No. 846,355. PATENTED MAR. 5, 1907.

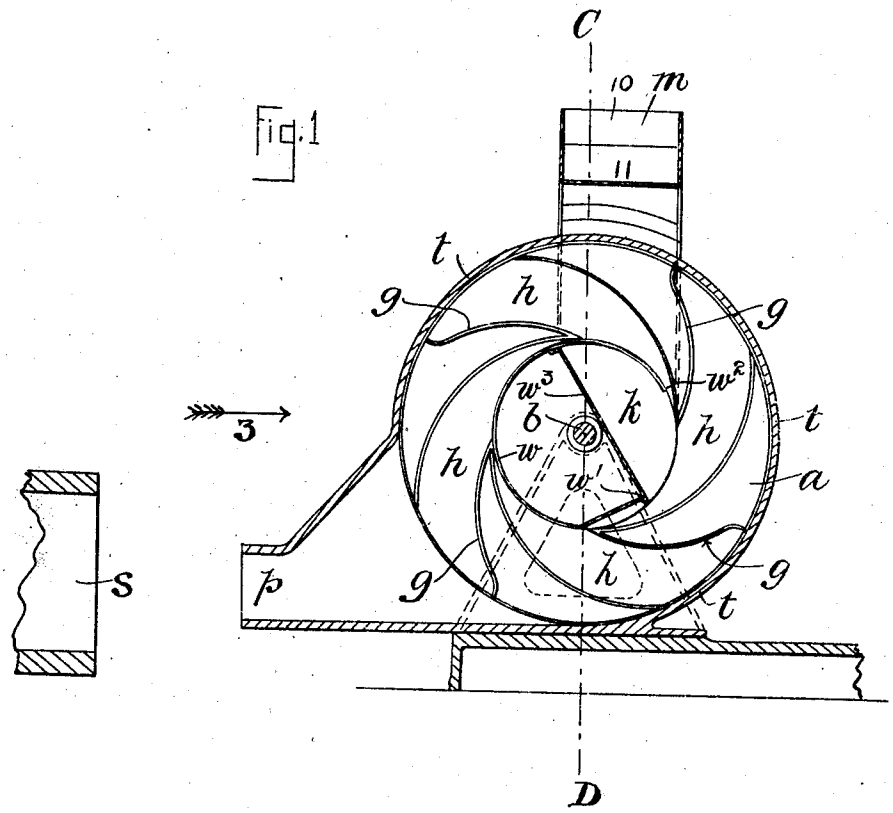
W. SLINGSBY.

APPARATUS FOR CHARGING GAS RETORTS.

APPLICATION FILED APR. 21, 1906.

2 SHEETS—SHEET 1.

Fig. 1



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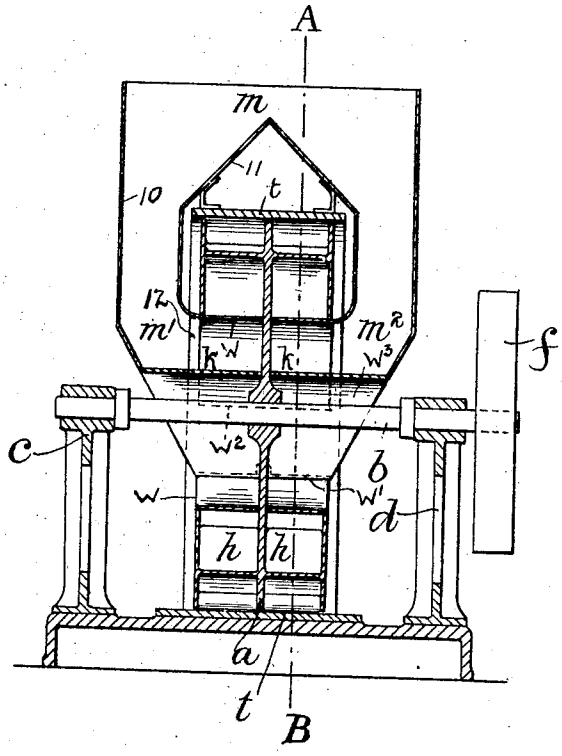
2 SHEETS—SHEET 2.

Fig. 2



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR CHARGING GAS-RETORTS.

No. 846,355. Specification of Letters Patent. Patented March 5, 1907.

Application filed April 21, 1906. Serial No. 312,987.

To all whom it may concern:

Be it known that I, WALTER SLINGSBY, a subject of the King of Great Britain, and a resident of 4 Mostyn Mount, Ovenden, near Halifax, in the county of York, England, have invented a certain new and useful Improvement in Apparatus for Charging Gas-Retorts, of which the following description, together with the accompanying sheets of drawings, is a specification.

This invention relates to machines or mechanism to be used for depositing or charging coal into retorts used in the manufacture of gas, and particularly to that class of such apparatus wherein the centrifugal force of a wheel or disk is employed as the means for carrying the coal to the desired position in the retort and wherein provision is made for the coal to be fed thereto through openings about its axial center; and my said invention consists in so constructing the moving wheels or disks of said machines or mechanism and the framework in connection therewith that the coal to be fed to said retorts is carried and deposited by said wheels or disks into said retorts without causing undue friction, impediment, or obstruction to any of the operating parts when performing their several and respective functions.

In the accompanying sheets of drawings, which are illustrative of my invention, Figure 1 is a sectional view taken on line A B of Fig. 2. Fig. 2 is a sectional view taken on line C D of Fig. 1 and as seen in the direction indicated by the arrow 3.

In carrying my invention into effect I make use of a rotary propeller or disk *a*, which I so arrange and construct that I am enabled to feed the coal thereto in any, either regular or irregular, quantities, as may be desired, and yet have same deposited in the proper position within the retort, and that without said propeller being at any time obstructed or prevented by the jamming of any substances brought into contact with it from performing its functions efficiently.

The propeller *a* is fixed upon the shaft *b*, which is mounted to rotate upon the bearings *c d*. This shaft may derive its rotary motion from any prime or other motor mechanism, as by a driving-belt taking over its driving-pulley *f*. I preferably employ an electric motor for transmitting motion to the shaft *b*, for the reason that such a motor affords facilities for controlling the speed of said shaft. Thus I am enabled to commence the propelling of the coal passing through the apparatus at a comparatively high rate of speed, so that such coal is projected to the innermost end of the retort, and by gradually reducing the speed the velocity of the coal will be reduced, so that it is fed in an even layer from the mouth or opening of the retort back to its innermost part.

To enable the propeller *a* to project the coal in a comparatively straight path from the blades or vanes *g* thereof in a proper direction along and throughout the length of the retort into which it has to be fed, I form these vanes or blades *g* curved, the curvature extending in a direction tangential to two circles corresponding with the path of movement of the inner and outer extremities of the blades, thereby forming radiating ducts or pockets or passages *h*, as shown in Fig. 1, which are somewhat in accordance with the pockets formed by the vanes of a rotary fan. All these ducts or passages *h* are arranged to terminate in a cavity *k*, formed around the propeller's axis. This cavity is formed by the walls of the inner casing or shield W, hereinafter described, said casing being supported by stationary parts of the apparatus, as by the walls 10 and 11 of the hopper *m*, as shown in Fig. 2, said casing having an opening 12 at one side to permit of the passage of the material to the pockets. As will be observed, Fig. 2 shows the ducts or passages *h* arranged on both sides of the central disk *a*, and this arrangement of them I preferably employ, for the reason that it enables the propeller to project a larger amount of coal proportionate to the size of its vanes than does the arrangement wherein such coal is fed thereto on one side of the machine alone. The blades or vanes to form the pockets, including the side portions, are carried by the disk, being formed therewith or secured thereto in any suitable manner. The coal is fed to these passages *h* by the chute or funnel *m*, one of the passages *m'* of which conducts said coal down to the axial opening of the cavity *k* on one side of the plate *a*, while the other passage m^2 conducts it to the opening of the cavity *k* on the other side of the plate, and as said coal is thus descending into the passages *h* its velocity relatively with that of the vanes

g is such as to enable it to descend or travel through the pockets without creating excessive friction, since from the time it enters the upper orifice of any of said passages or pockets h to the time it reaches the other end thereof said pocket will have moved from the position where it will receive the coal to the position where it projects same along its path to the retort.

Inasmuch as the shape of the vanes is such as to provide during the movement of the parts for a gradual movement of the material toward the point of greatest centrifugal action, there is no liability of injuring the casings by subjecting them to the action of lumps of coal thrown out by centrifugal force, nor is there a liability of the formation of an excessive amount of floating dust, &c., such as would result were the coal to be dropped directly from the central chute to a point corresponding with the path of movement of the outer end of the vanes.

The coal on leaving the passages h travels through the funnel p, which at such time is in alinement with the mouth s of the retort to which said coal has to be supplied, so that same is thus deposited therein, as desired.

In order that the coal may be constrained to follow the desired path, the peripheral or outer openings of the passages h are incased by the shield t, which only affords an outlet for the coal therefrom along the funnel p. Again, to prevent the vanes from inducing air to flow into the passages h from the central opening or cavity k I arrange a casing or shield w, which extends from the point w' to that at w^2, as well as across the axle at w^3, the latter being in the form of a diaphragm, so that the inner end or orifice leading to each of the passages or pockets h is never opened or laid bare until the outer end of the same has been entirely covered by the shield t. By these means I find that comparatively little inducement is given to cause an inrush of air and that the dispersing or distributing of dust is therefore greatly reduced.

As hereinbefore stated, by forming the passages h as above described and by supplying the coal thereto through the central cavity k its passage or course through said passages h will occupy such time relatively with that of the rotary movements of the propeller a that on its reaching the outer orifices of said passages a it will be ready and in position for leaving the same and to travel along the funnel p to the retort, there being but little liability of the material being brought into contact with the shield t to an extent which would affect the operation of the device. Hence the functions of said propeller are more freely and smoothly carried out, and that with little friction of the coal against any of its guiding-surfaces as it passes over the shield and along its path to the retort.

The passages h of the propeller are preferably formed between disks, as illustrated, although I am aware that they might be otherwise produced, yet I follow this method of production for the sake of cheapness and accuracy.

Such being the nature and object of my invention, what I claim is—

1. A device of the character described comprising a substantially central receiving-chute, an outlet, and a series of pockets movable successively from a position to receive the material from said chute to a position to discharge the same through said outlet, the pockets being curved in a manner to cause the material to be passed gradually throughout the length of the pocket during the movement of the latter from its receiving to its discharging position.

2. A device of the character described comprising a substantially central receiving-chute, an outlet, and a series of pockets movable successively from a position to receive the material from said chute to a position to discharge the same through said outlet, said pockets being curved and extending in a direction tangential to two circles corresponding with the path of movement of the inner and outer extremities of the pockets, the material passing gradually throughout the length of the pockets during the movement of the latter from their receiving to their discharging position.

3. A device of the character described comprising inner and outer casings arranged concentrically, said casings each having openings for the passage of the material, a chute for delivering the material within the inner casing, and a series of pockets substantially fitting within and mounted to rotate between said casings and adapted to successively receive material through the opening in the inner casing and discharge it through the opening in the outer casing, said pockets being curved in a manner to cause the material to be passed gradually throughout the length thereof, said openings being positioned relatively to each other in a manner to prevent direct passage of the material from one opening to the other.

4. A device of the character described comprising inner and outer casings arranged concentrically, said casings each having openings for the passage of the material, a chute for delivering the material within the inner casing, and a series of pockets substantially fitting within and mounted to rotate between said casings and adapted to successively receive material through the opening in the inner casing and discharge it through the opening in the outer casing, said pockets being curved in a manner to cause the material to be passed gradually throughout the length thereof, said openings being located on opposite sides of the center of said casings,

whereby the material will be prevented from passing directly from one opening to the other.

5. A device of the character described comprising inner and outer casings arranged concentrically, said casings each having openings for the passage of the material, a chute for delivering the material within the inner casing, and a series of open-ended pockets substantially fitting within and mounted to rotate between said casings, the ends of the pockets being movable successively past said openings, said pockets being curved in a manner to cause the material to be passed gradually throughout the length thereof, said openings being positioned on opposite sides of the center of said casings, whereby one extremity of the pockets will be closed at all times.

6. A device of the character described comprising inner and outer casings arranged concentrically, said casings each having openings for the passage of the material, a chute for delivering the material within the inner casing, and a series of open-ended pockets substantially fitting within and mounted to rotate between said casings, the ends of the pockets being movable successively past said openings, said pockets being curved and extending in a direction tangential to two circles corresponding with the path of movement of the inner and outer extremities of the pockets, said openings being positioned on opposite sides of the center of said casings.

7. A device of the character described comprising a substantially central receiving-chute, a propeller having pockets the inner extremities of which cross the mouth of said chute, said pockets being curved in a manner to cause the material to be passed gradually throughout the length thereof, an outlet for the material passing through said pockets, and means for rotating the propeller.

8. A device of the character described, comprising a substantially central receiving-chute, a propeller having blades the inner extremities of which cross the mouth of said chute, said blades extending in a direction to cause the material to be passed gradually throughout the length thereof, an outlet for the material carried by the blades, and means for rotating the propeller.

9. A device of the character described comprising a substantially central receiving-chute, a propeller having blades the inner extremities of which cross the mouth of said chute, said blades being curved and extending in a direction tangential to two circles corresponding with the path of movement of the inner and outer extremities of the blades, said blades extending in a direction to cause the material to be passed gradually throughout the length thereof, an outlet for the material carried by the blades, and means for rotating the propeller.

10. A device of the character described comprising a substantially central receiving-chute, a propeller having curved blades, the inner extremities of which cross the mouth of said chute, said blades extending in a direction to cause the material to be passed gradually throughout the length thereof, an outlet for the material carried by the blades, and means for rotating the propeller.

11. A device of the character described comprising inner and outer casings arranged concentrically, a diaphragm within the inner casing, said casings each having openings for the passage of the material, a chute for delivering the material within the inner casing on one side of said diaphragm, and a series of pockets substantially fitting within and mounted to rotate between said casings and adapted to successively receive material through the opening in the inner casing and discharge it through the opening in the outer casing, said openings being located on opposite sides of the center of said casings.

12. A device of the character described comprising inner and outer casings arranged concentrically, said casings each having openings for the passage of the material, a rotating shaft located centrally of said casings, a disk carried by said shaft and extending through the inner casing and into juxtaposition to the outer casing, said disk intersecting said openings to provide a pair of openings for each casing, independent pockets located on opposite sides of said disk between said casings, the extremities of the pockets being adapted to move past said openings, the pairs of openings being located on opposite sides of the shaft, and a common chute for delivering the material within the inner casing on either side of said disk

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

WALTER SLINGSBY.

Witnesses:
FRED HAMMOND,
SAMUEL HEY.