

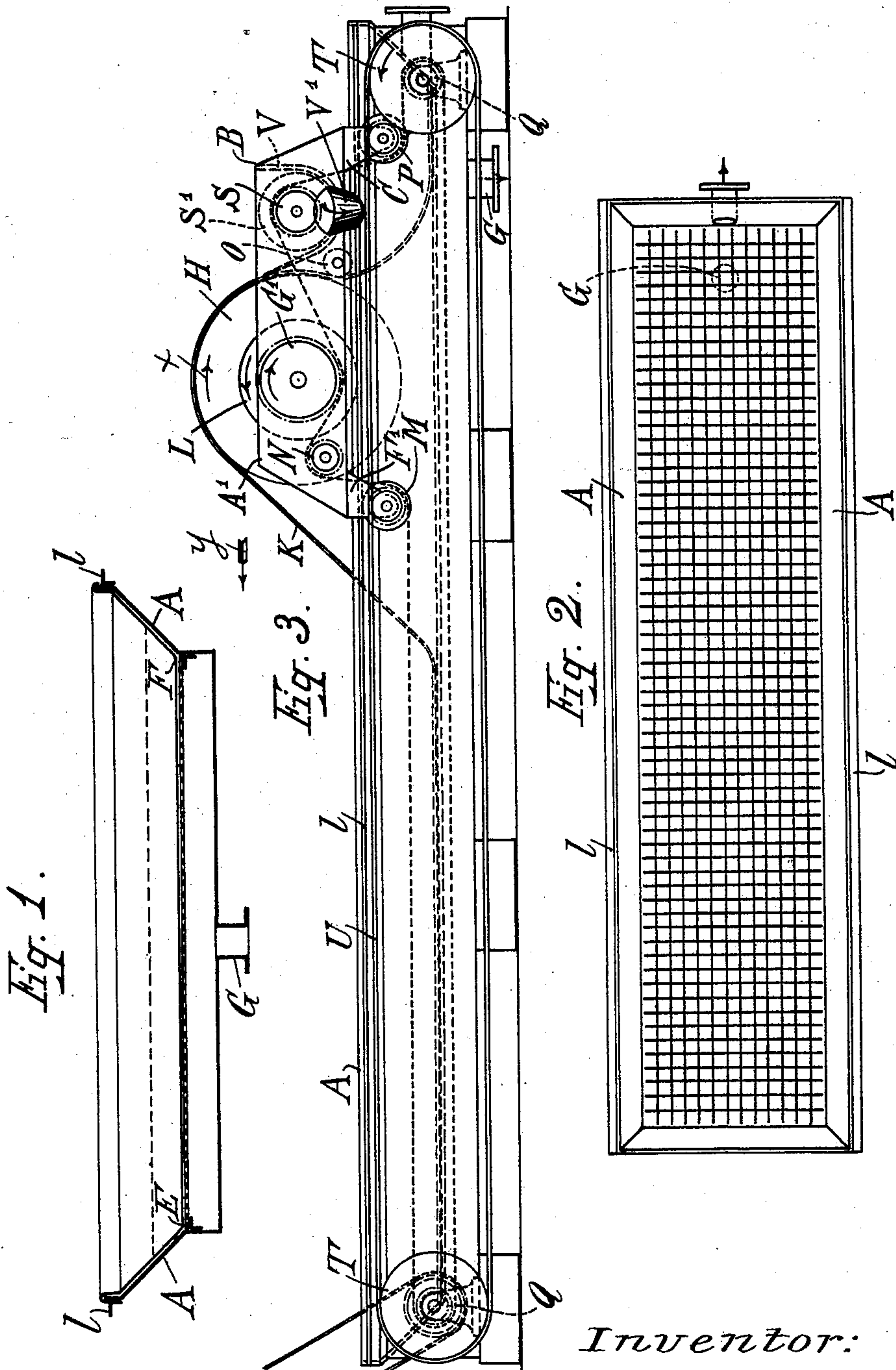
(No Model.)

3 Sheets—Sheet 1.

J. HUNDHAUSEN.
APPARATUS FOR DRAINING STARCH.

No. 603,447.

Patented May 3, 1898.



Witnesses:

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Otto Munk

Inventor:

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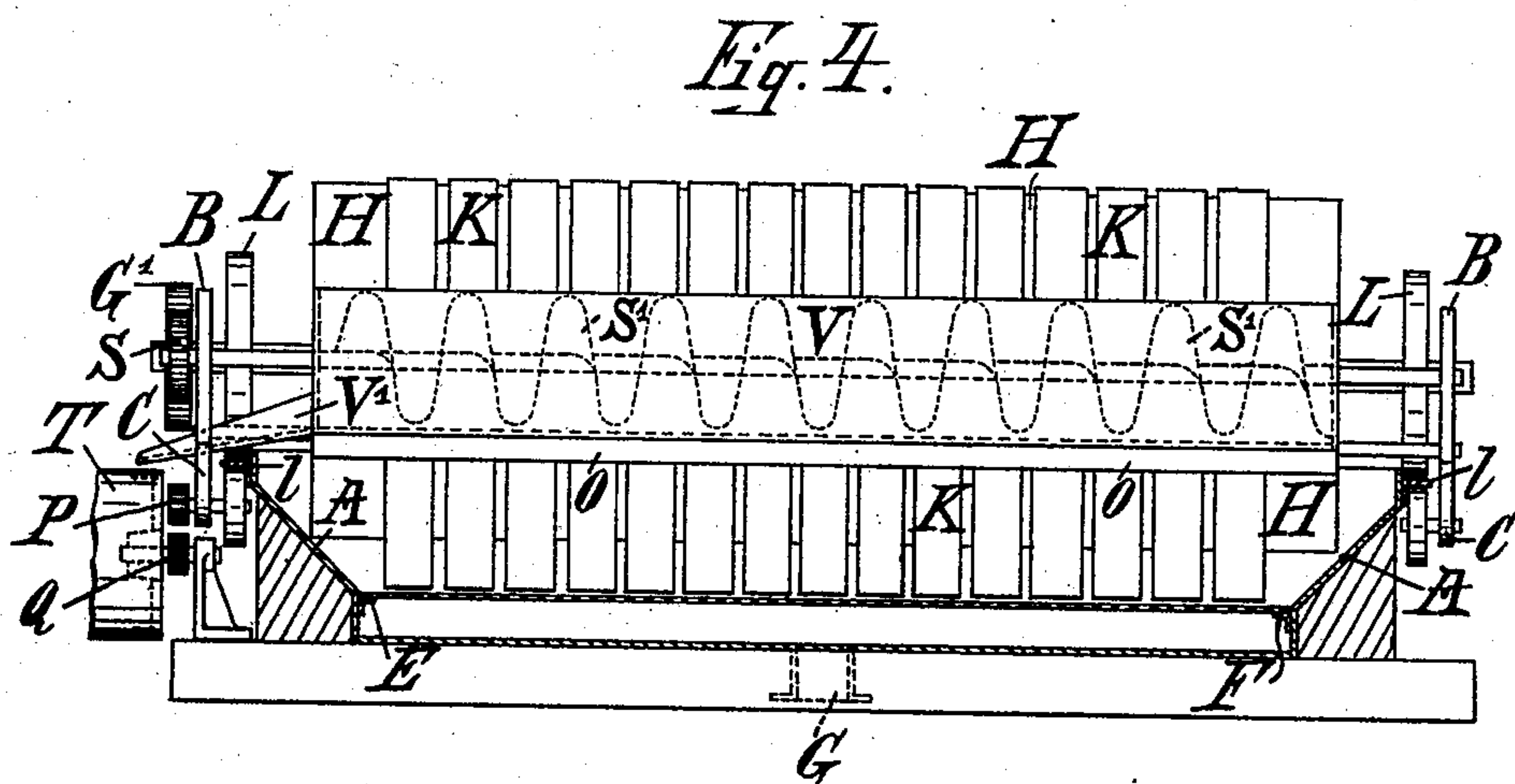
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J. HUNDHAUSEN.
APPARATUS FOR DRAINING STARCH.

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Patented May 3, 1898.



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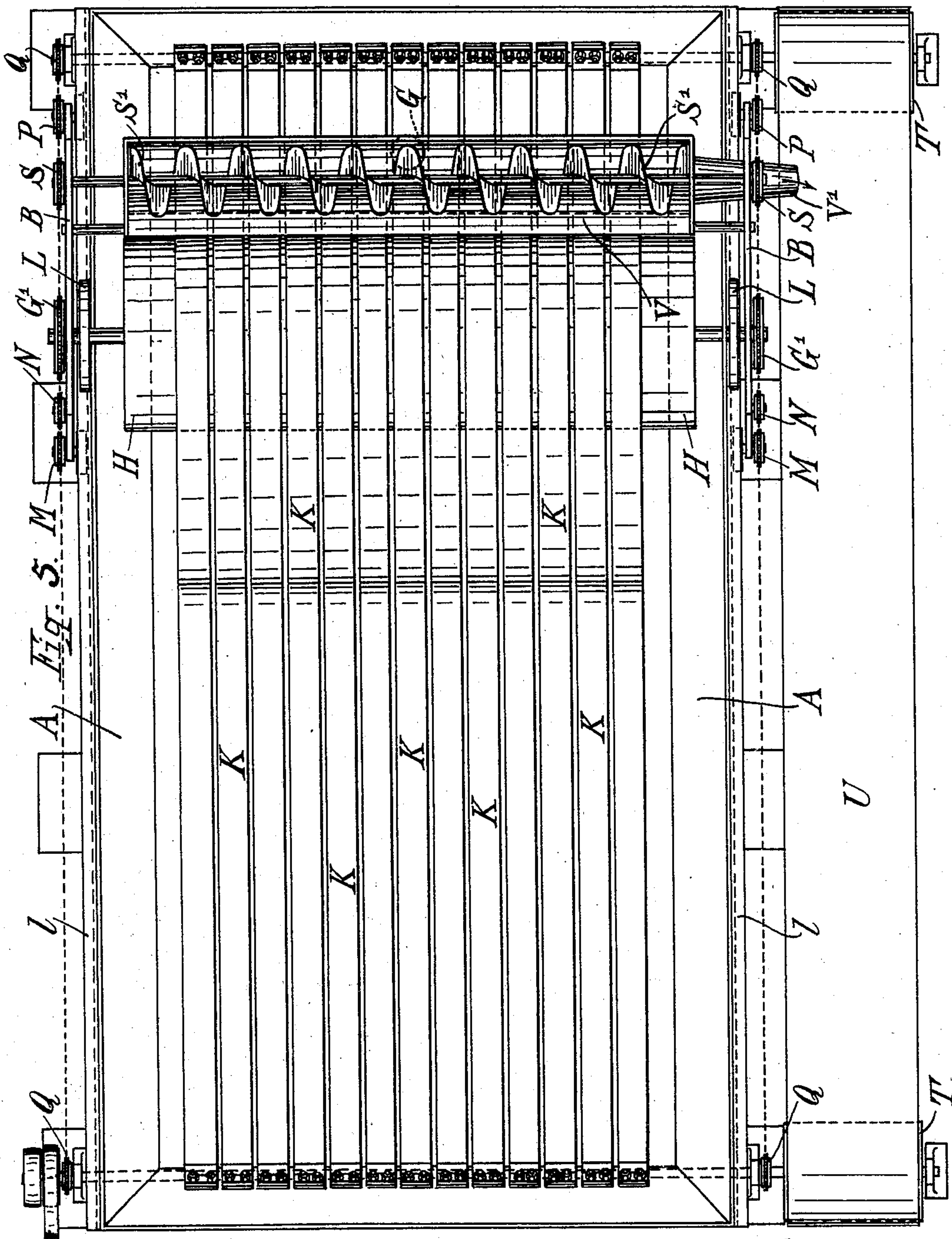
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UNITED STATES PATENT OFFICE.

JOHANNES HUNDHAUSEN, OF HAMM, GERMANY.

APPARATUS FOR DRAINING STARCH.

SPECIFICATION forming part of Letters Patent No. 603,447, dated May 3, 1898.

Application filed June 10, 1896. Serial No. 594,970. (No model.)

To all whom it may concern:

Be it known that I, JOHANNES HUNDHAUSEN, a subject of the King of Prussia, Emperor of Germany, and a resident of Hamm, in Rhenish Prussia and Kingdom of Prussia, Germany, have invented certain new and useful Improvements in the Method of and Apparatus for Cleansing, Filtering, and Automatically Removing Starch and Like Materials, of which the following is a specification.

My invention relates to an apparatus for cleaning, filtering, and automatically removing starch and like materials, such as alumina, pigments, and the like; and it consists in the construction and arrangement of the apparatus as shown and described in the specification and in the drawings annexed thereto, which form a part thereof.

In the drawings, Figure 1 is a cross-section of a trough. Fig. 2 is a partial plan view of the trough shown in Fig. 1, portions thereof being broken away. Fig. 3 is a side elevation of the apparatus used by me for removing sediment from the trough, and Fig. 4 is a cross-section of the apparatus in Fig. 3. Fig. 5 is a plan view of the apparatus complete.

The trough employed by me consists of a rectangular vessel having a closed bottom and provided with angular and sloping sides A. At about the level of the junction of the sloping sides with the vertical sides near the bottom of the trough there is placed a perforated false bottom E F, which acts as a sieve, and upon which there may be placed, if necessary, a suitable filtering cloth or medium. In the bottom of the trough there is arranged an outlet G. If a partial vacuum is produced between the actual and the false bottom of the trough by a pump or other means, the sedimentation will be facilitated, while at the same time the fluid is sucked out of the sediment. The fluid, with the solid matters in suspension therein which have not been deposited, flows off at one end of the trough through an opening (not shown) above the false bottom. The angle of inclination of the trough sides, the rate of flow of the liquid, and the degree of suction will depend in each case upon the nature of the material in suspension and the degree of sedimentation desired.

For the removal of the sediment from the

trough the apparatus illustrated in side elevation, Fig. 3, and in cross-section, Fig. 4, is employed.

On the perforated false bottom E F there is arranged a band or a series of parallel bands K K, composed of felt or other similar porous material.

A carriage A' B F' C is mounted above the longitudinal trough and carries in suitable bearings a large roller H and a smaller roller O, between which the band or bands pass. The weight of the carriage is taken by the rollers L L, which run upon flanges l, constructed on the sides of the trough, Fig. 1. At each end of the trough there is a chain-wheel, (shown at Q, Fig. 3.) A chain connected with these wheels passes partly around the wheels M N G' S P and effects their rotation when the wheels Q at the ends of the trough are rotated. The wheel N is a guide-wheel, the wheel G is fixed on the shaft which carries the roller H, and the wheel S is fixed upon the shaft of the Archimedean screw in the transverse trough V. The chain-wheels M P are fixed upon spindles, upon which also are fixed wheels which run upon the under side of the flange l.

Parallel with the roller H the transverse trough V is arranged, one edge of this trough acting as a scraper to remove the sedimented matter from the band or bands which pass over the roller. This matter falls into the trough and is conveyed by a conveying-screw S' to an outlet V', whence it falls upon the conveying-band U T, by which it is removed and deposited in any convenient position.

The principal defects in machines of this type are that the band or bands in the longitudinal trough do not make a tight joint with the lateral walls of the trough and permit air to enter around the edges to the suction apparatus. The sloping walls I have described and illustrated obviate this defect, the material in the bottom of the trough overlapping the porous false bottom, as indicated by the dotted lines in Fig. 1, and making an air-tight joint with the sides. Also, when the carriage has been pulled forward hitherto the band has been wound around the roller H, the rotary motion having been produced by the rack. In my present invention I employ a chain for producing the rotary motion of the rollers

H O and the screw S' and the linear motion of the carriage, which latter is obtained by the grip of the rollers H O upon the bands K, so that the carriage pulls itself along. The
 5 roller H is also made of larger diameter, and the bands K, instead of being wound upon the roller, pass over it and under roller O.

The operation may be briefly described as follows: The material to be filtered, having
 10 been placed in the trough and over the series of bands K, lying on the false bottom thereof, is allowed to filter through the filtering material, while the sediment collects above the bands. The chain-wheel at the left of the
 15 trough, Fig. 3, being now set in motion, will turn the roller H in the direction of the arrow X, Fig. 3. This rotary movement of the roller against the bands K, which are gripped between the roller H and the roller O, will cause
 20 the carriage to move to the left in the direction of the arrow y, Fig. 3, it being borne in mind that the ends of the bands remained fixed, and the bands K will therefore be lifted by the roller H, raising the sediment material
 25 and depositing it into the trough V, where it is fed by the conveyer to the band U.

What I claim is—

1. In combination in a filtering apparatus, the trough, a band extending therein to re-
 30 ceive the sediment, said band being attached at its ends, a carriage movable along the trough and having an elevated support for the

band to lift the same on one side and to deposit the sediment on the other side of said support, and the conveyer on the carriage for
 35 moving the material away, substantially as described.

2. In combination the trough, the band extending therein and fixed at its ends, the carriage having a roller over which the band
 40 passes, a roller O to grip the band in connection with the carriage-roller, the conveyer on the carriage, a scraper for removing the sediment from the band and to deposit the same
 45 at the conveyer, and means for rotating the roller, substantially as described.

3. In combination the trough, the band fixed at its ends and extending along the trough, the carriage movable along the trough, the
 50 roller on the carriage, the chain and chain-wheels on the carriage and trough, the scraper for removing the sediment from the band and for depositing it at the conveyer, and the conveyer on the carriage, said roller and conveyer being rotated by the chain and chain-
 55 wheels, substantially as described.

Signed at Cologne, in the Province of Rhineland and Kingdom of Prussia, this 31st day of March, A. D. 1896.

JOHANNES HUNDHAUSEN.

Witnesses:

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