

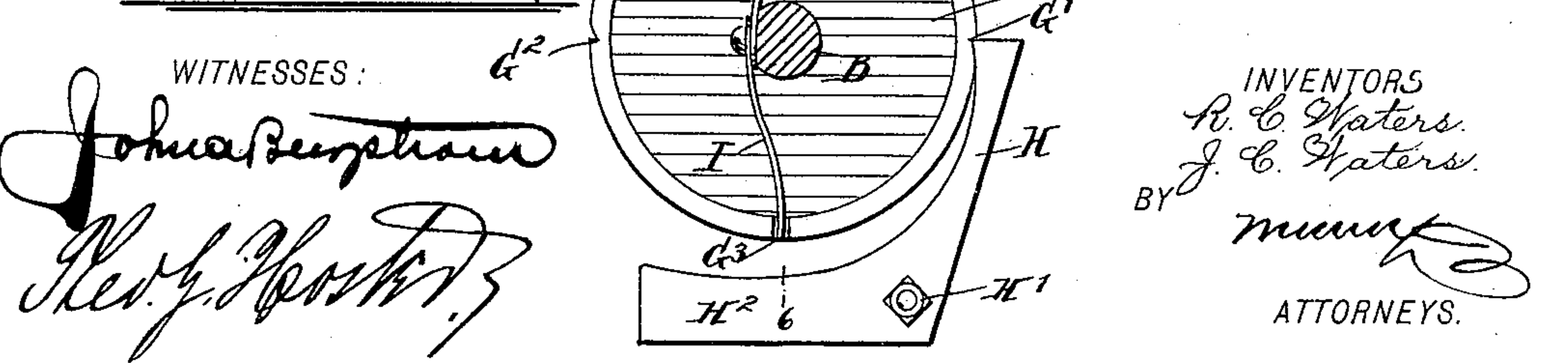
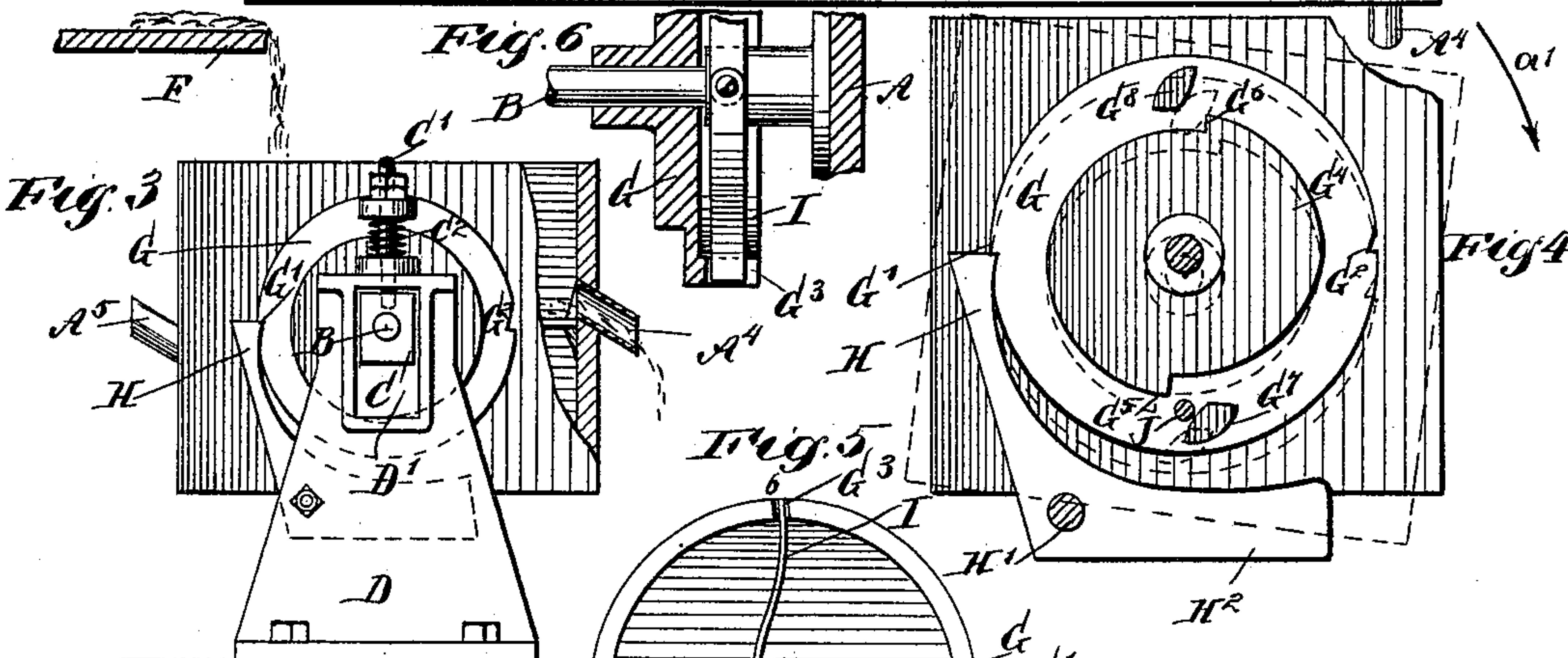
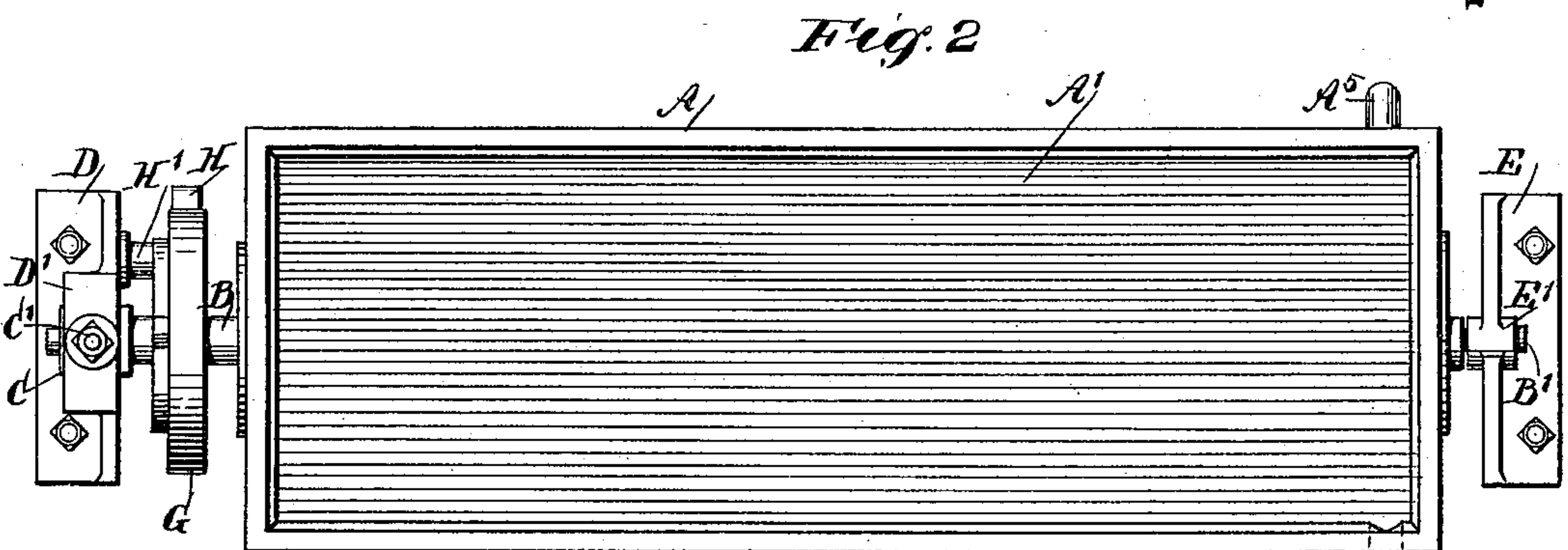
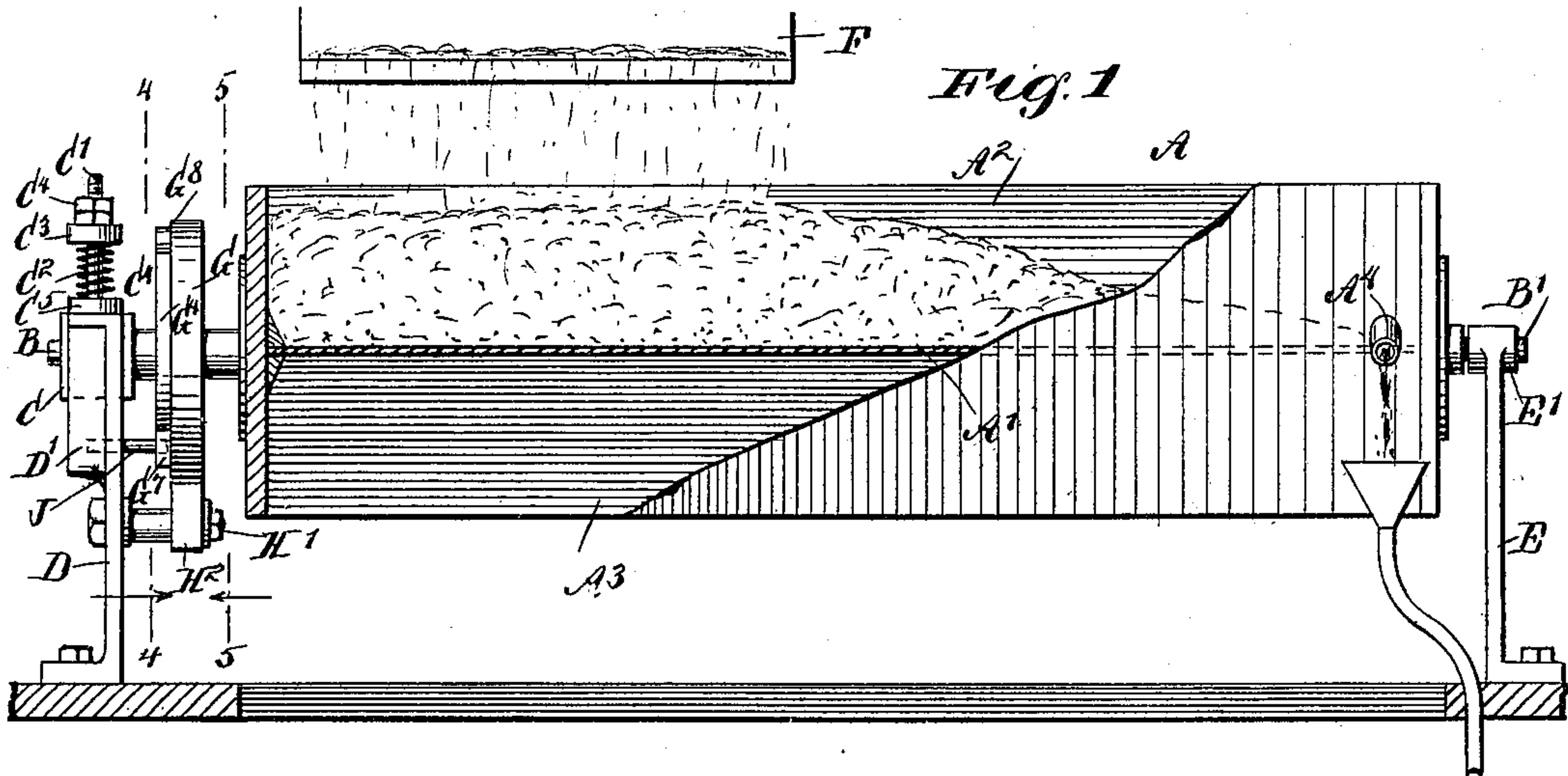
No. 614,355.

Patented Nov. 15, 1898.

J. C. & R. C. WATERS.  
CONCENTRATE RECEIVER.

(Application filed Nov. 23, 1897.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

JOHN C. WATERS AND RICHARD C. WATERS, OF ROMLEY, COLORADO.

## CONCENTRATE-RECEIVER.

SPECIFICATION forming part of Letters Patent No. 614,355, dated November 15, 1898.

Application filed November 23, 1897. Serial No. 659,602. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN C. WATERS and RICHARD C. WATERS, of Romley, in the county of Chaffee and State of Colorado, have invented a new and Improved Concentrate-Receiver, of which the following is a full, clear, and exact description.

The invention relates to concentrating machinery; and its object is to provide a new and improved concentrate-receiver, which is simple and durable in construction and arranged to receive the concentrates and the water from a concentrating-table, to separate the water from the concentrates, and to automatically discharge the concentrates in a comparatively dry condition.

The invention consists of novel features and parts and combinations of the same, as hereinafter more fully described, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement with parts in section. Fig. 2 is a plan view of the same. Fig. 3 is an end elevation of the same with parts in section. Fig. 4 is an enlarged cross-section of the improvement on the line 4 4 of Fig. 1. Fig. 5 is a similar view of the same on the line 5 5 of Fig. 1, and Fig. 6 is an enlarged sectional side elevation of part of the improvement on the line 6 6 of Fig. 5.

In concentrating machinery as heretofore constructed the concentrates passed with the water from the concentrating-machine into an ordinary box set on the floor, the concentrates being cleaned out of the box by a person using a hoe or shovel. This method requires laborious work, as the concentrates in falling pack very firmly and solidly in the bottom of the box, and the work of removing the concentrates by the use of a shovel makes the surrounding floor sloppy and disagreeable and frequently leaves the concentrates in a slimy condition.

With our improvement, presently to be described in detail, the concentrates are quickly separated from the water and automatically discharged without the need of manual labor.

The improved concentrate-receiver is provided with a box A, having its ends provided with trunnions B B', of which the trunnion B is mounted to turn in a suitable bearing C, fitted to slide vertically in a guideway D', formed or attached to a standard D. The bearing C is normally held in an uppermost position by the action of a spring C<sup>2</sup>, coiled on a rod C', attached to said bearing, and fitted to slide in the top of the standard D, the said spring being set in two cups C<sup>3</sup> C<sup>5</sup>, of which the cup C<sup>3</sup> is adjustably held on the rod C' and the other cup C<sup>5</sup> is set on top of the standard D. By turning nuts C<sup>4</sup> on the upper threaded end of the rod C' the cup C<sup>3</sup> can be adjusted to regulate the tension of the spring C<sup>2</sup> according to the nature of the concentrates under treatment. The other trunnion B' is fitted loosely in a bearing E', formed on a standard E, so that the box A is free to swing downwardly at the opposite end for dumping or discharging the concentrates, as hereinafter more fully described.

The box A is provided at or near its middle with a bottom A', dividing the box into a top compartment A<sup>2</sup> and a bottom compartment A<sup>3</sup>, the said bottom A' being of a flexible material, such as rubber or the like, to permit a ready discharge of the concentrates when the corresponding compartment moves into a lowermost position, it being understood that the bottom A' slightly sags by the weight of the concentrates as they accumulate in the compartment A<sup>2</sup> or A<sup>3</sup> uppermost at the time.

The concentrates and the water pass directly from a concentrating-table F or other machine into the uppermost compartment of the box A, so that the concentrates settle on the bottom A', and the water flows out of the compartment through an outlet-pipe A<sup>4</sup> or A<sup>5</sup>, leading from the corresponding compartment A<sup>2</sup> or A<sup>3</sup> near the bottom A', as will be readily understood by reference to Fig. 3. Thus the concentrates and the water separate, the water flowing into a suitable discharge-pipe for carrying the water to a distant place.

Now in order to turn the box A automatically when a sufficient quantity of concentrates have accumulated in the uppermost compartment the following device is provided: On



the trunnion B is mounted to turn loosely a disk G, formed in its peripheral surface with oppositely-arranged notches G' G<sup>2</sup>, adapted to be successively engaged by a pawl H, fulcrumed at H' on the standard D, and weighted, as at H<sup>2</sup>, so as to hold the said pawl in engagement with the periphery of the disk G and the said notches G' G<sup>2</sup>. A spring or springs I are secured to the trunnion B and extend with their ends into notches G<sup>3</sup>, formed in the rim of the disk G, the springs serving to prevent jar and strain on the box when the latter is turned for dumping the contents out of the uppermost compartment. On the outer face of the disk G is formed or secured a cam G<sup>4</sup>, having shoulders G<sup>5</sup> G<sup>6</sup> and adapted to be engaged at its peripheral surface by a pin J, projecting from the standard D. Opposite the shoulders G<sup>5</sup> and G<sup>6</sup> are formed cam-shaped stops G<sup>7</sup> G<sup>8</sup>, respectively, for locking the disk, and consequently the box, in place until a sufficient amount of concentrates has accumulated in the uppermost compartment of the box. Now it is evident that when this takes place the weight of the concentrates will cause the box A to swing downward from the bearing E' as the fulcrum and against the tension of the spring C<sup>2</sup>, the box A in moving downward carrying the disk G along; but as the pawl H engages one of the notches G' or G<sup>2</sup> it is evident that the disk slightly turns on the trunnion B against the tension of the spring I. When this movement takes place the pin J travels over the cam-surface of the corresponding surface of the stop G<sup>7</sup> or G<sup>8</sup>, so that the box starts to turn in the direction of the arrow a'. (See Fig. 4.) The weight of the concentrates causes a further turning of the box until it has made a half-revolution to bring the filled compartment into a dumping or lowermost position and the previously-empty compartment to the top to receive concentrates from the machine F. Now when the box A moves downward the peripheral surface of the cam G<sup>4</sup> moves in contact with the fixed pin J, so that the box is gradually moved upward during the dumping operation until the pawl H again moves in contact with the other notch in the peripheral surface of the disk G. Contact is also made by the stop G<sup>7</sup> or G<sup>8</sup> against the pin J, which prevents any further turning of the box. When the concentrates have passed out of the dumping-compartment at the time the corresponding shoulder G<sup>5</sup> or G<sup>6</sup> has passed the pin J, then the spring C<sup>2</sup> will move the trunnion B and the parts carried thereby upward to the former normal position, as shown in Fig. 4.

By having the bottom A' flexible, as described, the incoming concentrates will bulge the bottom in an opposite direction, so that any concentrates adhering to the under side of the box from the previous operation will readily become dislodged and discharged from the bottom compartment. As the water is continually run off from the uppermost compartment it is evident that the concentrates

will be comparatively dry when dumped out of the box, as before described.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

1. A concentrate-receiver comprising a box provided with a bottom separating the box into two approximately equal compartments, the said box being mounted to turn and also yieldingly supported at one end whereby the said box will move downward under the weight of the accumulating concentrates in the box, and means for turning the box automatically when it moves downward, substantially as described.

2. A concentrate-receiver provided with a box mounted to turn and formed with two compartments having a common flexible bottom and an outlet-pipe leading from each compartment near the said flexible bottom, substantially as described.

3. A concentrate-receiver provided with a box mounted to turn and also arranged to swing downward under the weight of the accumulating concentrates in the box and a device for starting the box to turn when it swings downward substantially as shown and described.

4. A concentrate-receiver provided with a box mounted to turn and formed with a flexible bottom separating the box into two compartments of which the upper compartment is the receiving-compartment the said box being also mounted to move downward under the weight of the accumulating concentrates in the uppermost compartment and a device for starting the box to turn when the latter is moved downward, substantially as shown and described.

5. A concentrate-receiver provided with a box formed with trunnions, one of which is journaled in a fixed bearing, and the other is mounted in a yieldingly-mounted bearing, a disk having a yielding connection with the trunnion in the yielding bearing, a pawl for temporarily holding the disk in place, a fixed pin, and a cam on the said disk and operating in conjunction with the said pin, substantially as shown and described.

6. A concentrate-receiver provided with a box having trunnions and mounted to move up and down, a disk loose on one of the trunnions, a spring for connecting the disk with the trunnion, and a pawl for engagement with notches in the disk, to hold the latter temporarily stationary on the downward movement of the box, substantially as shown and described.

7. A concentrate-receiver provided with a box having trunnions and mounted to move up and down, a disk loose on one of the trunnions, a spring for connecting the disk with the trunnion, a pawl for engagement with notches in the disk, to hold the latter temporarily stationary on the downward movement of the box, stop-lugs on the said disk, and a fixed pin adapted to be engaged by the



stop-lugs, to limit the turning movement of the box, as set forth.

5 8. A concentrate-receiver comprising a box provided at its ends with trunnions, one of which is fitted loosely in a fixed bearing and the other is journaled in a vertically-movable and yielding-mounted bearing, whereby the said box will swing downward under the weight of the accumulating concentrates in the box, and means for starting the box to turn when it swings downward, substantially as described.

15 9. A concentrate-receiver provided with a box having trunnions one of which is fitted loosely in a fixed bearing, and the other is journaled in a bearing fitted to slide vertically in a suitable guideway, a spring normally holding said bearing in an uppermost position, means for regulating the tension of the said spring and a device for starting the box to turn by the weight of the accumul-

ing concentrates in the box, substantially as shown and described.

10. A concentrate-receiver provided with a box having trunnions and mounted to move 25 up and down, a disk on one of said trunnions and formed in its peripheral surface with oppositely-arranged notches, a spring connecting the disk with the trunnion, a weighted pawl fulcrumed on a fixed support and arranged to engage the notches in the said disk, 30 a cam on the outer face of the disk and having oppositely-arranged shoulders, a pin projecting from a fixed support and adapted to engage the peripheral surface of the cam and 35 oppositely-arranged stops on the outer face of the said disk, for the purpose set forth.

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