

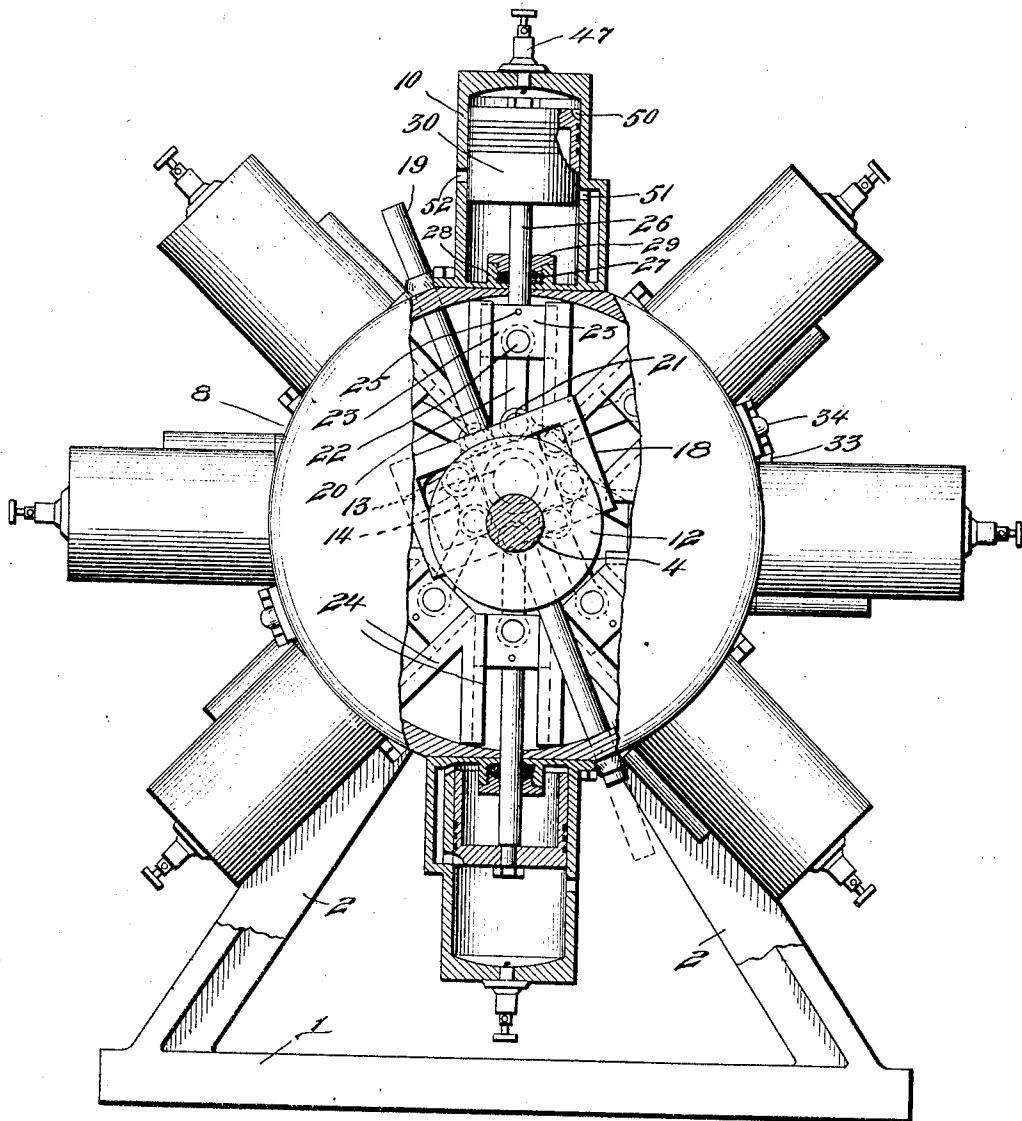
J. C. PEALER.
INTERNAL COMBUSTION ENGINE.
APPLICATION FILED JUNE 25, 1912.

1,061,923.

Patented May 13, 1913.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses
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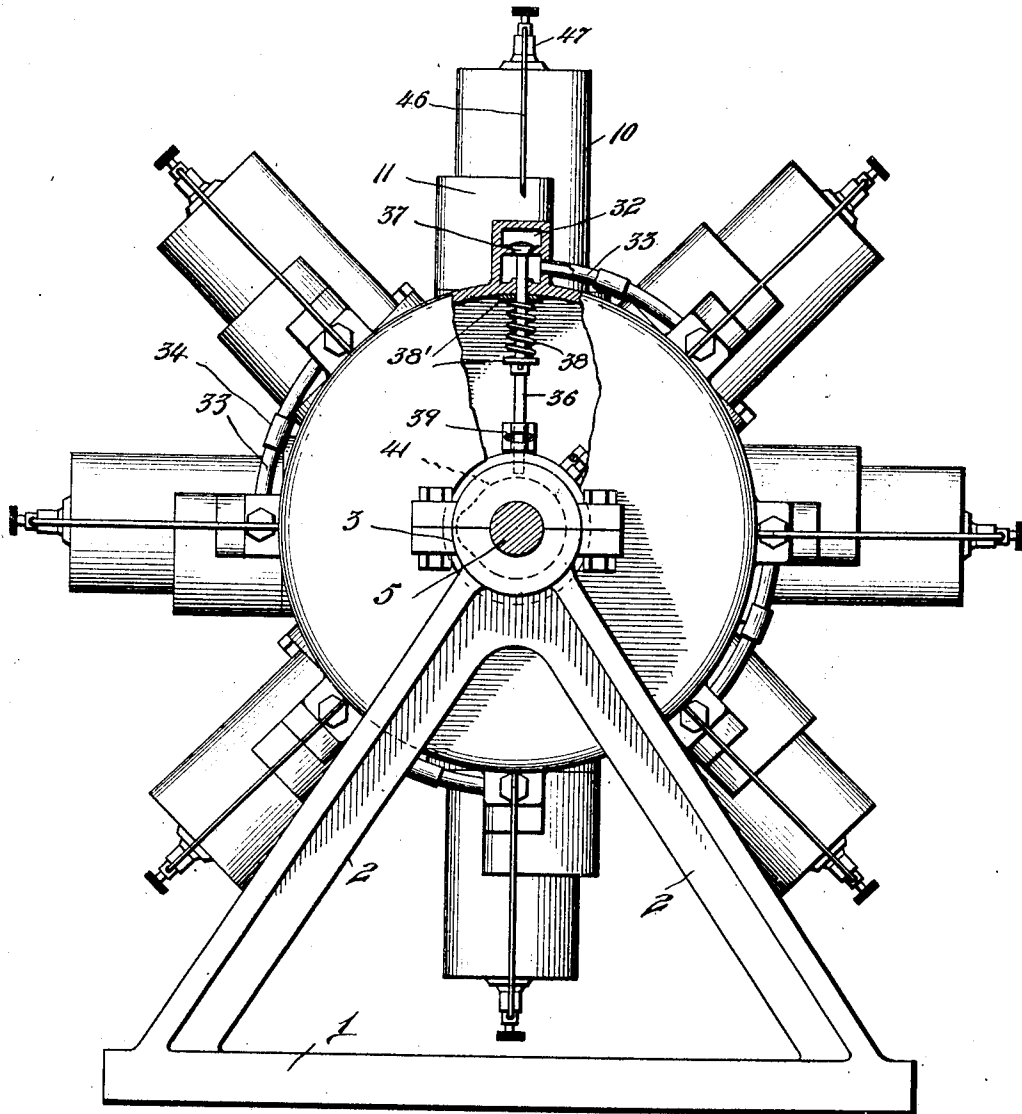
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4 SHEETS—SHEET 2.

Fig. 2.



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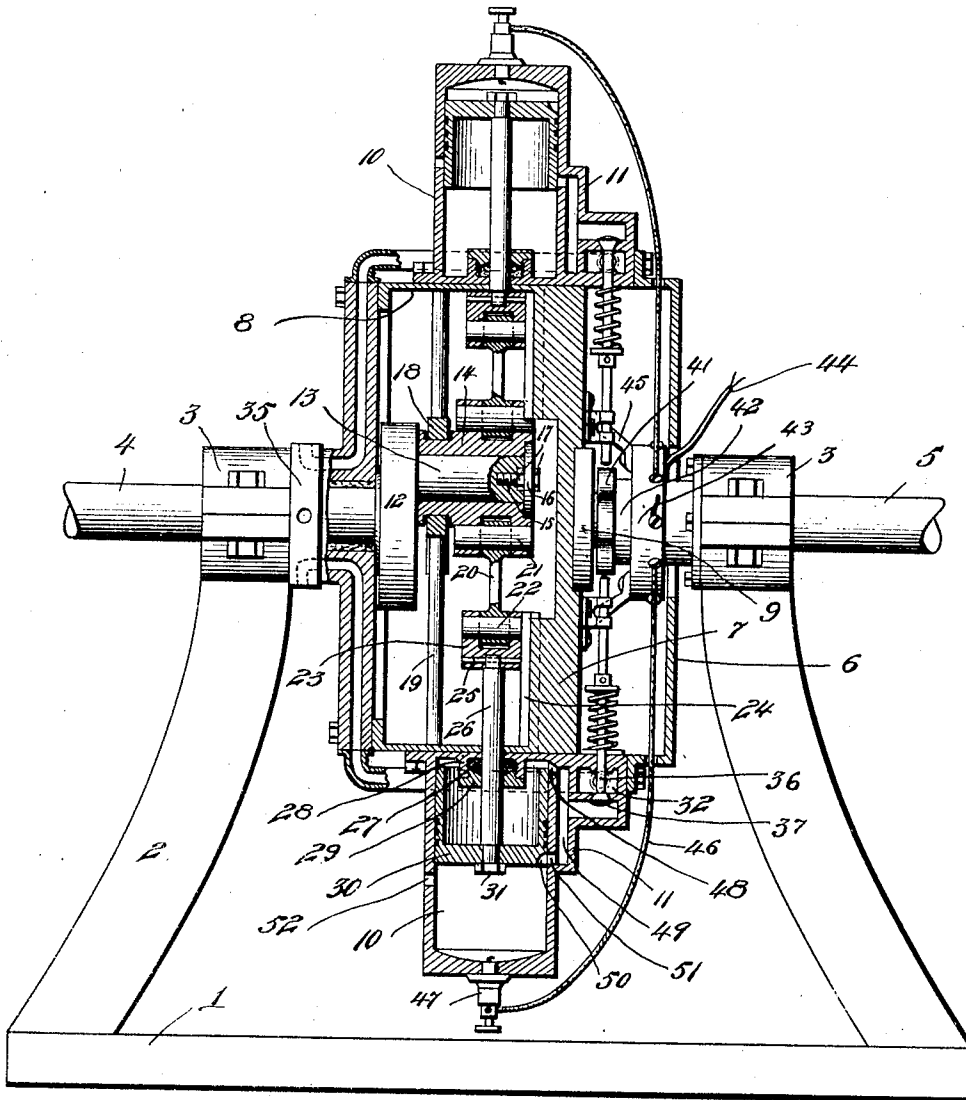
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4 SHEETS—SHEET 3.

Fig. 3.



Witnesses

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4 SHEETS-SHEET 4.

Fig. 4.

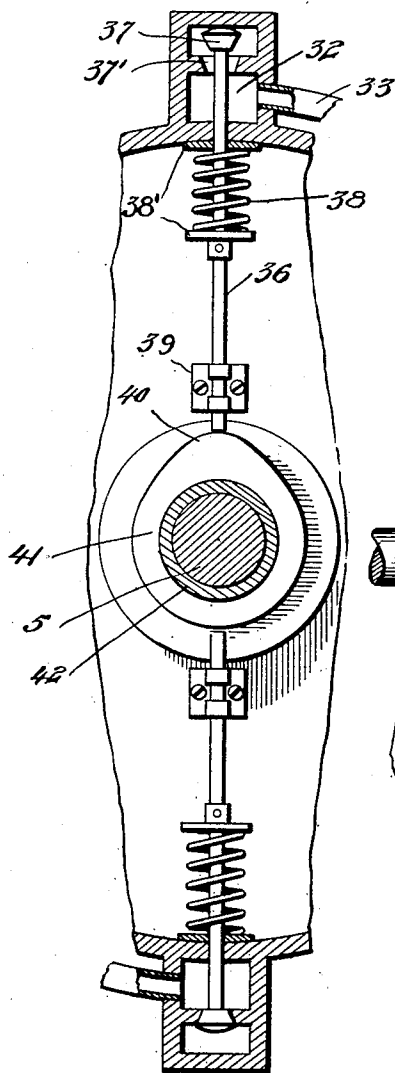
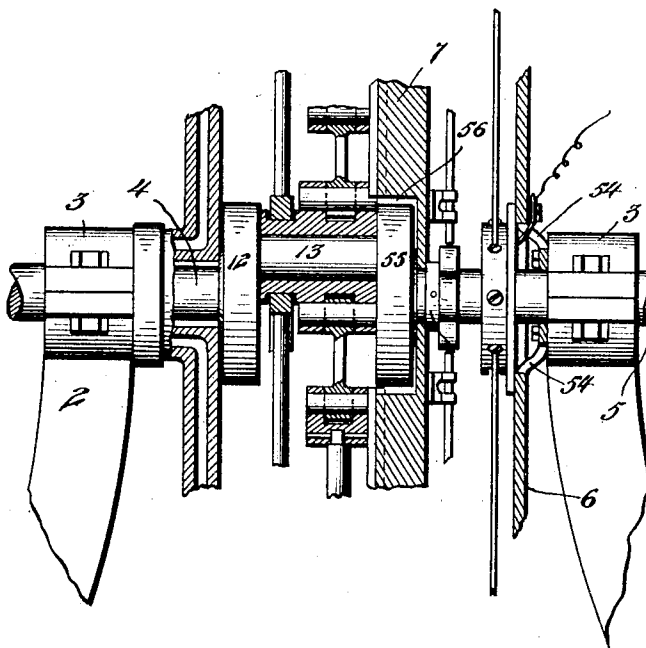


Fig. 5.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JAMES C. PEALER, OF MARION, INDIANA, ASSIGNOR OF ONE-HALF TO JOHN W. KELLEY.

INTERNAL-COMBUSTION ENGINE

1,061,923.

Specification of Letters Patent.

Patented May 13, 1913

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To all whom it may concern:

Be it known that I, JAMES C. PEALER, a citizen of the United States, residing at Marion, in the county of Grant and State of Indiana, have invented certain new and useful Improvements in Internal-Combustion Engines, of which the following is a specification.

My invention relates to improvements in internal combustion engines, and refers particularly to a two-cycle engine employing gas or gasoline as a fuel.

The primary object of my invention is the provision of an engine of this type which will secure a perfect balance for all the moving parts thereof, and which will at the same time practically eliminate vibration of the parts, without in any way decreasing the power of the engine or affecting its efficiency.

A further object of my invention is the provision of an engine of the rotating cylinder type which will at all times develop a steady and reliable power, and which will possess a perfect cooling condition by reason of the rotation of its cylinders.

Another object of my invention is the provision of an engine which will be of compact size to facilitate its installation and to effect an economy in working space; which will be strong and reliable; which will develop the greatest amount of power possible and yet be economical in operation; and which will in general prove highly satisfactory and efficient from every point of view.

With the attainment of these objects in view, my invention broadly stated, consists in the provision of an engine having a fixed shaft, a multiplicity of radially extending cylinders rotating around said shaft as an axis, valves for said cylinders, and means for operating said valves successively.

The invention further consists in the certain novel features of construction and combinations of parts, substantially as shown, described, and claimed hereinafter.

In order that the detailed construction and the operation of my invention may be understood and its many advantages seen and appreciated, I have illustrated in the accompanying drawings an engine constructed in accordance with and embodying the principles of my invention, it being understood that I do not limit myself to the exact details of construction herein shown,

but reserve the right to make such changes and modifications as come within the spirit and scope of my invention.

Figure 1 is a side elevation of an internal combustion engine constructed in accordance with and embodying my invention, the casing being partly broken away to illustrate details of construction, and a pair of the cylinders being shown in section. Fig. 2 is a similar view taken from the opposite side of the engine, the casing being partly broken away to afford a view of the valve operating mechanism of my engine. Fig. 3 is a vertical transverse central sectional view through the engine. Fig. 4 is an enlarged detail view of the valve operating mechanism, and Fig. 5 is a fragmentary sectional view of a slightly modified construction.

In the drawings: The numeral 1 designates the bed plate, from which rise the supports 2, formed at their upper ends with bearing boxes 3, in which are journaled the stationary crank shaft 4 and the rotating main shaft 5, which shafts pass through the crank case 6. The main shaft is secured to the vertical wall 7 of the cylinder supporting drum 8 by the collar 9 and suitable fastenings. Said drum also carries a series of cylinders 10, formed with offset portions 11. The stationary shaft 4 has a crank or disk 12 upon its inner end, to which is eccentrically secured the wrist pin 13, journaled in the cylindrical piston link bearing 14. Said pin has a socket in which is mounted a bolt 15, having a head or plate 16, and a pair of tightening nuts 17. The bearing 14 is held in proper position by means of the open square yoke 18, which fits around said bearing at one end and is provided with the sliding guide rod 19, passing through the crank case and serving as a guiding and steadying means for the yoke and bearing. Passing transversely through the inner ends of the piston links 20 and securing the same to the cylindrical bearing 14 are the pins 21. The outer ends of the piston links are secured by the pins 22 to the sliding cross heads 23, sliding in guides 24 in the vertical wall 7 of the supporting drum 8. Fastened by the keys 25 to the cross heads are the piston rods 26, passing through openings in the drum and casing and through the packing 27, the packing gland 28, and the nut 29 on the inside of the cylinders 10, and are

fastened to the pistons 30 by the nuts 31. From this construction it will be seen that the shaft 4 is stationary and that the several piston rods are connected by the piston links to the bearing 14 of the wrist pin, and that this bearing is retained in place by the headed bolt 15 and the rectangular or square yoke 18.

In the offsets 11 of each cylinder is a valve chamber 32, connected by a pipe 33 with the valve chamber of the adjacent cylinder so that the cylinders are connected in pairs. Each pipe 33 has a T coupling 34, which leads to the collar 35 on the bearing box 3. This collar is suitably connected, as by a manifold, to the carbureter (not shown), and the intake therefrom passes through said pipes 33 into the valve chamber.

Mounted in each valve chamber is a valve rod 36 carrying a valve 37, seated in a valve seat 37' and controlled by a spring 38, confined between heads 38' on said rod. The valve rod passes through a guide bracket 39 fastened on the vertical wall 7 of the drum 8, and makes contact with the cam portion 40 of the stationary cam 41, formed on a sleeve 42 bolted to the adjacent bearing box 3 on the shaft 5.

Mounted on the shaft 5 is a commutator 43, connected by a wire 44 with the batteries and spark coil (not shown). This commutator has eight sections, one for each cylinder, and is rotatable with the drum 8 by means of the brackets 45, connecting said parts. Each section of the commutator is connected by a wire 46 with the spark plug 47 of the cylinder.

The operation so far is as follows: The cylinders, shaft 5, crank case, drum, and commutator are rotatable. The shaft 4 and cam 41 are stationary. The valves of course rotate with the cylinders. Referring to the lower cylinder of Fig. 3, the mixture is fed from the carbureter into the pipes 33 and from thence into the valve chambers 32. As the piston moves from the bottom toward the top of the cylinder, *i. e.*, toward the spark plug, a suction is formed. A charge is sucked into the cylinder through port 48 and vertical passage 49, communicating with said port and the valve chamber. The valve is open at this time by reason of its contact with the cam portion of the stationary cam, thereby permitting the charge to pass through the valve opening or seat 37'. This charge is being sucked in until it reaches the desired point. The compression then begins in the lower part of the cylinder and continues until the port 50 of the piston registers with the port 51 of the vertical passage 49. The charge now rushes through port 48, passage 49, port 51, and impacts against the piston, causing the charge to rush to the upper end of the cylinder. This

charge is compressed until it reaches the proper place, and is ignited by means of an electric spark, conveyed by the commutator. As ignition is made, the combustion drives the piston downward and carries the engine onward to the right until the piston registers with the exhaust port 52, allowing the burnt gases to escape into the atmosphere or into a muffler. As the piston travels a little farther, port 51 is opened and a fresh charge rushes into the top of the cylinder and assists in forcing out the burnt gases.

It will be noted that as the piston moves upward and compression takes place in the top of the cylinder, another charge is being sucked into the lower part of the cylinder, and that in this manner an impulse or explosion is given the engine at every revolution. It will also be noted that three of these impulses are effective at all times, and that a steady and high power is thus derived.

In the modification shown in Fig. 5, the cylinders do not rotate and the crank case is secured to the main shaft by brackets 54. The crank shaft 4 rotates and its crank or disk 12 is connected by the wrist pin 13 to the disk 55 on the shaft 5. This disk fits in an annular recess 56 of the vertical wall 7 of the drum 8. In this construction, both the cam and the commutator rotate with shaft 5. The operation of the cylinders, etc. is similar to that in the preferred construction.

From the foregoing description, it will be seen that I have provided a simple, economical, reliable, and efficient engine which will be capable of production at a low cost and will prove entirely satisfactory in use.

I claim:—

1. In an engine, the combination with a fixed shaft and a rotating shaft, of a plurality of cylinders rotating around said fixed shaft, piston rods carrying pistons sliding in said cylinders, sliding cross heads to which said rods are connected, piston links connected to said cross heads, a bearing for said links, a rectangular shaped yoke embracing said bearing near one end, and a reciprocating guide rod for said bearing and yoke and a single element fixed on said rotating shaft against which the valve rods of each of said cylinders successively contact in their rotation.

2. In an engine, the combination with a fixed shaft and a rotating shaft, of a plurality of cylinders rotating around said fixed shaft, piston rods carrying pistons sliding in said cylinders, sliding cross heads to which said rods are connected, piston links connected to said cross heads, a bearing for said links, a rectangular shaped yoke embracing said bearing near one end, a reciprocating guide rod for said bearing and

yoke, valves for said cylinders, valve rods for said valves, and a stationary cam carried by the rotating shaft with which said valve rods contact successively.

5 3. The combination with a revolving drum carrying piston cylinders, of a rotating shaft secured thereto, a stationary cam on said shaft, valve rods carrying valves for said cylinders adapted to successively
10 contact with the cam, a fixed shaft carrying a crank having a wrist pin, a cylindrical bearing carried thereby, piston links secured in said bearing, piston rods connected to said links and carrying pistons controlled
15 by said piston valves, and means embracing one end of the piston link bearing and movable therewith for securing the same in position.

4. In an engine, in combination, a fixed
20 shaft and a rotating shaft, a crank on said fixed shaft, a wrist pin carried thereby, a bearing in which said pin is journaled, piston links secured in said bearing at one end and in cross heads at the other end,
25 piston rods fastened in said cross heads, guides in which said cross heads slide, a drum carrying cylinders revolving with said rotating shaft, piston heads carried by said piston rods, offset portions on said cylinders,
30 valves in said portions, a stationary cam on said rotating shaft against which the

valve rods successively contact, and an open rectangular frame secured to the bearing and having a guide rod passing through the yoke and casing.

5. In an engine, the combination of a fixed shaft, a disk thereon, a wrist pin on said disk, a bearing therefor, piston rods connected to said bearing, an open rectangular yoke embracing one end of the bearing and
40 eccentric with reference to the fixed shaft, a guide rod for said yoke, and a rotating shaft carrying a rotating drum having cylinders rotating with said drum and shaft.

6. In an engine, the combination of a fixed
45 shaft, a disk thereon, a wrist pin on said disk, a bearing therefor, piston rods connected to said bearing, an open yoke embracing one end of the bearing and eccentric with reference to the fixed shaft, a guide rod for
50 said yoke, a rotating shaft, a drum carrying cylinders rotating with said shaft, offsets on said cylinders, valves therein, valve rods for said valves, and a stationary cam on the rotating shaft against which said valve rods
55 contact successively.

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

JAMES C. PEALER.

Witnesses:

NELLE CAMPBELL,
JOHN R. BROWNE.