A. G. J. RAPP.

HUTCH VALVE.

APPLICATION FILED JAN. 27, 1919.

1,391,403. **Patented Sept. 20, 1921.**

Fig. 2.

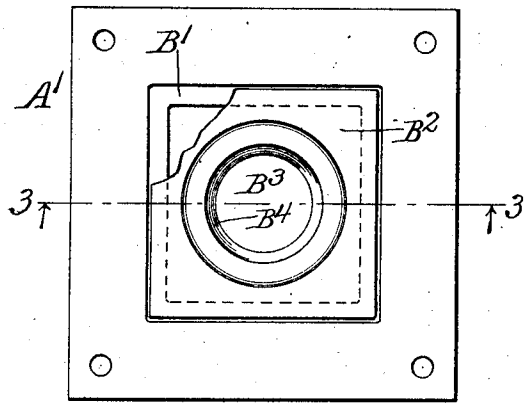


Fig. 3.

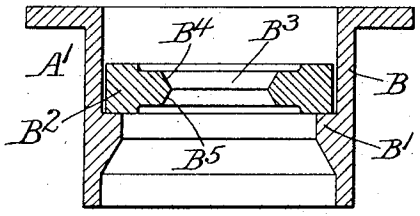


Fig. 1.

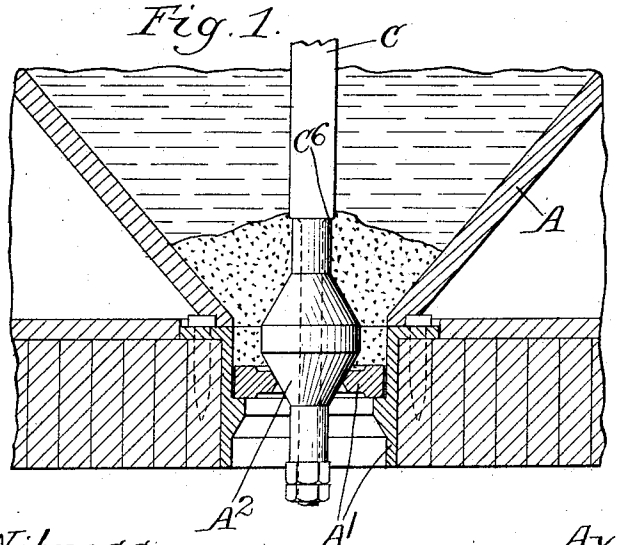
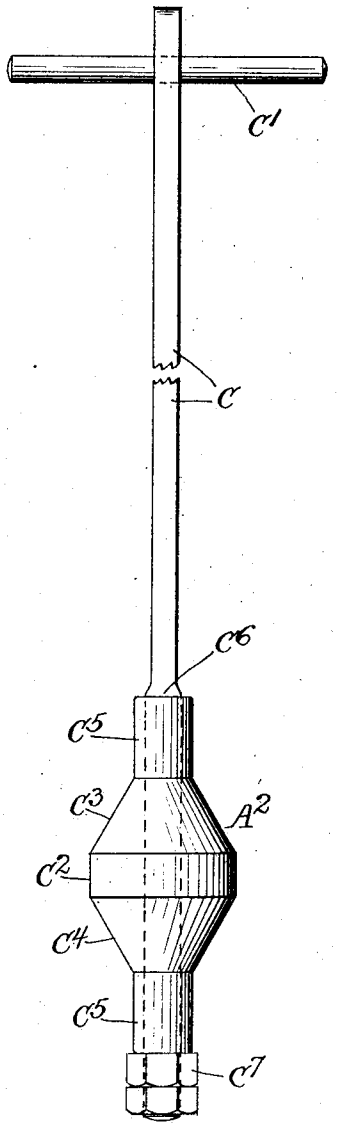


Fig. 4.



Witness.
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UNITED STATES PATENT OFFICE.

AXEL G. J. RAPP, OF CHICAGO, ILLINOIS, ASSIGNOR TO LINK-BELT COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

HUTCH-VALVE.

1,391,403. Specification of Letters Patent. Patented Sept. 20, 1921.

Application filed January 27, 1919. Serial No. 273,278.

To all whom it may concern:

Be it known that I, AXEL G. J. RAPP, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Hutch-Valves, of which the following is a specification.

My invention relates to improvements in hutch valves such as are used in connection with the well-known type of Foust jig for coal washing. It has for one object to provide a new and improved form of valve which can be easily operated, positive in closing, subject to a minimum of wear and will be easily and cheaply renewable when finally worn out.

My invention is illustrated more or less diagrammatically in the accompanying drawings wherein

Figure 1 is a sectional view of a part of a jig showing my device in place.

Fig. 2 is a plan view of the valve seat and holding socket.

Fig. 3 is a section along the line 3—3 of Fig. 2.

Fig. 4 is a side elevation of the valve and valve stem.

Like parts are indicated by like characters in all the figures.

A is the hopper of a Foust jig adapted to contain water as indicated, and have at the bottom an accumulation of the heavy fines from the coal or other material being washed. A^1 is a valve seat assembly, A^2 a valve carried by a valve stem C, whereby the fines may be permitted to run off.

There is nothing novel about the idea of treating the fines in this manner. My invention lies in the valve itself and the valve seat.

B is the supporting cup or socket or valve base rigidly mounted at the bottom of the hopper; it may be cylindrical or preferably, as here shown, square. B^1 is a ledge extending inwardly about the entire inner periphery of the socket. B^2 is a valve plate inclosed within and fitting the socket and resting upon the ledge. The weight of the seat itself and of the contents of the hopper keeps the seat in position on the ledge in the socket. The valve seat has a circular aperture B^3 therethrough bounded by two frusto conical surfaces B^4 B^5 as indicated, the surfaces being chilled or otherwise hardened and being adapted to act interchangeably as valve seating surfaces, so that when one is worn out the valve seat may be turned over and the other surface may then be used.

C is a valve stem and has, at the upper end, a suitable manipulating handle C^1 and at its lower end it carries the valve. This valve is made up of a cylindrical portion C^2, on either side of it a frusto conical portion C^3 C^4, and on both sides of the frusto conical portions smaller cylindrical portions C^5. All these parts may be made separate and strung upon the rod or may be one integral casting placed upon the rod, in either event, drawn up rigidly against the shoulder C^6 by a nut C^7 so that when one of the conical members wears down the valve assembly may be taken off and the other substituted for it.

It will be evident that while I have shown in my drawings an operative device, still many changes might be made in size, shape and arrangement of parts without departing materially from the spirit of my invention. I wish therefore that my drawings be regarded as in a sense diagrammatic.

The use and operation if my invention are as follows:—

The valve is operated in the usual manner by being opened at certain predetermined times to permit the fines and a minimum of water to run out. It is then seated. The constant movement of the valve and the abrasion by the fines both when the valve is open and when it is seated, gradually wears away the valve and valve seat, and, of course, this wear will be more or less irregular. The valve will soon commence to leak. When the leaking becomes too great to be permissible, it is necessary only to stop operations, lift up the valve, lift out the valve seat, turn it over and turn the valve over when you have a new valve and valve seat, thus doubling the life of the apparatus.

The simplicity of the whole device makes it possible for this to be done in the field without difficulty, the mechanics using only the tools available.

I claim:

1. A hutch valve assembly, comprising a tubular socket, a shoulder therein, a flat apertured valve plate resting loosely upon the shoulder, a valve member adapted to reciprocate toward and from the plate to

open and close the aperture, and a part associated with said member and adapted at all times to project beyond the plate.

2. A hutch valve assembly, comprising a tubular socket, a shoulder therein, a flat apertured valve plate resting loosely upon the shoulder, a valve member adapted to reciprocate toward and from the plate to open and close the aperture, and a part associated with said member and adapted at all times to project beyond the plate, the valve and valve seat being so positioned that the liquid pressure tends to hold the valve seat on the shoulder and the valve on the valve seat.

3. A hutch valve assembly, comprising a tubular socket, a shoulder therein, a flat apertured valve plate resting loosely upon the shoulder, a valve member adapted to reciprocate toward and from the plate to open and close the aperture, and a part associated with said member and adapted at all times to project beyond the plate, said valve member comprising a reciprocable stem, a cylindrical portion of greater diameter than the aperture, two conical portions whose bases are of the same diameter as the larger cylindrical portion, and two cylindrical portions smaller in diameter than the aperture, and binding the smaller truncated ends of the conical portions.

4. A hutch valve assembly, comprising a tubular socket, a shoulder therein, a flat apertured valve plate resting loosely upon the shoulder, a valve member adapted to reciprocate toward and from the plate to open and close the aperture, and a part associated with said member and adapted at all times to project beyond the plate, the valve and valve seat being so positioned that the liquid pressure tends to hold the valve seat on the shoulder, and the valve on the valve seat, said valve member comprising a reciprocable stem, a cylindrical portion of greater diameter than the aperture, two conical portions whose bases are of the same diameter as the larger cylindrical portion, and two cylindrical portions smaller in diameter than the aperture, and binding the smaller truncated ends of the conical portions.

5. In a hutch valve assembly a relatively large discharge passage, a relatively thin flat apertured plate held therein, the aperture being much smaller in cross section than the passage, a valve mounted for reciprocation toward and from the plate to open and close the aperture from the direction of flow of liquid, a member projecting from the valve and extending through the plate, the plate engaging portion of the valve being conical, and means mounted on the back of the valve for guiding and directing material which tends to seat itself about the valve, and for forcing such material away to prevent withdrawal of the valve.

In testimony whereof, I affix my signature in the presence of two witnesses this 18th day of January 1919.

AXEL G. J. RAPP.

Witnesses:
EDNA B. PETERSON,
MARION INGRAHAM.