

J. DODDS.
 SCREENING AND PICKING APPARATUS.
 APPLICATION FILED DEC. 28, 1910.

988,255.

Patented Mar. 28, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

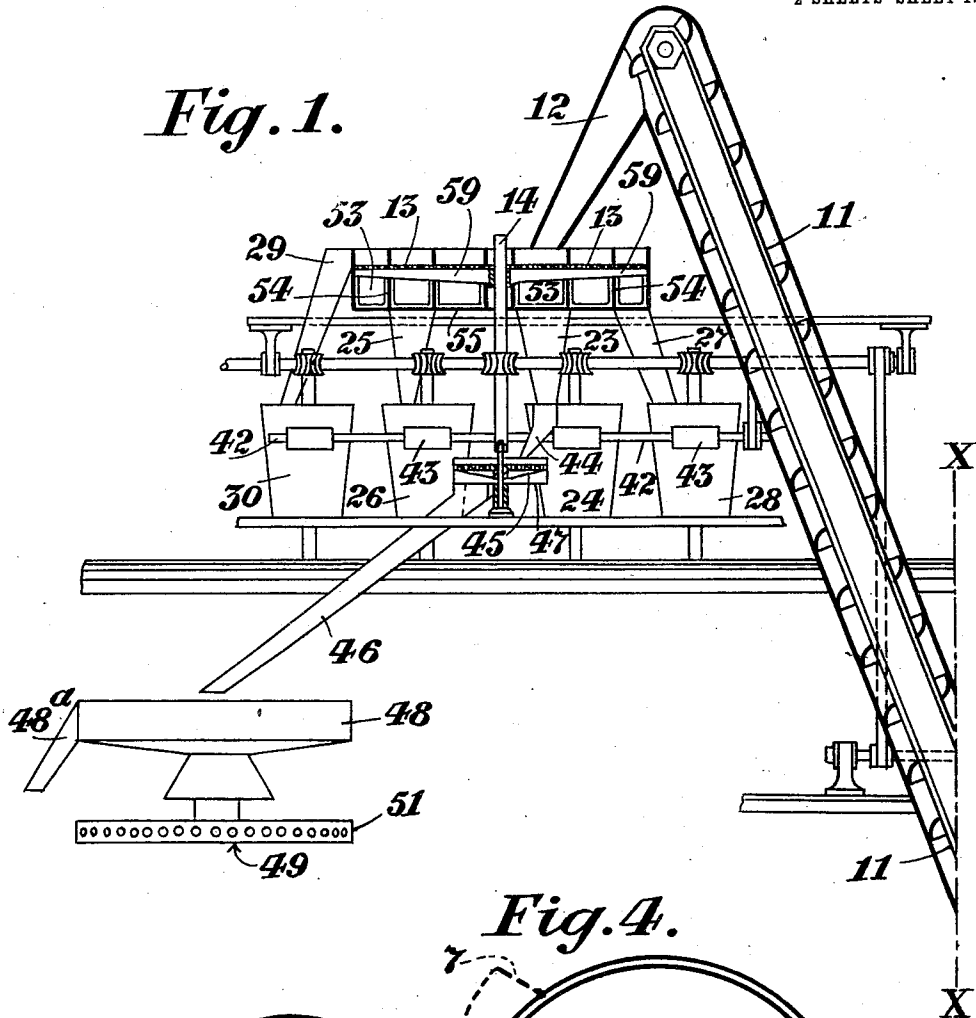
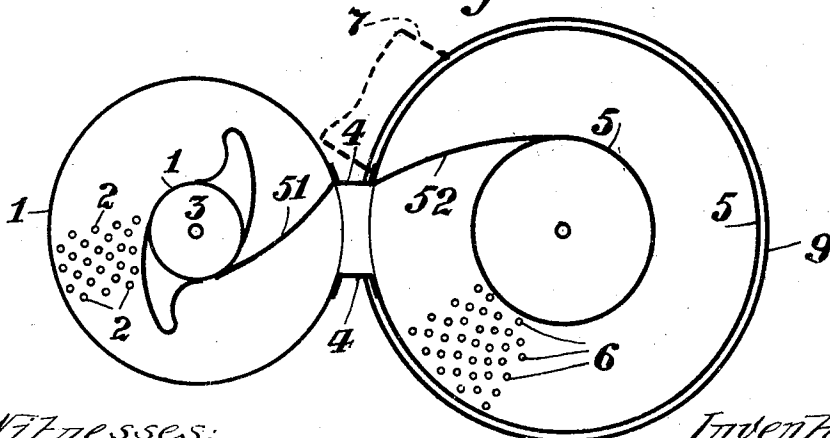


Fig. 4.



Witnesses:
L. H. Conville,
P. F. Nagle.

Inventor:
Joseph Dodds.
by Wiedersheim & Kaibauer.
Attorneys.

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2 SHEETS—SHEET 2.

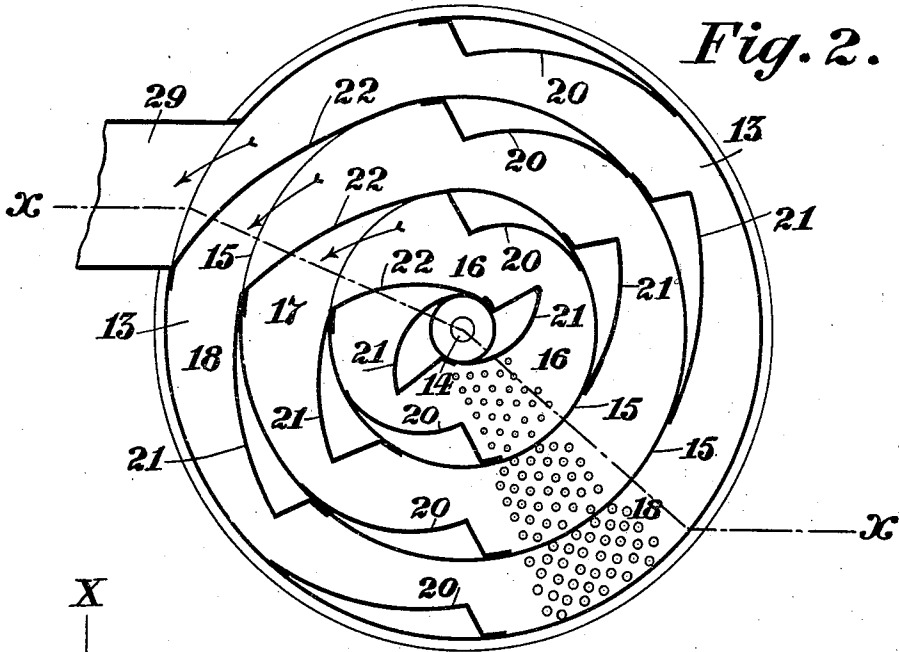


Fig. 2.

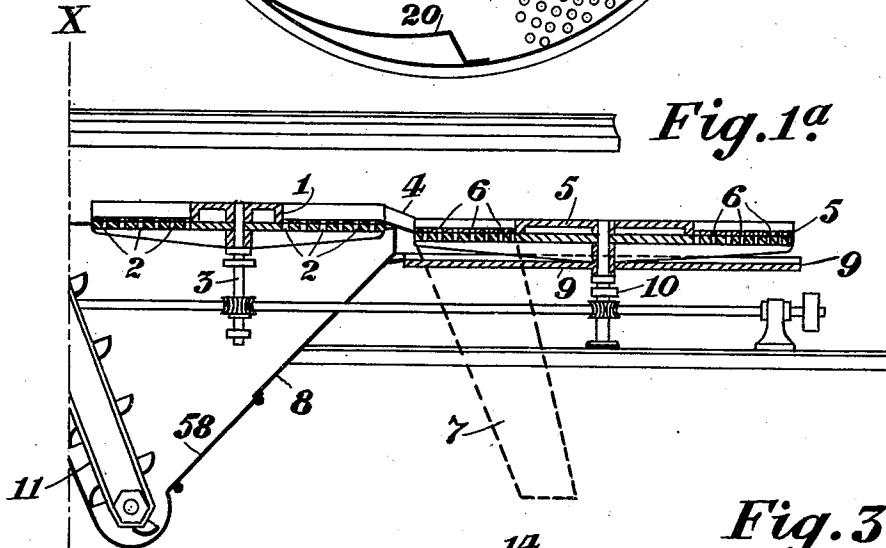


Fig. 1a

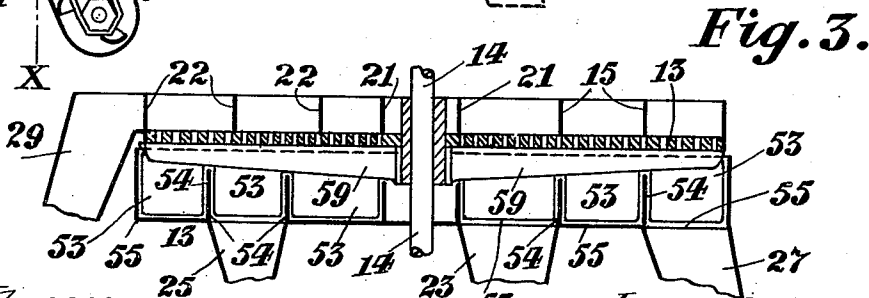


Fig. 3.

Witnesses:
L. Douville,
R. F. Nagle

Inventor:
by Joseph Dodds,
Wiedersheim & Leibniz,
Attorneys.

UNITED STATES PATENT OFFICE.

JOSEPH DODDS, OF RUTHERGLEN, GLASGOW, SCOTLAND.

SCREENING AND PICKING APPARATUS.

988,255.

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To all whom it may concern:

Be it known that I, JOSEPH DODDS, a subject of the King of Great Britain, residing at Rutherglen, Glasgow, Scotland, have invented a certain new and useful Screening and Picking Apparatus, of which the following is a specification.

This invention relates to apparatus for screening, picking and washing coal of that type in which perforated screening or picking tables or plates are caused to rotate with the coal thereon, and have the coal discharged therefrom by means of stationary sweeps or scrapers.

The object of the invention is to improve the construction of such apparatus.

The novel features of the invention will be hereinafter more fully described and then particularly pointed out in the appended claims.

In order that the invention may be clearly understood I have hereunto appended explanatory drawings which show, by way of illustration or example, a coal screening, picking and washing apparatus constructed in accordance with my invention.

On the said drawings:—Figures 1 and 1^a are two portions of a view of the complete apparatus shown partly in side elevation and partly in section, the portions being separated on the line X, X. Fig. 2 is a plan view showing the arrangement of the concentric partitions 15 and sweeps 22 in the screening table or rotary riddle 13. Fig. 3 is a section of the screening table or riddle 13, taken on the line *x, x*, Fig. 2. Fig. 4 is a plan view of the tables 1 and 5.

In the apparatus shown on the drawings the coal is delivered by means of a chute, or otherwise, to a rotary table 1 which is made with perforations 2 and is mounted on a vertical shaft 3, and, fitted between the circumference of this table 1 and the center thereof, is a stationary curved sweep 51 (see Fig. 4) by means of which the large coal is swept off the table into a chute 4 from which it passes to a rotary picking table 5 made with perforations 6 and from which the large coal is discharged by means of a curved sweep 52 similar to that on the table 1, to a chute 7 adapted to discharge into trucks or other suitable receptacles. Located beneath the table 1, so as to receive the dross falling through the perforations thereof is a hopper 8 which may, if desired, be extended beneath the table 5 so as to receive the dross from

both tables 1, 5, or if desired, the table 5 may, as shown, have fitted thereunder a second rotary and unperforated table 9, which is mounted on the shaft 10 of the table 5 and is provided with a stationary sweep by means of which the dross is swept from the table, as it rotates, into the hopper 8.

In the hopper 8 is located the lower end of a bucket conveyer 11 by means of which the dross is conveyed from the hopper and discharged through a chute 12 into a screening table or rotary riddle 13 mounted on a vertical shaft 14. This table or riddle 13 is surrounded by an outer wall and has, above it and rigidly fitted to said wall or otherwise, two concentric partitions 15 by means of which its surface is divided into three annular and concentric compartments 16, 17, 18 the table forming the base of these compartments and being perforated the perforations increasing in size from the central compartment 16 to the outer compartment 18, all the perforations for each compartment being uniform. The outer wall of each compartment has fitted thereon a series of stationary deflecting guide plates or sweeps 20, by means of which the coal, which is carried around on the rotating table, is thrown or directed inward, and the inner wall of each compartment has fitted thereon a series of stationary deflecting guide plates or sweeps 21 by means of which the coal on the rotating table is thrown or directed outward, the plates or sweeps 20, 21, remaining stationary while the coal rotates with the rotary table. The outer wall of each compartment is made with an opening or gap by means of which the coal, in each compartment, too large to pass through the perforations therein, may pass to the next compartment, or, in the case of the compartment 18, to the chute 29 and the washer 30, each compartment being provided with a fixed plate or sweep 22 by means of which the coal is directed outward therefrom through the opening or gap. The screening table or rotary riddle 13 has provided (see Fig. 3) beneath it a fixed and unperforated bottom 55 which is fitted with concentric partitions 54 corresponding to the concentric partition walls 15. Depending in each concentric compartment and from the arms 59 which support the plate are sweeps 53 which sweep the coal off the bottom 55 to openings therein communicating with chutes 23, 25, 27, leading to the washers 24, 26, 28.

The fine coal and dross passing through the perforations in compartment 16 in the table or riddle are directed by means of a chute 23 into a washer 24; the singles passing through the perforations in the compartment 17 are directed by means of a chute 25 to a washer 26, the doubles passing through the perforations in the compartment 18 are directed by means of a chute 27 into a washer 28 while the nuts swept from the compartment 18 by means of the sweep 22 are directed by means of a chute 29 into a washer 30.

The fine coal and dross from the compartment 16 may, after passing from the washer 24, be directed by means of a chute 44 to a rotary table 45 (such as the table 1) by means of which the fine coal is separated from the dross, the fine coal being discharged from the upper side of the table 45 by means of a stationary sweep while the dross is collected on an under rotary and unperforated plate from which it is discharged by means of a sweep into the chute 46 and directed to another rotary table 48 having a perforated plate from the upper side of which the dross is discharged by a chute 48^a while the water is passed therethrough and falls on to a tray 49 made with an unperforated bottom and a perforated rim 51 through which latter the water passes away while any dross or impurities passed through the table 48 collect on the bottom of this tray 49. The tray can be cleaned from time to time, as required.

Deflecting guide plates similar to 20, 21, may be provided in conjunction with the tables 1 and 5 for the purpose of scattering or spreading the coal thereon. When the deflecting plates 20, 21, are used, they cause the coal to follow a more or less zig-zag path when being carried around by the perforated table. The coal being alternately thrown from side to side in this manner greatly increases the efficiency of the apparatus.

58 is a discharge door for the hopper 8 and the dross and small coal from the tables 1 and 5 can be discharged through this door when it is not desired to wash the coal.

The apparatus may be used for minerals and ores as well as coal.

Having now fully described my invention what I claim and desire to secure by Letters Patent is:—

1. Apparatus for screening coal and other minerals comprising, in combination, a perforated rotary table and stationary oppositely disposed curved sweeps for scattering the mineral thereon while the table rotates.

2. Apparatus for screening coal and other minerals comprising, in combination a perforated rotary table and deflecting sweeps for scattering the mineral thereon arranged in pairs oppositely curved for deflecting

said material from side to side while the table rotates.

3. Apparatus for screening coal and other minerals comprising, in combination, a perforated table, means for rotating the table, and a series of curved deflectors arranged above the table in pairs oppositely disposed and adapted to cause the mineral to pursue a zig-zag path.

4. Apparatus for screening coal and other minerals comprising, in combination, a table provided with a series of perforations each series being of different diameter, fixed partitions dividing one series from another, deflecting means on the partitions, means for rotating the table and means for discharging the mineral from the table.

5. Apparatus for screening coal and other minerals comprising, in combination, a table provided with an annular series of perforations each series being of different diameter, fixed partitions dividing one series from another, deflecting means on the partitions, means for rotating the table and means for discharging the mineral from the table.

6. Apparatus for screening coal and other minerals comprising, in combination, a table provided with an annular series of perforations each series being of different diameter, fixed annular and upright partitions dividing one series from another, deflecting means on the partitions, means for rotating the table and means for discharging the mineral from the table.

7. Apparatus for screening coal and other minerals comprising, in combination, a table provided with a series of perforations each series being of different diameter, fixed partitions dividing one series from another, curved deflecting means on the partitions, means for rotating the table and means for discharging the mineral from the table.

8. Apparatus for screening coal and other minerals comprising, in combination, a table provided with a series of perforations each series being of different diameter, fixed partitions forming annular compartments which communicate with one another dividing one series from another, deflecting means on the partitions, means for rotating the table and means for discharging the mineral from the table.

9. Apparatus for screening coal and other minerals comprising, in combination, a table provided with a series of perforations each series being of different diameter, fixed partitions dividing one series from another, deflecting means on both sides of the partitions, means for rotating the table and means for discharging the mineral from the table.

10. Apparatus for screening and picking coal and other minerals, comprising, in combination, a rotary and perforated table for the minerals, oppositely-disposed fixed means

arranged above said table for scattering the minerals, a picking table, a chute connecting the tables, stationary curved means for sweeping the mineral from the first table
5 through the chute to the picking table, and curved means adjacent said chute for sweeping the large mineral from the picking table.

11. Apparatus for screening and picking coal and other minerals, comprising, in combination, a rotary and perforated table for the minerals, oppositely disposed fixed means arranged above said table for scattering the minerals, a picking table, a chute connecting the tables, stationary curved means for
15 sweeping the mineral from the first table through the chute to the picking table, curved means adjacent said chute for sweeping the large mineral from the picking table, and means for collecting the dross and fine
20 coal passed through both tables.

12. Apparatus for screening and picking coal and other minerals, comprising, in combination, a rotary and perforated table for the minerals, oppositely-disposed fixed means
25 arranged above said table for scattering the minerals, a picking table, a chute connecting said tables, stationary curved means for sweeping the mineral from the first table through the chute to the picking table,
30 curved means adjacent said chute for sweeping the large mineral from the picking table, means for actuating the tables, and a second rotary and unperforated table mounted under said picking table.

35 13. Apparatus for screening coal comprising in combination a picking table, means for sweeping the coal therefrom, means for collecting the dross and fine coal passed through said table, a perforated rotary sorting
40 table having partitions and oppositely curved sweeps upon opposite sides thereof, and conveyer means for conveying the dross and fine coal to said sorting table.

45 14. Apparatus for screening coal, comprising, in combination, a plurality of perforated rotary tables, means for sweeping the

coal from one table to the other, means for discharging the coal from the last table, means for collecting the dross and small coal passed through said tables, a rotary and
50 perforated table having curved partitions and oppositely curved sweeps for sorting the coal, and means for conveying the dross and small coal to said rotary and perforated sorting table.

15. In an apparatus for screening coal, a rotary screening table, comprising, in combination, a circular bottom, concentric partitions forming annular compartments fixed thereon, series of uniform perforations at
60 the bottom of each compartment, the perforations of each compartment being of different size to those in the other compartments, means for deflecting the coal from side to side of each compartment, means
65 arranged on the table for directing the coal from one compartment to another, and means for collecting and delivering the different classes of coal passed through the apertures in the table.

16. In an apparatus for screening coal, a rotary screening table, comprising, in combination, a circular bottom, concentric partitions forming annular compartments fixed therein, uniform perforations at the bottom
75 of each compartment but of different size to those at the bottom of the other compartments, deflecting guide plates for throwing the coal from side to side of the compartments, an opening in the outer wall of each
80 compartment through which the coal is directed into the next compartment, and means for collecting and delivering the different classes of coal passed through the apertures in the table.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH DODDS.

Witnesses:

WILLIAM GALT,

WILLIAM CARRUTHERS.