June 10, 1924.

1,497,618

J. VONKA

WEIR

Filed March 15, 1922

2 Sheets-Sheet 1

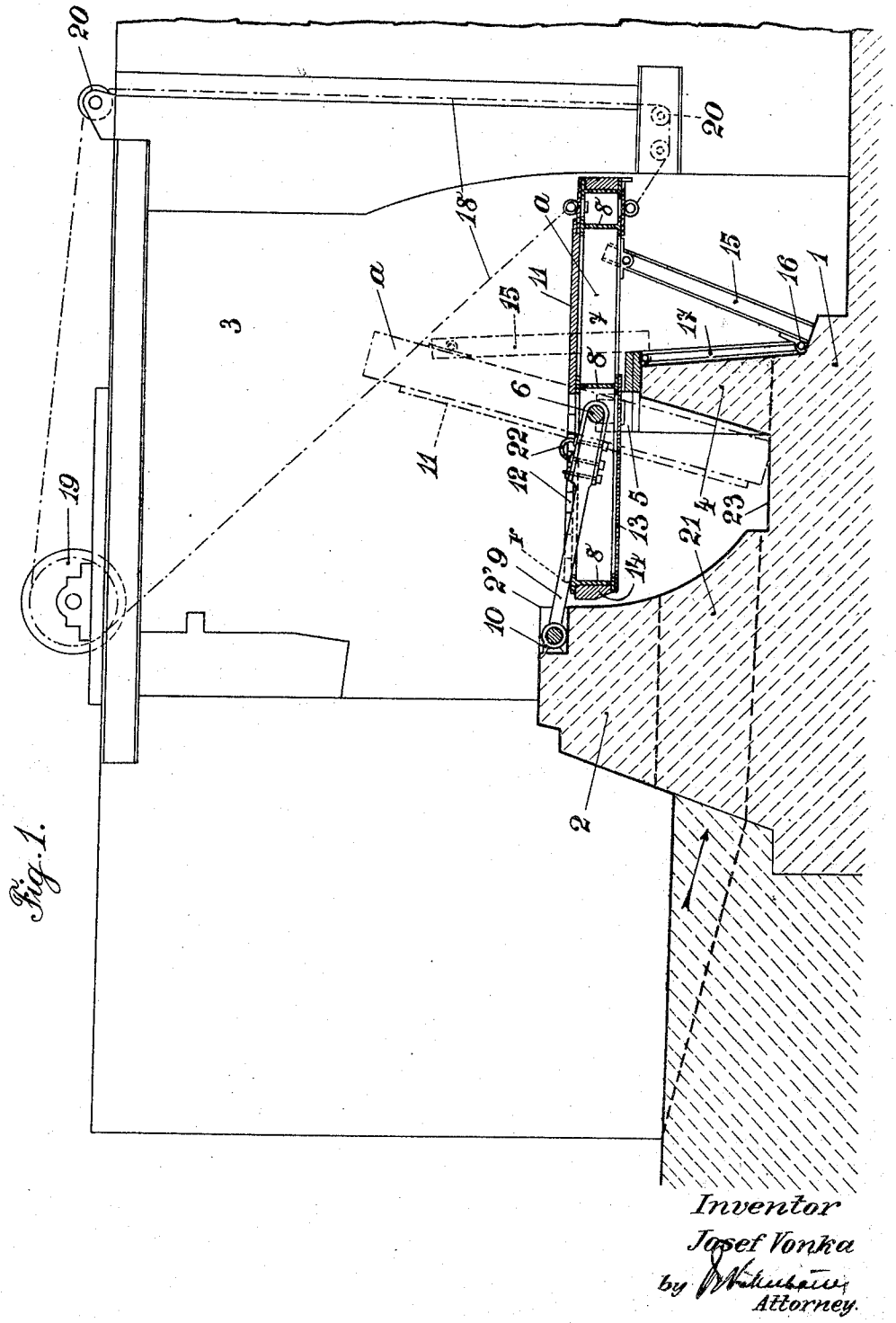

Fig. 1.

Inventor
Josef Vonka
by
Attorney.

June 10, 1924.

1,497,618

J. VONKA

WEIR

Filed March 15, 1922

2 Sheets-Sheet 2

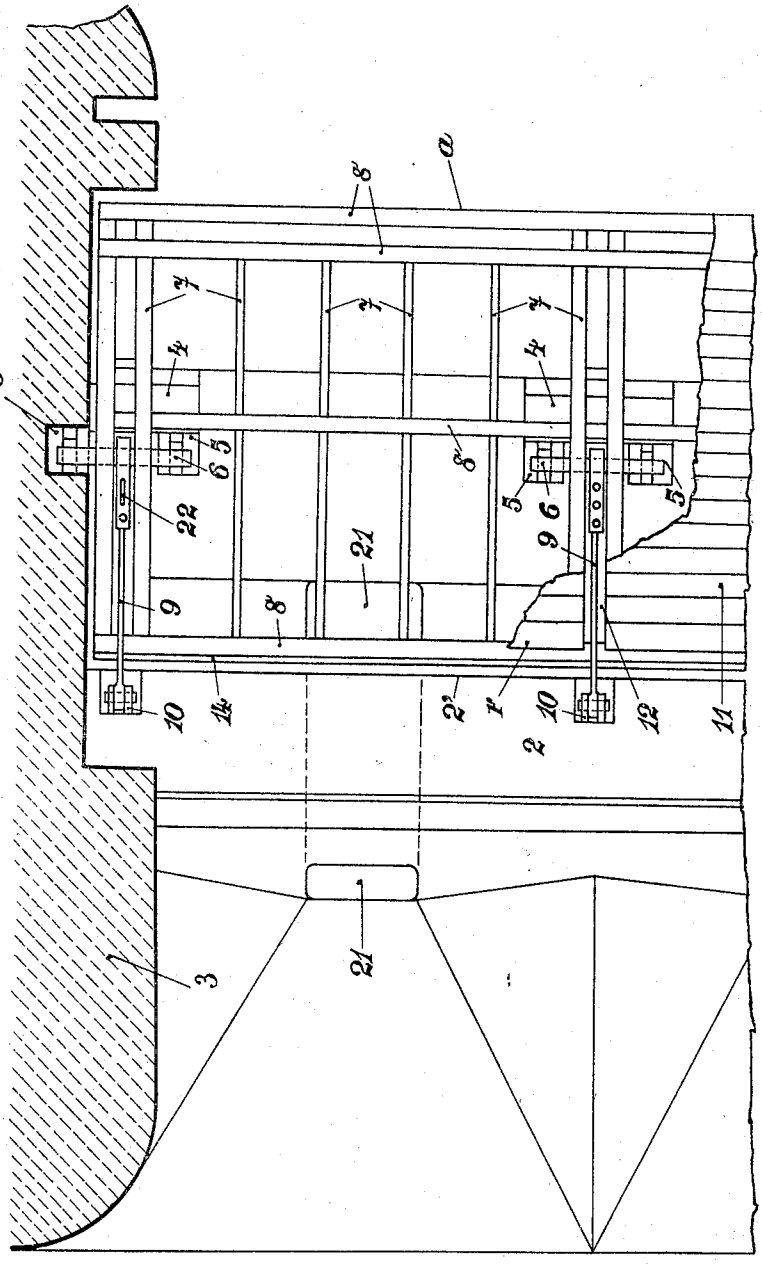

Fig. 2.

Inventor
Josef Vonka

by [illegible]
Attorney.

Patented June 10, 1924. 1,497,618

UNITED STATES PATENT OFFICE.

JOSEF VONKA, OF NYMBURK, CZECHOSLOVAKIA.

WEIR.

Application filed March 15, 1922. Serial No. 543,970.

To all whom it may concern:

Be it known that I, JOSEF VONKA, a citizen of the Czechoslovak Republic, residing at Nymburk, Czechoslovakia, have invented certain new and useful Improvements in Weirs, of which the following is a specification.

My invention refers to weirs and more especially to a weir provided with tilting sluice gates.

In the weir according to the present invention the sluice gates are tiltably disposed below a fixed dam which serves to protect them against being damaged, when they assume a horizontal position and has gravel passages arranged therein which allow the water carrying gravel and sand to pass through, but are clogged by the gates whenever these latter are placed in an upright position.

In the drawings affixed to this specification and forming part thereof a weir embodying my invention is illustrated diagrammatically by way of example. In the drawings—

Fig. 1 is a vertical section, one of the sluice gates being shown in full lines in tilted (horizontal) position and in dotted lines in vertical position.

Fig. 2 is a plan view.

Referring to the drawings, 1 is the foundation and 2 is the fixed dam erected thereon. 3, 3 are the ramps and 4 are piers arranged between the ramps and carrying bearings 5. *a* is the sluice gate composed of transverse and longitudinal girders 7 and 8, respectively. Journals 6, 6 extending horizontally between the transverse girders adjoining the piers are supported in the bearings 5 and are surrounded by the free end of the connecting rod 9 hinged at the other end to a hinge pin 10 secured in the dam 2. The dam extends vertically above the level of the journals 6 of the gate. In consequence thereof when the gate assumes its horizontal position, its edge *r* is located somewhat lower than or at a level with the upper edge 2′ of the dam, the gate being thus protected against damage. The upper side of the gate is lined with planks or rails 11 leaving an opening 12 for the connecting rod 9. On the other side of the gate opposite the opening there is arranged a metal plate 13. 14 is a base beam extending across the lower end of the gate adjoining the dam, said beam resting on the sole 23 of the weir when the gate assumes a vertical position. 15 is a supporting beam serving to support the gate in upright position, said beam being hinged at one end to the gate while its other end carries a bolt 16 extending into a guide 17 arranged on the pier 4.

18 is an endless chain serving for mechanically tilting the sluice gate *a*, said chain being fastened to the rear end of the gate and running across a pulley 19 and the sheaves 20. For repairs the gate *a* can be turned a little and be lifted above the bearings by the connecting rods 9 without it being necessary to dismantle the bearings. The rods 9 are provided to this end with eyes 22.

In the lower part of the dam 2 there are provided passages 21 intermediate the piers 4. When the sluice gates are tilted down into their horizontal position, the water rushes through these passages and washes away the gravel and sand, thus preventing the weir from getting obstructed. When in upright position the gate rests with its base beam 14 on the sole 23 of the weir, whereby the flow of water through the passages 21 in the dam is interrupted.

The gate *a* is tilted up and down about the journals 6 by means of chain 18, the greatest effort being required at the beginning when raising the gate from its horizontal position. When the gate is turned further, the pressure of the water on the lower portion of the gate increases and by its turning moment tends to raise it altogether, which is easy for the reason that the gate is supported in such way that the water pressure on either side of the journals 6 is balanced. When the gate is raised upright and the headwater reaches the overflow rim, the pressure acting on the gate will hold it in upright position without it being necessary to hold it, the turning moment of the water pressure acting on the lower portion of the gate exceeding the pressure acting on the upper portion. When the water rises further, its pressure causes the gate to be tilted down, as the moment of the water pressure acting on the upper portion of the gate increases.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

I claim:

1. In a weir in combination, a fixed dam, a passage in said dam, a plate-shaped sluice gate behind said dam balanced and adapted to be tilted about a horizontal axis and, when in upright position, to rest on the sole of and to block said passage and a connecting rod hinged to the upper part of said dam and having said gate pivoted thereto.

2. In a weir in combination, a fixed dam, a passage in said dam, a plate-shaped sluice gate behind said dam balanced and adapted to be tilted about a horizontal axis disposed below the upper level of said dam and, when in upright position, to rest on the sole of and to block said passage and a connecting rod hinged to the upper part of said dam and having said gate pivoted thereto.

3. In a weir in combination, a fixed dam, a passage in said dam and a sluice gate behind said dam adapted to be tilted about a horizontal axis and, when in upright position, to rest on the sole of and to block said passage, a supporting beam being hinged to said gate and vertical guides serving to guide the free end of said beam.

4. In a weir in combination, a fixed dam, a passage in said dam lateral ramps and a pier intermediate said ramps a sluice gate between each ramp and said pier, said gate being adapted to be tilted about a horizontal axis and, when in upright position, to rest on the sole of and to block said passage and an endless chain attached to the farther end of and serving to tilt said gate.

In testimony whereof I affix my signature.

JOSEF VONKA.