No. 876,713. PATENTED JAN. 14, 1908.

P. HÄRDÉN.

ORE CONCENTRATOR.

APPLICATION FILED JULY 11, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

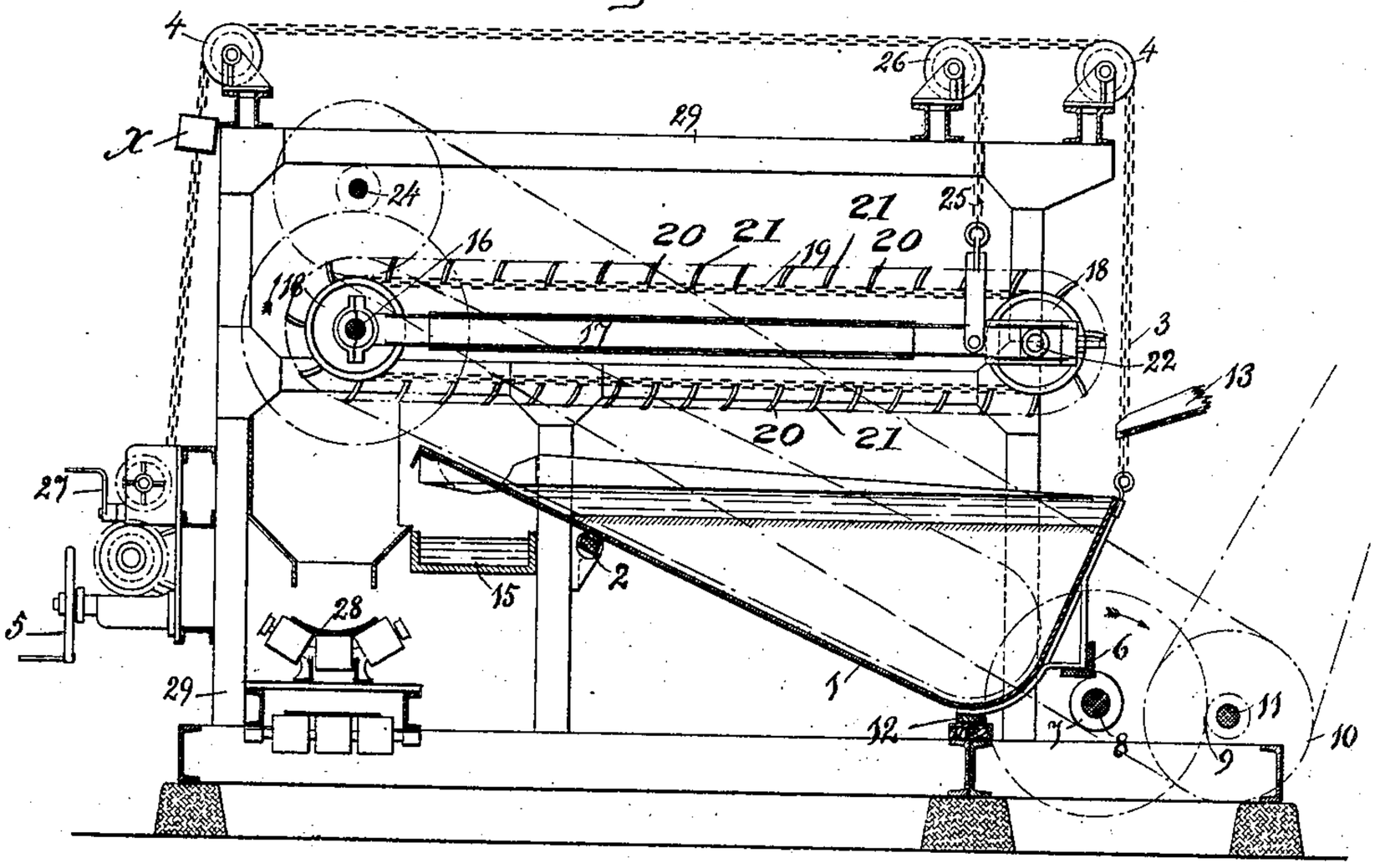
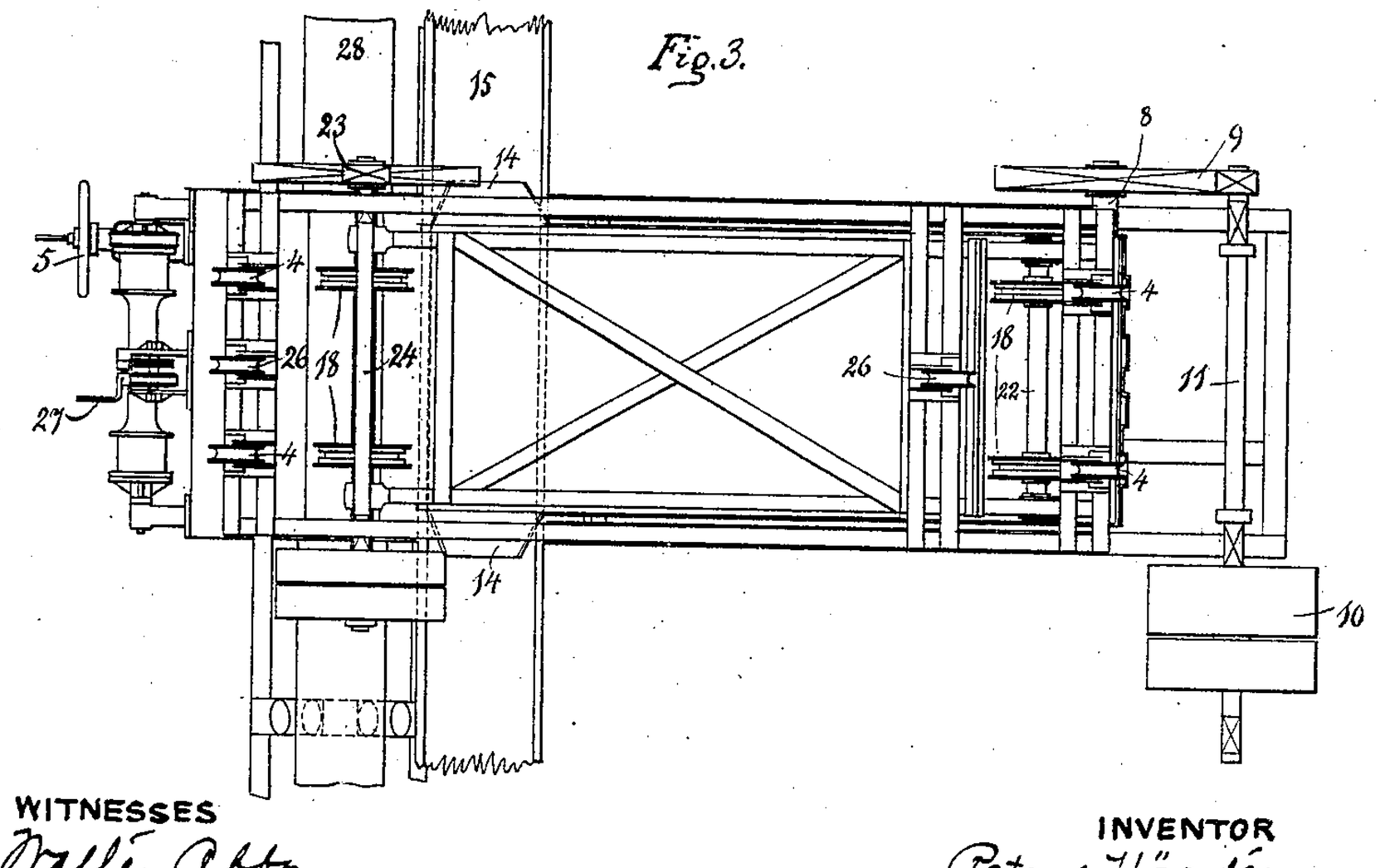


Fig. 3.



WITNESSES

Walter Abbe

L. H. Grote

INVENTOR

Petrus Härdén

BY

Howard & Howard

ATTORNEYS

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2 SHEETS—SHEET 2.

Fig. 2.

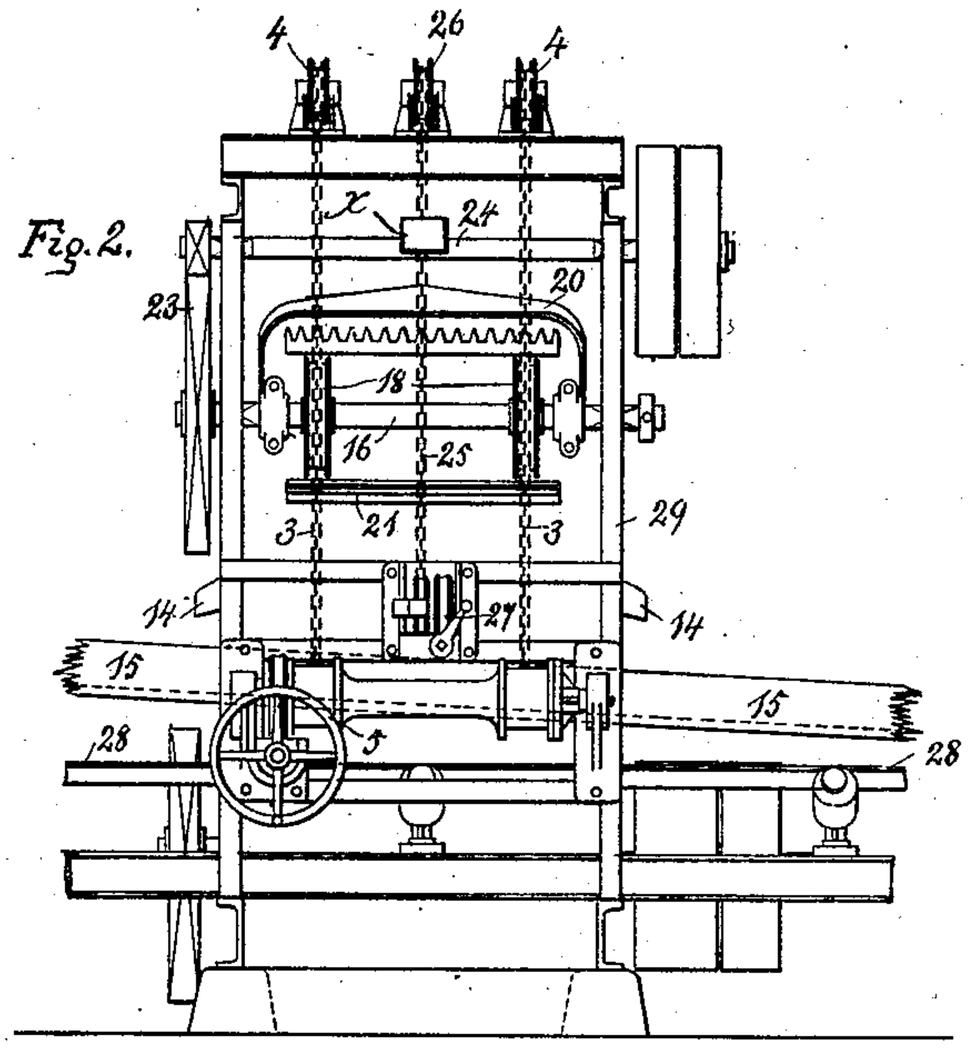


Fig. 4.

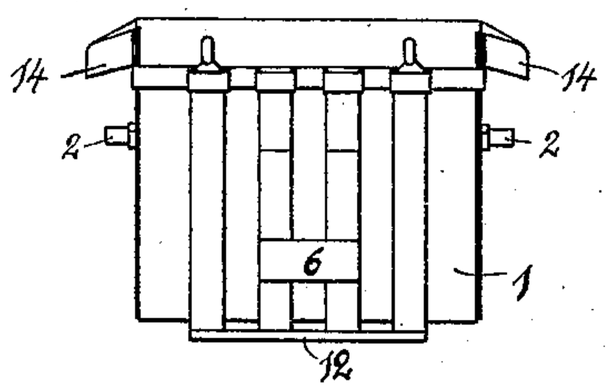


Fig. 5.

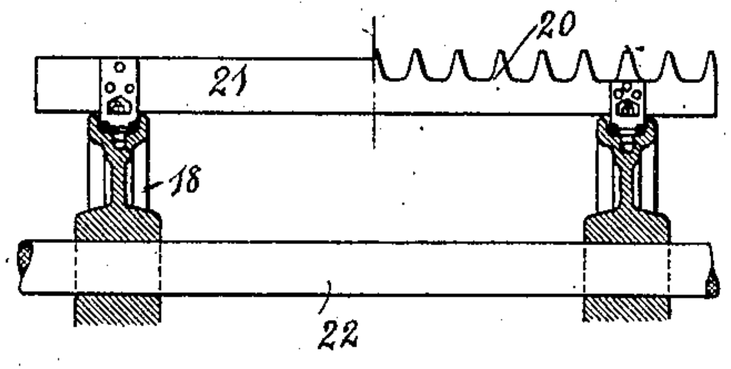
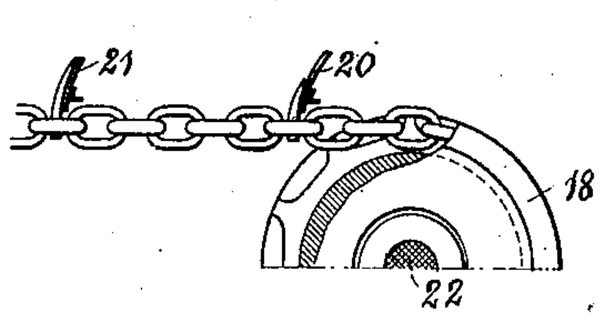


Fig. 6.



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Howard and Howard

ATTORNEYS

UNITED STATES PATENT OFFICE.

PETRUS HÄRDÉN, OF STOCKHOLM, SWEDEN, ASSIGNOR TO METALLURGISKA AKTIEBOLAGET, OF STOCKHOLM, SWEDEN, A CORPORATION OF SWEDEN.

ORE-CONCENTRATOR.

No. 876,713. Specification of Letters Patent. Patented Jan. 14, 1908.

Application filed July 11, 1907. Serial No. 383,306.

To all whom it may concern:

Be it known that I, PETRUS HÄRDÉN, a subject of the King of Sweden, and resident of and having a post office address at Centralpalatset, Stockholm, Sweden, have invented certain new and useful Improvements in Ore-Concentrators, of which the following is a specification.

The invention refers to apparatus for removing the packed material from shaking apparatus by means of which the superfluous water is separated from ore-pulp.

In the accompanying drawing there is shown as an example only, a device adapted to a shaking apparatus of this kind.

Figure 1 represents a longitudinal section of the apparatus, Fig. 2 is an end view and Fig. 3 a plan. Fig. 4 is an end view of the shaking receptacle alone. Figs. 5 and 6 are detail views of the means for scraping off the packed mass.

1 is the bucket pivoted on the trunnions 2 and suspended at the rear end by two chains 3 running over the pulleys 4 to a windlass 5 provided with two chain-drums. At the rear end of the receptacle there is provided an iron bar 6 intended to be operated intermittently by a cam 7 keyed on a shaft 8 which is rotated by means of the toothed gearing 9 and the belt-pulley 10 on the shaft 11.

12 is a shoulder striking against a stationary oaken board or the like when the receptacle falls downwards.

13 is the end of a conduit for leading the ore pulp suspended in water to the receptacle. In the front end the receptacle is provided with two discharge openings 14, a trough 15 for the water to run off being provided under said openings.

In this apparatus the water is separated by repeated shocks and the suspended material gathers in the form of a firmly compressed or packed mass at the bottom of the receptacle. The means for removing said mass from the receptacle will now be described. It consists of a frame 17 pivoted on a shaft 16 and provided at each end with two chain pulleys 18 round which two endless chains 19 are arranged. To these chains 19 are attached at proper intervals scrapers 20, 21, which are intended to tear up and remove the packed material. For this purpose every other scraper 20 is provided with teeth for tearing up the mass and every intermediate scraper 21 consists of a curved sheet for removing the loose material from the receptacle. The front chain pulleys are mounted on the shaft 16 which is the driving shaft. It is rotated by means of a toothed gearing 23 and a shaft 24 driven by a belt from the shaft 11, as indicated by dotted lines in Fig. 1. The rear end of the frame 17 is suspended by means of a strap in a chain 25 passing over a pair of chain pulleys 26 to a windlass 27.

28 is a convex conveying belt for carrying the material from one or more apparatus to the depot.

The whole apparatus is supported by a framework 29 of beams or a wooden frame or other device suitable for the local conditions.

In using the apparatus the suspended ore-pulp is introduced into the receptacle 1 that occupies the position shown in Fig. 1. In this position the iron bar 6 rests on the cam 7 and by the rotation of the latter the receptacle is brought to vibrate and in descending the shoulder strikes against the stationary oaken board lying beneath. These shocks cause the material to settle. The shaking having proceeded sufficiently, so that the water above is free from ore, the rear part of the receptacle is lifted by means of the windlass 5 to such a height that the water is able to flow off through the discharges 14 into the trough 15. This being effected the receptacle is somewhat lowered, but not sufficiently for coming into the region of action of the cam wheel. This scraping off of the ore now begins and that is brought about by lowering the free end of the frame by means of the windlass 27 till the scraping plates come in contact with the mass of ore and the tearing off begins. The chain 25 can be slackened so that the frame makes its way through the packed mass by its own weight or its weight may be balanced by suspending in the chain 25 in the vicinity of the windlass a more or less heavy counterweight by means of which the pressure with which the sheets are pressed against the mass of ore may be controlled. The frame with its scrapers having made its way to the position represented by dotted lines in Fig. 1 the bucket is empty and the frame is elevated so far as to occupy the position represented in full lines in Fig. 1, after which the bucket is lowered towards the cam, so as to be vibrated and ready for another charge.

I claim.

Apparatus for shaking ore pulp, comprising a pivoted receptacle, means for shaking it, means for raising the receptacle to run off the water, and an endless scraping means with devices for lowering the latter into the receptacle and withdrawing the same therefrom.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses.

PETRUS HÄRDÉN.

Witnesses:

A. EKDOL,

F. A. NYILLIN.