T. M. HEALEY & C. W. ROGERS.

ORE CONCENTRATOR.

No. 194,965. Patented Sept. 11, 1877.

Fig. 1.

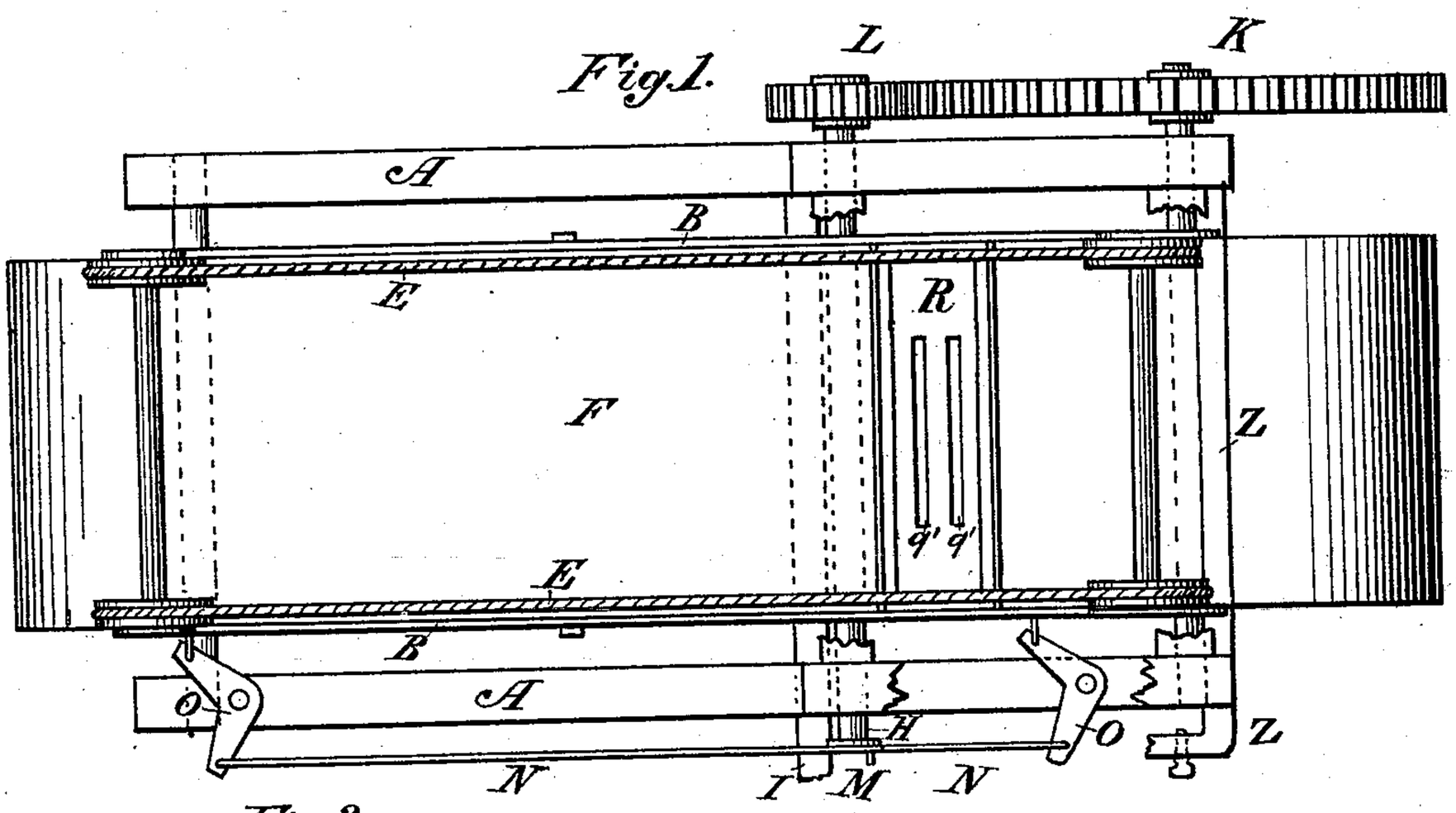


Fig. 3.

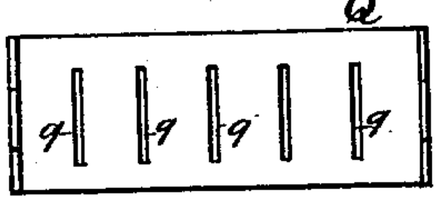


Fig. 4.

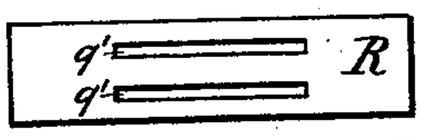
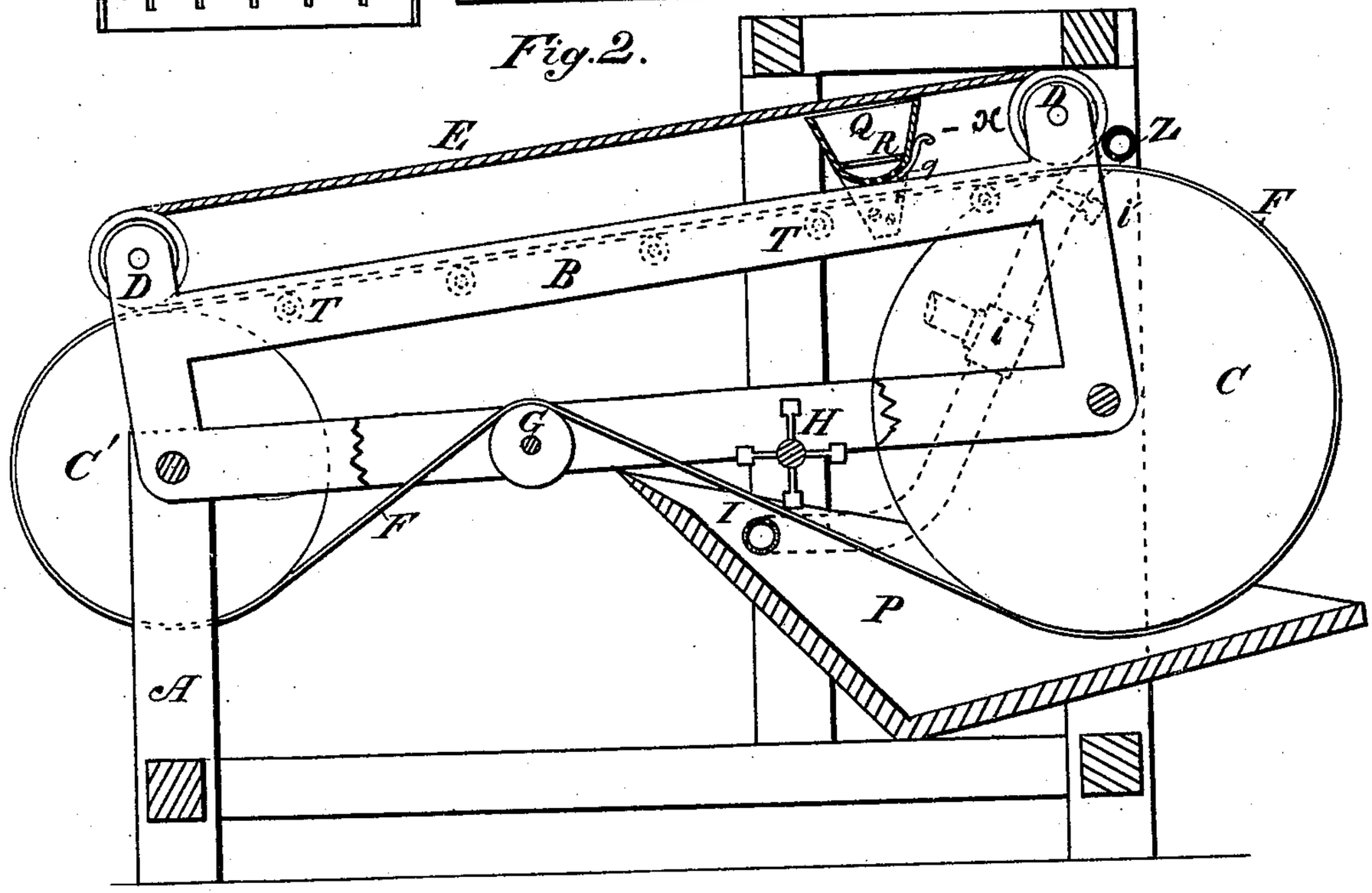


Fig. 2.



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IMPROVEMENT IN ORE-CONCENTRATORS.

Specification forming part of Letters Patent No. **194,965**, dated September 11, 1877; application filed August 31, 1877.

To all whom it may concern:

Be it known that we, THOMAS M. HEALEY and CHARLES W. ROGERS, both of the city of Washington, District of Columbia, have invented a new and useful Improvement in Ore-Concentrating Machines, which improvement is fully set forth in the following specification and accompanying drawing, in which—

Figure 1 is a plan of the entire machine. Fig. 2 is an elevation. Figs. 3 and 4 are details of parts.

Our invention relates particularly to the class of machinery wherein pulverized ores suspended in water are concentrated by precipitation, and is described as follows:

In the drawings, A is a frame, of any suitable material, within which is an inner inclined shaking-frame B, carrying at each end a roller or cylinder, C C′, which support and give motion to an endless belt, F. Roller C may be greater in diameter than roller C′, or both may be of equal or less diameter.

Attached to the inner frame B, at each corner thereof, are grooved or flanged pulleys or band-wheels D D, carrying endless straps E, of rubber or other suitable material, extending along the top of and at the sides of the endless belt F, preventing any material from passing off at the sides of said belt F. Underneath and supporting the belt are small rollers T T, fixed within the inner frame B, and freely revolving therein by the motion of the belt F. Resting on the inner frame B, near its head and above the belt, is an ore-distributer, Q, which oscillates preferably with the frame B, but which may be oscillated independently thereof; and nearer the head is a water-supply pipe or box, Z. Beneath the belt, and revolving in bearings in the oscillating frame, is a guide-roller or tightener, G. Near to the driving-drum C, and revolving in bearings in the inner frame B and above the lower part of the endless belt F, is a beater, H, beneath which and below the belt is a perforated water-pipe or washer, I, that receives its water-supply at *i* under pressure. This pipe extends above and across the head of belt F, and is perforated to give the required amount of water above the belt to the mass thereon, which amount of water is controlled by cock *i′*. A lateral shaking motion is given to the inner frame B and its attachments by the arrangement of crank-pin M on the end of shaft of beater H, pitman N, and bell-cranks O O, or any other suitable shaking attachment.

The operation of the machine is as follows: The pulverized ore being fed into the distributer Q, wherein it is thoroughly saturated with water or distributed dry onto the belt F, which moves against a flow of water from the pipe Z, the lighter particles of sand, rock, or gangue are floated or carried off, while the metals, by their weight or greater gravity, are separated, and their precipitation onto the belt facilitated by the oscillating motion given to the belt, which carries them to the beater H and washer I, where they are shaken and washed off by the action of the revolving arms on the beater, and the sprinkling jets of water coming from the pipe or box I against the belt and falling into a sluice, P, are carried off into a settling tank or box outside the machine.

The ore-distributer Q is more particularly described as follows, reference being had to Figs. 3 and 4 in the drawings:

A box or case, Q, has its bottom pierced by holes or slots, as shown in Q, Fig. 2. Within the box is arranged one or more false bottoms, R, also pierced with holes or slots corresponding with or opposed to those in the bottom of Q. Beneath the bottom Q a sliding bottom or apron, X, is arranged to cover, in whole or part, the apertures *q q* and regulate the delivery of ore to the belt F.

The construction which we prefer is to make the false bottom R with a few longitudinal slots, and the main bottom with numerous small traverse slots *q′ q′*, although we do not confine ourselves to this arrangement.

The object of this arrangement is to check the rapid delivery of the pulverized ore until thoroughly wetted, experience having shown that some ores will lump like flour, and also float on the belt, while by this device no ore can pass onto the belt without passing between the two bottoms and being saturated with water. The pulverized ore being fed into the distributer with water becomes thoroughly saturated, and, receiving an oscillating motion in the distributer while passing through, it is

partially precipitated before reaching the belt, thus facilitating the action of the machine, while thoroughly distributing the ore.

We are aware that the combination of a beater, endless belt and straps, ore-sluice, and water-sprinkler is old; but in the cases referred to the belt travels without lateral motion, and the ore-sluice is not regulating, ore-wetting, or settling; nor does the beater operate on the under half of the belt, but on the upper half, for the purpose of communication to the belt and carried ore a vertically-agitating motion; but

What we do claim as new, and desire to secure by Letters Patent, is—

1. In a machine for washing and concentrating ores, the combination of an endless traveling and laterally-shaking belt, F, guide-straps E, and beater H, acting upon the under half of belt F for the purpose of assisting in the dislodgment of the ore therefrom, oscillating ore-distributer Q, water-supply pipe or washer Z, sprinkler I, and guide-roller G, as and for the purposes described.

2. The oscillating ore-distributer Q, composed of apron X, false bottom R, and box Q, in combination with the endless traveling and laterally-shaking belt F, whereby the thorough wetting and partial settling of the ore are effected, substantially as described.

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