

L. C. FLACCUS.
CLEANING DEVICE FOR GAS COLLECTING MAINS.
APPLICATION FILED JAN. 14, 1911.

1,005,011.

Patented Oct. 3, 1911

2 SHEETS—SHEET 1.

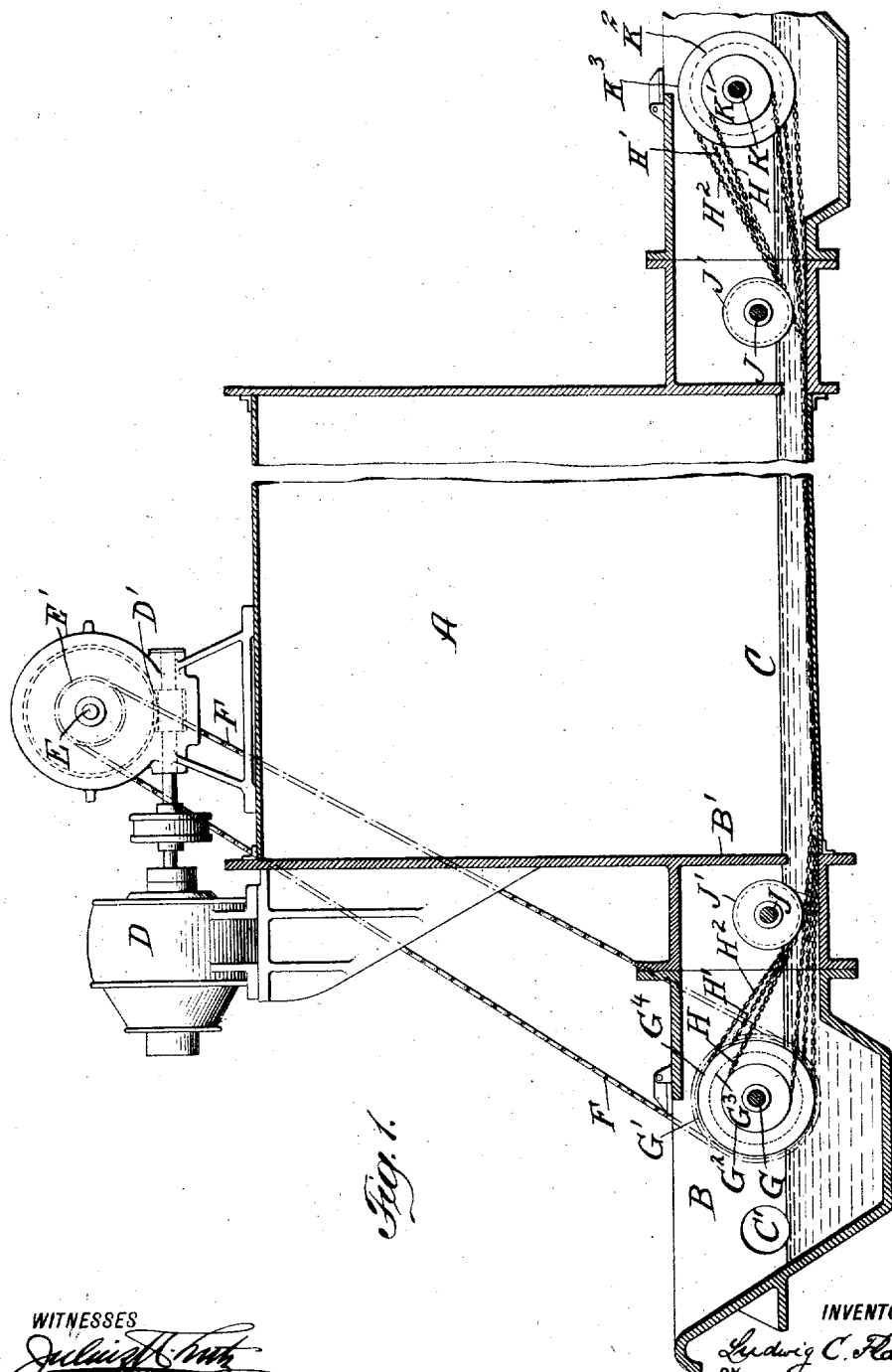


Fig. 1.

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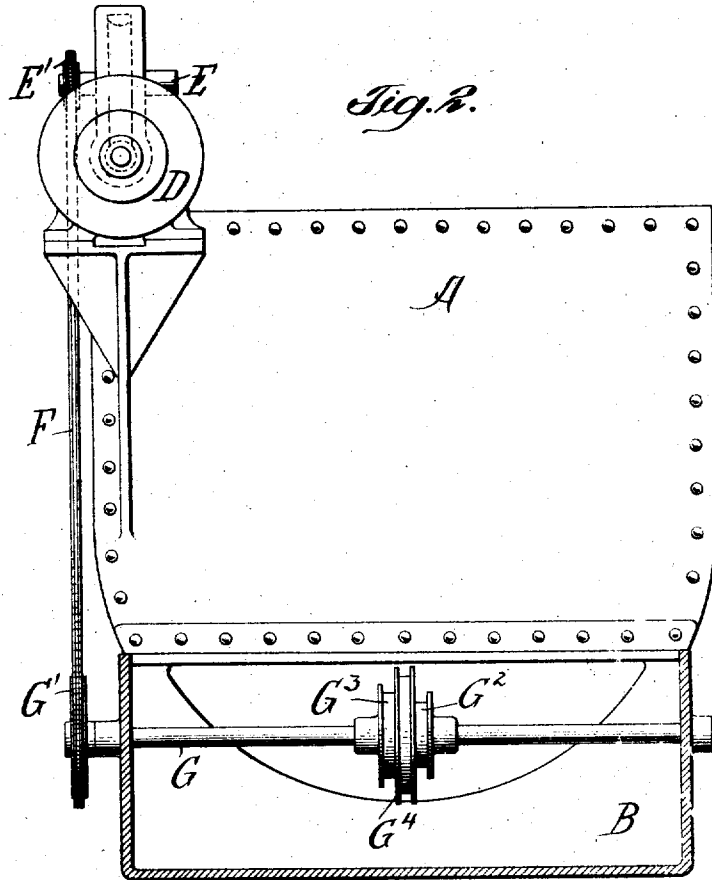
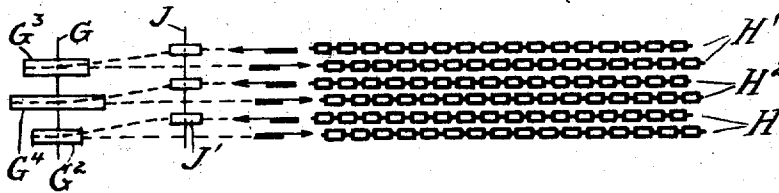


Fig. 3.



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LUDWIG CARL FLACCUS, OF NEW YORK, N. Y., ASSIGNOR TO STETTINER CHAMOTTE-FABRIK ACTIEN-GESELLSCHAFT VORM. DIDIER, OF STETTIN, GERMANY, A CORPORATION OF GERMANY.

CLEANING DEVICE FOR GAS-COLLECTING MAINS.

1,005,011.

Specification of Letters Patent.

Patented Oct. 3, 1911.

Application filed January 14, 1911. Serial No. 602,569.

To all whom it may concern:

Be it known that I, LUDWIG CARL FLACCUS, a subject of the German Emperor, and resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Cleaning Devices for Gas-Collecting Mains and the Like, of which the following is a specification.

My present invention relates to devices for removing from gas mains and the like, impurities, such as tar, pitch, coal dust which may adhere to the walls of such conduits.

The invention has been devised for use more particularly in connection with the gas-collecting main of a coke-oven plant, but it will be evident that the new cleaning device may be used for other purposes also.

The invention involves the provision of a traveling mechanical cleaning device, such as a chain or chains, arranged to scrape or run along the surface which it is desired to keep clean, and in the preferred form of my invention I employ a plurality of chains whose juxtaposed runs are made to travel at different rates of speed and in opposite directions.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a sectional elevation of a gas-collecting main or receptacle provided with my improved cleaning device; Fig. 2 is an end view thereof, with parts in section; and Fig. 3 is a detail plan view showing, in a diagrammatic fashion, the six juxtaposed runs of the three cleaning chains employed in the specific example of my invention illustrated by the drawings.

In Figs. 1 and 2, A designates the collecting main which receives gas in the usual manner, say from a coke oven pant, the gas passing on from this main to any suitable plant for the recovery of by-products (not shown). It is well-known that in the course of time various impurities contained in the gas will be deposited on the walls of the main, forming a gradually increasing sediment or crust which would clog up the main if allowed to grow. Among such impurities I will mention sticky tar, pitch, and particles of coal dust. Hitherto such detrimental deposits have been knocked loose periodically by means of rods and then re-

moved, and it has also been attempted to wash the deposits away by means of very fluid tar, flowing at the bottom of the main. However, this is but partially successful, and it was still found necessary to scrape the main from time to time, although at longer intervals. In the drawing the inlet for the thin or fluid tar used as a cleaning liquid is supposed to be at the right hand end of the main A, and at the lower portion of each end or head there is a trough-shaped extension B communicating with the body of the main, partitions B' being provided at each junction to preserve a seal by dipping into the cleaning liquid C. One of the troughs B is provided with an overflow C' forming an outlet for the liquid tar or like cleaning fluid, and preferably the bottom of the main is inclined toward this outlet. A suitable motor D is mounted on brackets at one end of the main A, and by means of a worm and worm wheel gearing D' the motor drives a shaft E carrying a sprocket wheel E'. A chain F transmits motion from the sprocket wheel E' to another sprocket wheel G' upon the outwardly projected portion of a shaft G whose main portion is within one of the trough-shaped extensions B. In the example shown, three wheels G² G³ G⁴ of different diameters are rigidly mounted on the shaft G in such a manner that the lower portion of each wheel dips into the liquid C, although this is not absolutely necessary. These wheels are adapted to impart a traveling motion at different linear speeds, to movable scraping elements which in the example shown consist of three chains H, H', H², each of which has both of its runs arranged close to the bottom of the main A and lengthwise thereof, the six runs being therefore adjacent to each other and in the same transverse plane, see Fig. 3. In order to hold the chain runs in this relation, they are guided by two sets of guides or idlers J' (three idlers in each set) which are mounted independently on shafts J. At the (upper) end opposite to the shaft G is located a shaft K on which are mounted rigidly three chain wheels K', K², K³ corresponding in size and in arrangement to the driving chain wheels G², G³, G⁴.

It will be seen from Fig. 3 that the six adjoining chain runs travel alternately in

opposite directions. Furthermore, owing to the difference in the size of the wheels G², G³, G⁴ those chain runs which travel in the same direction will move at different rates of speed. A very efficient scraping action is thus obtained for the loosening of the sticky tar and other foreign matter tending to form incrustations on the walls of the main A. The continuous stirring and scraping action will enable such foreign substances to be carried away readily by the liquid tar C or other cleaning fluid which overflows at the outlet C'. The device is mechanical, and continuous in its action, and the manual labor required hitherto for cleaning the main is dispensed with. The liquid seal at B' enables the trough-shaped extensions B to be left open at the top, as shown, so that the chain wheels G², G³, G⁴ and K', K², K³ and also the idlers J' are readily accessible. Various modifications may be made without departing from the nature of my invention as set forth in the appended claims.

I claim:

1. The combination of a main, an endless movable cleaning device having oppositely traveling runs arranged partly side by side within the main to travel lengthwise thereof and having loops exteriorly of the main, and supporting means, arranged exteriorly of the main, in engagement with said loops.
2. The combination of a main, an endless movable cleaning device having oppositely traveling runs arranged side by side lengthwise within the main, and means for driving said endless cleaning device.
3. The combination of a main, an endless movable cleaning device having oppositely traveling runs which extend in the same transverse plane within the main and are adapted to travel lengthwise of the main, and means for operating said cleaning device.
4. The combination of a main having open extensions and means for forming a liquid seal at the junction of each extension with the body of the main, an endless movable cleaning device having oppositely traveling runs arranged side by side lengthwise of the main and partly within said extensions, supporting wheels arranged within said extensions and engaging the loops of the cleaning device, and means for imparting a traveling motion to said cleaning device.
5. The combination of a main having open extensions and means for forming a liquid seal at the junction of each extension with the body of the main, an endless movable cleaning device having oppositely traveling runs arranged side by side lengthwise of the main and partly within said extensions, supporting wheels arranged within the extensions and engaging the loops of the cleaning device, idlers arranged within the extensions and engaging the cleaning de-

vice between the main's body and the supporting wheels, and means for operating said device.

6. The combination of a receptacle, an endless movable cleaning device having oppositely traveling runs arranged side by side within said receptacle, supporting wheels engaging the loops of said cleaning device, and means for operating the said device.

7. The combination of a receptacle, an endless movable cleaning device having oppositely traveling runs arranged side by side within said receptacle, supporting wheels engaging the loops of said cleaning device, idlers engaging said cleaning device between the supporting wheels, and means for operating said device.

8. The combination of a receptacle, a cleaning device comprising a plurality of endless movable elements having oppositely traveling runs arranged within said receptacle, supporting wheels engaging the loops of said cleaning device, independent co-axial idlers engaging different runs of the cleaning device between said supporting wheels and holding said runs adjacent to each other in the same plane, and means for operating said cleaning device.

9. The combination of a receptacle, an endless movable cleaning device having oppositely traveling runs arranged side by side within said receptacle, supporting wheels engaging the loops of said cleaning device, and means engaging the cleaning device between the supporting wheels and holding the runs of said device in a transverse plane.

10. The combination of a cleaning device comprising a plurality of juxtaposed elements, and means for causing the individual elements to travel at different rates of speed.

11. The combination of a cleaning device comprising a plurality of endless flexible elements and means for causing the individual elements to travel at different rates of speed.

12. The combination of a cleaning device comprising a plurality of endless flexible elements, supporting wheels engaging the loops of said elements, and means for giving the individual elements different rates of linear speed.

13. The combination of a cleaning device comprising a plurality of endless flexible elements, two sets of connected supporting wheels engaging the loops of said elements, said wheels being of different diameters to cause the respective elements to travel at different rates of linear speed, and means for driving one set of said wheels.

14. The combination of an endless movable cleaning device having oppositely traveling runs, supporting wheels engaging the loops of said device, and means, located

between said wheels, for guiding the oppositely traveling runs of said device and bringing them side by side into the same transverse plane.

- 5 15. The combination of a cleaning device comprising a plurality of endless flexible elements, two sets of connected supporting wheels engaging the loops of said elements, said wheels being of different diameters to
10 cause the respective elements to travel at different rates of linear speed, means for driving one set of said wheels, and two sets of guides engaging the runs of the said endless elements between the supporting wheels

and arranged to hold the central portions of 15 said runs in the same transverse plane.

16. The combination of a receptacle, a cleaning device comprising a plurality of members arranged side by side within said receptacle, and means for causing said mem- 20 bers to travel in opposite directions.

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

LUDWIG CARL FLACCUS.

Witnesses:

STELLA ENGEL,

WILLIAM P. ENGELMAN.

Corrections in Letters Patent No. 1,005,011.

It is hereby certified that in Letters Patent No. 1,005,011, granted October 3, 1911, upon the application of Ludwig Carl Flaccus, of New York, N. Y., for an improvement in "Cleaning Devices for Gas-Collecting Mains," errors appear in the printed specification requiring correction as follows: Page 1, line 14, for the word "deviced" read *devised*; and same page, line 41, for the word "pant" read *plant*; page 2, line 21, for the word "mith" read *made*; and line 35, for the word "mean" read *means*; and same page, lines 89 and 91, for the word "device" read *elements*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 24th day of October, A. D., 1911.

[SEAL.]

E. B. MOORE,

Commissioner of Patents.

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