

(No Model.)

F. H. RICHARDS.
AUTOMATIC WEIGHING MACHINE.

No. 548,846.

Patented Oct. 29, 1895.

Fig. 1.

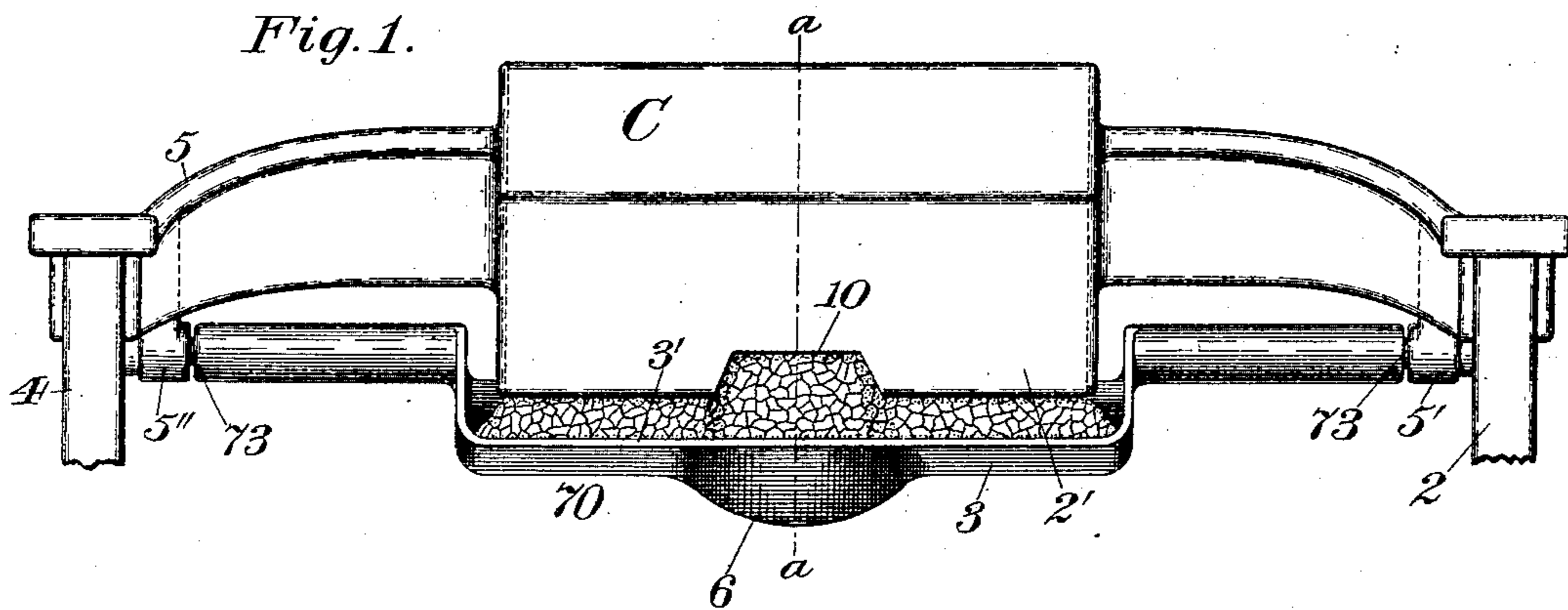


Fig. 2.

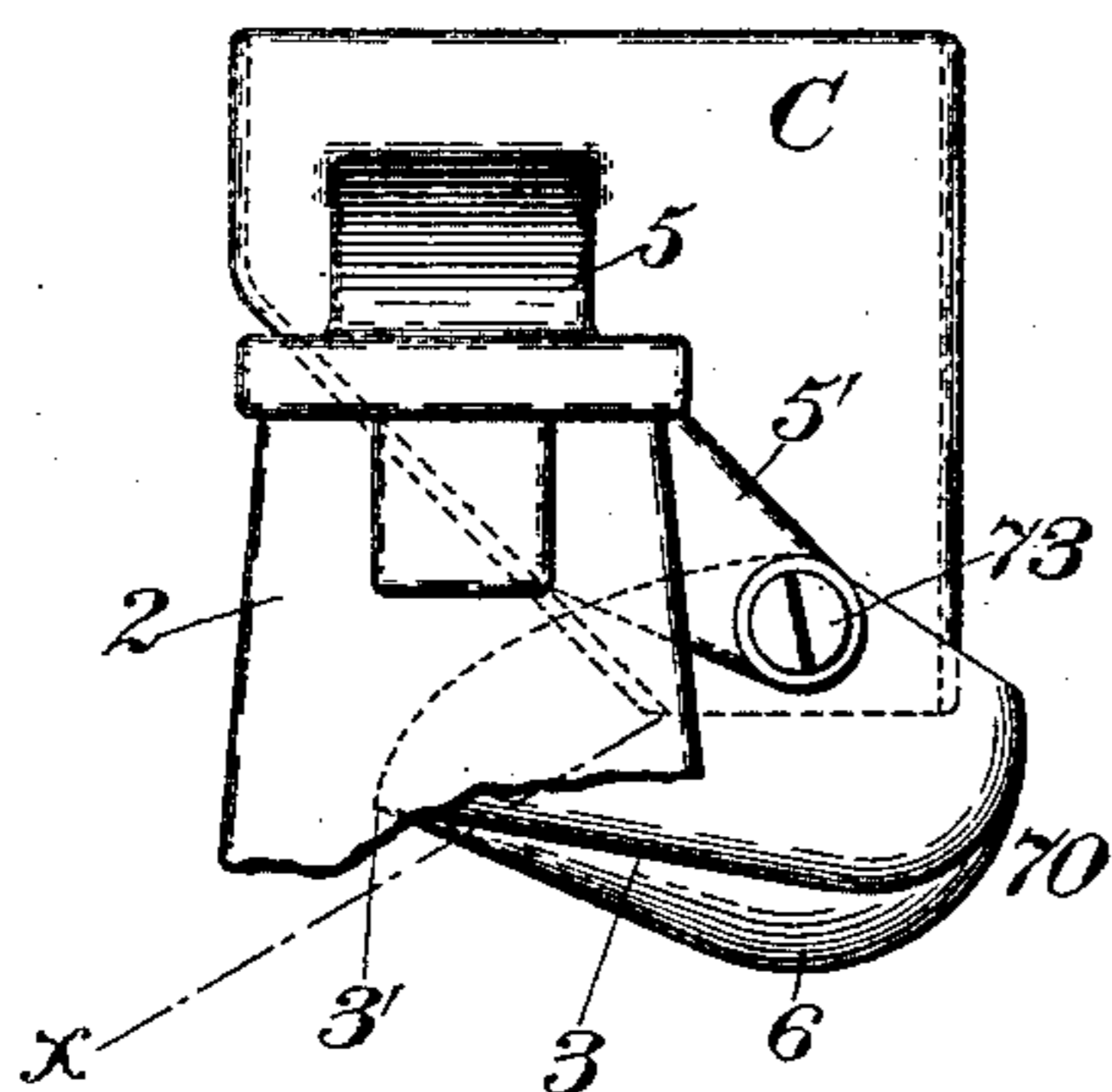


Fig. 3.

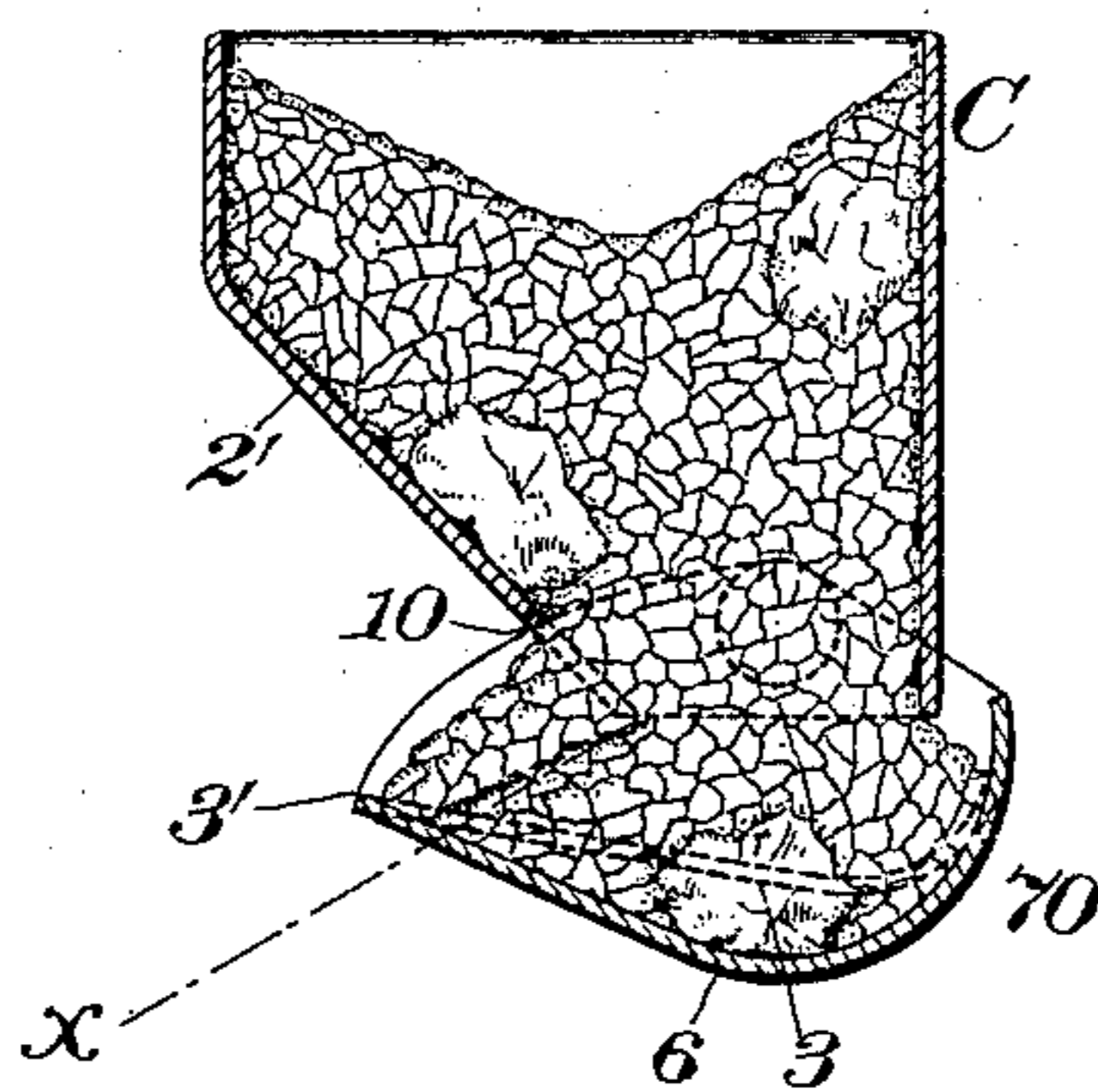


Fig. 4.

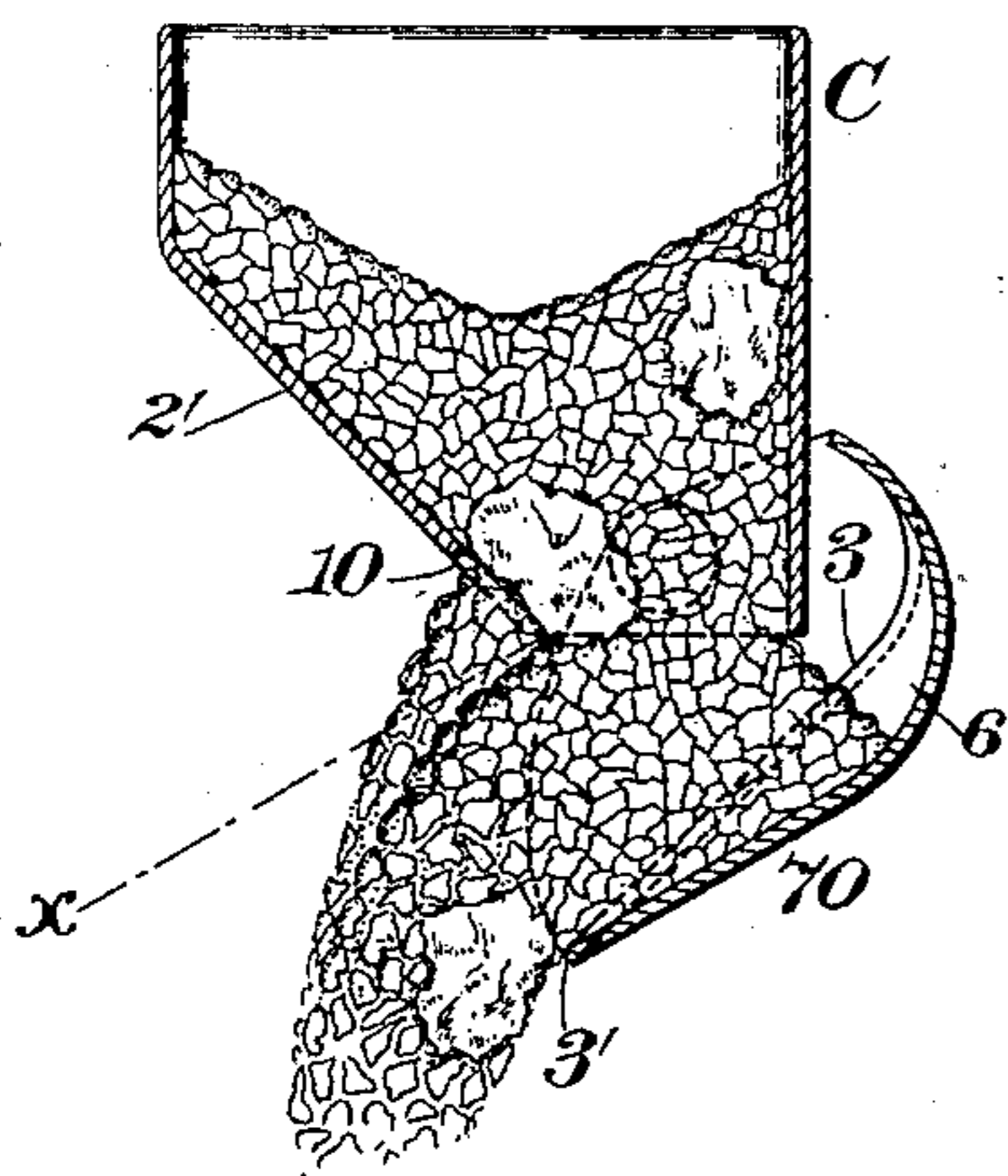
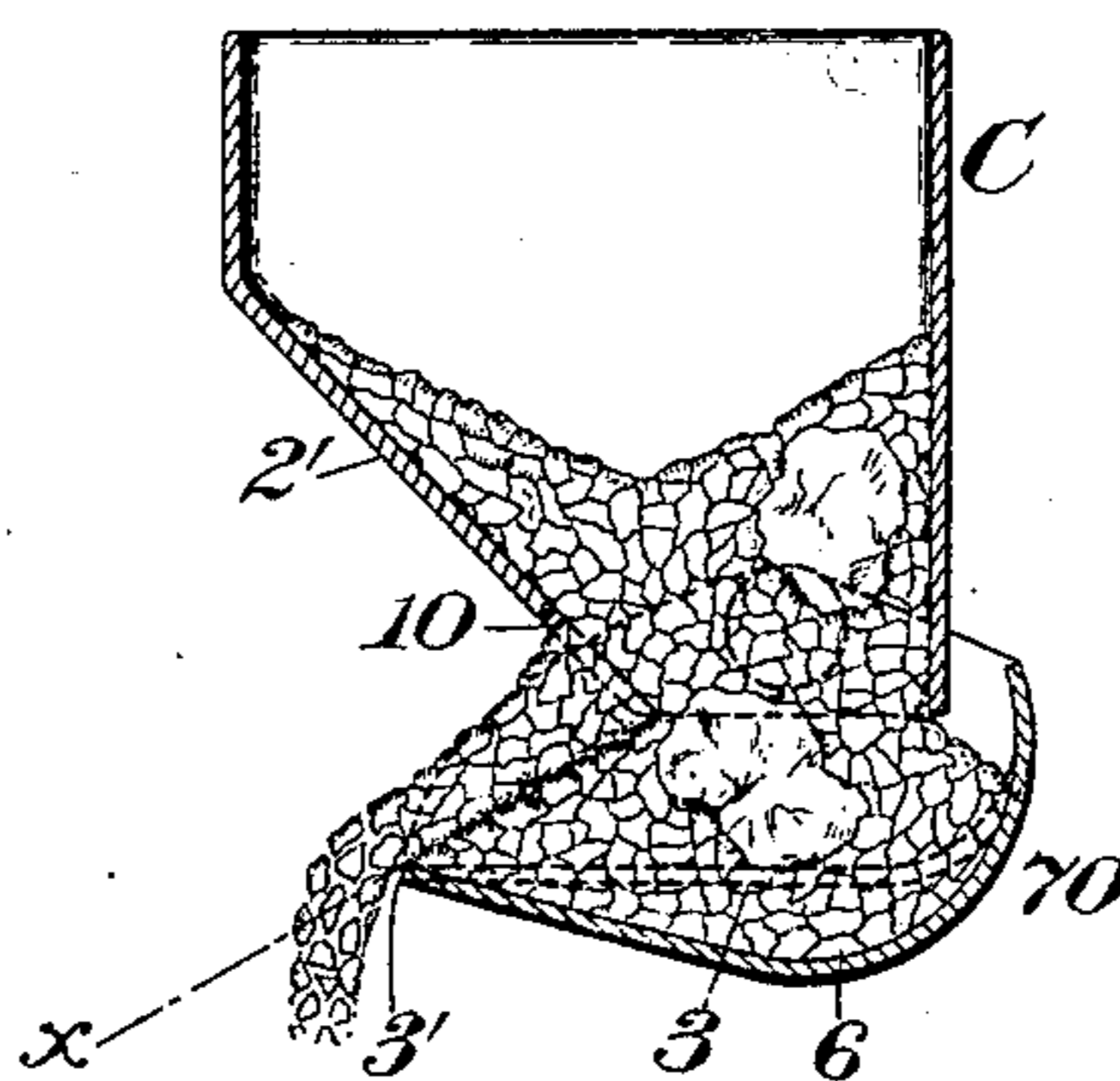


Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

FRANCIS H. RICHARDS, OF HARTFORD, CONNECTICUT.

AUTOMATIC WEIGHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 548,846, dated October 29, 1895.

Application filed April 16, 1895. Serial No. 545,984. (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 Automatic Weighing-Machines, of which the following is a specification.

This invention relates to weighing-machines, and has for its object to provide an improved valve, whereby the machine will be peculiarly adapted for the successful weighing of granular materials, the particles or granules of which are normally of a uniform size, but which may have therein occasionally relatively-large lumps that would be liable to clog the valve.

In the drawings accompanying and forming part of this specification, Figure 1 is a front elevation of the upper portion of the framework of a weighing-machine, showing a spout or supply-chute and a valve thereunder embodying my present improvement. Fig. 2 is a side elevation of the same as seen from the right hand in Fig. 1. Fig. 3 is a vertical cross-section taken in line *a a*, Fig. 1, and showing the valve closed. Figs. 4 and 5 are views similar to Fig. 3, showing, respectively, the valve in its open and drip positions.

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

For convenience and for the purpose of illustration my improved valve is shown in connection with certain parts (to be hereinafter described) of a weighing-machine of known construction.

The upper portions of suitable side frames, usually employed for carrying some of the operative parts of a weighing-machine, are designated by 2 and 4, and are shown connected by a top plate or beam, which supports in some suitable manner a spout or supply-chute, (designated in a general way by C.) This chute is adapted for containing the material and is in position for keeping the bucket (not shown) of a weighing-machine constantly supplied therewith.

The supply spout or chute is shown as of the improved kind described and claimed in my application, Serial No. 542,137, filed March 18, 1895. The valve for the spout, except as hereinafter specified, is illustrated as of the

improved kind, described and claimed in Letters Patent of the United States No. 535,727, granted to me March 12, 1895. The valve is shown at 70 as pivotally supported at 73 within suitable arms, such as 5' and 5'', carried by the top plate or beam 5 and is in position and adapted to be oscillated or swung at the proper time by suitable actuating mechanism or mechanisms (not shown) for carrying its forward edge or the forward edge 3' of the main valve-bottom or valve-plate beyond the line of the normal angle of repose, (indicated by *x*), which is designated herein by 3, to thereby cut off the supply of the main stream to the bucket.

The supply spout or chute is shown provided with a front inclined wall 2', having therein a drip-opening 10, which is shown herein of such a size as to permit the free passage thereof of relatively-large lumps of material when the main stream is flowing into the bucket.

On reference to the drawings it will be observed that the drip-opening 10 is substantially coincident or in vertical alignment with this central rapidly-moving current or stream, so that when the valve 70 is opened the lumps or masses of material generally found in the smaller sizes of coal, mixed feed, &c., are carried past the drip-opening 10 by this rapidly-moving central current. For momentarily receiving these lumps during the closing movement of the valve until a succeeding opening movement thereof and for preventing clogging of the valve in closing the valve is shown as having a stream-supporting face or valve-plate 3 under the chute, and as also having in said face a central transversely-disposed channel or depression. This channel or depression, which is designated by 6, is shown extending nearly from the front edge to the rear wall of the valve and in vertical alignment or substantially coincident with the drip-opening 10 in the supply spout or chute C.

It will be obvious, in view of the peculiar disposition of the drip-opening 10 relatively to the channel or depression 6 in the valve or valve-plate 3, that the lower wall of said channel is relatively remote from the upper wall of the drip-opening 10, which leaves a relatively-deep laterally-extending space in which the lumps as they approach and pass the drip-

opening 10 may be received during the closing movement of the valve 70.

The natural inherent tendency of the lumps in the material being weighed is to follow the path of least resistance and be drawn into the relatively-rapidly moving central stream or current. The channel or depression 6 in the valve or valve-plate 3 is shown in vertical alignment with the drip-opening 10 and with the relatively-rapid moving central stream or current. When the valve is closing, the force of this central stream will carry the lumps past the drip-opening 10 and into the channel or depression 6, where they may be dislodged and expelled by the force of the descending stream when the valve is opened. The channel or depression 6 is shown of a width approximating that of the drip-opening 10, and it will be apparent that when the lumps are lying in this channel during the closing of the valve these lumps cannot touch the lower edge of the supply-spout, which prevents clogging of the valve in closing.

Referring now to Fig. 3, which illustrates the valve normally closed, a lump is shown as having been carried by the central stream into the channel or depression 6. On the opening of the valve the force of the descending mass will dislodge this lump and carry it out of the channel and valve.

In Fig. 4 the valve is shown open, and the stream is shown flowing out of the supply spout or chute. When the valve is open, the relatively-large lumps are carried past the drip-opening 10 and into a bucket of a weighing-machine or other receptacle. (Not shown.)

Fig. 5 shows the valve in a drip position or nearly closed, the forward edge of said valve having intersected the line of the normal angle of repose of the material issuing from the supply spout or chute. The central stream now forces any lumps that may be in the mass into the channel or depression 6. When the valve is opened, the descending mass dislodges these lumps, forces them out of the channel or depression, and carries them to a bucket or other receptacle.

It will be noticed (see Fig. 4) that when the valve is opened to permit the whole stream or mass to flow from the supply spout or chute the valve-plate 3 of the valve is shown disposed at a relatively-greater inclination or angle than the normal angle of repose. This peculiar disposition of the valve-plate gives to the stream during this period a relatively-accelerated speed, which insures the dislodg-

ment of the lumps lying in the channel or depression 6 for forcing them out of said channel or depression.

Having thus described my invention, I claim—

1. In a weighing-machine, the combination with a supply-spout or chute adapted for containing a mass of material; of a valve having a stream-supporting face under said chute, and also having in said face a channel or depression in position and adapted for receiving relatively-large lumps of material discharged by the supply-spout or chute during the closing of the valve, whereby said lumps are dislodged and carried out of said channel or depression by the force of the descending mass of material, when the valve is opened, substantially as described.

2. In a weighing-machine, the combination with a supply-spout or chute adapted for containing a mass of material, and having a drip-opening; of a valve having a stream-supporting face under said chute, and also having in said face a channel or depression, substantially in alignment with the drip-opening in the supply-spout or chute, whereby when the valve is closing, relatively-large lumps may pass the drip-opening, and be received by the channel or depression in the valve, and whereby said lumps may be dislodged, and carried out of said channel or depression by the force of the descending mass of material, when the valve is opened, substantially as described.

3. In a weighing-machine, the combination with a supply-spout or chute for containing a mass of material, and having a centrally-located drip-opening; of a swinging valve having a stream-supporting face under said chute, and also having in said face a channel or depression disposed transversely relatively to said valve, and in vertical alignment with the drip-opening, and forming with said drip-opening a relatively-deep, central space, whereby, when the valve is closing, relatively-large lumps may pass said drip-opening, and be received by the channel or depression in the valve, and whereby such lumps may be dislodged by the force of the descending mass of material, when the valve is opened, substantially as described.

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Witnesses:

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