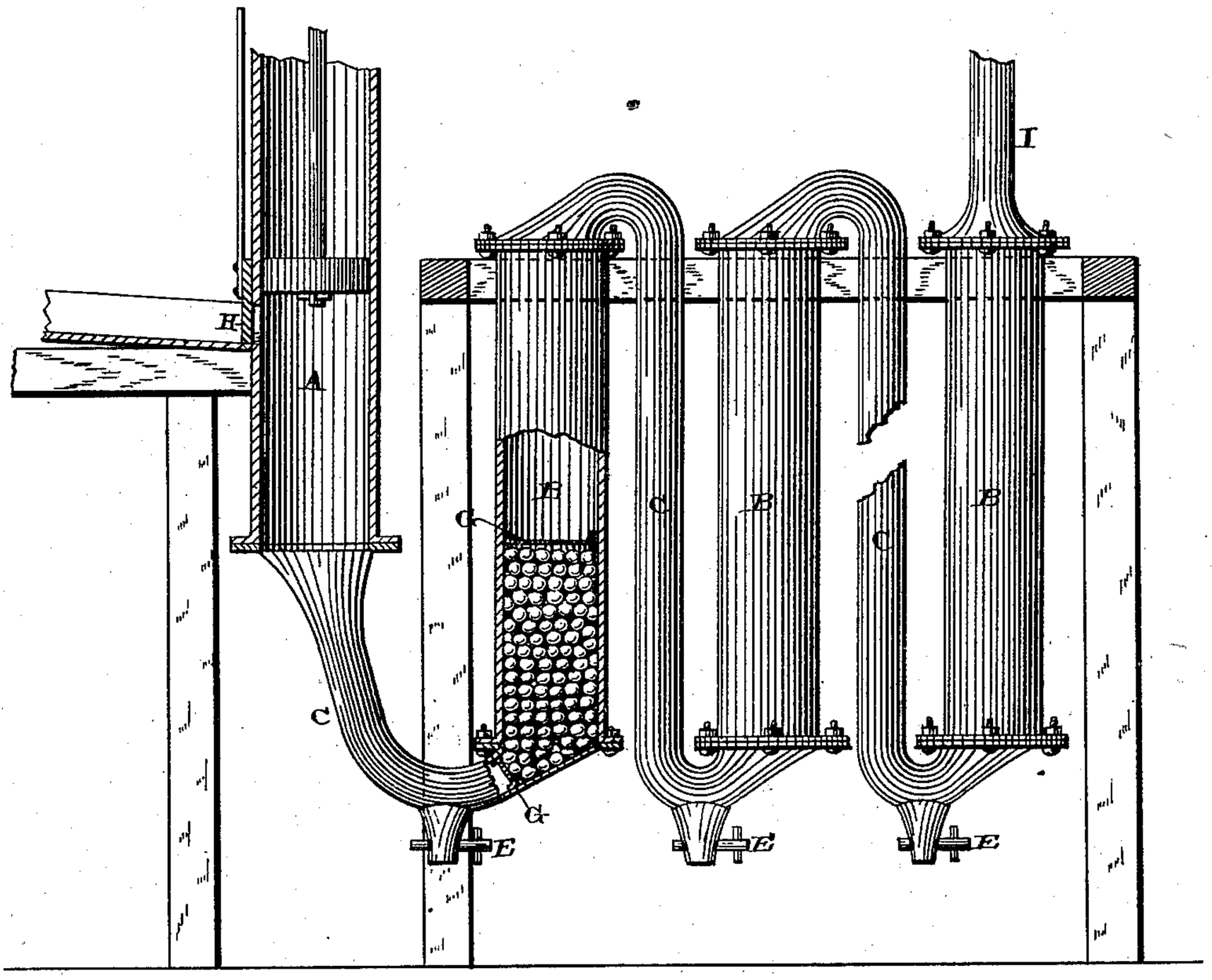
(No Model.)

E. F. SCHMIDT & W. H. STREERNWITZ.

AMALGAMATOR.

No. 264,344. Patented Sept. 12, 1882.



Witnesses.
W. H. Mortimer.
W. H. Burger

Inventors.
E. F. Schmidt.
W. H. Streernwitz.
per
F. A. Lehmann, atty.

UNITED STATES PATENT OFFICE.

ERICH F. SCHMIDT AND WILLIAM H. STREERNWITZ, OF HOUSTON, TEXAS.

AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 264,344, dated September 12, 1882.

Application filed April 17, 1882. (No model.)

To all whom it may concern:

Be it known that we, E. F. SCHMIDT and W. H. STREERNWITZ, of Houston, in the county of Harris and State of Texas, have invented certain new and useful Improvements in Amalgamators; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the acompanying drawing, which forms part of this specification.

Our invention relates to an improvement in amalgamators; and it consists in placing in the bottoms of the chambers a number of iron balls or other suitable-shaped pieces of amalgamated iron, which have sufficient room to move freely among themselves, and then forcing up through the balls or pieces of iron, in contradistinction to forcing it down over their tops, the amalgamated ore and water, so as to cause the pieces of iron to vibrate, and thus to grind and break the pieces of quartz passing up through them.

The accompanying drawing represents a side elevation of our invention, partly in section.

A represents the pump-cylinder, of any suitable construction, and which has an opening through its side, so as to let the water and pulp, as it flows from the stamps or the amalgamating-plates, pass directly into it. This opening in the side of the cylinder is controlled by a valve, H, which may either be operated by hand or connected to the pumping machinery, so as to admit the pulp only after the pump-piston has been raised upward. Connected to the bottom of this cylinder A, and with the tops of each one of the cylinders B, is a suitable curved pipe, C, which is provided at its lowest point with a suitable stop-cock, E, through which the amalgam can be drawn off from any of the cylinders whenever so desired.

The cylinders B may be of any desired shape, length, or size that may be preferred, and each one is filled to any desired extent with amalgamated balls or pieces of iron of any shape or size. These balls or pieces of iron are held in the bottom of the cylinder by means of the screens G, which allow the amalgam, quicksilver, and the crushed quartz or pulp and water to pass freely through them. Between the upper screens and the tops of the balls or pieces of iron there is left enough room to allow the balls or pieces of iron to vibrate among themselves at each stroke of the piston in forcing the ore and water through them. As in each case this ore and water is forced through these balls or pieces of iron from the bottom upward, the force of the incoming current will raise the balls or pieces of iron upward and cause them to grind and knock against each other, and thus crush the fine pieces of quartz which are passing up through them. By subjecting the quartz or pulp to this grinding action the fine pieces of gold, which may be incased in rust or any other substance which prevents it from uniting readily with the quicksilver, will be ground and broken, so that it will be readily taken up by the quicksilver in one of the cylinders B. It will be seen that the connecting-pipes C, between the cylinders, have their upper ends attached to the top of one cylinder and the lower end of the bottom of another cylinder, so that the quartz and water will in each case be forced upward through the balls in contradistinction to downward over their tops. Where the quartz is forced down over the tops of the balls the balls remain stationary, and hence have no movement or play so that they will grind and pulverize the quartz that is passing over them. With the quicksilver which is placed in each one of the cylinders there is mixed a suitable quantity of zinc for the purpose of creating a galvanic electric current, and thus increasing the absorbing power of the quicksilver. Through the top of each cylinder or connecting-pipe C will be made a suitable opening, through which this quicksilver can be applied from time to time, and this opening will be kept closed by means of a plug or any other suitable device while the machine is in operation. After the quartz or pulp has been forced successively through the chambers B, of which there may be any desired number, the refuse is forced out through the discharge-pipe I. Instead of a pump being used for forcing this quartz through the cylinders, a column of water may be used for the

same purpose; but this column must have a height sufficient to overcome the weight of the mercury.

Having thus described our invention, we claim—

1. The combination of a cylinder provided with the screens G, a suitable number of balls or pieces of iron, which are confined between the screens, and a supply-pipe, C, which is connected with the bottom of the cylinder, whereby the ground quartz is forced upward through the balls or pieces of iron, so as to be ground and broken by the movement of the balls, substantially as set forth.

2. The combination of a series of cylinders, B, which have their upper and lower ends connected together by the pipes C, the stop-cock E, the screens G, the pieces of iron which are placed between the screens, and a suitable means for forcing the pulp up through each cylinder, the lower portions of the cylinders and pipes being filled with quicksilver, substantially as specified.

In testimony whereof we affix our signatures in presence of two witnesses.

ERICH FRANZ SCHMIDT.
WILLIAM HENRY STREERNWITZ.

Witnesses:
HENRY SCHER,
JOSEPH LANG.