No. 728,390. PATENTED MAY 19, 1903.

M. GRAHAM.

HOT COKE CONVEYER.

APPLICATION FILED FEB. 2, 1903.

NO MODEL.

FIG. 1.

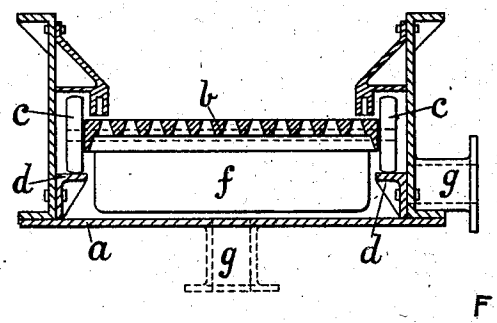


FIG. 2.

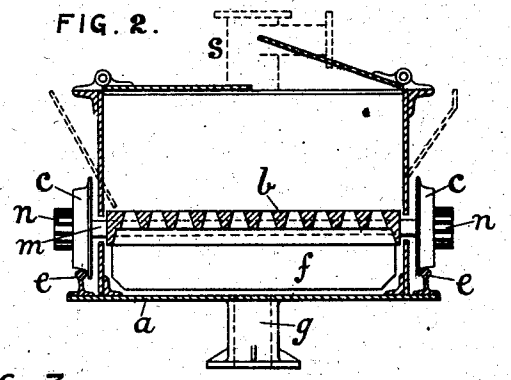


FIG. 3.

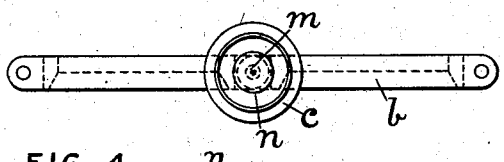


FIG. 4.

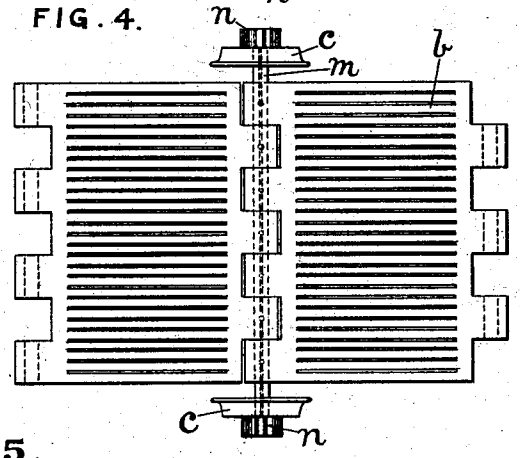


FIG. 5.

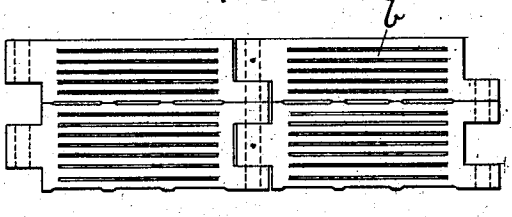


FIG. 6.

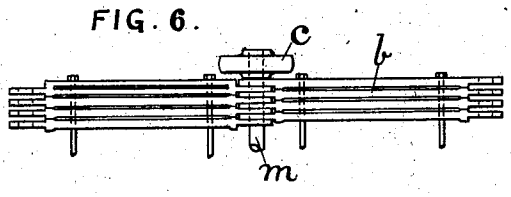
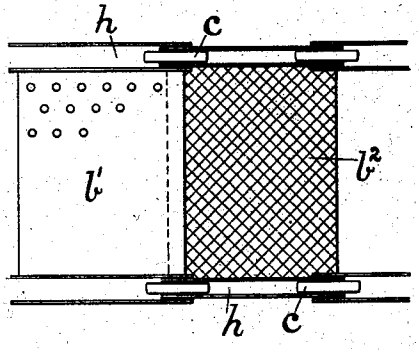


FIG. 7.



Witnesses:
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Harry Davies.

Inventor:
Maurice Graham
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 728,390. Patented May 19, 1903.

UNITED STATES PATENT OFFICE.

MAURICE GRAHAM, OF LEEDS, ENGLAND.

HOT-COKE CONVEYER.

SPECIFICATION forming part of Letters Patent No. 728,390, dated May 19, 1903.

Application filed February 2, 1903. Serial No. 141,575. (No model.)

To all whom it may concern:

Be it known that I, MAURICE GRAHAM, engineer, a subject of the King of Great Britain and Ireland, residing at Leeds, in the county of York, England, have invented a new and useful Improvement in Hot-Coke Conveyers, of which the following is a specification.

This invention relates to hot-coke conveyers for use mainly in conveying hot coke direct from the retorts in gas-works. In coke-conveyers of this type it has hitherto been customary for the drag or push-plate chain to work upon the bottom of the trough. Moreover, in the event of a steel-plate or steel-belt conveyer being adopted this also has been worked on the bottom of the trough. In both cases the coke has fallen direct from the retorts into the conveyer. In the first case—viz., with the drag or push-plate conveyer—the coke has either been pulled red-hot along the trough toward the end of the conveyer, where it has been quenched by passing through a depth of water in the trough at that point, or else the hot coke has been quenched directly after having fallen into the trough in the first instance. It will be seen, therefore, that these systems of quenching have the drawback that any excess of water is carried along in front of the coke, and consequently is eventually absorbed or taken up by the coke during its passage along the trough, the coke being delivered in a completely-saturated condition. In the second case—viz., with the steel plate or belt conveyer—there has always been water between the bottom of the trough and the steel-plate conveyer, so as to keep the latter from getting too hot, and therefore from warping or getting out of shape. This also has resulted in the coke becoming too wet and being delivered in a saturated condition, as in the former instance.

The object of my present invention is to overcome the drawback or objection above referred to and to provide an arrangement whereby the coke after being quenched at the point of its entry into the conveyer-trough can be drained of its superfluous water during its transit or conveyance along the entire length of the apparatus, so as to be delivered in a more or less dry and marketable condition. This I accomplish by employing within the conveyer-trough an endless traveling conveyer constructed in the form of a perforated grid and by raising the said conveyer or traveling grid to a suitable height above the level of the bottom of the trough. After the quenching operation, therefore, the waste water drains through the perforated grid into the lower portion of the trough, which serves as a conduit for the waste water and small breeze or refuse. Suitable outlets are provided either in the side or bottom of the trough for the purpose of getting rid of the waste water and refuse as quickly as possible. These outlets, or any convenient series of them, can be connected directly or indirectly to a sump or collecting-tank, from which the smudge, breeze, or refuse can be extracted by means of a slow-running elevator or other apparatus, the water being run off and pumped over again for the purpose of quenching the coke, as previously described.

My said invention is illustrated in the accompanying drawings, in which—

Figure 1 is a transverse section of one form of my improved apparatus. Fig. 2 is a transverse section of a somewhat modified form. Fig. 3 is a side elevation showing a short length of the conveyer or traveling grid, as illustrated in Fig. 2. Fig. 4 is a plan of Fig. 3. Figs. 5 and 6 are plans (partial) of modified forms of conveyer or traveling grid. Fig. 7 is a plan showing a short length of a further modified form of traveling conveyer or grid.

Similar letters of reference are employed to indicate similar parts throughout the several views.

a is the conveyer-trough, which may be of any convenient section, either built up or cast solid, and which may be either covered or uncovered.

b is the perforated grid forming the conveyer, which is hinged or jointed at regular intervals and is mounted on runners or wheels *c* at the joints, or which may be supported at intervals on fixed rollers, or be arranged to slide or travel in any convenient manner upon continuous bearings. Thus, for instance, the runners or wheels *c* may travel upon an internal rail *d*, Fig. 1, or an external rail *e*, Fig. 2, the conveyer or grid *b* being, however, in all cases arranged at a sufficient height above the floor of the trough *a*. The

conveyer or grid b carries one or more scrapers f for the purpose of keeping the lower part of the trough a clear of refuse, which is discharged along with the waste water by means of outlets g, provided at convenient intervals in the bottom or side of the trough. The action of these scrapers f may be facilitated, if required, by an occasional flushing or a constant stream of water through the lower part of the trough. Each length of the perforated grid or conveyer b may be cast entire, as shown in Fig. 4, or in sections, Fig. 5, or the grid or conveyer b may be built up of a suitable number of single bars, as shown in Fig. 6, or the conveyer may consist, Fig. 7, of a series of perforated plates b', or of lengths b^2 of wire-mesh chainwork or expanded metal, these being attached, preferably, to the double chain h h, working on rollers or runners c. The hinge-pin m may be formed with a central oil-passage, Figs. 2, 3, and 4, by which oil or lubricant may be conducted to the bearing-surfaces from lubricators n, of any ordinary or suitable type, provided at one or both ends of the pin m.

s, Fig. 2, is an exhauster for removing the steam and fumes produced within the trough.

In existing coke-conveyers of the types hereinbefore referred to, in which the conveyer works along the bottom of the trough, the drawback or objection referred to may be to some extent overcome by inserting at intervals in the bottom of the trough a series of fixed grids or gratings which are arranged in connection with a sump or collecting-tank, as hereinbefore described with reference to the outlets g.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a hot-coke conveyer, in combination, a trough a, a perforated traveling grid or conveyer b working therein, means for supporting the said grid or conveyer above the level of the bottom of the trough, an outlet or series of outlets g, and a scraper or scrapers f, whereby the coke after being quenched is drained of its superfluous moisture during its transit along the trough, substantially as set forth.

2. The combination, with a conveyer-trough provided with a drain-outlet, of a conveyer formed of pivoted plates provided with water-passages, and a scraper on the lower side of the said conveyer which works in the bottom part of the said trough.

3. The combination, with a conveyer-trough provided with a drain-outlet, and rails inside the said trough; of a conveyer formed of pivoted plates provided with water-passages, rollers which run on the said rails and support the said plates, and a scraper in the lower side of the said conveyer which works in the bottom part of the said trough.

4. The combination, with a conveyer-trough provided with a drain-outlet, of a conveyer formed of a series of plates each said plate consisting of a series of bars arranged side by side with water-passages between them, and pivot-pins connecting the said plates together, and a scraper on the lower side of the conveyer which works in the bottom part of the said trough.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MAURICE GRAHAM.

Witnesses:
ALLAN BENNETT,
JOHN E. WALSH.