(No Model.) 2 Sheets—Sheet 1.

C. LÜHRIG.

APPARATUS FOR WASHING, SEPARATING, AND CONCENTRATING ORES OF DIFFERENT SPECIFIC GRAVITY.

No. 474,023. Patented May 3, 1892.

Fig. 1,

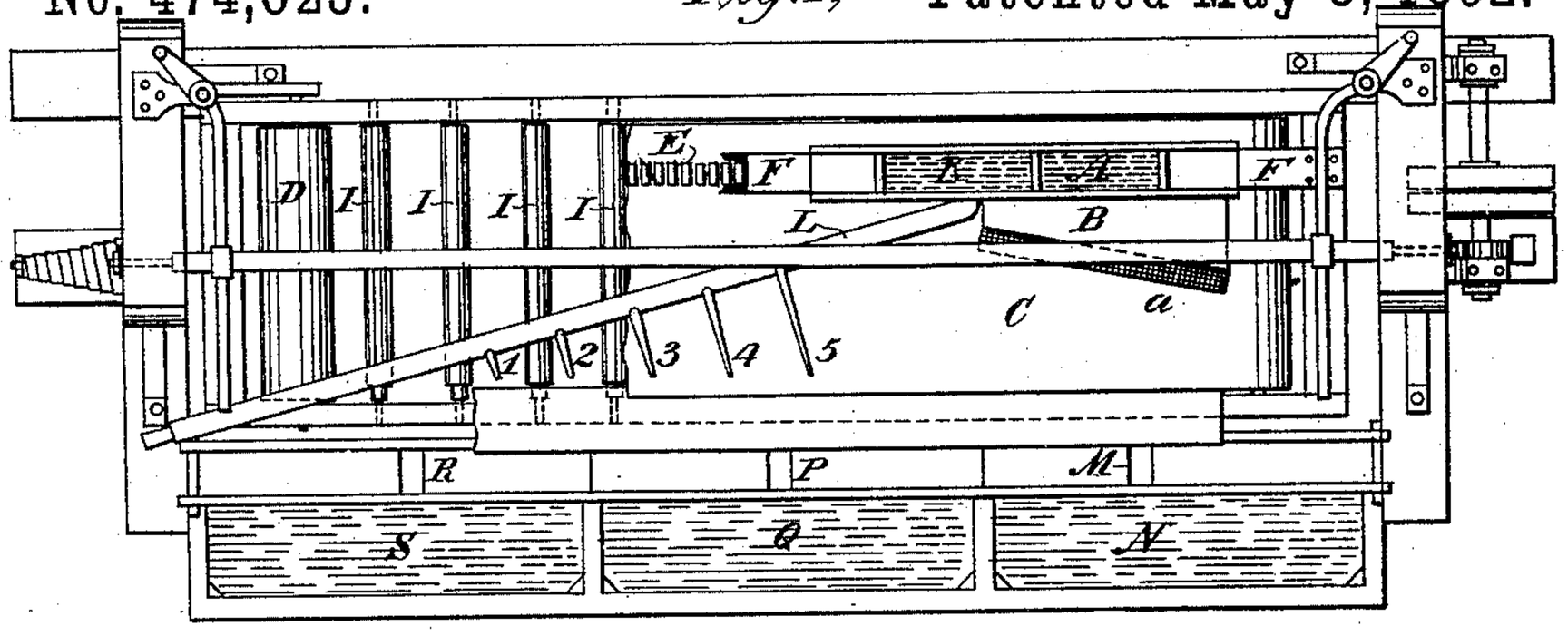


Fig. 2,

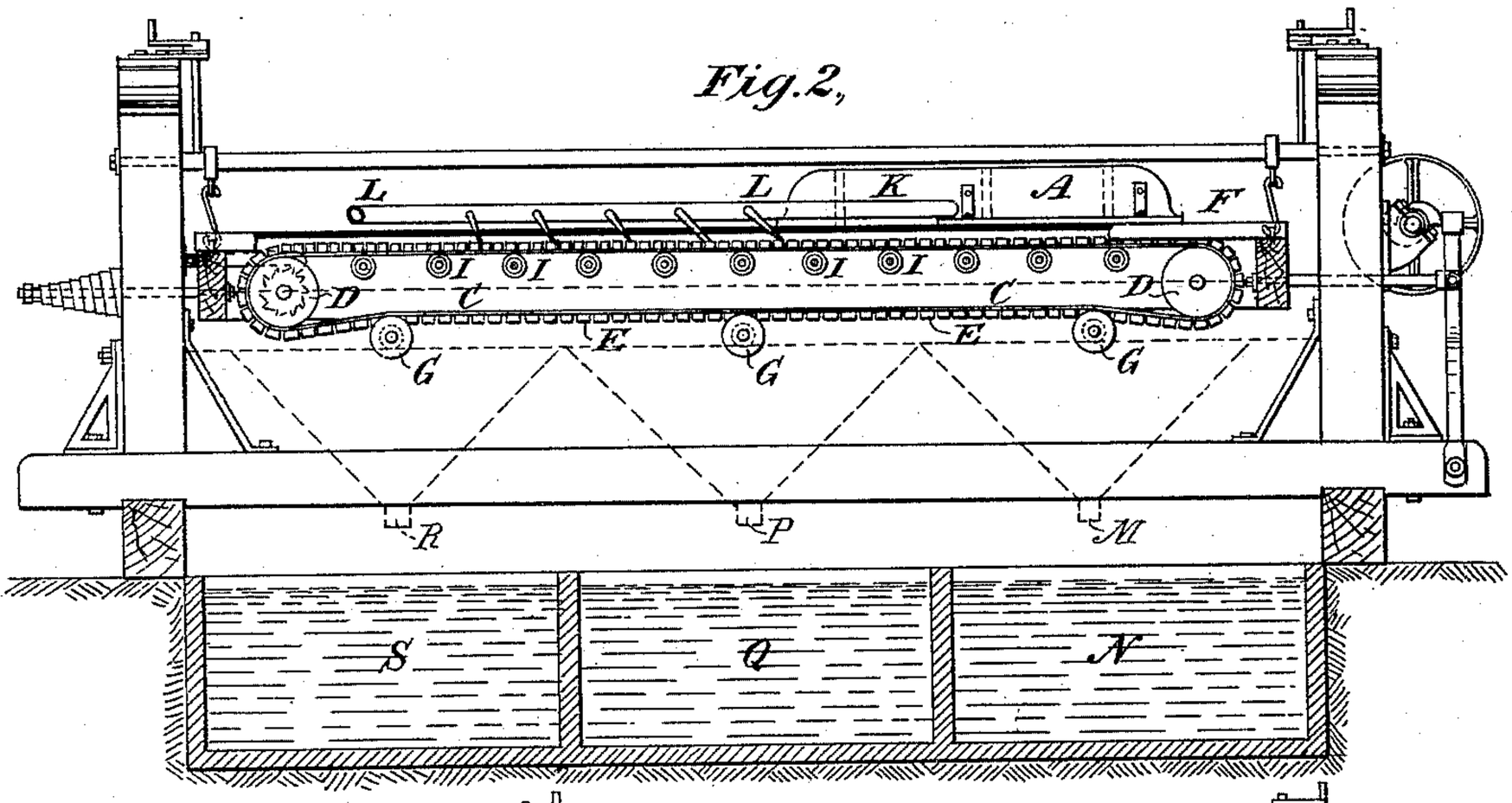


Fig. 3,

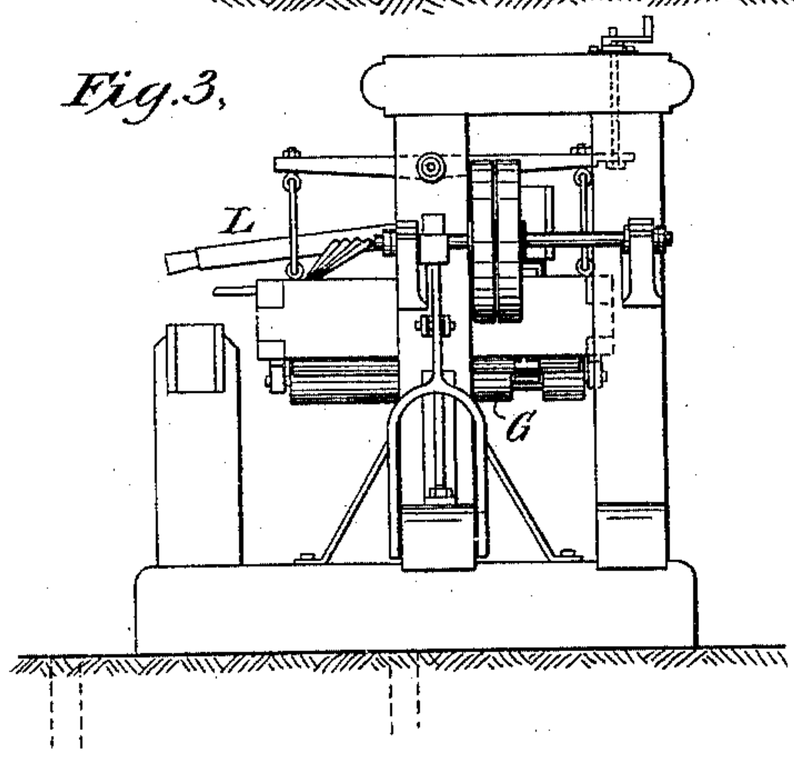
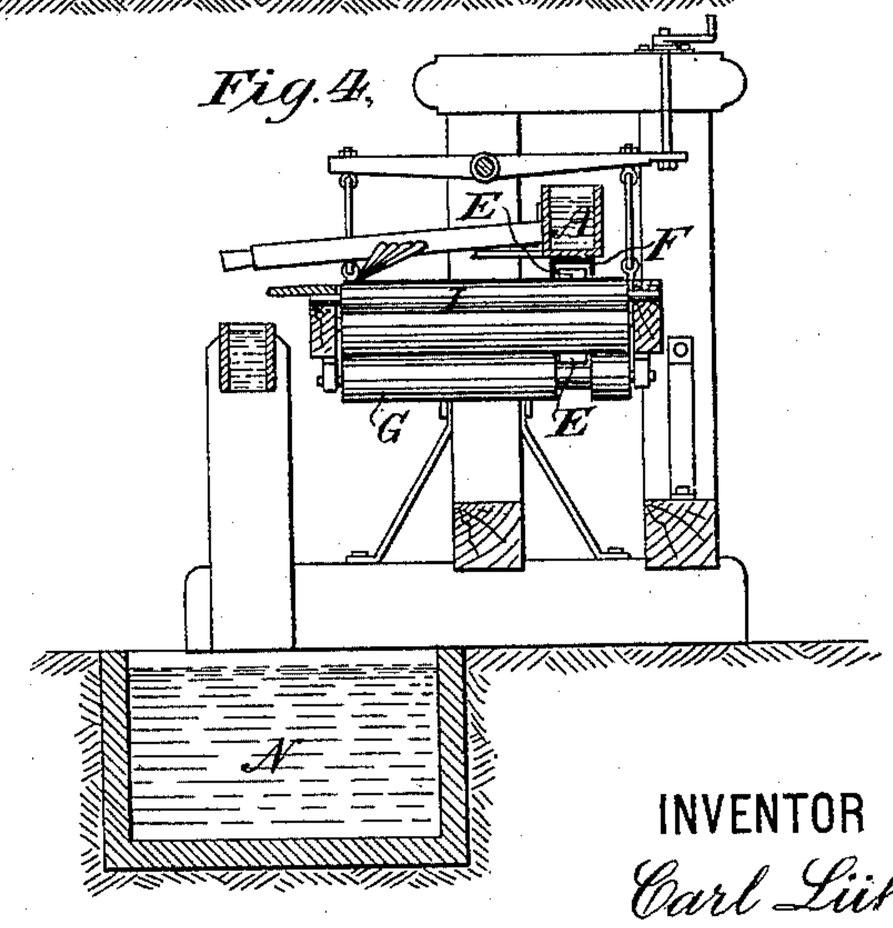


Fig. 4,



WITNESSES:

Edward Thorpe.

M. J. Spencer.

INVENTOR

Carl Lühring.

BY Henry P. Parker

ATTORNEY

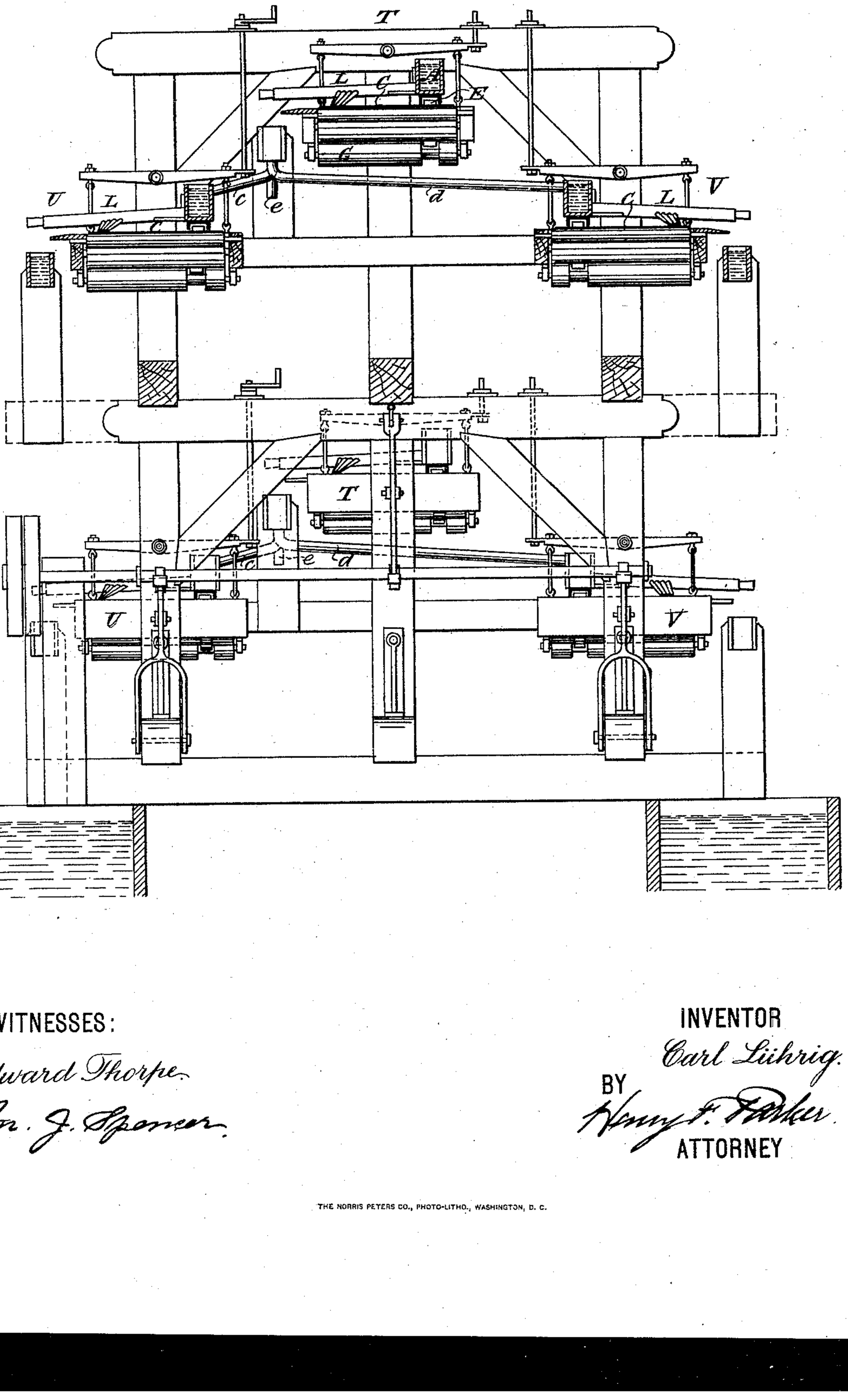
(No Model.) 2 Sheets—Sheet 2.

C. LÜHRIG.

APPARATUS FOR WASHING, SEPARATING, AND CONCENTRATING ORES OF DIFFERENT SPECIFIC GRAVITY.

No. 474,023. Patented May 3, 1892.

Fig. 5,



WITNESSES:

Edward Thorpe.

In. J. Spencer.

INVENTOR

Carl Lühring.

BY Henry F. Parker.

ATTORNEY

UNITED STATES PATENT OFFICE.

CARL LÜHRIG, OF DRESDEN, GERMANY, ASSIGNOR TO THE LÜHRIG COAL AND ORE DRESSING APPLIANCES, LIMITED, OF ENGLAND.

APPARATUS FOR WASHING, SEPARATING, AND CONCENTRATING ORES OF DIFFERENT SPECIFIC GRAVITY.

SPECIFICATION forming part of Letters Patent No. 474,023, dated May 3, 1892.

Application filed January 29, 1892. Serial No. 419,646. (No model.) Patented in England September 17, 1890, No. 14,723.

To all whom it may concern:

Be it known that I, CARL LÜHRIG, a subject of the Emperor of Germany, residing at Dresden, Saxony, Germany, have invented certain new and useful Improvements in Apparatus for Washing, Separating, and Concentrating Ores of Different Specific Gravities, (for which Letters Patent have been granted in England, dated September 17, 1890, No. 14,723,) of which the following is a specification.

This invention relates to improvements in apparatus known as "percussion-vanners" for treating ores and similar substances in a pulverized state, by which the ore is separated or classified according to its specific gravity and each class is caused to pass into a separate trough as it leaves the vanner; and said invention consists in the herein-described means of guiding the traveling belt by means of a flexible ridge thereon composed of sections or blocks of wood attached to the outer surface of the belt and guided in a channel-iron or other suitable groove above the belt lying parallel to the travel thereof.

This invention also consists in a novel compound arrangement of several traveling belts, each delivering a plurality of grades of ore concentrates and so relatively arranged that the pulverized ore washed from one vanner or from one set of vanners in a partially separated or classified condition can be passed over another vanner or set of vanners to be similarly operated upon for more complete separation or classification, and finally delivered into receptacles without requiring manual labor.

Having reference to the accompanying drawings, in which similar letters of reference indicate corresponding parts throughout the several views, Figure 1 is a plan view; Fig. 2, a longitudinal sectional elevation; Fig. 3, an end view; and Fig. 4, a cross-sectional view taken on the line *x x*, Fig. 1, showing a single percussion-table. Fig. 5 is an end elevation, partly in section, showing the assemblage of several percussion-tables in combination.

Referring first to Figs. 1, 2, 3, and 4, the liquid holding the mineral in suspension is supplied to the feeding-box A, which, according to this invention, instead of being stationary, is attached to the movable frame so as to move to and fro with it. From A the liquid passes over the distributing table or feeder, composed of an inclined plane B, onto the india-rubber band C. In order to cause the liquid to flow gradually onto C, it is preferred to fix to the edge of B a strip of calico or other absorbent fabric *a*, which rests loosely on the belt C, so as to distribute the pulp liquid by capillary action.

To insure that the rubber band C shall retain its position upon the roller D, short strips of wood E are attached to its outer surface and placed in a row, so that as the band travels they pass along an inverted channel-iron F, which is fixed above the table. The guide-rollers G under the table are recessed to allow passage of the strips E.

The friction of the band C on the table is reduced by means of the idle-rollers I, placed at suitable intervals apart so as to support the said band.

Water flows onto the band C from the trough K by a pipe L, extending diagonally across the table, with a series of nozzles 1 2 3 4 5 for jets of water to remove adhesive matter from the rubber.

The percussion action imparted in the usual way to the table separates the particles of mineral into several, usually three, different classes, according to their respective gravities. The lightest collect on the band C and are delivered by the hopper M into the receptacle N, an intermediate product is delivered by P into Q, and the heaviest by R into S.

As shown by Fig. 5, six single tables are combined so as to constitute a compound machine, so arranged that the lower sets of the apparatus can be fed by gravity from the upper sets without requiring any manipulation of the material treated.

Although six tables are shown in Fig. 5, obviously a greater or less number might be thus arranged. Assuming that there are only three—namely, the uppermost three shown in Fig. 5—they may be worked as follows: The material fed to the uppermost table is separated into three classes, according to gravity, as above described. The lightest may be al-

lowed to flow to the table on the right, the intermediate quality to the table on the left, while the heaviest may be discharged as final products; or the products from each table may be discharged or treated in others of the tables, according to their character. The three tables are all connected to one motor, so as to work together.

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

1. In an ore concentrator and separator, the combination, with a percussion-frame and endless apron or belt revolving thereon, of a sectional ridge, substantially as described, on the outer surface of the belt and a guide composed of an inverted-U-shaped channel bar or groove embracing both sides of said ridge, for the purpose set forth.

2. In combination with a percussion-frame and endless apron or belt revolving thereon, a pulp-feeder composed of an inclined plane above the belt, communicating with the surface of the same through the medium of an absorbent fabric resting on the belt, substantially as described.

3. In an apparatus for washing, separating, and dividing ore-concentrates into classes having different specific gravities, a plurality of laterally-inclined revolving belts, each delivering plural classes of concentrates and intermediate to the discharges of one belt and the feed of another or others, a divided receptacle for the said different classes, each division thereof, except that for the tailings, communicating to the feeder of a successive belt, whereby a subdivision of the divided concentrates from the preceding belt is automatically effected simultaneously, as described.

CARL LÜHRIG.

Witnesses:
EDWARD THORPE,
M. J. SPENCER.