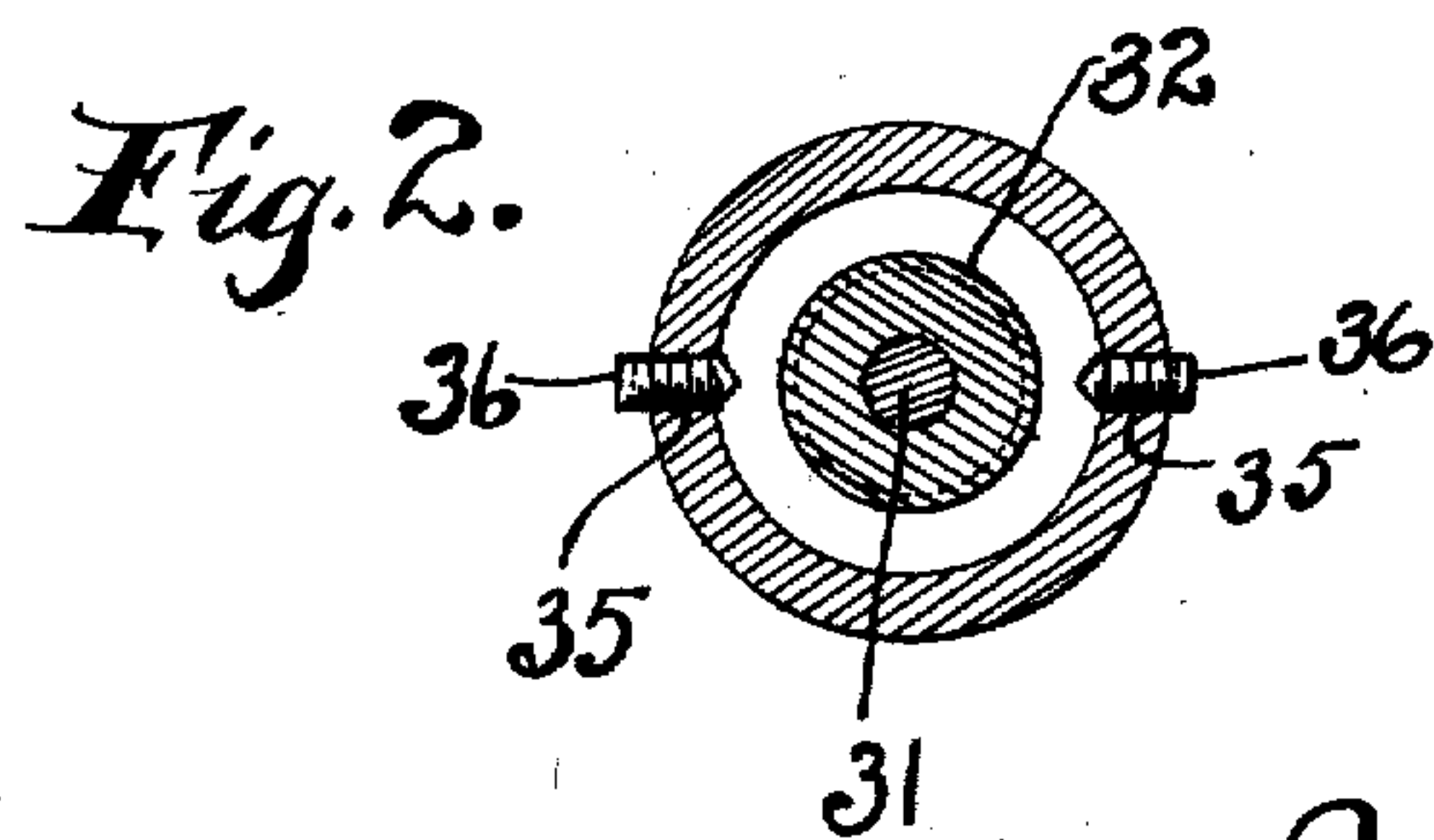
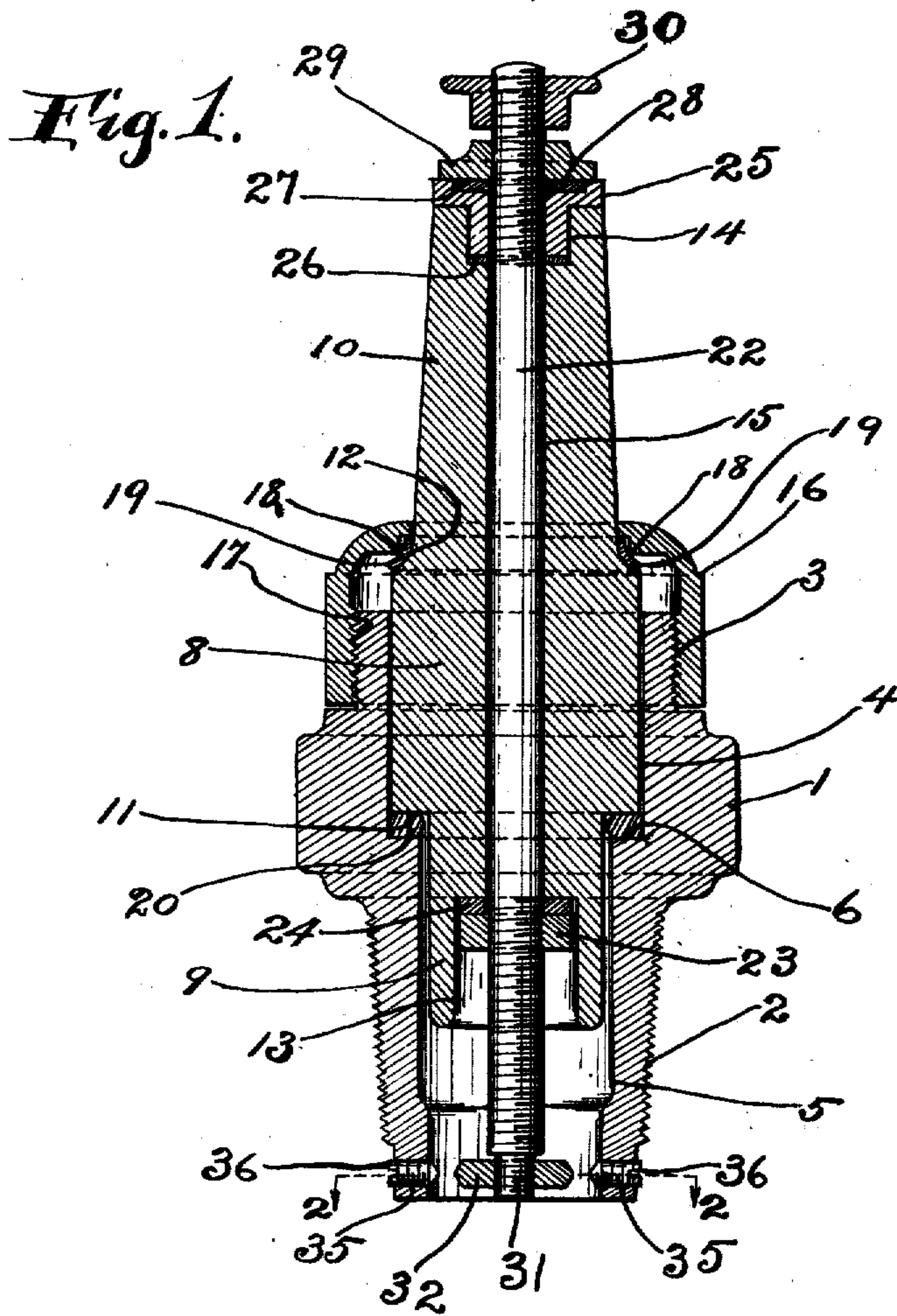


J. E. SCHAEFER, JR.
SPARK PLUG.
APPLICATION FILED JULY 28, 1910.

995,989.

Patented June 20, 1911.



Witnesses:
H. J. Bellins.
B. C. Brown.

Inventor:
Joseph E. Schaefer Jr.
by Lynch & Corer
his Attorneys.

UNITED STATES PATENT OFFICE.

JOSEPH E. SCHAEFER, JR., OF DETROIT, MICHIGAN.

SPARK-PLUG.

995,989.

Specification of Letters Patent. Patented June 20, 1911.

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To all whom it may concern:

Be it known that I, JOSEPH E. SCHAEFER, Jr., a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Spark-Plugs; and I 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 pertains to make and use the same.

This invention relates to new and useful improvements in spark plugs.

The object of this invention is to provide a spark plug which will be simple in construction so that it can be readily taken apart and cleaned and one in which the electrodes will be thoroughly insulated thereby preventing short-circuiting within the plug.

A further object of the invention is to provide terminals for the electrodes which will have a comparatively large surface and which can be readily adjusted thereby increasing the life and general efficiency of the plug.

With these and further objects in view my invention consists in the features of construction and combination of parts, described in the specification, pointed out in the claim and illustrated in the accompanying drawings.

In the accompanying drawings Figure 1 is a central section through a spark plug embodying my invention. Fig. 2 is a section on line 2-2, Fig. 1.

Again referring to the drawings, 1 represents the casing or shell of the spark plug which is open at both ends. The casing is provided with the usual exterior screw-thread 2 at one end whereby it may be screwed into the engine cylinder and with an exterior screw-thread 3 at the opposite end. In the upper part of the casing 1 is formed a cylindrical bore 4 and in the lower part is arranged a chamber 5, the said chamber 5 being a continuation of the bore 4 but of smaller diameter so that an annular seat 6 is formed in the lower part of the bore 4. The insulating member comprises a cylindrical body portion 8 which is adapted to fit snugly in the bore 4, a reduced portion 9 which extends down into the chamber 5 and a tapered portion 10 which extends outwardly beyond the said casing 1. A flat annular shoulder 11 is formed at the inner end of the cylindrical body portion 8 and

an annular concave seat 12 is formed at the outer end of said cylindrical portion 8. A recess 13 is formed in the extension 9 and a recess 14 is formed in the end of the tapered portion 10. A bore 15 extends from the bottom of the recess 13 to the bottom of the recess 14. A union 16 is provided for holding the insulating member in the shell 1, said union being provided with an interior screw-thread 17 which engages the thread 3 on the casing 1. An inwardly projecting annular shoulder 18 is formed on the interior surface of the union so as to register with the concave seat 12 on the insulating member and between said shoulder 18 and the concave seat 12 is arranged a flexible washer 19. A washer 20 is preferably arranged between the annular seat 6 and the shoulder 11. It will be readily seen that as the union 16 is screwed down onto the casing the shoulder 18 will press the washer 19 against the concave seat 12 thereby forming a gas tight joint which prevents the gas from the cylinder escaping through the plug.

A spindle 22, screw-threaded at each end, extends through the bore 15 in the insulating member and projects beyond said insulating member at each end and the end thereof within the casing 1 extends down to the end of said casing. A nut 23 is arranged on the spindle 22 within the recess 13, a washer 24 being preferably arranged between said nut 22 and the bottom of said recess 13. On the opposite end of said spindle 22 is arranged a nut 25 having a reduced portion adapted to fit into the recess 14 and between the bottom of the recess 14 and the said nut 25 is arranged a washer 26. A recess 27 is formed in the top of the nut 25 and therein is arranged a packing ring 28 and over the packing ring is a lock nut 29. The spindle is also provided with a thumb nut 30 for connecting the electric wire in the usual manner.

The lower end of the spindle 22 is preferably reduced in diameter and is provided with a screw-thread as shown at 31, and on this reduced end is screwed a disk 32 which forms one of the terminals of the spark plug. The perimeter of the disk is preferably provided with a double bevel. Around the lower end of the casing 1 is formed a series of screw-threaded openings 35 and in each opening is arranged a small screw 36 having a conical shaped point. The screws 36 together form the other terminal of the spark plug.

From the foregoing description it will be seen that I have provided a spark plug which will absolutely prevent leakage of gas from the cylinder through said plug, 5 also by providing the recess in the lower part of the insulating member arranged to receive the clamping nuts on the spindle I am able to prevent the accumulation of deposits between the nuts and the inner surface 10 of the casing, which would result in forming a cross circuit. Also the arrangement of the disk and the series of screws give a very large working surface for the terminals while permitting of an accurate adjustment 15 of the terminals, thereby securing great efficiency in the operation of the spark plug.

What I claim is:—

In a spark plug, a casing provided with a screw-thread at each end thereof and having a bore extending therethrough, the bore at one end being larger than the bore at the other end so that an annular shoulder is formed within said bore, an insulating member arranged in said bore and having an 20 annular shoulder arranged to abut against the shoulder in said bore, said insulating member being also provided with a recess at each end and a curved annular shoulder on its exterior surface intermediate of its

ends, a union adapted to slip over the outer 30 end of said insulating member and having a screw-thread arranged to engage the thread on the adjacent end of the casing said union having an annular angular shoulder on its inner surface arranged to register with the 35 curved seat on the insulating member, a flexible washer arranged between said seat and said shoulder, a spindle arranged in said insulating member and extending beyond said insulating member at each end, the said 40 ends being screw-threaded, a nut arranged on the outer end of said spindle, said nut having a reduced portion which extends down into the recess in the outer end of the insulating member and being also provided 45 with a recess in its outer face, a ring arranged in said recess, a lock nut arranged over said ring, a disk arranged on the inner end of said spindle and a series of screws having conical shaped points mounted in 50 said casing in the plane of said disk.

In testimony whereof, I sign the foregoing specification, in the presence of two witnesses.

JOSEPH E. SCHAEFER, JR.

Witnesses:

VICTOR C. LYNCH,
N. L. McDONNELL.