

A. BROWNING.  
SEWAGE DISTRIBUTER.  
APPLICATION FILED MAR. 24, 1908.

955,754.

Patented Apr. 19, 1910.

2 SHEETS—SHEET 1.

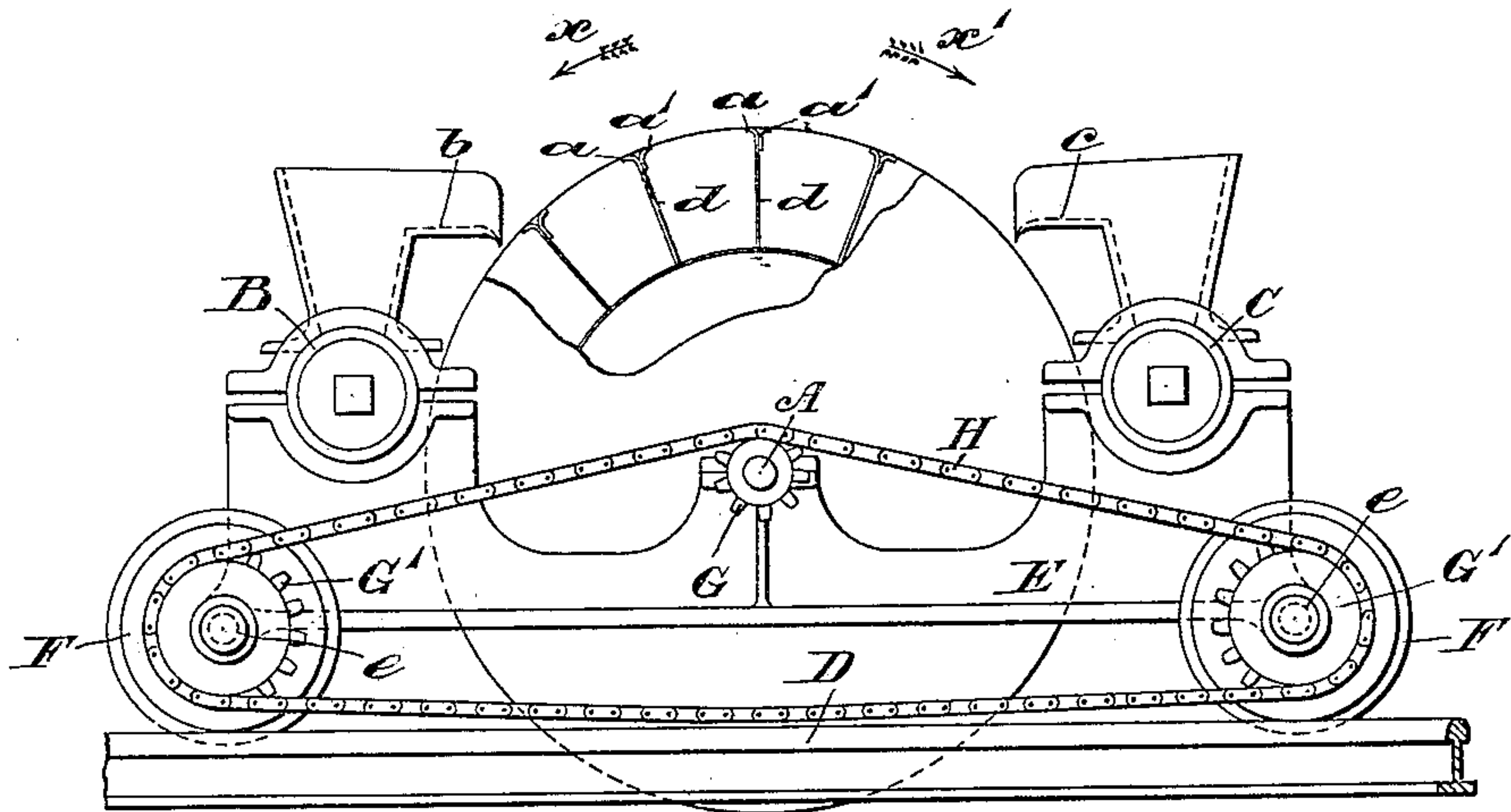


Fig. 1.

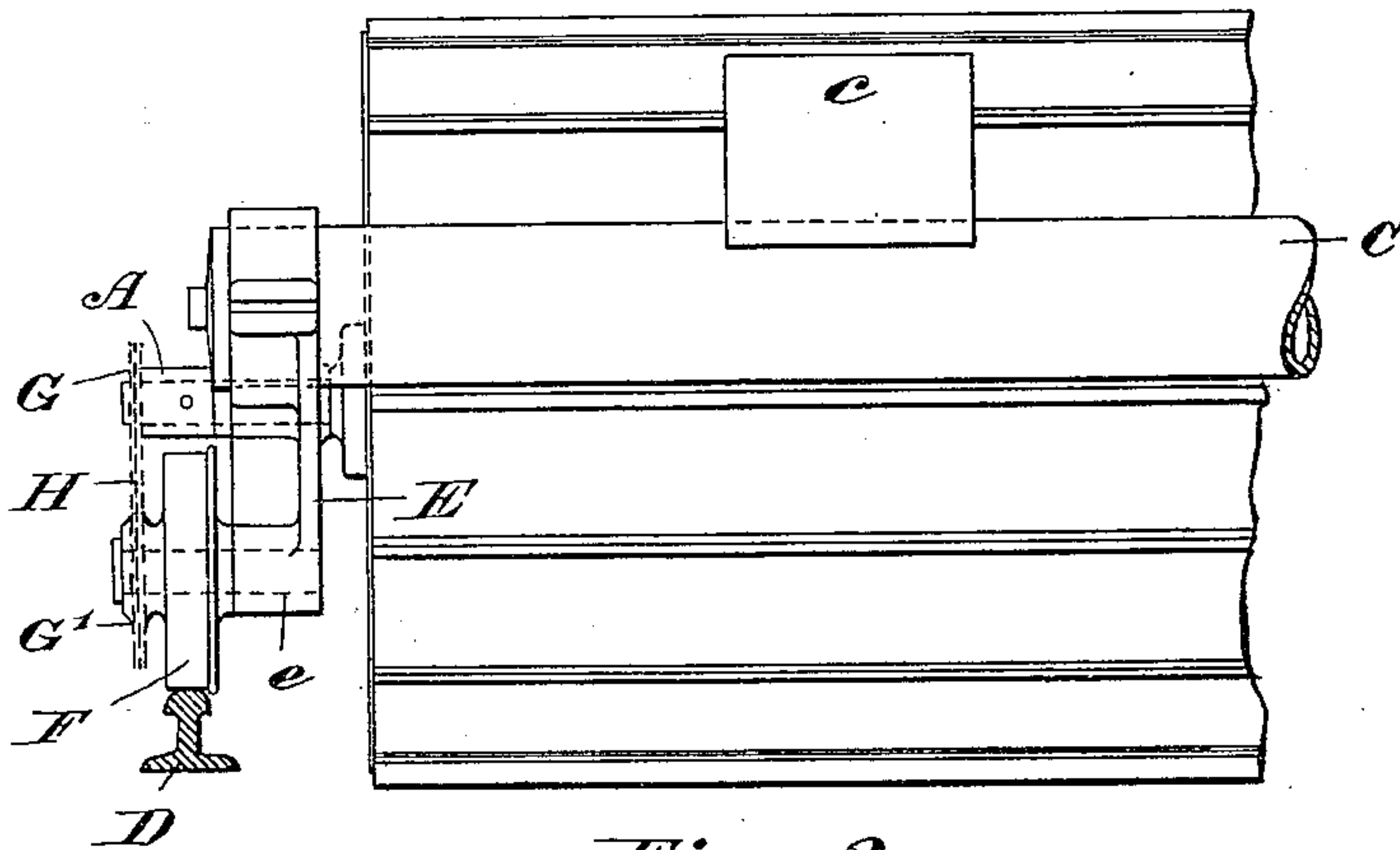


Fig. 2.



Fig. 3.

Witnesses

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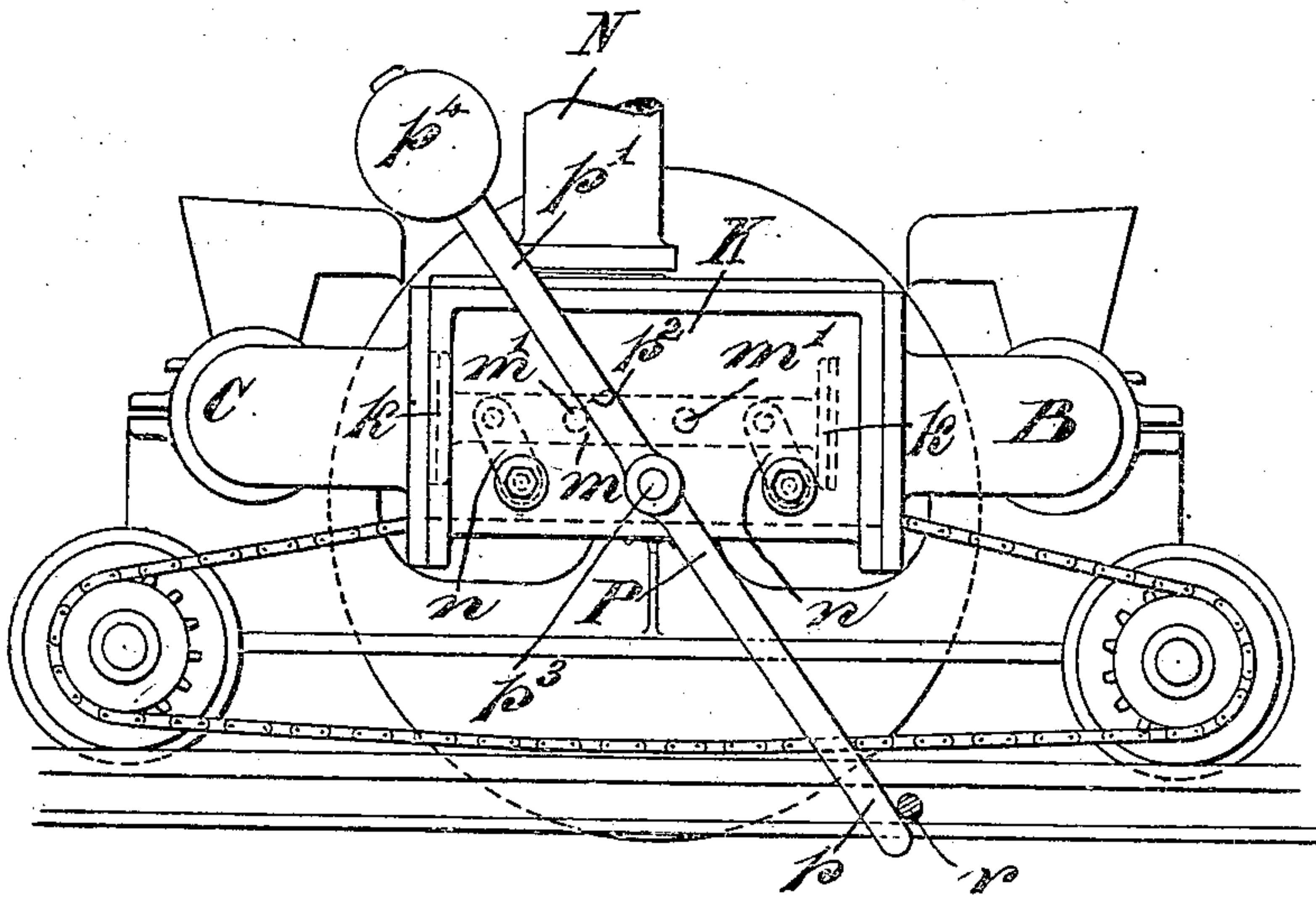


Fig. 4.

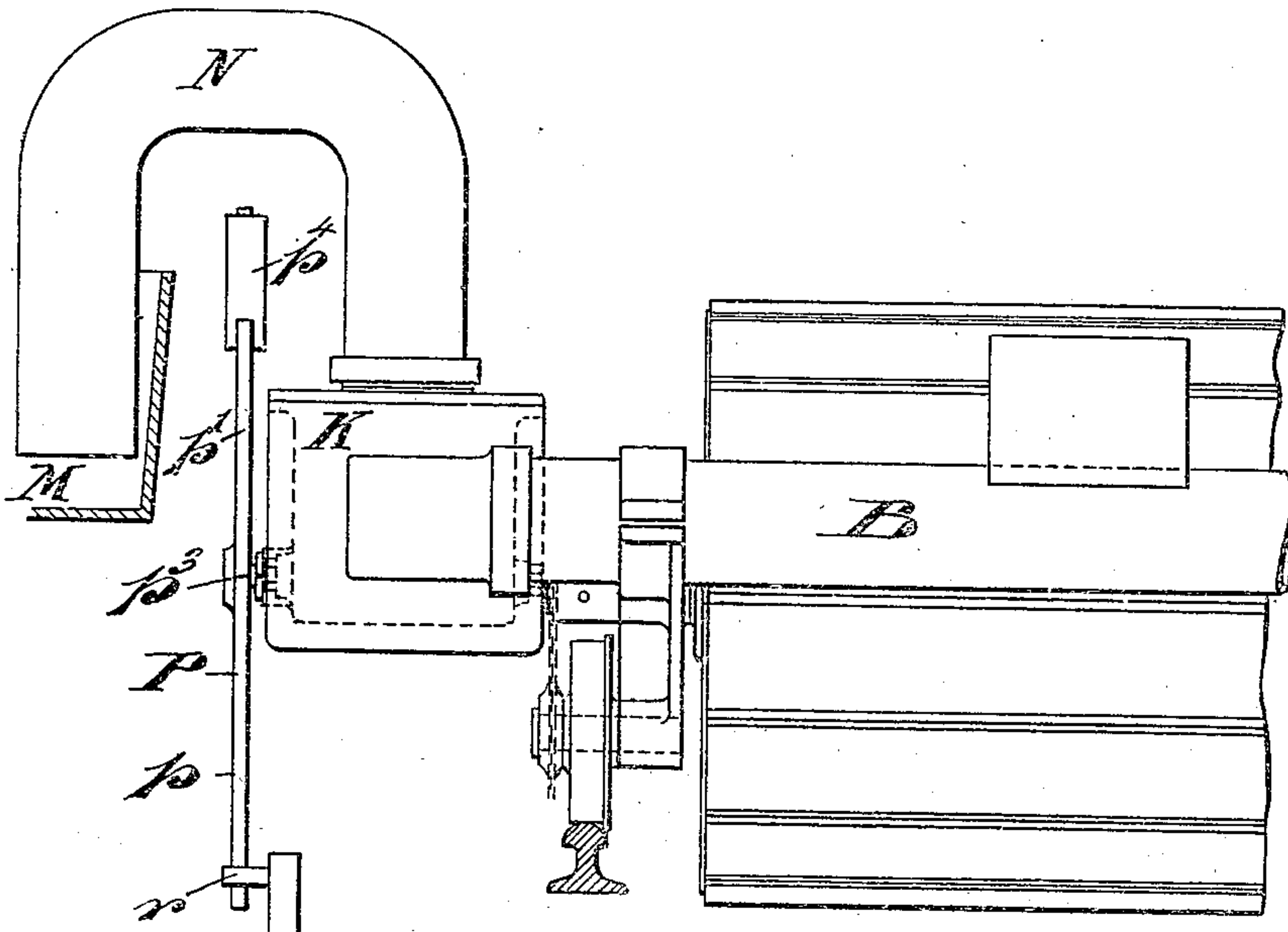


Fig. 5.

Witnesses  
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Attorney



# UNITED STATES PATENT OFFICE.

ALFRED BROWNING, OF OLD HILL, ENGLAND, ASSIGNOR TO WALTER JONES, OF AMBLECOTE, ENGLAND.

SEWAGE-DISTRIBUTER.

955,754.

Specification of Letters Patent.

Patented Apr. 19, 1910.

Application filed March 24, 1908. Serial No. 422,909.

*To all whom it may concern:*

Be it known that I, ALFRED BROWNING, a subject of the King of Great Britain, and residing at Old Hill, in the county of Stafford, England, have invented certain Improvements in Sewage-Distributers, of which the following is a specification.

This invention relates mainly to the self-propelled water-wheel type of distributor which is carried backward and forward over a rectangular filter and delivers the sewage from the water-wheel on to the surface of the filter, the sewage being delivered to the wheel from a conduit system which is parallel with the axis of the wheel and travels therewith and the wheel itself extending substantially across the width of the filter surface upon which it delivers the sewage.

The purpose of the invention is to adapt the buckets of the wheel so that they may each be utilized in driving the wheel in opposite directions of rotation. For this purpose I also form the bucket vanes each with a double lip so that one lip holds the liquid while the wheel rotates in one direction over the filter and the other lip comes into use in the same manner when the wheel rotates in the opposite direction.

In order that the invention may be clearly understood, I will describe the same by reference to the drawings herewith, which illustrate a convenient practical application thereof.

Of these drawings, Figure 1 illustrates in elevation an end view of a distributing apparatus of the water-wheel type to which the invention is applied, a portion of the water-wheel being shown in section to illustrate the double-lipped buckets; Fig. 2 is a side view of the end of the apparatus which is illustrated by Fig. 1; Fig. 3 is a detached sectional view to an enlarged scale, showing the double lip of one of the water-wheel buckets; Fig. 4 is an inner end view of the distributor showing means by which the reversal may be effected, and—Fig. 5 is a side view of the inner end of the distributor, having the reversing means shown by Fig. 4.

Referring first to Figs. 1 and 3, it will be seen that lips  $a$  and  $a'$  are formed along the outer edge of each blade  $d$ , which turn in opposite directions therefrom and form a double lip, and thus if the sewage is supplied

to the buckets through weirs, such as  $b$ , of the weir pipe B which runs along one side of the wheel, the wheel will turn in the direction of the arrow  $x$  (Fig. 1) the sewage being held within each bucket by its lip  $a'$  during a considerable portion of a semi-revolution of the wheel, and if the sewage is supplied to the buckets through weirs, such as  $c$ , of the weir pipe C which runs along the other side of the wheel, the wheel will turn in the direction of the arrow  $x'$  (Fig. 1), the sewage being held within each bucket by its lip  $a$  during a considerable portion of a semi-revolution of the water-wheel. The sewage may be supplied to the weir pipes B, C, and alternately automatically cut off from one and admitted to the other to drive the water-wheel in opposite directions in any manner previously adapted or proposed in which sewage is fed alternately to one or other of a pair of weir pipes or the like which travel to and fro over a filter surface, such as in the manner shown by Figs. 4 and 5, in which the weir pipes B and C join into opposite ends of a valve box K which is constantly supplied with sewage from the trough M, which runs along one side of the filter bed, through the medium of a siphon N which travels with the distributor, and in which valves  $h$  carried on the ends of a bar  $m$  which is supported upon rocking arms  $n$  are moved, as the distributor approaches either end of its travel, so that one of them closes one of the weir pipes and the other opens the other weir pipe, the movements of the valves being caused by the lower end  $p$  of a two-armed lever P coming against a stop  $r$ . A short arm  $p^2$  fixed on the spindle  $p^3$  which carries the lever P operates against one or other of a pair of studs  $m'$  of the bar  $m$  as the lever turns. The outer end of the upper arm  $p'$  has a weight  $p^4$  which insures that when the lever has been turned somewhat beyond a vertical position it will fall over and thus rapidly close the valve which needs to be closed.

In Fig. 3 the outer edge of each radiating vane  $d$ , of the vanes which divide off the spaces of the buckets, is shown as having the lip  $a$  formed by bending the metal of the vane to a curved shape as seen in transverse section, and the lip  $a'$  of such edge, which is curved in the opposite direction, is shown as formed of a separate strip of metal which



is riveted to the vane. The construction of the double-lipped buckets may, however, be varied considerably, as will be understood.

It will now be seen that the construction of 5 double-lipped buckets enables all the buckets of the wheel, throughout their entire length, to be used in propelling the wheel in both directions of revolution, alternatively, so that in each direction in which the wheel is 10 traveling the whole of the buckets are utilized both in the propulsion of the wheel and in the distribution of the sewage. The same purpose may be effected, however, though not so satisfactorily, by using plain radiat- 15 ing vanes, the sewage being delivered from the conduit system alternatively to one or other side of the wheel, according to the direction in which the distributor is to travel at that moment.

20 Referring now to Figs. 1 and 2, the bearing wheels which ordinarily carry the ends of the shaft A of the water-wheel and run upon the track D are dispensed with, and the carriages E (one at each end of the 25 water-wheel shaft A, and of which only one is shown) directly carry the shaft A and are each carried by a pair of bearing wheels F which run upon the track D, the pairs of these wheels which are at opposite sides of 30 the carriage being geared with opposite ends of the shaft A, such gearing for each pair of wheels being effected through the medium of a sprocket pinion G which is fixed upon the shaft A, sprocket wheels G' which 35 are concentric and also rigid with the bearing wheels F, respectively, and a chain H which is driven by the pinion G and drives the wheels G'; or the wheels F are otherwise driven by suitable gears from the shaft A. 40 It is convenient to form each bearing wheel F and its sprocket wheel G' in one, and to carry each such wheel F and its sprocket wheel G' upon a stud e which is fixed to the corresponding carriage E.

45 Having fully described my invention, what I claim and desire to secure by Letters Patent is:—

1. A device of the character described 50 having a carriage adapted to traverse a track, a water-wheel kept in alinement by the carriage and extending substantially across the width of the filter bed and having a series of buckets which are supplied by

a conduit appliance which is parallel there- with and travels with the carriage, means 55 for propelling the carriage in opposite directions along said track from reverse movement of said water-wheel, and means capable of operation first to deliver sewage to the series of buckets of the water-wheel at 60 one side thereof, to drive the wheel in one direction, and afterward to deliver such sewage to said series of buckets of the water-wheel at the opposite side thereof, to drive said wheel in an opposite direction. 65

2. A device of the character described having a carriage adapted to traverse a track, a water-wheel kept in alinement by the carriage and extending substantially 70 across the width of the filter bed and having a series of buckets which are supplied by a conduit appliance which is parallel therewith and travels with the carriage, the op- posite halves of each of said buckets being 75 substantially symmetrical in profile, means for propelling the carriage in opposite directions from reverse movement of the water-wheel, and means capable of operation first to deliver sewage to the buckets of the 80 water-wheel at one side thereof, to drive the wheel in one direction, and afterward to deliver the sewage to said buckets at the opposite side of the water-wheel, to drive said wheel in an opposite direction.

3. A device of the character described 85 having a carriage adapted to traverse a track, a water-wheel kept in alinement by the carriage and provided with double-lipped buckets, means for propelling the car- riage in opposite directions from reverse 90 movement of the water-wheel, and means capable of operation first to deliver sewage to the buckets of the water-wheel at one side thereof, to drive the wheel in one direction, and afterward to deliver the sewage to said 95 buckets at the opposite side of the water-wheel, to drive said wheel in an opposite direction.

In witness whereof I have hereunto signed my name this 11th day of March 1908, in the 100 presence of two subscribing witnesses.

ALFRED BROWNING.

Witnesses:

ROBERT G. GROVES,  
JOHN E. S. LOCKWOOD.