No. 785,531. PATENTED MAR. 21, 1905.

C. G. WELLER.

ORE CONCENTRATOR.

APPLICATION FILED APR. 20, 1904.

Fig. 1.

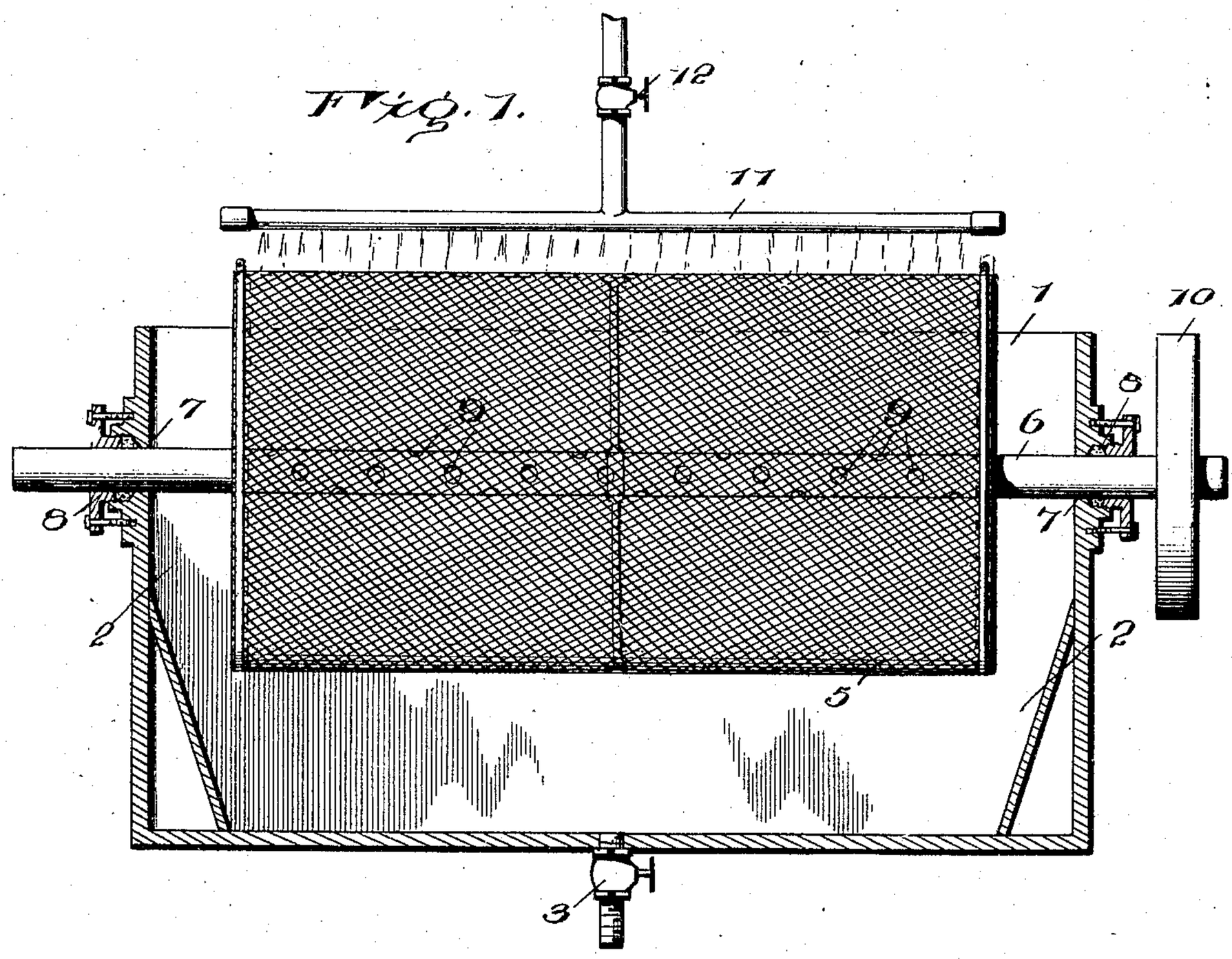


Fig. 2.

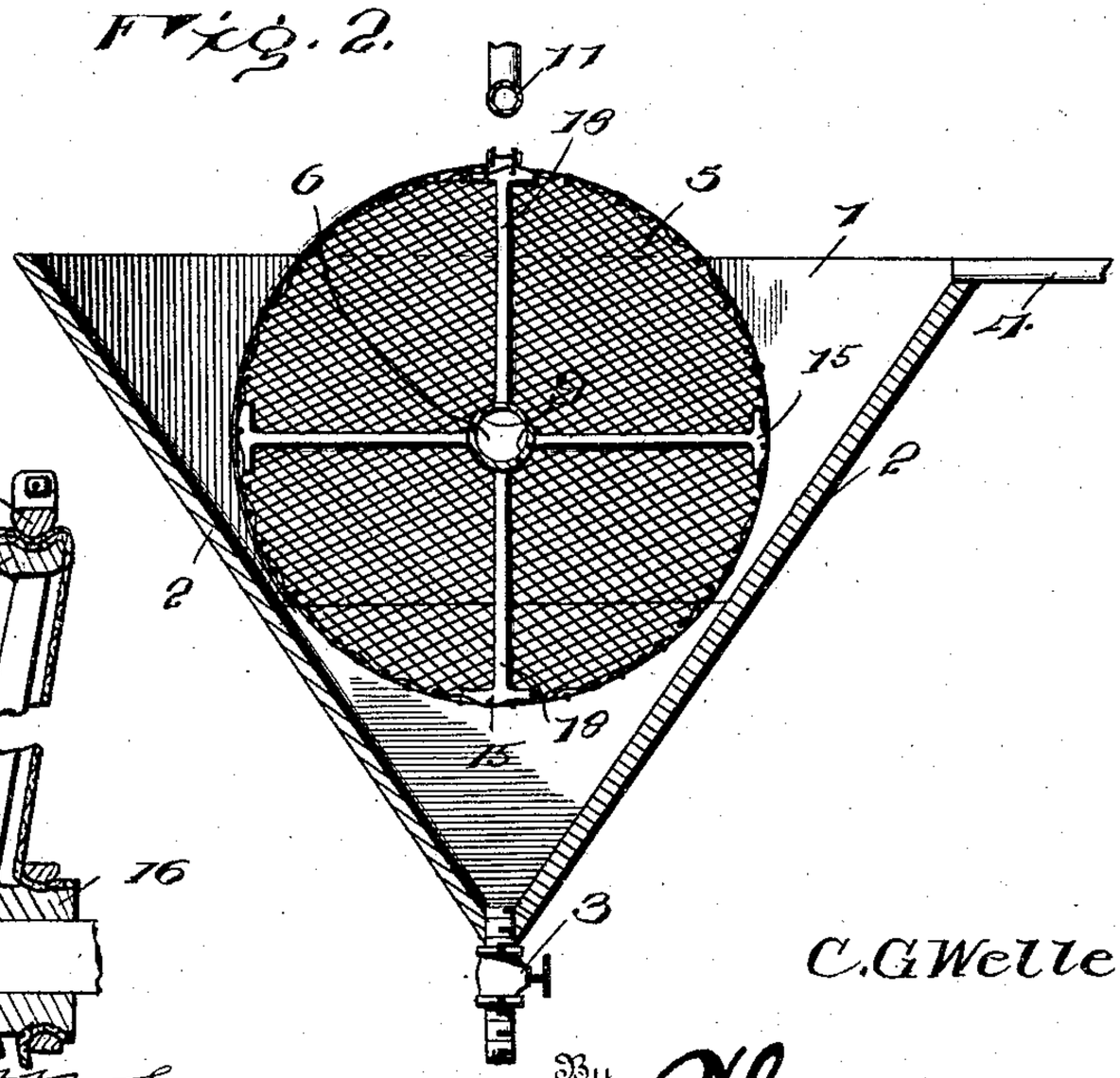
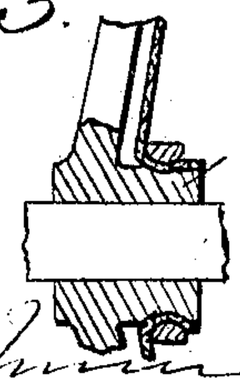


Fig. 3.



Witnesses

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No. 785,531. Patented March 21, 1905.

UNITED STATES PATENT OFFICE.

CALVIN G. WELLER, OF IDAHO SPRINGS, COLORADO.

ORE-CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 785,531, dated March 21, 1905.

Application filed April 20, 1904. Serial No. 204,093.

To all whom it may concern:

Be it known that I, CALVIN G. WELLER, a citizen of the United States, residing at Idaho Springs, in the county of Clear Creek and State of Colorado, have invented certain new and useful Improvements in Ore-Concentrators, of which the following is a specification.

In the separation and concentration of ore, particularly such as contain the precious metals, the grading or classifying process is most generally adopted in the wet system, the floating and finer particles of metal being collected by screen.

This invention is designed to prevent the fouling or clogging of the screen, and to this end the screen is mounted for movement, rotary, and the water passes from the box into the screen and thence outward, the metal collecting on the screen being removed by the rotation of the screen through the water contained in the box and by means of a spray or jets of water directed against the screen.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and drawings hereto attached.

While the essential and characteristic features of the invention are susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a central longitudinal section of an ore-concentrator embodying the invention. Fig. 2 is a transverse section on the line X X of Fig. 1. Fig. 3 is a sectional detail of an end portion of the separating-screen, showing the preferred means for securing the screen-cloth to the framework.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The box 1 has its sides upwardly flared and provided at its ends with upwardly-inclined partitions 2, whereby the concentrate is directed to a central point, where a valved outlet 3 is located for regulating the discharge upon the concentrating-table in the manner well understood. An inlet 4 is provided at the upper end of a side of the box for the admission of the water, slimes, or pulp from which the floating and fine particles of the precious metals are to be removed.

Within the box 1 is located the separating-screen 5 of cylindrical formation and mounted for rotation, said screen being closed upon all of its sides to insure removal of all particles from the water. The mesh of the screen will depend upon the degree of separation to be effected. A pipe 6 passes centrally through the separating-screen and constitutes the axis or support therefor and is journaled in bearings 7, fitted to the ends of the box 1. Stuffing-boxes 8 of any type provide a tight joint between the pipe 6 and the ends of the box and prevent leakage. The separating-screen 5 is mounted upon the pipe or shaft 6 in any manner, so as to rotate therewith, and the part of the pipe located between the heads of the screen is perforated, as shown at 9, to admit of the water passing freely into the pipe, thence to the point of discharge, which may be at one or both ends of the pipe, as desired. The power for operating the screen is preferably applied to the pipe or shaft 6, and for this purpose a band-pulley 10 is secured upon the pipe, power being applied thereto by means of a drive-belt (not shown) in the usual way.

A spray-pipe 11 is arranged to deliver a series of jets of water upon the exposed portion of the separating-screen, so as to dislodge and remove the particles adhering thereto, thereby preventing fouling of the screen and insuring unobstructed passage of the water therethrough, which is essential to the efficiency of the machine. A valved pipe 12 connects with the spray-pipe 11 and leads from any suitable source of water-supply.

In the operation of the machine the separating-screen is rotated at a comparatively slow speed, and the water, laden with slimes, small particles of metal, and the like to be separated, is fed to the box in determinate quantity through the inlet 4. The heavier particles are precipitated and collect in the bottom of the box and are drawn off through the valved outlet 3. The floating and lighter

particles adhere to the outer side of the screen, whereas the water passes through the sides of the screen into the pipe 6, thence to the determinate point of discharge. The particles adhering to the screen are removed by the water contained in the box as the screen rotates therethrough and by the jets delivered upon the screen from the spray-pipe 11. The particles thus dislodged accumulate upon the surface of the water contained in the box and may be removed from time to time by means of a scoop, dipper, or like device.

In order to admit of the replacement of the screen-cloth at a nominal and minimum expenditure of time and money, the means illustrated most clearly in Fig. 3 have been devised, the same consisting of annular binders 13 and 14, coöperating with, respectively, the rim 15 and hub 16 of the end supports or arms 18. The parts 15 and 16 are grooved, so as to retain the parts 13 and 14 in place. The part 13 is adjustable, its end portions being connected by a bolt or like fastening. The screen-cloth is connected to the rim portion only of the intermediate support or supports by means of the substantial equivalent of the parts 13 and 15.

Having thus described the invention, what is claimed as new is—

In an ore-concentrator, the combination of a box for receiving the pulp, slime or material to be separated, a perforated pipe journaled in the box, arms projected from said pipe and forming open-work end supports, a rotary separating-screen mounted upon said end supports, the end supports being provided with grooved rims and hubs, the fabric of the screen extending over the grooved rims and hubs, annular binders for clamping said fabric to said rims and to said hubs, and means for feeding pulp to the box externally of the screen.

In testimony whereof I affix my signature in presence of two witnesses.

CALVIN G. WELLER. [L. S.]

Witnesses:

WILL LUGG,

AUGUST HORSCH.