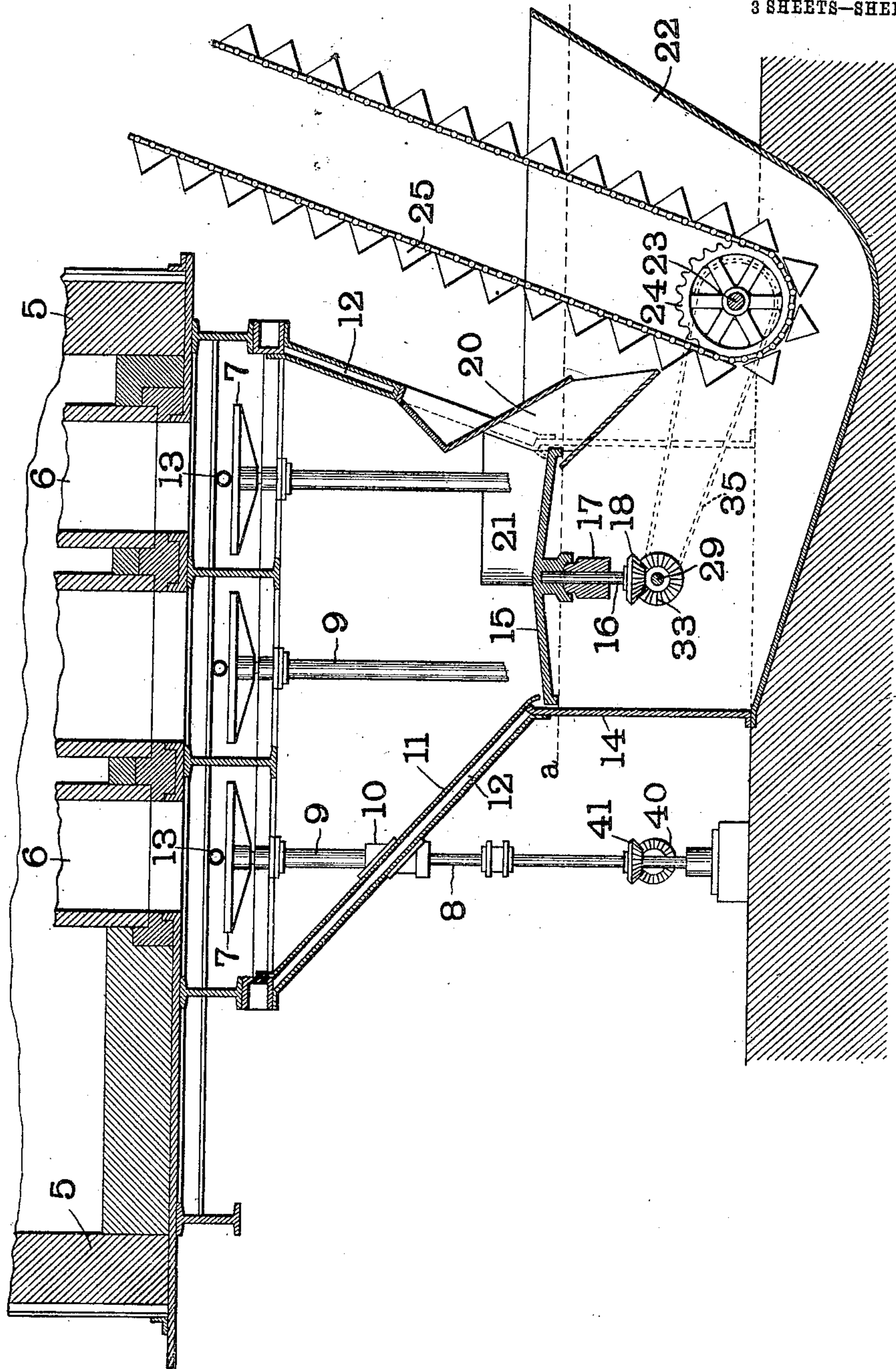


917,363.

Patented Apr. 6, 1909.
3 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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W. A. Alexander.

Inventor

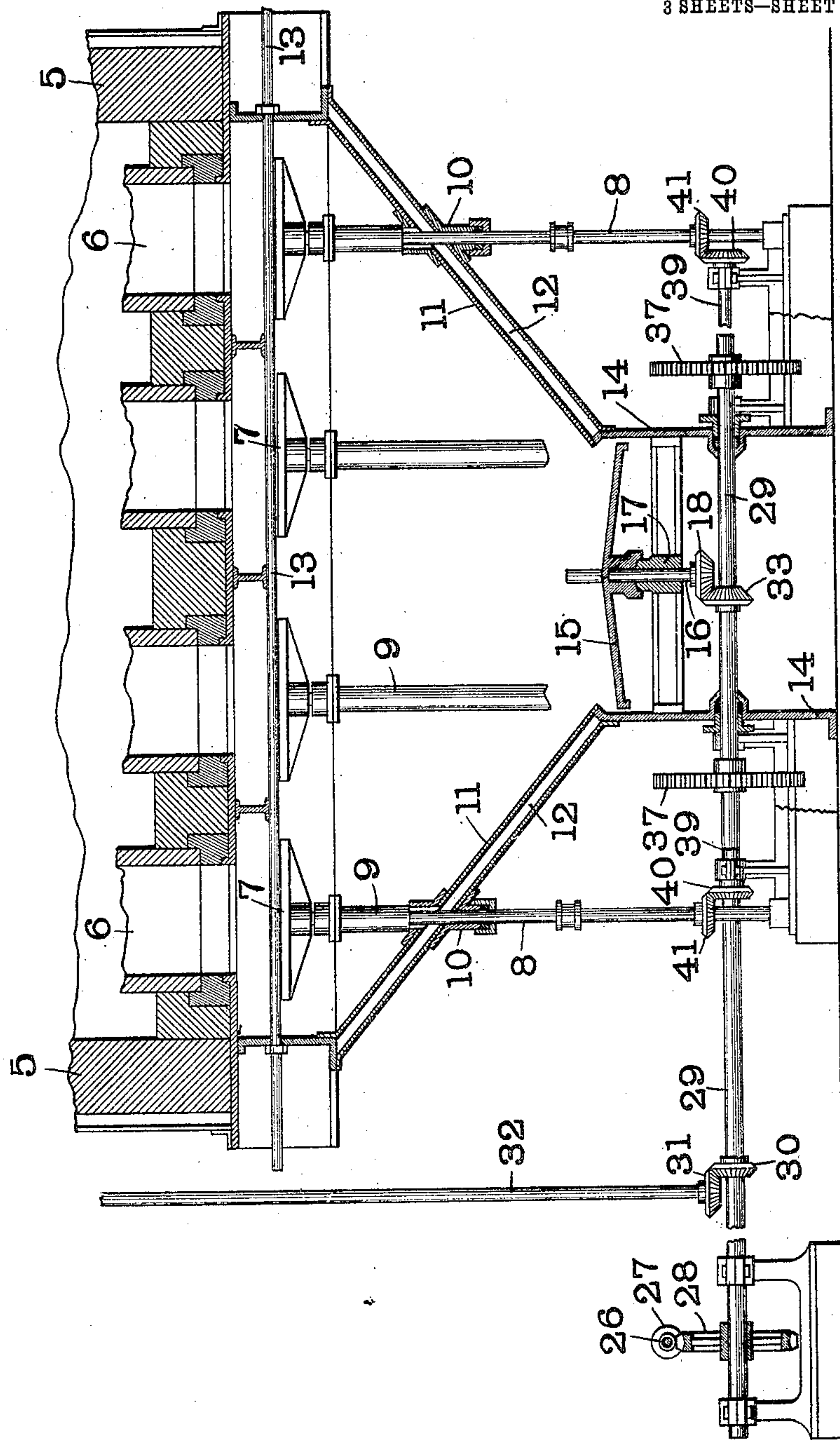
D. R. Russell

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917,363.

Fig. 2.



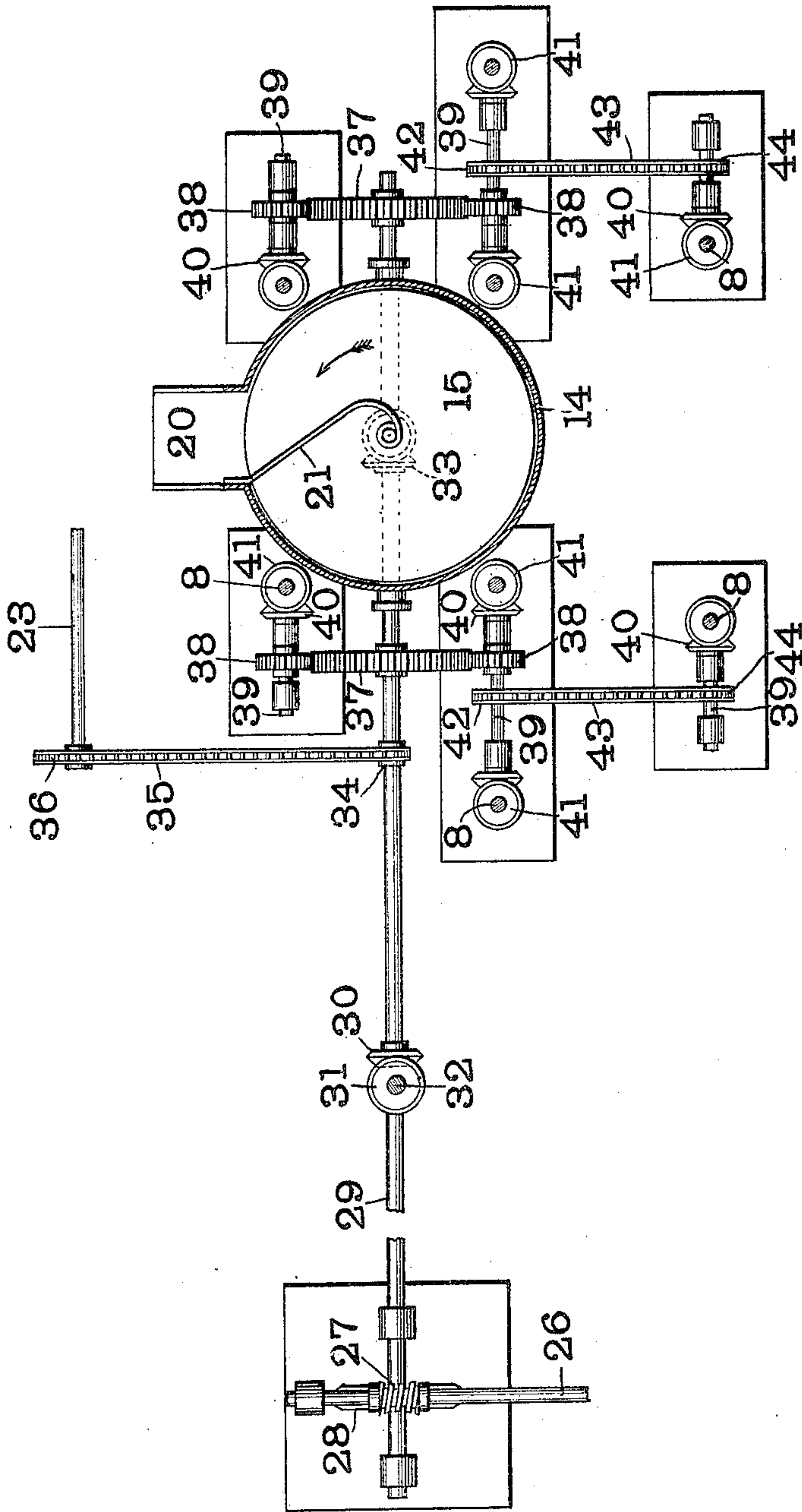
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Fig. 3.



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UNITED STATES PATENT OFFICE.

DANIEL R. RUSSELL, OF ST. LOUIS, MISSOURI, ASSIGNOR TO PARKER-RUSSELL MINING & MANUFACTURING COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

CONTINUOUS VERTICAL RETORT.

No. 917,363.

Specification of Letters Patent.

Patented April 6, 1909.

Application filed July 30, 1908. Serial No. 446,059.

To all whom it may concern:

Be it known that I, DANIEL R. RUSSELL, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented a certain new and useful Continuous Vertical Retort, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to vertical gas retorts of that class known as continuous, in which the fuel is continuously fed into the upper ends of the retorts and the coke is continuously removed from the lower ends of the retorts.

My invention relates particularly to the mechanism for removing the coke from the lower ends of the retorts.

The object of my invention is to provide an apparatus of the class above referred to which will successfully effect the removal of the coke from the lower ends of the retorts without permitting access of air to the retorts and in which the coke will only momentarily come in contact with the water sealing the device so that the coke will merely be quenched and not saturated with the water.

In the accompanying drawings, which illustrate one form of apparatus made in accordance with my invention, Figure 1 is a vertical cross section, Fig. 2 is a vertical longitudinal section and Fig. 3 is a top plan view of the driving gearing.

Like marks of reference refer to similar parts in the several views of the drawings.

5 represents the retort bench which may be of any usual form. Situated in the retort bench 5 are the retorts 6 which are arranged in vertical position and are open at their lower ends. In order to support the charges in the retorts 6 a circular plate 7 is situated a short distance below the end of each retort. The distance between the lower end of the retort and the plate 7 is sufficient to allow room for the coke to be discharged laterally between the plate and the lower end of the

retort. Each of the plates 7 is mounted upon a shaft 8 which passes down through a sleeve 9 and then through a stuffing box 10 situated in the walls of a hopper shaped receptacle 11. The walls of this hopper shaped receptacle 11 are made double as shown in Figs. 1 and 2 so as to provide a space 12 forming a water jacket to cool the receptacle. In order to discharge the coke from the plates 7 which are rotated, as will be hereinafter described, I provide pipes 13 passing centrally from each of the said tables 7. The water may be forced through these pipes to prevent injury thereto by the heat of the coke resting upon the table. The hopper shaped receptacle 11 terminates in a cylindrical portion 14 at the upper end of which is situated a revoluble table 15. This table 15 is carried by a stem 16 passing through a bearing 17 and terminating in a beveled gear wheel 18 which is driven as will be hereinafter described. The receptacle 11 is provided with a discharge spout 20 situated at one side of the cylindrical extension 14 of the said receptacle. In order to cause the discharge of the coke from the table into the spout 20 a scraper 21 is provided as best shown in Fig. 3. It will be evident that the action of this scraper when the table 15 rotates in the direction of the arrow in Fig. 3 will be to discharge the coke in the spout 20.

The cylindrical portion of the receptacle 11 is provided with an extension 22, Fig. 1, which, together with the said cylindrical portion 14, forms a sump for containing water to seal the discharge spout 20. The water preferably stands at the level indicated by the dotted line "a" in Fig. 1. Arranged within the extension 22 is a shaft 23 provided with a sprocket wheel 24 upon which runs an endless conveyer 25 which conveyer is situated adjacent to the discharge spout 20 so that the coke is immediately carried out of the sump after being discharged into the conveyer.

In order to drive the various moving parts of the device power is applied from any suitable source to a shaft 26. This shaft 26 is provided with a worm 27 acting on a worm

wheel 28 on a shaft 29. The shaft 29 is provided with a beveled gear wheel 30 meshing with a second beveled gear wheel 31 upon a shaft 32 which extends to the upper part of the retort bench and drives the coal feeding mechanism (not shown). The shaft 29 is also provided with a beveled gear wheel 33 which meshes with the wheel 18 hereinbefore described so as to drive the table 15. The shaft 29 is also provided with a sprocket wheel 34 around which passes a sprocket chain 35. The chain 35 also passes around a sprocket wheel 36 carried on the shaft 23 which drives the conveyer 25 hereinbefore described. The shaft 29 is also provided with two spur wheels 37 which engage with pinions 38 carried upon shafts 39 which are in turn provided with beveled gear wheels 40 meshing with beveled gear wheels 41 on the lower ends of the shafts 8 carrying the plates 7. One of the sets of shafts 39 is also provided with sprocket wheels 42 around which pass sprocket chains 43 which also pass around sprocket wheels 44 upon a third set of shafts 39. In this way all of the plates 7 are driven from the shafts 29.

In the operation of my retort the coal is fed into the upper ends of the retorts 6 by any suitable mechanism. As the coal comes coke it is discharged laterally through the space between the lower ends of the retorts and the plates 7. This is accomplished by the action of the pipes 13 coöperating with the rotating plates 7. The coke from all the plates 7 is guided by the hopper shaped walls of the receptacle 11 on to the table 15. As the table is rotated in the direction of the arrow in Fig. 3, the coke is discharged into the spout 20 by means of the scraper 21. The coke immediately after coming in contact with the water forming the water seal of the device is taken up by the endless conveyer 25 and carried out of the sump so that it may be immediately dried and hence will not be injured by its contact with the water.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. The combination with a vertical gas retort open at its lower end, of a rotary member arranged below said retort to support the charge, a second rotary member arranged below said first rotary member, and a water seal for said second rotary member.

2. The combination with a vertical retort open at its lower end, of a member arranged below said retort to support the charge, means for discharging the coke from said member, a rotary member below said first member, a scraper for discharging the coke from said rotary member, and a water seal for said rotary member.

3. The combination with a vertical retort open at its lower end, of a rotary member

arranged below said retort to support the charge, a stationary abutment for discharging the coke from said rotary member, a second rotary member arranged below said first rotary member, and a water seal for said second rotary member.

4. The combination with a vertical retort open at its lower end, of a rotary member arranged below said retort to support the charge, a water pipe forming an abutment for discharging the coke from said member, a second rotary member arranged below said first rotary member, and a water seal for said second rotary member.

5. The combination with a plurality of vertical retorts open at their lower ends, of rotary members arranged below said retorts to support the charges, means for discharging coke from said members, a second rotary member arranged below said first named member and adapted to receive the coke therefrom, means for rotating said first and second members in a substantially horizontal plane, and a water seal for said second member.

6. The combination with a plurality of vertical retorts open at their lower ends, of members arranged below said retorts to support the charges, means for discharging the coke from said members, a second member arranged below said first named members and adapted to receive the coke therefrom, means for rotating said second member in a substantially horizontal plane, a water seal provided with a discharge and a conveyer coöperating with said discharge.

7. The combination with a plurality of vertical retorts open at their lower ends, of members arranged below said retorts to support the charges, means for rotating said members in a substantially horizontal plane, means for discharging the coke from said members, a second member arranged below said first named members and adapted to receive the coke therefrom, means for rotating said second member in a substantially horizontal plane, and a water-seal for said second member.

8. The combination with a plurality of vertical retorts open at their lower ends, of rotary members arranged below said retorts to support the charges, means for discharging the coke from said members, a second rotary member arranged below said first named members and adapted to receive the coke therefrom, a water seal provided with a discharge, and a conveyer coöperating with said discharge.

9. The combination with a plurality of vertical retorts open at their lower ends, of rotary members arranged below said retorts to support the charges, means for discharging the coke from said members, a second rotary member arranged below said first named ro-

tary members and adapted to receive the
coke therefrom, a water seal provided with
a discharge, a conveyer coöperating with said
discharge and gearing for continuously oper-
5 ating all of said rotary parts and said con-
veyer.

In testimony whereof I have hereunto set

my hand and affixed my seal in the presence
of the two subscribing witnesses.

D. R. RUSSELL. [L. s.]

Witnesses:

W. A. ALEXANDER,

A. C. FOWLER.