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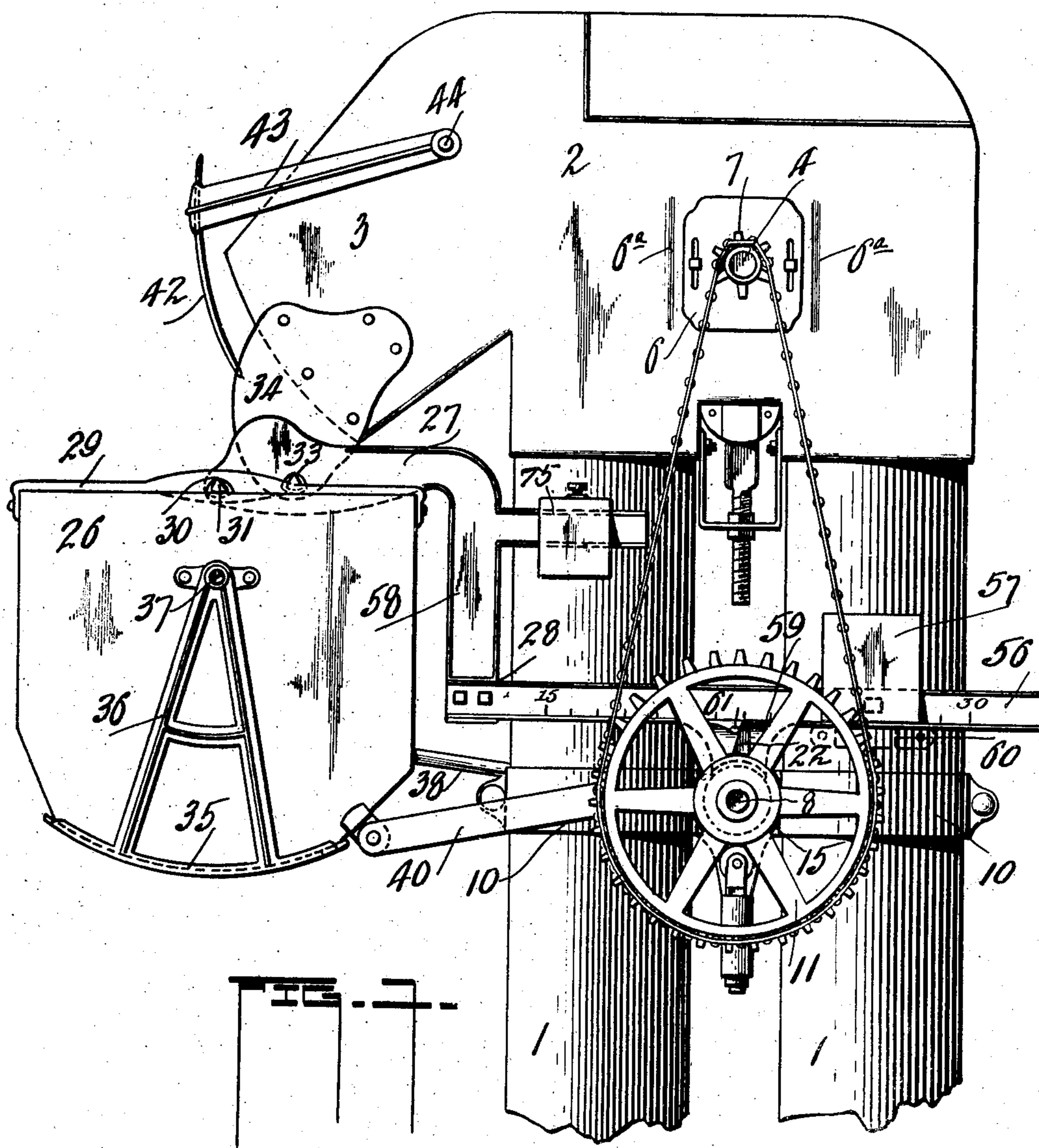
PATENTED AUG. 18, 1908.

B. M. STEELE & C. L. GARDNER.

GRAIN WEIGHING MACHINE.

APPLICATION FILED DEC. 17, 1904.

4 SHEETS—SHEET 1.



Witnesses:
H. V. Gibson.
R. M. McCormick

Inventors,
Benjamin M. Steele,
Charles L. Gardner.
By Chas. H. LaPorte Atty.

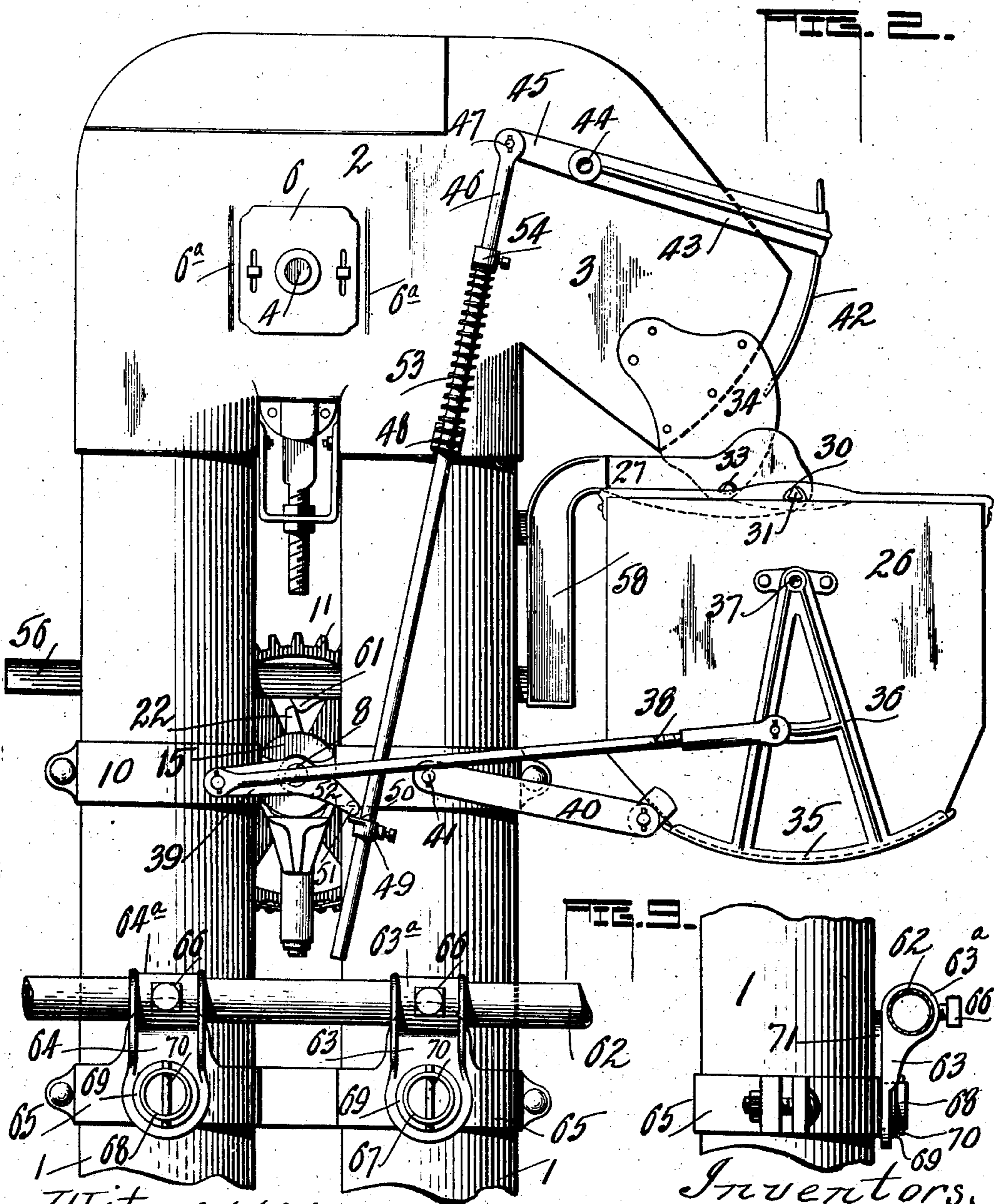
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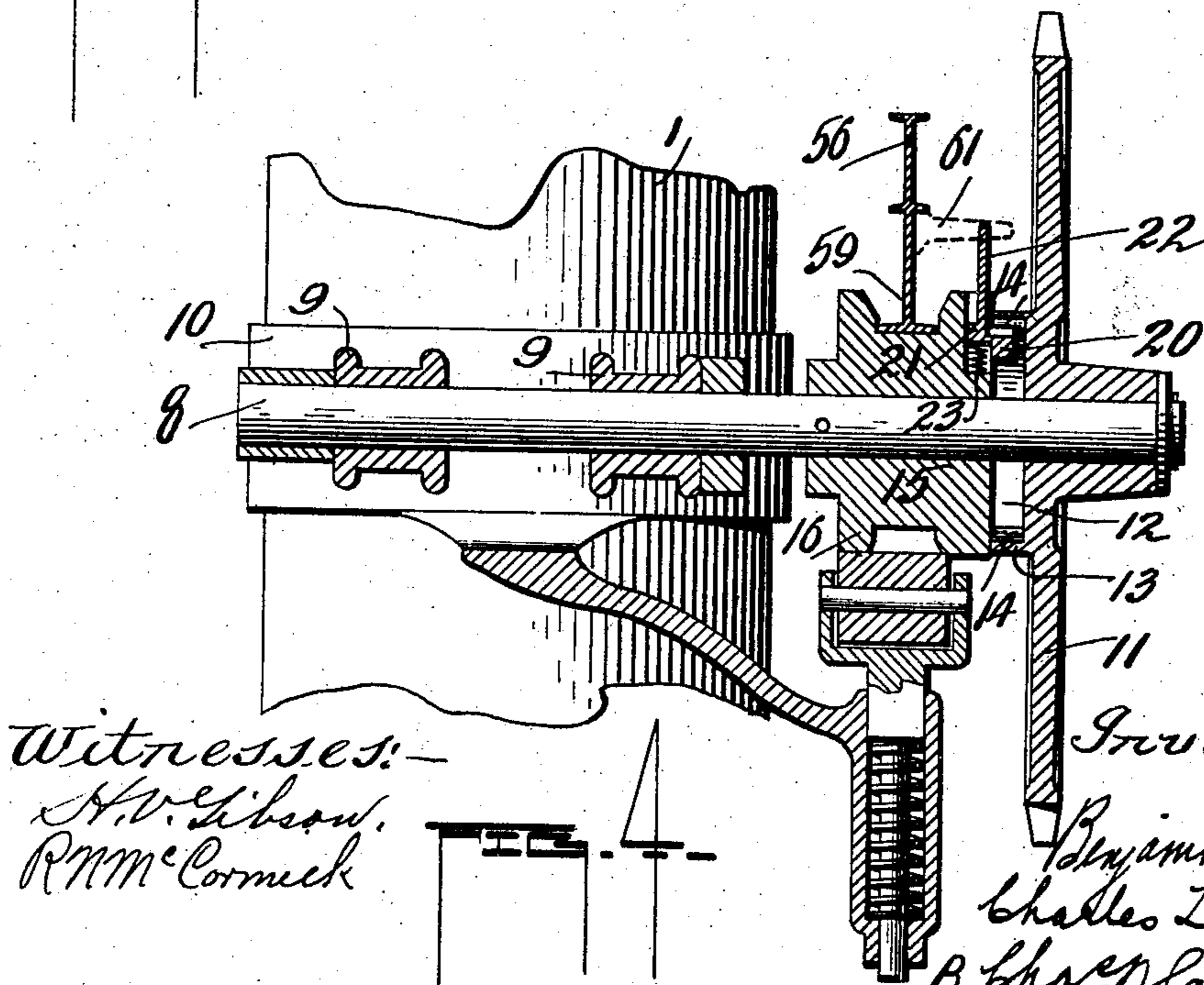
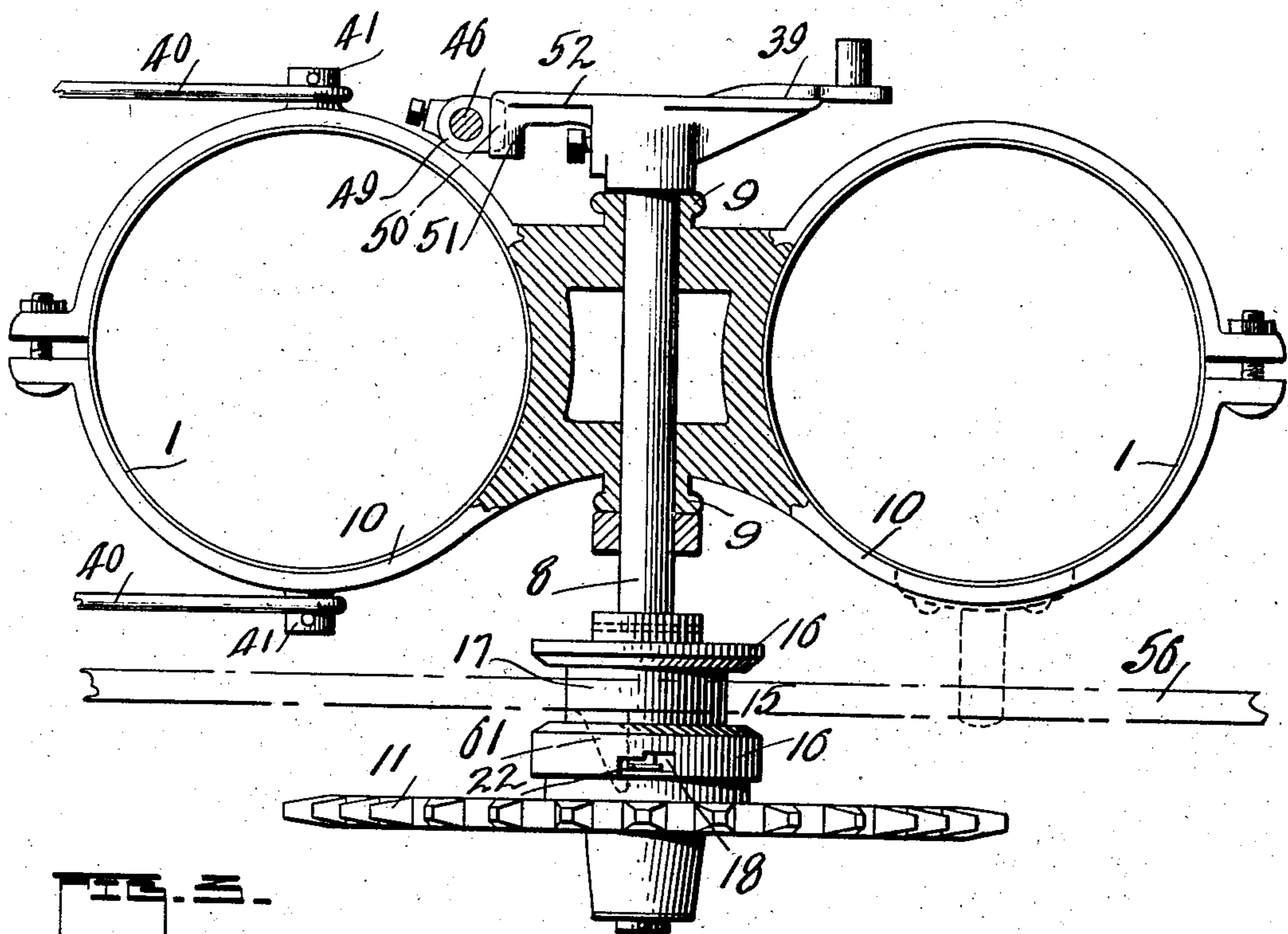
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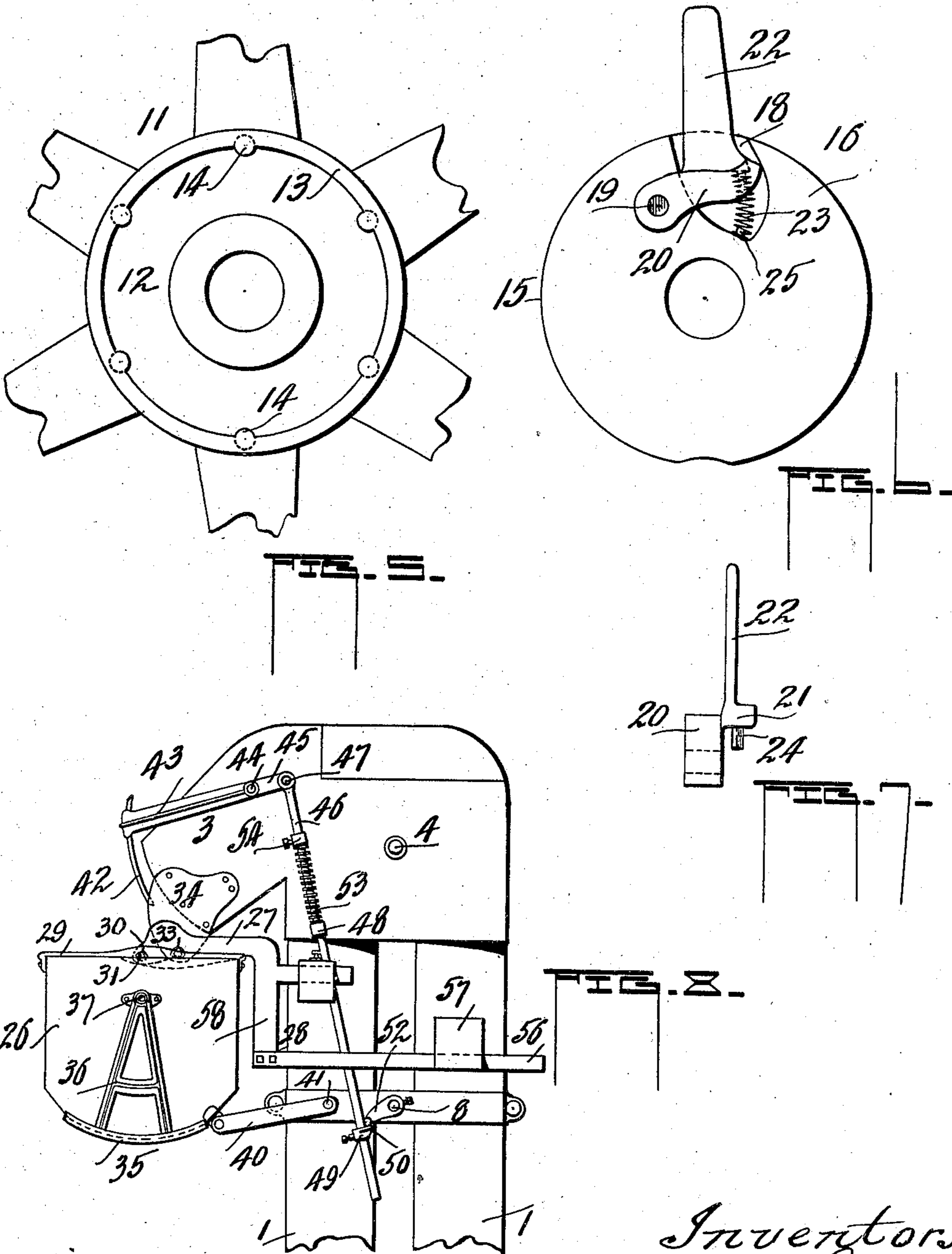
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE

BENJAMIN M. STEELE AND CHARLES L. GARDNER, OF PEORIA, ILLINOIS, ASSIGNORS TO BEN STEELE WEIGHER MANUFACTURING COMPANY, OF PEORIA, ILLINOIS, A CORPORATION OF ILLINOIS.

GRAIN-WEIGHING MACHINE.

No. 896,670.

Specification of Letters Patent.

Patented Aug. 18, 1908.

Application filed December 17, 1904. Serial No. 237,304.

To all whom it may concern:

Be it known that we, BENJAMIN M. STEELE and CHARLES L. GARDNER, citizens of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Grain-Weighing Machines; and we 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 grain-weighing machines, and especially to that class in which grain is delivered from the spout of an elevator tube or trunk into a hopper or receptacle that is counterpoised upon the frame of a scale-beam, in such a manner that when a predetermined amount of grain is delivered to the hopper or receptacle it will descend a short distance and in so doing will bring into action the mechanism whereby the mouth of the elevator-spout is closed and whereby the bottom of the hopper is automatically opened in order to discharge the grain from the hopper, the discharge of the grain from the hopper permitting the weight of the scale-beam to restore the parts to such position that a fresh supply of grain will be delivered from the elevator-spout to the hopper.

One of the objects which we have in view, is to improve and simplify the construction and arrangement of the devices which control the opening and closing of the valve parts or gates of the spout and hopper.

A further object of the invention, is a trip-shaft and a continuously rotated sprocket wheel on said shaft; a member fixedly connected to the shaft in juxtaposition to the hub of the sprocket wheel; a pawl pivotally supported by the member within the hub of the sprocket wheel adapted at intervals to engage portions of the hub of the said wheel to make the wheel fast to the shaft, the control of the said pawl being accomplished through and by means of a spring and the scale-lever.

A further object of the invention is a trip-shaft one terminal of which carries a crank and attached to the crank is a pitman connected at its other end to the valve of the hopper; a finger secured at a suitable place

on the said shaft adapted to normally engage and hold a pitman rod which is connected at its opposite end to the gate of the spout, the engagement of the finger with the pitman retaining the spout gate in a raised position; means for intermittently rotating the said shaft resulting in the disengagement of the finger from the pitman permitting the spout gate to fall and close the opening of the spout and raising the said pitman.

The invention has for its further object a trip-shaft and a continuously driven sprocket wheel carried thereby, the inner hub of the sprocket being provided with a series of internally arranged, lugs or teeth suitably spaced around the said hub; a member fixedly carried by the said shaft in juxtaposition to the inner face of the hub of the sprocket wheel the face thereof provided with a suitable depression or cut-out portion; a pawl pivotally attached to the face of the member with its free end operatively carried within the hub of the sprocket wheel and adapted to be engaged by the lugs or teeth of the said sprocket wheel to connect and rotate the shaft with the sprocket wheel, the said pawl formed with or having attached thereto an arm or finger operating in the cut-out face of the said member; and a scale-beam adapted to support a hopper, and its free end arranged to engage the finger or arm of the pawl for the purpose of disconnecting the same and the trip-shaft from the sprocket.

A further object, is the manner of supporting or sustaining the tubes of the elevator in an upright position, which includes a pivotal support whereby the elevator may be swung into a position approximately longitudinally with its support.

The invention also consists in the various features of improvement hereinafter described, claimed in the appended claims and illustrated in the accompanying drawings, in which:—

Figure 1 is a view in elevation of the upper part of a grain-elevator having our invention applied thereto; Fig. 2 is a view in side elevation from the opposite side of the upper part of the elevator; Fig. 3 is an enlarged view, in horizontal section, through the tubes above the operative parts on the trip-shaft to show a plan of the same; Fig. 4 is an enlarged view, in vertical section, showing

the operative parts of the trip-shaft and relative arrangement of the same; Fig. 5 is an enlarged elevation showing the upper face of the hub of the sprocket wheel and the lugs or teeth thereof; Fig. 6 is an enlarged elevation showing the face of the member which is fixed to the trip-shaft, and the pawl carried thereby adapted to engage the teeth or lugs of the sprocket wheel; Fig. 7 is an edge view, detached, of the pawl and the finger or arm attached thereto; Fig. 8 is a view in elevation, greatly reduced, of the upper part of the grain elevator showing the same devices which control the spout gate seen in Fig. 2, but upon the side of the machine illustrated in Fig. 1; Fig. 9 is a detail in side elevation showing the device for supporting the tubes.

Referring to the drawings 1 denotes elevator tubes of which there are two arranged parallel and having their ends fastened to a suitable head section 2, which is provided with an outlet spout 3, through which grain escapes as it is raised in the elevator tubes. The tubes are adapted to be sustained in an upright position by securing the same to a rod or gas-pipe indicated as 62, through connections of brackets 63 and 64 which are attached in a manner to be described to bands or straps 65 secured to the tubes, the further description showing how the elevator tubes may be swung on one of such brackets.

4 denotes a cross-axle or shaft extending through the head section 2, over which a suitable elevator (not shown) is adapted to travel for elevating material to be discharged through the spout 3. This shaft is journaled in the slotted bearing plates 6 adjustably secured by bolts, as seen, at opposite sides of the said head. The bearing plates 6 are secured to the head in depressed portions thereof, indicated by shaded lines as 6^a for the purpose of retaining the said plates in the positions shown, in the event that the securing bolts should work loose. The shaft is continuously driven through connection with some suitable power (not shown), and upon one end of the said shaft is carried the sprocket-pinion 7, which revolves with the shaft and is adapted to impart rotation to a trip-shaft in a manner to be described.

Beneath the head 2 and transversely arranged between the elevator-tubes is a horizontal counter or trip-shaft 8, adapted to be intermittently actuated. The said shaft is supported and rotatable in the bearings 9 formed integral with a pair of circular formed straps or brackets 10 secured to the opposite tubes in the manner shown. On one end of the trip-shaft 8 is loosely carried and adapted to be continuously rotated a driven sprocket wheel 11, which is connected with the continuously rotated pinion 7 on the shaft 4, see Fig. 1. The inner hub portion of the sprocket wheel is of suitable thickness and is pro-

vided with the concentric depression or cut out portion 12 forming the annular flange portion 13 of the hub, the inner face of which at intervals is provided with the teeth or lugs 14, serving a purpose to be described.

Secured on the trip-shaft 8 with its outer face in juxtaposition to the face of the hub of the sprocket wheel, is a member 15, preferably of the form herein, but the same may for various reasons be of other forms and serve the purposes herein with equally as good results. The member as here shown is provided with flanges 16 between which the body of the member is shown having the annular depressed portion 17. At a suitable point in the outer face of the member 15 is provided the cut-out portion, depression or seat 18. Pivotaly secured at a point 19 on the face of the member 15 is a pawl 20, which, by reason of the faces of the member and hub of the sprocket wheel being in juxtaposition will extend into and is movably carried in the depression or cut-out portion 12 of the hub of said sprocket; the free end of the pawl crosses the cut-out portion 18 in the member and is provided with an off-set or lug 21 movably carried in the said cut-out portion 18, and extending up from the body of the pawl and the lug thereof, which may be attached thereto or be integral therewith is a plate, arm or finger 22 which extends up and beyond the peripheral face of the said member, for a purpose to be described. For the purpose of holding or forcing the pawl 20 in a raised position we have provided the coil spring 23 which is carried in the cut-out portion 18 of the member, one end bearing against the lug 21 around a short stem 24 depending from the lug, and the lower end thereof bearing against the wall of the cut-out portion 18 and around a stem 25, best seen in Fig. 6 of the drawings.

During the rotation of the sprocket wheel 11, if the pawl 20 is not held in a depressed position one of the lugs or teeth 14 of the hub of said sprocket wheel, will engage with the end of the said pawl; however, the said shaft is at predetermined intervals retained in a position of rest, through the engagement of a member (to be described) with the arm or finger 22 which holds the same in such a position that the free end of the pawl will be depressed, permitting the sprocket wheel to be rotated without its lugs or teeth 14 engaging with the pawl, thereby holding the shaft in a position of rest, as described.

26 denotes a weigher-bucket or hopper which is hung beneath the outlet spout 3 upon the outer ends of the bifurcated arms 27 of a scale-lever 28. The support for the hopper being the side rails 29 thereof having fulcrum seats 30 upon the knife edge supports 31 attached to or forming a part of the arms 27 of the scale-lever. The arms 27 of the scale-lever are fulcrumed at points 33 inte-

gral with oppositely depending ears 34 attached to the outlet spout 3 of the head section 2. A valve 35 curved to conform to the bucket or hopper side is sustained by hangers 36 at points 37 and serves to close the bottom of the bucket or hopper. To one of the hangers 36 is pivotally joined one end of a pitman 38 and having its opposite end engaging the pin of a crank arm 39, which is secured to one end of the trip-shaft 8. Links 40 pivoted at their forward ends to the bucket 26 and their opposite ends engaging studs 41 secured to one of the tubes 1 prevents the bucket from swaying as it moves up and down.

42 denotes a valve or gate supported by the hanger 43 pivoted at 44 on the outside of the head section 2 and serves at intervals to close the exit spout 3 of the head section. One of said hangers is provided, preferably, with an extension 45 and to this extension of said hanger is attached a pitman or rod, which is indicated as 46, and in the preferred construction is carried on that side of the head section upon which the crank 39 is attached to the trip shaft. Said pitman or rod has its upper end pivotally connected at 47 to the extension aforesaid of the hanger and the body thereof is shown passing through a guide plate or bracket 48 attached to the side of the head 2, with the lower end portion thereof in close proximity to the trip-shaft, as seen in Fig. 2, and at a suitable point there is secured to the pitman a collar or equivalent member 49 having the extension 50. In Fig. 2 the extension of the collar 49 is shown in engagement with an inwardly projecting stud or finger 51 from the outer end of a short arm, plate or crank 52 attached to the trip-shaft 8, preferably forming an extension of the crank arm 39 as shown.

In the position shown in the figures, the spout gate is open and the hopper valve is closed. Upon the operation of the trip-shaft, the hopper valve will be opened through the action of the crank arm 39 and the pitman 38 and simultaneously with the operation of the hopper valve the spout gate will close instantly. The rotation of the trip-shaft will cause the release and disengagement of the stud or finger 51 of the arm 52 from the collar 49 on the pitman or rod 46, when the gate 42 will drop, swinging on the pivot 44 and closing over the opening of the spout 3. The parts having the relation shown in the drawings, especially Fig. 2, the closing of the valve will cause the pitman to be raised, placing the collar 49 thereon in a position that during the continued rotation of the trip shaft and immediately upon the closing of the hopper valve, the spout gate will be opened, through the reengagement of the stud or finger 51 of the arm 52 with the collar 49 on the pitman, moving said pitman to a position such as will open the spout gate,

when the clutch parts will be released and the trip-shaft brought to a position of rest. To insure the instantaneous closing of the spout gate, we have provided a spring 53, preferably encircling the pitman 46 between the guide 48 and a collar 54 attached to said pitman, operating in the manner apparent in the figures.

In Fig. 2 the arm or finger 52 is shown made a part of or attached to the crank arm 39, also disposing the pitman 46 and its parts on the side of the machine to be controlled by the said finger 52. However, it is to be understood no limitation is placed on the manner of operating the pitman 46 nor the detail construction and disposition of the said parts, for in Fig. 8 the pitman 46 is shown placed on the side of the machine where the clutch devices are operated for actuating the trip-shaft, and the finger 52 is made independently of the crank arm 39 and attached to the shaft, as shown, in which position the pitman 46 and the spout gate may be worked equally as well as where the same are operated as seen in Fig. 2, of the drawings.

Referring again to the scale-lever 28 the same is formed with the graduated scale-beam portion 56 extending transversely beside the tubes intermediately the same and the upper half of the sprocket wheel 11 and carries the slidably arranged weight 57. The end of the beam portion 56 adjacent to the hopper is connected with the lower end of the vertical portion 58 of the scale-lever which is here shown to be integral with the arms 27. The lever is shown provided with a counterbalancing weight 75, but no particular reference is made thereto as no claim for the same is made herein.

The beam portion 56 of the scale-lever in its normal position lies in a substantially horizontal position and preferably above the annular depressed portion 17 of the member 15 as seen in Figs. 1, 3 and 4; it is adapted that in its normal position the beam rests on the member 15 through a rest or extension 59 thereof, which conforms at its lower portion to the surface of the member 15. While we have shown the beam in its normal position resting on the member 15, it may be found convenient as well as advisable to change the construction of the member 15 and in this event the beam would rest on a support 60 shown in dotted lines attached to one of the tubes 1.

Extending outwardly from the body of the rest 59 or the body portion of the beam, is a finger or arm 61, which, when the beam is in its position of rest, is in the path of the finger or arm 22 of the pawl 20 and is adapted to engage the same for the purpose of releasing the pawl from the teeth of the sprocket wheel and thereby release the sprocket from the trip-shaft.

In Fig. 1 the position of the parts are such that the trip-shaft is at rest, and in this position the hopper is filled with grain discharged from the spout 3. As soon as the hopper 5 overbalances the scale-lever it will descend causing the scale-lever to oscillate on its pivot 32 raising the beam portion 56 and release the finger 61 from engagement with the arm 22 of the pawl 20. Immediately upon 10 the release of the arm 22, the free end of the pawl 20 will be raised or forced up into the path of the teeth or lugs 14 of the sprocket wheel, by means of the spring 23 described, which will lock the sprocket wheel to the 15 member 15 and the trip-shaft, causing the same to rotate in unison therewith, opening the valve of the hopper through the movement of the crank 39 attached to one end of the trip-shaft and the pitman 38 connecting 20 the crank and valve 35 of the hopper. The spout gate 42, as has been described, upon the dropping of the hopper and starting of rotation of the trip-shaft is adapted to be closed instantly. As the trip-shaft is ro- 25 tated the finger 52 moves downwardly in an arc of a circle giving a slight downward movement until the finger 52 rides off of the collar 49, when the release of the pitman 46 will allow the weight of the valve or gate 42 to drop assisted by the spring 53, closing the 30 spout and raising the pitman 46 connected therewith. As soon as the grain is discharged from the hopper and the scale beam overbalances the weight of the hopper, the 35 hopper is raised and the beam lowered to its position of rest. The continued rotation of the trip-shaft bringing the free end of the finger 52 in engagement with the collar 49 drawing the pitman 46 down into the posi- 40 tion seen in Fig. 2 and opening the spout by raising the valve 42. The timing of the pitman 38 being such that the hopper valve is closed before the spout gate 42 is opened to again permit the grain to discharge into the 45 hopper. As soon as the arm 22 of the pawl 20 engages the finger 61 of the scale-beam the trip-shaft is disconnected from the sprocket wheel, substantially as before set forth and believed to be understood.

50 The drawings disclose a chain tightener for the shaft 4; also a brake-controlling device for the trip-shaft, but as they form no part of this invention they are neither described in detail or claimed.

55 Referring again to the support of the elevator tubes 1 to the rod or gas-pipe 62, attention is directed particularly to Figs. 2 and 9. The gas-pipe, as is well understood by those familiar with weigher construction, is 60 adapted to be supported or attached in a suitable manner to the side of a separator and at a desirable height thereon, so that the position of the straps or bands 65 on the tubes will have to correspond. The brackets are 65 formed with the tubular heads 63^a and 64^a

which are slipped over the gas-pipe 62 and when in proper position are fixed by means of the set-screws or bolts 66. The brackets further comprise the depending plate extension which have suitable sized openings and 70 by means of such openings the plate extensions of the brackets are slipped over, or studded projections 67 and 68 of the brackets 63 and 64 are slipped through such openings and then secured in place by means of the 75 washers 69 and pins 70 as seen in the figures referred to. As a backing for the brackets the bands are provided with the extended plate extensions 71, serving to stiffen the support to prevent wobbling. By the use of the 80 two brackets 63 and 64 it will be seen a very rigid support is provided for sustaining the elevator in an upright position. It is aimed to have one of the brackets, preferably 63 serve as a pivot upon which the elevator may 85 be swung to lower the head thereof, to facilitate in placing the separator supporting the elevator in a barn or shed, where the opening is not high enough to admit the elevator in its raised position and where it has been nec- 90 essary heretofore to detach the elevator, or hinge the tubes to fold back upon themselves. To accomplish this the bracket 64 is loosened from the stud 68 by slipping the end of the 95 bracket off the stud, when the lower end of the elevation may be detached from the feed thereto, and then swung on the stud 67, all of which it is believed will be understood, the stud 67 rotating in the opening in the bracket 63. 100

It is manifest that the precise details of construction may be varied without departing from the spirit of the invention and that features of the invention may be employed without its adoption as an entirety. 105

Having thus fully described our invention, what we claim and desire to secure by Letters Patents, is:—

1. The mechanism for controlling the trip-shaft of a weigher, consisting of a trip-shaft, 110 a continuously driven sprocket loosely carried on one terminal thereof having a series of internally arranged lugs in its hub, a member fixed on the said shaft, an oscillatory finger pivotally attached to the member and 115 projecting without the same its free end adapted to be intermittently engaged by the lugs on the sprocket, and means for controlling the finger aforesaid.

2. The mechanism for controlling the trip- 120 shaft of a weigher, consisting of a trip-shaft, a continuously driven sprocket loosely carried on one terminal thereof, a series of engaging lugs carried thereby, a member fixedly 125 attached to the said shaft, an oscillatory finger pivotally attached to the said shaft and adapted to have an intermittent engagement with the lugs aforesaid, an extension from the said finger projecting without the said member, and means adapted to engage with 130

the extension of the finger at predetermined intervals for controlling the engagement of said finger and lugs aforesaid.

3. The mechanism for controlling the trip-shaft of a weigher, consisting of a trip-shaft, a continuously driven sprocket loosely carried on one terminal thereof its hub provided with a concentric groove, a series of lugs disposed on the inner face of the flange forming the outer ring of said groove, a member fixedly attached to the said shaft, a finger pivotally attached to the member projecting without the same and operatively carried in the groove of the hub, adapted at intervals to be engaged by one of the lugs aforesaid, and means for controlling the said finger.

4. The mechanism for controlling the trip-shaft of a weigher, consisting of a trip-shaft, a continuously driven sprocket loosely carried on one terminal thereof, a series of lugs disposed on said sprocket concentric to the axis thereof, a member fixedly attached to the said shaft and provided with a depression in its face, a finger pivotally attached to the member its free end movable across the depression thereof, and adapted to have an intermittent engagement with the lugs of the sprocket, an extension from the finger extending into and up out through the depression of the member, a scale-beam adapted to engage the extension of the finger at predetermined intervals to disengage the finger from the lugs, and yielding means for forcing the end of the finger into the path of the lugs when released by the scale-beam.

5. In a weigher, the combination of the spout gate, a trip-shaft, means for intermittently actuating said shaft, a hanger for the said spout gate, a rod pivotally attached to the aforesaid hanger and extending down into close proximity to the trip-shaft, an arm on the shaft adapted to engage and hold the said rod in a depressed position for raising the spout gate, the actuation of the shaft releasing the arm from the rod allowing the gate to fall and close the spout.

6. In a weigher, the combination of the spout gate, a trip-shaft, means for intermittently actuating said shaft, a hanger for the said spout gate, a rod connected with said hanger and extending down in close proximity to the said shaft, a collar attached to the rod, an arm secured to the said shaft adapted at intervals to engage the collar of the rod for holding the rod in a depressed position and the spout gate raised, the actuation of the said shaft causing the arm to ride off of the collar aforesaid releasing the rod which is automatically raised by the falling of the gate for closing the said spout.

7. In a weigher, the combination of the spout gate, a trip-shaft, means for intermittently actuating said shaft, a hanger for the said spout gate, a rod connected with said hanger and depending therefrom, an arm at-

tached to the shaft adapted at intervals to be rotated therewith and when at rest to normally engage and hold the rod depressed and the spout gate raised, and yielding means for raising the said rod to close the gate upon the actuation of the shaft which disengages the arm from the rod.

8. In a weigher, the combination of a spout, a gate for closing the spout, the same carried by hangers one of which is provided with an extension, a trip-shaft, means for intermittently actuating the said shaft, a rod pivotally attached to the extension of the hanger aforesaid and passing down through a guide has its lower end carried in proximity to one end of the trip-shaft, a finger carried by the said shaft adapted at intervals to engage and hold the said rod depressed and the gate raised, the rotation of the shaft releasing the said rod when the gate automatically drops raising the rod, the continued rotation of the said shaft bringing the finger in engagement with the rod to depress the same and raise the said gate.

9. In a weigher, the combination of a spout, a gate for closing the said spout, the same carried by hangers one of which is provided with an extension, a trip-shaft, means for intermittently actuating the said shaft, a rod pivotally attached to the extension of the hanger, a guide through which the rod is carried, a collar secured to the rod at or near its lower end, a finger carried on the trip-shaft adapted during each revolution of the said shaft to engage the collar on the rod to depress the same and raise the valve, and means for raising the rod and thereby dropping the valve when the finger is released from the said collar in the rotation of the trip-shaft.

10. In a weigher, the combination of a discharge spout, having a gate, a weighing hopper having a valve, a trip-shaft, connections between the said shaft the gate and valve, a continuously driven sprocket loosely carried on one terminal of the said shaft, the inner hub of the said sprocket provided with a series of engaging devices, a member fixedly attached to the shaft, a lug pivotally attached to the member, a spring for intermittently throwing the lug into engagement with the aforesaid devices of the sprocket wheel, a scale-beam supporting the hopper, and means projecting from the said beam adapted to normally engage the said lug and disengage the same from the devices of the sprocket wheel.

11. In a weigher, the combination of a discharge spout, having a gate, a weighing hopper having a valve, a trip-shaft, connections between the said shaft the gate and valve, a continuously driven sprocket wheel loosely carried on one terminal of the said shaft, the inner hub of the said sprocket provided with a series of engaging devices, a member fix-

edly attached to the said shaft and provided with a cut-out portion, a finger pivoted to the face of the member and adapted to have its free end intermittently engage the devices of the sprocket wheel, an extension of the finger operating in the cut-out portion of the member and extending out through the same, a scale-beam supporting the hopper, and means attached to the said beam adapted to normally engage the extension of the finger aforesaid and disconnect the said finger from the devices of the sprocket wheel.

12. In a weigher, the combination of a spout having a gate, a hopper having a valve, a trip-shaft, a pitman connecting the trip-shaft and hopper valve, a rod connected with the spout gate and extending into close proximity to the said shaft, means carried by the said shaft adapted at intervals to engage the rod to depress the same and raise the spout gate, the rotation of the shaft releasing the rod when the gate automatically drops and raises the said rod, a sprocket wheel adapted to be continuously driven and loosely carried on the said shaft, a member fixed to the shaft, a finger carried by the member adapted to have an intermittent engagement with the sprocket wheel to connect the same to the member and trip-shaft, a scale-beam supporting the hopper, and an extension of the said beam adapted to engage the finger when the beam is lowered and disconnect the same from the sprocket wheel.

13. In a device of the character described, the combination of a pivoted valve, a trip-shaft, a rod connected with the valve and having its lower end in proximity to said shaft, an arm carried on the trip-shaft, means on the rod adapted to be engaged by the arm aforesaid and holding said valve in a raised position, the release of the arm from the means on the rod permitting the said valve to drop.

14. In a device of the character described, the combination with a discharge spout of an elevator, a valve for closing said spout and pivotally connected thereto, a trip shaft, an arm carried on said shaft, and means connected with said valve adapted to be engaged by the arm aforesaid for holding the valve elevated and when disengaged therefrom to permit the valve to drop.

15. In a device of the character described, the combination with a discharge spout of an elevator, a valve adapted for closing the spout and pivoted thereto, a trip-shaft, a member connected thereto and projecting therefrom, a rod connected with the valve and having its lower end disposed adjacent to said shaft, and a collar on said rod adapted in the movement of the said shaft to be engaged by the member thereof for elevating the valve and when the said shaft assumes a position of rest to retain the valve elevated,

and upon the movement of the shaft to release the member thereof from the said collar to permit the valve to drop and also elevate the said rod.

16. In a device of the character described, the combination with the discharge spout of an elevator, a valve for closing said spout, hangers supporting the valve and pivotally connected to said spout, one of said hangers having an extension beyond the pivot thereof, a trip-shaft, an arm connected with said shaft, and means connected with the extension of the hanger aforesaid and adapted to be intermittently engaged by the arm of the shaft for holding the valve in an open position, the release of the arm from said means permitting the valve to close the spout.

17. In a device of the character described, the combination with the discharge spout of an elevator, a valve for closing said spout, hangers supporting the valve and pivotally connected with the spout, a trip-shaft, an arm carried by said shaft, a rod connected with one of the hangers aforesaid and having its lower end disposed in proximity to the trip-shaft, means on the rod adapted to be intermittently engaged by the arm for depressing the rod and opening the valve, and yielding means for insuring the closing of said valve and the elevation of said rod upon the release of the arm from the means on the rod.

18. In a device of the character described, the combination of a pivoted valve, a trip-shaft, a rod connected with the valve and extending into close proximity to said shaft, connections with the shaft capable of having an intermittent engagement with the rod for holding the valve normally opened, and a spring influencing the action of the rod to close the valve upon the operation of the trip shaft.

19. In a device of the character described, the combination with the discharge spout of an elevator, a valve pivotally connected through hanger arms to said spout and adapted to close the same, an intermittently operated trip-shaft, a rod pivoted at its upper end to one of the hangers supporting said valve and its lower end disconnected, means secured to the trip-shaft adapted to have a releasable engagement with said rod, and a spring in operative connection with said rod capable of acting to close the valve upon the operation of the trip-shaft.

20. In an automatic weigher, the combination with a weigher bucket having a valve, a delivery spout and a valve therefor, a trip-shaft, and connections between one end of said shaft and said bucket valve, of mechanism for operating the valve of the delivery spout, comprising a rotary part connected with the trip-shaft upon that side of the weigher where connection is made between

said shaft and said bucket valve, a rod pivoted at one end to the spout gate and capable of being engaged by said rotary part for holding the valve normally opened, and
5 means in operative connection with said rod for closing said valve upon the operation of said trip-shaft and rotation of said rotary part.

In testimony whereof we affix our signatures, in presence of two witnesses.

BENJAMIN M. STEELE.
CHARLES L. GARDNER.

Witnesses:

CHAS. W. LA PORTE,
ROBT. N. McCORMICK.