J. M. CRAWFORD.

Distributer for Hydraulic Pipes.

No. 163,363. Patented May 18, 1875.

Fig. 1.

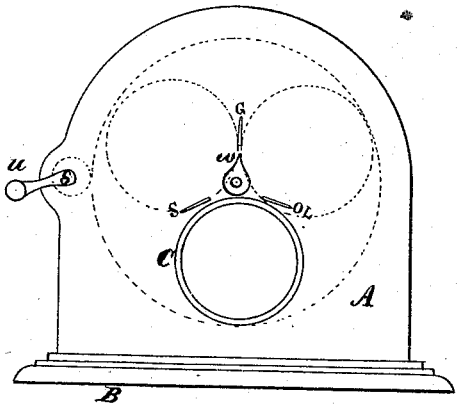


Fig. 2.

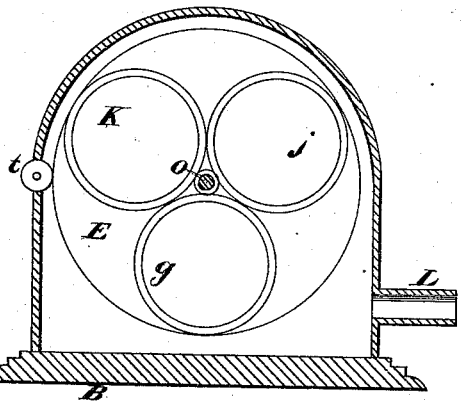


Fig. 3.

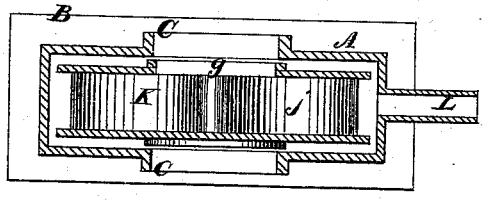


Fig. 4.

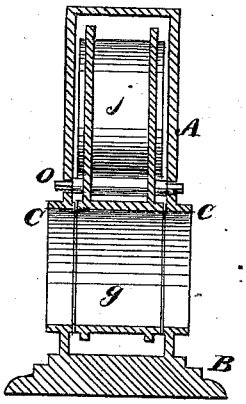
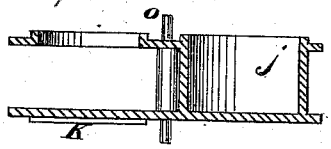


Fig. 5.



Witnesses

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JOHN M. CRAWFORD, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN DISTRIBUTERS FOR HYDRAULIC PIPES.

Specification forming part of Letters Patent No. **163,363**, dated May 18, 1875; application filed March 10, 1875.

To all whom it may concern:

Be it known that I, JOHN M. CRAWFORD, of Philadelphia, State of Pennsylvania, have invented an Improved Distributer for Hydraulic Pipes; and do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention without further invention or experiment.

In hydraulic mining, and under other circumstances where a stream of water is conducted under pressure through a pipe or pipes for the purpose of utilizing the force or impact of the water as it issues from a nozzle, it is usual to employ a strong iron box, called a distributer or separator, at some point in the length of the pipe near the nozzle. This box or distributer is provided with a valve or cut-off inside of it, by means of which the stream of water can be shut off without going to the head-source. My invention relates to an improved distributer or separator for this purpose; and it consists of an arrangement by which I can either shut off the water entirely from the nozzle, and confine it in the main pipe, or direct it, or a portion of it, to a waste-pipe when it is cut off from the nozzle, in order to relieve the pressure on the main pipe, which would result in case the entire stream was cut off.

In order to more fully illustrate and describe my invention, reference is had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of my machine. Fig. 2 is a longitudinal vertical section in elevation. Fig. 3 is a horizontal section. Fig. 4 is a transverse vertical section. Fig. 5 is a section of the gate removed from the case.

Let A represent the box or distributer, which is made of such material as will withstand the strain to which it is to be subjected. My distributer need not be as strong as the box-distributer heretofore used, as it is not intended to withstand much inside pressure, as will be hereafter shown. The shape of the box is immaterial, with the exception that it shall have two opposite parallel faces, and the width of the box or distance which these two faces are separated from each other is also immaterial. I prefer to connect two semicircular sides or plates by a semicircular connecting-rim, in the manner shown, and then secure the straight side of the box thus formed upon a base, B. In each side of this box I make a flanged opening, C, opposite to each other, so that the main pipe, which conveys the water from the reservoir or head, can be attached to the flange of one opening, while the pipe that leads to the hydraulic nozzle is attached to the flange of the opposite opening. To connect the two openings C, and make the pipe continuous, I secure inside of the box or distributer A a movable diaphragm, E, which carries a section of pipe, *g*, which is just long enough to connect the two openings C, when it is properly adjusted between them, thus carrying the stream directly through the distributer in a pipe without admitting it into the main portion of the box. By this arrangement the force or current of the stream is not impaired by striking into one part of the box, and being taken out at a different part, as in the ordinary distributer. The diaphragm F has another section of a pipe, *j*, which is similar to the section *g*, with the exception that its end which is farthest from the ingress-opening C is closed. When the diaphragm is moved so as to place this pipe-section between the openings, the water will be cut off by the closed end from the nozzle, and confined to the main pipe and pipe-section *j*. The diaphragm E has a packed face, K, which moves close against the outlet side of the box, and by moving the diaphragm still farther this packed face is moved across the egress-opening, while the opposite opening communicates with the interior of the box, so that the water from the main pipe will enter the box and pass out through the waste-pipe or outlet-opening L.

The diaphragm E can be moved directly across the opening in the manner of a slide, in which case the pipe-sections *g j* and packed face K will be made in the same line; or it can be made in the form of a quadrant or segment of a circle, in which case the acute angle of the segment will be pivoted to the lower corner of the box, and the pipe-sections *g j* and packed face K will be arranged in the proper circle to be brought in line with the openings C C, by raising and lowering its free or opposite end;

but I prefer to construct the diaphragm in a circular or disk form, and mount it upon a shaft or journal, O, so that it will rotate inside of the box. In this case the sectional pipes and packed face will be arranged in a circle at the proper distance from the center of the disk, so that the rotation of the disk will bring them successively opposite the openings C C.

To rotate the diaphragm or disk, I employ a shaft, *s*, and crank *u*, which passes through the box or case near the rim of the disk, and on this shaft, inside the box, I secure either a toothed or friction wheel, *t*, so that it will engage with or bear against the rim of the disk. By turning the crank the disk can be rotated as desired.

Two or more pipes can be connected through one distributer, if desired.

An index-finger, *w*, is secured to the journal of the disk outside of the box, so as to indicate the position of the disk.

I thus provide a distributer or separator for hydraulic pipes, by which the stream of water can be cut entirely off and retained in the main pipe, or directed to the wasteway, as desired. It also provides for carrying the stream of water in a direct line without deflection or breaking of the current, thereby rendering the stream more effective.

Various modifications of this device could be devised, such as making the pipe-section stationary, and moving the disk or disks between its end and the end of the hydraulic pipe; but these alterations are obvious substitutes.

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

1. A distributer or separator for hydraulic pipes, having the ingress and egress openings C C directly opposite each other, in combination with the diaphragm F, with its pipe-section *g*, for the purpose of conveying the stream directly through the distributer, without admitting it to the body of the distributer, substantially as above described.

2. The distributer A, with its openings C C and wasteway L, in combination with the diaphragm F, with its connecting pipe-section *g*, closed pipe-section *j*, and packed face K, arranged and operated substantially as and for the purpose described.

3. The distributer A, with its openings C C and rotating circular diaphragm E, in combination with the shaft *s*, crank *u*, and wheel *t*, substantially as and for the purpose above described.

4. In combination with a distributer, A, having a rotating diaphragm, E, the index-finger W, substantially as and for the purpose described.

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Witnesses:
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