

No. 644,586.

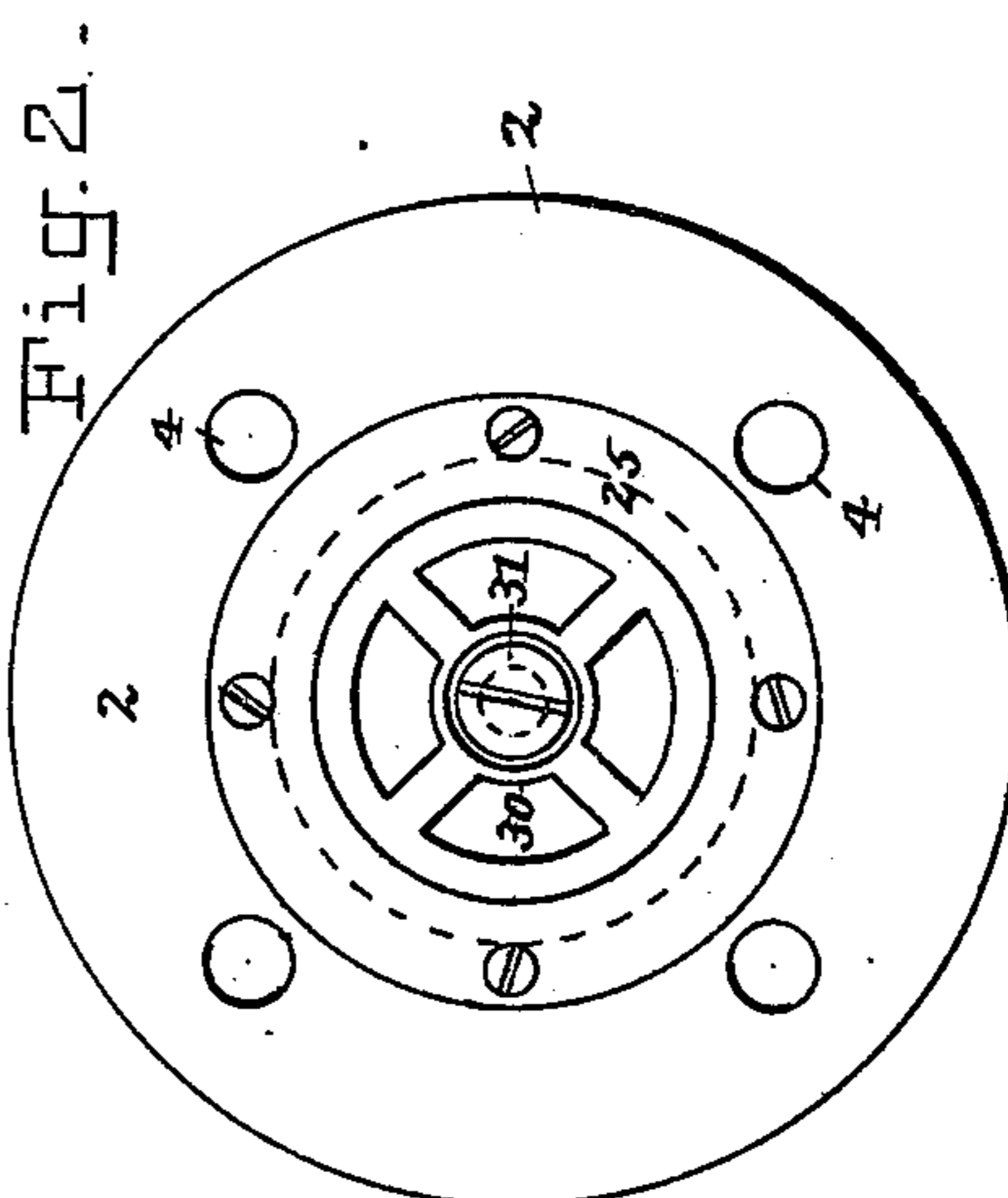
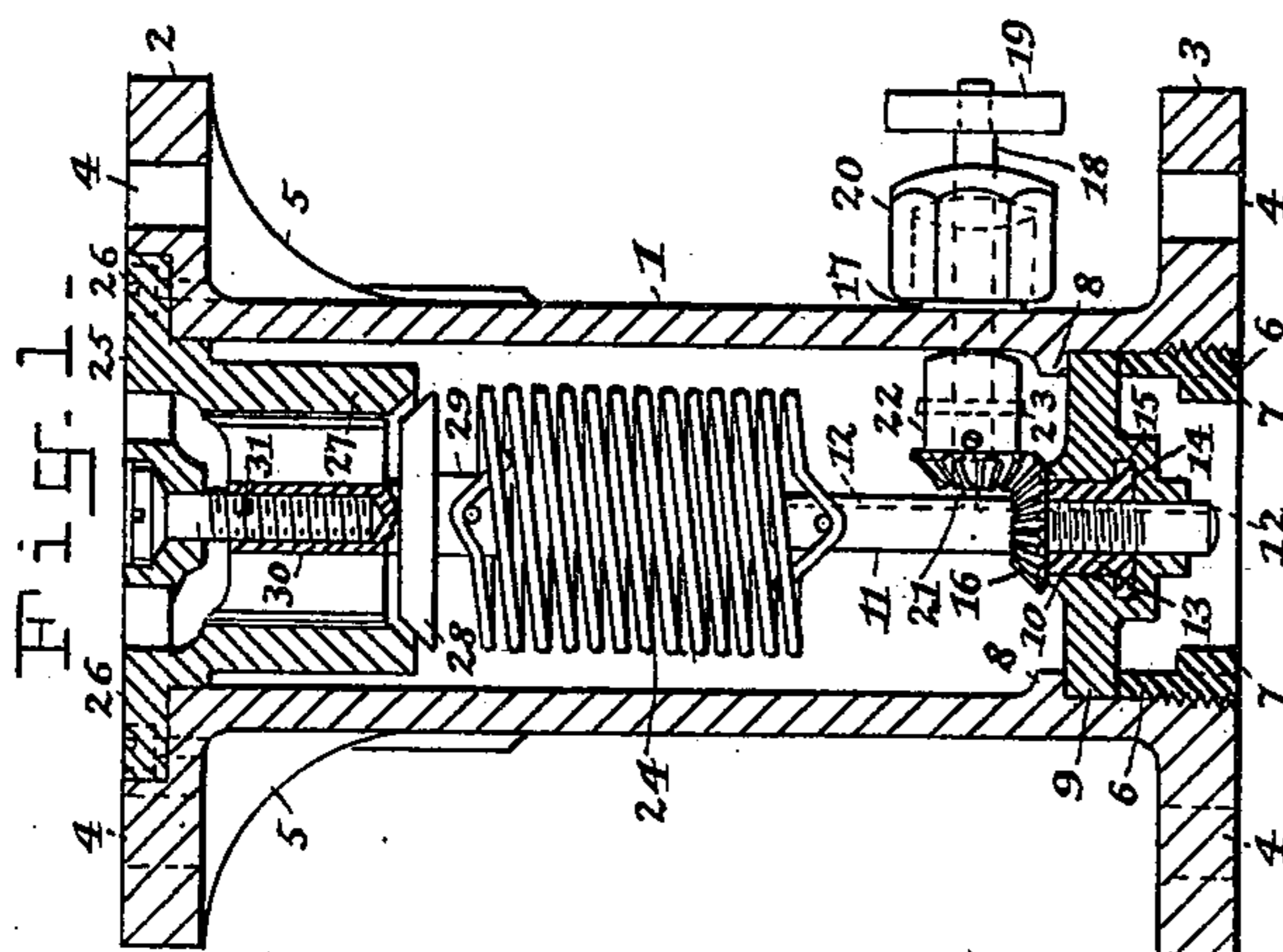
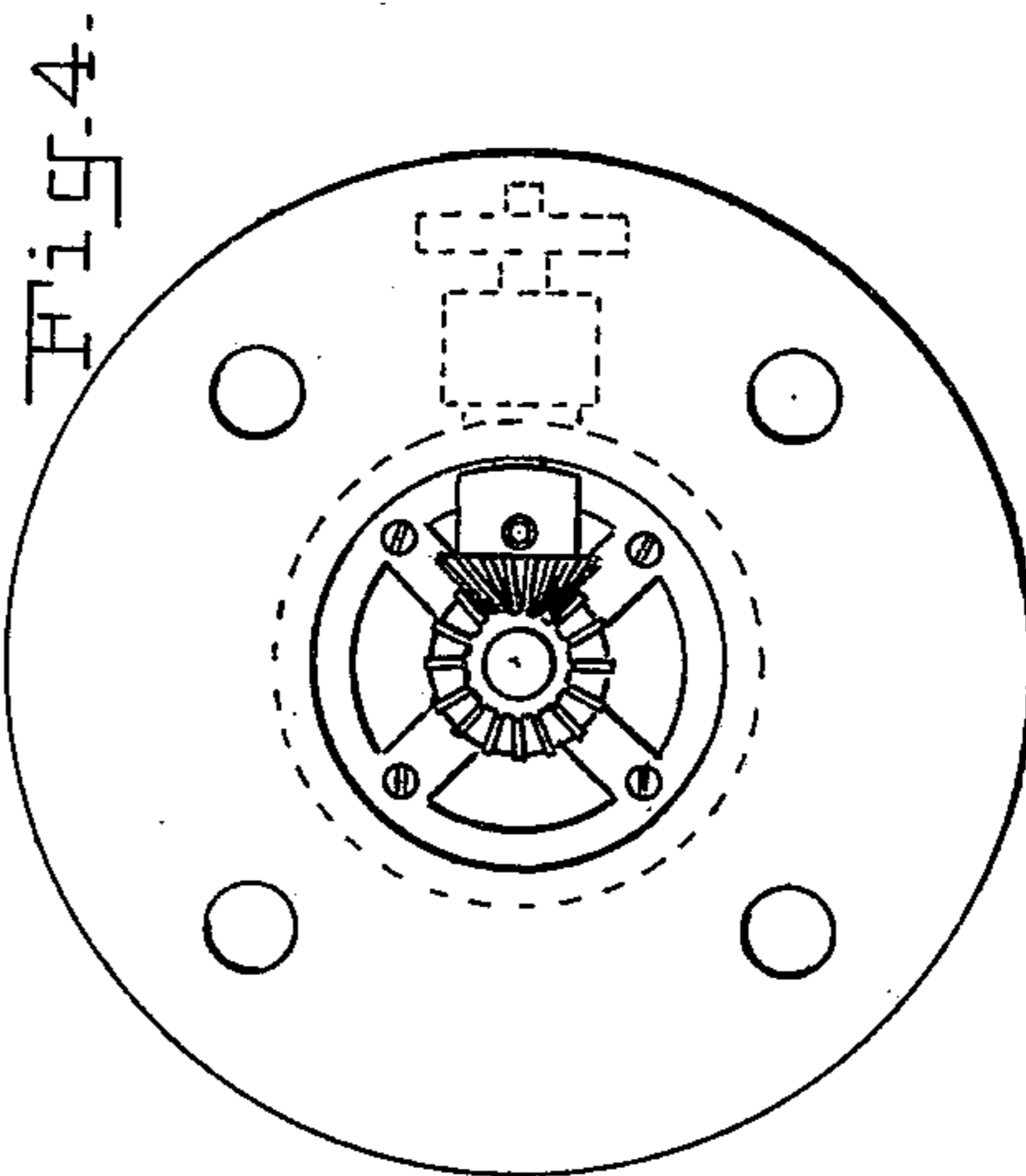
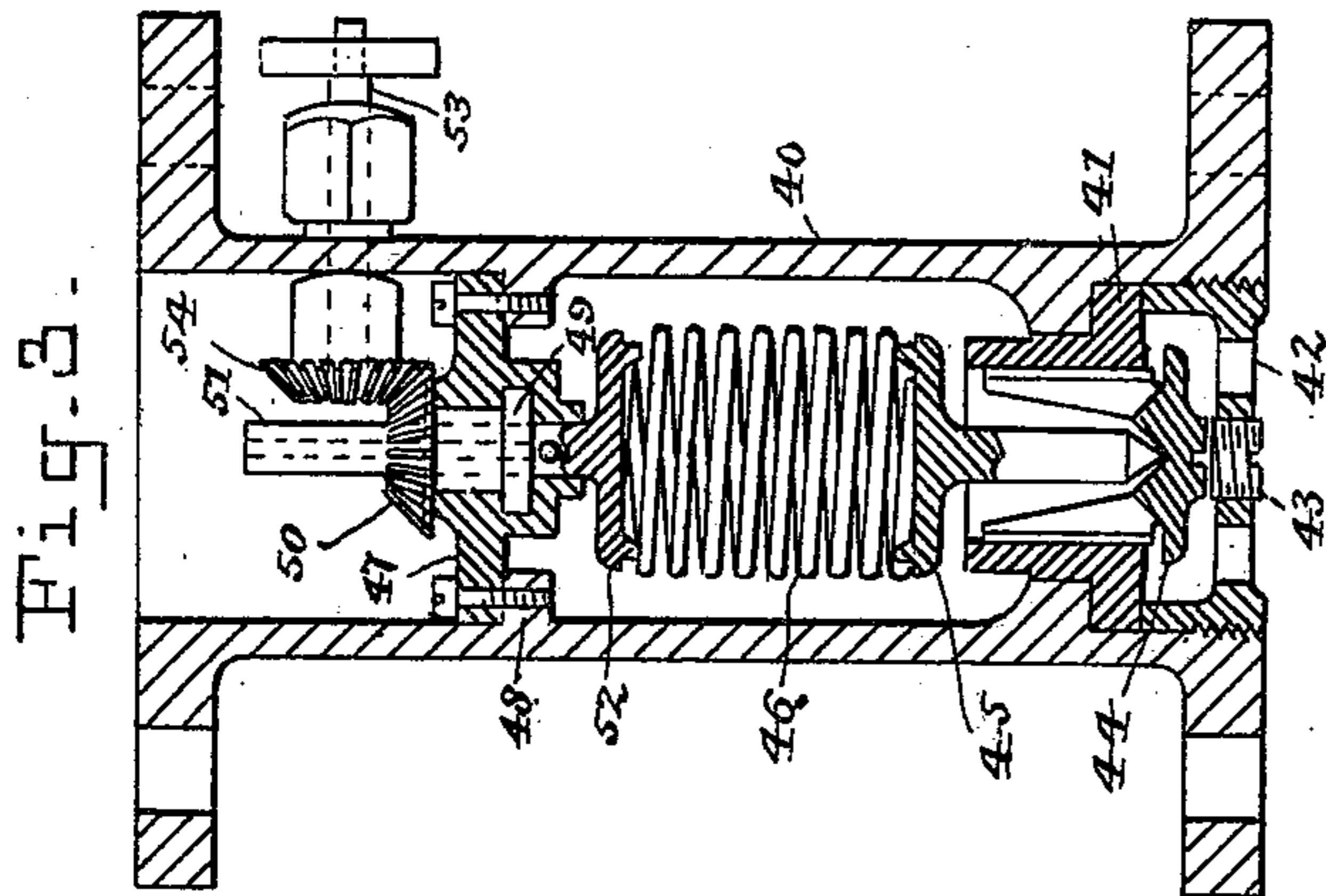
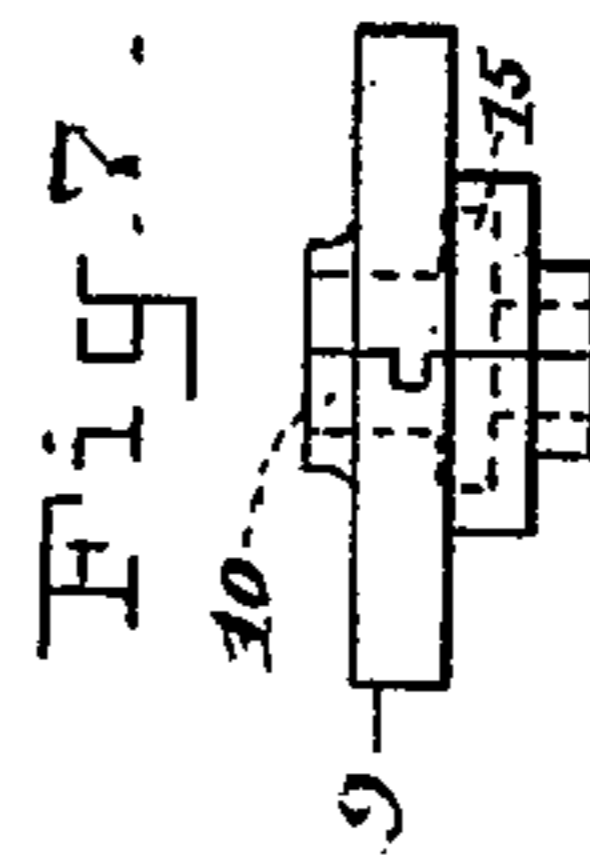
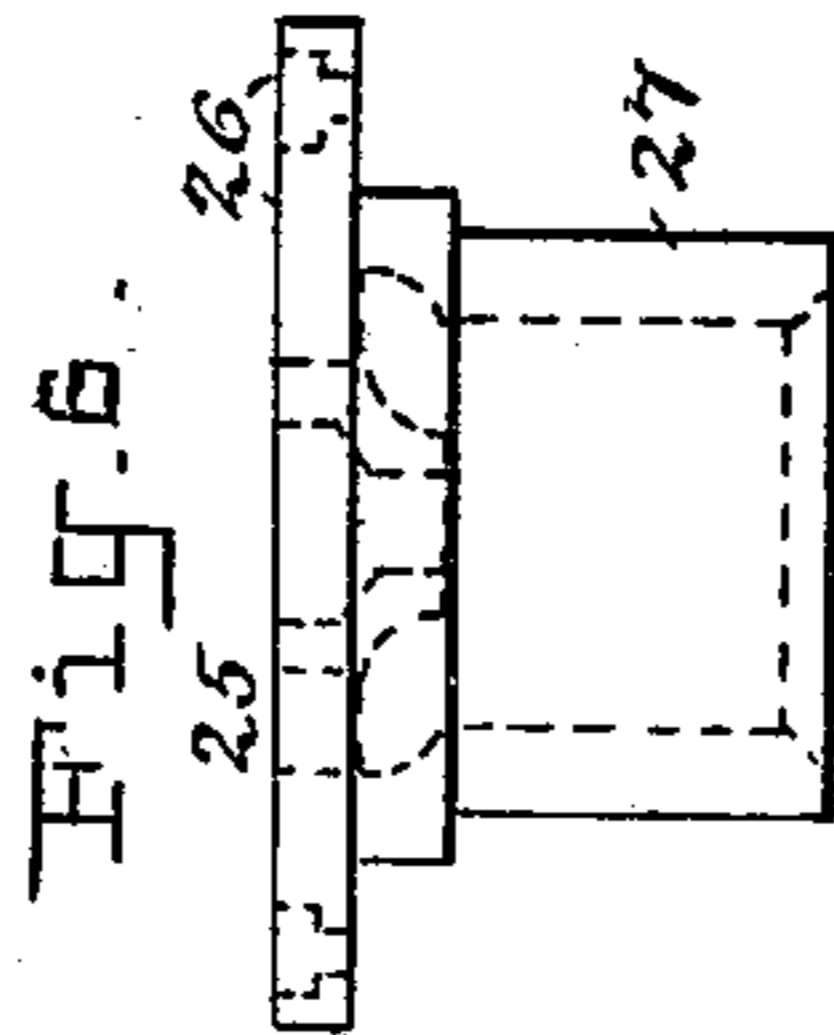
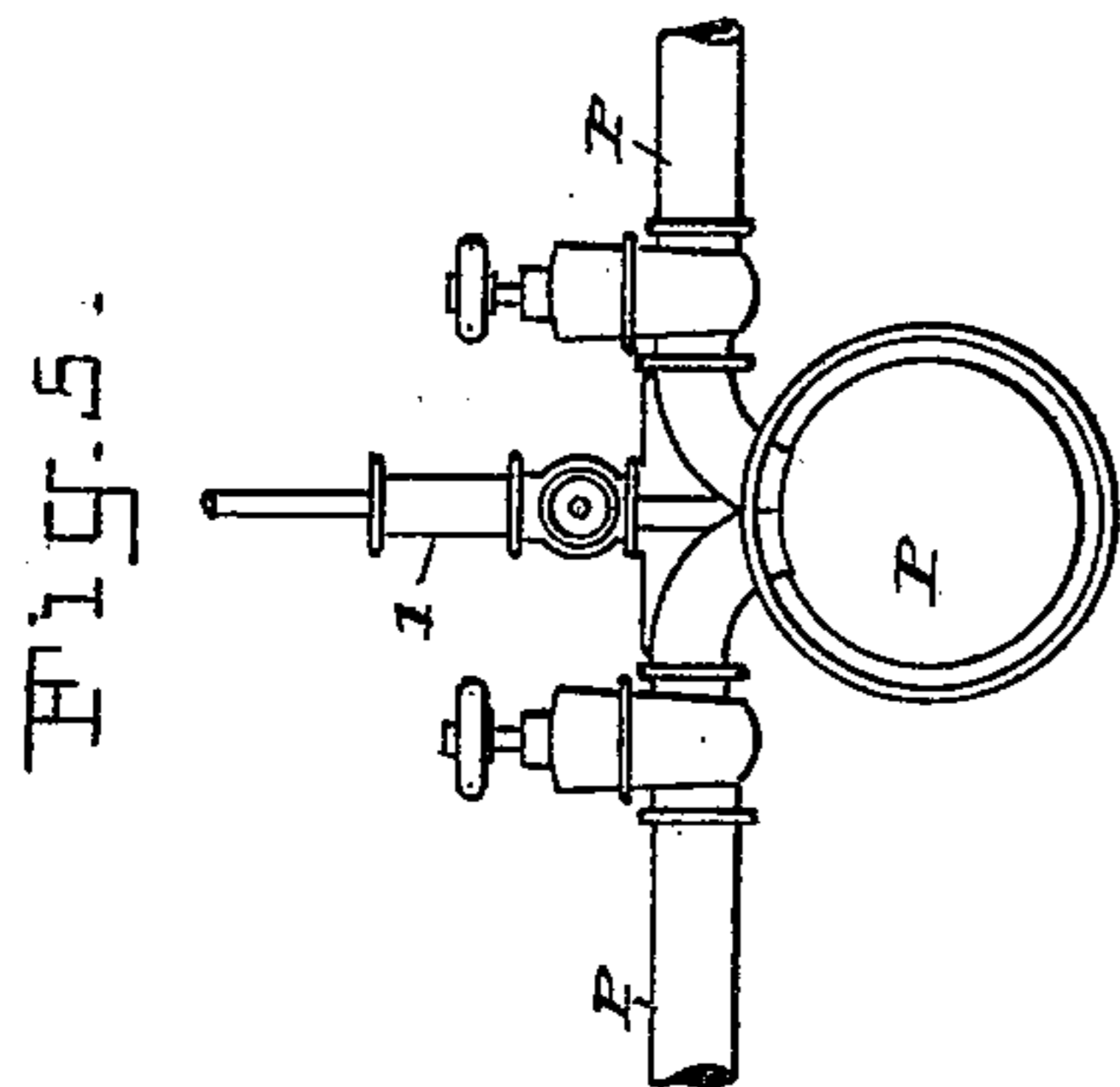
Patented Mar. 6, 1900.

L. C. EISENHUT.

VALVE.

(Application filed Oct. 31, 1898.)

(No Model.)



Witnesses:
E. B. Bolton
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UNITED STATES PATENT OFFICE.

LAURENSE C. EISENHUT, OF NEW YORK, N. Y.

VALVE.

SPECIFICATION forming part of Letters Patent No. 644,586, dated March 6, 1900.

Application filed October 31, 1898. Serial No. 695,027. (No model.)

To all whom it may concern:

Be it known that I, LAURENSE C. EISENHUT, a citizen of the United States, residing in the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to valves, and particularly to those used in connection with vacuum-pumps or similar apparatus; and one of the objects of the invention is to produce a valve of this general character which is simple in construction and at the same time positive and effective in operation.

A further object of the invention is to provide a valve having automatic action and one wherein the tension or force of the valve can be regulated or adjusted.

Still another object is to provide means whereby the tension or force of the valve can be accurately adjusted from the outside of the valve proper without interrupting the action of the valve or disconnecting or removing the parts of the valve or other apparatus.

With these and other objects in view the invention consists, essentially, in the construction, combination, and arrangement of parts, substantially as hereinafter more fully described in the following specification and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved valve, showing the adjacent parts in longitudinal section. Fig. 2 is a top plan view of the same. Fig. 3 is a view similar to Fig. 1 of a modified form of construction. Fig. 4 is a top plan view of the same. Fig. 5 illustrates the valve in operative position. Figs. 6 and 7 represent details of construction.

Similar characters of reference designate corresponding parts throughout the several views.

Referring to the drawings, and particularly to the construction illustrated in Figs. 1 and 2 thereof, the reference character 1 designates a casting or sleeve having laterally-extending end flanges 2 and 3, respectively pro-

vided with openings 4, through which pass attaching bolts or screws to secure said sleeve in position, and, if preferred, the flange 2 may be provided with strengthening-ribs 5 of any desired form or construction. The lower orifice of said sleeve is preferably provided with interior screw-threads to detachably engage the exterior screw-threads upon the collar 6, preferably provided with diametrically-opposite interior ribs or lugs 7, and said sleeve is preferably provided with an annular interior rib or extension 8, formed on or connected with the same adjacent to the screw-threaded end thereof, or a plurality of interior lugs may be employed instead of the annular rib or extension before described. Within the end of said sleeve and resting against said rib 8 is detachably secured a circular frame or spider 9, preferably constructed in two parts or halves and having a central bore 10, adapted to receive a rod or shaft 11, provided with a longitudinal recess or groove 12, and suitably mounted on the rod 11 is a spool 13, having interior screw-threads adapted to enter screw-threads in the rod 11, and the spool 13 is also provided with an annular end flange 14, constructed to move in the annular chamber 15 in the spider 9, and the spool 13 is preferably provided with a bevel gear or pinion 16.

Mounted or journaled in a suitable bearing in a tubular projection 17 of the sleeve 1 is a shaft 18, preferably provided with a hand-wheel 19 to provide for the rotation of said shaft, and upon said projection is secured a nut or collar 20, and the shaft 18 is preferably provided with a cylindrical tongue to enter the groove 12 in the rod 11 when the former is brought into registering position therewith by the rotation of said rod, and thereby prevent the reverse rotation of the rod 11 when it is desired to retain the same in a fixed position.

Removably mounted upon the inner end of the shaft 18 is a bevel gear or pinion 21, having a tubular shank 22, adapted to be connected to said shaft by means of a pin 23 or other device, and the bevel gears or pinions 16 and 21 are adapted to mesh or engage, so that by turning the hand-wheel 19 the spool 13 on the rod 11 will be rotated and the tension of

the spring 24, connected at one end to said spool 13 on the rod, can be regulated by the elevation or depression of the rod 11, thereby contracting or expanding the spring.

5 Within the recessed end of the sleeve 1 is secured a circular disk or plate 25, preferably having a supporting and attaching flange or rim 26 and a depending tubular extension 27, the orifice of which is preferably inwardly
10 beveled to form a seat for the valve 28, carrying a shank 29, connected with one end of the spring 24, preferably as shown in the drawings; but any other suitable manner of connecting the ends of the spring 24 to the
15 rod 11 and shank 29 may be employed. The valve 28 is preferably provided with a projection 30 to receive a screw 31, passing through the disk 25, preferably having a skeleton or frame-like central portion, and by means of
20 this construction the distance the valve 28 will be opened by the spring 24 can be exactly adjusted or regulated from outside of the valve.

The operation of the invention will be readily understood from the foregoing description
25 when taken in connection with the accompanying drawings and the following explanation thereof.

The vacuum-pump is first put into operation and the air above the valve is partially
30 exhausted, causing the valve to close; but by means of the hand-wheel, as before described, and intermediate parts the tension of the spring 24 can be so accurately adjusted that the approximate degree of vacuum in the
35 pipes, or other apparatus with which the valve is connected, can be regulated, and when the vacuum exceeds a predetermined degree the valve will close and cut off the pipes, or other apparatus, from the vacuum-pump, thus
40 constantly maintaining a certain degree of vacuum therein.

In Figs. 3 and 4 of the drawings I have illustrated a modified form of the construction hereinbefore shown and described where-
45 in the expansive instead of the contractive force of the spring is employed to actuate the valve; but the general character of the construction is the same. In this construction I employ a sleeve or casting 40, having
50 a flanged collar 41, secured in one end thereof by means of a skeleton or frame-like disk 42, carrying an adjusting-screw 43 to regulate the downward movement of the valve, and the valve 44 is slidably mounted in ways
55 in the collar 41 and is provided with a hollow shank to receive the stem of the disk 45, upon which the spring 46 bears. A skeleton disk or spider 47 is secured upon an annular flange 48 in the sleeve or casting 40,
60 and mounted in said disk is a spool 49, carrying a bevel gear or pinion 50, and through said spool passes a rod 51, having screw-threaded connection therewith, provided with a disk or plate 52, adapted to receive one end
65 of the spring 46, as clearly shown in the drawings. Mounted in the sleeve 40 is a shaft 53, carrying a bevel gear or pinion 54, adapted

to mesh with the pinion 50 to rotate on the rod 51 and to compress said spring and unseat said sleeve. The operation of this construction will be readily understood from the foregoing description thereof, and further explanation of the same will not be required. 70

I do not confine myself to the construction, combination, and arrangement of parts herein shown and described, and I reserve the right to make all such changes in and modifications of the same as come within the spirit and scope of my invention. 75

The application of my invention is not limited to use with vacuum-pumps to regulate automatically the degree of vacuum in a system of pipes or other apparatus, and the same may be applied wherever desired. 80

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is— 85

1. A valve provided with a casing, a rotatable portion mounted in said casing, a resilient device engaging said valve and portion and an independent device out of alignment with said portions, constructed to engage and rotate the same. 90

2. A valve provided with a casing, a pinion mounted within said casing, a resilient device connected with said valve and pinion and means for operating said pinion. 95

3. A valve provided with a casing, a pinion mounted within said casing, a resilient device connected with said valve and pinion and a shaft carrying a pinion to drive the former pinion. 100

4. A valve connected with an independently-mounted rod or shaft by a resilient device, said shaft carrying a pinion, and means for driving said pinion. 105

5. A valve connected with an independently-mounted rod or shaft by a resilient device, said rod or shaft carrying a pinion, and an exteriorly-mounted shaft provided with a pinion to drive the first-mentioned pinion. 110

6. A valve connected with an independently-mounted rod or shaft by a resilient device, a device to prevent the rotation while permitting of the longitudinal movement of said shaft and means for moving said rod. 115

7. A valve provided with a rod or shaft, a resilient device engaging said valve and rod and means for moving said rod longitudinally and carrying a device engaging the same to prevent the rotation of said rod. 120

8. A valve provided with a casing, a longitudinal rod or shaft mounted therein carrying a pinion, a resilient device between said valve and shaft, and means engaging said pinion to expand or contract said device from the outside of said casing. 125

9. A valve provided with a casing, a longitudinal shaft or rod mounted therein carrying a pinion, a resilient device between said valve and rod, a horizontal shaft carrying a pinion to drive the former pinion to elevate or depress said rod. 130

10. A valve connected with a longitudinal

rod or shaft by a resilient device and a horizontal shaft engaging said rod to prevent the rotation thereof by said device.

5 11. A valve provided with a longitudinal rod or shaft having a groove, and a horizontal shaft carrying a tongue or projection constructed to enter said groove to prevent the rotation of said rod while permitting the longitudinal movement thereof.

10 12. A valve provided with an independently-mounted rod or shaft, a resilient device

engaging said rod and valve, means for adjusting the opening of the valve and means for reciprocating said rod and carrying a device engaging the same to prevent the rotation thereof. 15

In witness whereof I have affixed my signature in the presence of two witnesses.

L. C. EISENHUT.

Witnesses:

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M. L. SHAY.