

F. Osterley,

Ore Siggers.

No. 96472.

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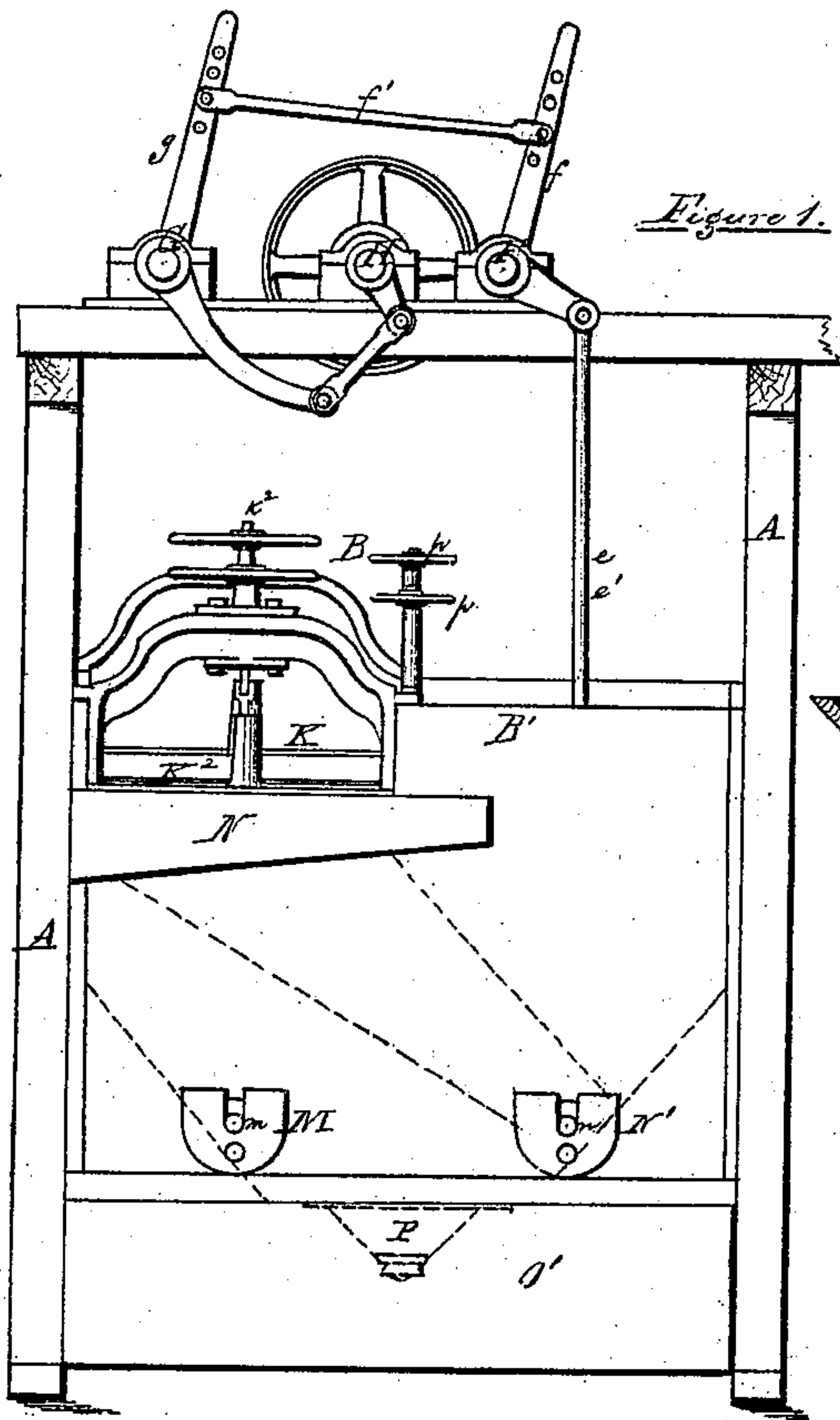


Figure 1.

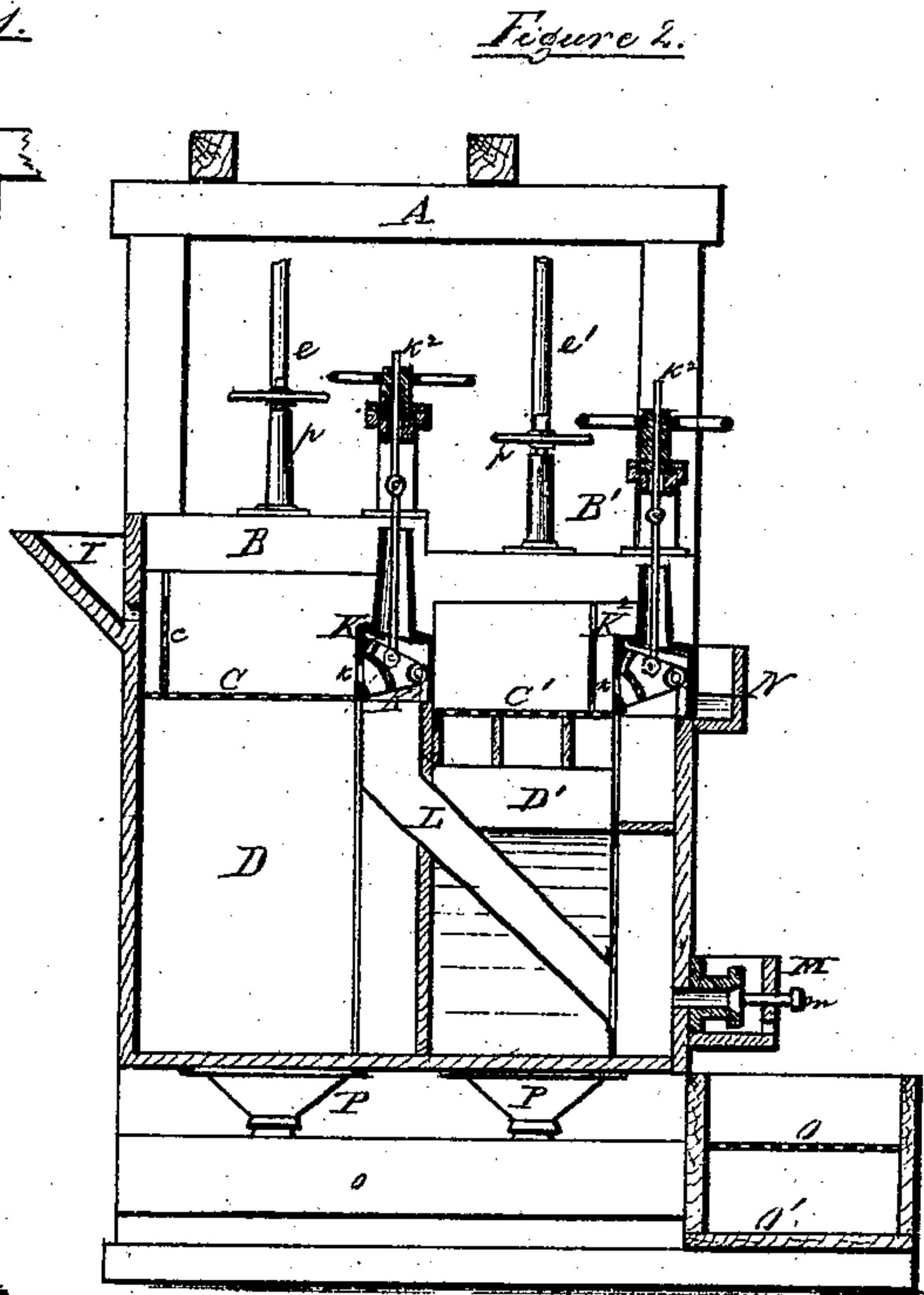


Figure 2.

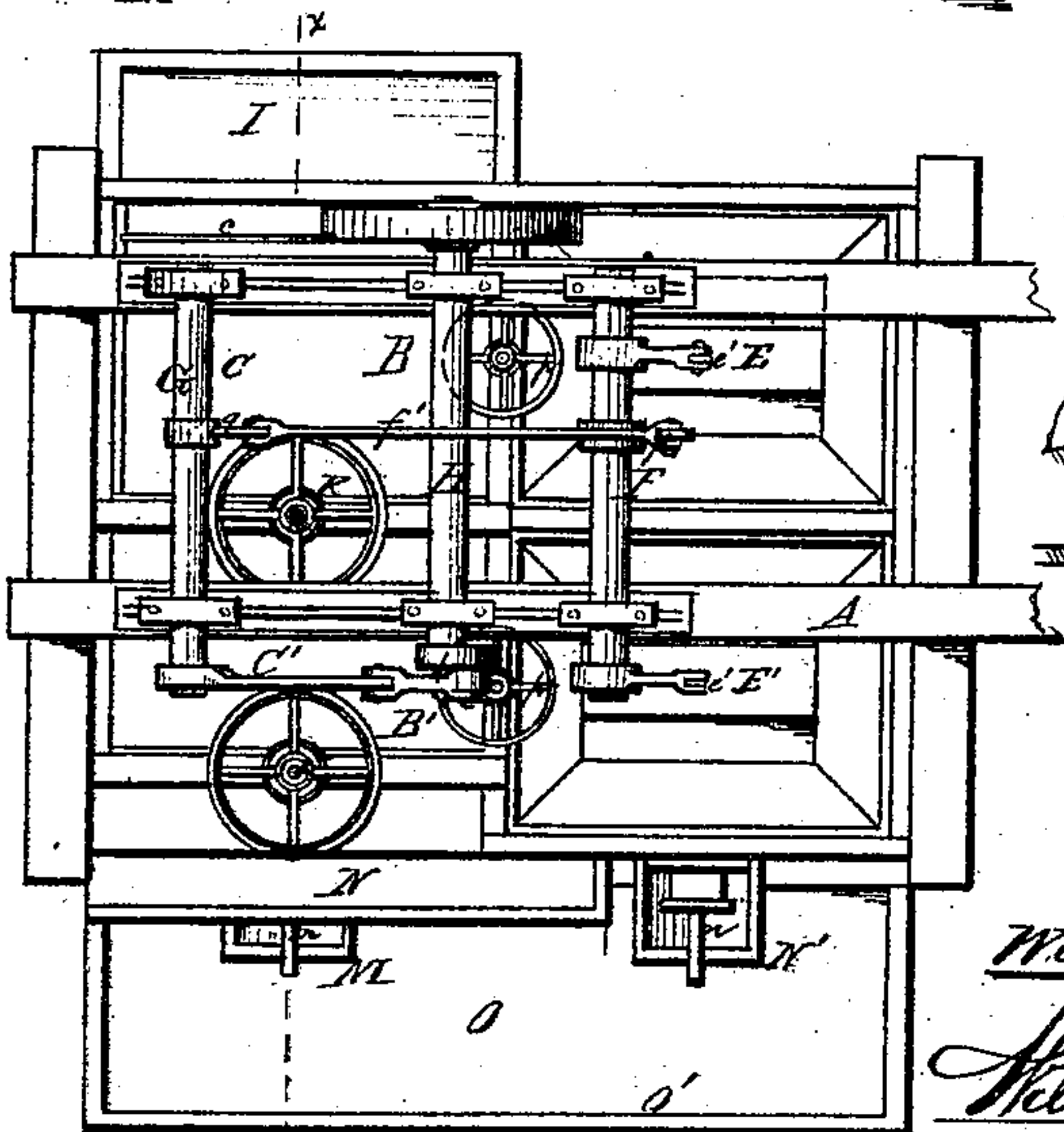


Figure 3.

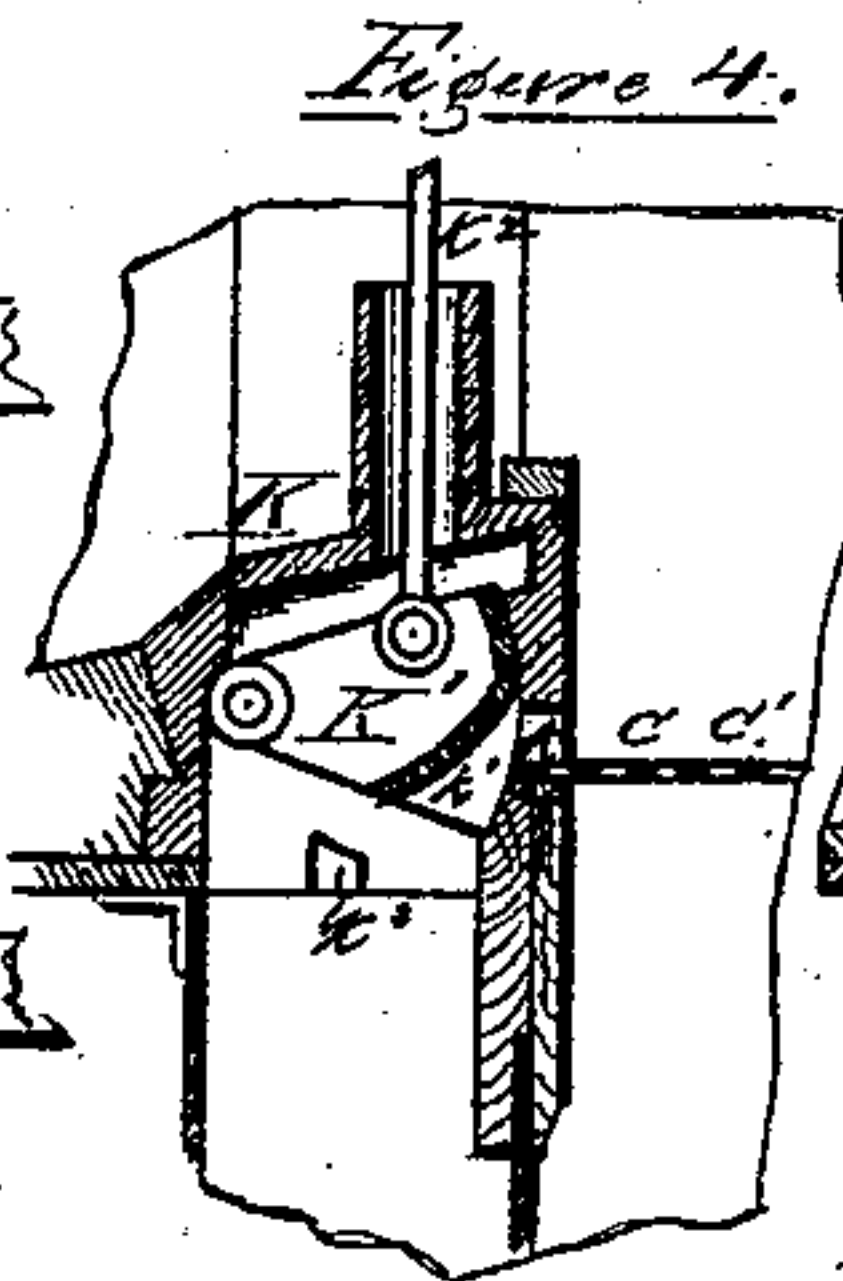


Figure 4.

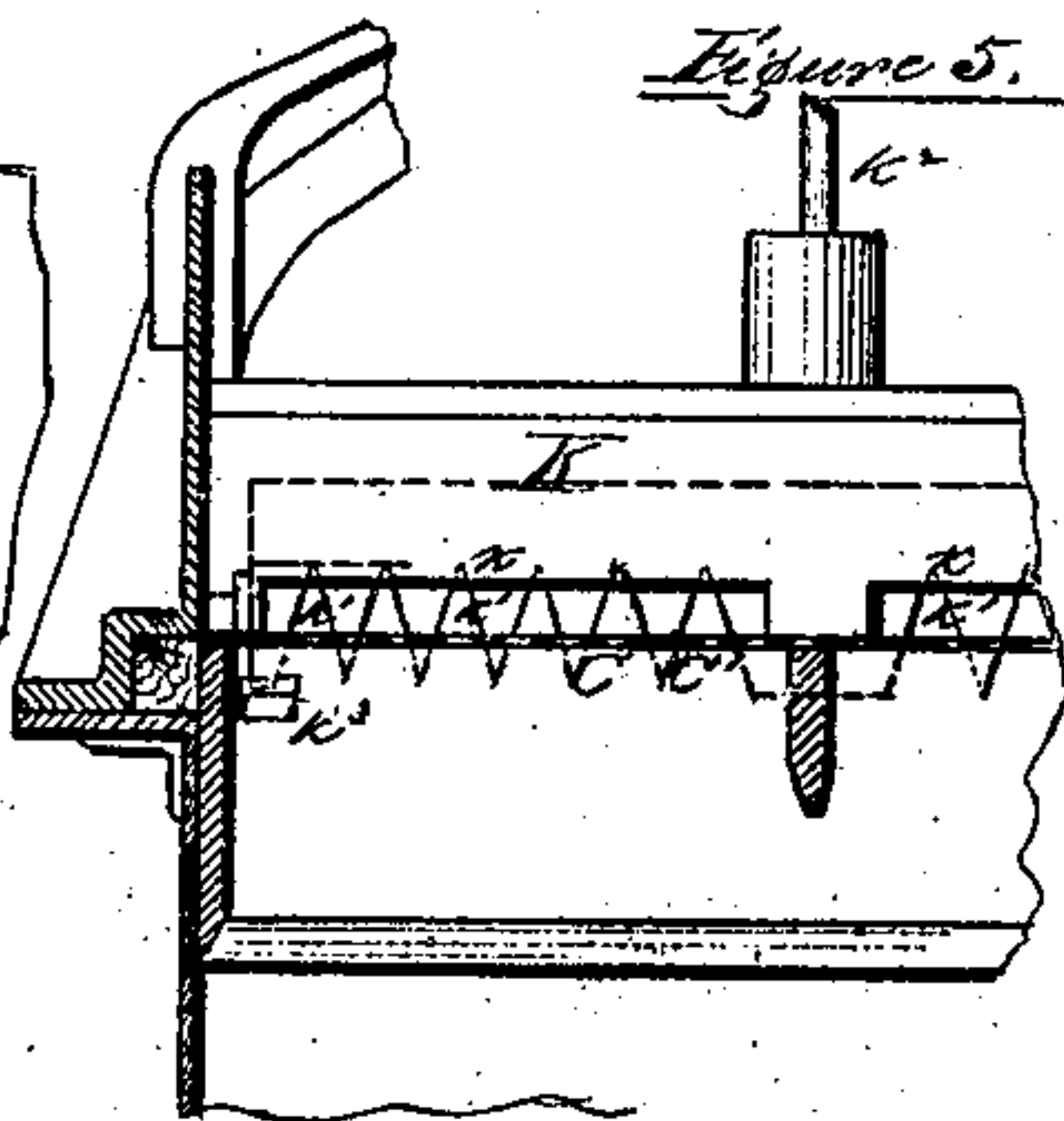


Figure 5.

Witnesses:

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UNITED STATES PATENT OFFICE.

PETER OSTERSEY, OF MECHERNICH, PRUSSIA, ASSIGNOR TO ADOLPHUS MEIER & CO., OF ST. LOUIS, MISSOURI.

IMPROVED APPARATUS FOR THE DISCHARGE AND PREPARATION OF GRANULAR ORE AND COAL AND SIMILAR MATERIALS.

Specification forming part of Letters Patent No. 96,472, dated November 2, 1869.

To all whom it may concern:

Be it known that I, PETER OSTERSEY, of Mechernich, in the Province of the Rhine and Kingdom of Prussia, have made certain new and useful Improvements in Apparatus for the Discharge and Preparation of Granular Ore, Minerals, Coal, and Similar Materials; and I do hereby declare the following to be a full and true description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention relates, principally, to the manner of discharge and separation of granular ores, coal, and similar matter; and the nature thereof, with regard to the said discharge, is in the construction of the discharging-gate for adjustment in accordance with the nature of the ore or coal; secondly, said invention relates to the general construction, arrangement, and operation of the apparatus for preparation and separation of the heavy and light components of ore, so as to insure a continuous and economical effect without undue liability of clogging or choking of parts, or of interruption in the operation of the apparatus, either from clogging or choking, or from variations in the size or quality of the granules of ore or coal.

To enable those herein skilled to make and use my said improvements, I will now more fully describe the same, referring herein to Figure 1 as a side view, to Fig. 2 as a sectional elevation at the line *xy*, to Fig. 3 as a plan, and to Figs. 4 and 5 as detail section and elevation, respectively, of the discharging-gate and connecting parts.

In its more usual form, my said machine for separating ore and coal consists of a strong wooden or iron frame, A, within which are inclosed two or more hydraulic jigger or separator machines, B B'. Each of said machines has a proper sieve, C or C', for receiving the granulated stuff. Said sieve rests upon a proper grating over a well, which, at its base, connects with a water-chamber, D or D', in which a plunger plays, to cause the water to surge up above the sieve, and thus carry upwardly the particles of ore or coal with the admixtures and impurities, and then allow the masses to settle, as in accordance with their respective

gravities in the general manner usual in similar machines.

The plungers E E' will usually be of wood, arranged with proper valves to permit the passage of water back to the water-chamber in case it leaks up above the plunger, and also admitting air under the plunger in the lift-stroke.

To operate said plungers I connect the rods *ee* with proper crank-arms, which are secured upon the shaft F, resting upon the frame-work A. Said shaft has a lever, *f*, which, by a link, *f'*, is connected with the lever *g* upon the shaft G. This shaft is operated from the power-shaft H by the crank and link-connection, as indicated in Figs. 1 and 3. To regulate the piston-stroke the levers *f* and *g* are arranged with holes, which allow the adjustment of the link *f'* at different heights above the shafts F and G.

The ore, coal, or other material may be received directly from the crushers into a feed-hopper, I, from which it passes to the sieve C, being regulated in its inflow by a suitable slide, *c*. The water will then achieve the separation, as above described, and the lighter stuff, usually dross, will be swept over the top of the gate-box K, while the heavier ore will deposit near the top of the sieve C to be drawn off through the gate K¹ and tube L at the discharge M.

In order to regulate the discharge of the stuff at the gate K¹, as in the nature of this invention, I have arranged within the box K the said gate, as more especially indicated in Figs. 4 and 5. The front side of the box has the inlet opening or openings *k*. To the ends of said box is pivoted the gate K¹, the front face whereof is rounded cylindrically to fit the contact-surface of the gate-box. Said face of the gate is arranged with V-shaped recesses *k'*, the apex of the indentations being above, so that as the gate is raised the efflux-openings formed by said recesses are increased. To adjust the position of said gate I connect the same, by a suitable pivot, with the link and screw-rod *k*², which is raised by turning a hand wheel and nut, generally as shown in Figs. 1 and 2. Instead of said hand-wheel and screw-rod, the adjustment of the gate may

be effected by a link and lever properly weighted with a counter-balance. When the gate is closed the detent k^3 prevents the gate from being lowered farther than necessary.

It is plain that by suitably regulating the size of the efflux-openings, by raising or lowering the gate K^1 , the various-sized granules of ore will be accommodated, and this without interruption of the movement and action of the entire apparatus. Moreover, in case of undue accumulation of stuff at the gate, so as to clog the discharge, such accumulation will be readily removed by raising the gate to a proper height to cause the water and stuff to flow out at the enlarged vent. If the ore is poor in metal the gate may be closed to await a proper accumulation of metal at the sieve before a discharge is made.

The lighter stuff which is carried over the bridge or box K will usually be carried to a second sieve, O' , being here subjected to a second separation, whereby the dross or light stuff is discharged over the second gate-box K^2 into a trough, N. The heavier mass passes through the gate in said box, (as before described for the passage of the gate K^1), and through a proper conduit to the discharge N' , similarly formed to the discharge M. The discharge-outlets will be closed by proper plugs or valves n and m , respectively, and the general arrangement of said discharges may be such as is indicated in the several figures, 1, 2, and 3.

From the discharge-spouts N' and M the granular mass is dropped upon a sieve, O, in a proper trough, O' , to be utilized in the proper manner. The water passes out of said trough O' by a conduit, o .

In order that the well and water-chamber may be readily cleansed, these will have hop-

per-bottoms leading to conical or other drain-spouts P. The openings thereof are over the conduit o , and are controlled by valves operated by rods and hand-wheels p .

The water as needed in the said operations will be delivered to the wells and water-chambers by a suitable supply-pipe.

In the application of my apparatus for the washing and screening of coal, the coal particles, being lighter than the usual admixtures, (such as iron pyrites, shale, and others,) will go over the bridge top of the gate-box; but, by the use of a number of separating devices, the coal itself may be separated into masses of grains varying in fineness. The ores (or admixtures when screening coal) which are specifically heaviest will, as above described, find a ready discharge, either continuously or intermittently, as may be deemed proper, the said discharge (as well as the entire process) being achieved with a very economical expenditure of power or water.

Having thus fully described my invention, what I claim is—

1. The gate-box K and its gate K^1 , the latter arranged with Λ -recesses, and adjusted by a rod, k^1 , and hand-wheel or similar device, substantially as set forth.

2. The arrangement of the hydraulic separator or jigger with several wells, each of which has its sieve and gate-box and adjustable gate in connection with each other, so as to separate the ore, coal, or other matter into granules of varying fineness, substantially as set forth.

Cologne, 3d May, 1869.

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Witnesses:

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