

No. 674,214.

Patented May 14, 1901.

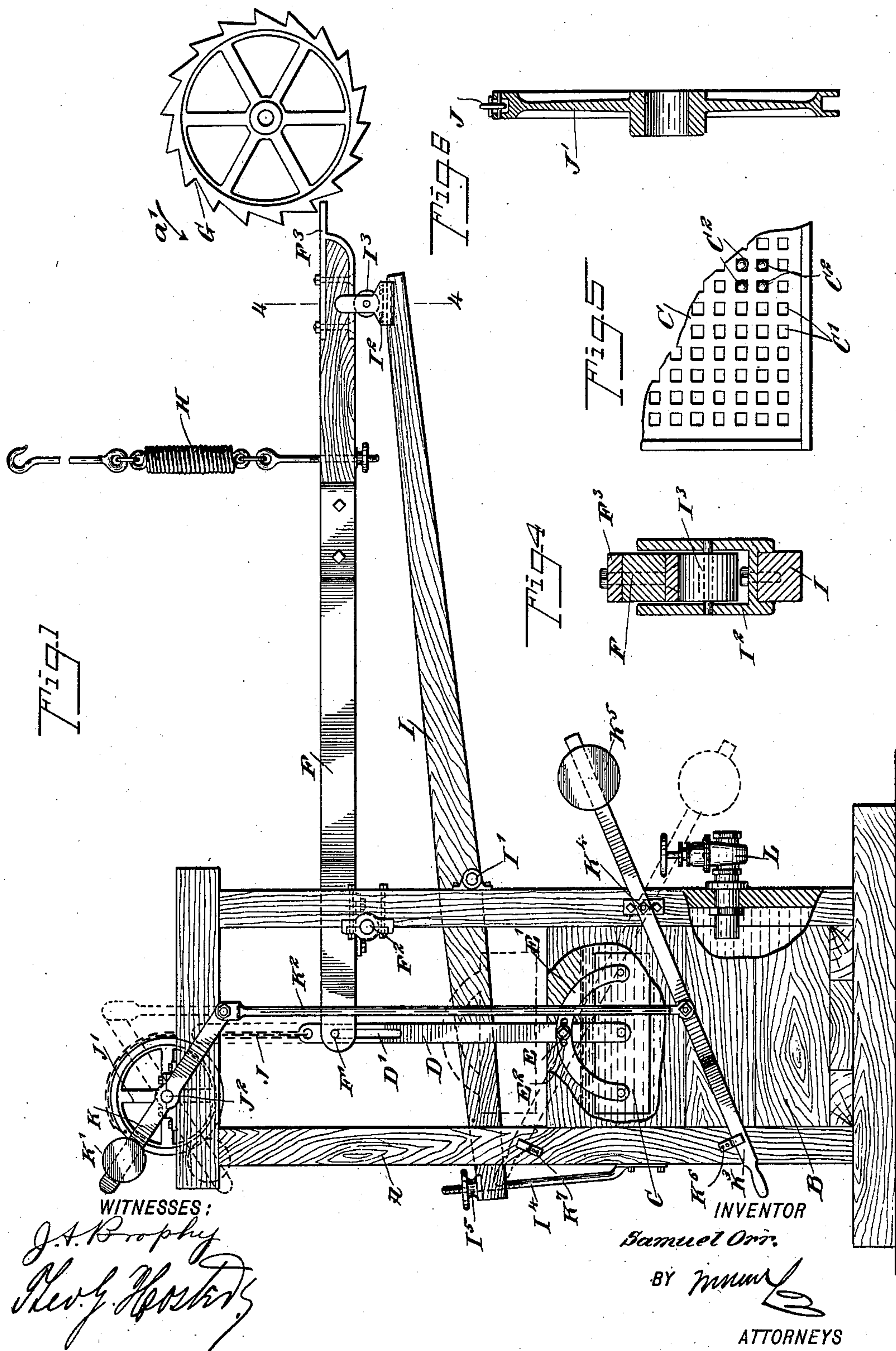
S. ORR.

CONCENTRATING JIG.

(Application filed June 27, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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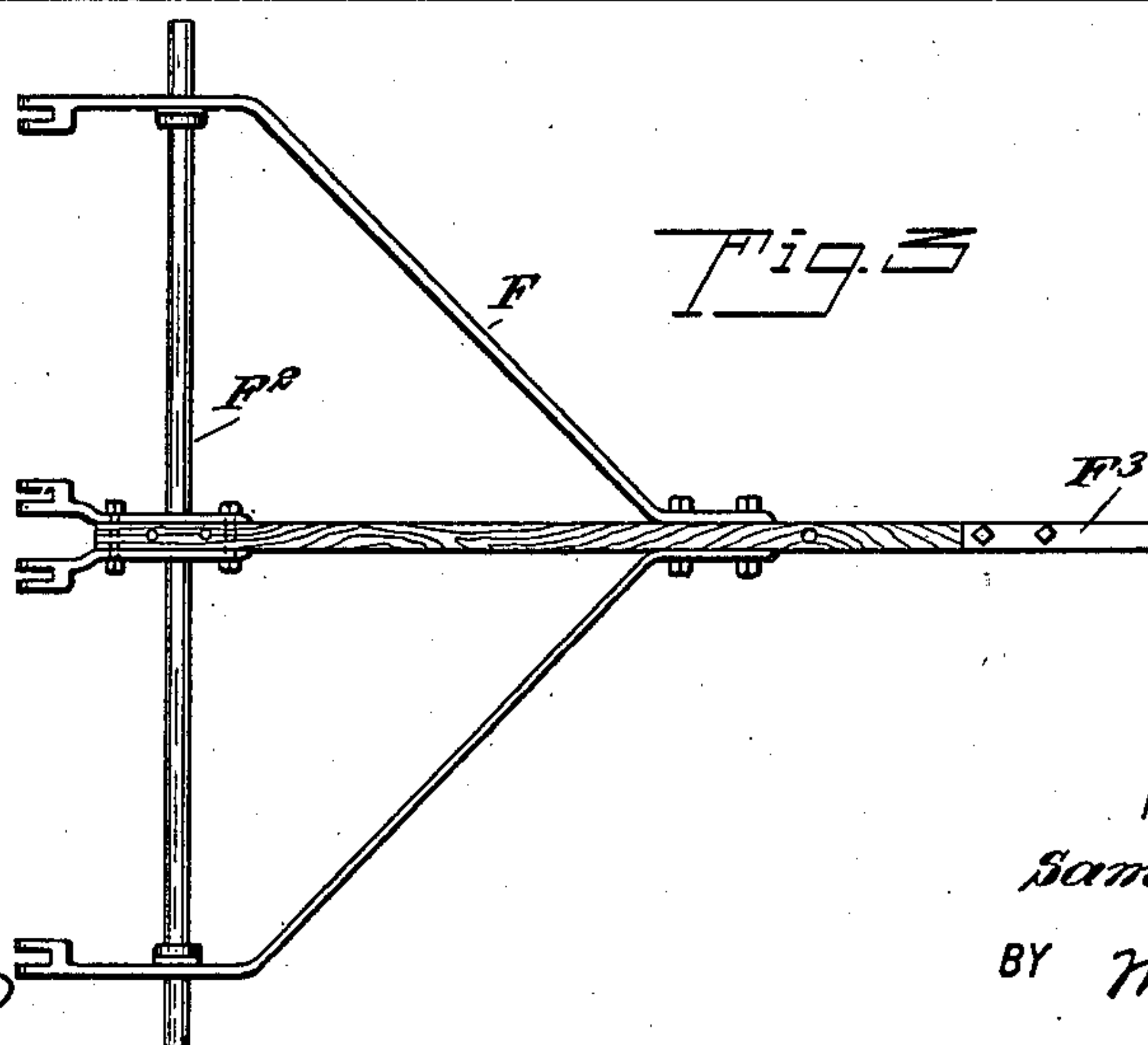
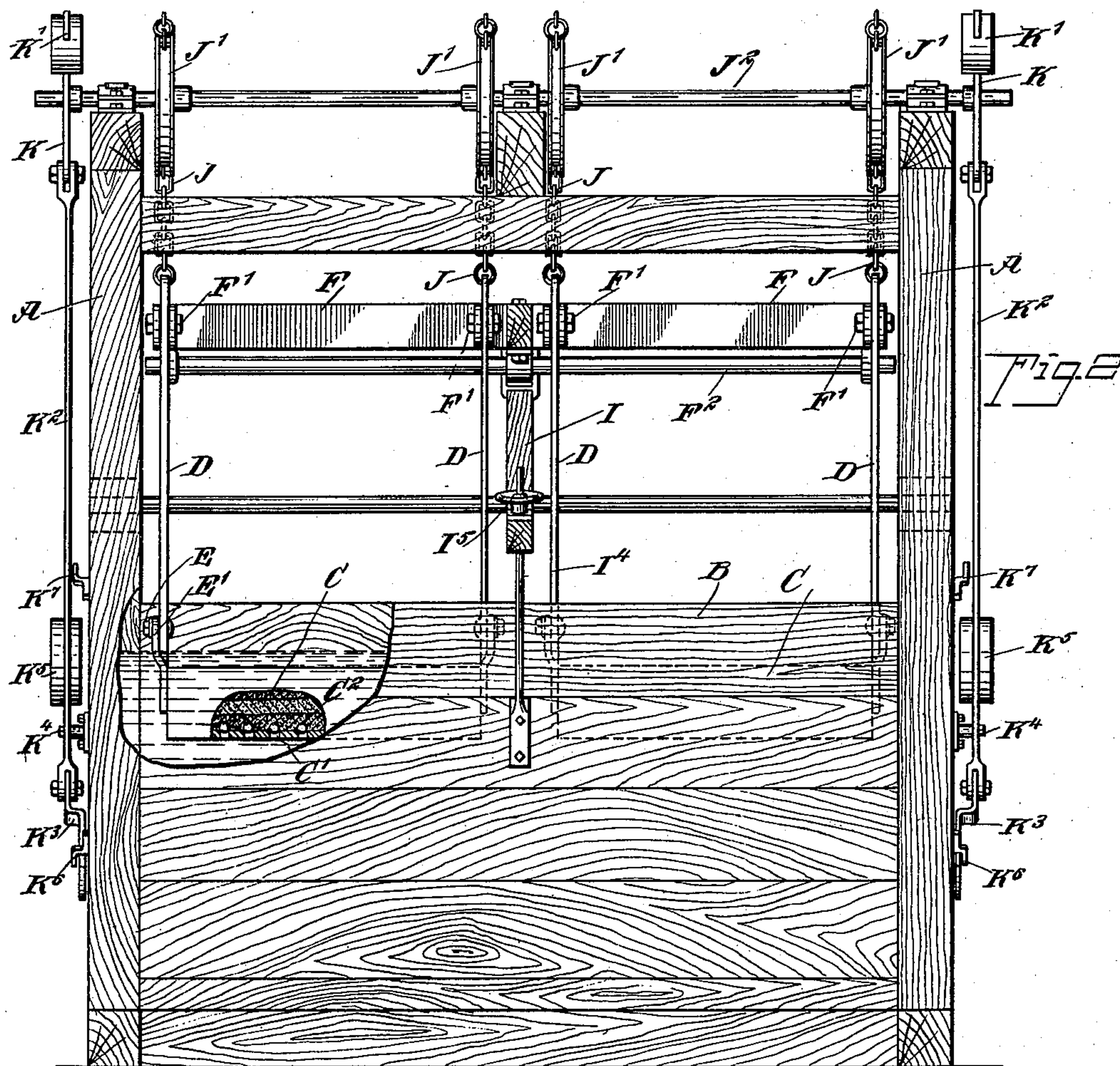
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CONCENTRATING JIG.

(Application filed June 27, 1900.)

(No Model.)

2 Sheets—Sheet 2.



WITNESSES:

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CONCENTRATING-JIG.

SPECIFICATION forming part of Letters Patent No. 674,214, dated May 14, 1901.

Application filed June 27, 1900. Serial No. 21,775. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL ORR, a citizen of the United States, and a resident of Leadville, in the county of Lake and State of Colorado, have invented a new and Improved Concentrating-Jig, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved concentrating-jig for treating ores as they come from a mine, for separating the ores according to their specific gravity, and for saving the float-silver and float-gold, the jig being arranged to permit of working it with a comparatively small quantity of water, which can be used over and over again.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement with parts broken out. Fig. 2 is an end view of the same with parts broken out. Fig. 3 is a reduced plan view of the jig-beam. Fig. 4 is an enlarged transverse section of the jig-beam and the spring-beam, the section being taken on the line 4-4 in Fig. 1. Fig. 5 is an enlarged plan view of part of the jig-pan, and Fig. 6 is an enlarged transverse section of one of the chain-pulleys.

The improved concentrating-jig is mounted on a suitably-constructed frame A, supporting a tank B, adapted to contain water, in which one, two, or more jig-pans C are immersed, for separating the different ores, as hereinafter more fully described. Each of the pans C is provided at its front and rear with pivoted upwardly-extending links D, formed with elongated slots D' at their upper ends, the slots of a pair of links being engaged by pins F', held on the ends of a jig-beam F, fulcrumed at F² on the main frame A.

In order to secure the pans C in proper position on the links D, bolts E are provided, extending through slots E² in segments E', secured to the front and rear of the pan C, as is

plainly illustrated in Figs. 1 and 2. By the arrangement described the pans C may be adjusted to hold the same normally in a horizontal position.

The forward end of the jig-beam F is provided with an arm F³, adapted to be engaged by the teeth of a toothed wheel G, mounted to rotate in the direction of the arrow α' , so as to move the pan C upward while the same is immersed in the water contained in the tank B. When a tooth of the wheel G passes over the arm F³, then the jig-beam F is caused to suddenly swing downward and then upward, and thus give an upward-and-downward movement to the pan C in the water in the tank B. The upward movement of the beam F is caused by the action of a spring H, attached to a suitable overhead support, (not shown,) and also by the action of a spring-beam I, fulcrumed at I' on the main frame A and carrying at its free end a guide I², straddling the free end of the beam F and supporting a friction-roller I³, engaging the under side of the arm F³. A bolt I⁴, secured to the main frame A, engages the inner end of the spring-beam I, a nut I⁵ screwing on said bolt to hold the friction-roller I³ in firm contact with the under side of the arm F³.

Now when the jig-beam F is moved downward by the action of the toothed wheel G, as above mentioned, then the spring H of the spring-beam I is put under tension, and as soon as the tooth glides off the arm F³ then the spring H and spring-beam I cause a sudden return or upward swinging movement of the jig-beam F to move the pan C suddenly downward in the water contained in the tank B.

Each pan C is adapted to receive the ore as it comes from the mine, and the bottom of each pan is formed with perforations, preferably made square, as shown in Fig. 5, with a lead bedding on the top surface of said bottom, the bedding consisting, preferably, of lead shot or balls c^2 , seated on the walls of the perforations C'. By the up-and-down movement given to each pan C the ore with which the pan is charged is agitated to such an extent, in connection with the water contained in the tank B, that the heavier materials, such as lead, readily pass to the bottom and

through the perforations C' and into the tank B and settle therein, while the lighter materials arrange themselves in superimposed layers in the pan, according to their specific gravity. The layers thus formed in the pan can be readily removed, and thus separation of the several materials contained in the ore is accomplished in a very simple manner.

In order to remove the materials from the pan, it is necessary that the pan be lifted out of the water contained in the tank B, and for this purpose independent means are provided for each pan to lift the same out of the water without disconnecting the pan from the jig-beam F.

The upper ends of the links D are connected with chains J, extending upwardly upon the peripheral surfaces of the wheels J', the ends of the chains being secured to said wheels. The wheels J' are secured on a shaft J², extending transversely and journaled in suitable bearings on the top of the main frame A. On the outer end of each shaft J² is secured a lever K, carrying at one end a weight K' and pivotally connected at its other end by a link K² with a hand-lever K³, fulcrumed at K⁴ on the main frame and under the control of the operator. One end of the lever K³ carries a weight K⁵, and the other or handle end of said lever is adapted to be engaged with keepers or stops K⁶ K⁷, held on the main frame, to hold the links D in either a lowermost or an uppermost position, according to which of the stops or keepers is engaged by the lever K³ at the time. Thus when the machine is running for separating the materials in a pan then the hand-lever K³ for this particular pan is engaged with the keeper K⁶ to hold the beam F and impart a jiggling motion to the pan, as previously explained, and when it is desired to raise a pan after the operation of jiggling is completed then the operator, without disconnecting the links D from the beam F, moves the lever K³ into the position shown in dotted lines in Fig. 1, so that the lever by the link K² imparts a swinging motion to the lever K to rotate the wheels J' and wind up the chains J, connected with the links D of the pan under treatment. When this takes place, the pan C is lifted upward out of the water, and the superimposed materials can now be removed from the pan for further treatment. When this has been done, the pan is again charged with ore from the mine, and then the lever K³ is moved back to its forward position to cause an immersion of the pan in the water and to allow the jig-beam F to agitate the pan for jiggling purposes, as previously explained. It is understood that the slots D' in the links D permit the upward movement of the links when the operator works the lever K³ without interfering with the jig-beam F.

On the tank B is arranged a draw-off faucet L for drawing off the water contained in the tank above the material settled on the

bottom of the tank, the water being preferably passed through a filtering-box for retaining any float-silver or float-gold that may have passed into the water.

From the foregoing it is evident that but a small quantity of water is needed to successively carry on the operation, and this water after straining can be used over and over again in the same apparatus.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A concentrating-jig, comprising a water-tank, a jig-pan having a perforated bottom, held submerged in the water in said tank, slotted links connected with said pan a jig-beam provided at one end with means for engaging the slots in the links and fulcrumed near said end, a toothed wheel engaging the longer member of the jig-beam at its free end to impart a downward movement to the same, and means for swinging the beam upward when released from the toothed wheel as set forth.

2. A concentrating-jig, comprising a water-tank, a jig-pan, links provided with slots and connected with said pan, a jig-beam provided with pins engaging the slots in the links, and a toothed wheel engaging the free end of the jig-beam to impart a jiggling motion to the same as set forth.

3. In a concentrating-jig, a water-tank, a jig-pan, links carrying the jig-pan, and provided with slots at their upper ends, a jig-beam provided with means for engaging the slots of the links and adapted to impart a jiggling motion to the pan and means for raising and lowering the pan independent of the jig-beam, as set forth.

4. A concentrating-jig, comprising a water-tank, a jig-pan having apertures in its bottom, links pivoted to said pan and provided with slots, a jig-beam provided with pins engaging said slots in the links, a toothed wheel engaging the free end of the jig-beam to impart a jiggling motion to the same, a spring connected with said beam at one side and a spring-beam engaging said jig-beam at the other side, as set forth.

5. A concentrating-jig, comprising a water-tank, a jig-pan for immersion in the water contained in the tank, links carrying the said pan, a jig-beam having connection with the links for imparting a jiggling motion to the said pan the said links having a vertical movement independent of the said jig-beam, a lever weighted at one end, connections between the said lever and the said links for raising and lowering the links by the movement of said lever, and a second weighted lever under the control of the operator and connected with the first-mentioned lever, for the purpose set forth.

6. A concentrating-jig, comprising a jig-pan, slotted links for carrying the pan, a jig-beam provided with means for engaging the

slots of said links to impart a jiggling motion to the said pan, chains connected with said links, wheels carrying said chains, a lever connected with the shaft of said wheels and
5 weighted at one end, a weighted hand-lever under the control of the operator and connected by a link with the first-mentioned lever, for raising and lowering the pan independent of said jig-beam, and keepers for
10 said hand-lever to hold the pan in either the lowermost or uppermost position.

7. A concentrating-jig, comprising a water-tank, a jig-pan, a pivoted jig-beam, for operating the pan, a toothed wheel engaging the
15 free end of the jig-beam, a spring exerting an upward tension on the beam, a pivoted spring-beam provided at its free end with a friction-roller engaging the under side of said jig-beam, a fixed bolt engaging the other end of

said spring-beam and a nut screwing on said 20 bolt, for the purpose set forth.

8. A concentrating-jig, comprising a water-tank, a jig-pan, a pivoted jig-beam for imparting a jiggling motion to the pan, a pivoted supporting-beam for the jig-beam mounted to 25 yield on pressure of the jig-beam, the said supporting-beam having a guide at its free end for the jig-beam, and a friction-roller carried by said guide and interposed between the beams at their point of contact as set 30 forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SAMUEL ORR.

Witnesses:

CHARLES H. BAILEY,
W. A. POLKINGHORN.