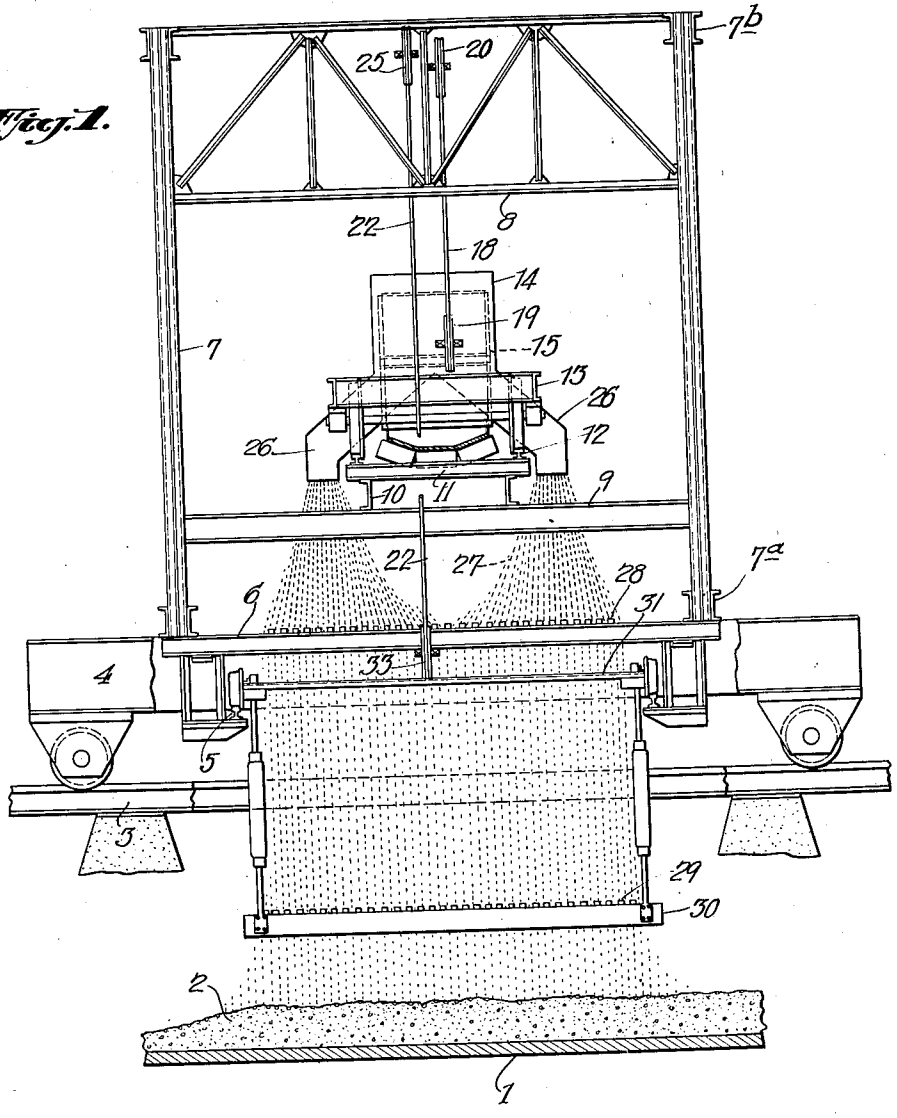
March 31, 1931. H. W. ALDRICH ET AL 1,798,715

ORE DISTRIBUTING

Filed June 16, 1927 2 Sheets-Sheet 1

Fig. 1.



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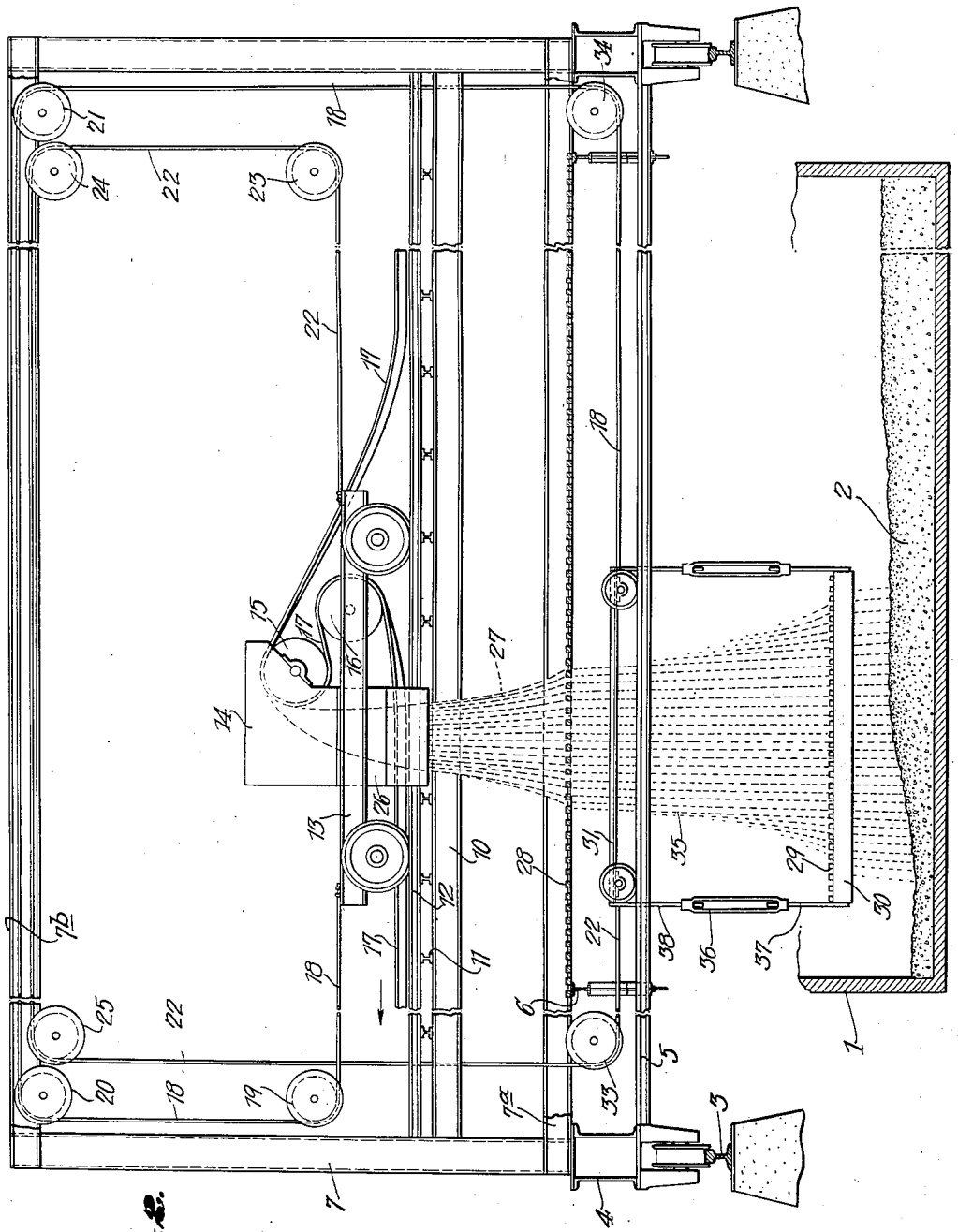


Fig. 2.

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Patented Mar. 31, 1931

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UNITED STATES PATENT OFFICE

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ORE DISTRIBUTING

Application filed June 16, 1927. Serial No. 199,202.

The invention is directed to a method of distributing crushed ore, (in which term we include matte and other materials which are treated like ores to extract metal therefrom) in a tank, vat or other receptacle or on a bed. It is particularly useful in connection with the extraction of metals from ores or the like where it is important to distribute the coarse and fine particles of material evenly in the receptacle in which they are to be treated. In the accompanying drawings—

Fig. 1 is a vertical cross-section of a distributing apparatus and Fig. 2 a vertical longitudinal section of the same.

A tank is indicated at 1 on the bottom of which the ore or other material 2 is to be distributed. On piers at the sides there are rails 3 above the tank carrying a wheeled truck 4 which can be shifted in what we call the transverse direction and which in turn carries rails 5 supporting a wheeled grating hereinafter referred to. The truck 4 includes transverse floor beams 6, end posts 7 connected by longitudinal girders 7^a and 7^b at top and bottom and overhead trusses or frame work between the posts as indicated at 8. Between the posts 7 at each end are carried cross beams 9 supporting longitudinal channels 10 which carry cross ties 11 supporting rails 12 on which travels in longitudinal direction a second small truck 13. This truck carries a tripper or dumper of any convenient sort, the frame work of which is indicated at 14 and which includes guide rollers 15 and 16 for a conveyor belt 17. The incoming portion of the conveyor belt travels up to and over the pulley 15 where the belt is inverted to dump the contents after which the belt passes back over the pulley 16 and forward below the floor of the truck 13 as shown. The truck is traversed in the longitudinal direction by means of a cable 18 passing over sheaves 19, 20 and 21 and a cable 22 passing over pulleys 23, 24 and 25. Any of the sheaves may be driven so as to draw the truck forward or backward as required. By this means the material coming in continuously on the conveyor belt can be distributed longitudinally on the floor of the tank.

The material discharged from the belt is dumped into chutes 26 leading to opposite sides of the truck 13 and drops in two streams indicated at 27. On the cross beams 6, there is a grating or grille work made of strips 28 of wood or other suitable material through which the crushed ore falls. The grating breaks the fall and also spreads the material. When this material falls on that which is already in the tank, it is caused by the grating to spread over a larger area. Also, the fall is broken so that the material drops lightly on that previously laid. Instead of the ridges of the crushed material which are characteristic of old methods, the interposition of the grating tends to effect a smoother deposition and to prevent segregation of the coarse and fine material, and also to form a bed which is lightly laid, instead of being fairly densely packed and which thus allows better percolation of solvents.

These desired advantages may be increased by interposing a second grating between the first grating and the bed. Such a grating is shown at 29 supported on a frame 30 which is suspended from an overhead frame 31 provided with two wheels rolling in a longitudinal direction on the rails 5.

We prefer to make this second grating 29 movable longitudinally as illustrated, in which case it does not need to be of the full length of the upper grating 28. It must always register with the truck 13 which carries the belt tripper, or rather with the chutes 26 through which the material is first discharged. Such registration is accomplished by passing the cables 22 over pulleys 33 and connecting them to the forward end of the frame 31, and passing the cables 18 over pulleys 34 and connecting them to the rear end of the frame 31. As the truck 13 is traversed, the truck or frame 31 will follow it and will spread and distribute the material in flaring lines as indicated at 35 in Fig. 2.

This second grating 29 is also preferably adjustable vertically so that as the height of the bed of material varies, the grating can be adjusted to a slight distance above it so

as to most effectively break the fall of the material. Such adjustment may be effected, for example, by means of turn buckles 36 in rods 37 and 38 by which the frame 30 is supported at its four corners.

The traversing movements described may be effected and synchronized by other means than the cables and sheaves shown, as, for example, by electric motors or magnets synchronized by electrical contactors. Various other devices than those illustrated may also be used for adjusting the grating 29 vertically. And grating or equivalent distributors of various sorts may be used in place of the simple wooden grilles shown.

In apparatus for distributing many materials, it is the common practice by means of deflecting plates or laterally moving devices to project the material laterally so that its path from the distributor to the point of rest is oblique. Where the material contains particles of different specific gravity or of different size, such lateral forces tend to classify the particles and to produce a bed of material which is not homogeneous across its entire area.

According to the present invention the ore is dropped through open unobstructed spaces and is distributed by striking one or the other screen and not during its passage through the air. There is a slight flare, owing to air resistance, in the streams 27 and 35. But from the distributing grating 29 to the bed 2, the space is so slight that there is not even this divergence from a true vertical stream. By dropping the ore in this way in substantially vertical lines, substantial homogeneity is preserved. This is most important in such operations as are contemplated for extraction of the metal from the ore, such as leaching by the passage of a solvent through it.

Various other modifications may be made by those skilled in the art without departing from the invention as defined in the following claims.

What we claim is:—

1. The method of distributing crushed ore on a fixed support to form a bed for extraction of metal which consists in dropping the ore in a stream, breaking its fall at a level above the surface of the bed and dropping it from said level in a stream in which the ore is substantially uniformly distributed throughout the cross-section on to the surface of the bed, raising the said level as the bed increases in depth and gradually and continuously building up above the support a bed of uniformly distributed lightly laid ore of increasing depth.

2. An apparatus for distributing crushed ore to form a bed for extraction of metal by the application of solvents to the accumulated bed of ore, said apparatus comprising a tank in which the ore is to be treated, a chute above said tank from which a stream of ore is caused to pour and a horizontal grating between the chute and the tank for breaking the fall of the ore and spreading it in a lightly falling stream in which the ore is substantially uniformly distributed throughout the cross-section so as to build up in said tank a comparatively deep bed of uniformly distributed ore lightly laid to facilitate percolation of the solvent, said horizontal grating being vertically adjustable to permit maintaining it at a slight elevation above the bed of the ore as the latter accumulates in height.

3. An apparatus for distributing crushed ore to form a bed for extraction of metal by the application of solvents to the accumulated bed of ore, said apparatus comprising a tank in which the ore is to be treated, a chute above said tank from which a stream of ore is caused to pour and a plurality of gratings at successive levels for breaking in succession the fall of the ore and spreading it in a lightly falling stream in which the ore is substantially uniformly distributed throughout the cross-section so as to build up in said tank a comparatively deep bed of uniformly distributed ore lightly laid to facilitate percolation of the solvent.

4. An apparatus for distributing crushed ore to form a bed for extraction of metal by the application of solvents to the accumulated bed of ore, said apparatus comprising a tank in which the ore is to be treated, a chute above said tank from which a stream of ore is caused to pour and a plurality of gratings at successive levels for breaking in succession the fall of the ore and spreading it in a lightly falling stream in which the ore is substantially and uniformly distributed throughout the cross-section so as to build up in said tank a comparatively deep bed of uniformly distributed ore lightly laid to facilitate percolation of the solvent, the lowest of said gratings being vertically adjustable so as to permit maintaining it at a slight level above the accumulated bed of ore.

5. An apparatus for distributing crushed ore to form a bed for extraction of metal by the application of solvents to the accumulated bed of ore, said apparatus comprising a tank in which the ore is to be treated, a chute above said tank from which a stream of ore is caused to pour, said chute being of less length than the tank, means for moving and guiding the chute lengthwise over the tank and a horizontal grating between the chute and the support for breaking the fall of the ore and spreading it in a lightly falling stream in which the ore is substantially uniformly distributed throughout the cross-section so as to build up in said tank a comparatively deep bed of uniformly distributed ore lightly laid to facilitate percolation of the solvent.

6. An apparatus for distributing crushed ore to form a bed for extraction of metal by

the application of solvents to the accumulated bed of ore, said apparatus comprising a tank in which the ore is to be treated, a chute above said tank from which a stream of ore is caused to pour and a horizontal grating between the chute and the tank for breaking the fall of the ore and spreading it in a lightly falling stream in which the ore is substantially uniformly distributed throughout the cross-section so as to build up in said tank a comparatively deep bed of uniformly distributed ore lightly laid to facilitate percolation of the solvent, the chute and the grating being of less length than the tank and means for moving and guiding them lengthwise over the tank during the building up of the bed therein.

7. An apparatus for distributing crushed ore to form a bed for extraction of metal comprising a fixed support, a chute from which a stream of ore is caused to pour, a plurality of gratings at successive levels for breaking in succession the fall of the ore and spreading it in a falling stream in which the ore is substantially uniformly distributed throughout the cross-section so as to build up on said support a bed of uniformly distributed lightly laid ore and means for moving and guiding the chute and the lowest grating lengthwise of the first grating and maintaining them in register with each other during such movement.

In witness whereof, we have hereunto signed our names.

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