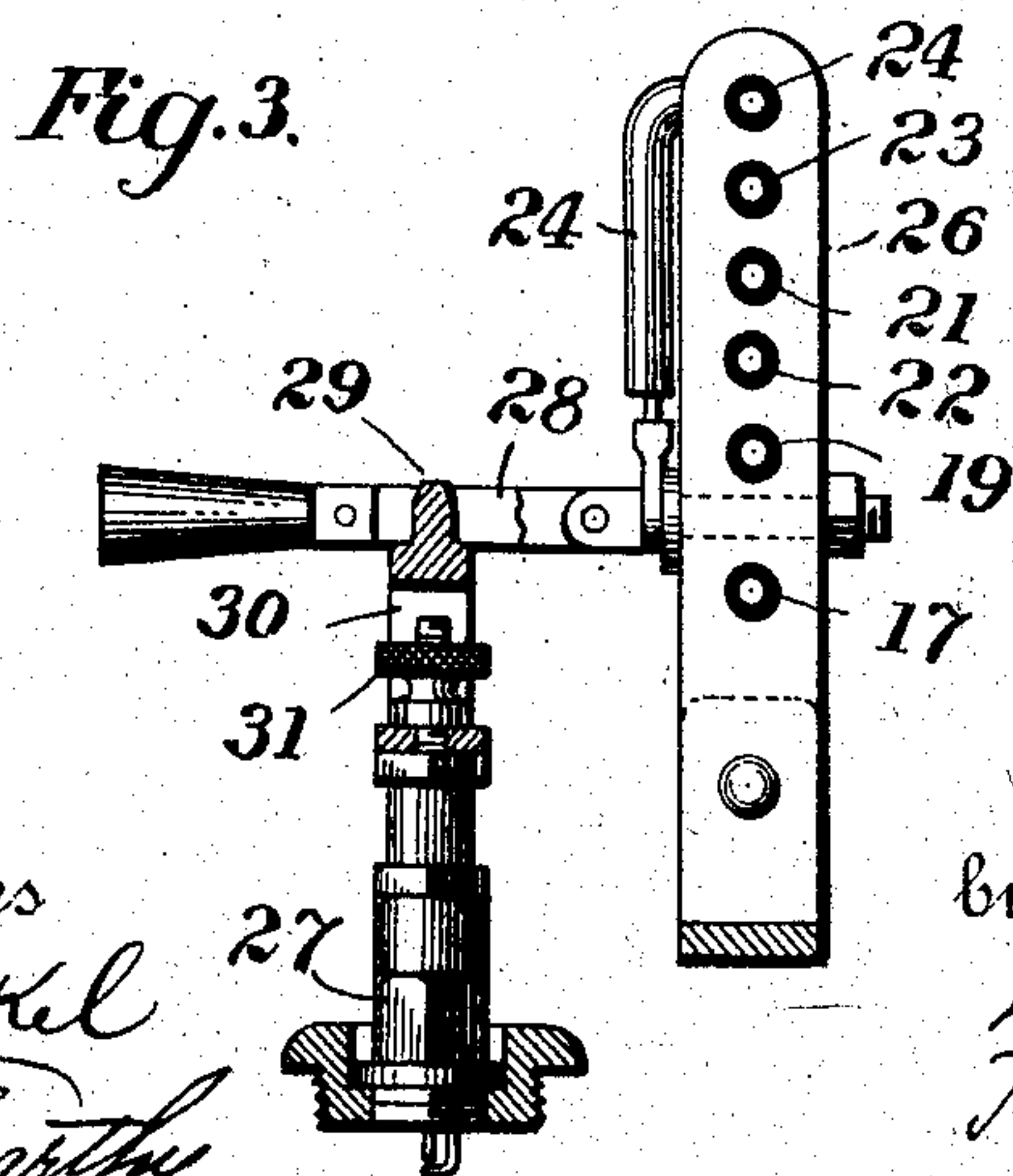
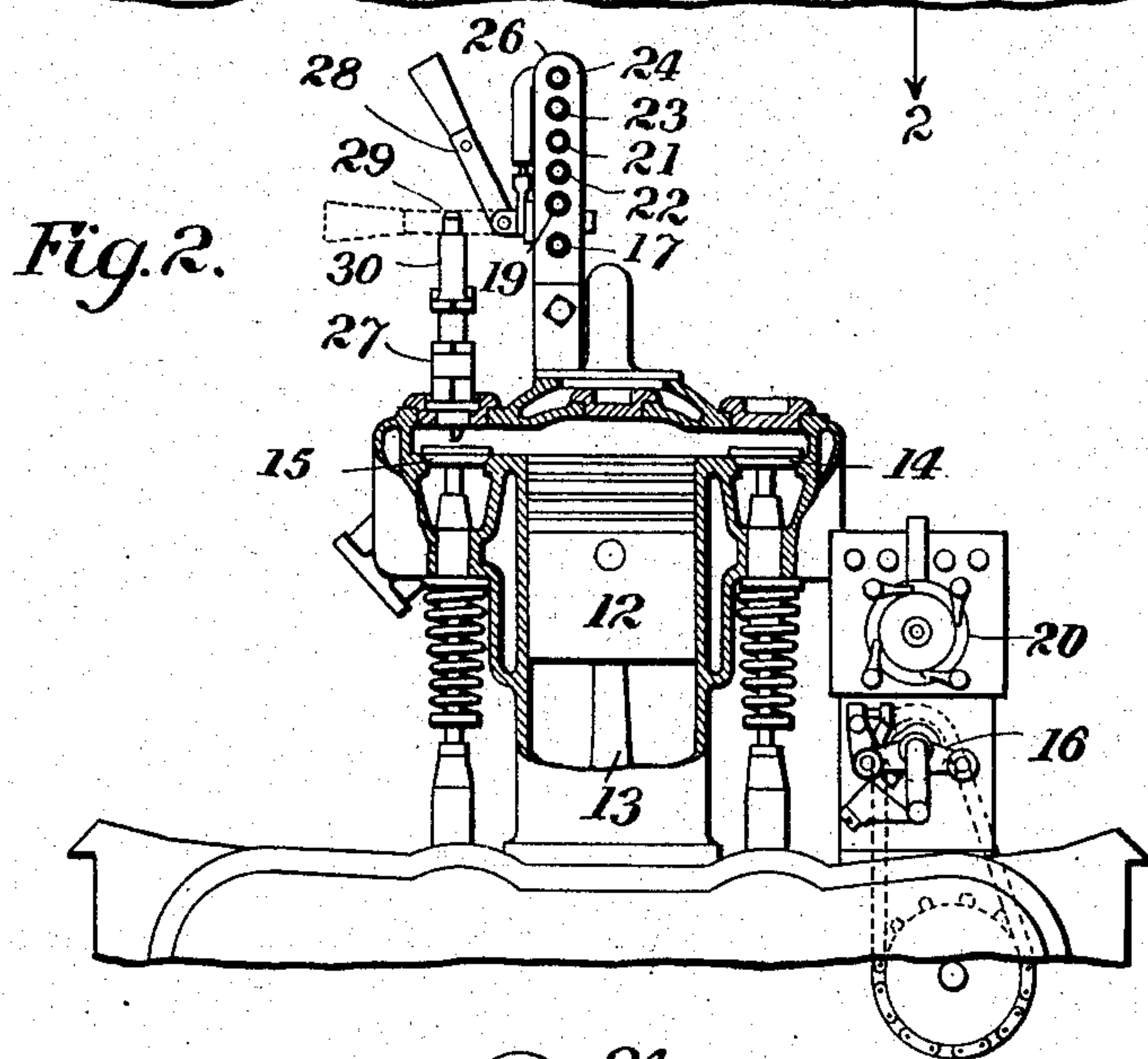
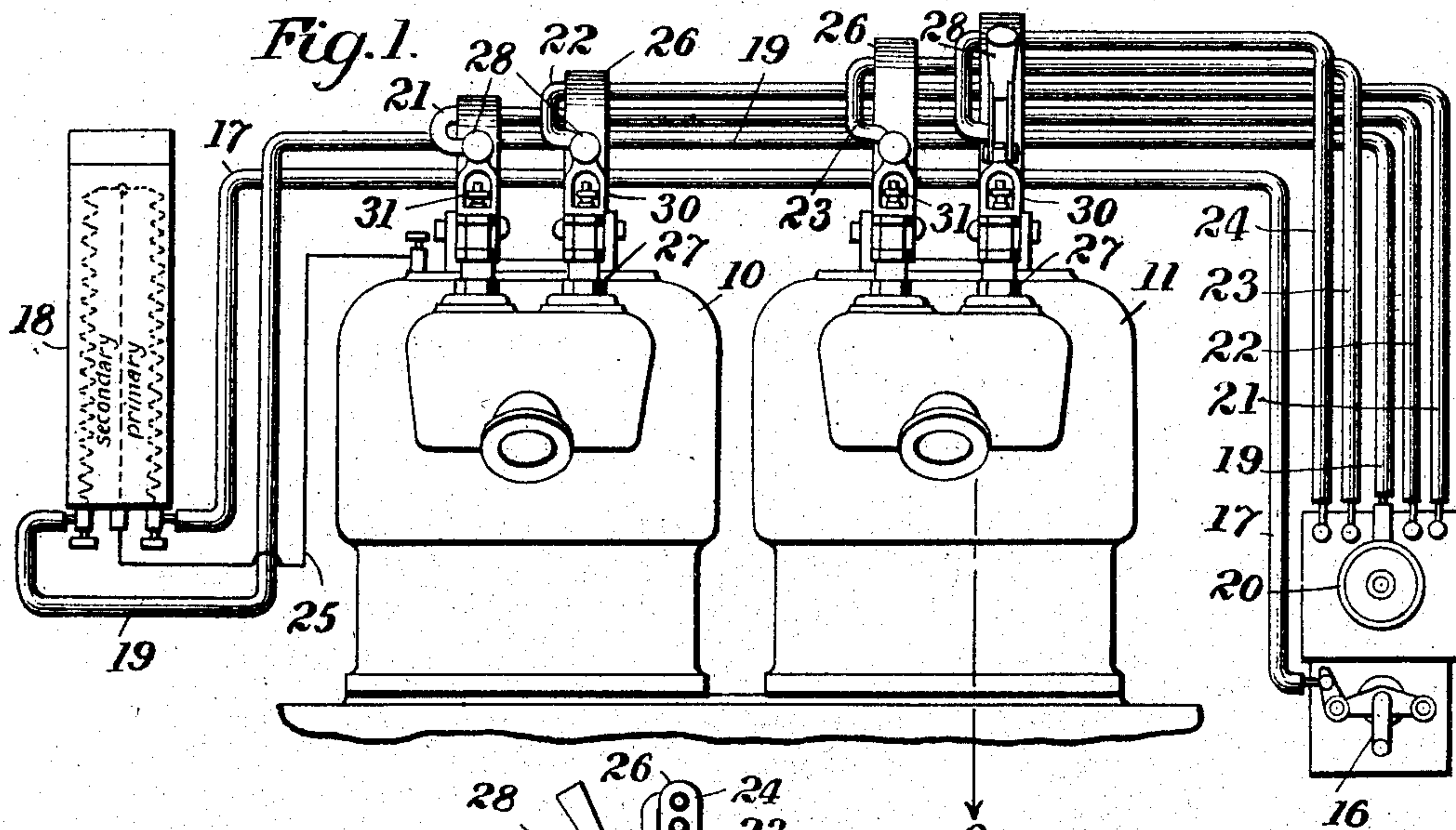


R. HUFF.
HYDROCARBON ENGINE IGNITION SYSTEM.
APPLICATION FILED JUNE 15, 1906.

973,507.

Patented Oct. 25, 1910.



Witnesses
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UNITED STATES PATENT OFFICE.

RUSSELL HUFF, OF DETROIT, MICHIGAN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
PACKARD MOTOR CAR COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF
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HYDROCARBON-ENGINE IGNITION SYSTEM.

973,507.

Specification of Letters Patent.

Patented Oct. 25, 1910.

Application filed June 15, 1906. Serial No. 321,936.

To all whom it may concern:

Be it known that I, RUSSELL HUFF, a citizen of the United States, and resident of Detroit, Wayne county, State of Michigan, have invented certain new and useful Improvements in Hydrocarbon-Engine Ignition Systems, of which the following is a specification.

This invention relates to improvements in the ignition apparatus of multiple cylinder hydrocarbon engines for motor vehicles.

The invention will be described in connection with the accompanying drawing, in which,

Figure 1 is a side elevation of the cylinders of a four-cylinder hydrocarbon engine showing the ignition system; Fig. 2 is a section on the line 2 of Fig. 1; and Fig. 3 is a detail.

Referring to the drawing 10, 11, indicate two cylinder casings each comprising a pair of cylinders of a four-cylinder hydrocarbon engine, 12 indicates one of the pistons, 13 a connecting rod, 14 an exhaust valve and 15 a mixture valve. A magneto 16 is suitably geared to the engine shaft and supplies the current for the ignition devices. The low tension current from the magneto passes through a conductor 17 to a coil or transformer in box 18. The high tension current from the transformer passes through a conductor 19 to a distributor 20 also driven by the engine, by means of which it is distributed to the several cylinders and the sparks properly timed. The current from the distributor passes to the cylinders through conductors 21 and 24 inclusive. The high and low tension circuits are completed through a ground wire 25 which connects the coil with the engine or other part of the machinery.

The conductors 17, 19 and 21 to 24 inclusive are supported by posts 26 of insulating material which are rigidly connected to the engine casings. These posts are set opposite the spark plugs 27 and upon each post is mounted a switch lever 28 which can be thrown into and out of contact with a contact 29 of the spark plug. This contact is in the form of a yoke 30 which is detachably connected to the spark plug by a thumb screw 31. The switch preferably has two

blades and the part 29 is preferably cylindrical and enters between the blades, as illustrated in the drawings.

In a high tension ignition system it is important to have the conductors thoroughly insulated to prevent leakage. This is accomplished by mounting the conductors in the manner described and maintaining them separated. Another advantage obtained by this construction is that the inductive action of the high tension circuit for one cylinder upon the high tension circuit for another cylinder is reduced to a minimum or practically obviated so that a premature ignition by induction is prevented. I have found the arrangement above described to be very effective in this respect. In the operation of motor cars having multiple cylinder engines it is important to be able to locate trouble with the ignition system quickly, and by the apparatus above described I am enabled almost instantly to detect which conductor or spark plug is out of order when trouble occurs with any of them. Thus when there is a "miss" in any of the cylinders each cylinder is tested in turn by opening the switches of the other cylinders. Thus in a few moments each cylinder can be tested and the difficulty can be accurately located. By using the detachable yoke contacts upon the spark plugs I am able to replace a plug without discarding the contact and I am also able to use these yoke contacts with plugs of different design and manufacture.

Having described my invention what I claim is,

1. In a high tension ignition system for hydrocarbon engines for motor vehicles, the combination with a plurality of engine cylinders, of a spark plug on each cylinder, a post or support of insulating material adjacent to each spark plug, a switch carried by each support and arranged to cooperate with the spark plug, and a conductor leading to each switch, the said conductors being separately mounted upon said posts.

2. In a high tension ignition system for hydrocarbon engines for motor vehicles, the combination with a plurality of engine cylinders, of a spark plug on each cylinder, a detachable yoke 30 on each spark plug pro-

vided with a contact, a post or support of insulating material adjacent to each spark plug, a switch carried by each support and arranged to cooperate with said contact, and
5 a conductor leading to each switch, the said conductors being separately mounted upon said posts.

3. In a high tension ignition system for hydrocarbon engines, the combination with
10 a source of low tension current and a transformer for creating a high tension current, of a plurality of engine cylinders, a corresponding plurality of high tension conductors leading to the cylinders, a distribu-
15 ter for directing the current to said conductors successively, spark plugs on the cylinders, a post or support of insulating material upon each cylinder, and a switch carried by each post or support and cooperating with the spark plug of the correspond-

ing cylinder, the said conductors being mounted upon said posts or supports.

4. In a high tension ignition system for hydrocarbon engines for motor vehicles, the combination with a plurality of engine cyl- 25
inders, of a spark plug on each cylinder, supporting means consisting of insulating material adjacent each spark plug, switches carried by said supporting means and arranged to cooperate with the respective 30
spark plugs, and high tension conductors mounted on said insulating supporting means, one of said conductors leading to each of said switches.

In testimony whereof I affix my signature 35
in presence of two witnesses.

RUSSELL HUFF.

Witnesses:

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