

(No Model.)

2 Sheets—Sheet 1.

W. S. LOCKHART.

MACHINE FOR SORTING MATERIALS ACCORDING TO SIZE.

No. 500,771.

Patented July 4, 1893.

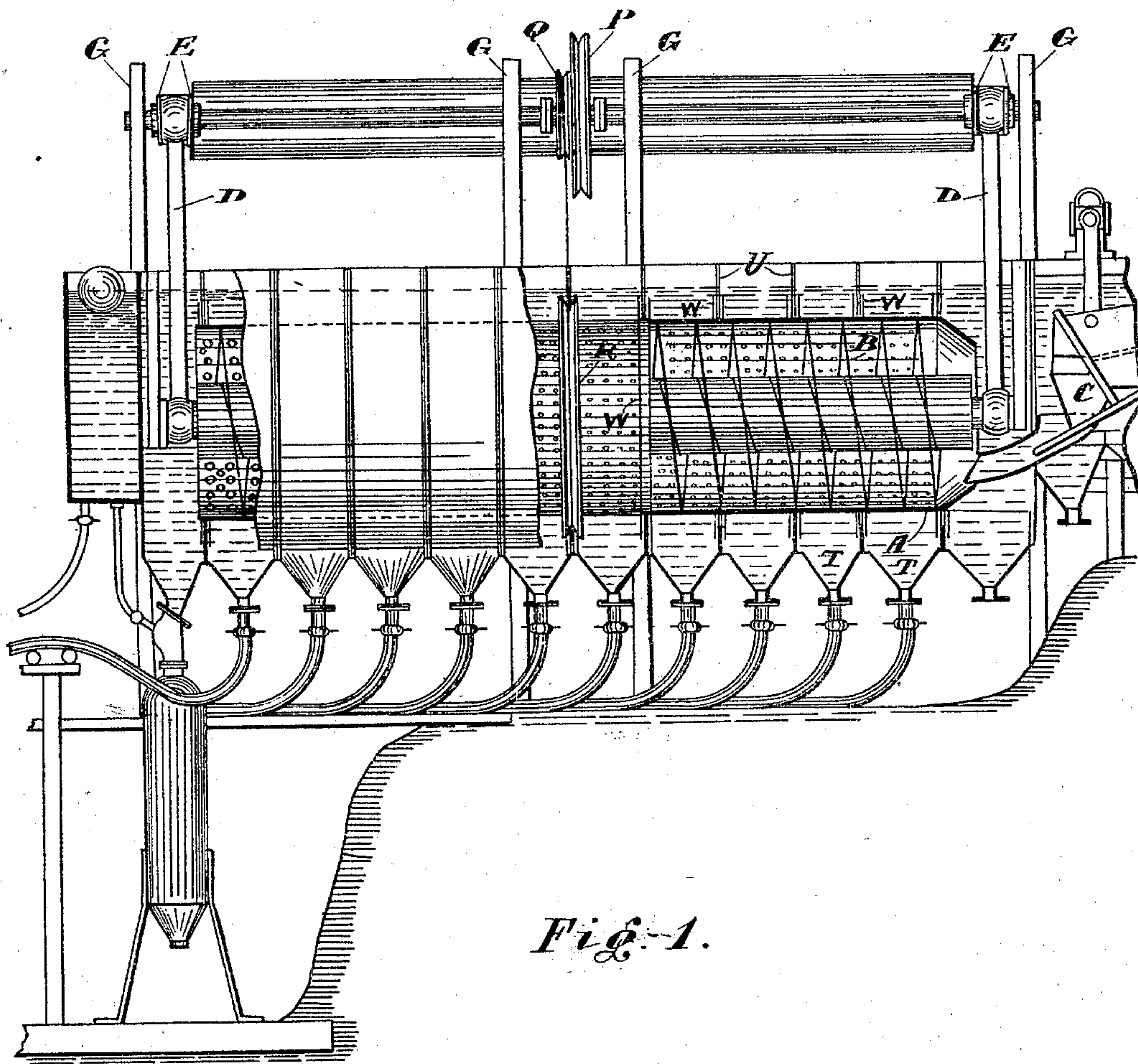


Fig. 1.

Witnesses:

E. R. Bolton
E. H. Sturtevant

By

Inventor:

William Stronach Lockhart

Quarles & R

his Attorneys.

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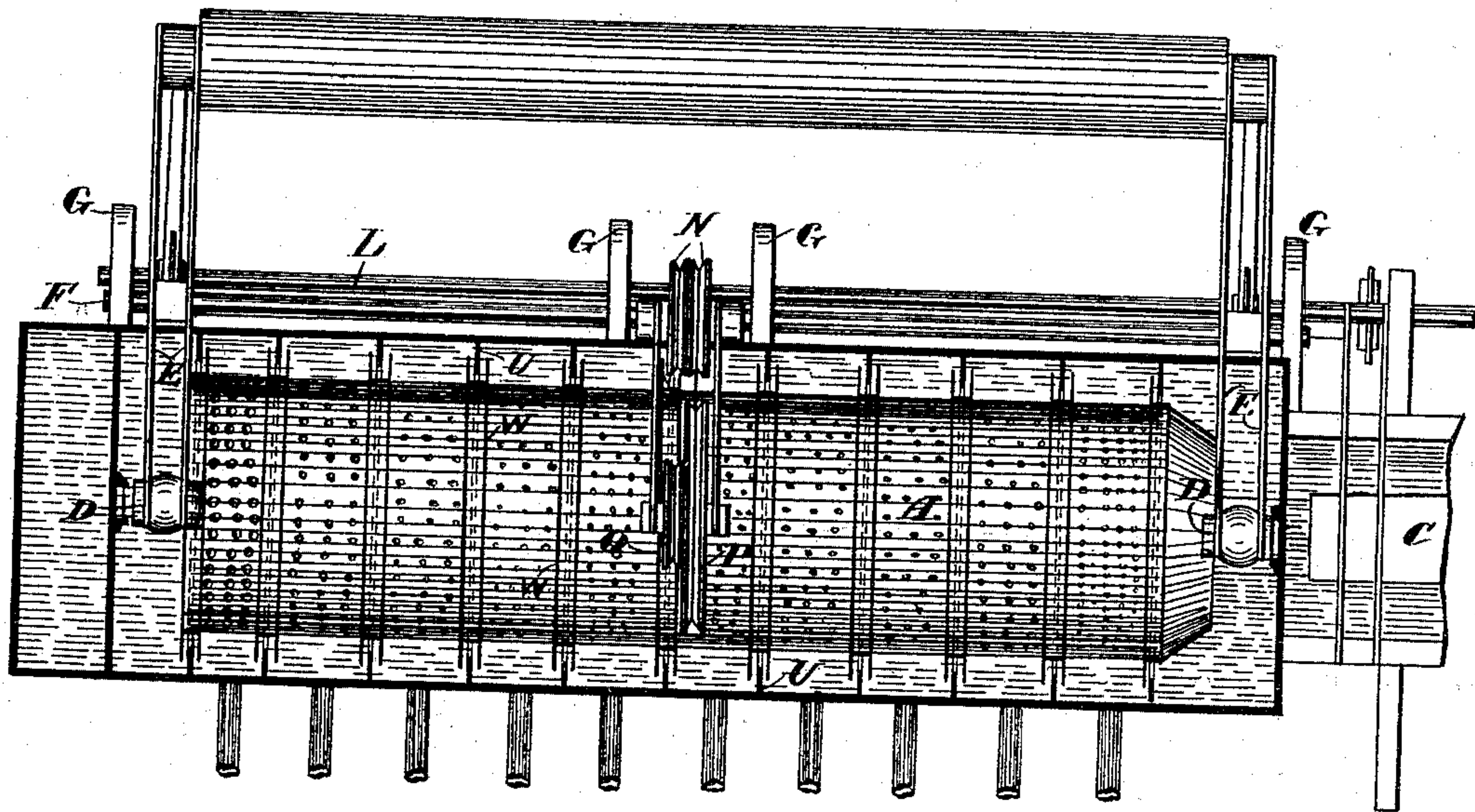


Fig. 2.

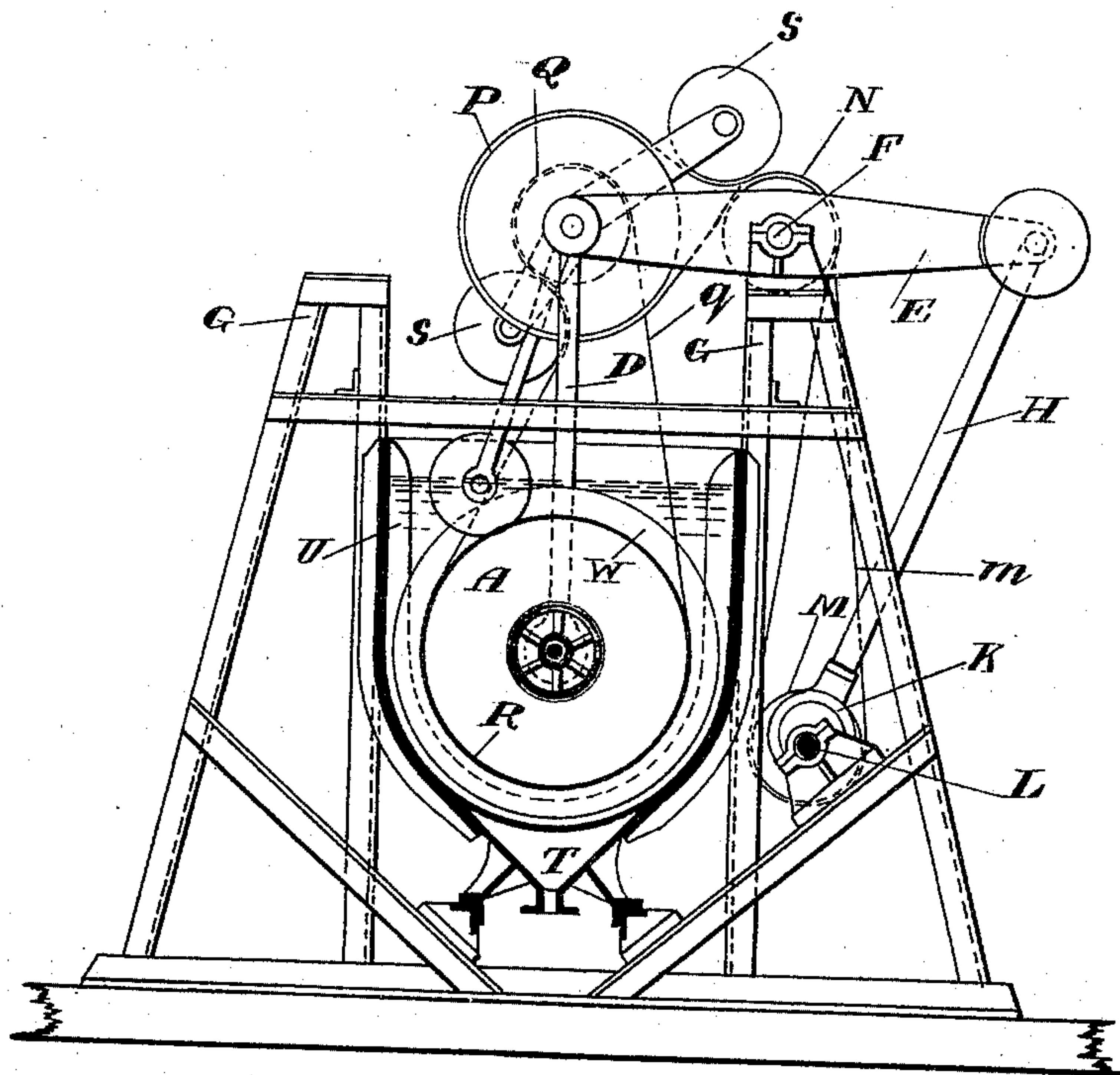


Fig. 3.

Witnesses:

E. B. Bolton
E. H. Sturtevant

Inventor:

William Stronach Lockhart

By

Richard R. [Signature]

his Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM STRONACH LOCKHART, OF LONDON, ENGLAND, ASSIGNOR TO THE
AUTOMATIC GEM AND GOLD-SEPARATOR SYNDICATE, LIMITED, OF SAME
PLACE.

MACHINE FOR SORTING MATERIALS ACCORDING TO SIZE.

SPECIFICATION forming part of Letters Patent No. 500,771, dated July 4, 1893.

Application filed February 1, 1893. Serial No. 460,587. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM STRONACH LOCKHART, residing at London, England, have invented an Improved Machine for Sorting
5 Materials According to Size, of which the following is a specification.

My invention relates to machinery for sorting or screening materials of any character, in a wet condition, and is designed by a combination in the screening part of the machine of a rotary and jiggling motion in water or other liquid, to effect such screening and sorting or classifying without liability to clogging, in
10 a more perfect manner than hitherto. And in order that my invention may be the better understood, I will now proceed to describe the same, reference being had to the drawings hereunto annexed, and to the letters marked thereon.

Figure 1 is a side elevation partly in section of my machine. Fig. 2 is a plan of the same and Fig. 3 is an end elevation of the same.

A is a cylindrical or polygonal revolving screen, more or less completely immersed in a
25 tank or other vessel of liquid, such as water; such screen having an interior helical conveyor B, surrounding the axis of the said screen, and turning with it. Thus the material to be screened or sorted is caused to pass
30 over the entire inner periphery of the screen A, as the latter revolves, below the material, which is introduced into the interior of the screen by the hopper C. The axis of the screen may be merely a central shaft; or it
35 may be formed as a large core as shown; or alternatively, the helix B may be attached to the inside periphery of the screen without such core or shaft, and in such case the screen may be supported externally on rollers, or
40 hung on links, such links being provided with roller or ball bearings. The screen may be horizontal, the feed being effected by the helix, or the screen may be placed at any desired angle to the horizon, and may be arranged to
45 raise the material by means of the helical conveyor or otherwise. The reciprocating or jiggling motion of the screen may be controlled by guides or links, and may be in a directly vertical direction or obliquely, but it is not in-
50 tended that the reciprocation shall be in the

direction of the axis of the screen, but in a direction at right angles to it. The said screen A is perforated with a series of successively sized holes partially indicated only in the drawings, and is supported by the connecting
55 rods D, from the end of two rocking levers E, which are pivoted on bearings F on the main frame G. The outer end of the said rocking levers E are attached by pivoted bearings to connecting eccentric rods H, surround-
60 ing eccentric tumblers K upon the first motion shaft L. It is obvious that this jiggling or reciprocating motion of the rocking lever E may be equivalently produced by a crank, or a cam, or ratchet wheels, on the shaft L. Or the
65 system may be arranged for convenience with levers of the second order and the balancing of parts provided for in any suitable manner.

The rotating motion of the screen is produced by a strap, rope or chain *m* driven by
70 a pulley M on the first motion shaft. The driving rope, chain or strap, passes over a double pulley N on the axis of the rocking lever E, and thence over a pulley P, on a shaft at the inner or screen end of the rocking le-
75 vers E. The rotation of this shaft is communicated to the screen by a rope, chain or strap *q*, over pulleys Q and R, the latter pulley being on the axis of the screen.

Riding pulleys S S are employed on the
80 various straps, ropes or chains, to maintain the necessary tension.

It is obvious that many equivalent mechanical arrangements to that above described as an example, can be made, without de-
85 parting from the essence of my invention, which is to produce the jiggling movement of the screen through its supporting frame, in either a horizontal or a vertical direction without interference with its rotary motion.
90 The material as it passes gradually down the revolving screen by the action of the internal helix is jiggled in water or other liquid, and is allowed to escape down the screen through a series of perforations in regular
95 succession of sizes into the separate receptacles T T, the screening action being materially assisted by the jiggling action described. The material can be carried from the hoppers
100 T T by a stream of water, or in other conven-

ient manner to be subsequently treated as may be desired, in parcels consisting of uniformly sorted materials as to sizes by the action of my above described machine.

5 To insure the separation of the various sized gems or minerals from one another, I provide diaphragms V V in the outer case, vessel or tank, which are pierced by a suitable opening to admit the screen, and large
10 enough to allow the jiggling or reciprocating movement of the screen. Flanges W W are provided on the periphery of the screen, loosely embracing the said diaphragms, so as to cover the space between the screen and
15 the fixed diaphragms V V in all positions of the screen, and thus prevent particles of sorted material passing between the screen and the edge of the diaphragm into an adjoining hopper or receptacle.

20 Having now described my invention, what I desire to claim and secure by Letters Patent is—

1. A wet sorting or classifying machine consisting, in combination, of a cylindrical or
25 polygonal perforated screen a fixed surrounding divided tank containing water, connections for support through bearings on frame, to crank and eccentrics on first motion shaft and flexible guided chain and rope connections to axis of screen from said first motion
30 shaft to produce a combined jiggling and rotary motion upon the screen while immersed in liquid.

2. In combination, in a wet sorting or classi-

35 fying machine a cylindrical or polygonal screen perforated with different sized holes in series and immersed in water tank, an internal feeding or controlling helix, suspending connecting rods, rocking levers oscillating on fixed bearings on frame, eccentrics on
40 first motion shaft and attachments to said rocking levers, flexible connections, such as chains, about driving pulleys on first motion shaft, guiding pulleys on ends of rocking levers and driving pulley on axis of screen substantially as described. 45

3. In a wet sorting or classifying machine, the combination with a polygonal or cylindrical screen and attachments and supports producing combined reciprocating and rotary
50 motion therein of a tank surrounding the said screen, diaphragms fitted in said tank surrounding the screen pierced with orifices admitting of the reciprocating motion of the screen and double flanges on the periphery of
55 the screen, loosely embracing said diaphragms to form a series of distinct chambers in tank for separate collection of separate sized minerals passing through the screen, substantially as described. 60

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

WILLIAM STRONACH LOCKHART.

Witnesses:

RICHARD A. HOFFMANN,
CHARLES H. CARTER.