

Jan. 20, 1925.

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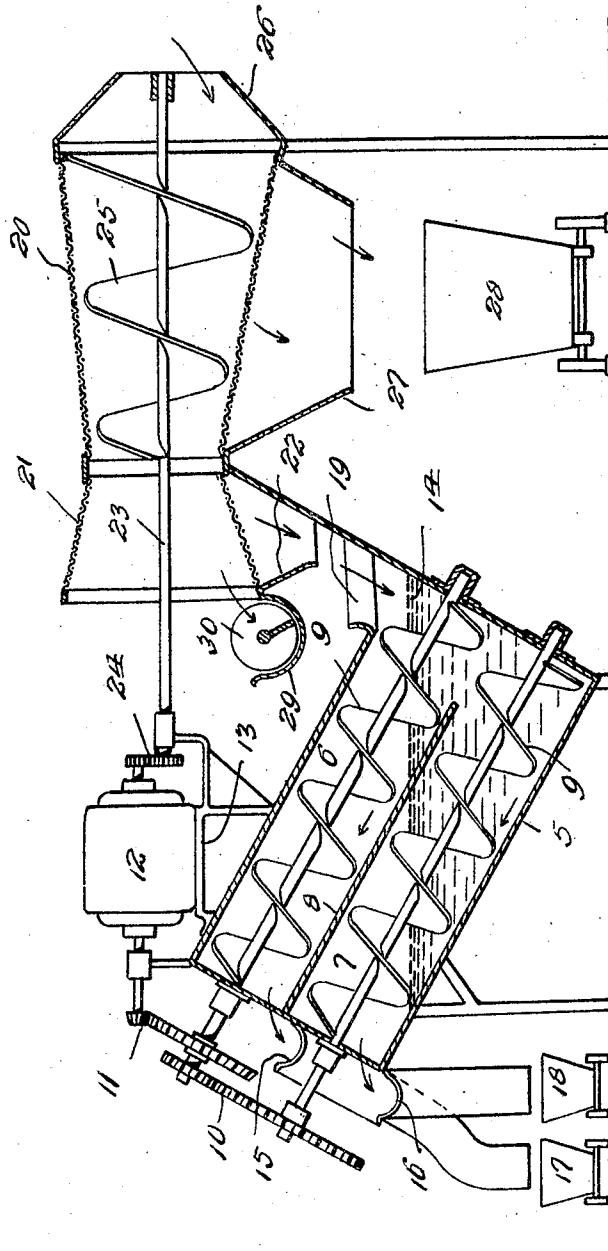
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APPARATUS FOR SEPARATING MATERIALS

Filed Aug. 21, 1923

2 Sheets-Sheet 2

Fig. 2.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR SEPARATING MATERIALS.

Application filed August 21, 1923. Serial No. 658,483.

To all whom it may concern:

Be it known that I, FRANK J. VODICKA, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Separating Materials, of which the following is a specification.

This invention relates to an improved apparatus for separating minerals or other materials of different specific gravities.

A primary object of the invention is to provide an apparatus of the above kind by means of which the separation of materials of different specific gravities may be expeditiously accomplished at a low cost and with a minimum expenditure of time and labor.

A further object of the invention is to provide an apparatus which is characterized by simplicity and durability of construction as well as efficiency in operation.

Other objects will become apparent as the nature of the invention is better understood, and the same consists in the novel form, combination and arrangement of parts hereinafter more fully described and claimed.

In the drawings, wherein like reference characters indicate corresponding parts throughout the several views:

Figure 1 is a somewhat diagrammatic side elevational view of the apparatus.

Figure 2 is a central longitudinal sectional view of the device.

Figure 3 is a transverse sectional view taken on the line 3—3 of Figure 1.

In the accompanying drawings, an apparatus is shown for carrying out the present process for specific use in separating coal and coke from cinders, which when mixed together are commonly called ashes. It is well known that ashes contain a certain amount of coke and unburned coal which are desired to be separated and salvaged. The invention, however, is not to be restricted to this particular use.

The machine shown is adapted for this specific use, and consists of a somewhat flat drum 5 that is divided into upper and lower compartments 6 and 7 by means of a longitudinal partition 8, and within which compartments are arranged conveyors 9, which may be driven by any suitable means such as the meshing gears 10 upon the forward ends of the shafts of said conveyors 9, and

gearing 11 between the upper conveyor shafts and the power shafts of a motor 12 which is shown as supported upon a bracket 13 fixed upon the drum 5. The drum 5 is inclined and the partition 8 is of such form as to terminate above the lower end of said drum so that the compartments 6 and 7 communicate with each other at this end. The drum 5 forms a container which is partially filled with a separating liquid as at 14 which covers the lower ends of both of the conveyors 9 and the upper end of the drum 5 may have different outlet spouts 15 and 16, which respectively communicate with the chambers 6 and 7 and onto which the materials are discharged by the conveyors 9 as will presently become apparent.

As shown in Figure 2, the discharge spouts 15 and 16 may terminate in different vertical planes so as to discharge into separate receptacles 17 and 18, and a charging opening 19 is provided in the top of the cylinder 5 in the lower end of the latter as shown clearly in Figure 2.

Suitably supported at a required elevation, are a pair of rotary sifting drums 20 and 21, the latter of which is provided with a discharge spout 22 from which material passes to the charging opening 19 of the drum 5. The drums 20 and 21 may be rigid with each other and fixed to a shaft 23 that is geared as at 24 with the power shaft of the motor 12 and a spiral conveyor 25 may be fixed upon said shaft 23 within the sifting drum 20. Also, the outlet end of this sifting device may be provided with a flared member 26 having an open end through which the material may be placed in the sifting drum 20, a suitable chute or spout 27 being provided for receiving the material that passes through the drum 20 and conveying the same into a receptacle 28 suitably disposed therebeneath.

At the discharge end of the sifting drum 21 may be positioned a trough 29 within which is positioned a suitably driven conveyor 30.

In operation, the ashes are placed in the sifting drum 20 in any suitable manner or by any suitable means and certain material as will not pass through said cylinder 20 into the spout 27 is conveyed into the sifting drum 21 by means of the conveyor 25. The sifter 20 allows the dirt and foreign particles to fall into the receptacle 28 while the ashes and cinders of proper size fall

through the sifter 21 into the spout 22 and from this spout 22 into the opening 19 of the drum 5. The larger particles of the material which do not fall through the sifter 21 pass from the end of the latter into the trough 29 and are conveyed to a desired point by means of the conveyor 30, while the above referred to ashes and cinders of proper size which fall into the liquid in the tank 5 will be separated by reason of the fact that the heavy cinders fall to the bottom of the tank or drum and coke and the unburned coal floats on the surface of said liquid. In other words, the particles which are of a greater specific gravity than the liquid 14 will fall to the bottom of the drum 5, while those particles which are of less specific gravity than the liquid 14 will remain at the top of the liquid so that said heavier particles are in position to be conveyed to the spout or chute 16 by the lower conveyor 19 while the lighter particles are in position to be conveyed by the upper conveyor line into the spout 15, these particles of different specific gravity being maintained separated by the partition 8.

From the above description, it is believed that the construction and operation, as well as the advantages of the present invention will be readily understood and appreciated by those skilled in the art.

Minor changes coming within the field of invention as claimed may be made without departing from the spirit and scope of the invention.

What I claim as new is:

Apparatus of the class described comprising a drum mounted in an inclined position and having its interior divided by a partition wall into superposed chambers, worm conveyors journaled for rotation in the chambers, means operatively connecting the worm conveyors together at the upper end of the drum, a motor mounted upon the drum and having one end of its shaft operatively connected with the worm conveyors and a feeder adapted to deliver material to the lower end of the drum, said feeder being operatively connected with the other end of the shaft of the motor.

In testimony whereof I affix my signature.
FRANK J. VODICKA.