

(No Model.)

J. D. COPLEN.
ORE CONCENTRATOR AND AMALGAMATOR.

No. 444,275.

Patented Jan. 6, 1891.

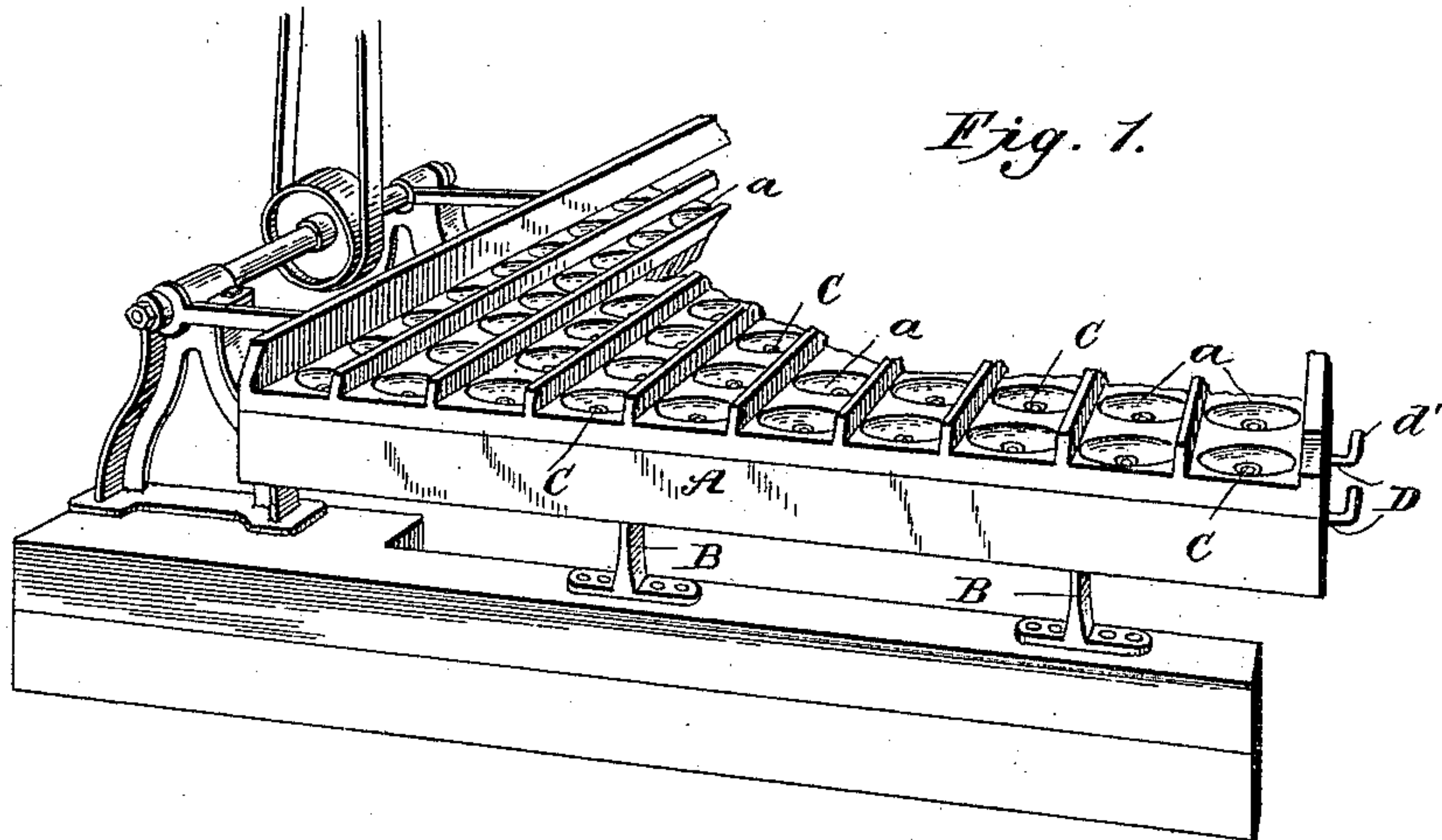


Fig. 2.

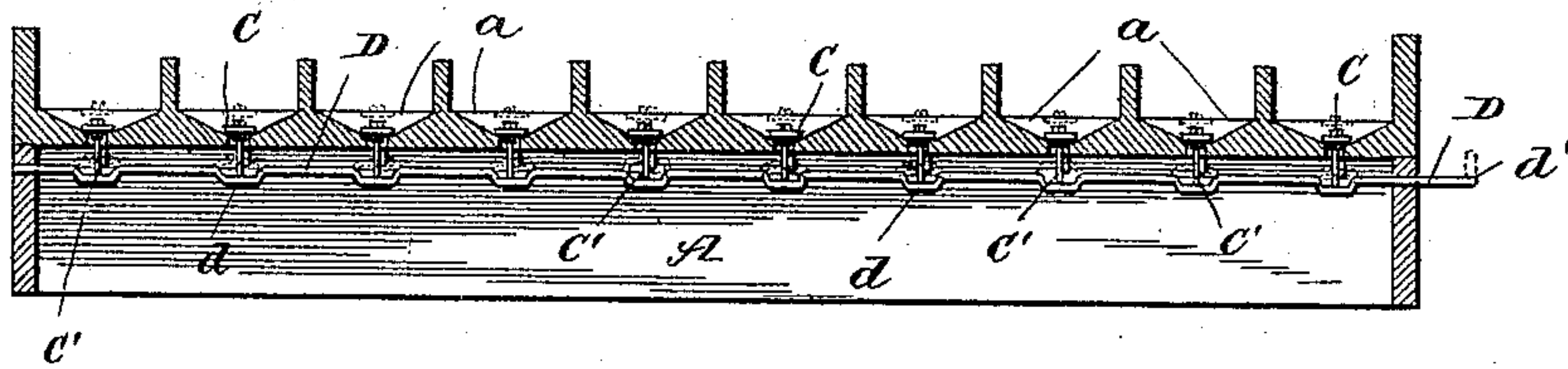
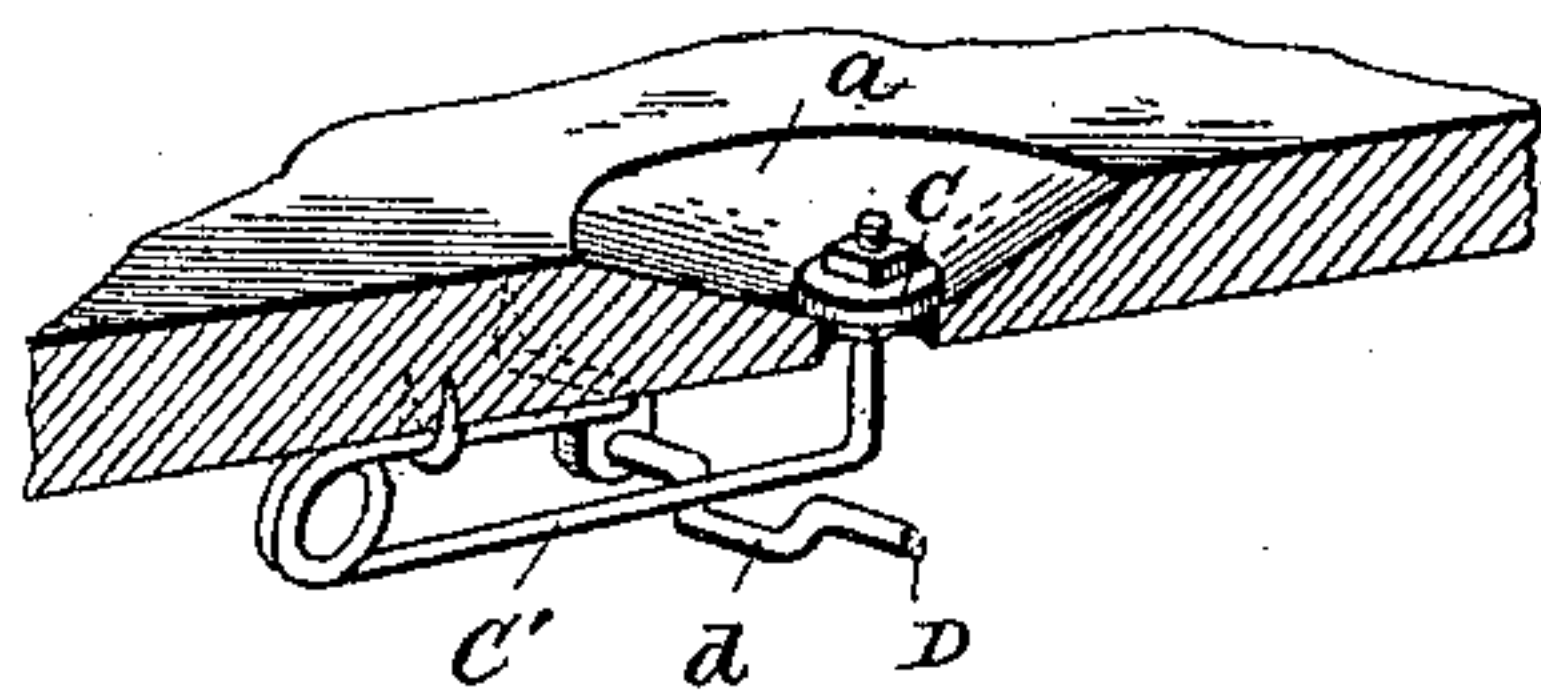


Fig. 3.



Witnesses

Edwin L. Bradford
J. M. Copenhaver

Inventor

John D. Coplen.

By his Attorneys

V. D. Shackbridge & Son.

UNITED STATES PATENT OFFICE.

JOHN D. COPLEN, OF DENVER, COLORADO.

ORE CONCENTRATOR AND AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 444,275, dated January 6, 1891.

Application filed June 7, 1890. Serial No. 354,579. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. COPLEN, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Ore Concentrators and Amalgamators; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in ore concentrators and amalgamators of the class described in Patent No. 390,755, granted to me October 9, 1888.

The object of the invention is to improve machines of this class to render them more durable, more convenient to the operator, and to enable them to work with a minimum of power as well as to secure the highest efficiency in use.

The invention consists in the combination of a table provided with cups or depressions and discharge-ways from the bottom of the cups, spring-operated vertically-moving valves, and means, as eccentrics or cams, for lifting the valves to open the discharge-ways, whereby said valves are conveniently operated and are automatically closed upon being released by the operator.

In the drawings, Figure 1 is a perspective showing my improvements in a concentrator and amalgamator, and Fig. 2 is a transverse vertical section showing the spring-valves and cams or eccentrics for operating the same. Fig. 3 is a detail showing the spring for operating the valve in elevation.

A is a concentrator-table having depressions *a* like that described in my said patent, and by preference made of metal, as copper-plate. In the present instance this table is mounted upon spring-legs B B. These legs are made thin in the middle, with increasing thickness toward both ends to equalize the spring action and to prevent crystallization and consequent breaking. The springs are attached at the bottom to cast-iron foot-pieces or brackets, and the upper ends fit into sockets in the under side of the table.

C C are valves connected to spring-arms C', which normally hold them tightly in place in the bottom of the depressions *a*. To open these valves for discharging the concentrates from the cups or depressions, I mount shafts D D beneath the table in suitable hangers and provide cams or eccentrics *d*, corresponding in number with the valves. To the end of each shaft is attached a hand-lever *d'* for operating the valves and discharging the concentrates at the will of the operator. It should be noted that the valves will be automatically closed and held to their seats by spring-pressure upon the release of the operating-lever and eccentrics. The shaft and eccentrics are conveniently made of three-eighths-inch gas-pipe. It will be observed that the cups or depressions are arranged in rows across as well as lengthwise of the table.

In operation pulp is delivered at the head of each of the longitudinal rows, and the heaviest matter is caught in the cups of the first cross-row, the next heaviest in the next cross-row, and so on. The concentrates or matter caught in the first cross-row may be simultaneously discharged by operating the hand-lever *d'* and raising the valves in said row of cups, and so on to the tail of the machine. It is often the case that the concentrates from near the tail of the machine are run over the machine a second time. Obviously each grade of concentrates may be kept and treated separately from the others.

Having now described my invention, I claim—

The combination of a table provided with cups or depressions and discharge-ways from the bottom of the cups, spring-operated vertically-moving valves, and means, as eccentrics, for lifting the valves to open the discharging-ways, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

JOHN D. COPLEN.

Witnesses:

SANFORD HOAG,
S. D. LOW.