

J. J. STORER.  
Ore Amalgamator.

No. 44,898.

Patented Nov. 1, 1864.

Fig. 1

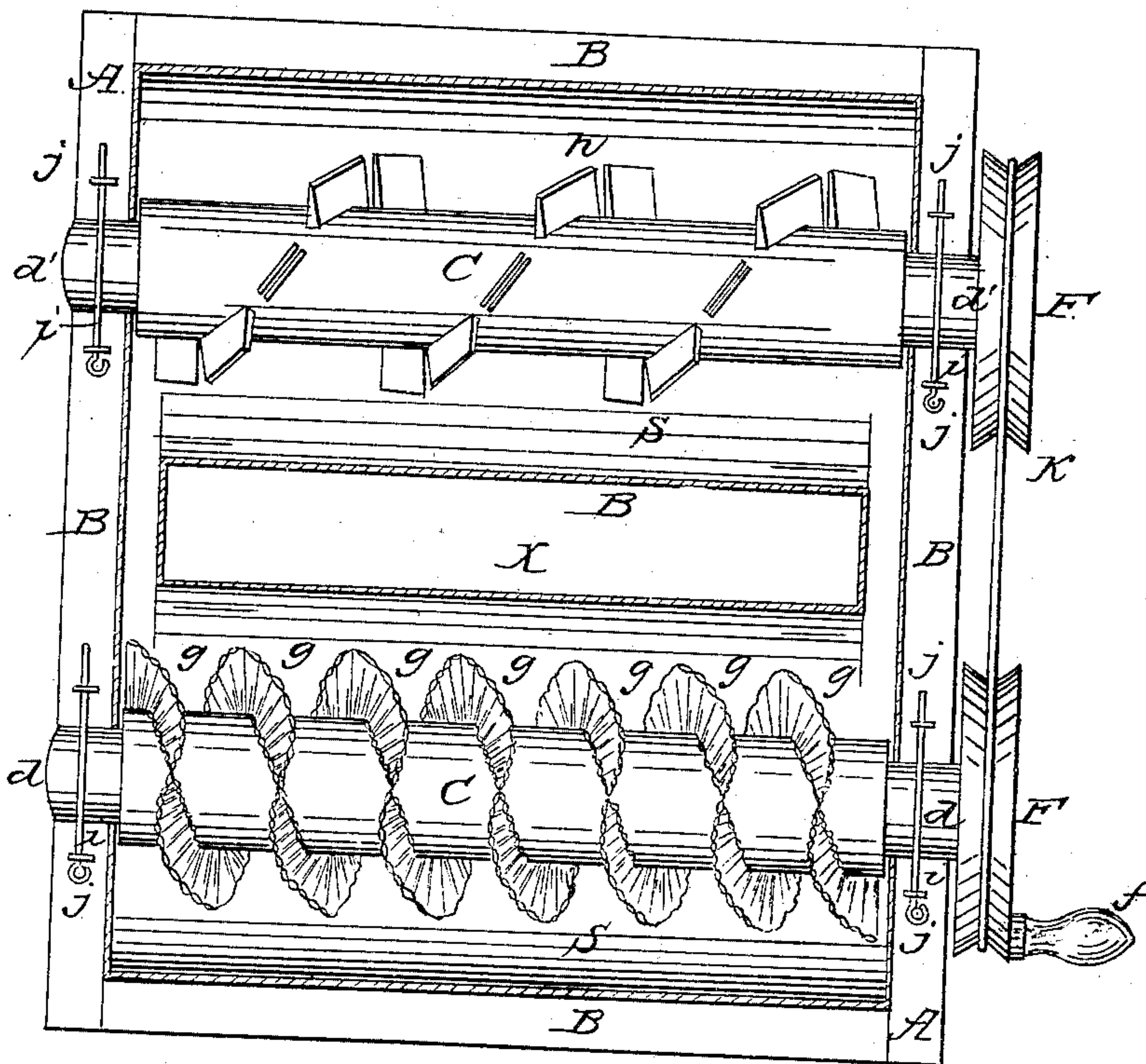
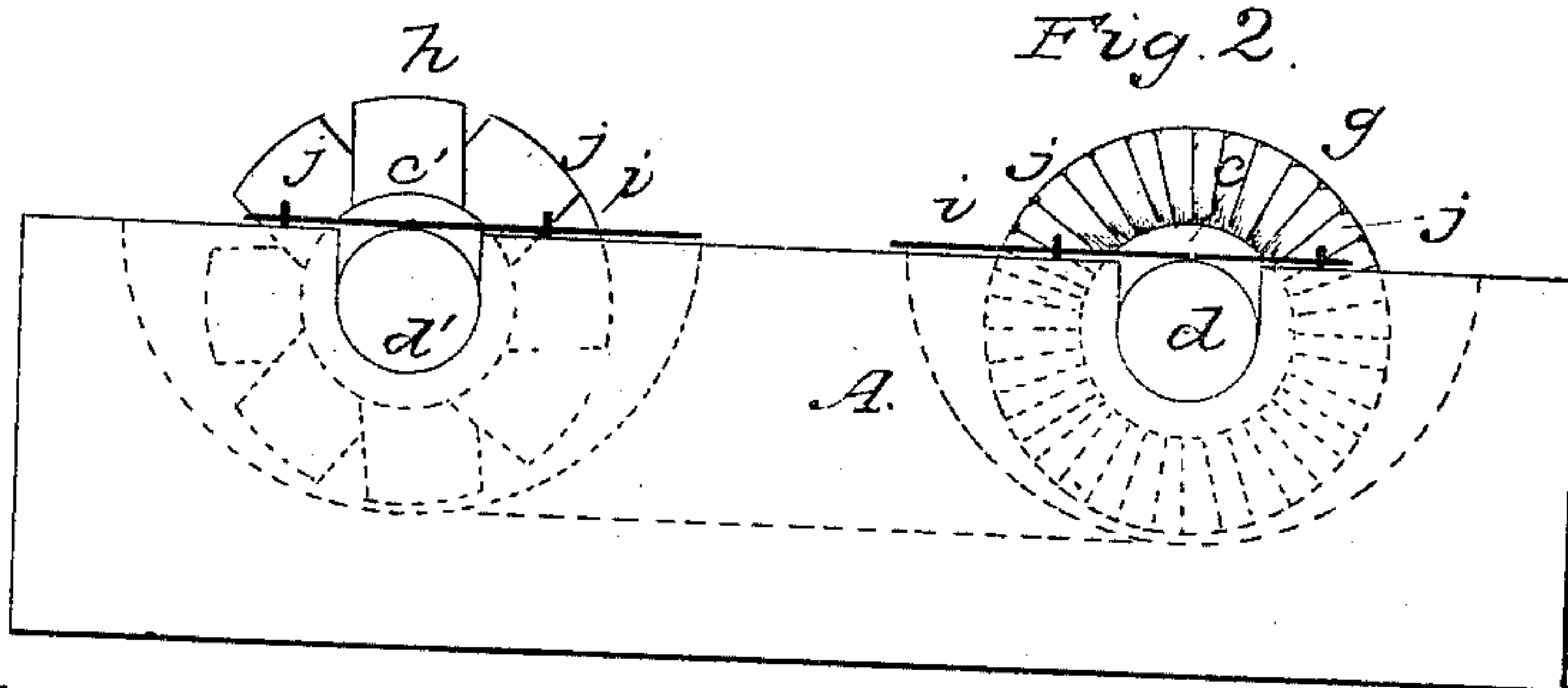


Fig. 2.



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## IMPROVED APPARATUS FOR AMALGAMATING GOLD AND SILVER.

Specification forming part of Letters Patent No. 44,898, dated November 1, 1864.

*To all whom it may concern:*

Be it known that I, J. J. STORER, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Method of Amalgamating Gold and Silver Ores; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a plan of two troughs or sluices united, and Fig. 2 an end view of the same, like parts being represented by the same letters in both figures.

The nature of my invention consists, first, in giving the "pulp," by any suitable mechanism, a circulating motion, so that it shall constantly return and pass over the same points until exhausted of its gold or silver; second, in the employment of an axle or axles, furnished with rods, blades, interlaced wires, or perforated plates, so arranged as to form a spiral or a paddle wheel, and made to revolve in a suitable sluice or sluices, so as to dip into the quicksilver at the bottom and mix the ores with it, giving the pulp at the same time a constant movement in a circuit, whereby the operation of amalgamating is performed much more rapidly and economically than it can be by any method known or used before; and, third, in constructing the rods, blades, wires, or perforated plates of said spiral or wheel, as well as the lining of the sluices, of copper or other metal not liable to be destroyed by the action of mercury, but capable of surface amalgamation, whereby the floating particles of metal, coming in contact with said amalgamated surfaces, will be more rapidly amalgamated and less liable to be lost than would be the case if constructed of any other material.

To enable others skilled in the art to use my invention, I will now proceed more fully to describe the same.

It is obvious that there may be many equivalent ways of embodying my improvement. The drawings, however, represent what I consider as the best, the size and proportions being varied at pleasure.

S and S' are two semi-cylindrical troughs or sluices, formed in the block or frame A, of wood or other suitable material, being separated by the partition X, which is cut away

at both ends down to the bottom of the troughs to form a free communication between them for the circulation of the pulp, as represented by the arrows in Fig. 1. These troughs or sluices I propose, as a general thing, to provide with a lining, B, of copper, tin-foil, or other metal not liable to be destroyed by the action of mercury, but capable of surface amalgamation, so as to arrest the floating particles of gold or silver that may come in contact with it.

C is an axle or cylinder, of wood or other suitable material, the ends *d d* of which turn in suitable bearings in the sides of the sluices or troughs, as represented in the drawings, *i i* being removable rods passing through the staples *j* for the purpose of keeping the axle in place.

*g g* are rows of rods or blades arranged in the axle C, close together, and so as to form spirals or a screw around it. The blades or rods may be of any material not injured by the action of mercury. I prefer, however, to make them of copper or other metal not destroyed by quicksilver, but capable of surface amalgamation, so that in passing through the pulp the amalgamated surfaces, coming in contact with the floating particles of metal, will arrest them and carry them down into the mercury at the bottom of the sluices.

C' is an axle, similar to C, having its two extremities *d' d'* turning in the sides of the trough and kept in place by means of the rods *i* and staples *j*. This axle C' has a spiral, *h*, consisting of blades of wood, as represented in the drawings. The spirals on both cylinders may, however, be exactly alike; or, instead of being constructed as shown in the drawings, they may be made of interlaced wires or perforated plates, and accomplish the object required equally well.

F is a pulley attached to one end of the axle C, and F' is a similar pulley attached to the same end of the axle C'.

K is a band or belt connecting the two pulleys F and F'.

*f* is a crank by means of which the cylinders are rotated by hand-power. They may, however, be driven by any other suitable power applied in any obvious manner.

I have represented in the drawings two troughs or sluices. It is obvious, however, that any number of them might be connected



in a similar manner. If required; or a single trough provided with a spiral agitator or wheel will answer, in which case the pulp will be heaped up at one end of the trough, from which it will flow away by its own gravity, and thus keep up a constant circulation. Two troughs united as in the drawings, however, are preferable to one. It is also obvious that a screw or spiral might be stationary, and have a tight barrel or cylinder revolve around it, and thus produce a constant circulation of the pulp; or, finally, a paddle-wheel may be arranged with its axis at right angles to the sluice or sluices, and by rotating give the pulp a similar motion in a circuit. To all these various plans, however, I prefer that shown in the drawings. The spiral rows of blades, &c., as shown by dotted lines in Fig. 2, extend nearly to the bottom of the sluices, and so as to the dip into the quicksilver which is placed there. The spirals on the two axles C and C' being arranged in opposite directions and turned by the belt K in the same direction, it is obvious that the pulp in the sluices will be moved from one to the other in a circuit, as shown by the arrows in Fig. 1.

Having thus described the construction and operation of my invention, what I claim as

new, and desire to secure by Letters Patent, is—

1. Giving the pulp, by any suitable mechanism, a circulating motion, so that it shall constantly return and pass over the same points until exhausted of its gold or silver, substantially as described.

2. The employment of an axle or axles, furnished with rods, blades, interlaced wires, or perforated plates, so arranged as to form a spiral or a paddle wheel, and made to revolve in a suitable sluice or sluices, so as to dip into the quicksilver at the bottom, substantially as and for the purpose described.

3. The wheel C, or its equivalent, with blades, rods, wire, &c., of copper or other metal not liable to be destroyed by the action of mercury, but capable of surface amalgamation, in combination with the sluice S or sluices S S', substantially as described.

4. The combined slices SS', lined with copper or other metal capable of surface amalgamation, arranged and operating substantially as herein set forth.

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Witnesses:

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