection, said cam disk having a flattened side substantially as set forth.

8. In a grain measure, an elevator spout having a measuring box at its upper end, opposite off-standing curved supporting loops attached to opposite sides of the measuring box, and a detachable and adjustable delivering spout disposed at an angle and having hooks at its upper flared end adapted to loosely engage over said loops, to admit of a turning or swinging adjustment for the spout substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES A. WEVER.

Witnesses:
J. W. MARRETT,
F. A. MONTGOMERY.