(No Model.) 2 Sheets—Sheet 1.

P. CHRISTA.

FEEDER FOR STONE SAWING MACHINES.

No. 384,125. Patented June 5, 1888.

Fig. 1.

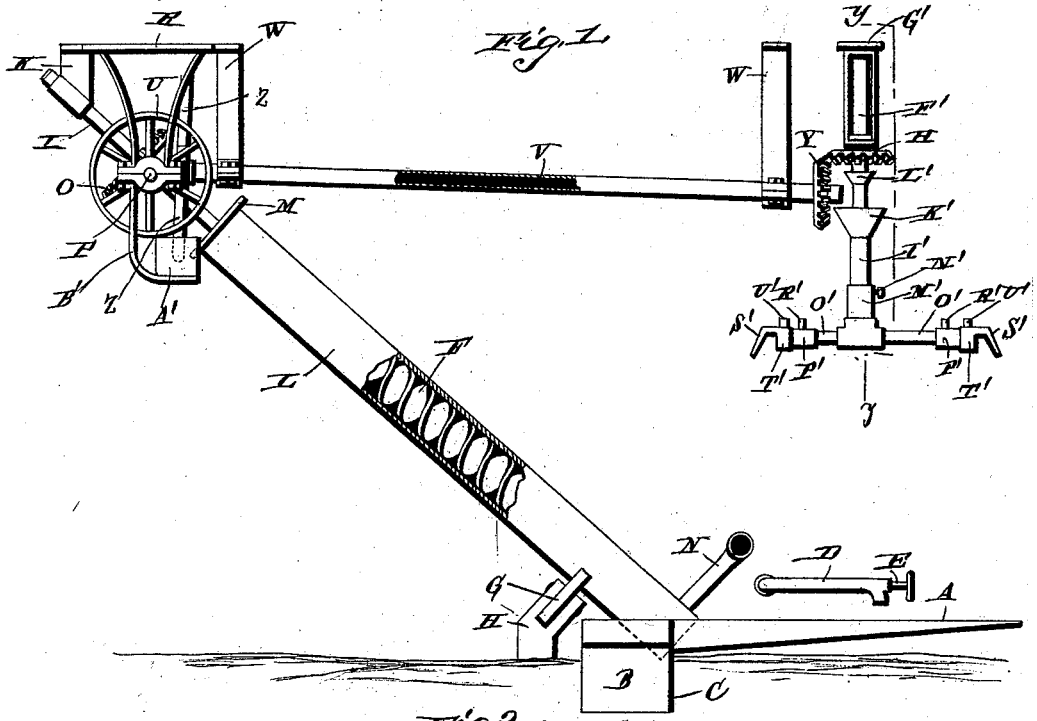
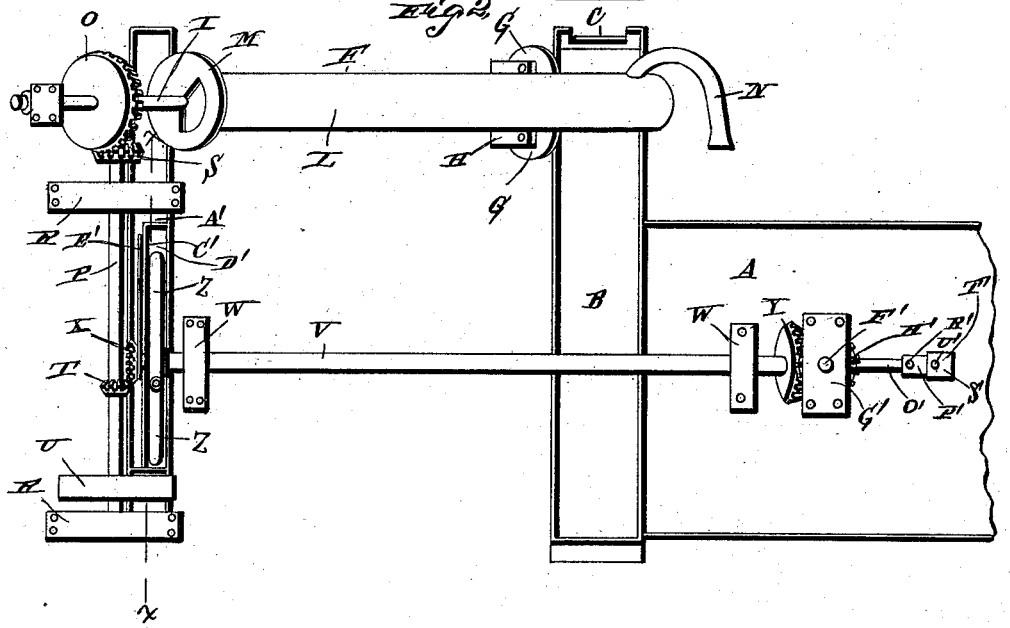


Fig. 2.



Witnesses.
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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

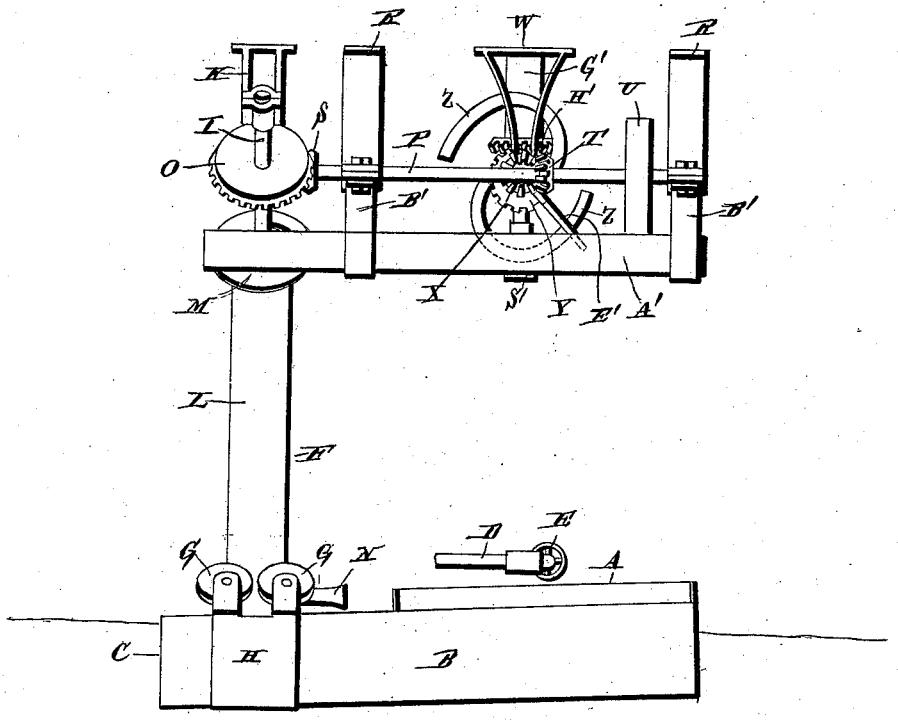


Fig. 4.

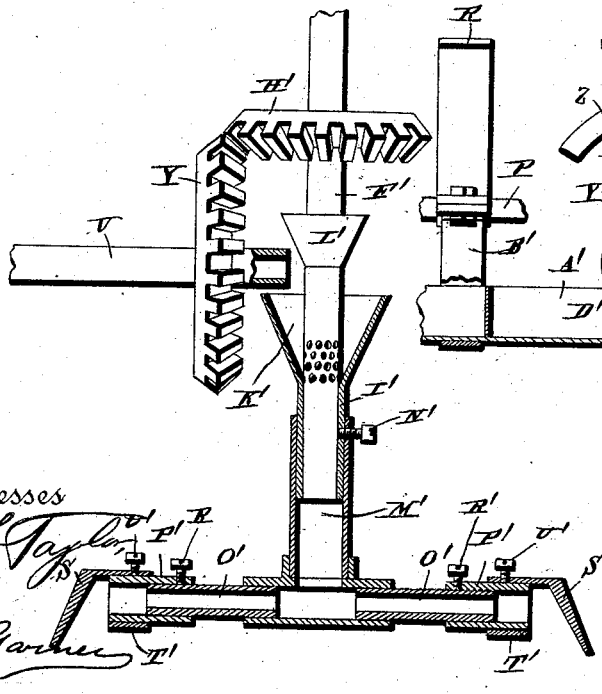
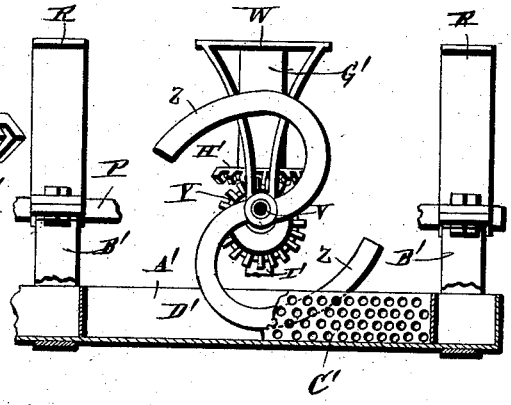


Fig. 5.



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UNITED STATES PATENT OFFICE.

PHILIP CHRISTA, OF DETROIT, MICHIGAN.

FEEDER FOR STONE-SAWING MACHINES.

SPECIFICATION forming part of Letters Patent No. 384,125, dated June 5, 1888.

Application filed November 1, 1887. Serial No. 253,996. (No model.)

To all whom it may concern:

Be it known that I, PHILIP CHRISTA, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented a new and useful Improvement in Feeders for Stone-Working Machines, of which the following is a specification.

My invention relates to an improvement in feeders for stone-working machines; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of a feeding-machine embodying my improvement. Fig. 2 is an end elevation of the same. Fig. 3 is a top plan view. Figs. 4 and 5 are detached sectional views on the lines *x x*, Fig. 2, and *y y*, respectively, of Fig. 1.

A represents a hopper of suitable size and shape, which is provided at one end with a trough, B. The said trough has its front end, C, lower than its sides, as shown.

D represents a water-pipe, which discharges into the hopper, and is provided with a valve, E, by means of which the flow of water to the hopper may be regulated.

F represents an inclined water-elevating screw, which has its lower end arranged over the trough B and bears upon anti-friction rollers G, which are journaled in suitable supports, H. From the upper end of the elevating-screw projects a shaft, I, which is journaled in a bearing at the lower end of the hanger K. A cylindrical case, L, incloses the screw. The upper end of this case is open and is provided with a projecting circular flange, M, and the lower end of the case is closed and is provided with a curved, radial, hollow cylindrical scoop or arm, N, the outer end of which is funnel-shaped, as shown. As the water-elevating screw rotates, its inclosing-case rotates therewith, and at each rotation of the screw and case the arm N scoops up a supply of water and grits or sand from the trough B and feeds the same to the screw.

O represents a miter gear-wheel, which is attached to the shaft I at a suitable distance from its outer end.

P represents a horizontal shaft, which is arranged at right angles to the screw F, and is journaled in bearing-boxes at the lower ends of a pair of hangers, R. One end of this shaft is provided with a miter-pinion, S, which meshes with the wheel O. The said shaft is further provided with a similar miter-pinion, T, and with a belt-pulley, U.

V represents a horizontal hollow tubular shaft, which is journaled in a pair of bearings at the lower end of hangers W, the said tubular shaft being arranged at right angles to the shaft P. To the inner end of the tubular shaft V is secured a miter-wheel, X, which meshes with the wheel T, and near the outer end of the said tubular shaft V is a miter-wheel, Y. The inner end of the tubular shaft is closed and the outer end thereof is open.

Z represents a pair of curved hollow scoop-arms, which are attached to the tubular shaft V near the inner end thereof and communicate therewith.

A′ represents a trough, which is arranged horizontally under the inner end of the hollow tube V, and extends outward and is arranged under the upper end of the screw F. This trough is supported upon arms B′, which depend from the hangers R.

C′ represents a sieve, which is arranged longitudinally in the trough and in a vertical position therein, as shown, thereby confining a space or chamber, D′, in one side of the trough, in which the outer ends of the scoop-arms Z operate.

E′ represents an arm, which projects radially from the inner end of the tubular shaft and is adapted to sweep over the bottom of the trough and the outer side of the sieve.

F′ represents a vertical shaft, which has its upper end journaled in a vertical bearing, G′. This shaft is provided with a miter-wheel, H′, which meshes with the wheel Y, and its lower end is fitted in the upper end of a vertical tubular sleeve, I′, which sleeve has its upper end provided with a funnel, K′, that is arranged under the outer end of a tubular shaft, V. A beveled flange, L′, is formed with the shaft F′ immediately above the outer end of the tubular shaft V.

M′ represents a short vertical pipe, which fits over the lower end of the sleeve I′, and is secured thereto at any desired adjustment by means of a set-screw, N′. From the lower end of the pipe M′ radiates a pair of horizontal

tubular arms, O′, the inner ends of which communicate with the lower end of the pipe M′ and the outer ends of which are open.

P′ represents a pair of tubular sleeves, which are fitted on the outer ends of the tubular arms O′, are longitudinally adjustable thereon, and are provided with set-screws R′, by means of which they may be clamped to the said tubular arms O′ at any desired adjustment.

S′ represents a pair of downwardly and outwardly inclined hoods, which are arranged at the outer ends of the extensible sleeves P′ and are provided with collars T′, which receive the outer ends of the sleeves P′. Set-screws U′ work in threaded openings in the said collars, and are adapted to secure the same at any desired adjustment on the sleeve P′.

The operation of my invention is as follows: The stone sawing or working machine (not shown) is arranged directly under the pipe M′. Motion is imparted to the shaft P by means of a belt from a suitable motor passing over the pulley U, and the rotation of the said shaft P is communicated to the tubular shaft V and the elevated screw by the gearing previously described. As the screw rotates it receives at each revolution a quantity of water mixed with sand and grits from the trough B, and the water is carried upward by the rotation of the screw and discharged into the trough A′. The sieve C′ separates the gravel and the coarser particles of grit from the finer particles of grit and sand, and thereby prevents the same from entering the compartment D′ of the trough. As the shaft V rotates, its curved arms scoop up a quantity of water with sand and grits from the compartment D′ of the trough and cause the water to enter the hollow shaft V and to flow through the same, as will be readily understood. The rotation of the hollow shaft prevents the sand and grits from settling, and the water, together with the sand and grits, is delivered from the outer end of the said shaft to the funnel K′ of the sleeve I′. This sleeve, being attached to the shaft F′, which is geared to the hollow shaft V, is caused to rotate together with the shaft M′ and the radial arms O′. The water, with the sand and grit, flows downward through the sleeve I′ into the shaft M′, and from the latter outward through the hollow arm O′, where it is dashed by centrifugal force against the inner sides of the hoods S′, which cause it to be sprayed, and from which it drops onto the stone that is being worked or sawed.

The hopper A is arranged directly under the stone-working machine, and thereby receives the water and the grits as they drip therefrom and conveys the same to the trough B. The unused grits are caught up, together with the water, by the scoop-arm N at the lower end of the screw, and are thereby fed again to the stone-working machine, as before described. The grits which have become powdered by the stone-working machine pass off from the trough B, together with a portion of the water, over the lower end, C, of the said trough, which forms an overflow.

Having thus described my invention, I claim—

1. The combination, in a feeding device for stone-working machines, of a vertical rotating shaft, I′, the radial hollow arms O′, communicating with the said shaft, and the hoods at the outer ends of the said hollow arms, for the purpose set forth, substantially as described.

2. The combination, in a feeding device for stone-working machines, of the vertical rotating hollow shaft I′, to which water and grits are supplied, the vertical sleeve M′, attached to the said shaft and vertically adjustable thereon, the hollow radial arms O′, extending from the sleeve M′ and communicating therewith, and the deflecting-hoods at the outer ends of the said arms, for the purpose set forth, substantially as described.

3. The combination, in a feeding device for stone-working machines, of the rotating vertical hollow shaft I′, the tubular radial arms O′, communicating with the said shaft and rotating therewith, the extensible sleeves P′ on the said radial arms, and the deflecting-hoods at the outer end of the said sleeves, substantially as described.

4. The combination of the vertical rotating hollow shaft I′, the radial hollow arms O′, communicating with the said shaft, the extensible sleeves on the outer ends of the said hollow arms, and the deflecting-hoods having the collars attached to the said sleeves and adjustable thereon, substantially as described.

5. The combination, in a feeding device for stone-working machines, of the rotating inclined elevating-screw, the trough to receive the water and sand from the said screw, and the rotating hollow shaft V, having the scoop-arms Z, working in the trough, for the purpose set forth, substantially as described.

6. The combination of the trough A′, having the sieve C′, and the compartment D′, with the rotating hollow shaft V, having the scoop-arm communicating therewith and working in the compartment D′, substantially as described.

7. The combination of the trough A′, having the sieve C′, and the compartment D′, with the rotating hollow shaft V, having the scoop-arm Z, working in the compartment D′, and the radial arm E′, working in the trough on the outer side of the sieve, substantially as described.

8. The combination of the elevating-screw, the trough to receive water and sand therefrom, the hollow shaft V, geared to the screw and having the scoop-arms Z, working in the trough, and the spraying device geared to the said hollow shaft, and in which the contents of the latter are discharged, substantially as described.

9. The combination of the elevated trough, the rotating hollow shaft V, having the scoop-arms Z, working in the trough, the vertical perforated hollow shaft F, geared to the shaft

V, and having the funnel K′ below the discharge end of the latter, and the hollow radial arms connected to and communicating with the shaft F′, substantially as described.

10. The combination, with the tube V, of the vertical rotating tubular shaft F′, having the beveled flange L′ above the discharge end of the tube V and the funnel K′ below the same, and the radial hollow arms O′, communicating with and connected to the lower end of the tubular shaft L′, substantially as described.

11. In combination with the elevating rotating screw F, the hollow case L, surrounding the same and rotating therewith, the scoop N on the case, the trough A′, communicating with the case L, the hollow shaft V, the scoop Z on the said shaft, working in the trough A′, and the spraying device communicating with the shaft V and receiving the supply therefrom, as set forth.

12. The combination of the rotating incased screw having the shaft I projecting from its upper end, the bearing K, in which said shaft is journaled, the trough at the upper end of the screw, the trough at the lower end thereof, and the anti-friction rollers supporting the lower end of the screw, substantially as described.

13. In combination with the hollow shaft I′, carrying the spraying devices and having the funnel or supply-nozzle K′, the hollow rotary shaft V, discharging into the nozzle-funnel K′, the scoop Z on the shaft V, the trough A′, in which the scoop Z works, the rotating case L, communicating with the trough A′, the screw F, working in the case L, and the scoop N on the case, as set forth.

14. In combination with the hollow shaft I′, carrying the spraying devices, the hopper A, arranged under the spraying devices, the trough B, communicating with the hopper, the case L, carrying the scoop N, working in the trough B, the screw F in the case, and the hollow shaft V, receiving its supply from the case L and delivering it to the shaft I′, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

PHILIP CHRISTA.

Witnesses:
F. G. RUSSELL,
JOHN L. MCCLOUD.