W. P. ALDERSON.

AMALGAMATOR.

APPLICATION FILED FEB. 19, 1916.

1,204,231.

Patented Nov. 7, 1916.

2 SHEETS—SHEET 1.

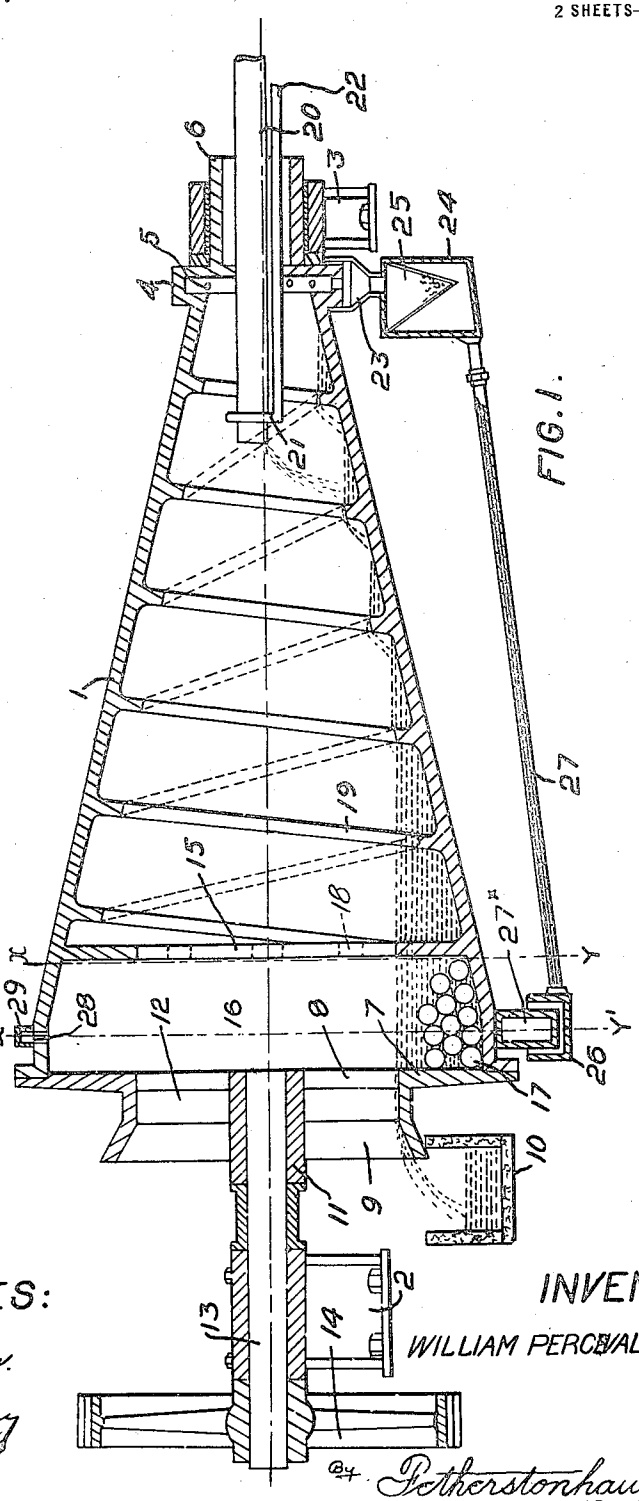


FIG. 1.

WITNESSES:

C. H. Perry.

H. J. Lyons

INVENTOR:

WILLIAM PERCIVAL ALDERSON

By Fetherstonhaugh & Co.

ATTYS

W. P. ALDERSON.

AMALGAMATOR.

APPLICATION FILED FEB. 19, 1916.

1,204,231.

Patented Nov. 7, 1916.

2 SHEETS—SHEET 2.

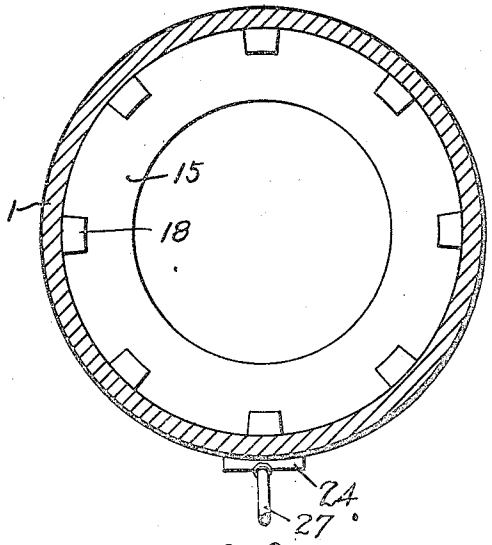


FIG. 2

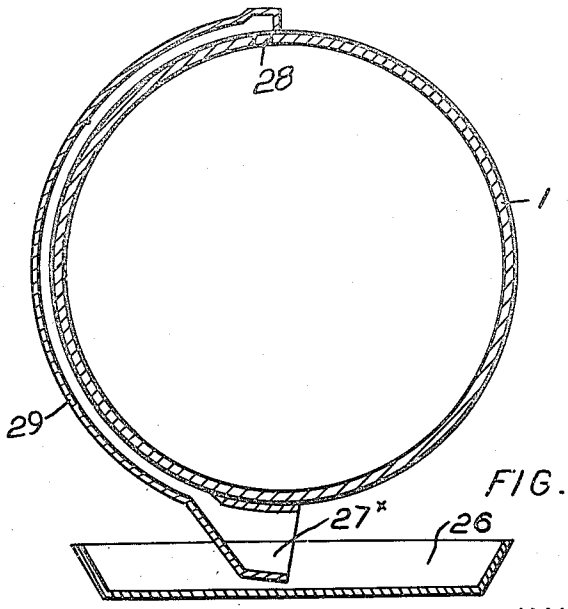


FIG. 3.

WITNESSES

C. H. Berry.

N. L. Gourley

INVENTOR

WILLIAM PERCEVAL ALDERSON

Fetherstonhaugh & Co.

UNITED STATES PATENT OFFICE.

WILLON PERCEVAL ALDERSON, OF TIMMINS, ONTARIO, CANADA.

AMALGAMATOR.

1,204,231. Specification of Letters Patent. Patented Nov. 7, 1916.

Application filed February 19, 1916. Serial No. 79,329.

To all whom it may concern:

Be it known that I, WILLON PERCEVAL ALDERSON, of the town of Timmins, in the district of Temiskaming, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Amalgamators, of which the following is the specification.

My invention relates to improvements in amalgamators and the object of the invention is to devise a simple machine which will effect a thorough separation of metal values from pulp and it consists essentially of a conical drum, a spiral mercury feed flange extending around the internal periphery of the drum and from end to end of the drum, an axial feed inlet at the small end of the drum, a discharge outlet at the large end of the drum, an annular connecting groove having discharge openings also located at the small end of the drum, a filter bag and trap to receive the amalgam from the collecting groove and means for returning the mercury from the trap into the opposite end of the drum as hereinafter more particularly explained by the following specification.

Figure 1 is a longitudinal section through my machine. Fig. 2 is a cross section on line *x*—*y* Fig. 1. Fig. 3 is a cross section on line *x'*—*y'* Fig. 1.

In the drawings like numerals of reference indicate corresponding parts in each figure.

1 indicates a conical drum designed to rotate around a horizontal axis.

2 and 3 indicate bearings for the drum.

4 indicates an annular enlargement formed at the small end of the drum and forming an annular internal groove provided with a series of discharge orifices 5 extending radially therefrom.

6 indicates a tubular extension to the small end of the drum 1. The tubular extension extends into the bearing 3 so as to support the small end of the drum.

7 indicates an end plate forming a closure for the large end of the drum.

8 indicates an orifice formed in the center of the end plate 7 and provided with an annular discharge spout 9.

10 indicates a trough for carrying away the pulp from the discharge 9.

11 indicates the center hub connected by spokes 12 to the wall of the annular spout 9.

13 indicates a shaft secured in the hub 11 and extending through and journaled in the bearing 2.

14 indicates the driving pulley for the shaft 13.

15 indicates an annular flange formed in the interior of the drum 1 in proximity to the large end thereof. The flange 15 forms an annular channel way 16 between itself and the plate 7 forming the end of the drum.

18 indicates a series of orifices formed in the flange 15 adjacent to the wall of the drum.

17 indicates a series of steel balls located in the channel 16 for a purpose which will hereinafter appear.

19 indicates a spiral flange extending from the flange 15 around the interior of the drum to the small end thereof terminating at the annular groove 4.

20 indicates a feed spout for the pulp.

21 indicates a spray ring surrounding the feed pipe 20 in proximity to its discharge end.

22 indicates a supply pipe for feeding water into the spray ring 21.

23 indicates a receiving hopper designed to receive the amalgam discharged from the groove 4 through the orifices 5.

24 indicates an amalgam trap provided with a filter bag 25 into which the hopper 23 fits.

26 indicates a mercury feed trough.

27 indicates an inclined pipe extending from the trap 24 to the feed trough 26.

27× indicates a scoop secured to the conical drum 1 and revolving therewith.

28 indicates an opening formed in the drum diametrically opposite scoop 27×.

29 indicates a duct leading from the scoop 27× around the drum to the orifice 28.

Having described the principal parts involved in my invention I will briefly describe the operation of the same. As before stated the pulp passes through the pipe 20 to the interior of the drum 1. The mercury contained in the trough 26 is picked up by the scoop 27× as the drum 1 revolves and is carried through the duct 29 and orifice 28 into the interior of the drum. The mercury as it is gradually fed into the drum is carried

by the spiral flange longitudinally of the drum toward the small end thereof thereby forming a series of mercury receptacles between the convolutions of the flange 19. As the pulp passes over the mercury the metal values are collected by the mercury and carried longitudinally of the drum into the groove 4. The amalgam is then carried through the orifices 5 into the filter bag 25. By this means the greater part of the metal values are separated from the mercury, the mercury flowing down through the pipe 27 back into the trough 26 when it is again fed into the machine. The steel balls 17 serve to more thoroughly mix the pulp with the mercury and thereby insure of a more thorough separation. The waste of the pulp passes out through the discharge orifice 8 and spout 9 into the trough 10. From this description it will be seen that I have devised a very simple device which will effectively separate metal values from pulp and which will economize the mercury employed in the process of separation.

What I claim as my invention is—

1. An amalgamator comprising a horizontally disposed conical drum rotatably mounted on suitable bearings and having a pulp inlet orifice at one end and a pulp discharge orifice at the opposite end, of means for feeding the mercury into the large end of the drum and carrying it gradually forward toward the small end, and means for discharging the amalgam from the small end of the drum.

2. An amalgamator comprising a horizontally disposed conical drum rotatably mounted on suitable bearings and having a pulp inlet at the small end and a pulp discharge at the large or opposite end, an internal spiral flange formed in the drum and extending longitudinally thereof, means for feeding mercury into the large end of the drum into engagement with the spiral flange, and means for continuously discharging the mercury and metal values as they are carried into the small end of the drum.

3. An amalgamator comprising a horizontally disposed conical drum rotatably mounted on suitable bearings, an annular internal groove formed at the small end of the drum and provided with a series of discharge orifices, a discharge spout at the opposite end of the drum, means for feeding mercury into the large end of the drum, means for gradually feeding the mercury forward from the large end of the drum toward the small end, a feed inlet pipe for the pulp extending into the small end of the drum, and a receiving trap for the amalgam collected at the small end of the drum.

4. An amalgamator comprising a horizontally disposed conical drum rotatably mounted on suitable bearings, an annular internal groove formed at the small end of the drum and provided with a series of discharge orifices, a discharge spout at the opposite end of the drum, means for feeding mercury into the large end of the drum, means for gradually feeding the mercury forward from the large end of the drum toward the small end, a feed inlet pipe for the pulp extending into the small end of the drum, a receiving trap for the amalgam collected at the small end of the drum, means in the trap for separating the metal values from the mercury, and means for automatically returning the mercury from the trap into the large end of the drum.

5. An amalgamator comprising a horizontally disposed conical drum rotatably mounted on suitable bearings, an annular internal groove formed at the small end of the drum and provided with a series of discharge orifices, a discharge spout at the opposite end of the drum, means for feeding mercury into the large end of the drum, means for gradually feeding the mercury forward from the large end of the drum toward the small end, a feed pipe for the pulp extending into the small end of the drum, a receiving trap for the amalgam collected at the small end of the drum, a strainer bag located in the trap and into which the amalgam is fed, and means for automatically returning the mercury from the trap into the large end of the drum.

6. An amalgamator comprising a horizontally disposed conical drum rotatably mounted on suitable bearings and having an axial pulp discharge outlet and a peripheral mercury inlet orifice at its large end, means for gradually feeding mercury into the large end of the drum, an annular internal groove formed in the small end of the drum having a series of discharge orifices extending radially therefrom, a spiral flange extending from the large end of the drum into the annular groove, a pulp inlet pipe extending into the small end of the drum, an amalgam trap designed to receive the amalgam discharged from the radial orifices of the annular groove, a mercury trough located in proximity to the large end of the drum, an inclined tube extending from the trap to the mercury trough, a scoop carried by the drum and designed to pass through the trough, and a duct extending from the scoop circumferentially around the drum to the mercury feed inlet.

7. An amalgamator comprising a horizontally disposed conical drum rotatably mounted in suitable bearings and having an axial pulp discharge outlet at its large end, an annular internal flange formed in the drum in proximity to its large end and having openings therein located in proximity to the internal periphery of the drum, a series of balls located in a space between the flange and the large drum end, means for feeding

the pulp into the opposite or small end of the drum, means for feeding mercury into the space between the annular flange and the large end of the drum, means for gradually carrying mercury forward toward the small end of the drum, means for discharging the amalgam at the small end of the drum, and a suitable receiving trap for the same.

WILLON PERCEVAL ALDERSON.

Witnesses:
B. Boyd,
M. Egan.