

No. 872,164.

PATENTED NOV. 26, 1907.

E. E. WRIGHT.
GAS AND GASOLENE ENGINE.
APPLICATION FILED OCT. 27, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

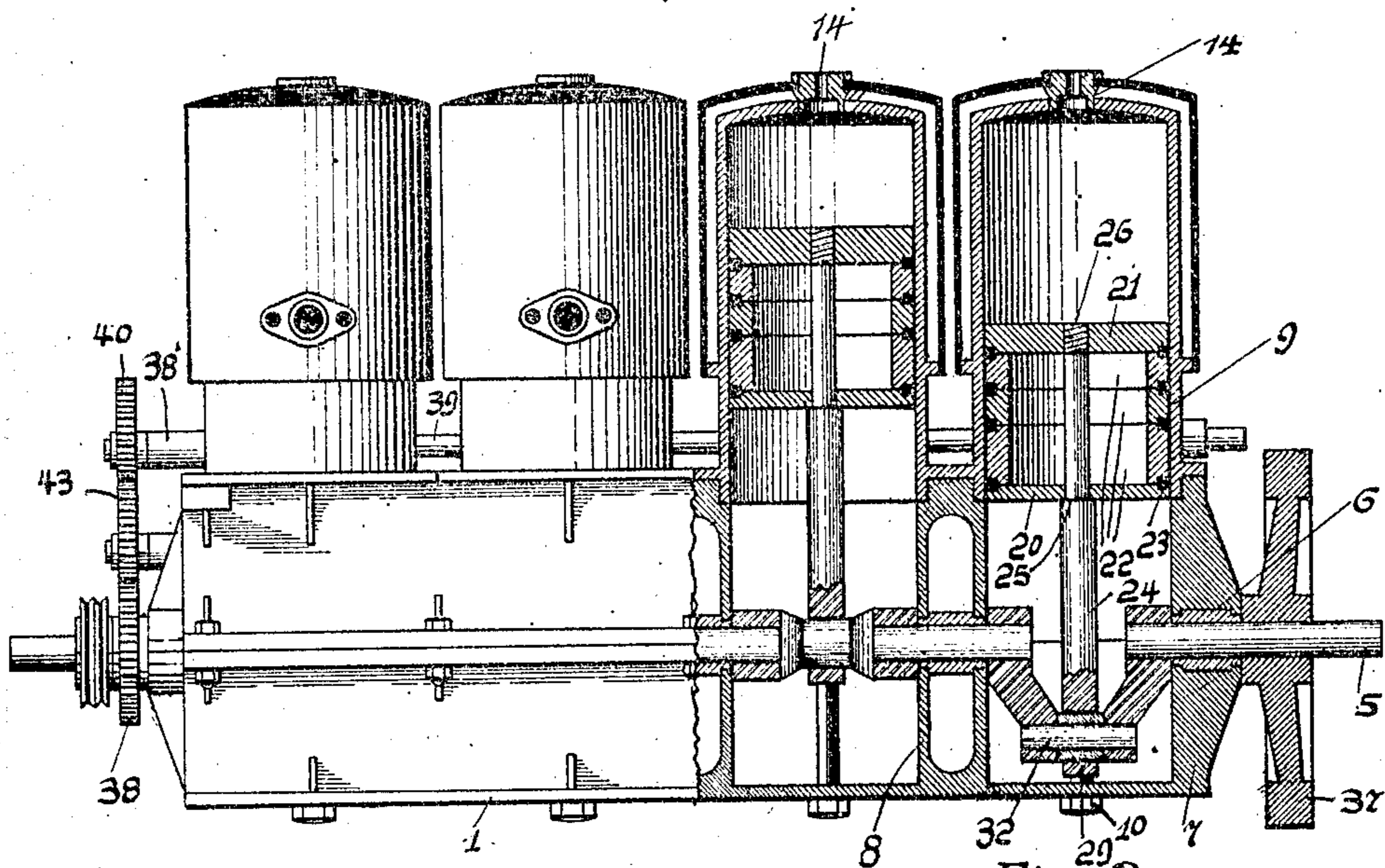


Fig. 2.

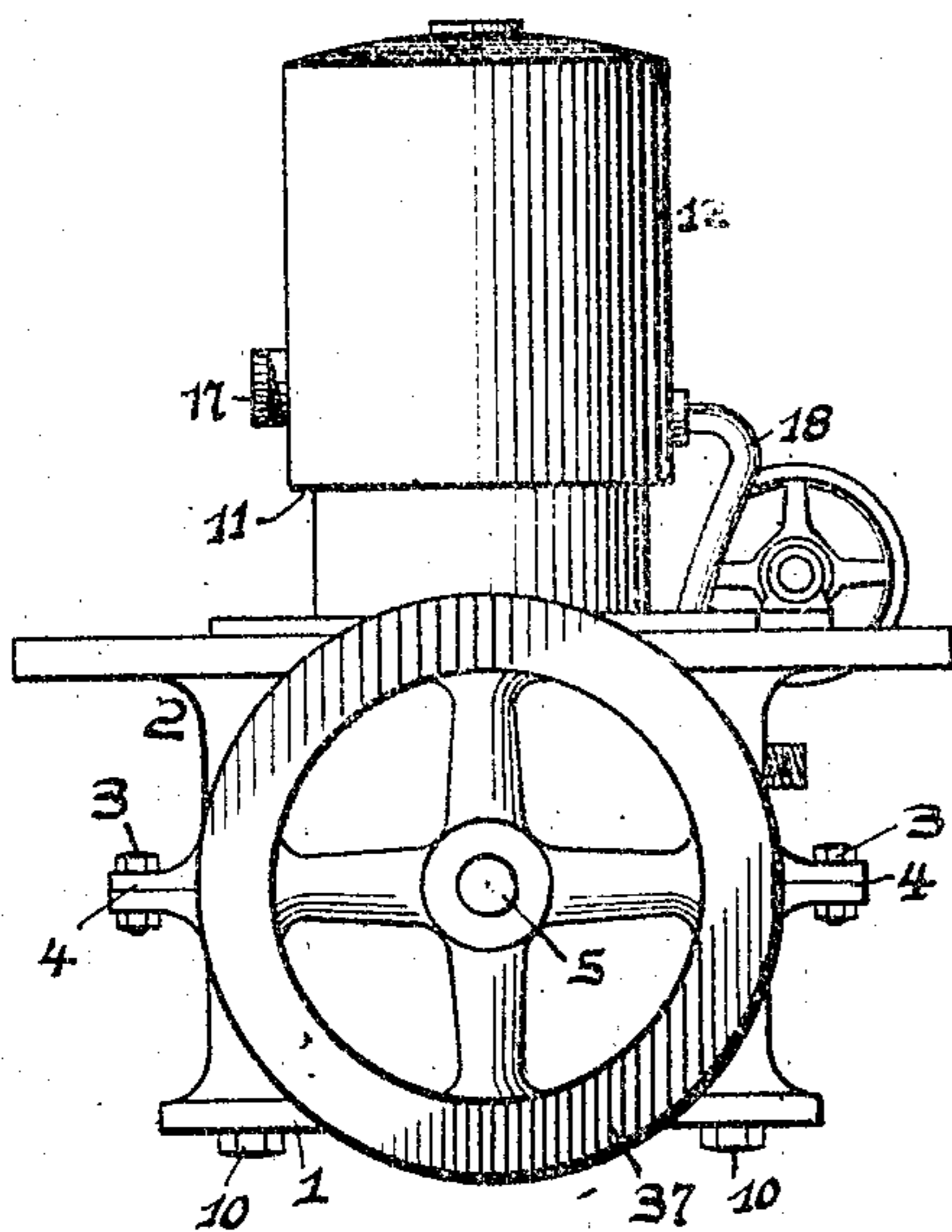
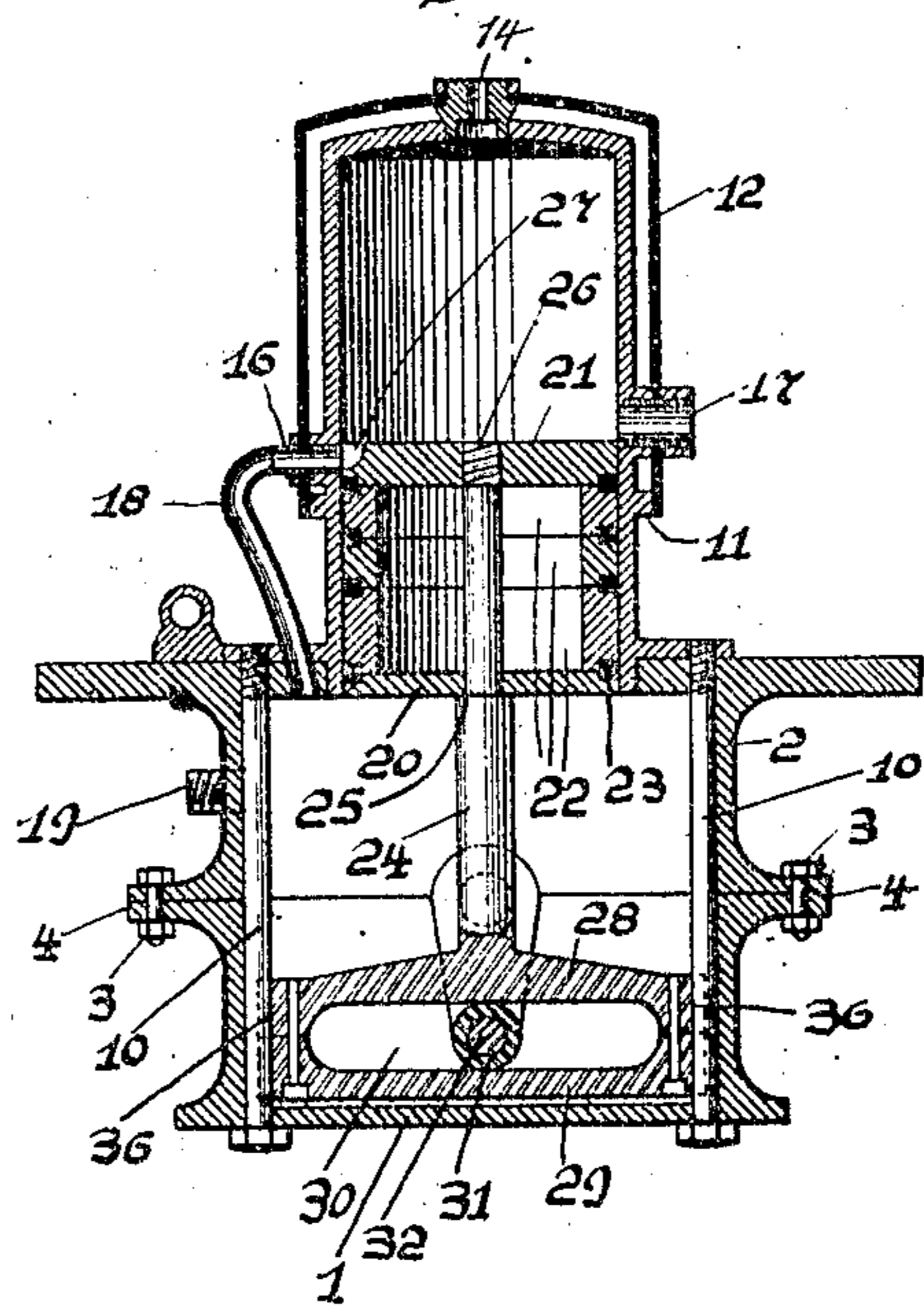


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4

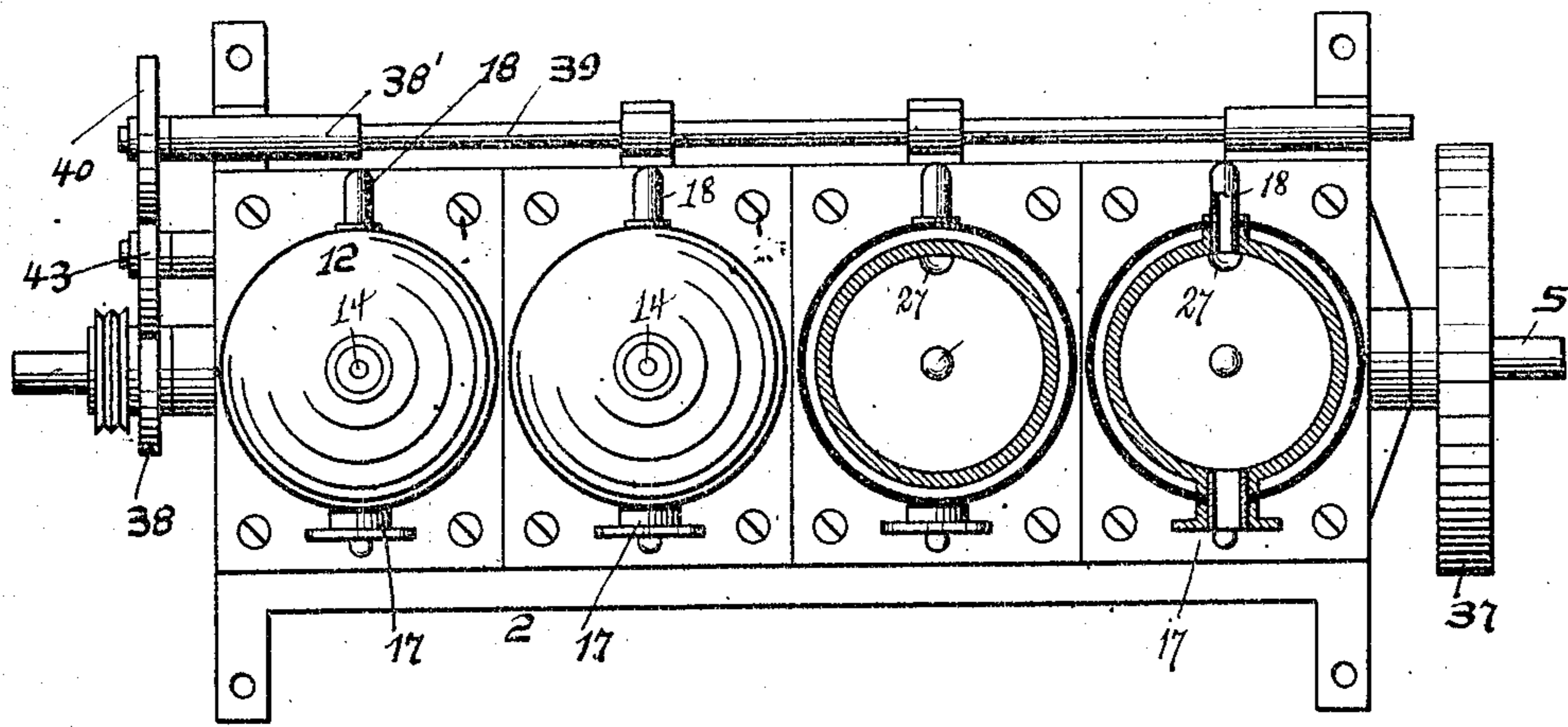
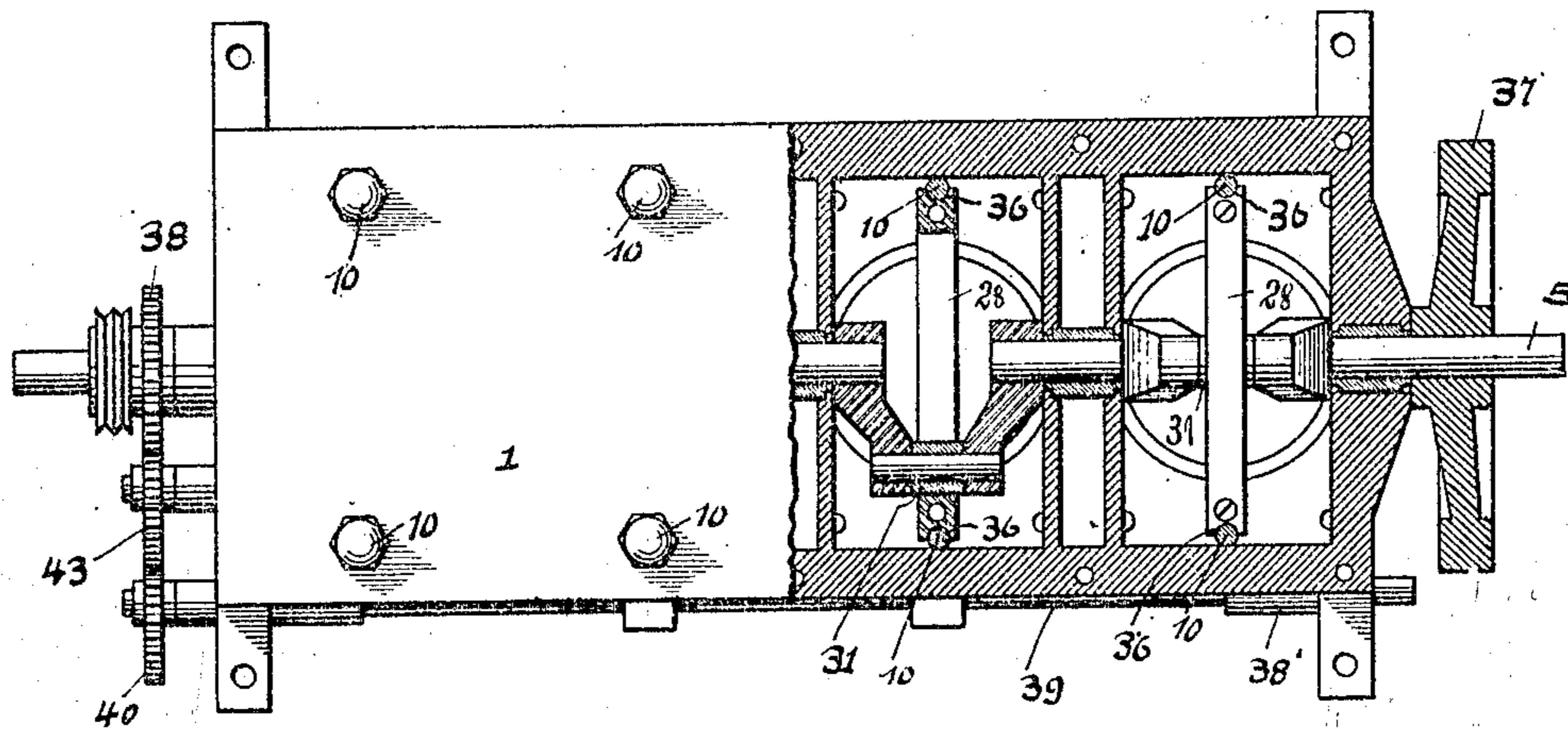


Fig. 5.



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UNITED STATES PATENT OFFICE.

EARL E. WRIGHT, OF MANSFIELD, OHIO.

GAS AND GASOLENE ENGINE.

No. 872,164.

Specification of Letters Patent.

Patented Nov. 26, 1907.

Application filed October 27, 1906. Serial No. 340,833.

To all whom it may concern:

Be it known that I, EARL E. WRIGHT, a citizen of the United States of America, residing at Mansfield, in the county of Rich-
land and State of Ohio, have invented cer-
tain new and useful Improvements in Gas
and Gasolene Engines, of which the follow-
ing is a specification, reference being had
therein to the accompanying drawing.

10 This invention relates to gas and gasolene
engines, more particularly of the four cylin-
der, two cycle type.

The invention has for its primary object
to improve the construction and increase the
15 utility and efficiency of devices of this char-
acter.

With these and other objects in view which
will more readily appear as the invention is
better understood, the same consists in the
20 novel construction, combination and arrange-
ment of parts to be hereinafter more fully
described, illustrated and then specifically
pointed out in the appended claims.

Referring to the drawings forming a part
25 of this specification, like numerals of refer-
ence designate corresponding parts through-
out the several views, in which—

Figure 1 is a side elevation of my improved
engine, partly in vertical section; Fig. 2 is
30 an end view of the engine, Fig. 3 is a ver-
tical and cross sectional view of the engine;
Fig. 4 is a top plan, partly in section; Fig.
5 is a bottom plan partly in section.

To put my invention into practice, I con-
35 struct my improved engine of two channel-
shaped frames 1 and 2, the frame 2 being
inverted upon the frame 1 and secured
thereto by bolts and nuts 3, which pass
through the flanges 4 of said frames. The
40 channel-shaped frames 1 and 2 form a box-
like structure or housing for a longitudinally
disposed crank shaft 5, said shaft being jour-
naled in bearings 6 carried by the ends 7 of
the housing, and by partitions 8 arranged
45 intermediate the ends of said housing.

Upon the housing is mounted four cylin-
ders 9, said cylinders being secured to the
housing by vertically-disposed tie-rods 10,
which also serve functionally as guides for
50 the piston cross heads to be presently de-
scribed. The cylinders 9 are formed with
peripheral flanges 11 and fitting over said
cylinders and engaging said flanges are
water jackets 12, said jackets being connect-
55 ed with a suitable water supply pipe, where-
by water can be circulated around the cylin-

ders to cool the same during the operation of
the engine. The top of each cylinder and
water jacket is provided with openings 14
to receive a conventional form of electric 60
spark plug, or hot tube, or similar igni-
tion device, but as the construction of these
spark plugs is so well known they are not
further illustrated. Each cylinder directly
above the flange 11 thereof is provided with 65
an inlet port 16 and with an exhaust port 17.
The inlet port 16 communicates with the
housing of the engine by a curved pipe 18,
said pipe passing upwardly from the inverted
channel-shaped frame 2. The frame 2 is 70
provided with an inlet port 19, whereby a
mixture of air and gas admitted to the hous-
ing of the engine will pass upwardly through
the pipe 18 and into the cylinder 9.

In each cylinder reciprocates a piston con- 75
sisting of heads 20 and 21, sections 22 and
packing rings 23, said packing rings being
interposed between the peripheral edges of
said sections and the heads 20 and 21. The
piston is supported by a piston rod 24 having 80
a shoulder 25 upon which the head 20 rests
and a screw-threaded end 26 upon which the
head 21 is secured. The head 21 serves to
retain the sections 22 and the rings 23 upon
the head 20 and permits of their ready re- 85
moval at any desired time.

One particular feature of my invention
resides in the head 21 which has its periphery
recessed, as at 27, whereby as the charge of
gas enters the cylinder 9 it will be deflected 90
upwardly to the top of the cylinder and pre-
vented from escaping through the exhaust
port 17, while the piston is in a lowered posi-
tion, such as illustrated in Fig. 3.

The piston rod is formed with a cross head 95
28 having a detachable member 29 which pro-
vides a slot 30 for a roller 31 carried by the
wrist pin 32 carried by the crank shaft 5.
The ends of the two-part cross head 28 are
provided with vertically-disposed grooves 36 100
to receive the tie-rods or guides 10, said tie-
rods thus serving to guide the cross head when
reciprocated within the housing of the engine.
The shaft 5 upon one end is provided with a
balance wheel 37 and upon the other end 105
with a gear wheel 38. This end of the shaft
also serves as the drive end, and may be pro-
vided with a belt pulley, gear wheel, sprocket
wheel or similar power transmitting wheel.

One side of the housing of the engine is 110
provided with brackets 38' in which is jour-
naled a longitudinally-disposed shaft 39,

carrying upon one end a gear wheel 40, meshing with an idler gear wheel 43, journaled at the end of the housing, said idler gear wheel also meshing in turn with the gear wheel 38 of the shaft 5. The shaft 39 is provided for controlling the electrical ignition devices, and the water pump of the engine.

In operation, I will assume that gas is being admitted to one of the cylinders, the piston of said cylinder being in the position illustrated in Fig. 3 of the drawings. It will of course be understood that while the piston of this cylinder is in this position, the other pistons of the engine are in operation, and that immediately upon one cylinder receiving its charge, the piston of said cylinder is elevated. As the piston travels upwardly closing the inlet and exhaust ports of the cylinder, the charge of gas within the cylinder is compressed and ignited, causing explosion, which drives the piston downwardly in the cylinder. The cylinder is permitted to exhaust slightly in advance of the opening of the inlet port and as it is ready to receive a fresh charge of gas. In providing the piston head 21 with a recess 27, I obviate the necessity for providing said head with flanges or deflectors of any type, as the shape of the recess in said head causes the gas to travel upwardly within the cylinder, and before it can descend the exhaust port is closed.

The two-part cross-head 28 of the piston rod 24 provides a relatively long piston head, and thus also provides a correspondingly long bearing and insures a positive centering of the piston rod within its cylinder during the stroke, thereby dispensing with the wear and tear of the cylinder heretofore experienced in unguided piston rods.

From the foregoing description taken in connection with the drawings it will be observed that I have devised an extremely simple engine, having comparatively few parts which can be easily and quickly assembled to provide an efficient and durable engine.

What I claim as new and desire to secure by Letters Patent, is:—

1. In an engine of the class described, a housing in two portions and having half bearings in their adjacent faces, cylinders mounted upon said housing, tie rods spaced apart and extending through said housing and connected to said cylinders, pistons operating in said cylinders, piston rods connected to said pistons and provided with transverse slotted cross heads slidably engaging said tie rods, and a shaft journaled in said housing bearings and provided with cranks operating in said slotted heads.

2. In an engine of the class described, a

housing in two portions having half bearings in their adjacent faces, one housing portion closed at its outer side and the other housing portion open at its outer side, cylinders mounted upon the open side of said housing portion, tie rods spaced apart and extending through the closed side of said housing portion and connected to said cylinders, pistons operating in said cylinders, piston rods connected to said pistons and provided with transverse slotted heads slidably engaging said tie rods, and a shaft journaled in said housing bearings and provided with cranks operating in said slotted heads.

3. In an engine of the class described, a housing in two portions and divided by transverse partitions into a plurality of compartments with shaft bearings in said partitions, a cylinder mounted upon said housing over each of said compartments, tie rods spaced apart in pairs and extending through said housing in each of said compartments and connected respectively to said cylinders, a piston operating in each of said cylinders, a piston rod connected to each of said pistons and provided with a slotted transverse head slidably engaging each pair of the tie rods in said compartments, and a shaft journaled in the bearings in said partitions and with a crank within each of said compartments and engaging said slotted heads.

4. In an engine of the class described, a housing in two portions having half bearings in their adjacent faces and divided by transverse partitions into a plurality of compartments with half bearings between the adjacent faces of the partitions, a cylinder mounted upon said housing over each of said compartments, tie rods spaced apart in pairs and extending through said housing in each of said compartments and connected respectively to said cylinders, a piston operating in each of said cylinders and consisting of spaced heads and a cylindrical intermediate portion whereby a relatively large bearing surface is produced, a piston rod having an intermediate shoulder bearing against one of said piston heads and threaded at one terminal into the other piston head and with a slotted head at the other terminal slidably engaging each pair of the tie rods, a shaft journaled in the bearings in said housing and in the partitions thereof and provided with crank pins respectively engaging the slotted heads of the several piston rods.

In testimony whereof I affix my signature in the presence of two witnesses.

EARL E. WRIGHT.

Witnesses:

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