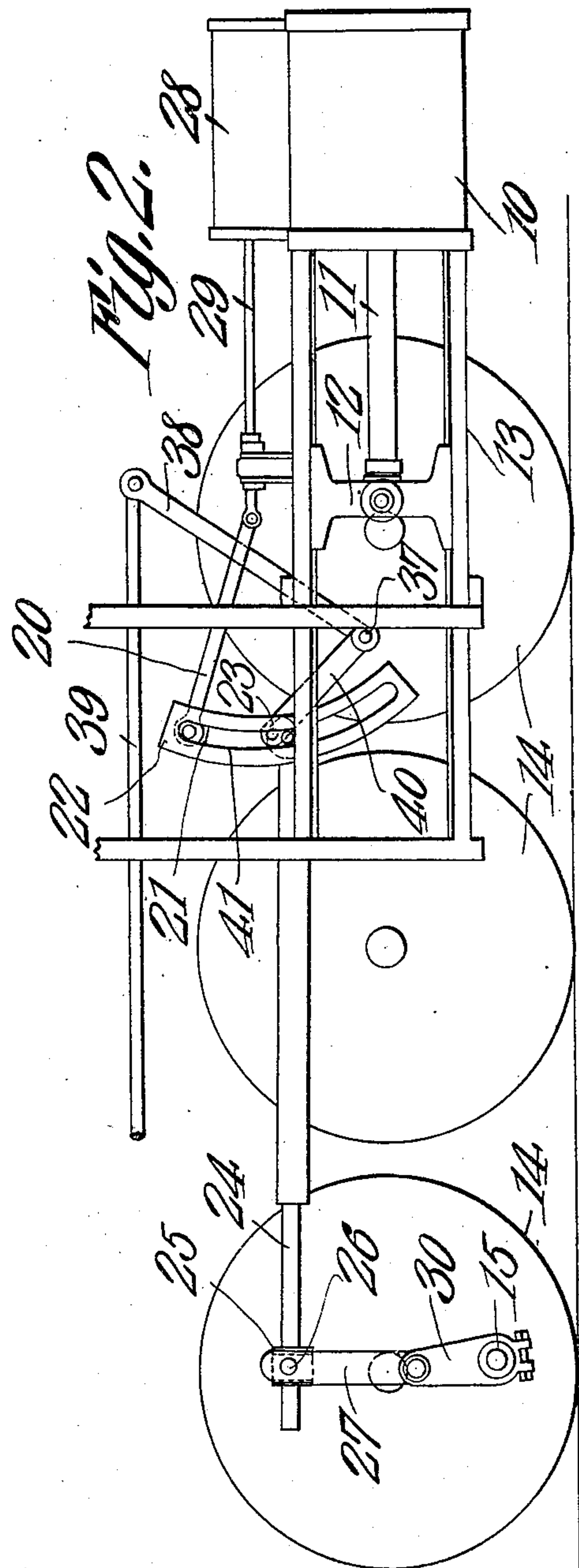
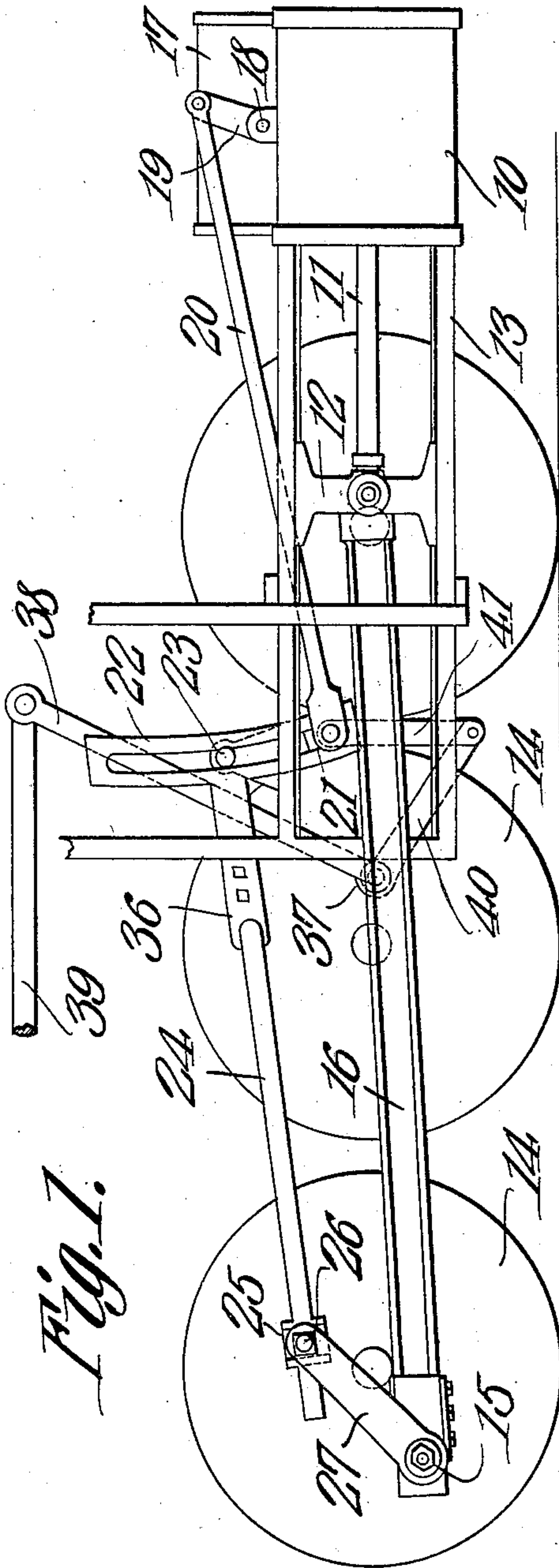


J. S. SPURGEON.
VALVE GEAR FOR ENGINES.
APPLICATION FILED MAY 21, 1908.

898,797.

Patented Sept. 15, 1908.

2 SHEETS—SHEET 1.



Witnesses

E. J. Hunt
W. H. H. H.

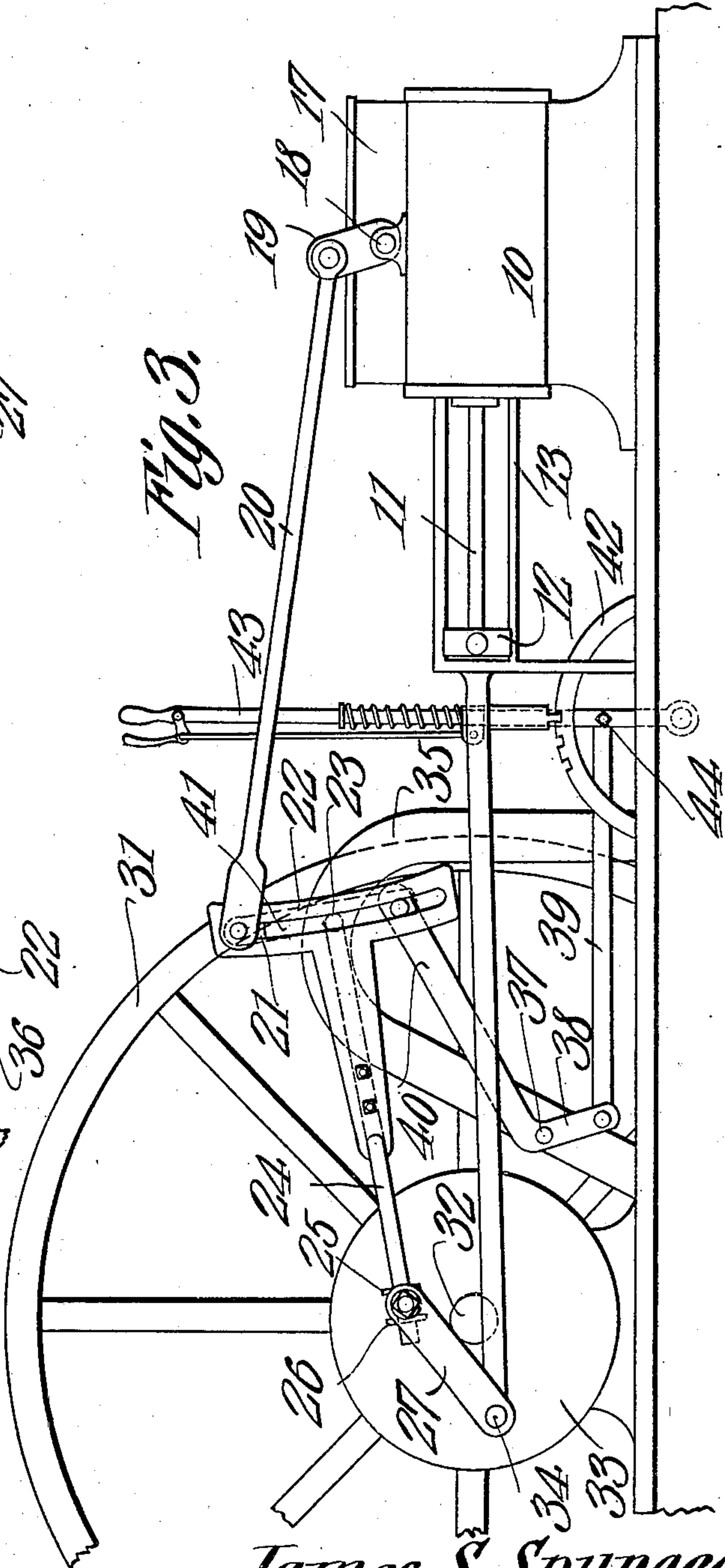
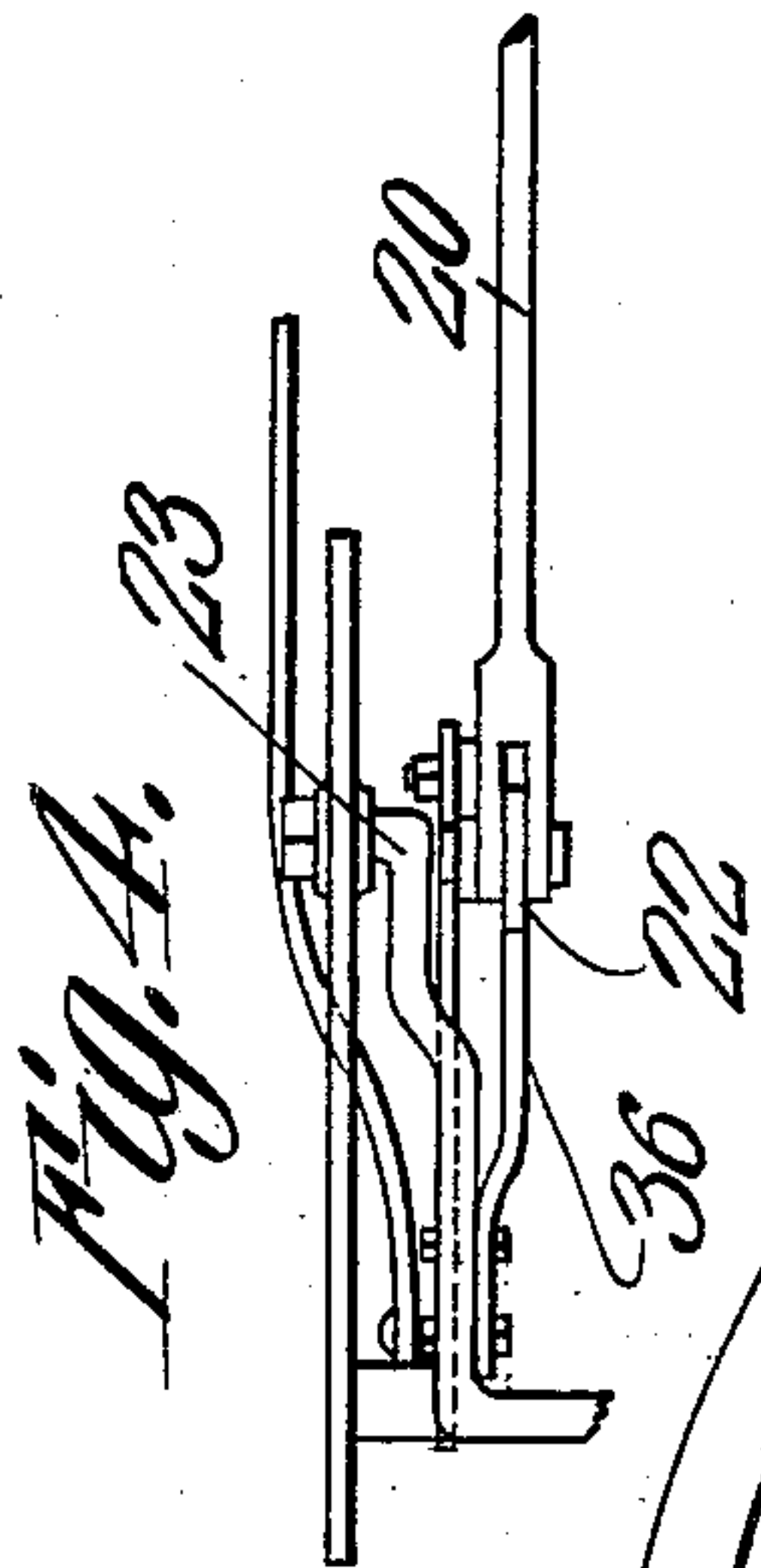
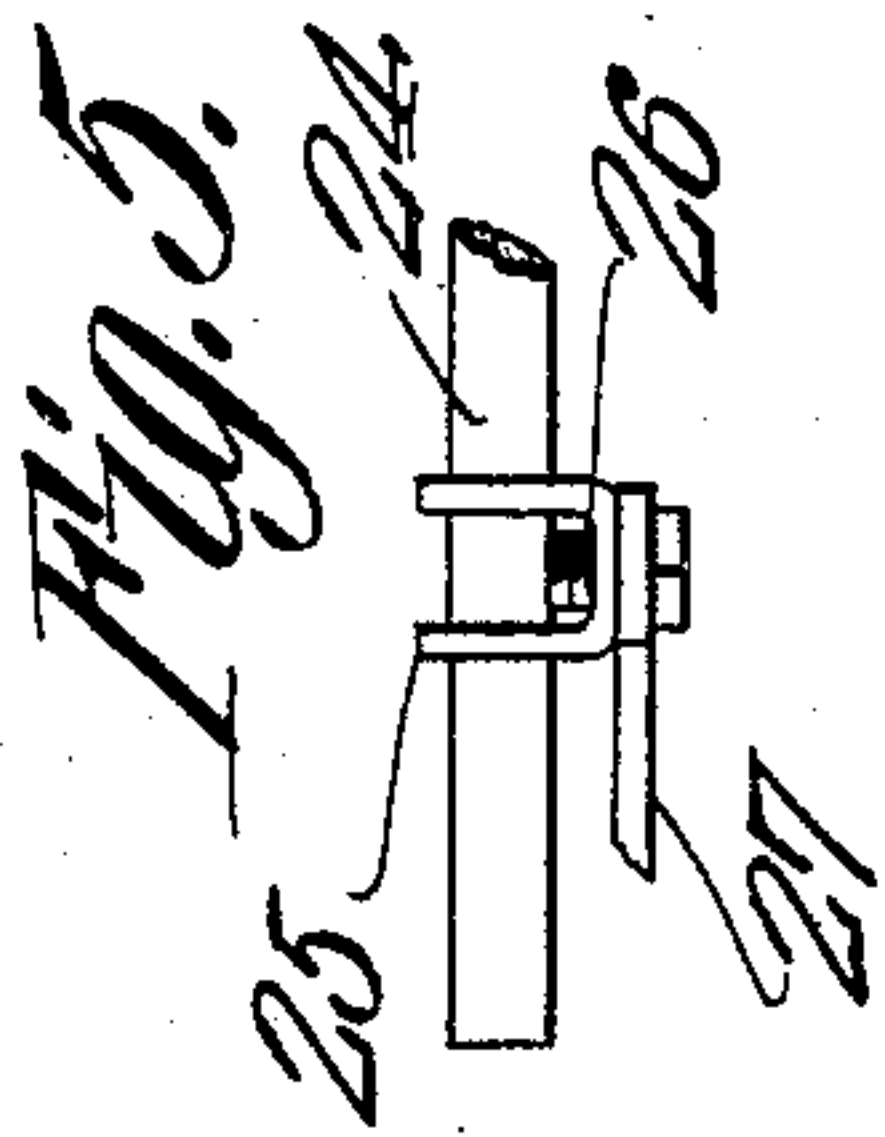
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2 SHEETS—SHEET 2.



Witnesses

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UNITED STATES PATENT OFFICE.

JAMES SILAS SPURGEON, OF JERICHO, KENTUCKY.

VALVE-GEAR FOR ENGINES.

No. 898,797.

Specification of Letters Patent.

Patented Sept. 15, 1908.

Application filed May 21, 1908. Serial No. 434,169.

To all whom it may concern:

Be it known that I, JAMES S. SPURGEON, a citizen of the United States, residing at Jericho, in the county of Henry and State of Kentucky, have invented a new and useful Valve-Gear for Engines, of which the following is a specification.

This invention relates to steam engines with a special reference to valve gears for such engines.

The object of the invention is to provide an improved general form of valve gear for steam engines of the stationary link type, and to provide improved means for adjusting the same.

The invention consists of a link and valve motion of improved form together with certain novel arrangements of details and combinations of parts hereinafter fully described, illustrated in the accompanying drawings, and specifically set forth in the claims.

In the accompanying drawings like characters of reference indicate like parts in the several views, and:—Figure 1 is a side elevation of one form of my device as applied to a railroad locomotive. Fig. 2 is another form of the device applied to a railroad locomotive. Fig. 3 is a side elevation of the device shown in Fig. 1 as applied to a stationary engine of the single cylinder type. Fig. 4 is a detailed plan view of the link and parts adjacent thereto. Fig. 5 is a detailed plan view of one form of adjusting slide to be used with this device.

Referring now to Figs. 1 and 2. The numeral 10 indicates one cylinder of a locomotive. This cylinder is provided with the usual piston to which is attached a rod 11 which is in turn connected to the cross head 12 mounted to slide in the guide 13. The wheels of the locomotive are indicated by the numeral 14 and the main crank pin is shown as at 15. In Fig. 2 neither the side rod nor the main rod are shown but in Fig. 1 the main rod is shown at 16, the side rods being also omitted in that figure.

The parts just described are common to all locomotive engines and may be of any desired form and dimension.

In Fig. 1 the engine is shown equipped with a steam chest 17 wherein is mounted a rocker valve not deemed necessary here to be shown, but of which the stem is indicated at 18. To the stem 18 is rigidly secured a rocker arm 19 being to actuate the valve.

Pivoted to the rocker arm 19 is a radius bar 20 the opposite end of which is attached to a link block 21, arranged to slide in a link 22. The link 22 is preferably pivoted at its central point and the manner of so doing will be explained when the description of Fig. 3 is reached. The central point in the present instance is indicated at 23. Rigidly attached to the link 22 there is a rock arm 24 mounted whereon is a sliding adjusting block 25 provided with a screw 26 to lock the same at any desired point on the rock arm 24. An eccentric rod 27 is pivotally attached to the crank pin 15 and the sliding block 25.

Referring now to Fig. 2. The cylinder 10 is provided with a steam chest 28 wherein is held a slide valve the stem of which is indicated at 29. This form of the device is also provided with a radius rod 20, link block 21, link 22, the latter being pivoted at its central point as in the form shown in Fig. 1 and indicated at 23. In this form there is also provided a rigid rocker arm 24 attached to the link 22 and equipped with the sliding block 25. In this form of the device, however, the eccentric rod 27 is not connected directly to the crank pin 15 but is pivotally attached to an eccentric crank 30 which is rigidly attached to the crank pin 15.

Referring now to the form of the device shown in Fig. 3 it will be observed that the difference is confined principally to the form of engine and there is little if any difference between the form here shown and that shown in Fig. 2. In this form the cylinder is again indicated by the numeral 10, the piston rod by 11, the cross head by 12 and the guide by 13. In place of the locomotive wheels 14 of the two previous views there is here shown a fly-wheel 31, mounted on a shaft 32, which carries a crank disk 33 having a crank pin 34 thereon. As in Fig. 1 the cylinder 10 is provided with a steam chest 17 containing a rocker valve the stem whereof is shown at 18. A rock arm 19 is rigidly attached to the stem and is in turn pivotally attached to a radius rod 20 which has the other end pivotally attached to a link block 21, mounted in the link 22 which is pivoted at 23. Referring to Figs. 3 and 4 it will be seen that there is provided a frame 35 to receive the pivot 23 of the link 22 and that this pivot is connected to the link 22 by an arm 36, thus indicated in Figs. 1 to 4 inclusive, the continuation whereof is formed as in Figs. 1 and 2 by a rock bar

24. A sliding block 25 is held on this rocker bar in the same manner as indicated in Fig. 1 and is connected to the crank pin 34 by an eccentric rod 27.

5 In Figs. 1, 2 and 3 there is shown a reverse shaft 37 provided with a reverse arm 38 whereto is pivotally attached a reach rod 39. A lifting arm 40 is so connected to the reverse arm 38 that when the reach arm is operated
10 the lifting arm and reverse arm will move in unison. A lifting link 41 connects the lifting arm 40 with the link block 21.

In Figs. 1 and 2 the reverse lever and quadrant are omitted but they are shown in
15 Fig. 3. The quadrant is there indicated by 42 and the reverse lever, having the usual latch arrangement, at 43, the latter being connected to the reach rod 39 as at 44.

It will be seen, that insofar as concerns the
20 valve gear, Figs. 1 and 3 are identical. Fig. 2 is, however, modified by the introduction of the eccentric crank 30, whereby with the same stroke of piston the eccentricity may be varied at will by the adjustment of the ec-
25 centric crank 30 above the crank pin 15.

It is further to be noted that the position of the valve may be adjusted to a nicety by the movement of and adjustment of the sliding block 25 on the rocker arm 24.

30 There has thus been provided a simple and efficient device for the purpose specified and one adapted to give extreme nicety of valve adjustment.

Having thus described the invention, what is claimed is:—

35 In a valve gear, a valve, a link bearing, an arcuate link provided with a radially disposed arm extending from the median point thereof, and lying in substantially the same
40 plane as the arcuate portion, a link supporting arm attached to the outer end of the radially disposed arm provided with a rectangularly disposed journal portion in alinement with the center of the link and supported in
45 the bearing, said portion being spaced laterally from the link, an extension formed on said link supporting arm, a slide mounted on said extension, a crank, a connecting link
50 pivotally connected to the crank, a bolt passing through the free end of said connecting link and the slide to hold the same in desired position on the extension of the link sup-
55 porting arm, a link block held to slide in said link, a valve rod provided with a forked end to embrace said block on each side of the link and pivotally connected thereto, and means to vary the position of the block in the link.

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

JAMES SILAS SPURGEON.

Witnesses:

O. B. McANDREWS,
J. F. MONTGOMERY.