

No. 752,702.

PATENTED FEB. 23, 1904.

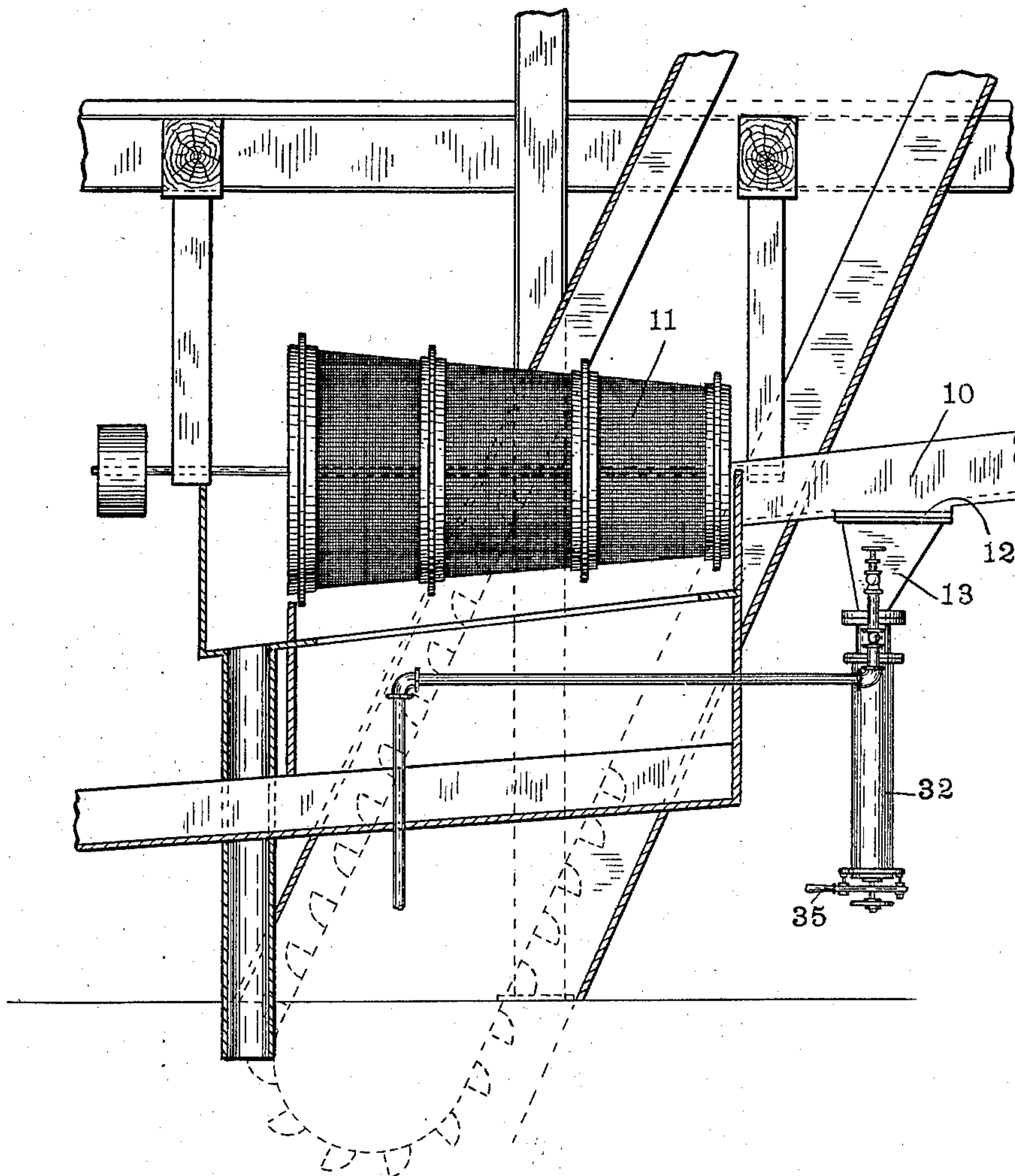
F. W. O'NEIL.
SEPARATING HOPPER FOR STAMP MILL LAUNDERS.

APPLICATION FILED MAY 2, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses
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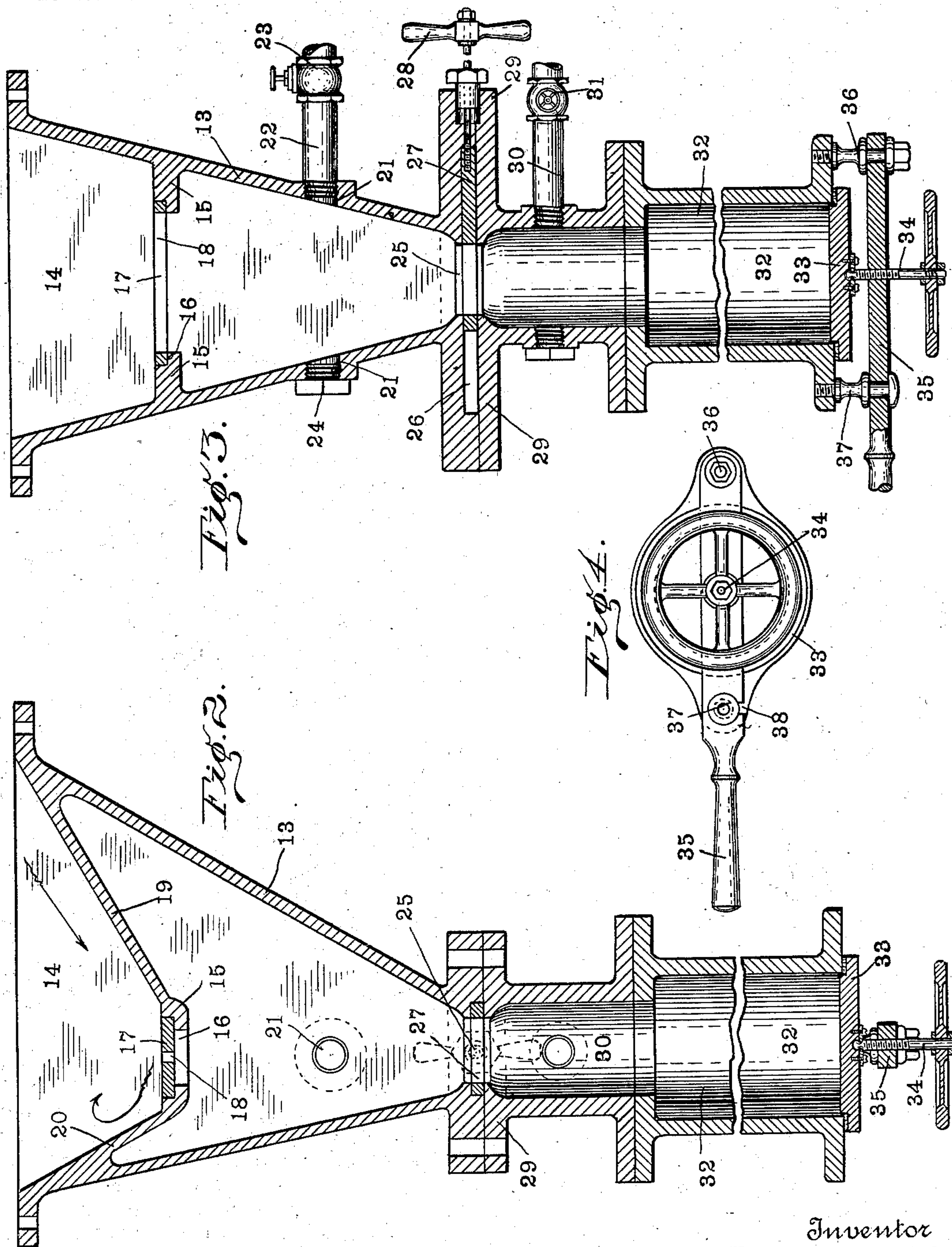
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UNITED STATES PATENT OFFICE.

FREDERICK W. O'NEIL, OF PAINESDALE, MICHIGAN.

SEPARATING-HOPPER FOR STAMP-MILL LAUNDERS.

SPECIFICATION forming part of Letters Patent No. 752,702, dated February 23, 1904.

Application filed May 2, 1903. Serial No. 155,267. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK W. O'NEIL, a citizen of the United States, residing at Painesdale, in the county of Houghton and State of Michigan, have invented certain new and useful Improvements in Separating-Hoppers for Stamp-Mill Launders, of which the following is a specification.

In the separation of native copper from its matrix it has heretofore been customary to connect at some point in the bottom of the launder running from the stamp-mill a box provided with an intermediate V-shaped partition symmetrically arranged with relation to the apex and to the launder, with an opening or slit at the apex through the partition, and force a stream of water upward through said opening. In this construction an outlet was provided from the bottom of the box below the partition of sufficient size to permit the free egress of the separated copper pellets, and a sufficient stream of water had to be forced into the box beneath the partition to create enough friction in the outlet-pipe to produce a back pressure sufficient to force a portion of the incoming water upward through the opening in the partition. As a consequence the operation resulted in a vast waste of water. The symmetrical arrangement of the partition with relation to the slit therethrough and with relation to the launder made it impossible for many of the smaller pellets of free copper to pass downward through the opening in the partition against the upward flow of water.

The object of my invention is to produce a separator in which there will be substantially no waste of water during operation and also of such form that all of the free copper pellets will be retained within the basin until they drop through the bottom.

The accompanying drawings illustrate my invention.

Figure 1 is a general view of a separating-screen, a launder leading thereto, and my improved separator attached to the launder. Fig. 2 is a vertical section of my separator parallel with the direction of flow through the launder. Fig. 3 is a vertical section at

right angles to Fig. 2 through the opening in the partition, and Fig. 4 is a bottom plan of the valve for closing the hollow leg.

In the drawings, 10 indicates a usual launder, and 11 a rotating screen mounted in the usual way, with separating receiving-chambers, &c. At a convenient point in the bottom of launder 10 I provide an opening 12, to which is attached my improved separator. This separator consists of a hollow body 13, provided at its upper end with a basin 14, the bottom of which is provided with a stepped opening 16, within which may be placed a gage-plate 17, provided with a slit or orifice 18. The incoming wall 19 of basin 14 leads downward gradually from the top of body 13 and connects with one side of bottom 15, while the outgoing wall 20 leads more abruptly from the bottom 15 to the top of body 13, so that basin 14 is not symmetrical with relation to the orifice 18, and the angle of the outgoing wall 20 is more abrupt with relation to the line of travel of the material through the launder than is the incoming wall 19.

Opposite walls of the body 13 are perforated at 21 21, and into one of said openings is lead a water-supply pipe 22, provided with a valve 23, while the other one of said openings is plugged with a plug 24. If desired, water may be lead into both openings. A discharge-orifice 25 is formed at the bottom of body 13, and adjacent said orifice I form a valve seat or way 26, within which is mounted a slide-valve 27, operated by a suitable stem 28. Connected to the bottom of body 13 is an intermediate hollow body 29, which holds the valve 27 in place and into which is lead a water-supply pipe 30, provided with a suitable valve 31. Secured to the bottom of body 29 is a hollow leg 32, which may be of any desired length and diameter. If desired, leg 32 may be directly attached to the bottom of body 13 and supply-pipe 30 lead thereinto; but for convenience of construction I prefer the form shown in the drawings. Any suitable means may be used for closing the bottom of leg 32—as, for instance, the cover-plate 33, carried at the end of a screw 34, which is threaded through a lever 35. This

lever 35 may be pivoted upon a pin 36, so as to swing parallel with the bottom of the hollow leg, and held normally in position by headed pin 37, a slit 38 being formed in lever 35 for that purpose.

In operation the hollow leg 32 and body 29 are filled with water introduced through pipe 30, and the valve 31 is then closed. Valve 23 is then opened, and the water flows through pipe 22 into body 13 and upward through slit 18 into basin 14, the column of water in leg 32 remaining substantially stationary and serving as an abutment for the column of water flowing through pipe 22 upward through slot 18. The material from the stamp-mill is then allowed to flow downward through the launder and drop into basin 14, where by reason of the greater inclination of wall 20 and the upward flow of water through slit 18 a whirling boiling action of the material is set up in basin 14, and the lighter matrix material, as well as all those portions of matrix which have not been sufficiently crushed to release the native copper, are forced outward and over into the launder and flow to the screen 11. The pellets of native copper of all sizes, however, pass downward through opening 18 and through the upflowing stream of water and drop downward through body 13 into leg 32. When leg 32 has been substantially filled with the copper, valve 27 is closed in order that the separating action may continue, cover-plate 33 is removed, so that the accumulated copper may drop out, the cover replaced, and leg 32 refilled with water from pipe 30, whereupon valve 27 is again opened, the copper which has accumulated in the bottom of body 13 dropping there-through into leg 32, and the action continuing without loss of time and without waste of water.

Pipe 30 may be omitted, if desired, in which case after leg 32 has been emptied there would be a momentary cessation of flow of water up through opening 18 until leg 32 became filled with water. Such an operation would be probably objectionable, as the basin 14 might become choked.

I claim as my invention—

1. In a separator of the class described, a receiving-basin having an orifice through its bottom, a hollow leg mounted beneath said basin, means for closing said leg, a valve for closing communication between said leg and

basin, and a water-supply pipe between said basin and said valve, for the purpose set forth.

2. In a separator of the class described, the combination with a hollow body, of a perforated partition in the upper end thereof forming a separating-basin, said basin being larger upon one side of the perforation than it is upon the other side of said perforation, a water-supply pipe leading into the body beneath the partition, and means for closing the lower end of said body.

3. In a separator of the class described, the combination with a separating-basin having an outgoing wall more abrupt than the incoming wall and an orifice through the bottom of said basin between the incoming and outgoing walls, of a closed receiving-leg mounted beneath said basin, and means for introducing a stream of water into the basin through its orifice.

4. In a separator of the class described, the combination with a hollow body, of a perforated partition in the upper end thereof, forming a separating-basin, a hollow leg communicating with the lower end of said hollow body, means for opening and closing said hollow leg, a valve arranged between the hollow leg and the hollow body, a water-supply pipe leading into said hollow body between the valve and the separating-basin, and a water-supply pipe leading into the hollow leg beneath said valve.

5. In a separator of the class described, the combination with a hollow body, of a separating-basin formed in the upper end of said body, the outgoing wall of said basin being more abrupt than the incoming wall and a perforation being formed in the bottom of said basin, of a hollow leg communicating with the lower end of said hollow body, means for opening and closing said hollow leg, a valve arranged between the hollow leg and the hollow body, a water-supply pipe leading into said hollow body between the valve and basin, and a water-supply pipe leading into the hollow leg beneath said valve.

In witness whereof I have hereunto set my hand and seal, at Dover, New Hampshire, this 8th day of April, A. D. 1903.

FREDERICK W. O'NEIL. [L. s.]

Witnesses:

FRANK R. BLISS,

CHAS. S. CORTLAND.