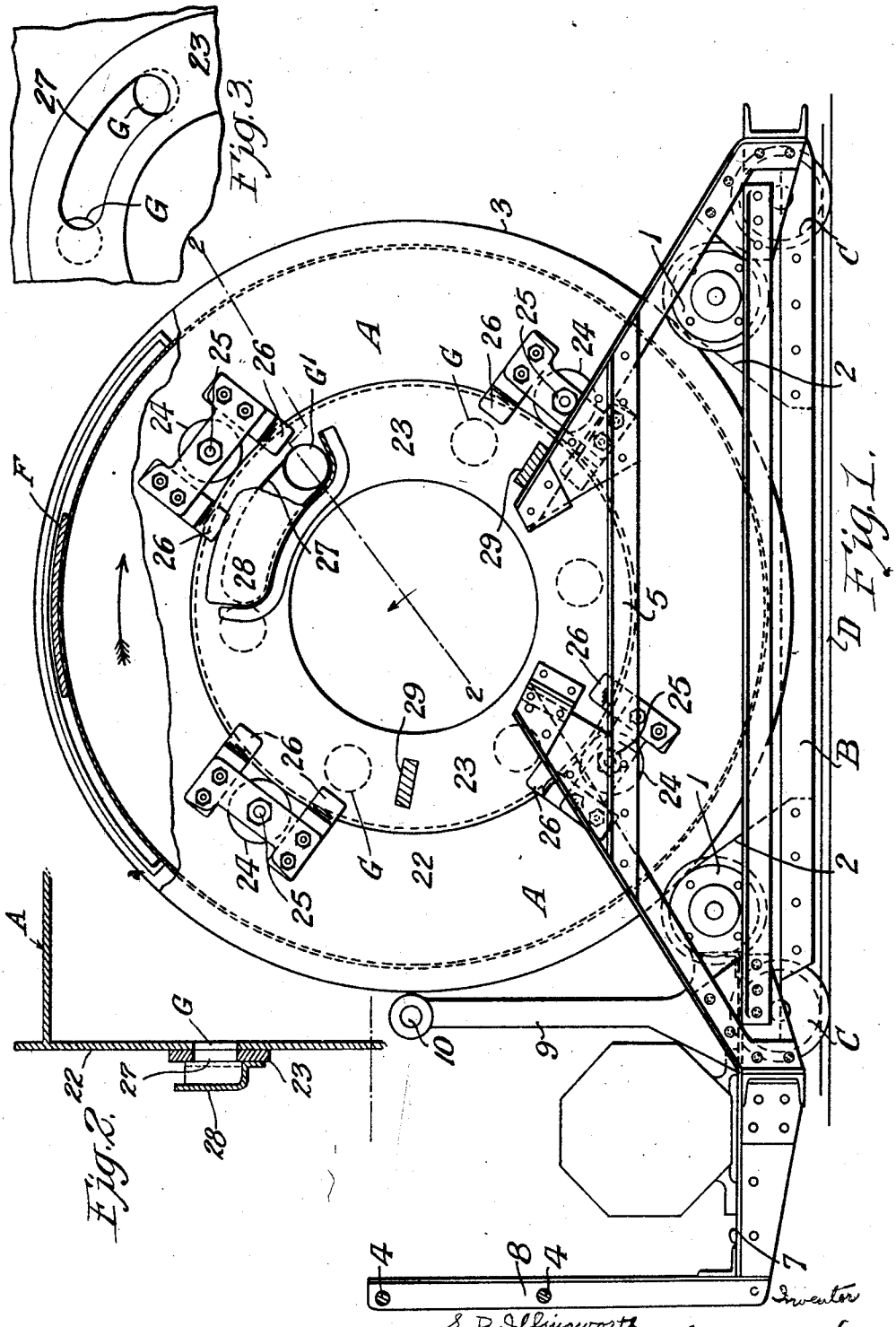
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APPARATUS FOR THE COOLING OF COKE

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Inventor
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APPARATUS FOR THE COOLING OF COKE.

Original application filed July 16, 1928, Serial No. 293,105. Divided and this application filed January 26, 1929, Serial No. 335,314, and in Great Britain June 15, 1927.

This application is a division of my application for U. S. patent filed 16th July, 1928, No. 293,105.

This invention relates to improvements in or modifications of the invention described in my United States Patent No. 1,593,698 which relates to the cooling of coke and apparatus therefor and is a division of my application Serial No. 293,105.

The present invention relates more particularly to the construction of the cooling wagon as illustrated in Figures 5–8 of my Patent 1,593,698 and which comprises a cylindrical chamber mounted to rotate on a carriage or support which can be moved to receive the discharge from any of the retorts or beneath the measuring hopper and the discharge pipe from the cistern.

The object of this invention is to provide an improved form of discharge from the cooling chamber or container, for the steam generated by the admixture of the hot coke with the wet coal.

According to this invention, the discharge means for the steam or other gases from the cooling chamber or cylinder comprises a series of holes which are formed in an end wall normal to the axis of rotation, and a covering plate in which is an oblong opening adapted to register with portions of two adjacent holes of the series substantially equal in aggregate area to the area of one hole to allow the passage of steam or other gases.

Preferably the oblong opening is of such a size that only the equivalent of one hole may register therewith, that is the circumferential length of the opening is equal to the distance between the centres of two holes.

The plate which is preferably of circular form may be positioned by means of three or more rollers mounted on the end of the container or cylinder and engaging the periphery of the plate so that the cylinder is free to rotate with respect thereto, fingers on the cylinder engaging the face of the plate and causing it to bear against the end of the cylinder.

Preferably the plate is fixed or its movement restricted by means such as a stop or stops such that the oblong opening always remains in its uppermost position with respect to the top of the cylinder.

A flange or deflection plate may be provided around the lower portion of the edge of the opening in the plate.

The invention is illustrated in the accompanying drawings in which Figure 1 is an end elevation of the cooling wagon, Figure 2 is a fragmentary sectional view taken on the line 2—2 of Figure 1, and Figure 3 is a partial end elevation showing the cover plate with the deflector plate removed.

In the drawings A indicates the cooling chamber or container B the carriage or support thereof mounted on wheels C which run on a track D. The container includes an end wall 22 normal to the axis of rotation, and this end wall is provided with a series of vent holes G of substantially equal size for the escape of steam from the cylinder.

The container or cylinder A is mounted to rotate about an axis through the container and is supported on rollers 1 mounted in bearings on plates 2 carried by the support B. The rollers 1 are flanged and engage endless rails 3 at each end of the cylinder A, which is guided axially by side frames indicated generally at 5. 7 is a platform for carrying the driving mechanism for rotating the cylinder and operating the carriage. An opening into the cylindrical container is provided with a door F for closing the same.

The cylinder A is provided with a ring 23 adapted to close all except one of the steam vents G. The ring is freely mounted at its rim on rollers 24 mounted in bearings 25 having fingers 26 for holding the ring against the end of the cylinder. The ring is provided with an oblong opening 27 of such a size that at any time a vent hole G or portions of two vents, substantially equivalent to a whole vent remain or remains uncovered. The vent hole G′ is shown uncovered. The opening 27 is provided with a deflector plate 28 for directing escaping gases in a direction away from the axis of rotation. 29 are stops to prevent rotation of the ring 23.

By having only one steam vent open at any one time, and that one open on the upper-side of the container fine coal is prevented from falling out of the container. It will be appreciated that whilst the container is in motion the coal is piled at an angle on the left hand side of the axis of the container (assuming the container is constructed for

rotation in a clockwise direction) and the upper right hand side is free of coal, consequently this latter portion of the drum is vented. In other words the position of the stop 29 relative to the oblong opening is such that upon rotation of the container in either direction, the movement of the cover plate relative to the support will be arrested when the opening in the cover plate is in a position substantially diametrically opposite the center of the mass of material in the container. In actual operation the issue of steam is periodic, namely, it takes place with each fall of the coal or rather slip of the coal in the container, which occurs the moment after the coal has been carried to its highest point in the container.

It is desirable to arrange that the area of the vent shall never be less than that of one vent hole or opening G and for this reason the opening in the cover plate is arranged so that the combined area of the uncovered portions of two holes is substantially equal to that of one hole.

What I claim is:—

1. Apparatus for the cooling of coke comprising a support; a cylindrical container mounted thereon for rotation about an axis coincident with the axis of the cylinder, one wall of the container being provided with a series of holes circumferentially and substantially equally spaced about said axis and of substantially the same areas; and a cover for said holes mounted for rotary movement relative to the container and positioned over the holes, said cover being provided with an oblong opening adapted to simultaneously expose portions of two adjacent holes of the series substantially equal in aggregate area to the area of one of the holes to permit escape of gases from within the container.

2. Apparatus for the cooling of coke comprising a support; a container mounted thereon for rotation about an axis through the container, and including a wall normal to said axis, said wall being provided with a series of holes circumferentially and substantially equally spaced about said axis and of substantially the same areas; a cover plate for said holes mounted for rotary movement relative to the container, and positioned over the holes, said cover plate being provided with an oblong opening adapted to simultaneously expose portions of adjacent holes of the series substantially equal in aggregate area to the area of one of the holes to permit escape of gases from within the container; and a deflection plate carried by the cover plate and positioned over the opening for deflecting escaping gases in a direction away from said axis.

3. Apparatus for the cooling of coke comprising a support; a container mounted thereon for rotation about an axis through the container, and including a wall normal to said axis, said wall being provided with a series of holes circumferentially and substantially equally spaced about said axis and of substantially the same areas; a circular cover plate for said holes positioned against said wall and over said holes, said plate being provided with an oblong opening adapted to simultaneously expose portions of two adjacent holes of the series substantially equal in aggregate area to the area of one of the holes to permit escape of gases from the container; and means for mounting said cover plate for rotary movement relative to the container comprising a plurality of rollers carried by the wall and circumferentially spaced about said axis to engage the periphery of the plate, and means carried by the wall for retaining the plate against said wall.

4. Apparatus or the cooling of coke comprising a support; a container mounted thereon for rotation in reverse directions about a horizontal axis through the container, and including a wall normal to said axis, said wall being provided with a series of holes circumferentially and substantially equally spaced about said axis and of substantially the same areas; a cover plate for said holes positioned against said wall and over said holes, said plate being provided with an oblong opening adapted to simultaneously expose portions of two adjacent holes of the series substantially equal in aggregate area to the area of one of the holes to permit the escape of gases from the container; means for mounting said plate for rotary movement relative to the container; and a stop on said plate adapted to cooperate with the support to limit the movement of the plate relative to the support, the arrangement of said stop being such as to arrest rotation of the cover plate relative to the support when the opening in the cover plate is above the level of said axis.

In testimony that I claim the foregoing as my invention I have signed my name this fourth day of January 1929.

STEWART ROY ILLINGWORTH.