

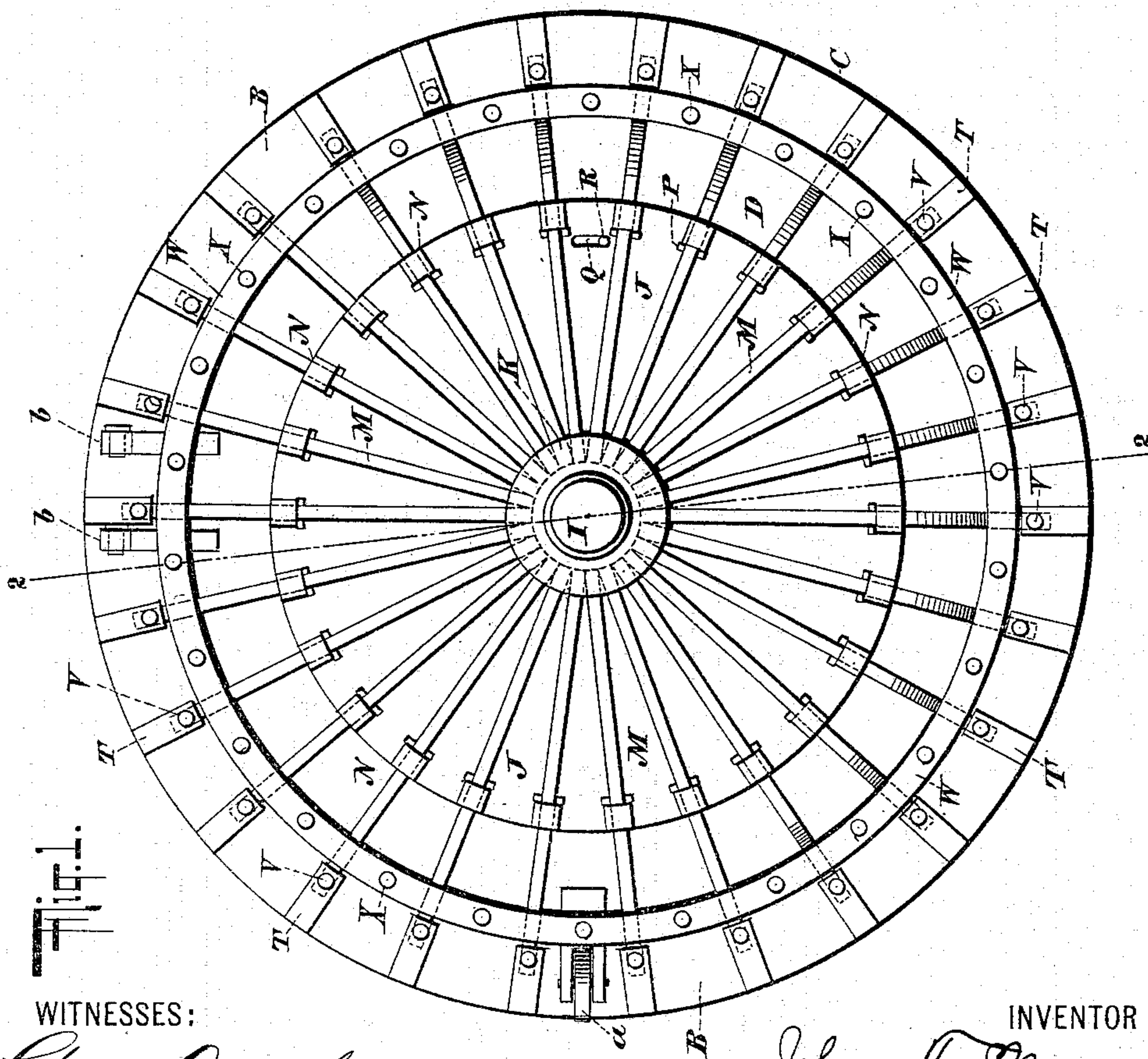
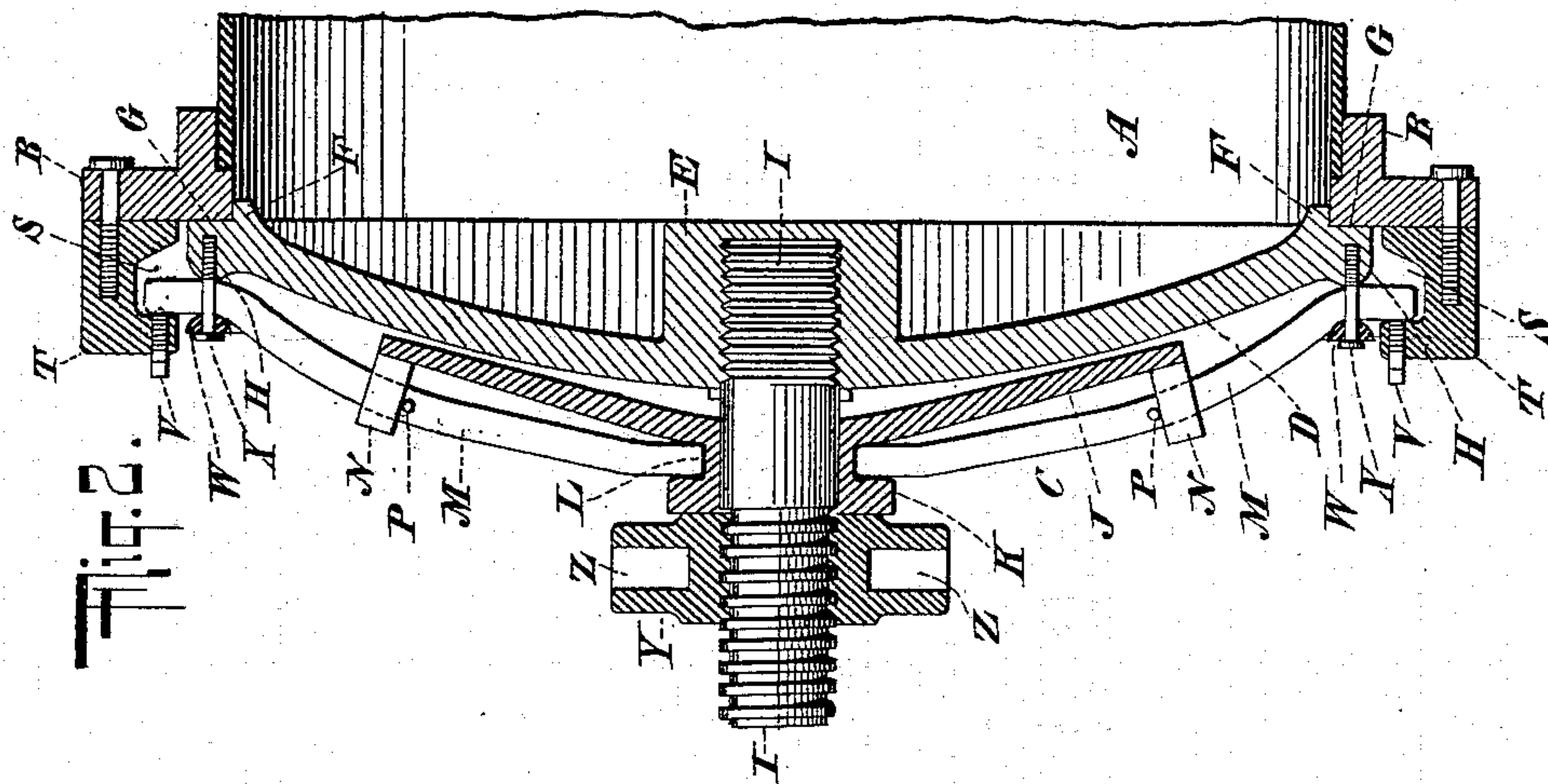
No. 612,050.

Patented Oct. 11, 1898.

J. T. MORSE.  
CYLINDER OR TANK HEAD.

(Application filed Sept. 23, 1897.)

(No Model.)



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JOHN T. MORSE, OF NEW YORK, N. Y.

## CYLINDER OR TANK HEAD.

SPECIFICATION forming part of Letters Patent No. 612,050, dated October 11, 1898.

Application filed September 23, 1897. Serial No. 652,697. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN T. MORSE, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Cylinder or Tank Heads, of which the following is a specification.

The invention relates to improvements in cylinder or tank heads, and pertains particularly to the class of heads intended for cylinders or tanks sustaining high pressures and which heads are required from time to time to be removed in order to open the cylinders or tanks.

In the class of apparatus to which the present invention pertains very great difficulty has been experienced in providing heads which will with certainty securely close the end of the cylinder or tank and be capable of being opened within a reasonable time and with a reasonable amount of labor; and the purpose of the present invention is to provide a cylinder-head which may with absolute certainty be relied upon to securely close the cylinder or tank and which may be readily and without loss of time quickly opened from the cylinder or tank.

The invention comprises the novel features of construction and combinations of parts hereinafter described and claimed and which are illustrated in the accompanying drawings, in which—

Figure 1 is a face view of a cylinder-head embodying the present invention; and Fig. 2 is a vertical section of same and a portion of the cylinder, the section being on the dotted line 2 2 of Fig. 1.

In the drawings, A designates a portion of the cylinder, which will be of steel and of suitable construction; B, a rim secured around the end of said cylinder A, and C the head as a whole applied to said rim B.

The cylinder-head C comprises the concavo-convex plate or head proper, D, which is in the form of a disk, having a central hub E, a flange F entering the outer edges of the cylinder A or the rim B thereon, and the shoulder G, which is directly adapted for contact with the outer face of said rim B. The plate or head D has along its extreme outer edges the annular shoulder H, and within its hub E is

formed a threaded socket to receive the bolt I, by which the several parts of the cylinder-head are preserved in their due relation to one another. Upon the bolt I and in near relation to the disk or head D is arranged the disk J, having a hub K, which rests upon a smooth portion of the bolt I and contains the annular groove L to receive the inner ends of the series of radiating levers M. The disk J at equidistant points along its periphery is provided with the series of lugs N, which extend outward at substantially right angles to the face of said disk and are provided with through-slots through which the ends of the levers M may freely pass for a definite distance, the movement of the levers M through said lugs N being checked at the proper time by means of the transverse pins P, connected with said levers, said pins being merely in the nature of stops. It is intended that the disk J shall have a limited axial motion at the proper time upon the bolt I, and hence said disk is provided with a slot Q, receiving a pin R, connected with the disk or head D, the purpose of the slot Q and pin R being to permit the disk J to have a limited axial motion and to check said disk at the ends of its proper movement.

The levers M, above referred to, have substantially the curvature of the face of the disk or head D, except at their outer portions, where they turn outward to contact with the shoulder H on said disk D and enter the recesses S in the lugs T, which are bolted or otherwise secured to the outer edges of the rim B, above described. The levers M all radiate from the annular groove L in the hub K and extend from within said groove L to within the recesses S, formed in the said lugs T.

The lugs T are provided with the adjusting-screws V, which are directly over the outer ends of the levers M and regulate the position of the outer end of said levers with respect to the lugs T, and consequently affect the relation of the said levers in their pressure against the annular shoulder H on the disk or head D. Substantially in line with the annular shoulder H of the disk or head D, but suitably removed from said shoulder, is arranged the ring W, which is directly over the outer portions of the levers M and is secured in posi-



tion by the bolts or screws X, which intermediate the levers M pass into the said shoulder H.

Upon the bolt I, exterior to the hub K of the disk J, is provided the nut Y, which has an interior thread to engage the thread at the outer portion of said bolt I and is furnished with radial sockets Z to receive the end of any suitable instrument by which the said nut may be turned both when sealing the head against the end of the cylinder and releasing said head from said cylinder.

The head C will preferably be hinged at one edge and at its lower edge will be provided with a roller *a* to run upon any suitable tramway during the opening and closing of said head. The invention is not limited to any special roller *a* nor to any special hinge for connecting the head at one edge with the cylinder. It is, however, recommended that the hinged sections to be secured to the head C may, as indicated in Fig. 1, be given the relation therein denoted at the letters *b b* in order that said hinge-sections may not interfere with the movement of the levers M in the opening of the head from the cylinder.

The drawings illustrate the levers M in the position they have imparted to them when they are engaged in locking the head C upon the cylinder A, and when in this position their outer ends are within the recesses S, they are firmly bearing against the annular shoulder H on the disk or head D, and their upper ends are being held at their inward position toward the cylinder by the pressure exerted by the nut Y on the hub K, within whose groove L the inner ends of said levers are retained. It will be apparent from an inspection of Fig. 2 that the inward turning of the nut Y has the effect of moving the disk J toward the disk or head D and that the inward movement of said disk J effects the simultaneous movement inward of the inner ends of all of the levers M, the result being that the outer extremities of said levers M press outward against the lugs T and the inner sides of the outer portions of said levers press firmly against the annular shoulder H on the said disk D. All of the levers M have a simultaneous action and with all of the force that may be created by the turning of the nut Y simultaneously bear against the annular shoulder H of the disk D, and thus the disk D is securely held against the end of the cylinder A. Any irregularity along any portion of the periphery of the rim B or any irregularity in the form of the lugs T or other parts of the structure which might otherwise result in some irregularity of pressure in some of the levers M may be quickly and successfully compensated for and corrected by means of the screws V, which are independently adjustable.

The cylinder-head may be freely removed from the cylinder by first reversing the nut Y in order to relieve its pressure from the disk J and levers M, and thereupon by giv-

ing the disk J a slight axial motion all of the levers M may be swung free of the lugs T, thus entirely releasing the head from the cylinder and permitting the same to be swung open upon its hinges, the roller *a* serving to aid in sustaining the weight of the head while being opened. When it is desired to again close the cylinder or tank, the head C will be swung inward upon its hinges until the disk D is in contact with the rim B of the cylinder, and thereupon the disk J will have a reverse axial motion to restore the outer portions of the levers M to the recesses S, formed in the lugs T, and upon this being done the nut Y will be again tightened to effect the pressure of the levers M against the annular shoulder H of the disk D, thus again sealing the head C upon the end of the cylinder. The slot Q and pin R prevent the disk J and levers M from having any undue motion, and the lugs N, connected with said disk J, insure an even and simultaneous motion of all of the levers M with said disk J. The ring W aids in preserving the relation of the outer portions of the levers M with the annular shoulder H and lugs T. After the bolt I has been screwed into the hub E it will be keyed or otherwise secured therein so as not to turn with the nut Y.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In combination with the cylinder having the series of edge-bearing lugs T and the series of adjusting-screws V extending through the outer members of said lugs, the disk-head D adapted to the end of said cylinder, the bolt connected with said head, the revoluble disk J on said bolt and having at its center the hub K and at its outer edges the slotted lugs N, the series of independent radiating levers M carried by said disk J within said lugs N and having their inner ends confined at said hub and their outer portions in engagement with said lugs T and pressing against said head D, and the nut on said bolt and adapted to move said disk J and the inner ends of said levers toward said cylinder and thereby cause the outer portions of said levers to press against said lugs T and said head D; substantially as set forth.

2. In combination with the cylinder having the edge-bearing lugs T, the disk-head D adapted to the end of said cylinder, the bolt connected with said head, the revoluble disk J on said bolt and having the central hub K slotted lugs N and groove L, the series of independent radiating levers M having their inner ends freely confined within said groove L, their middle portions freely held in said lugs N and their outer portions in engagement with said lugs T and pressing against said head D, and the nut on said bolt and adapted to move said disk J and the inner ends of said levers toward said cylinder and thereby cause the outer portions of said levers to press against said lugs T and said head D; substantially as set forth.



3. In combination with the cylinder having the edge-bearing lugs, the disk-head D adapted to the end of said cylinder, the bolt connected with said head, the revoluble disk on  
5 said bolt, the series of radiating levers carried by said revoluble disk and having their outer ends contacting with said bearing-lugs and pressing against said head D, the ring W external to the outer portions of said levers,  
10 the screws or bolts securing said ring, and the nut on said bolt and adapted to move the

inner ends of said levers toward said cylinder and thereby cause the outer portions of said levers to press against said lugs and head D; substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 21st day of September, A. D. 1897.

JOHN T. MORSE.

Witnesses:

CHAS. C. GILL,  
E. JOS. BELKNAP.