

(No Model.)

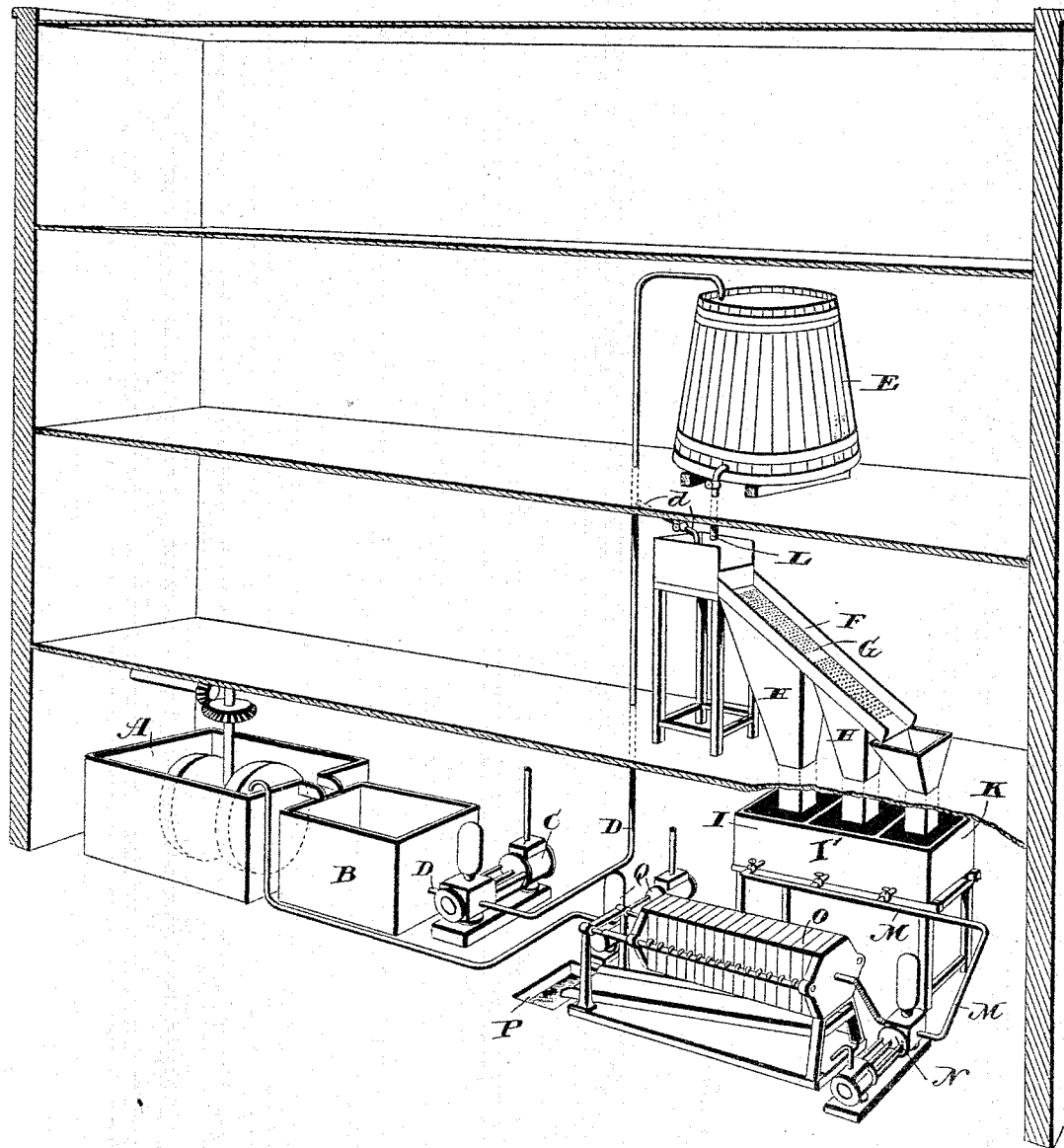
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H. C. HIGGINSON.
MANUFACTURE OF WHITING.

No. 491,353.

Patented Feb. 7, 1893.

Fig. 1.



Witnesses
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Jas. Hutchinson.

Inventor
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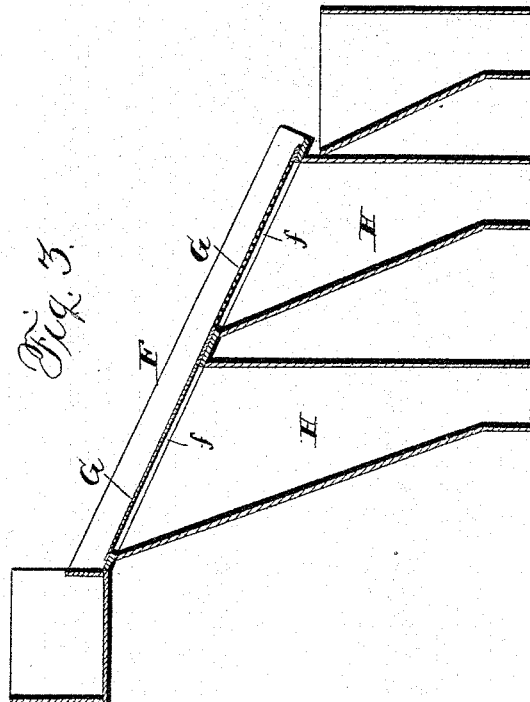
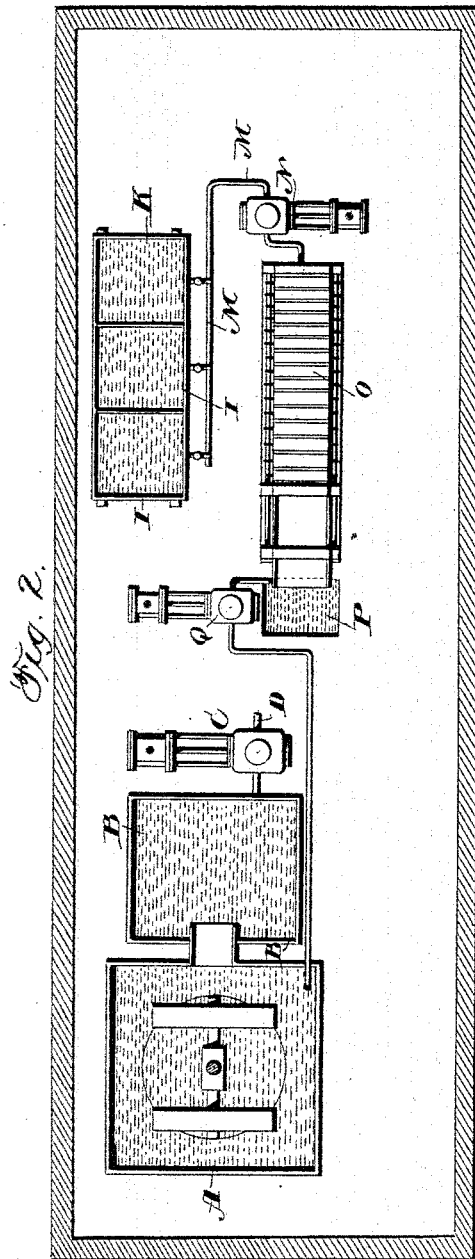
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UNITED STATES PATENT OFFICE.

HENRY C. HIGGINSON, OF NEWBURG, NEW YORK.

MANUFACTURE OF WHITING.

SPECIFICATION forming part of Letters Patent No. 491,353, dated February 7, 1893.

Application filed November 2, 1891. Renewed November 7, 1892. Serial No. 451,134. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. HIGGINSON, a citizen of the United States, residing at Newburg, in the county of Orange, and in the State of New York, have invented certain new and useful Improvements in the Manufacture of Whiting; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my apparatus as arranged in a building, the walls and floors of such building being broken away to better show the mechanism; Fig. 2 is a plan view of the lower or main floor, and Fig. 3 is a section of the screening device employed for grading the product.

Letters of like name and kind refer to like parts in each of the figures.

In the manufacture of whiting, it is customary to pass the ground article, suspended in water, from the chasing mill into and through a series of settling vats which are arranged in lines so that the overflow from the first and each succeeding vat passes into the next of the series and when all are filled by the settling of the whiting, the flow is stopped and the contents of each vat conveyed to the mechanism employed for removing the water. By such process, in a very crude way, the whiting is separated into grades having different degrees of fineness, the coarsest being contained in first vat, and the finest in the last vat, but it is found that in each grade, except the finest, there is a proportion of material that belongs to the finer grades, which in no manner increases its value, but, by lessening the quantity of said finer grades, causes a material loss in the value of the output of the plant. Another disadvantage arising from the use of the apparatus described is the large amount of space required for its accommodation, and as from the bulky nature of the material operated upon it is desirable that the work should be carried on at a water front, or adjacent to a railroad, such space usually represents a large investment for ground, which adds materially to the cost of the finished article. To obviate these objections and to enable more uniform grades of whiting to be produced is

the design of my invention, which invention consists, in the system of mechanisms employed and in details of construction, substantially as and for the purpose hereinafter specified.

In the carrying of my invention into practice, a chasing mill A is located at a suitable point, and at one side is provided a tank B, that receives from the mill tank, the overflow of water containing in suspension the ground material. Adjacent to and connected with the tank B, is a pump C which is adapted to draw therefrom the contents and to force the same through a pipe D, into a tank E that is, preferably, located in the second story of the building above that in which the chasing mill is placed. Within the room below the tank E is placed a grading mechanism which consists essentially of an inclined trough or chute F which has within its bottom a number of openings *f*, and *f*, that are covered with perforated metal or wire cloth G, the uppermost of said screens being sufficiently fine to pass nothing but the finest grade of whiting, and each succeeding screen having coarser openings or meshes. Beneath each of said screened openings is arranged a hopper H which communicates with a tank I, preferably, located within the lower story, and operates to direct into such tank any material that passes through such opening, while at and below the lower end of said chute is placed another tank K into which falls all material that passes over said screened openings.

From the tank E, a pipe L, extends to the upper end of the chute F, and operates to convey material from the former to the latter. I, preferably, provide a branch pipe *d* between the pipe D and the upper end of said chute so as to enable material to be forced directly into the latter, when desired, without passing through said tank E.

The tanks I and I, each adapted to contain a grade of whiting, are, preferably, elevated to or near the upper part of the room, and communicating with each, through a pipe M, is a pump N that is connected with a press O for use in expelling water from the ground material and forming the latter into cakes. The water thus expelled, which contains a small per centage of the finest grade of whit-

ing, is collected in a tank P, and, by means of a pump Q is, as required, forced into the chasing mill A, to be again used.

It will be readily understood that but one
5 grade of whiting at a time will be operated upon by the press O.

The system of mechanisms described, enables the process of pulverizing, grading and pressing into cakes to be continuously carried
10 on within a fraction of the space, and in a fraction of the time required for the mechanism now in use:—the work is more thoroughly and economically done, the separation of the grades is practically perfect and no loss results from waste.

Having thus described my invention, what I claim is—

1. In an apparatus for the manufacture of whiting, in combination with a tank containing liquid and the crushing apparatus working therein, a series of screens differing in fineness of mesh, circulating devices connecting said tank and screens for causing the liquid from the crushing tank, containing the
25 crushed material in suspension, to flow over said screens, and suitable separate receptacles to receive the matter passing through the different screens, substantially as and for the purpose described.

30 2. In an apparatus for the manufacture of whiting in combination with the liquid containing tank and the crushing apparatus working therein, an overflow device for allowing exit of the upper part of the liquid from the tank, a receptacle into which such overflow discharges, circulating devices for drawing off the mingled liquid and crushed material from such receptacle, screens connected by said devices with said receptacle over
35 which the mingled liquid and material are passed, a suitable receptacle to receive what passes through the screen, a press, and connections between it and the receptacle below the screen, through which the contents of
45 such receptacle can flow into the press to be

there compacted, substantially as and for the purpose shown.

3. In an apparatus for the manufacture of whiting, in combination with the liquid containing crushing tank and the crushing ap-
50 paratus therein, one or more screens, circulating devices between said tank and screens for discharging over the latter the liquid flowing from the crushing tank containing the crushed material in suspension, a receptacle
55 for each screen, to receive what passes through the latter, a press for compacting the material connected with such receptacle, and circulating devices for returning the liquid issuing from the press to the crushing tank, substantially as and for the purpose set forth.

4. In an apparatus for manufacturing whiting, a tank containing water crushing mechanism operating in the same, an overflow outlet from the upper part of the tank, a receptacle into which such overflow discharges,
65 means for drawing off the mingled water and whiting from such receptacle, a series of grading screens over which the mingled liquid and whiting is discharged by the draw off device,
70 a series of chambers each connected with one of the screens, a force pump, the inlet pipe thereof connected by suitable valved pipes with the different chambers of the series, the press into which the eduction pipe of said
75 pump discharges having its farther or outer end adapted to allow the flow of water while keeping back any whiting in the latter, and means for returning the water issuing from the press back to the crushing tank again, all
80 combined substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand this 22d day of October, A. D. 1891.

HENRY C. HIGGINSON.

Witnesses:

E. E. ROOSA,

J. BRADLEY SCOTT.