

Jan. 20, 1925.

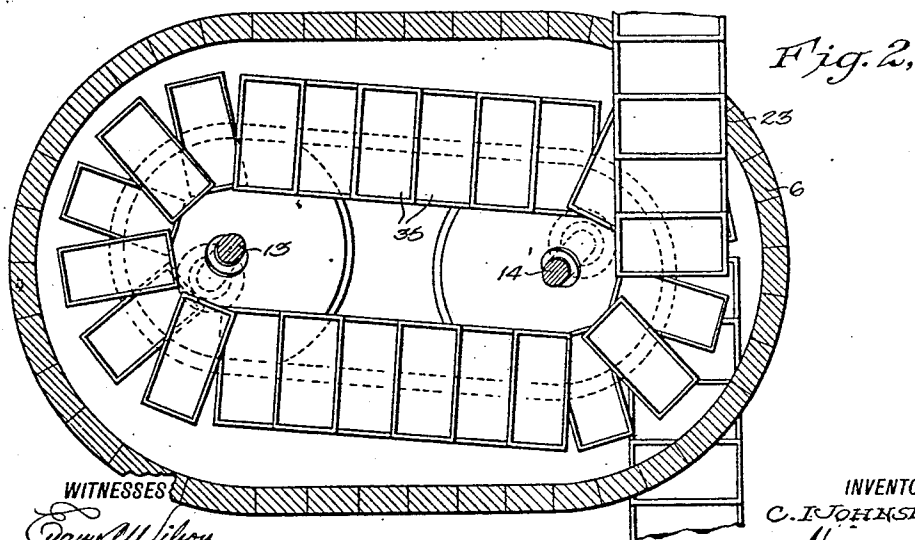
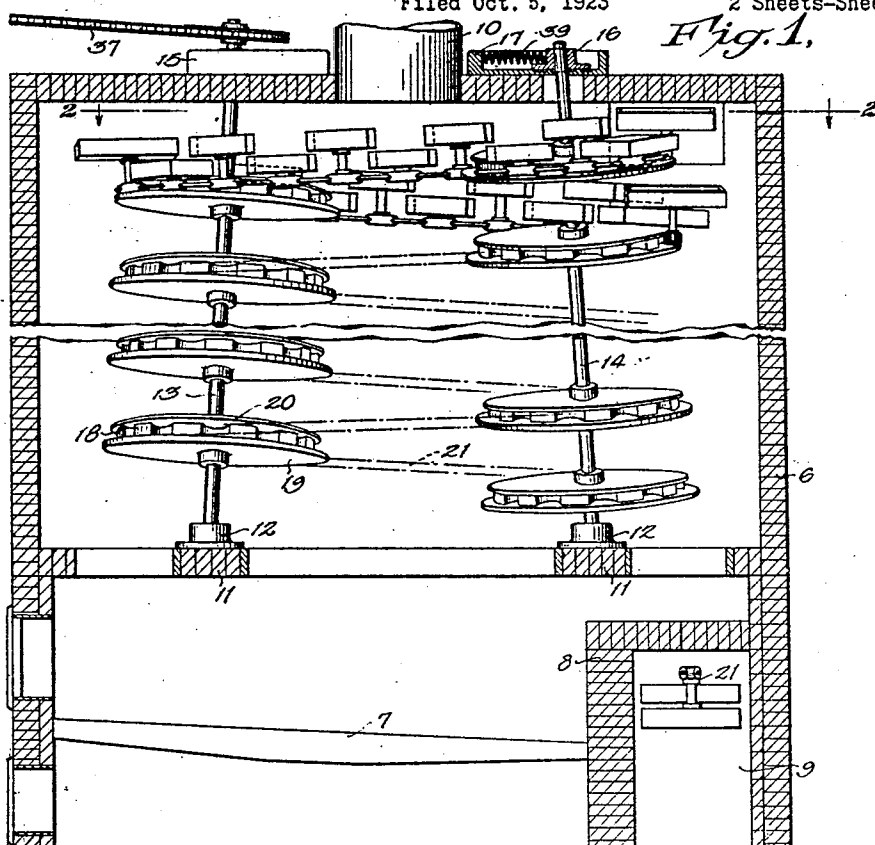
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APPARATUS FOR TREATING BRIQUETTES

Filed Oct. 5, 1923

2 Sheets-Sheet 1



WITNESSES
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Fig. 3.

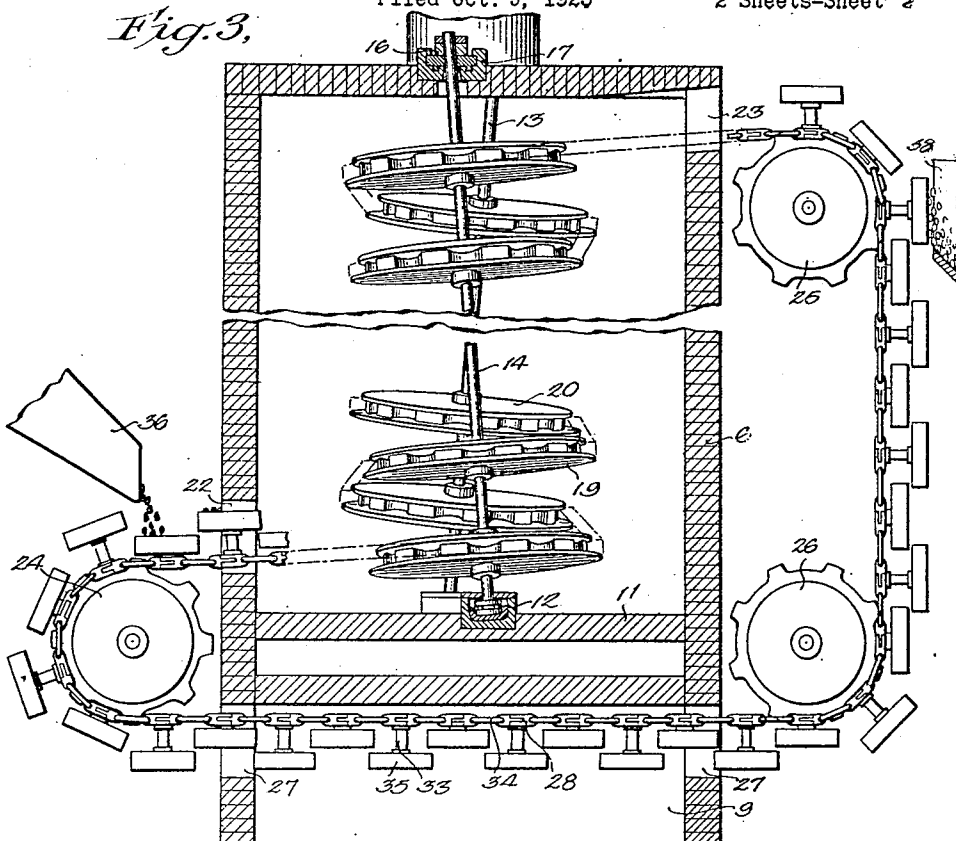


Fig. 4.

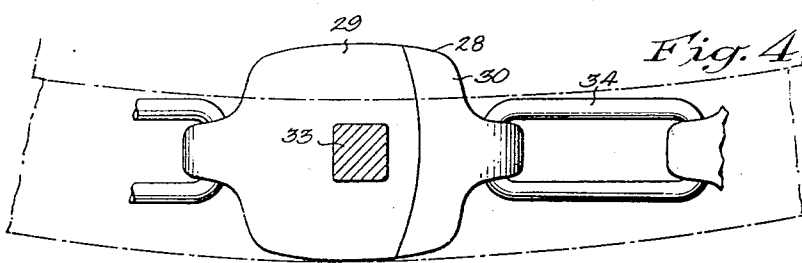
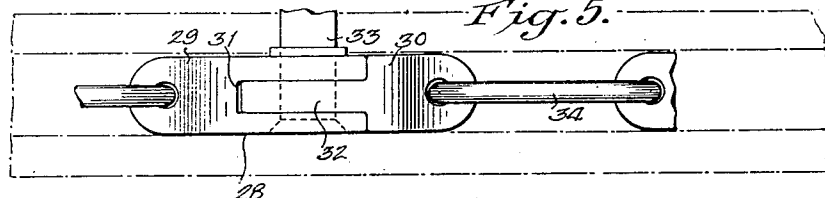


Fig. 5.



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UNITED STATES PATENT OFFICE.

CARSTEN I. JOHNSEN, OF BROOKLYN, NEW YORK.

APPARATUS FOR TREATING BRIQUETTES.

Application filed October 5, 1923. Serial No. 666,807.

To all whom it may concern:

Be it known that I, CARSTEN I. JOHNSEN, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Apparatus for Treating Briquettes, of which the following is a full, clear, and exact description.

This invention relates to improvements in conveying apparatus primarily utilized in the treatment of briquettes.

In the manufacture of coal briquettes, a binder is usually employed, the nature of which is such that the briquettes now used, when burning, smoke and give forth an odor of sulphur dioxide. Furthermore, briquettes as now made are not waterproof due to the condition of the binder after the briquettes have been formed.

An object of the present invention is to overcome the above difficulties by treating the briquettes in such manner that the binder will be dried and carbonized or charred to make the briquettes waterproof and to prevent the binder from breaking down into its constituents with the result that the briquettes will be smokeless and odorless when burning.

Another object is to provide an apparatus in which briquettes to be treated are transmitted through a heating furnace by an endless conveyor and subjected to the heat in said furnace sufficiently long to effect the complete drying and carbonization of the binder.

The above and other objects will appear more clearly from the following detail description when taken in connection with the accompanying drawings, which illustrate a preferred embodiment of the inventive idea.

In the drawings—

Figure 1 is a fragmentary longitudinal section through the apparatus;

Figure 2 is a section substantially on the line 2—2 of Figure 1;

Figure 3 is a fragmentary transverse section through the apparatus; and

Figures 4 and 5 are fragmentary views in top plan and side elevation, respectively, of the conveyor employed in connection with the invention.

Referring more particularly to the accompanying drawings, the numeral 6 indicates a furnace which may be of substantially oval formation in top plan, as shown in

Figure 2. The furnace is provided interiorly thereof and adjacent its lower end with a grate, conventionally indicated by the numeral 7, and supported by one wall of the furnace and an auxiliary wall 8 therein, the latter wall forming a chamber 9 for a purpose which will presently appear. The top of the furnace 6 is provided with a flue 10 forming an outlet for the heat and products of combustion generated in the furnace. Directly above the grate 7 the furnace is provided with the spaced transversely extending supporting sections 11, each carrying a bearing 12 of a well known type. Mounted in the bearings 12 are the lower ends of two shafts 13 and 14, the upper end of the shaft 13 extending through the top of the furnace and mounted in a stationary bearing 15, while the upper end of the shaft 14 is supported in a bearing 16 movable longitudinally in a supporting member 17 for a purpose which will later appear. The bearing 12, which supports the lower end of the shaft 14, is shown in more detail in Figure 3 and includes relatively movable bearing members to permit of a slight rocking movement of the lower end of the shaft 14 when the upper end thereof is moving longitudinally in the supporting member 17. The shafts 13 and 14 are inclined or arranged diagonally with respect to longitudinal and transverse vertical planes extending through the furnace, as shown in Figures 1 and 3 and extend upwardly from the supporting sections 11 in opposite directions so that the upper and lower ends of said shafts will be disposed on opposite sides of a medial longitudinal vertical plane extending through the furnace. Also with respect to a medial transverse vertical plane extending through the furnace the shafts are so inclined that the lower ends thereof will be spaced a greater distance apart than the upper ends, as clearly shown in Figure 1. Carried by each of said shafts in superposed relation thereon are a plurality of propelling elements arranged in planes at right angles to the axis of rotation of the shaft upon which they are mounted and thus being pitched with respect to the horizontal in accordance with the inclination of the respective shafts. By thus arranging the propelling elements, it will be seen in Figures 1 and 3, that the elements carried by one shaft are inclined or pitched in opposite directions with respect to the ele-

furnace, rotatable shafts in said furnace each inclined with respect to both longitudinal and transverse planes extending through said furnace and also extending in opposite 5 directions relative to each other, propelling elements carried by each shaft, an endless conveyor extending around said elements, and carriers supported on said conveyor.

2. In a conveyor apparatus utilized for 10 the passage of briquettes through a heating furnace, rotatable shafts in said furnace each inclined with respect to both longitudinal and transverse planes extending through said furnace and also extending in opposite 15 directions relative to each other, propelling elements carried by each shaft, the elements on one shaft being in staggered relation and inclined in opposite directions with respect to those on the other shaft, an endless conveyor 20 extending around said elements, and carriers supported on said conveyor.

3. In a conveyor apparatus utilized for the passage of briquettes through a heating 25 furnace, rotatable shafts in said furnace each of which is inclined upwardly in opposite directions with respect to a plane extending through said furnace, propelling elements carried by each shaft and arranged in staggered relation with respect to the elements 30 on the other shaft, an endless conveyor extending around said elements, and carriers supported on said conveyor.

4. In a conveyor apparatus utilized for the passage of briquettes through a heating 35 furnace, rotatable shafts in said furnace, each of which is arranged diagonally with

respect to vertical intersecting planes extending through said furnace and in opposite directions relative to each other, propelling elements carried by each shaft, an 40 endless conveyor extending around said elements, and carriers supported on said conveyor.

5. In a conveyor apparatus utilized for the passage of briquettes through a heating 45 furnace, rotatable shafts in said furnace each of which is arranged diagonally with respect to vertical intersecting planes extending through said furnace and in opposite directions 50 relative to each other, propelling elements carried by each shaft, an endless conveyor extending around said elements, and carriers supported on said conveyor and alternately arranged in different planes with respect to the plane of said conveyor and 55 the ends of each carrier in one plane overlapping the adjacent ends of the next adjacent carriers in the other plane.

6. In a conveyor apparatus utilized for the passage of briquettes through a heating 60 furnace, shafts rotatable in said furnace and arranged diagonally with respect to vertical intersecting planes, a bearing for one of said shafts having a sliding movement relative to the other shaft, means engageable 65 with said bearing compensating for heat expansion within said furnace, propelling elements carried by said shafts, a conveyor extending around said elements, and carriers mounted on said conveyor.

CARSTEN I. JOHNSEN.