No. 607,479. Patented July 19, 1898.

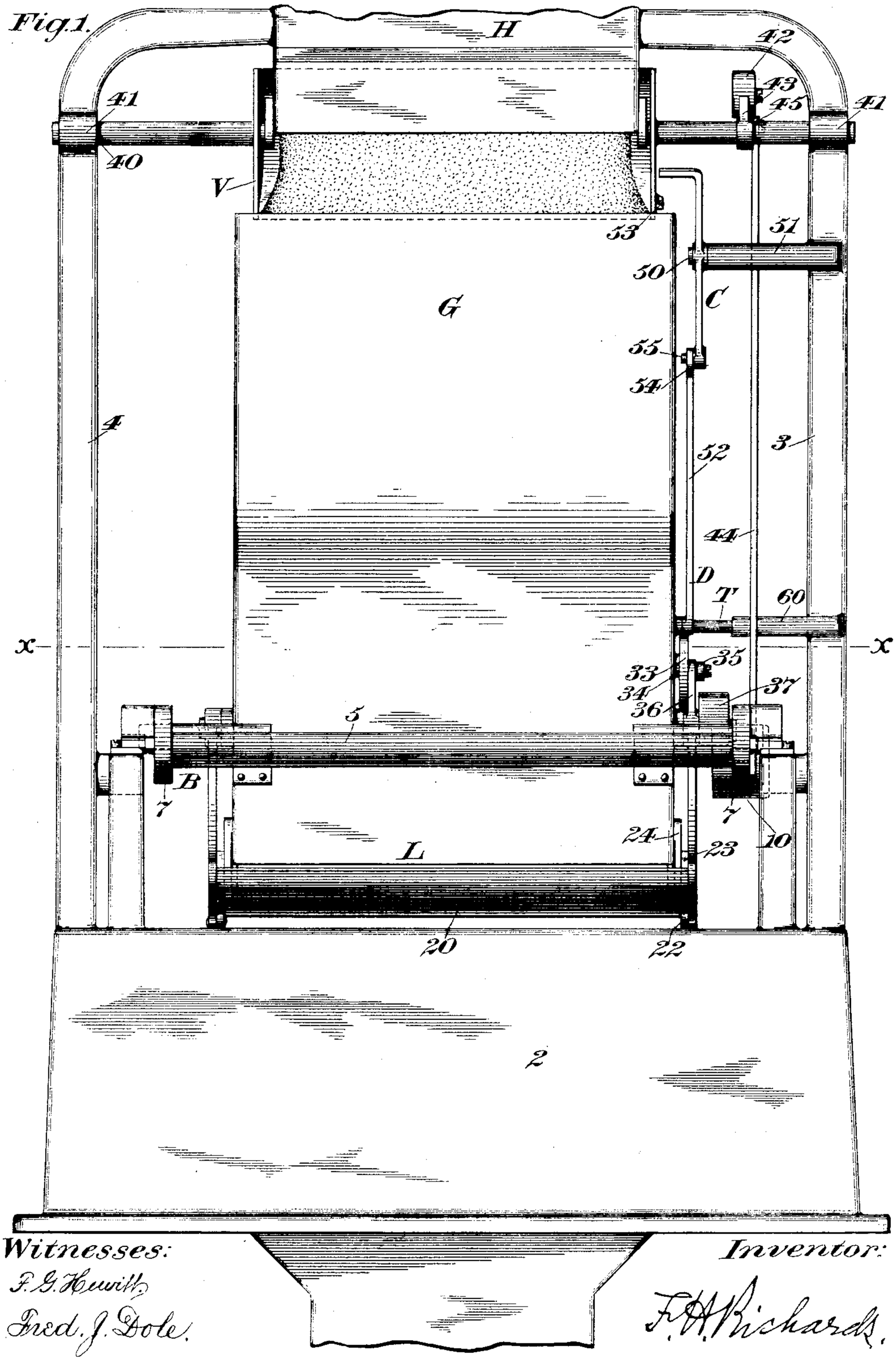
F. H. RICHARDS.

WEIGHING MACHINE.

(Application filed Nov. 6, 1897.)

(No Model.) 5 Sheets—Sheet 1.

Fig. 1.



Witnesses:
F. G. Hewitt
Fred. J. Dole.

Inventor:
F. H. Richards.

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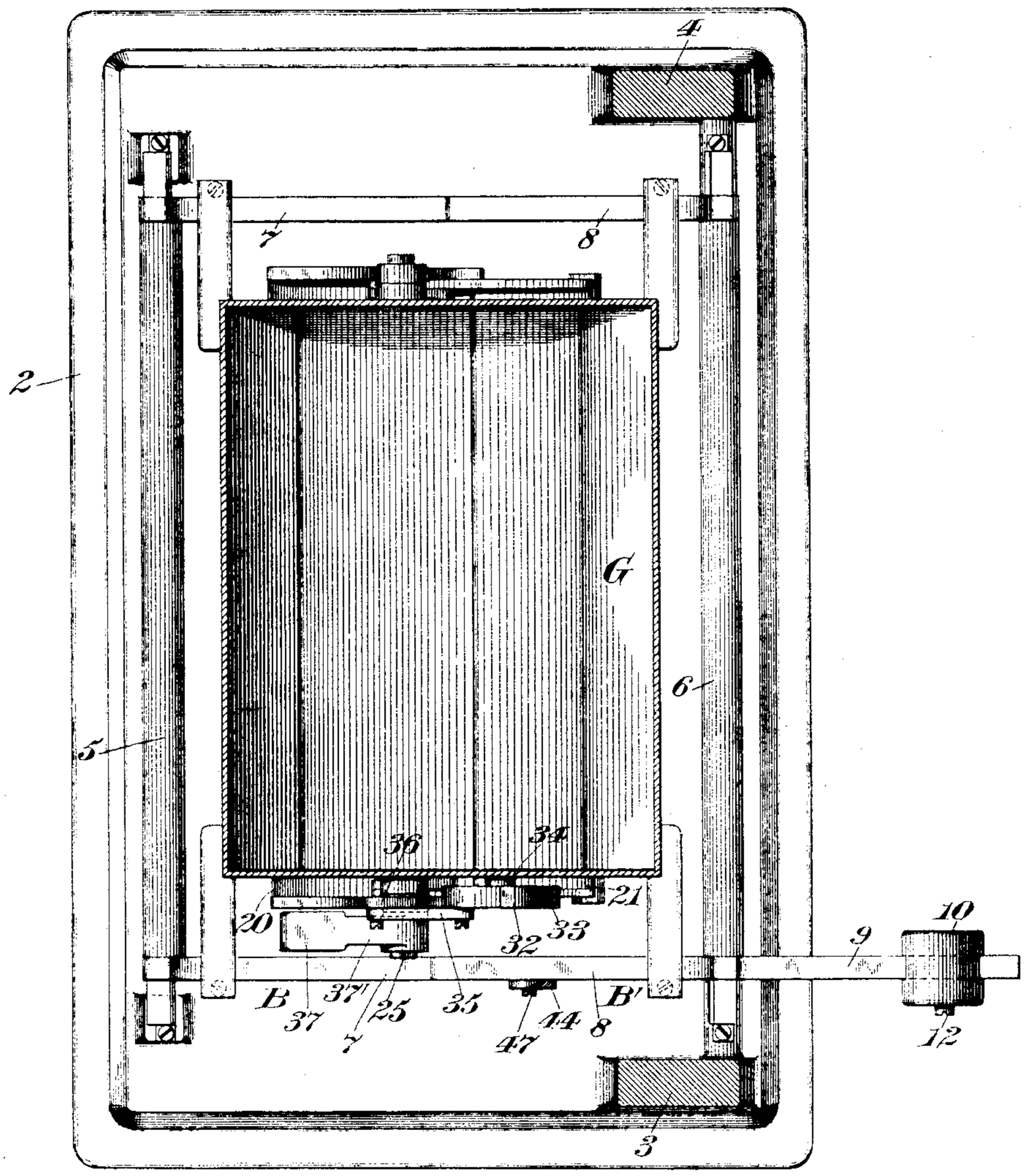
Fig. 2.



Witnesses:
F. G. Hewitt,
Fred. J. Dole.

Inventor:
F. H. Richards.

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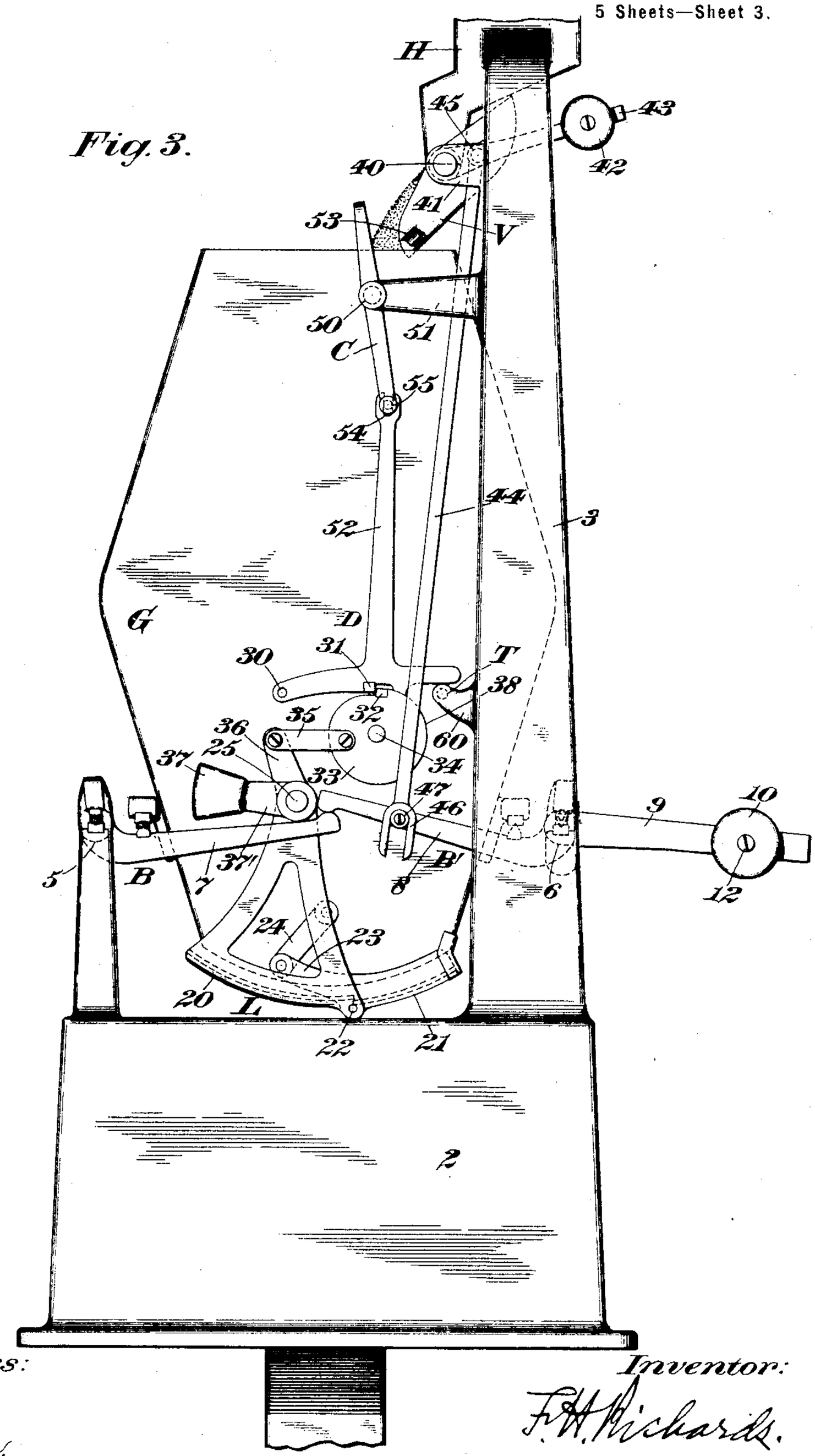
(No Model.) 5 Sheets—Sheet 3.

Fig. 3.



Witnesses:
F. G. Lewith,
Fred. J. Dole,

Inventor:
F. H. Richards.

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F. H. RICHARDS.

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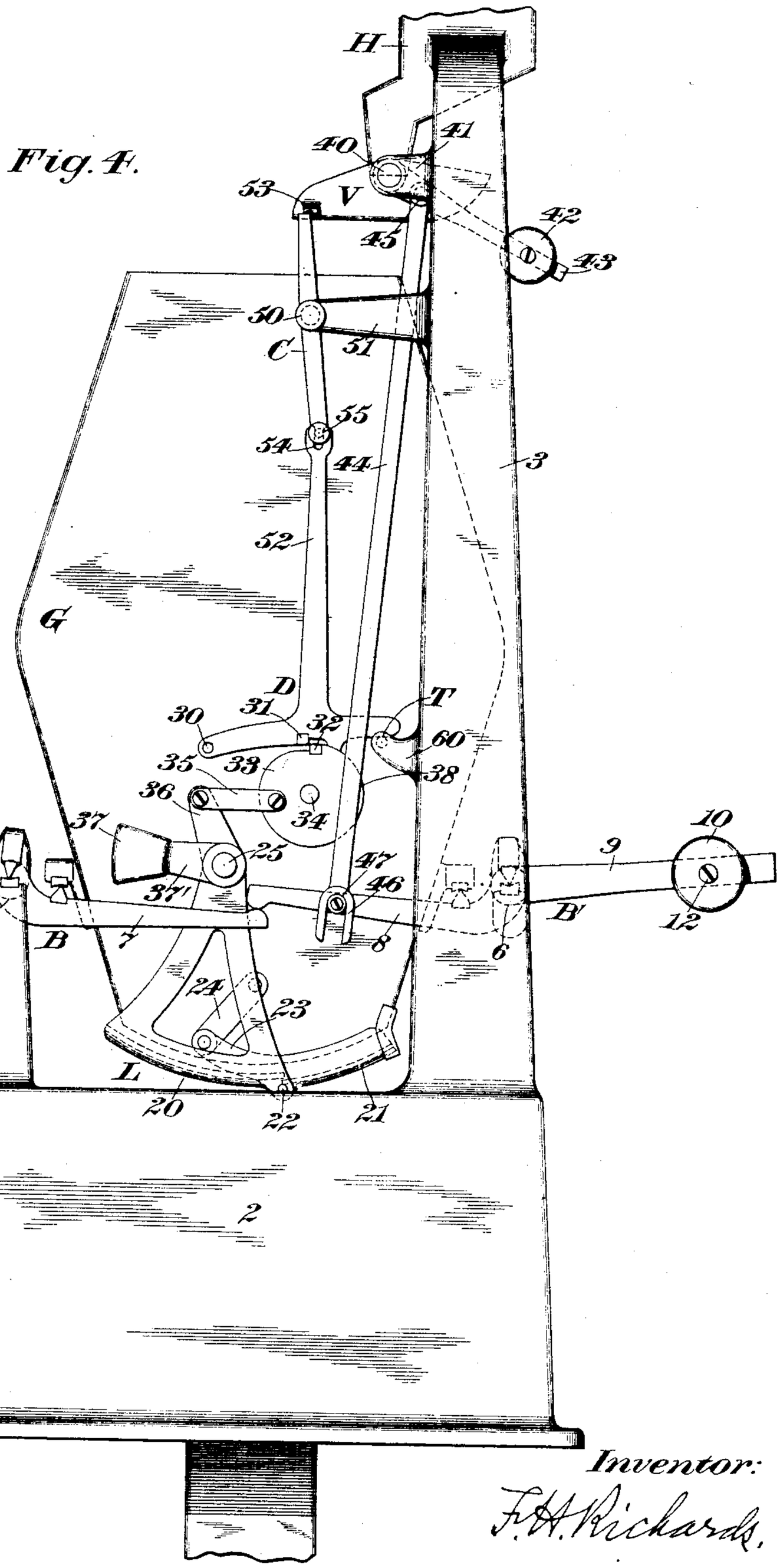
(Application filed Nov. 6, 1897.)

(No Model.)

5 Sheets—Sheet 4.

Fig. 4.



Witnesses:
F. G. Hewitt.
Fred. J. Dole.

Inventor:
F. H. Richards.

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F. H. RICHARDS.

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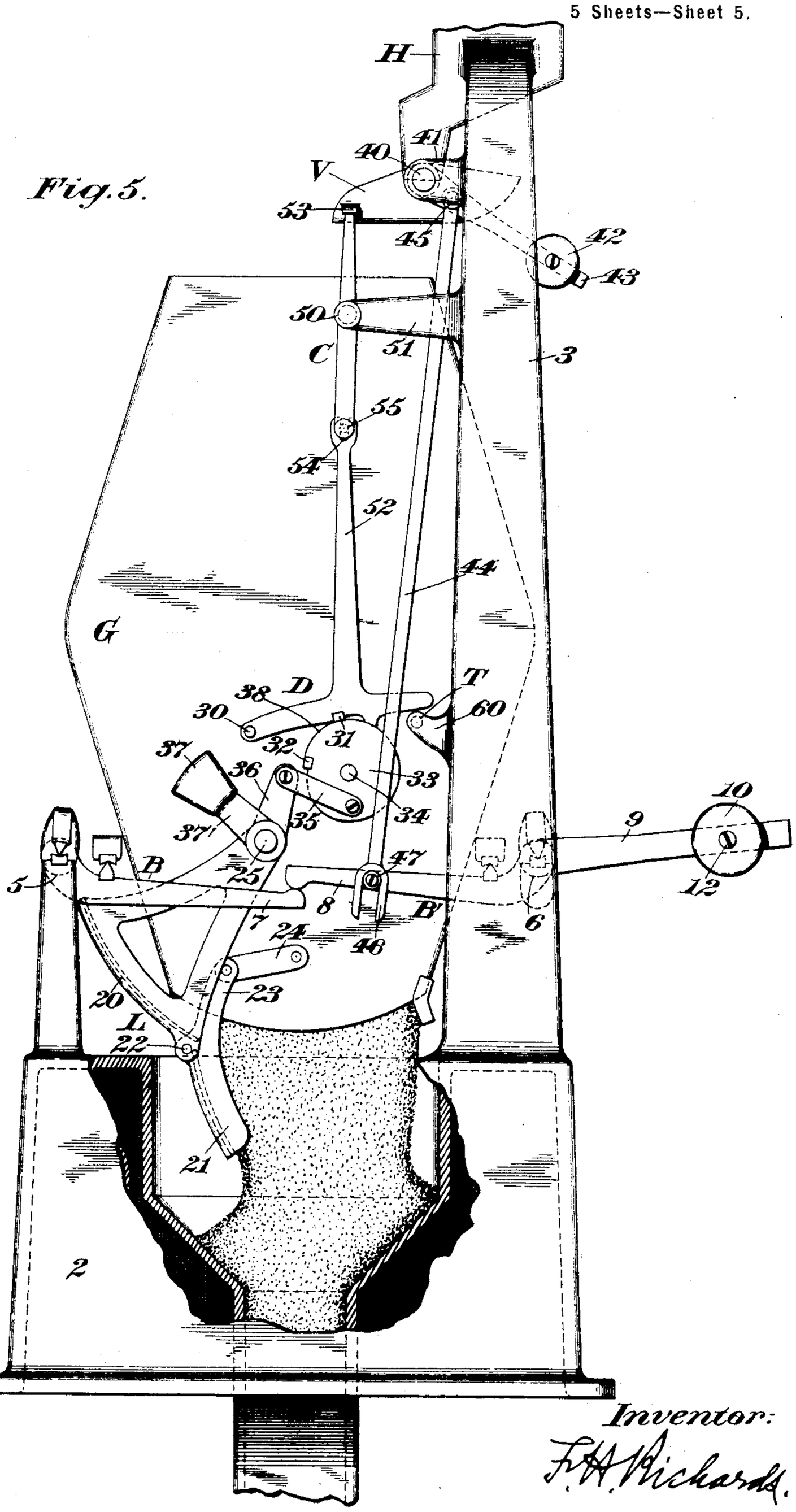
(No Model.) 5 Sheets—Sheet 5.

Fig. 5.



Witnesses:
F. G. Hewitt.
Fred. J. Dole.

Inventor:
F. H. Richards.

UNITED STATES PATENT OFFICE.

FRANCIS H. RICHARDS, OF HARTFORD, CONNECTICUT.

WEIGHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 607,479, dated July 19, 1898.

Application filed November 6, 1897. Serial No. 657,636. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS H. RICHARDS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Weighing-Machines, of which the following is a specification.

This invention relates to weighing-machines, and it is in the nature of an improvement upon the machine covered by my contemporaneously-pending application, Serial No. 649,027, filed August 21, 1897.

My improved machine includes simple means operative with the closer mechanism for governing the action of the supply-valve, a stop or locker coöperative with the closer-holding latch being provided to lock the valve shut, said stop or locker being thrown to its working position by said latch when the latter is operated, thereby to prevent the opening of the valve, and consequently the delivery of material to the load-receiver while the load is being discharged. In the present case the latch is furnished with a fixed arm to which the stop or locker is connected, preferably, by a slide-joint, by reason of which the load-receiver may descend without disturbing the stop, and means are provided for successively tripping and raising the latch, whereby it will shift the stop or locker into working position to prevent the operation of the valve. The latch is first tripped by a suitable device, which may be on the framework, and is then lifted by means operative with the closer, whereby as said closer opens the locker or stop, through the intermediate connections, is rendered effective for accomplishing the purpose specified.

In the drawings accompanying and forming part of this specification, Figure 1 is a front elevation of my improved weighing-machine. Fig. 2 is a sectional plan view, the section being taken in the line x x, Fig. 1. Figs. 3, 4, and 5 are side elevations as seen from the right in Fig. 1, showing the positions occupied by the different parts during the making and discharging of a load.

Similar characters designate like parts in all the figures of the drawings.

The framework for sustaining the different parts of the machine consists in the present instance of the chambered base or bed and the side frames or uprights 3 and 4, having extensions at their top secured to the supply-hopper H, which constitute a convenient means for delivering a stream of material to the load-receiver of the weighing mechanism.

The weighing mechanism consists of a load-receiver and supporting-beam mechanism therefor. The load-receiver is in the form of a hopper-shaped bucket or receptacle, as G, supported upon the beams B and B′, respectively. The scale-beams are similar in construction to those covered in the application hereinbefore alluded to, and each comprises a shaft portion, as 5 and 6, respectively, and the oppositely-disposed arms 7 and 8, an arm 7 of one beam being under and in contact with an arm 8 of the other beam on one side of the load-receiver, while such organization is reversed on the opposite side of said receiver, whereby on the reciprocation of the load-receiver and beams each beam serves as a guide for the other beam. The shaft portions of the beams are mounted upon the framework, and the load-receiver is supported upon the two beams in a manner similar to that shown in the application mentioned and in numerous prior patents granted to me. The beam B′ has the rearwardly-extending counterweighted arm 9 extending from the shaft portion 6, upon which arm the weight 10 is slidable, the weight being held in a fixed position by the set-screw 12 and exerting a force equaling that of the load-receiver.

The discharge of the loads intermittingly from the load-receiver G is controlled by a closer, as L, said closer being of the "compound" type and including in its construction two curved plates 20 and 21, respectively, the plate 21 being pivoted to the plate 20, as at 22, and being also connected with the load-receiver. The plate 21 has the fixed arm 23, to which the link 24 is pivoted, said link being likewise attached at its opposite end to the load-receiver. The closer-plate 20 is pivotally mounted, as at 25, upon the load-receiver for swinging movement thereon. The closer-plates 20 and 21 when shut and locked are substantially in alinement, as indicated in Fig. 3; and when the closer-holding latch is tripped the closer L will be forced open by the pressure of the mass acting thereagainst, and the closer-plate 21, by reason of

its connection with the load-receiver, will be shifted relatively and at an angle to the closer-plate 20, as indicated in Fig. 4, whereby said closer-plate 20 is disposed at one side of the outflow of material from the load-receiver G, such material acting against said closer-plate 21 to hold the closer wide open for a sufficiently long period to insure the complete discharge of the load.

Means are provided for holding the closer shut during the load-supplying period, and said means preferably includes in its organization a member coöperative with the closer and a latch adapted to engage said member, one of the closer-holding parts having a cam-face adapted to run in contact with the other part on the opening movement of the closer, by reason of which the closer-holding latch will be shifted to throw the valve stop or locker into working position to intercept the opening of the valve.

The closer-holding latch is designated by D, it being of the "gravity" type and pivoted at one end, as at 30, to the load-receiver, said latch having a hook or shoulder 31, adapted to engage a catch or offset 32 on the plate or disk 33 when the closer is shut, as indicated in Fig. 3. The plate 33 is pivoted, as at 34, to the load-receiver, and it has a link 35 eccentrically connected thereto and also pivoted to the crank-arm 36 on the closer L.

To release the closer L, the latch-hook 31 is disengaged from the catch or offset 32 on the disk 33, at which time the closer will be forced open, in the manner hereinbefore set forth, to discharge the load. To shut the closer, it is provided with the weight 37 at the outer end of the crank-arm 37'.

The plate or disk 33 has a cam-face 38 extending beyond the offset 32, and when the latch D is disengaged from the plate or disk 33 by a suitable tripping device the closer will be opened, and the disk 33, by reason of its connection with said closer, will be rotated in the direction of the arrow, thereby causing the cam-face 38 to rotate along the hook or shoulder 31 of the latch to lift said latch for throwing the valve-locking means into operation, as will hereinafter appear.

To control the supply of material to the load-receiver G, a pan-valve Y, of ordinary construction, is provided, said valve being pivoted, as at 40, between the brackets 41 on the side frames 3 and 4, respectively. To shut the valve or swing it under the outlet of the hopper H for cutting off the supply, the valve-closing weight 42 at the end of the arm 43 is provided, said arm being secured to the pivot of the valve. The weight 42 acts normally to close the valve, this operation, however, being limited or controlled by the beam mechanism acting through the longitudinal rod 44, pivoted, as at 45, to the arm 43. The rod 44 terminates in a bifurcation 46, which straddles the projection or anti-friction-roll 47 on the poising-arm 8 of the beam B', which arm descends with the load-receiver.

The full volume of the supply-stream is shown in Fig. 3 flowing into the load-receiver G, at which time the valve V is wide open, and when a certain proportion of the load has been received the poising-arms 7 and 8 and the load-receiver G will descend, whereby the projection 47 by moving away from the rod 44 permits the weight 42 to drop, thereby swinging the valve V to its closed position, the operation being continued until the load is completed, at which time the valve will have reached its fully-closed position to cut off the supply.

The locker for holding the valve in its shut position on the operation of the latch D is designated by C, it being in the form of a lever pivoted, as at 50, between its ends to the forward arm 51 on the frame member 3 and connected at its lower end by a slide-joint with the upright fixed arm 52 on the latch, so that when the latch is operated to disengage it from the disk 33 said latch will swing under the upper arm of the stop C under the catch-face or projection 53 near the discharge end of the valve V, as represented in Figs. 4 and 5. The stop or locker C is connected with the upright arm 52 by a slide-joint of convenient construction. In the present case the upper end of the arm is notched or recessed, as at 54, to receive the pin 55 at the lower end of the stop or locker. When the latch is operated, the valve V having previously reached its closed position, the upright arm 52 will be swung to what is herein represented as the "left," thereby moving the upper arm of the stop C under the catch-face 53 on the valve V to hold said valve shut as long as the latch is shifted.

The tripper for the latch D is designated by T, and it is shown consisting of an abutment or pin on the lug 60 on the framework, said tripper being disposed in the path of the latch. At a moment preceding the completion of the load the free end of the latch strikes the tripper, and on the further descent of the load-receiver and when the load is completed the valve 53 will be shut. As the load-receiver descends a short distance after the valve is closed the pivotal point of the latch will be carried downward with said load-receiver, and the free end of the latch being against a fixture the result will be to swing the latch-arm 52 to the left for a short distance, so that the upper end of the stop or locker C is forced to the right and under the catch-face 53 on the valve, as shown in Fig. 4. When the latch is fully disengaged from the disk, the closer will be released, and as it opens it furnishes the power for rotating said disk, and as the disk turns the latch will be lifted by the cam-face 38, by reason of which the upright arm 52 is swung farther to the left, thereby moving the stop or locker C well under the catch-face 53 on the valve,

so that said valve will be held from opening while the closer is open and while the latch is in its lifted or raised position.

The operation of the hereinbefore-described machine is as follows: Fig. 3 represents the positions occupied by the different parts at the commencement of operation, at which time the closer L is held shut by the latch D, which is in engagement with the disk 33, and the valve V is wide open, thereby permitting the full volume of the supply-stream to enter the empty load-receiver. When a predetermined portion of the load has been received, the load-receiver will descend and the beam-arm 8 by moving away from the free end of the rod 44 will permit the valve V to be closed by the dropping of the counterweight 42, the valve being fully closed when the load is completed, as indicated in Fig. 4. About the time the load is nearly completed and the valve V is substantially closed the free end of the latch D will abut against the tripper T, and as the parts descend the upright arm 52 of the latch will be swung to the left and said latch will be disengaged from the disk 33 in the manner hereinbefore specified. When the latch is thus disengaged, the closer L will be released and swung open by the pressure of the load to discharge the same. When the closer opens, the disk 33 will be rotated to carry the cam-face 38 into contact with and to raise the latch D, so that the latch-arm 52 is shifted to swing the stop C under the catch-face 53 on the valve for locking said valve shut while the latch D is raised. When the load is completely discharged, the closer L is shut by the weight 37, and when it has reached its primary position the latch D drops to hold said closer, thereby moving the stop C from under the projection on the valve V to release the latter, whereby the parts again repeat the operation.

Having described my invention, I claim—

1. The combination, with weighing mechanism including a load-receiver, of a closer for said load-receiver; a latch for the closer, having a fixed arm; a supply-valve; and a valve-stop supported independently of the weighing mechanism connected with said arm and operated by the latch.

2. The combination, with weighing mechanism including a load-receiver, of a closer for said load-receiver; a latch for the closer; a supply-valve; and a valve-stop connected with the latch by a slide-joint and shiftable by said latch into position to prevent the action of the valve.

3. The combination, with weighing mechanism including a load-receiver, of a closer for said load-receiver; a latch for the closer, having a fixed arm; a supply-valve; and a valve-stop connected with said arm by a slide-joint.

4. The combination, with weighing mechanism including a load-receiver, of a closer for said load-receiver; a latch for the closer, having a fixed arm; a supply-valve; and a lever connected with said arm and shiftable by the latch into position to prevent the opening of the valve.

5. The combination, with weighing mechanism including a load-receiver, of a closer for said load-receiver; a latch for the closer, provided with a fixed arm having a notch in its upper end; a supply-valve; and a valve-stop shiftable into position to prevent the opening of the valve, said valve-stop having at its lower end a pin seated in said notch.

6. The combination, with weighing mechanism including a load-receiver, of a closer for said load-receiver; a latch pivoted to the load-receiver and serving to lock the closer shut, said latch having an arm between its pivot and its free end; a valve-stop connected with said arm and shiftable by the latch to prevent the opening of the valve; and a tripper disposed in the path of movement of the latch.

7. The combination, with weighing mechanism including a load-receiver, of a closer for said load-receiver; a latch for the closer, having a fixed arm; means operative with the closer and engaged by the latch and constructed to lift said latch when it is tripped; and a valve-stop connected with said fixed arm and shiftable by the latch into position to prevent the operation of the valve.

FRANCIS H. RICHARDS.

Witnesses:
F. N. CHASE,
FRED. J. DOLE.