

(No Model.)

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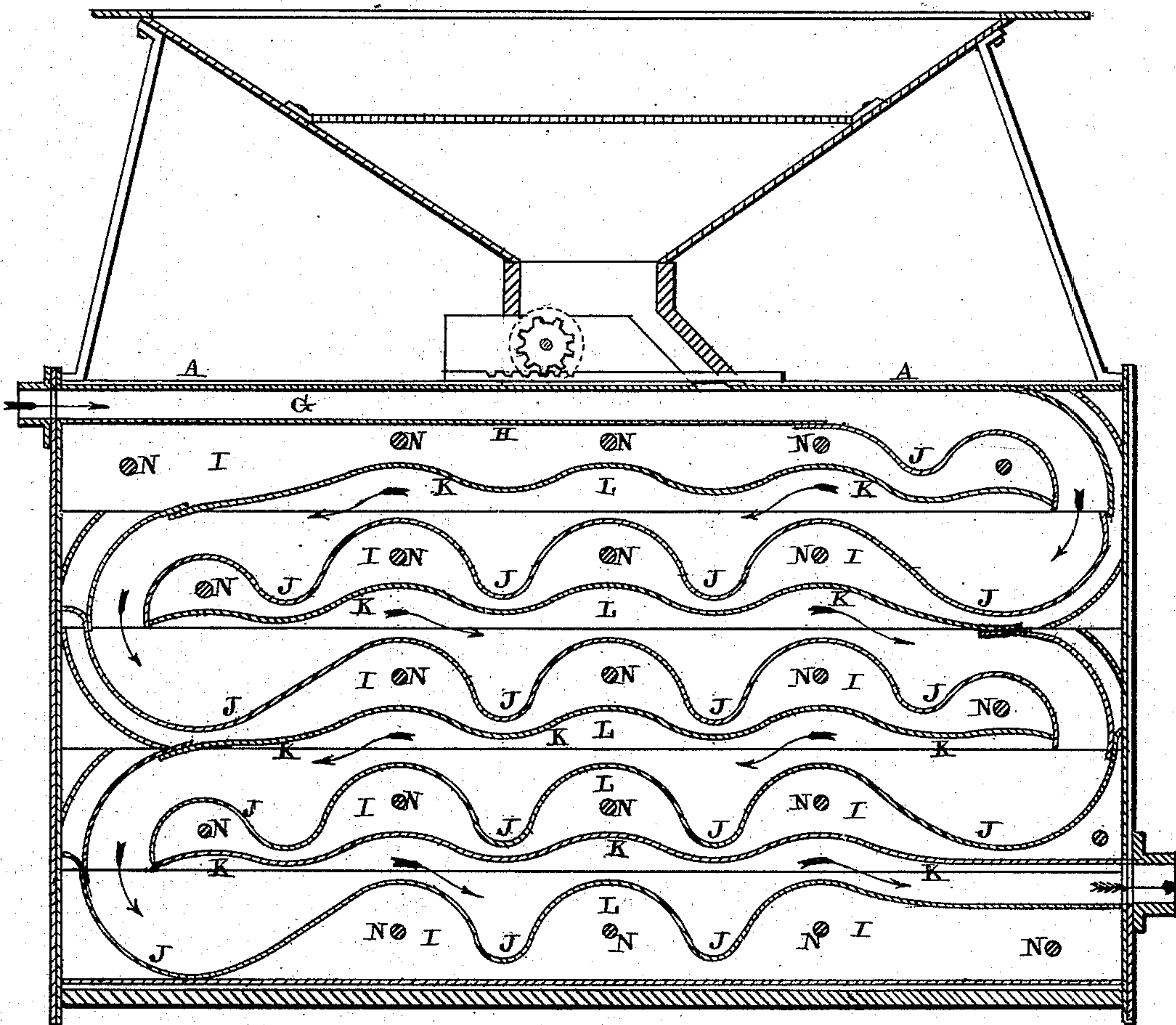
G. DEAN.

MACHINE FOR AMALGAMATING AND CONCENTRATING ORES.

No. 273,969.

Patented Mar. 13, 1883.

*Fig. 1.*



Witnesses.

*W. C. McKinney,*  
*W. F. Kern*

Inventor

*Geo. Dean,*  
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*Atty.*

(No Model.)

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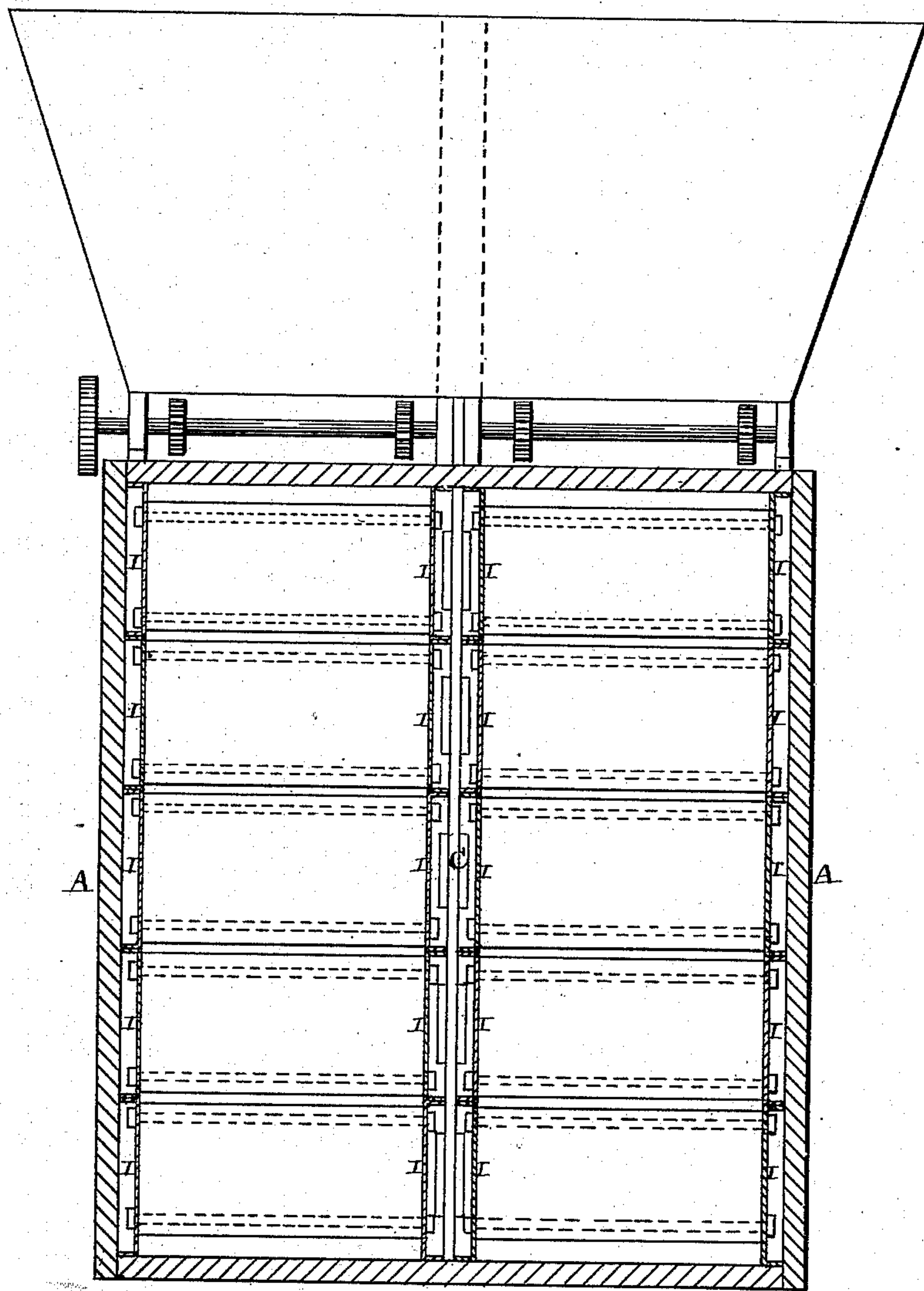
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*Fig. 2.*



*Witnesses.*

*N. W. Mortimer.*

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(No Model.)

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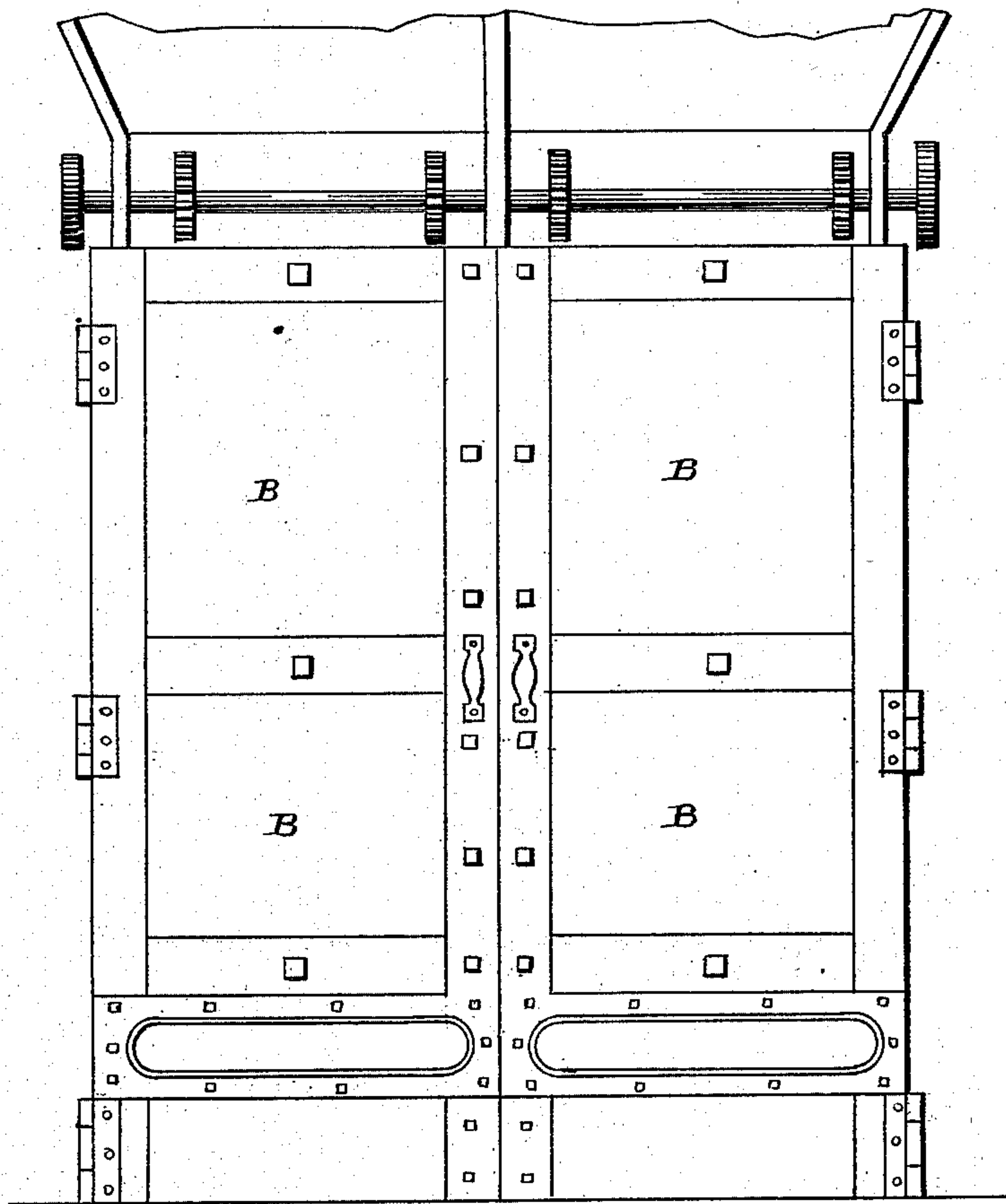
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*Fig. 3.*



*WITNESSES.*

*A. H. Mortimer.*  
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# UNITED STATES PATENT OFFICE.

GEORGE DEAN, OF ST. LOUIS, MISSOURI.

## MACHINE FOR AMALGAMATING AND CONCENTRATING ORES.

SPECIFICATION forming part of Letters Patent No. 273,969, dated March 13, 1883.

Application filed March 13, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE DEAN, of St. Louis, in the county of St. Louis and State of Missouri, have invented certain new and useful Improvements in Machines for Amalgamating Ores; and I 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 accompanying drawings, which form part of this specification.

My invention relates to an improvement in machines for amalgamating and concentrating ores, of that class in which a blast or current of air is used; and it consists; first, in placing the drawers in the frame so that each drawer will rest upon the top of another, and thus form a continuous channel having curved ends from one end of the machine to the other; second, in forming the drawers out of two pieces of channel-iron of suitable width and length, and which form the sides between which the amalgamated corrugations are placed and secured by suitable clamping-bolts.

The object of my invention is to construct an amalgamating-machine in which the pans or drawers are placed one upon another, so as to take up less room, so that the passage through the machine shall have rounding ends, and thus enable the material to be carried through more readily; to have both of the corrugated pieces amalgamated above and below, so that a continuous amalgamated channel is formed, and thus increase the amalgamated surface, and to so construct the machine that it can be readily taken apart and packed in a very small space.

Figure 1 is a vertical longitudinal section of my invention. Fig. 2 is a vertical cross-section of the same. Fig. 3 is an end view.

A represents the frame, which may be of any suitable construction, but which will be preferably made of iron of sufficient thickness and strength to withstand all necessary strains. In order to give this frame sufficient bearings upon its end for the attachment of the hinges of the doors B, suitable angle-pieces are fastened to or formed upon the frame, as shown. This frame is divided verti-

cally into two or more separate compartments by means of the partition C, and this partition also has suitable angular pieces formed upon or secured to its end where the doors come in contact with it, so as to form a broader bearing for them. These doors are opened when the pans or drawers are to be inserted, and then closed, when the machine is to be operated, to keep the drawers in place. Each of the doors has an opening through its lower portion, where the material that has been carried through by the blast of air makes its escape. The blast of air is to be generated by a blower or air-compressor or any other suitable machine. The machine while in operation remains stationary and has no movement of its own.

Upon the top of the frame is placed a suitable hopper, which is also divided vertically into two or more separate parts, and which is attached to a suitable collar, which is in turn attached to and supported by the top of the frame of the machine near its center. The passage from the hopper, which is provided with a suitable feeding mechanism, is inclined, as shown, so that the material passing from the hopper into the machine will be caught by the incoming blast of air and carried straight along the passage without any danger of its clogging up the passage or being forced by the blast of air back into the hopper, which would be likely to occur if the material dropped straight down. The air-passage G, through which the incoming blast of air is forced from the fan, is formed in the top part of the upper pan by means of a suitable piece, H, which is fastened between the sides I of the pan or drawer. This piece extends horizontally along a suitable distance beyond the point at which the material is dropped into the machine, where it has its end lapped over the short upper corrugation, J, which is placed in the drawer. In each one of the pans or drawers L, which are composed of the two side pieces, I, and the upper and lower corrugations, J K, and which are secured together by means of suitable clamping-bolts, N, the upper and lower corrugated pieces are arranged in the relation shown in Fig. 1, so as to form a continuous channel back and forth through the machine



from one end to the other, and from its top to its bottom. These corrugated plates J K may be held in position between the side plates, I, by frictional contact alone; or the plates I may be grooved, so as to receive the edges of the corrugated plates, or provided with suitable projections, upon which the edges of the plates will rest. Each drawer must be made of detachable parts, as above described, in order that the corrugations can be removed to be cleaned and again have the mercury applied to them. The upper corrugated pieces, J, are provided with deeper corrugations or pockets than the lower pieces, K; but both pieces are amalgamated above and below, so that a continuous amalgamated channel is formed through the machine, and thus a much larger amalgamating-surface produced. The ends of the pieces J K are arranged so that when the drawers or pans are placed in the frame—one directly upon the top of the other—their ends will register in such a manner as to form the curves in the channels, so that the material which is being carried through by the blast will pass around much more readily than it can do where it is thrown directly against the end of the frame. The drawers are placed one directly upon the top of the other, so as to avoid the use of supports for the drawers, which supports take up a great deal of room and require the channel to be made much wider than is necessary. If these drawers did not rest one upon the other, the sand and dirt would come in contact with the frame of the machine and wedge the drawers in place by the sand getting in between them and the case. By my construction the sand cannot leave the channel, and thus can cause no trouble in the frame. In placing the drawers in position each one is slid along the top of the lower one. The projecting parts of the lower corrugated plate slide under the curved end of the lower drawer that projects from the top, the front end being kept raised, so as to pass over the projecting part of the upper corrugated plate in the lower drawer until it gets into position, when it is lowered. The corrugated plates which form the channel do not touch the case. The sides I of the drawers or pans are formed of channel or angle iron, as shown in Fig. 2, and fit snugly in the compartments formed to receive

them and rest one directly upon the top of the other. By thus placing the pan directly upon the top of one another all supports in the machine for retaining the pans in position are done away with, and the curves in the channel-way can be made as here shown. Another advantage gained by the construction of the drawer as here shown is that by removing the bolts the corrugations can be readily taken out and each one of the pans packed in a very small space for transportation. A special advantage gained by dividing the frame of the machine into several separate compartments of suitable width is that each drawer supplied with its necessary quantity of quicksilver can be very readily handled, while to construct a machine to do a large quantity of work, so as to utilize a large blower without dividing the machine into separate compartments, would make the drawers too unwieldy and clumsy to operate, and the machine would necessarily be confined to a smaller size. Each compartment can also be worked independently of the other.

Having thus described my invention, I claim—

1. In an amalgamating and concentrating machine, the combination of a suitable inclosing-frame with a series of drawers which are placed vertically one upon the top of the other, so that the lower drawer has to sustain the weight of all the others above it, substantially as shown.

2. The combination of the side plates, I, the clamping-bolts N, and the corrugated plates J K, the plates having their ends curved so as to meet or overlap when the drawers are placed one upon the top of the other, and thus form an unbroken channel through the frame, substantially as described.

3. A series of drawers which are to be piled one directly upon the other in an amalgamating-machine, the sides of each drawer being formed of channel-iron and having a flange along its top and bottom edges to form a bearing-surface, substantially as set forth.

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

GEORGE DEAN.

Witnesses:

THOS. R. REYNOLDS,  
H. M. KNOX.