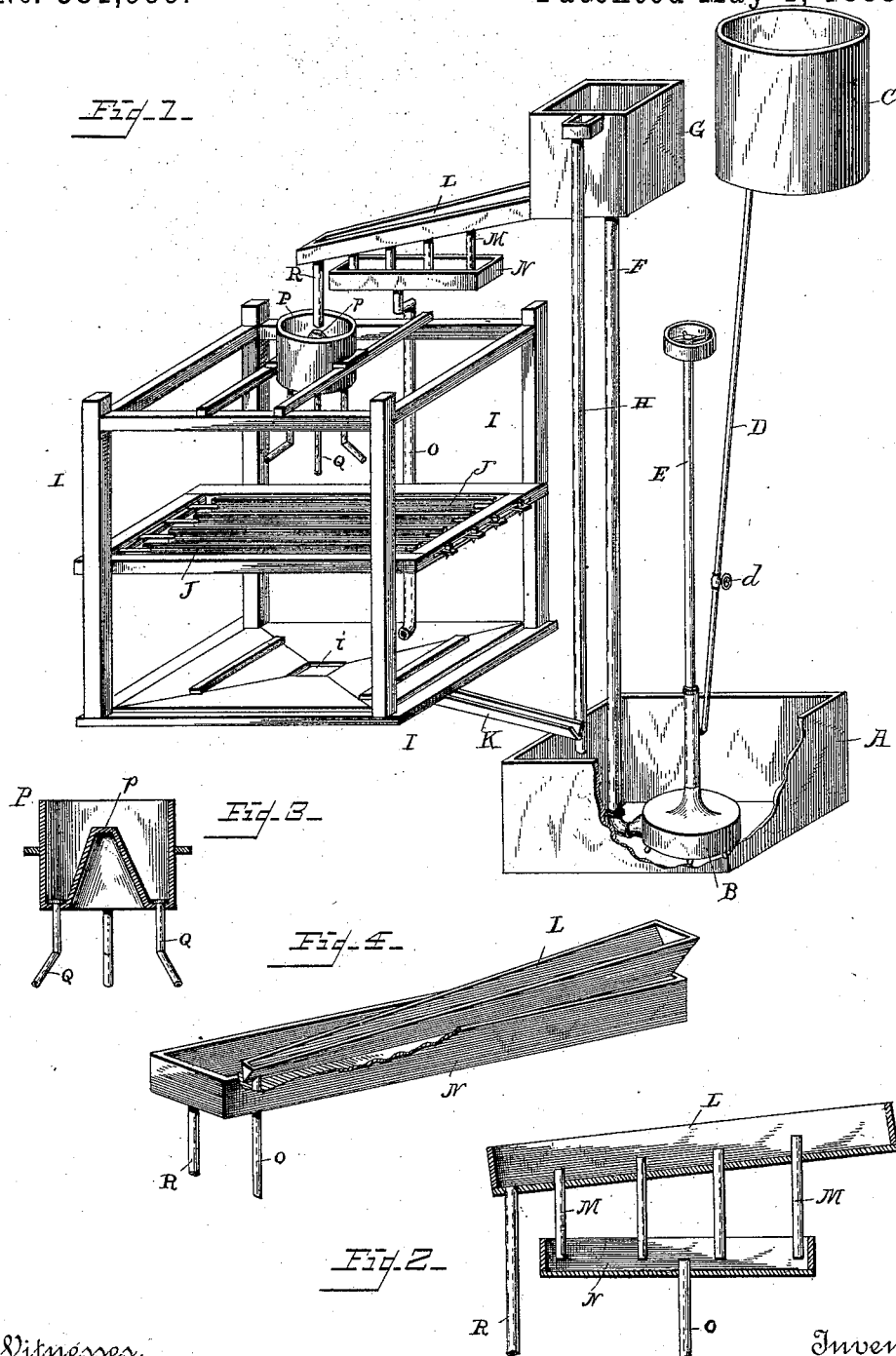


(No Model.)

E. J. HAWLEY.
METHOD OF AND APPARATUS FOR FEEDING CHILLED SHOT IN STONE
SAWING MACHINES.

No. 381,999.

Patented May 1, 1888.



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UNITED STATES PATENT OFFICE.

ELI J. HAWLEY, OF MANCHESTER, VERMONT.

METHOD OF AND APPARATUS FOR FEEDING CHILLED SHOT IN STONE-SAWING MACHINES.

SPECIFICATION forming part of Letters Patent No. 381,999, dated May 1, 1888.

Application filed July 30, 1887. Serial No. 245,676. (No model.)

To all whom it may concern:

Be it known that I, ELI J. HAWLEY, a citizen of the United States of America, residing at Manchester, in the county of Bennington and State of Vermont, have invented certain new and useful Improvements in Methods of and Apparatus for Feeding Chilled Shot in Stone-Sawing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to a method of and an apparatus for feeding chilled shot to a stone in the gang-frame of a stone-sawing machine.

Metallic grains or globules, technically called "chilled shot," are now extensively used in lieu of sand as the abrasive substance in stone-sawing, they being fed to the stone on the frame in the various ways in which sand has been fed. A common way of feeding sand is to first mix sand and water in a tank, then pump the mixture to a reservoir on a plane higher than that of the gang-frame, and finally discharge it from the reservoir onto the stone, all as shown and described in patent No. 321,293, granted to me on the 30th day of June, 1885.

After considerable experience in the use of mixed shot and water in the manner above indicated, I have found that method, when adopted in the use of shot, to be defective, in that the relative quantity of water discharged onto the stone is too great, the shot being very often washed out of the saw-kerfs, whereby the saws are for the time being rendered practically useless; and I have also found that the best results are attained when the shot, as they fall onto the stone, are mixed with just sufficient water to serve as a lubricant and to wash the detritus from the saw-kerfs, it being understood of course that there must be a considerable quantity of water mixed with the shot when they leave the reservoir, in order to carry them down to the point of discharge into the distributor.

My invention consists in an improved method of feeding chilled shot to a stone-sawing machine, the said method consisting in discharging the shot from the reservoir mixed with a sufficient quantity of water to carry them down the feed-trough, gradually diminishing the quantity of water after it leaves the reservoir, and finally discharging the shot and the reduced quantity of water onto the stone.

My invention also consists in certain mechanism, which will first be described in connection with the drawings and then pointed out in the claims.

Figure 1 of the drawings is a perspective view of a stone-sawing machine illustrating my invention. Fig. 2 is a longitudinal section of the feed-trough and the water-trough, the pipes connecting them, and also the pipes leading to the distributor and lower part of the gang-frame being shown in elevation. Fig. 3 is a cross-section of the distributor with distributing-pipes attached. Fig. 4 is a perspective view of a modification of the feed-trough and its arrangement with relation to the water-trough.

Referring to the accompanying drawings, A represents a tank for containing water and shot.

B is a centrifugal pump located in tank A and connected with a clear-water vessel, C, by a pipe, D, provided with a stop-cock, *d*. The purpose of admitting water to the journal of the pump is to lubricate the shaft E, and also to wash gritty substances from the head of the piston, as described in my Patent No. 336,807, dated February 23, 1886.

Connected with the pump is a pipe, F, leading to a reservoir, G. The reservoir is located above the plane of the gang-frame, as shown, and is supplied with chilled shot and water from tank A by means of the pump, which forces the mixture thereto through pipe F.

Connected with the reservoir at or near its top is an overflow-pipe, H, leading downward into tank A, which serves to carry back any surplus of shot and water.

I represents the gang-frame provided with saws J, and having an opening, *i*, in its hopper-shaped bottom, from which a trough, K, leads to the tank for an evident purpose.

The machine thus far described is of usual construction; but I will now describe the mechanism I have devised for feeding the mixed shot and water.

In Figs. 1 and 2, L represents the feed-trough leading from the reservoir to a position over the gang-frame, and having a downward inclination from the reservoir. Through the bottom of this trough are inserted drain-pipes M, the upper ends of which are on different

levels, their heights decreasing toward the lower end of the trough. Beneath trough L is arranged a water-box, N, into which the lower ends of pipes M extend, and from the bottom of this box a pipe, O, leads to the bottom of the gang-frame.

P represents the distributor mounted on top of the gang-frame. It consists of a cylindrical vessel having a frusto-conical bottom, p, and provided around the base of the cone with a series of angular distributing-pipes, Q, one for each saw in the gang. These pipes are inserted loosely in the bottom of the distributor, being held in place therein by flanges on their ends, as shown, thus adapting them to be swung around to any desired position.

R represents the discharge-pipe, its upper end being secured in the lower end of the feed-trough flush with the bottom thereof, and its lower end extending into the distributor.

Mixed chilled shot and water are discharged from the reservoir through a spout (not seen) into the feed-trough. As they flow toward the lower end of the trough, the shot will gravitate toward the bottom; but the water above the level of the first drain-pipe will flow down into the water-box. Continuing on its course toward the lower end of the trough, the water above the level of the next drain-pipe will likewise flow down into the water-trough, and so on until the mixed shot and water pass the last drain-pipe, when the remaining quantity of water will flow with the shot through the discharge-pipe into the distributor, and the water and shot will be distributed by the cone to the distributing-pipes, and thence to the stone, a separate stream being provided for each saw in the gang. The water flowing down into the water-box will be conducted by pipe O to the bottom of the gang-frame to wash the shot mixed with the mud formed in sawing back into the tank, from which it is discharged by the action of the pump in a manner well understood by persons familiar with stone-sawing machinery.

In Fig. 4 I have shown a modification of the feed-trough above described. This consists

simply of a trough tapering in height and width toward the lower end, and located within the water-trough, its discharge-pipe passing through the bottom of said trough, all as shown clearly. The operation of this apparatus is essentially the same as that of the one above described, and will be readily understood.

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

1. The method of feeding chilled shot to a stone-sawing machine, consisting in discharging the shot from the reservoir mixed with a sufficient quantity of water to carry them down the feed-trough, gradually diminishing the quantity of water after it leaves the reservoir and while flowing through the trough, and finally discharging the shot and the reduced quantity of water onto the stone.

2. In a stone-sawing machine, the combination, with the gang-frame and a reservoir for mixed chilled shot and water, of a feed-trough provided at its lower end with a discharge-pipe, the said trough being constructed and arranged, substantially as described, so as to retain the shot while flowing through it, and to gradually discharge a quantity of the water after it leaves the reservoir and while flowing through the trough.

3. In a stone-sawing machine, the combination, with the gang-frame and a reservoir for mixed chilled shot and water, of a feed-trough provided at its lower end with a discharge-pipe, a water-box beneath said trough, a series of drain-pipes whose upper ends extend through the bottom of the feed-trough on different levels, and whose lower ends extend into the water-box, and a pipe leading from said box to the bottom of the gang-frame, substantially as described.

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

ELI J. HAWLEY.

Witnesses:

J. P. BLACK,
J. H. WHIPPLE.