

No. 693,690.

Patented Feb. 18, 1902.

W. G. DODD.
ORE OR PULP SAMPLER.
(Application filed May 1, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

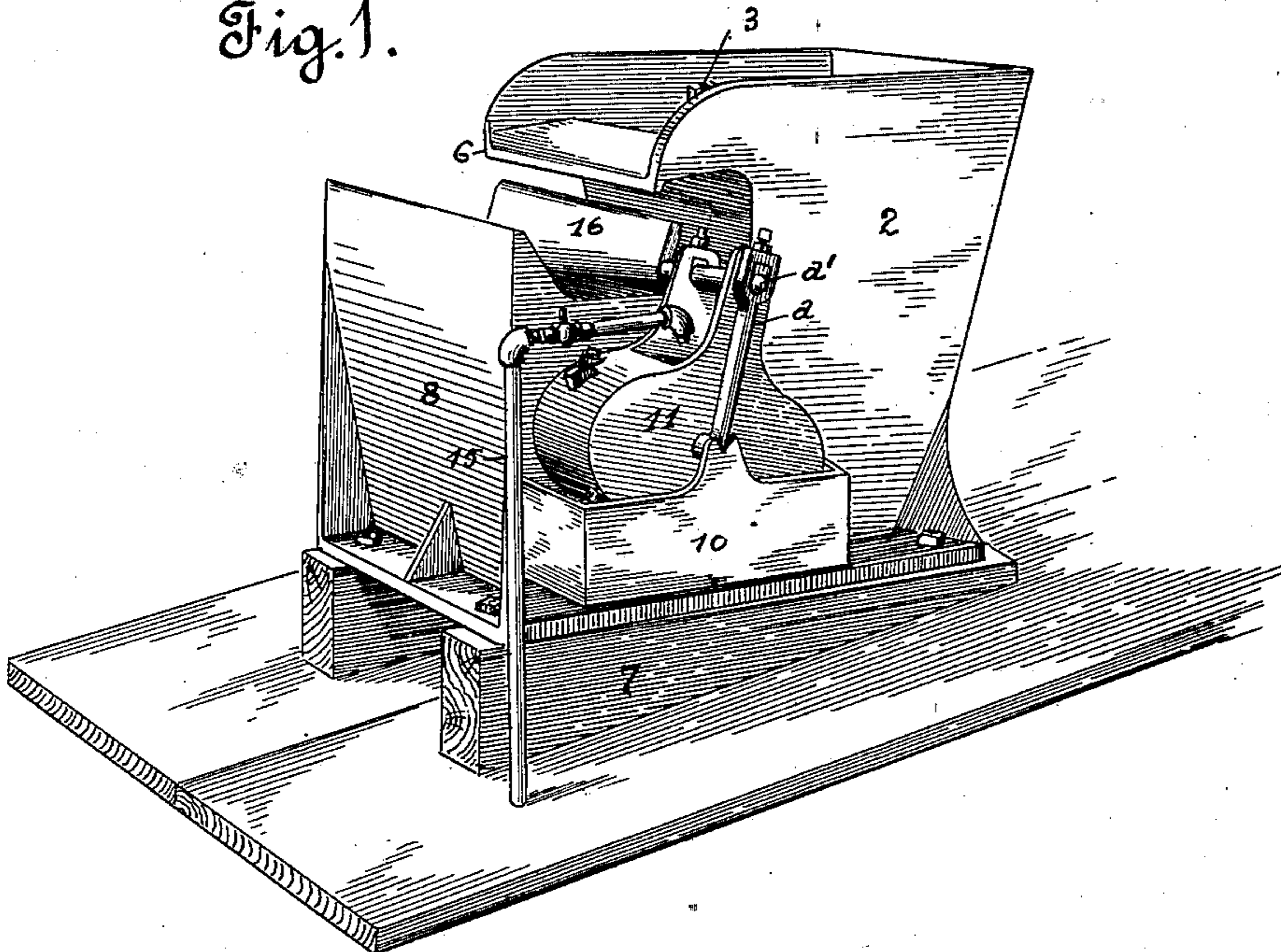
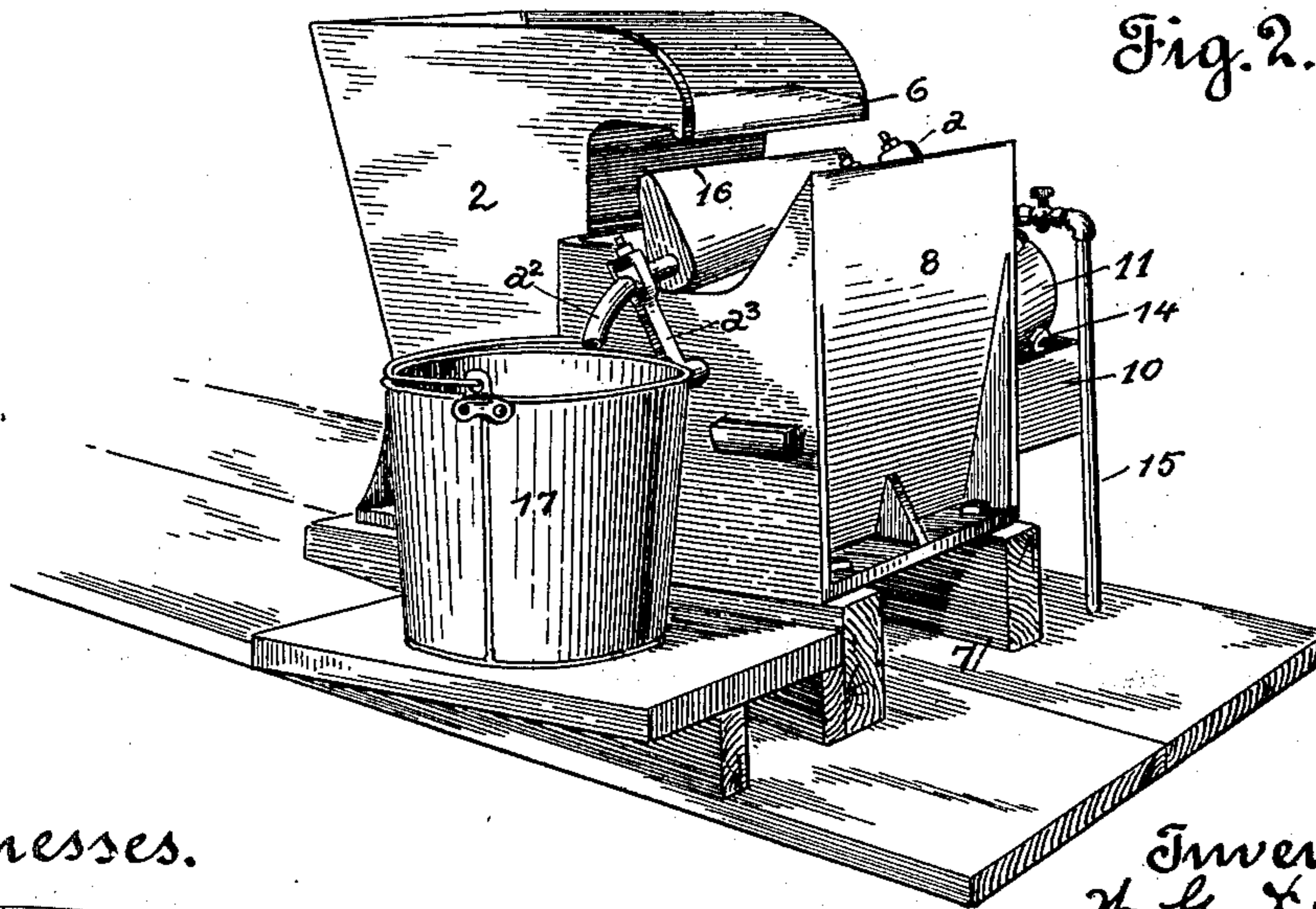


Fig. 2.



Witnesses.

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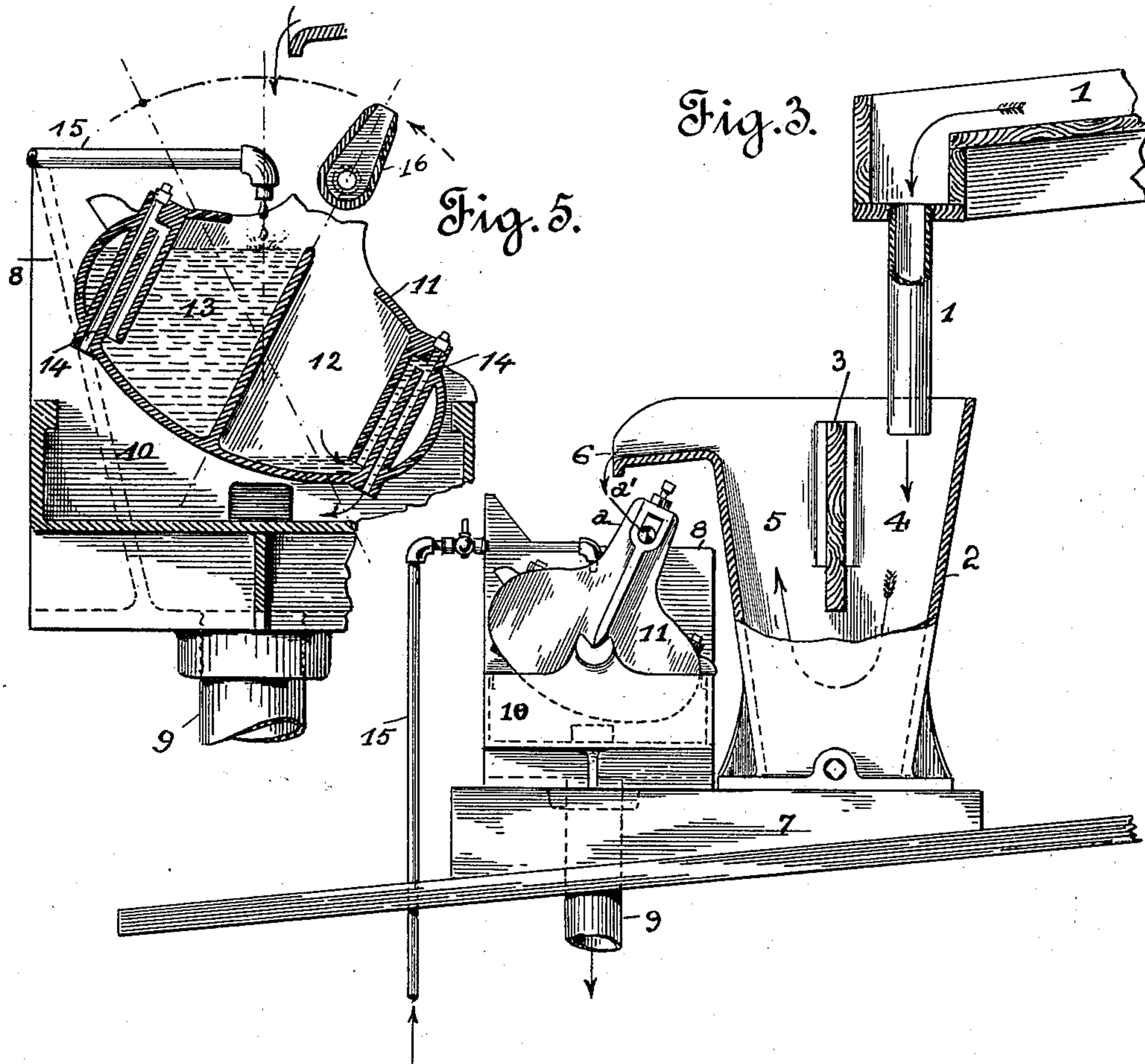
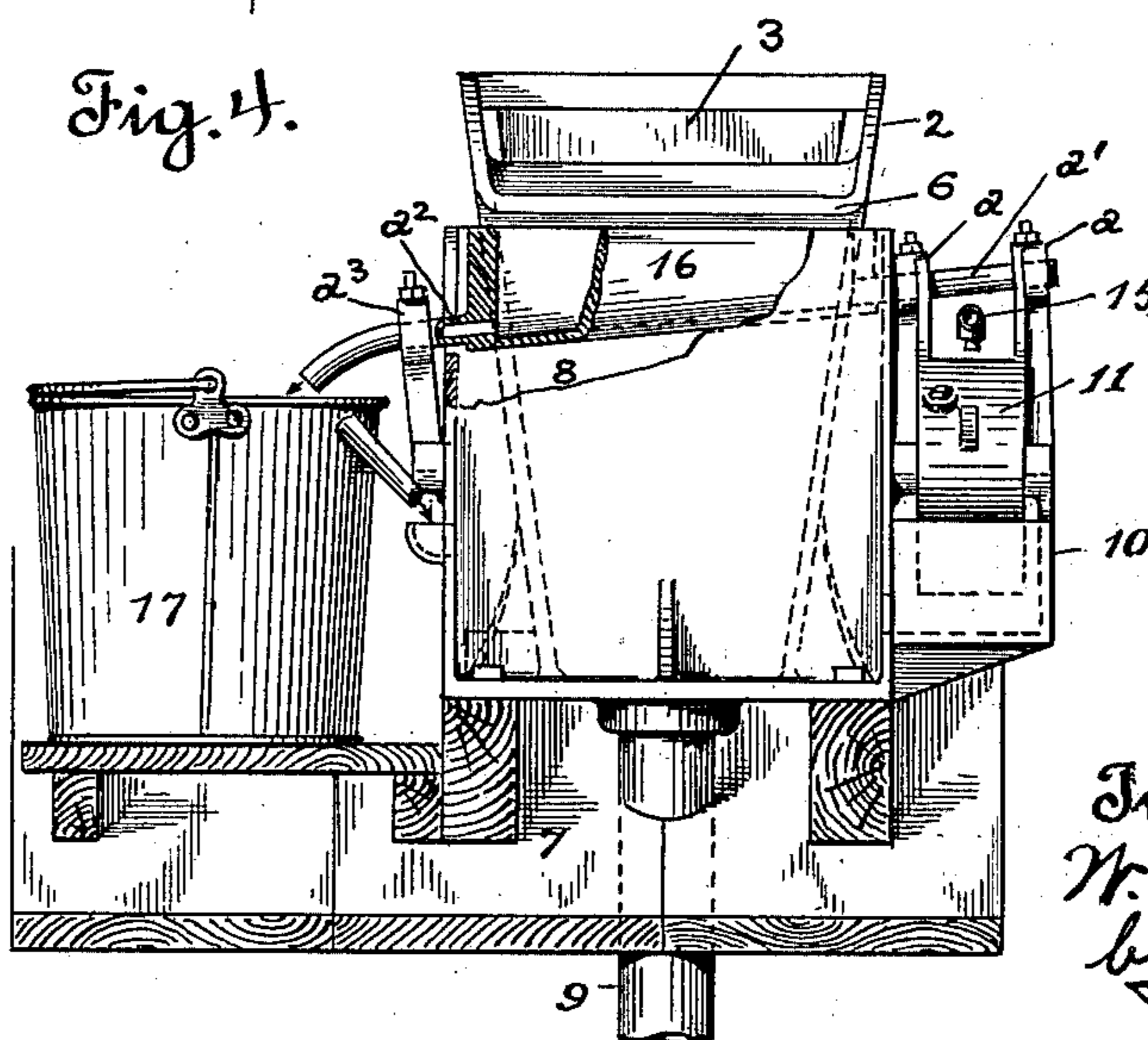


Fig. 4.



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UNITED STATES PATENT OFFICE.

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ORE OR PULP SAMPLER.

SPECIFICATION forming part of Letters Patent No. 693,690, dated February 18, 1902.

Application filed May 1, 1901. Serial No. 58,271. (No model.)

To all whom it may concern:

Be it known that I, WILLIS G. DODD, a citizen of the United States, residing at the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Pulp-Samplers; and I do hereby declare the following to be a full, clear, and exact description of the same.

The present invention is designed for use in connection with the sampling of pulp generally or, if desired, as conveyed from the battery or stamp toward the concentrating-tables or concentrator; and the object of the invention is to provide an automatically-operated device whereby at regular intervals a given quantity of the pulp is removed from the stream of pulp or from the pulp passing toward the concentrating means and discharged into a suitable receptacle for the samples. By the removal of the samples at given intervals there will be collected—say at the end of three hours—a number of samples taken from different “portions,” so to speak, of the body of pulp. Knowing the number of samples extracted in a given time and the quantity of pulp passed through the battery in said time it is an easy matter by an analysis of the combined samples to ascertain with certainty the average value of the pulp treated by the concentrating means, thus obviating the expense incident to the running of the mill plant for a “clean-up” in order to state whether the value contained in the pulp justifies the cost of extracting same, while at the same time it enables one to maintain a tally as to the working of the concentrating means and in this manner readily discover whether an undue proportion of the values go off with the tailings.

In order to comprehend the invention, reference should be had to the accompanying sheets of drawings, wherein—

Figure 1 is a perspective view of the apparatus partly broken away. Fig. 2 is a similar view taken from the opposite side of the machine. Fig. 3 is a side view in elevation, partly in section, of the sampling apparatus with the sluiceway leading from the battery. Fig. 4 is a front view in elevation of the mechanism disclosed by Fig. 2 of the drawings,

and Fig. 5 is an enlarged detail sectional view of the tripping mechanism for the sampler.

The present invention is interposed at any suitable point, preferably between the battery and the concentrating means, neither of said devices being illustrated in the present drawings.

From the battery of the stamp-mill extends the sluiceway 1, into which the pulp from the battery discharges. The lower end of this sluiceway extends within an accumulating-hopper 2, which is divided by a transverse partition 3 into chambers 4 5. This partition does not extend to the bottom of the hopper. Consequently the chambers 4 5 communicate. The pulp from sluiceway 1 flows into chamber 4 and fills the hopper to a height equal to the bottom of partition 3, after which the pulp contained within the hopper by the weight of the inflowing pulp is gradually forced upward within chamber 5 until it overflows lip 6, slightly below the level of the top of the hopper. After the pulp reaches this point its discharge from the hopper will be a continuous one so long as the working of the battery or the feed of pulp into chamber 4 continues. The object of this accumulating-hopper is to obtain a continuous and even flow of pulp. Said hopper is preferably secured to the inclined base-pieces 7, so that the hopper stands with a forward inclination.

In front of and below the hopper 2 is arranged a pulp or overflow chamber 8, which receives the pulp discharged from the hopper 2. The overflow-lip 6 extends outwardly from hopper 2, so as to be in line with the center of chamber 8. From the bottom of this chamber extends the outlet-pipe 9, through which the pulp delivered into said chamber escapes and is conveyed toward the concentrator, concentrating-table, or concentrating means. It will thus be observed that the chamber 8 is an open one. Hence the flow of the pulp toward the concentrating means is unobstructed.

The hopper 2, overflow-chamber 8, and outlet-pipe 9 may be said to constitute a continuation of the sluiceway 1.

To one side of the overflow-chamber 8 is secured the casing 10, within which is mounted

ed to swing the tilting or oscillating reservoir 11. This reservoir is divided by a vertical partition into chambers 12 13. Each chamber is provided with a siphon-outlet 14. The reservoir is an open one at its top, and into same a small stream of water is discharged from supply-pipe 15. The discharge end of pipe 15 is directly over the center of the tilting or oscillating reservoir 11, so that its discharge will be into one of the chambers or compartments, depending upon the position of the reservoir. Presuming same to be in position illustrated by Fig. 5 of the drawings, then the discharge from the supply-pipe will be into chamber or compartment 13. The weight of the water fed into said chamber or compartment gradually swings or tilts the reservoir over, so that by the time the chamber has become filled with water the reservoir will have swung over its full distance and chamber or compartment 12 placed beneath the drip or supply pipe. As the reservoir swings over the siphon located in its filled chamber automatically withdraws or empties the water therefrom, the water thus drawn off entering casing 10 and flowing therefrom through a suitable outlet. Chamber 12 is then in a position to be filled with water, the weight of which when the chamber becomes full throws or tilts the reservoir in an opposite direction to that described and its water is drawn off by the siphon in said chamber. The reservoir 11 is thus automatically tilted or alternately swung over and the filled chamber automatically emptied. It will be understood that the supply of water is so regulated that a given period of time is required for the chamber or compartment of the tilting or oscillating reservoir to fill. While one chamber or compartment is being emptied the other is gradually filled. The reservoir 11 is so suspended within the casing 10 that it cannot swing or tilt until a given quantity of water has entered the chamber or compartment directly beneath the supply-pipe.

The swinging reservoir 11 is provided with the upwardly - extending bearing - arms a , which serve as bearings for journal a' of sample-receiving cup 16. This cup works immediately above the overflow-chamber 8, being equal in width therewith. Said cup is open at its top, and its trunnion a^2 is held in bearing-arm a^3 , pivoted to one side of the overflow-chamber. The trunnion a^2 is a hollow one and extends beyond the arm a^3 , so that any material delivered into the cup will escape therefrom and be delivered into receptacle 17. In order to aid the material in escaping from cup 16, said cup is arranged at a downward inclination toward its discharge end, so that the material fed therein may flow freely toward its outlet.

The receiving-cup is located directly beneath the overflow-lip 6 of the hopper 2, so that the pulp passes thereover into the receiving-chamber. This cup is oscillated or

swung inward and outward with the movement of the reservoir 11. When the reservoir is exactly balanced or stands vertically, the cup 16 will be directly below the flowing stream of pulp, and the pulp enters therein through its open top. Each time the reservoir 11 is tilted the cup will pass through the stream of pulp, and as its movement is a gradual one sufficient time is allowed for the cup to fill with pulp. As the swing of reservoir 11 carries the cup beyond or from within the stream of pulp, the pulp delivered thereto will have had time to escape ere the cup is again brought into the stream by the oscillation of reservoir 11. Thus a given quantity of pulp is extracted with each throw or movement of the cup through the body of the pulp.

By cutting off the flow of water through supply-pipe 15 the working of the sampler ceases although the flow of the pulp is not interrupted.

The described device for collecting or extracting samples of the pulp to be treated in no manner interferes with the flow of the pulp to the concentrating means.

By the use of the described sampler the operator of the mill is enabled at any time to extract a quantity of the pulp and from same ascertain the true value of the material being treated.

It is obvious that in lieu of the described cup, which is moved through the body of pulp in order to extract samples therefrom, any suitable form of collecting device may be employed which will receive or extract a quantity of the pulp as passed back and forth through the flowing body thereof.

While I have described the device as being interposed within the sluiceway by which the pulp is conveyed from the battery to the concentrating means, it is not my intent to be understood as confining myself to such location. The invention may be located at any suitable point and so connected as to extract samples of the material desired to be treated.

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

1. In a pulp-sampler, the combination with the pulp-accumulating hopper, of the overflow-chamber which receives the pulp discharged from the hopper, a swinging reservoir located at one side of the overflow-chamber, said reservoir having its interior divided into compartments, siphon-outlet for each compartment of the reservoir, a water-supply for alternately delivering water to the respective compartments, a cup or collecting device interposed between the hopper and overflow-chamber, said cup or device being connected with and actuated by the oscillatory movement of the reservoir whereby the same is caused to move at given intervals through the flowing body of pulp as discharged from the hopper.

2. The combination with an oscillatory res-

ervoir having interior compartments, of a si-
phon-outlet for each compartment of the res-
ervoir, of means for alternately supplying
water to the respective compartments, and a
5 cup or sample-collecting device arranged be-
low the stream of pulp, said cup or device
being actuated by the oscillatory movement
of the reservoir so as to alternately move

back and forth through the stream of pulp
at regular intervals.

In witness whereof I have hereunto set my
hand.

WILLIS G. DODD.

Witnesses:

LEE D. CRAIG,
N. A. ACKER.

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