

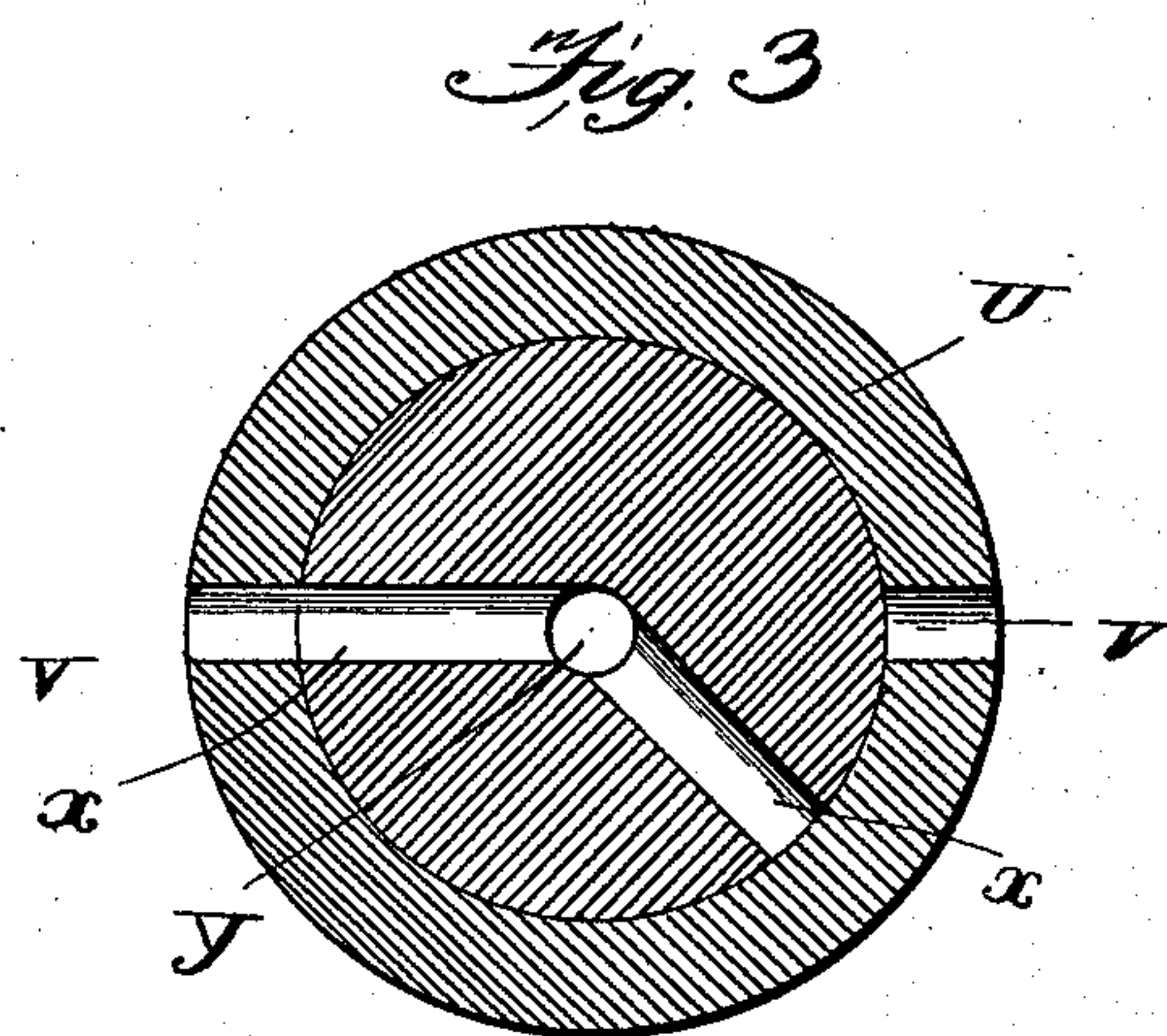
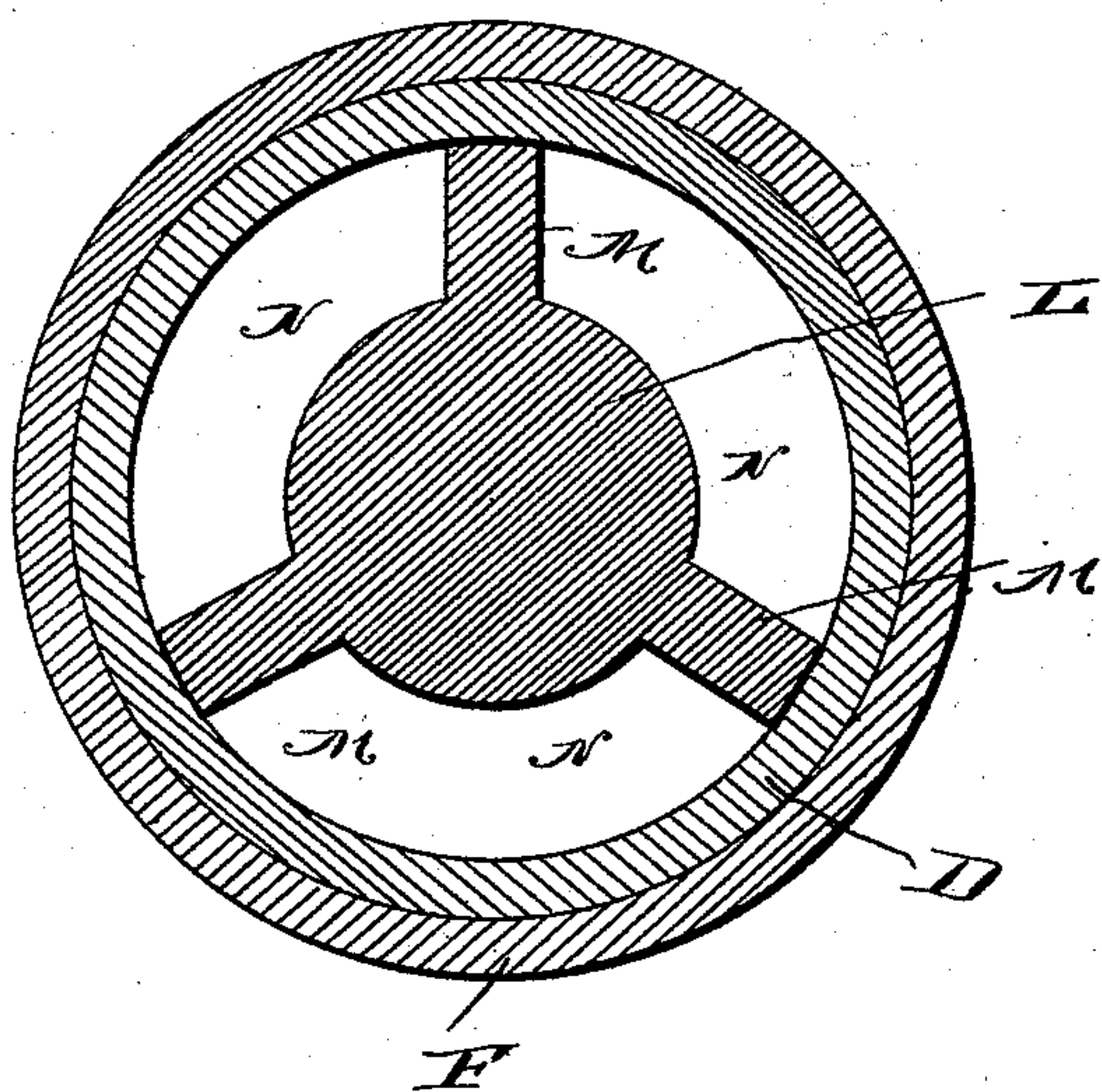
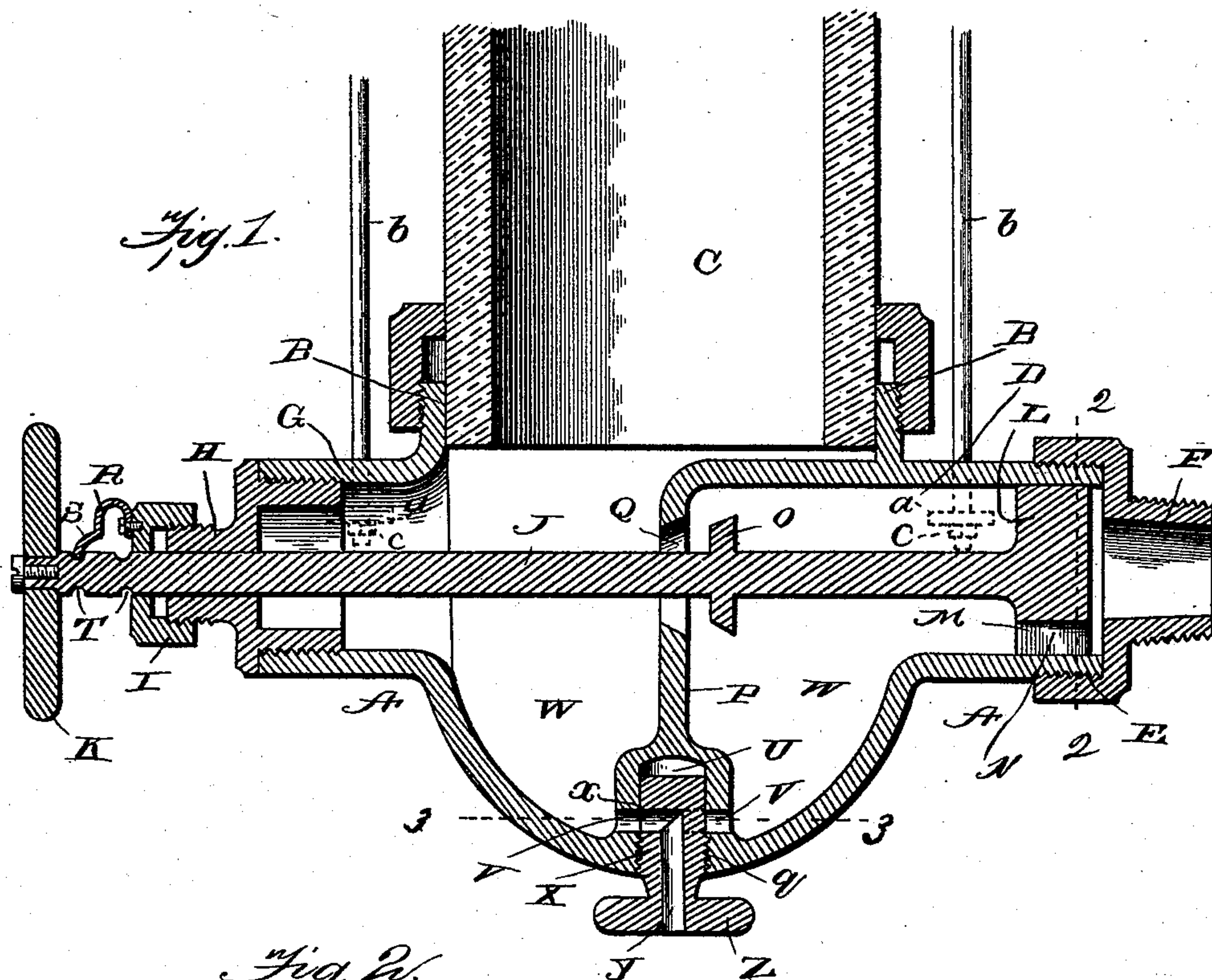
(No Model.)

G. S. NEELY.

AUTOMATIC SAFETY VALVE FOR WATER GAGES.

No. 524,393.

Patented Aug. 14, 1894.



Inventor

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Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE S. NEELY, OF PACIFIC, MISSOURI, ASSIGNOR OF ONE-HALF TO
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AUTOMATIC SAFETY-VALVE FOR WATER-GAGES.

SPECIFICATION forming part of Letters Patent No. 524,393, dated August 14, 1894.

Application filed July 29, 1893. Renewed July 17, 1894. Serial No. 517,831. (No model.)

To all whom it may concern:

Be it known that I, GEORGE S. NEELY, a citizen of the United States, residing at Pacific, in the county of Franklin and State of Missouri, have invented a new and useful Automatic Safety-Valve for Water-Gages, of which the following is a specification.

This invention relates to automatic safety valves for water gages; and it has for its objects to provide an improved valve of this character adapted to be used in connection with an ordinary gage glass, whereby efficient means shall be provided for automatically closing the steam or water ports and preventing the escape of steam and water, in case of the breakage of the glass, and at the same time to provide efficient means for keeping the inlet passage closed, irrespective of the pressure in the boiler, until a new glass could be inserted in position.

With these and other objects in view which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the accompanying drawings:—Figure 1 is an enlarged central sectional view of an automatic water gage valve arranged at the lower end of a water gage glass, a portion of which is shown. Fig. 2 is a detail sectional view on the line 2—2 of Fig. 1. Fig. 3 is a similar view on the line 3—3 of Fig. 1.

Referring to the accompanying drawings, A represents a water gage valve casing having an upwardly projecting neck B, communicating with the interior thereof and into which is fitted the lower end of an ordinary water gage glass C, which is employed in its ordinary use of indicating the height of the water in a steam boiler, with which the glass is connected. It is of course understood that the construction herein described is duplicated at both ends of the glass, but is not shown for the sake of a clearer illustration of the valve. The valve casing A, is further provided at one side thereof with the off-standing inlet chamber or neck D, having an outer exteriorly threaded end E, engaged by the inlet coupling or nipple F, which is threaded into one side of a steam boiler at a

proper point, in order to properly connect the gage to the boiler in the ordinary manner. The said casing is provided at a side directly opposite and in a line with the inlet chamber or neck D, with an interiorly threaded guide neck G, in which is removably fitted the centrally bored guide plug H, the outer end of which is engaged by the packing gland I, which not only serves as an auxiliary guide for the longitudinally moving valve stem J, but also serves to hold any suitable packing for such stem in a proper position.

The horizontally moving valve stem J, which is mounted to slide in the guide plug H, carries upon its outer end, outside of the gland or cap I, a hand wheel K, by means of which the stem may be readily manipulated, and the said stem carries at its extreme inner end inside of the inlet chamber or neck D, an integral pressure head L, provided with a radial series of wings M, forming water passages N, therebetween, and the circular body of said pressure head works directly in front of the opening in the inlet coupling F, and is of a diameter equaling the same. The said pressure head L, slides freely in the inlet chamber or neck D, of the valve casing, and at a point intermediate of the same and the outer end of the valve stem, the latter is further provided with an integral beveled valve disk O, working at one side of the vertical casing partition P.

The partition P, is formed integrally with the body of the casing and is arranged centrally and vertically therein, and such partition is provided at a point near its upper end with a beveled valve opening Q into which is adapted to fit the valve disk O, when the same is thrown therein under the pressure of the steam and water, in case the glass C should accidentally break. When the water gage glass C, is unimpaired and the boiler is in use, the valve disk O, is held away from the valve opening or valve seat Q, in the vertical partition P, so that there is a free passage for the water through the inlet coupling F, and the water passages N, of the pressure head L, into the glass C, so that the latter will properly indicate the water level in the boiler. The valve is normally held open and is prevented from becoming accidentally

closed by jarring or for other causes by reason of the check spring R. The check spring R, is removably secured at one end to the outer side of the gland or cap I, and is provided with a spring tongue S, which is adapted to engage either one of the locking grooves T, formed in the valve stem J, near the outer end thereof, and when the valve O, is open, the tongue S, engages the outer one of said grooves. Supposing the water glass C, to break, the entire pressure of the water and steam passing through the coupling nipple F, will be directed against the pressure head L, and thereby throw the valve O, onto its seat, so as to cut off the further outward flow of the water and steam. This movement causes the valve stem to move in a direction which brings the inner one of the grooves T, up to the spring R, and the valve stem is thereby locked to hold the valve closed until the necessary repairs are made, even though the pressure in the boiler has materially decreased.

The lower part of the casing A, at the lower end of the vertical partition P, is bored to form a cylindrical valve chamber U, having a threaded opening *q*, at the bottom of the casing, and also provided with the side ports V, which communicate with the sediment pockets W, formed in the bottom of the casing at both sides of the vertical partition P, therein, and said cylindrical valve chamber accommodates therein the two-way valve plug X. The valve plug X, is threaded into the lower opening *q*, so as to form a steam tight joint with the casing, and is provided with the separate drain passages *x*, which communicate with a common discharge or drain passage Y, formed vertically in the valve plug, and the same is further provided at its outer end with a hand wheel Z, by means of which it may be readily manipulated. Now it will be apparent that in order to remove sediment from the valve seat Q, and the valve disk O, it is simply necessary to turn the valve disk in the valve seat by manipulating the hand wheel K, and such sediment will drop into the sediment pockets W. By manipulating the valve plug X, so as to bring the passages *x*, in a line with either of the ports V, the casing can be properly drained of such sediment without disturbing any parts of the valve. This valve plug or drain cock, X, also provides for draining the water gage glass C, when the boiler is not in use.

Changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention, and at this point it may be well to note that the valve casing A, is provided on its opposite sides with the off-standing perforated lugs *a*, adapted to receive the threaded ends of the guard rods *b*, arranged at the sides of the gage glass C, and engaged at their extremities by the nuts *c*, which secure the same in position, and said guard rods act in the ca-

capacity of protectors for the gage glass by preventing the same from being accidentally broken by objects coming in contact therewith.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In an automatic water gage valve, the valve casing having a centrally arranged valve seat and an inlet chamber or neck at one side thereof, a horizontally moving valve stem mounted within the casing and having an intermediate valve disk working at one side of the valve seat, and a pressure head at its inner extremity within the inlet chamber or neck, said pressure head having water passages, substantially as set forth.

2. In an automatic water gage valve, the valve casing fitted onto the lower end of a water gage glass and provided with a central valve seat and an off-standing cylindrical inlet chamber or neck located at one side of the valve seat, the inlet coupling nipple fitted to the outer end of said chamber or neck, and the horizontally moving valve stem mounted within the casing and provided at an intermediate point with a valve disk working at one side of the valve seat, and at its inner end with a pressure head sliding within said inlet chamber or neck, said pressure head being of a solid diameter equaling that of the inlet coupling and provided with a radial series of wings forming water passages, substantially as set forth.

3. In an automatic water gage valve, the valve casing having a central vertical partition provided with a valve seat, a cylindrical inlet chamber or neck at one side of the partition and a guide neck at the opposite side of the partition, a removable guide plug fitted into the guide neck, a horizontally moving valve stem mounted within the casing and having an intermediate valve disk, and a pressure head at its inner extremity within the inlet chamber or neck, and a check or lock device arranged at one end of the valve stem to hold the same stationary in both positions thereof, when the valve is closed and opened, substantially as set forth.

4. In an automatic water gage valve, the valve casing having a central valve seat and an inlet chamber or neck at one side, the horizontally moving valve stem having an intermediate valve disk and a winged pressure head moving in the inlet chamber or neck, and locking grooves formed therein near its outer end, and a check spring removably secured at one side of the casing and having a tongue adapted to engage the locking grooves of the valve stem, substantially as set forth.

5. In a valve of the class described, the combination of the valve casing having a central vertical valve seat partition, forming sediment pockets at both sides thereof, and a two-way drain valve mounted within the bottom of the casing and adapted to have its ports connect with either of the sediment pockets,

to provide for relieving the casing of the sediment which collects at both sides of its valve seat substantially as set forth.

5 6. The valve casing having a central vertical valve seat partition, a cylindrical valve chamber located at the lower end of the partition and provided with a lower threaded opening and side ports opening at both sides of the partition, and a two-way exteriorly
10 threaded valve plug fitted in said chamber and having a central vertical drain passage and separate passages or ports communicat-

ing with the central drain passage and with either of the side ports in the valve chamber, to relieve the same of the sediment which col- 15 lects at both sides of the valve seat substantially as set forth.

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

GEORGE S. NEELY.

Witnesses:

WM. B. SMITH,
H. A. BOOTH.