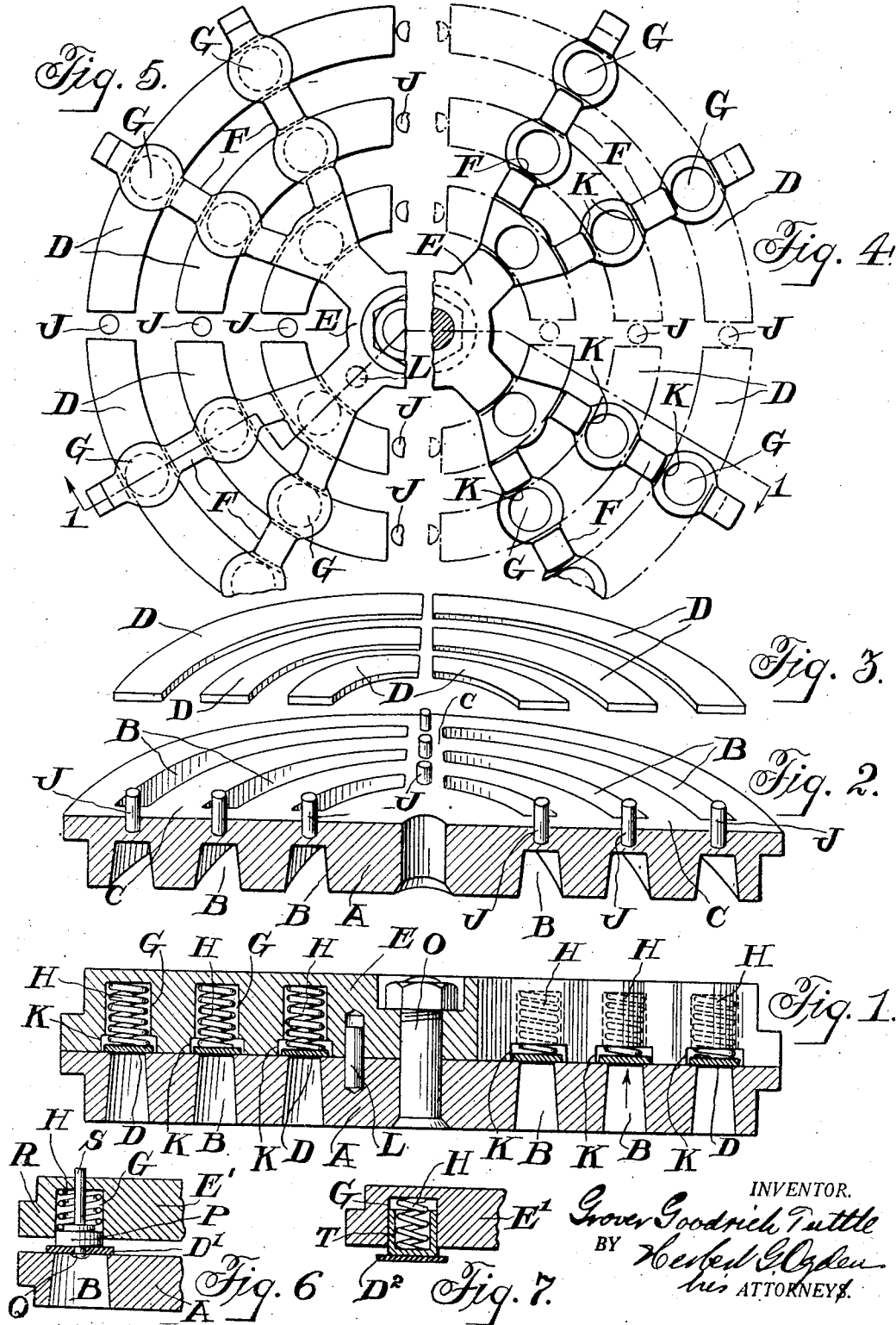


G. G. TUTTLE.
PLATE VALVE.

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1,376,484.

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PLATE-VALVE.

1,376,484.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GROVER GOODRICH TUTTLE, a citizen of the United States, residing at Phillipsburg, in the county of Warren and State of New Jersey, have invented a certain new and useful Improvement in Plate-Valves, of which the following is a specification.

This invention relates to plate valves for pumps, blowing engines, compressors and the like, and the objects of the invention are primarily to utilize the maximum available area of a valve seat for the passage of fluid and produce a plate valve which is simple in construction, and not liable to break.

Other objects of the invention are to enable plate valves in the form of curved or segmental strips of sheet metal to be properly guided as the plates move to and from their seats without excessive wear and rubbing, and insure the seating of the plates in substantially the same places each time they return to their seats.

Further objects will hereinafter appear and to all of these ends the invention consists in the features of construction and combinations of elements herein described and claimed and shown in its preferred forms in the accompanying drawings, in which—

Figure 1 is a transverse sectional view of a valve on the line 1—1 of Fig. 4;

Fig. 2 is a perspective view in transverse section of the valve seat;

Fig. 3 is a perspective view of a series of valve plates adapted to be seated on the valve seat;

Figs. 4 and 5 together show a plan view of the stop plate and valve plate broken away through the center, the left hand half (Fig. 5) being a top plan and the right hand half (Fig. 4) being a bottom plan, with the valve plates in dot and dash lines to indicate their positions in the guiding recesses of the stop plate;

Figs. 6 and 7 are detail sectional views of modifications.

Referring to the drawings, A represents a valve seat of usual form having concentrically arranged passageways B which may be separated by the radial webs or ridges C. In accordance with this invention, the valve plates D adapted to be seated over the passageways B are in the form

of separate and disconnected flat, curved or segmental strips of sheet metal, conforming to the curvature of the passageways B on the face of the valve seat A.

A stop plate or guard E is adapted to be mounted on the valve seat A over the valve plates as indicated in Fig. 1, and the stop plate E is preferably formed with the arms F having recesses or sockets G for the reception of valve springs H which are preferably in the form of coiled springs. These valve springs H may, if desired, bear directly on the valve plates D as shown in Fig. 1, and in this form of the invention means are provided for guiding the valve plates and for limiting both transverse and endwise movement of the valve plates as they move to and from their seats. One suitable means for guiding the ends of the valve plates is shown in Figs. 2, 4 and 5 inclusive, and consists of guide pins J inserted in the upper face of the valve seat A and located between the arms F of the stop plate E at the ends of the passageways B, but I do not limit myself to guide pins as other forms of guiding means may be devised, in fact, I have shown other forms in the modifications indicated in Figs. 6 and 7 to be described.

In order to provide guiding means for the valve plates in transverse or radial directions relatively to the valve seat A, the stop plate arms F are provided with guide recesses K, underneath the spring receiving apertures G. Within the guide recesses, the valve plates D are adapted to lift, and the guide pins J and the sides of the guide recesses K effectually serve to guide the valve plates.

In assembling the parts a dowel pin L is preferably provided between the valve seat A and the stop plate E to position the parts, and the usual bolt O is provided for securing the parts together.

In the modifications of the invention shown in Fig. 6, the guide recesses K are omitted from the stop plate E' and the valve plates D' are suitably secured to guide shoes P as by means of the rivets Q. These guide shoes P are provided with reduced portions or centering lugs R over which the springs H are adapted to lie, and if desired, the springs may be suitably connected to the shoes P or to the lugs R in any suitable man-

ner. The shoes P are further provided with the guiding and centering pins S extending through the springs and through apertures in the stop plate E'. The shoes P are
 5 guided in the spring apertures or sockets G and serve to guide the movement of the valve plates D'. In this form of the invention any wear comes between the guide shoes and the stop plate.

10 In the modification shown in Fig. 7, the valve plates D² are suitably welded or otherwise secured to the guide shoes T in the form of thimbles extending over the springs H in the spring receiving recesses or sockets G. Any wear during the lift of the
 15 valve comes between the thimbles and the stop plate E'.

I claim:

1. A plate valve comprising a valve seat
 20 having concentrically arranged passageways in the same plane, valve plates in the form of separate segmental strips adapted to be seated over said passageways, a stop plate mounted on the valve seat over the
 25 valve plates, springs for seating said valve plates, and means for guiding said valve plates.

2. A plate valve comprising a valve seat
 30 having concentrically arranged passageways in the same plane, valve plates in the form of separate disconnected segmental strips adapted to be seated over said passage-

ways, a stop plate mounted on the valve seat over the valve plates, springs for seating said valve plates, and means for limiting
 35 both transverse and endwise movement of the valve plates as they move to and from their seats.

3. A plate valve comprising a valve seat having concentrically arranged passage-
 40 ways in the same plane, valve plates in the form of separate segmental strips adapted to be seated over said passageways, a stop plate mounted on the valve seat over the valve plates, said stop plate being provided with
 45 recesses, springs in said recesses over the valve plates, and means cooperating with the springs for guiding the valve plates as they move to and from their seats.

4. A plate valve comprising a valve seat
 50 having concentrically arranged passageways in the same plane, valve plates in the form of separate segmental strips adapted to be seated over said passageways, a stop plate mounted on the valve seat over the
 55 valve plates, springs for seating said valve plates, shoes connected to the valve plates beneath the springs, and means for guiding the shoes as the valve plates move to and from their seats.
 60

In testimony whereof I have hereunto set my hand.

GROVER GOODRICH TUTTLE.