

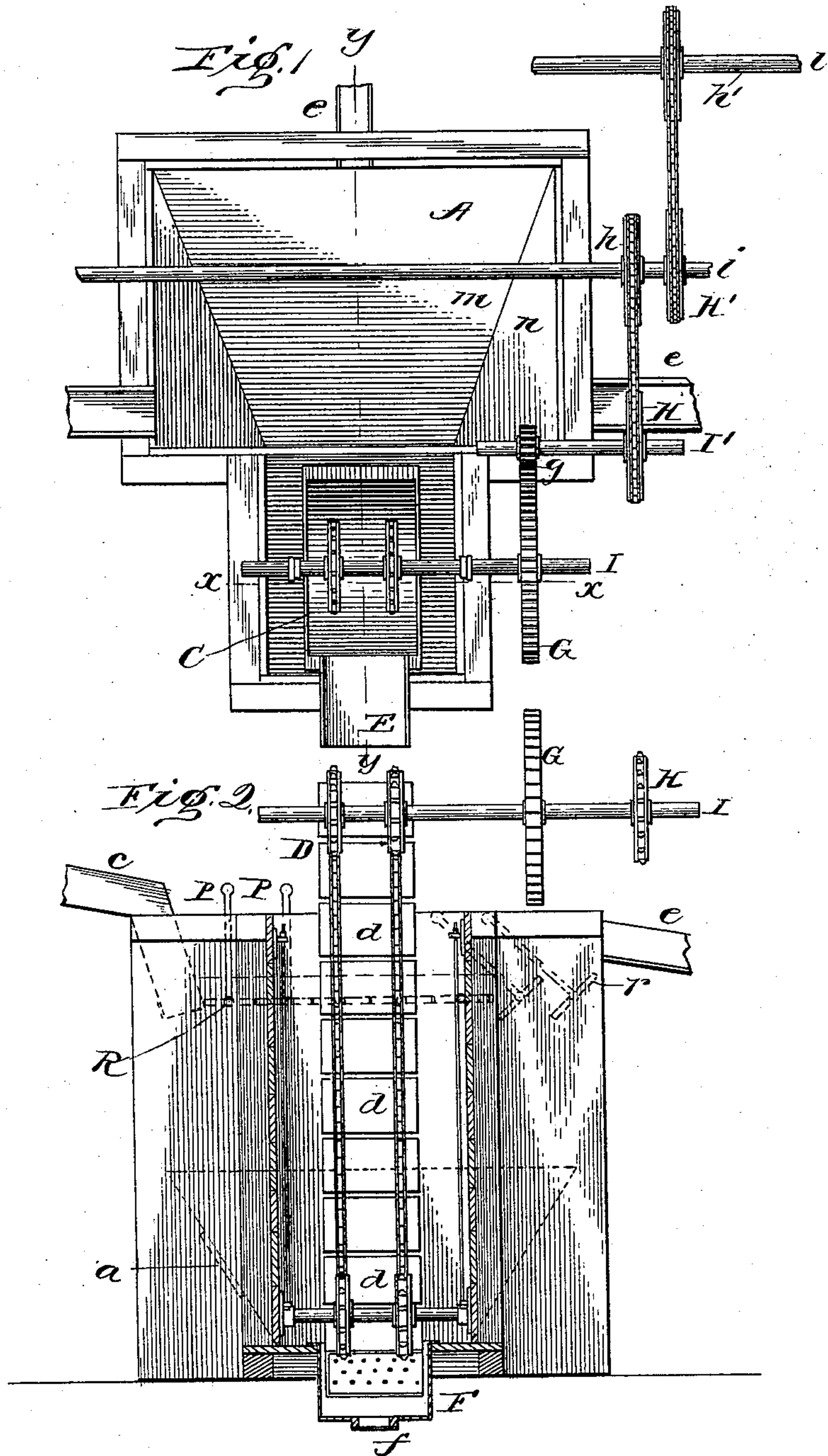
(No Model.)

2 Sheets—Sheet 1.

T. M. RIGHTER.
SETTLING TANK.

No. 585,121.

Patented June 22, 1897.



Witnesses:
J. M. Fowler Jr.
Wm P. Churchill.

Inventor:
Thomas M. Righter
by Henry H. Bates
his Attorney.

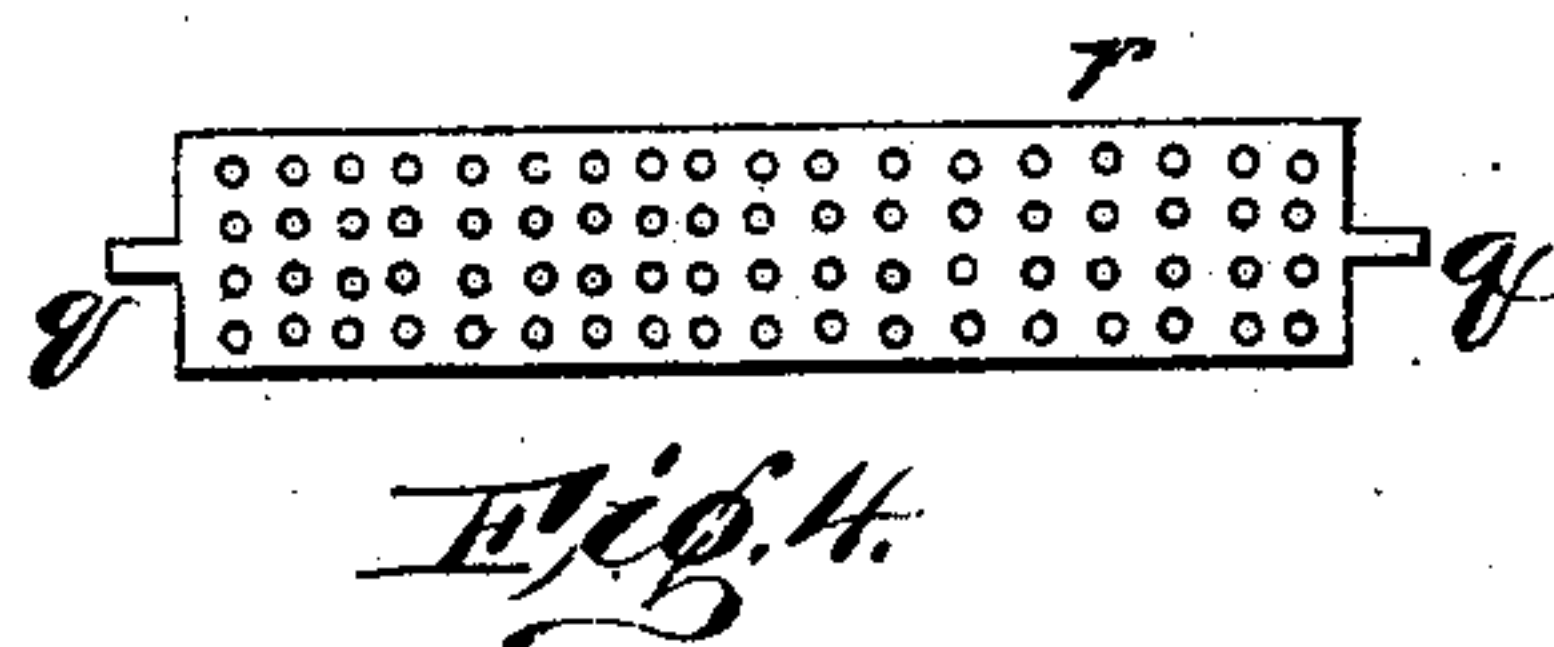
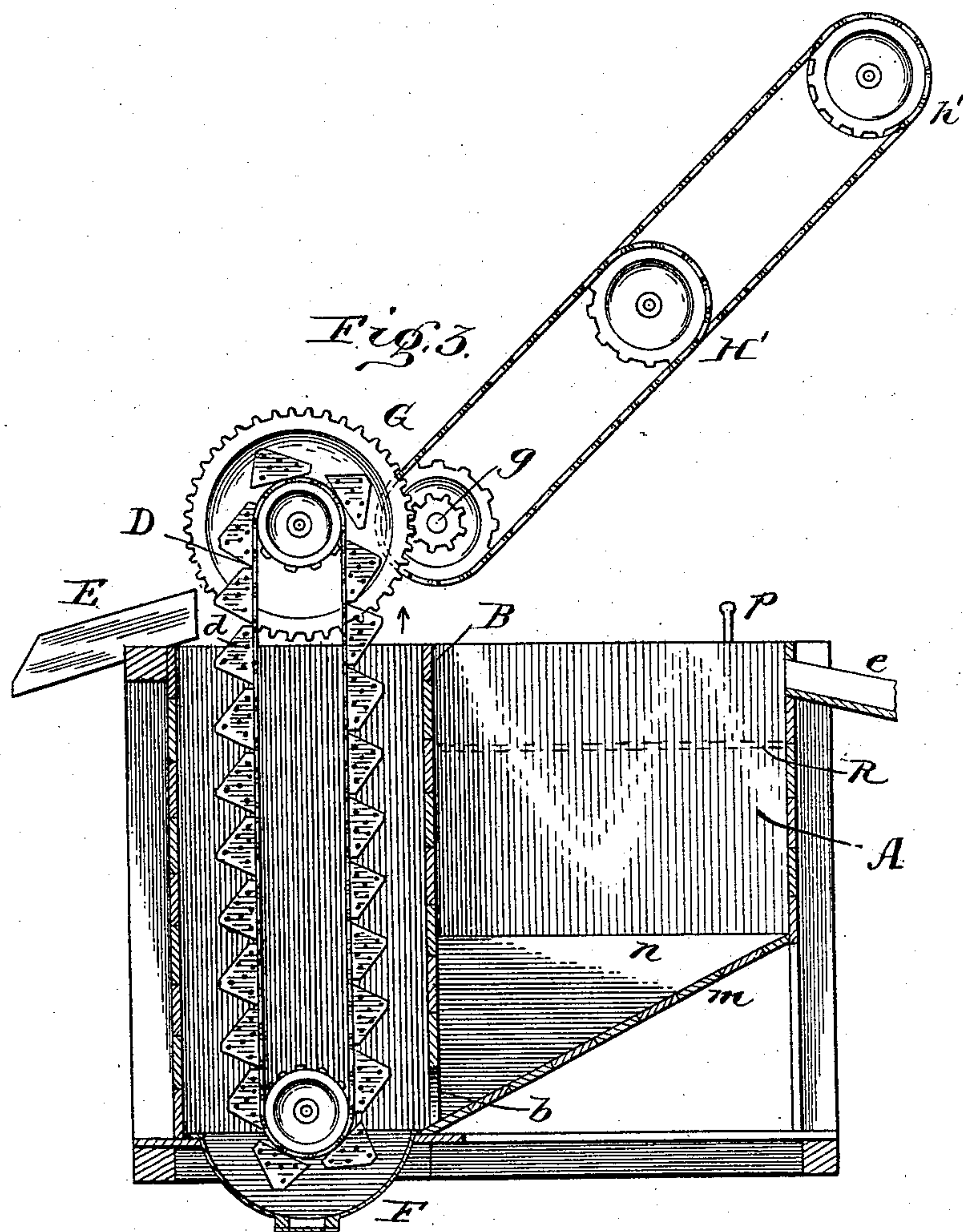
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UNITED STATES PATENT OFFICE.

THOMAS M. RIGHTER, OF MOUNT CARMEL, PENNSYLVANIA.

SETTLING-TANK.

SPECIFICATION forming part of Letters Patent No. 585,121, dated June 22, 1897.

Application filed March 24, 1897. Serial No. 629,002. (No model.)

To all whom it may concern:

Be it known that I, THOMAS M. RIGHTER, a citizen of the United States, residing at Mount Carmel, in the county of Northumberland and State of Pennsylvania, have invented certain new and useful Improvements in Settling-Tanks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in settling-tanks for collieries where coal is mined in large quantities, creating a large amount of refuse matter to be disposed of after separation has been effected between the marketable coal and the slaty and mineral substances mixed therewith.

The object of my invention is to take care of and dispose of the great mass of dirt which contaminates the washings of the coal and would otherwise pollute and fill up the streams and drainage courses of the region and eventually flood over valuable surface areas to the great damage of property.

Referring to the accompanying drawings, forming a part of this specification, Figure 1 represents a plan view of my improved settling-tank. Fig. 2 is a front elevation and vertical lateral section taken through the elevator-well on a line *x x*, Fig. 1; and Fig. 3 is a transverse section taken through the elevator on a line *y y*, Fig. 1. Fig. 4 shows a detail view of one of the sections of the sectional floor.

A is the settling compartment or tank proper, having a funnel-shaped bottom formed by sloping inclines, as shown at *m n*, converging from three sides toward the opening *b*, formed in the partition B of the front side. This partition separates the settling-chamber from the well C, in which is located an endless elevator or chain of buckets D. These buckets are formed of thin sheet metal perforated on their ends and front faces to allow the water to escape from the mass during the ascent.

E is a chute so located as to receive the refuse from the inverted buckets as they pass over and discharge it into cars, carts, or other receptacles for removal.

F is a boot into which the bottom of the

elevator-chain dips in reversing, and has an opening *f* in the bottom through which the tank may be emptied and drained.

d d are the elevator-buckets. Motion is communicated to the chain of buckets from any convenient source of power through appropriate gears *G g H h H' h'* and shafting *I I' i i'*.

A manhole is provided, as shown at *a*, through which the tank may be entered for cleansing when desired.

The operation is as follows: After everything has been screened out from the mass as mined and separation of the coal from the slate and refuse matter has been effected the fluid refuse, dirt and water, is introduced into the settling-tank at any convenient point, as *c*. Here separation commences to take place by gravity, the heavier suspended matter subsiding to the bottom and the water being run off at any convenient point, as *e*. The bottom of the tank being convergent, the settlings naturally flow toward the opening *a* in the partition B, which is of about the same height and width as an elevator-bucket. This partition separates the fluid mass in the tank from the water in the elevator-well and prevents agitation in the latter from the inflowing current, while the elevators, operating in a separate compartment, do not raise or stir up the subsiding matter in the main tank during the operation of settling. The buckets being set in motion rapidly pick up the mass of settlings flowing toward and through the opening as they pass the same and carry it up through the water in the well to a suitable distance above the surface thereof, which stands at the same level with that of the liquid mass in the settling-tank. During the ascent above the surface the bulk of the water drains out of the buckets through the perforations of the front and sides back into the well, while the remaining refuse is discharged as the buckets become reversed in turning over the sprocket into the chute E for removal. The speed at which the buckets are driven will be regulated in proportion to the height to which it may be thought advisable to lift the mass before dumping to effect the requisite drainage, being slower if the distance be short than where the distance is longer. There being no current in the elevator-well the fine material

is not washed out of the buckets, and this is essential to good results.

To aid the efficiency of the settling means above described, I use the auxiliary means

5 shown at R, Figs. 2 and 3. R is a sectional

floor perforated throughout and located a suitable distance below the overflow or outlet

10 e. The inlet is a tight conduit or flume c and opens below this floor at the opposite side from

the outlet. The said floor is made in sections

15 r about twelve inches wide, more or less, each section being sustained on pivotal bearings

q q at each end, turning in sockets formed in or attached to the walls of the tank on the

front and rear sides. These sections may be

made of any suitable material, either wood or metal, so that the perforations can be kept

clear and in operative condition. The object

20 of the floor is to afford a resting-place for filtering material to be placed on the upper

surface thereof, the said floor being continuous when all the sections are in place and

horizontally adjusted. The filtering material may be sand, gravel, powdered coke, cin-

25 ders, or any of the materials in use suitable for the purpose. The function of the filter-

ing material is to strain out the finer impurities in the liquid contained in the tank as the

liquid rises toward the overflow, holding back

30 the impurities and letting the water flow off comparatively clear. The object of making

the floor in pivoted sections is to enable the filtering material to be readily dumped into

the tank, when it becomes clogged and ineffi-

cient, by means of the handles p p, provided for 35 the purpose, one to each section, and extending a sufficient distance above the high-water level of the tank to be operated.

In Fig. 2 I have shown two of the sections at the right hand in oblique position, as they 40 would appear in the act of dumping.

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

1. In a settling-tank for coal-washings, the combination of a settling-compartment with 45 a converging bottom, an inlet flume or conduit, an outlet-chute, a discharge-chute for refuse-settlings, a sectional perforated floor R, for sustaining filtering material, having pivoted sections r, a well-compartment, an 50 endless chain of perforated buckets located in the well, and means for giving motion to the said chain of buckets, substantially as and for the purpose specified.

2. In a settling-tank for collieries, the combination of a settling-compartment A, having 55 converging bottom, inlet-conduit, overflow-passage, perforated sectional floor, with pivoted sections, partition B with opening b, well C, elevator-chain in said well with perforated 60 buckets, discharge-chute E and boot F, substantially as and for the purpose specified.

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

THOMAS M. RIGHTER.

Witnesses:

W. B. FAUST,

JOHN P. GIBSON.