

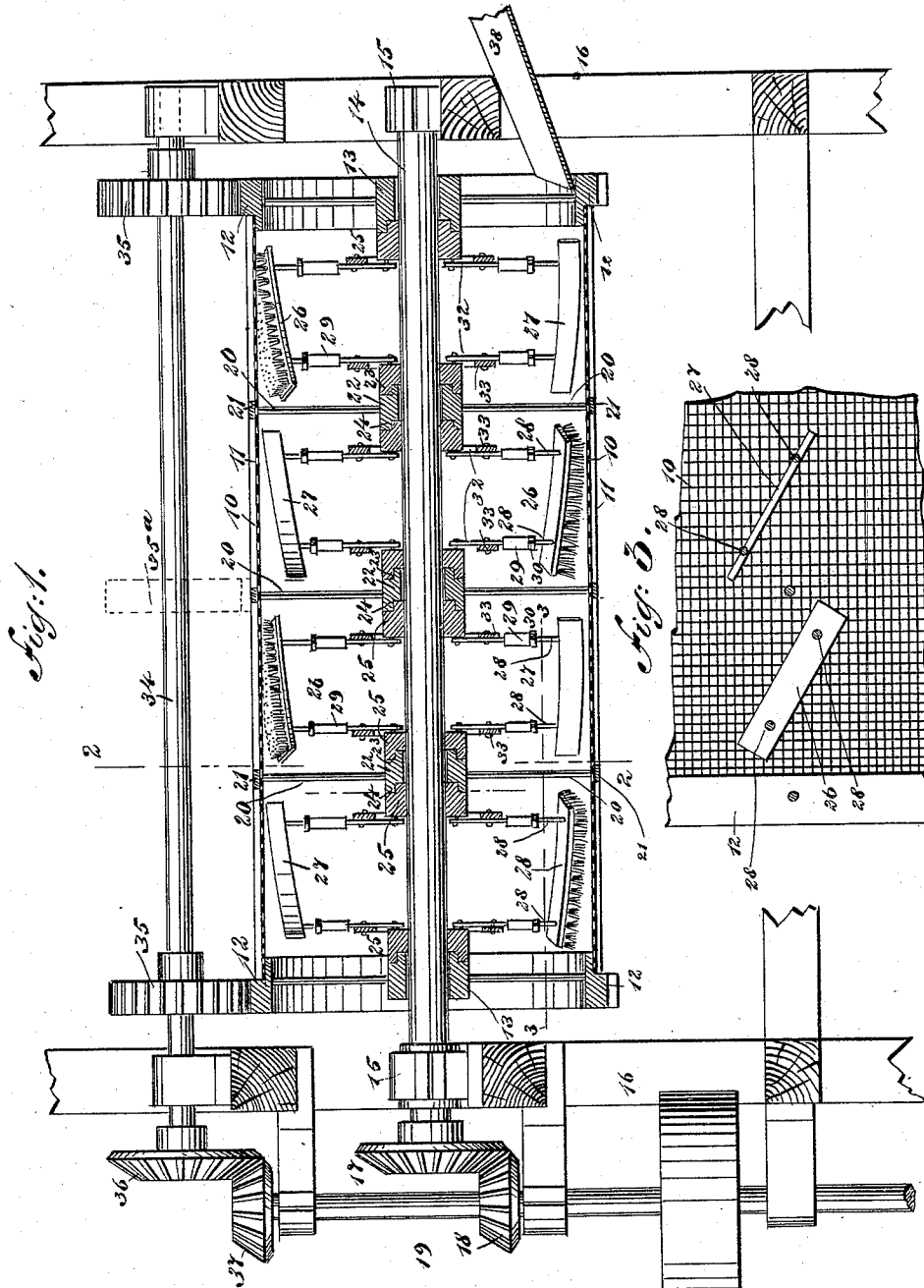
(No Model.)

2 Sheets—Sheet 1.

J. J. COYNE.
COAL SCREEN.

No. 477,516.

Patented June 21, 1892.



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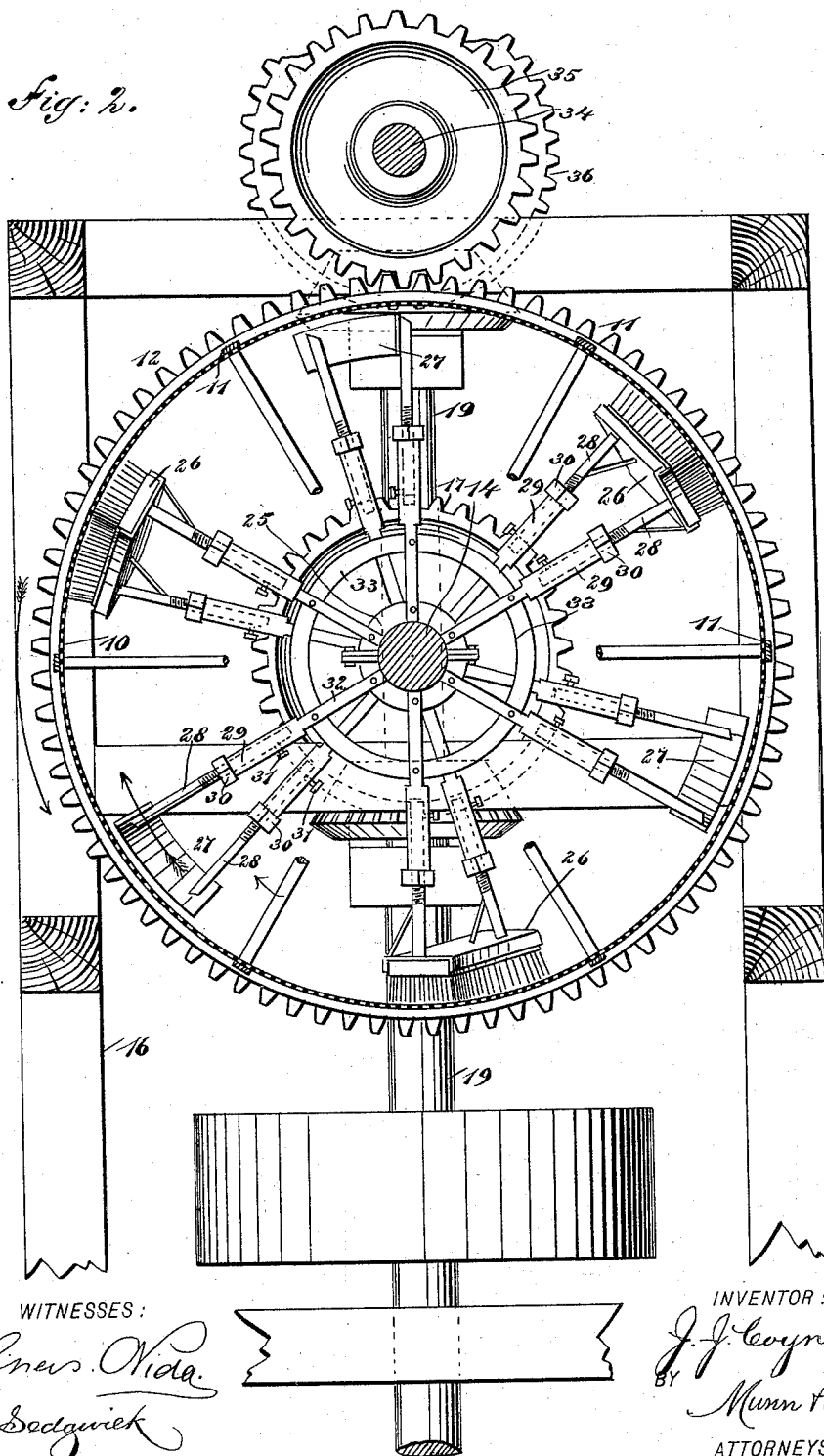
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UNITED STATES PATENT OFFICE.

JAMES J. COYNE, OF OLD FORGE, PENNSYLVANIA.

COAL-SCREEN.

SPECIFICATION forming part of Letters Patent No. 477,516, dated June 21, 1892.

Application filed December 22, 1891. Serial No. 415,841. (No model.)

To all whom it may concern:

Be it known that I, JAMES J. COYNE, of Old Forge, in the county of Lackawanna and State of Pennsylvania, have invented a new and Improved Coal-Screen, of which the following is a full, clear, and exact description.

My invention relates to improvements in coal-screens, such as are adapted to receive coal as it comes from the breaker, and more especially to coal-screens which are adapted for screening anthracite coal; and the object of my invention is to produce a simple apparatus by means of which the coal may be rapidly and efficiently screened without regard to its condition as to moisture, and which also will brush and polish the coal so that it will be in an excellent condition when screened.

To this end my invention consists of certain features of construction and combinations of parts, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a broken vertical longitudinal section of the screen embodying my invention. Fig. 2 is an enlarged cross-section of the same on the line 2 2 in Fig. 1, and Fig. 3 is a broken sectional plan on the line 3 3 in Fig. 1.

The screen 10 is of the usual form—that is, it is cylindrical and it may be made up of different-sized meshes, so that different sizes of coal may be forced through it at various points—and this screen is strengthened by stiffening-bars 11, which extend longitudinally of the screen, and the ends of which are secured to flanges on the gear-wheels 12, which gear-wheels form the ends of the screen, and the gear-wheels have hubs 13, which are loosely mounted on the horizontal shaft 14, the ends of which turn in suitable bearings 15, supported on the frame 16, and the shaft has at one end a pinion 17 meshing with a pinion 18 on the main driving-shaft 19, which shaft extends vertically at one end of the frame in the usual manner. The screen is thus held in a horizontal position and turns loosely on the shaft, and the coal is moved through it in the manner hereinafter described.

The screen is further supported by the radial arms 20, the outer ends of which are se-

cured to the screen, as shown at 21, and the inner ends of which are secured to hubs 22, which turn loosely on the shaft 14 and which are recessed annularly at each end, as shown at 23 24, one recess being produced exteriorly on the hub and the other recess being produced interiorly. The hubs 13 of the gear-wheels 12 are also similarly recessed, and the object of the recesses in the hubs 22 is to enable them to interlock with the collars 25, which carry the brushes 26 and paddles 27, so that no coal or culm may get beneath the bearings of the hubs or collars, and thus be ground up to the detriment of both the coal and the bearings. The collars 25 are keyed to the shaft 14, so as to turn therewith, and the brushes 26 and paddles 27, which are carried by the collars, are arranged so as to contact with the screen and force the coal or culm through it. These paddles and brushes are arranged, preferably, so as to alternate, as shown best in Fig. 2, so that they will alternately scrape and brush, and they will carry the coal around the entire surface of the screen, so that the coal will be very rapidly screened. The brushes and paddles are each hung in the same manner—that is to say, the ends of each brush or paddle is supported by rods 28, which are screw-threaded at their inner ends, and which enter threaded sockets 29, being held thereto by nuts 30 and set-screws 31, as shown in Fig. 2, and the sockets 29 are formed on the outer ends of arms 32, the inner ends of which are secured to the collars 25, and in this connection it will be noticed that the collars are in two parts, having flanges bolted together, as shown in Fig. 2, so that they may be readily taken off the shaft. It will thus be seen that the brushes and paddles may be arranged so that they will bear harder upon the screen at one end than at the other—that is to say, they may be given an incline by means of their screw connection with the socket 29 and the arms 32, and, as a result, the coal may be gradually worked from one end of the screen to the other, so that the culm and finer particles of coal will first fall through the finer meshes of the screen and the coarser particles will be forced through the coarser meshes, and to facilitate the carrying forward of the coal the brushes and paddles are preferably arranged in a spiral line, as shown in

Figs. 1 and 2, so that they will act in the nature of a screw. The arms 32, which carry the brushes and paddles, are strengthened by circular braces 33.

5 The screen is rotated by means of a counter-shaft 34, which has gear-wheels 35 at the ends, which mesh with the gear-wheels 12, and it will be seen that by applying the power at both ends of the screen the mechanism will
10 not be unduly strained and the screen will be steadily revolved. If the screen is a very long one, another set of gear-wheels may be added to the middle, as shown at 35^a in Fig. 1.

One end of the counter-shaft 34 is provided
15 with a pinion 36, which meshes with a pinion 37 on the main shaft 19, and it will thus be seen that the screen 10 will be revolved in one direction, while the shaft 14 and the paddles and brushes carried thereby will be re-
20 volved in the opposite direction. This enables the coal to be very rapidly and efficiently screened. The coal is fed to the screen from the breaker through a chute 38.

As described above, the screen revolves in
25 one direction and the brushes and paddles in another, so that the coal will be screened and sorted and gradually carried through the screen, and it will be seen that the entire surface of the screen will be utilized, so that the
30 machine will work very fast. The screen in

practice may be covered by the usual wire jacket.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with the supporting-shaft and the screen mounted thereon, said screen having supporting-arms with recessed hubs to turn loosely on the shaft, of paddles and brushes having collars keyed to the shaft, the collars of the brushes and paddles being
40 recessed so as to interlock with the hubs which support the screen, substantially as described.

2. A screening apparatus consisting in the rotary shaft provided with series of interlocking hubs, the central hub of each series being
45 loose on the shaft and the two outer hubs of each series being fixed to the shaft, radial arms projecting from the loose hubs, a tubular screen carried thereby, adjustable radial
50 arms projecting from the fixed hubs, brushes and blades connecting the outer ends of the arms of adjacent fixed disks, and means for operating the shaft and screen, substantially as set forth.

JAMES J. COYNE.

Witnesses:

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