A. L. NELSON.

INTERNAL COMBUSTION ENGINE.

APPLICATION FILED AUG. 18, 1919.

1,372,897. Patented Mar. 29, 1921.

Fig. 1.

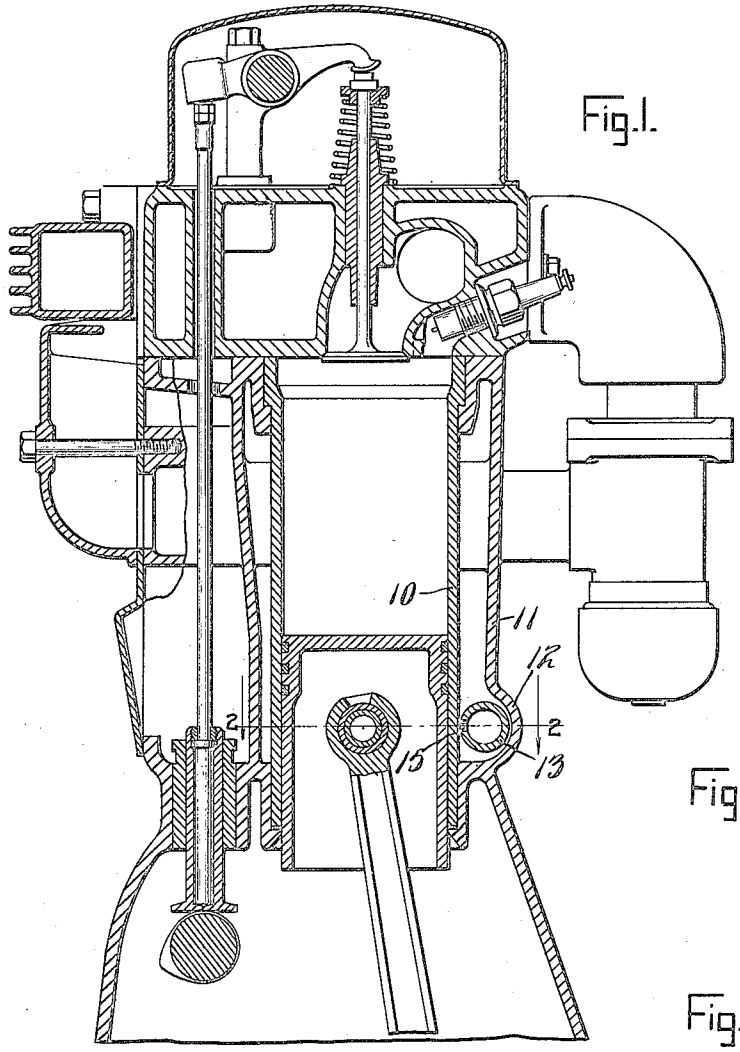


Fig. 3.

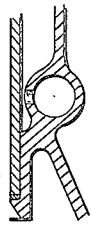


Fig. 4.

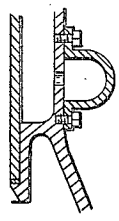
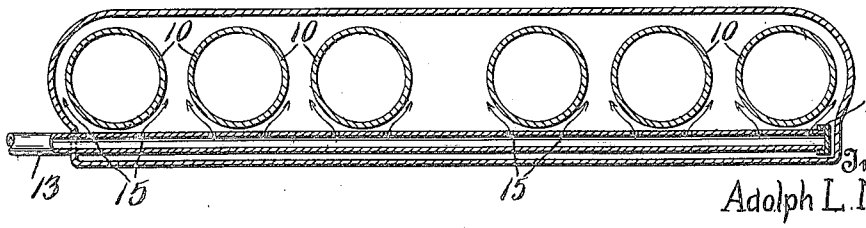


Fig. 2.



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By

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UNITED STATES PATENT OFFICE.

ADOLPH L. NELSON, OF INDIANAPOLIS, INDIANA.

INTERNAL-COMBUSTION ENGINE.

1,372,897. Specification of Letters Patent. Patented Mar. 29, 1921.

Application filed August 18, 1919. Serial No. 318,367.

To all whom it may concern:

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

In water cooled internal combustion engines of the ordinary type the water comes into one end of the engine and passes across the cylinders from end to end of the cylinder casing resulting in the water meeting the first cylinders in a colder condition, or at lower temperature, than when it meets the cylinders toward the other end of the engine casing. By this means an uneven cooling effect is produced with subsequent well known disadvantages, such as uneven distribution of gas and charges and uneven action by the respective cylinders.

The object of my said invention is to provide means for introducing a cooling medium at the same temperature and in uniform manner against and around all of the cylinders of the engine, so that each will be effected uniformly by the cooling medium and the disadvantages above referred to thereby obviated.

Referring to the accompanying drawing which is made a part hereof and on which similar reference characters indicate similar parts,

Figure 1 is a sectional view through an internal combustion engine equipped with my said invention,

Fig. 2, a horizontal section through a portion thereof as seen when looking in the direction indicated by the arrows from the dotted line 2—2 in Fig. 1, and

Figs. 3 and 4 are detail views showing modified forms.

It will not be necessary to describe the construction and arrangement of the various parts comprising the structure of engine illustrated, the same being shown merely to illustrate the type of engine to which my invention may be found applicable.

The cylinders 10 are mounted within the casing 11 in any appropriate manner, but preferably substantially as illustrated in Patent No. 1,301,254. In this construction I form the casing or jacket 11 with a longitudinal bulged-out portion 12 near the lower end in which I mount a longitudinal pipe 13 with a closed inner end 14, the other end being connected with the water supply. Said pipe is formed with perforations 15, preferably arranged so that streams of water projecting through said perforations will come against the opposite sides of the several cylinders 10. If found desirable in any case the perforations 15 may vary slightly in diameter increasing from the inlet toward the inner end, so as to insure a uniform volume of water discharge. In ordinary constructions, however, I find that no variation is necessary inasmuch as the length of the pipe is not sufficient to make any material difference in the discharge between one end and the other.

In operation the water for cooling comes in from the pump through pipe 13 and is discharged through the perforations 15 against the cylinders 10, being conducted by said pipe throughout the length of the cylinder casing, so that the cylinders at the inner end of the casing are subjected to the action of water of the same temperature as the cylinders at the other end of the casing, and a uniform cooling effect is thus secured and a uniform temperature of the various cylinders at any horizontal plane maintained, thus insuring a uniform distribution of gas, a uniform weight of charge in each cylinder, a uniform action under the explosions in the several cylinders; and also a uniform contraction and expansion under the action of the cooling and heating agencies, all of which contributes to the efficiency, smoothness of operation, the power, and the maintenance of the various parts of the engine in uniform condition at all times.

In Figs. 3 and 4 are illustrated two obvious modifications to show some of such, all of which I regard as within the scope of my invention.

Having thus fully described my said invention, what I claim as new and desire to secure by Letters Patent, is:

1. An internal combustion engine comprising a jacket and several cylinders spaced apart therein and a pipe for conducting the cooling medium extending from end to end of the jacket and terminating therein and provided with perforations for discharging the cooling medium against each of the several cylinders, substantially as set forth.

2. An internal combustion engine comprising a jacket formed with a bulged-out portion near the lower extremity, cylinders

arranged within said jacket and spaced therefrom, a water pipe positioned within the jacket and adjacent thereto in complement with the bulged-out portion, said water pipe terminating within the jacket and formed with perforations positioned to discharge against each of said cylinders, substantially as set forth.

In witness whereof I have hereunto set my hand and seal at Indianapolis, Indiana, this 12th day of July, A. D. nineteen hundred and nineteen.

ADOLPH L. NELSON. [L. S.]

Witnesses:
E. W. BRADFORD,
M. L. SHULER.