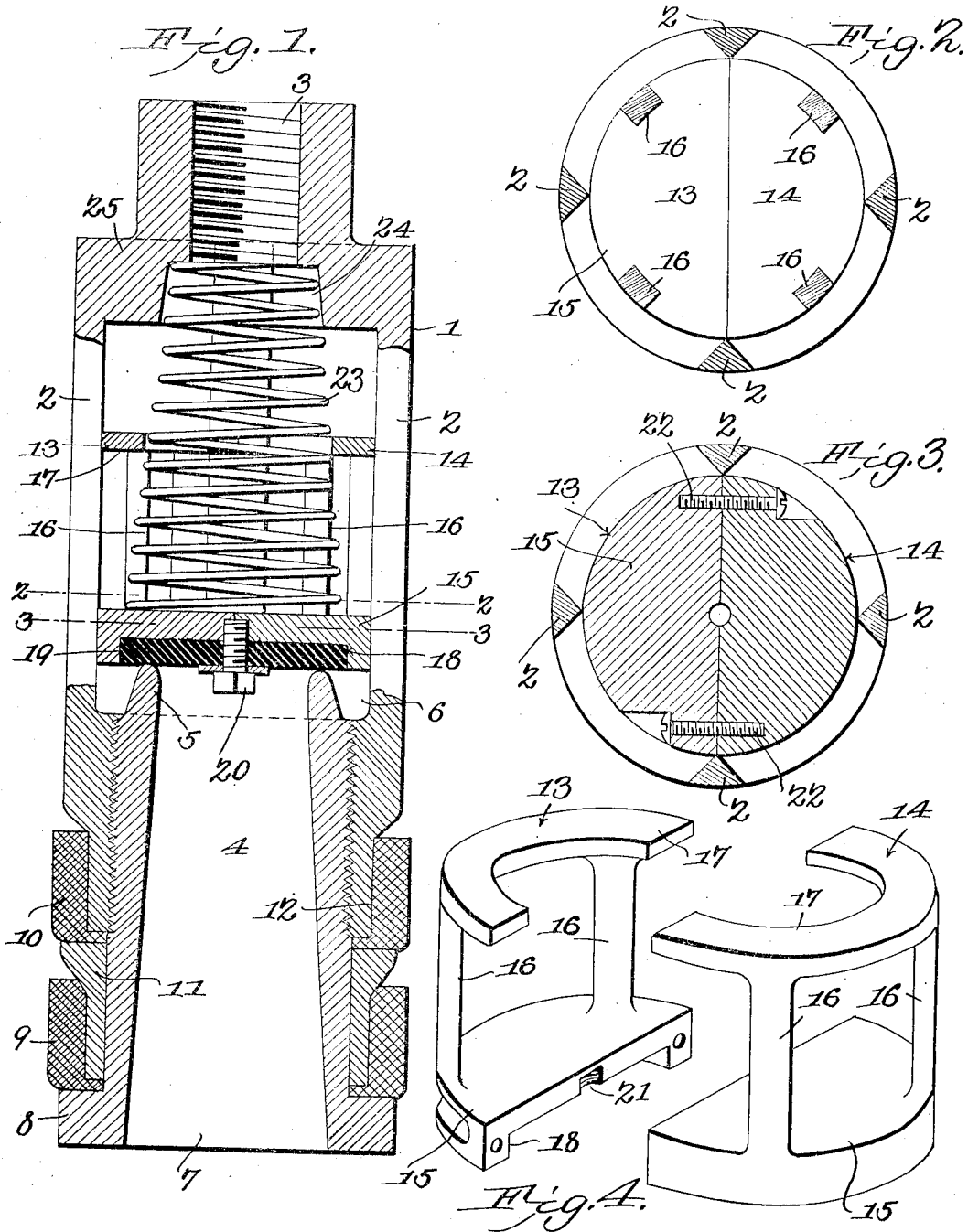


No. 892,594.

PATENTED JULY 7, 1908.

C. A. KILLIAN.  
PUMP PISTON.

APPLICATION FILED FEB. 17, 1906.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## PUMP-PISTON.

No. 892,594.

Specification of Letters Patent.

Patented July 7, 1908.

Application filed February 17, 1906. Serial No. 301,701.

*To all whom it may concern:*

Be it known that I, CHARLES A. KILLIAN, a citizen of the United States, residing at Morse Bluff, in the county of Saunders and State of Nebraska, have invented a new and useful Pump-Piston, of which the following is a specification.

This invention relates to pump pistons.

The object of the invention is to provide a pump piston having a novel form of lift valve and seat therefor, the parts being so constructed and arranged as to insure accurate fitting of the valve upon its seat, to prevent any rocking movement of the valve relatively to the seat, to insure perfect contact between the valve and the seat, to preclude retention of grit or sand between the valve and the seat, and to insure the clearing of the valve seat of any foreign matter that might enter it.

With the above and other objects in view, as will appear as the nature of the invention is better understood, the same consists in the novel construction and combination of parts of a pump piston, as will be hereinafter fully described and claimed.

In the accompanying drawings forming a part of this specification, and in which like characters of reference indicate corresponding parts:—Figure 1 is a view in vertical transverse section through a pump piston constructed in accordance with the present invention. Fig. 2 is a view in horizontal section taken on the line 2—2, Fig. 1. Fig. 3 is a similar view taken on the line 3—3, Fig. 1. Fig. 4 is a perspective detail view of the valve.

Referring to the drawings, 1 designates the cage of the valve which may be provided with any number of valve guiding bars 2, four in this instance being shown, and as triangular in cross section. The cage, is provided as usual with an interiorly threaded boss 3 to which the pump rod is connected. The lower end of the cage is provided with interior threads to be engaged by exterior threads of a cup-carrier 4, the upper end of which is formed into a valve seat 5, the valve engaging face of which is curved or rounded, thus to insure proper co-action therewith of the valve. As shown, the outer face of the valve seat is tapered, and is somewhat inset from the periphery of the cup-carrier and forms in conjunction with the base of the bars 2 an annular sand or grit pocket 6 into which such substances will fall and be re-

tained, thereby to prevent undue wear of the valve and the valve seat. As clearly shown in Fig. 1, the bore 7 of the cup carrier is tapered, or flared outward towards the bottom of the piston and this will insure escape back into the well or pump stock of any grit or sand that may be raised, and that does not enter the sand pocket 6.

The lower end of the cup carrier is provided with a circumferential flange 8 upon which rests the lower leather cup 9 which is held spaced from the adjacent cup 10 by a sleeve 11 of the usual construction. As clearly shown in Fig. 1, the lower portion of the cage is circumferentially reduced at 12, in order that the cup 10 may occupy a proper position relatively to the exterior of the cage.

The lift valve which constitutes one of the essential features of the present invention, is constructed of two like sections designated generally 13 and 14, and as each section is a counterpart of the other, a description of one will serve for both. Each section comprises a semi-circular head 15, a plurality of bars 16 integral therewith, and a semi-annulus 17 integral with the bars. The underside of the head is provided with a chamber 18 in which is fitted a valve face 19, preferably of rubber or leather, and which is held in position relatively to the two heads by a bolt 20 that engages half threaded openings 21 at the center of the two head sections, as clearly shown in Fig. 3. In order to hold the head sections assembled, screws or bolts 22 are employed that engage threaded openings disposed at right angles to the meeting edges of the head sections as shown in Fig. 3.

When the sections of the lift valve are assembled, the head, arms and semi-annuli form a true cylinder, which will work within the cage 1, and bear against the inner edges of the bars thereof, and so will be guided, and possibly held against any tilting movement which would result in the uneven wear of the valve seat. In order to cause the valve face to contact with the valve seat with sufficient force to effect a seal between the parts, there is a conical coiled spring 23 employed, the lower turn of which bears upon the upper faces of the head sections 15 and the upper reduced whirls of which fit in a seat or socket 24 formed in the underface of the head 25 of the cage, and is thereby always held centered relatively to the center of the lift valve, whereby the latter is caused properly to seat itself.

From the foregoing description, it will be seen that while the improvements herein defined are simple in character, that they will be thoroughly efficient for the purposes designed, and will in a novel and practical manner obviate certain defects heretofore present in pistons of the character described.

I claim:—

1. In a pump piston, a valve therefor of cage-like form divided vertically into two like sections, each section comprising a semi-circular head, a semi-circular ring above the head of equal radius and connecting bars between the semi-circular head and ring portions, and screws joining the two parts extending in a horizontal direction from one head section into the other.

2. In a pump piston, a valve therefor of cage-like form divided diametrically into two equal sections, each section having a semi-circular head with a semi-circular recess in its under side and horizontal screw holes perpendicular to its flat meeting face, one of said screw holes extending through to the semi-circular edge of the head and countersunk, and screws fitted to said screw holes for fastening the valve sections together.

3. As an article of manufacture, a section of a cage-valve made of two like parts divided diametrically, said section comprising a semi-circular head, a semi-circular ring above said head of equal radius externally, and vertical connecting bars between the two parts, said semi-circular head having a simi-

larly shaped recess in its under side, a semi-circular threaded opening in the axis of the head extending upwardly from the bottom of said recess, and a screw hole at each end of and perpendicular to the flat diametrical surface of said head, one of said screw holes passing through the head to its peripheral surface and there counter-sunk.

4. A hollow pump piston having its upper end in the form of a cage and a valve seat projecting into said cage above the lower ends of the cage bars, a two part cage valve within the cage divided diametrically and connected by horizontally disposed screws in the head of said valve, and a valve packing fitted into a socket on the underside of the head of the cage valve and adapted to rest on said seat.

5. A hollow pump piston, the upper end of which is in the form of a cage having vertical side bars and a valve seat, a cage valve diametrically divided to enable the sections of said valve being inserted into the cage and there assembled, a packing disk fitted into a depression formed in the head of each valve section, and screws passing through said heads for uniting them.

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

CHARLES A. KILLIAN.

Witnesses:

FRANK A. HINES,  
JOSEPH F. REZNICEK.