F. DE W. CHENEY.

INTENSIFIER.

APPLICATION FILED NOV. 7, 1917.

1,390,020.

Patented Sept. 6, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

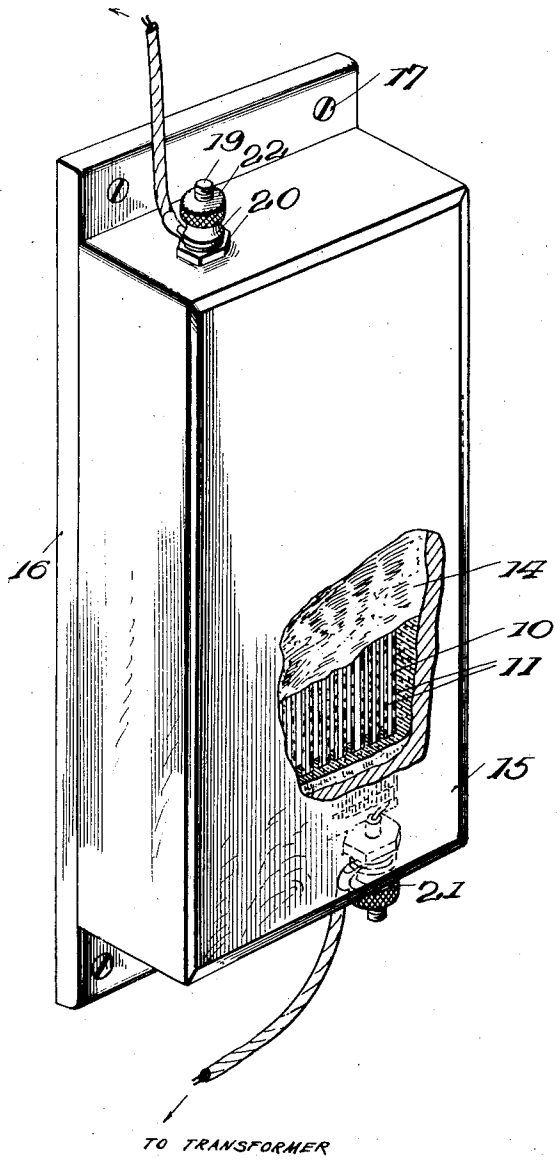
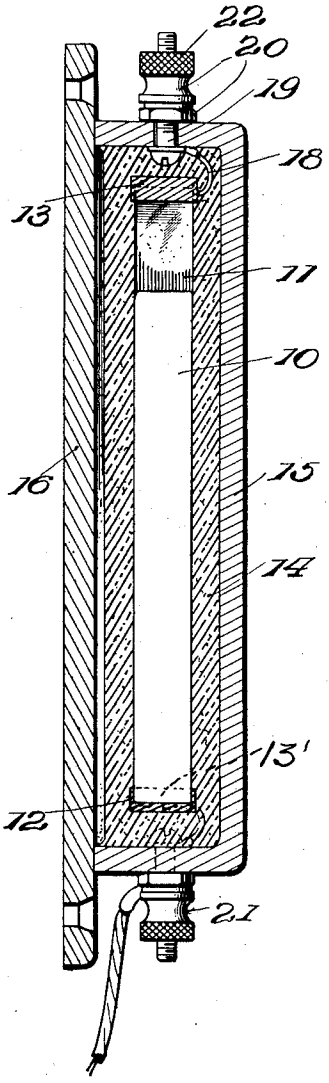


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

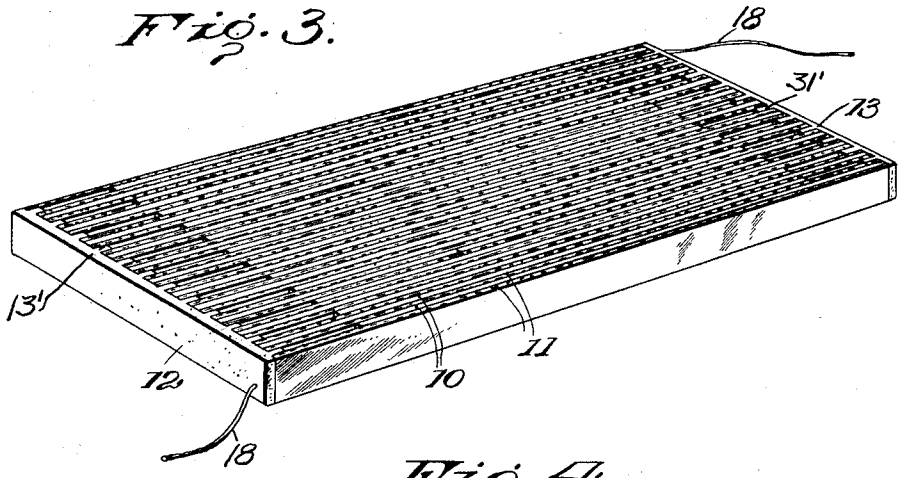
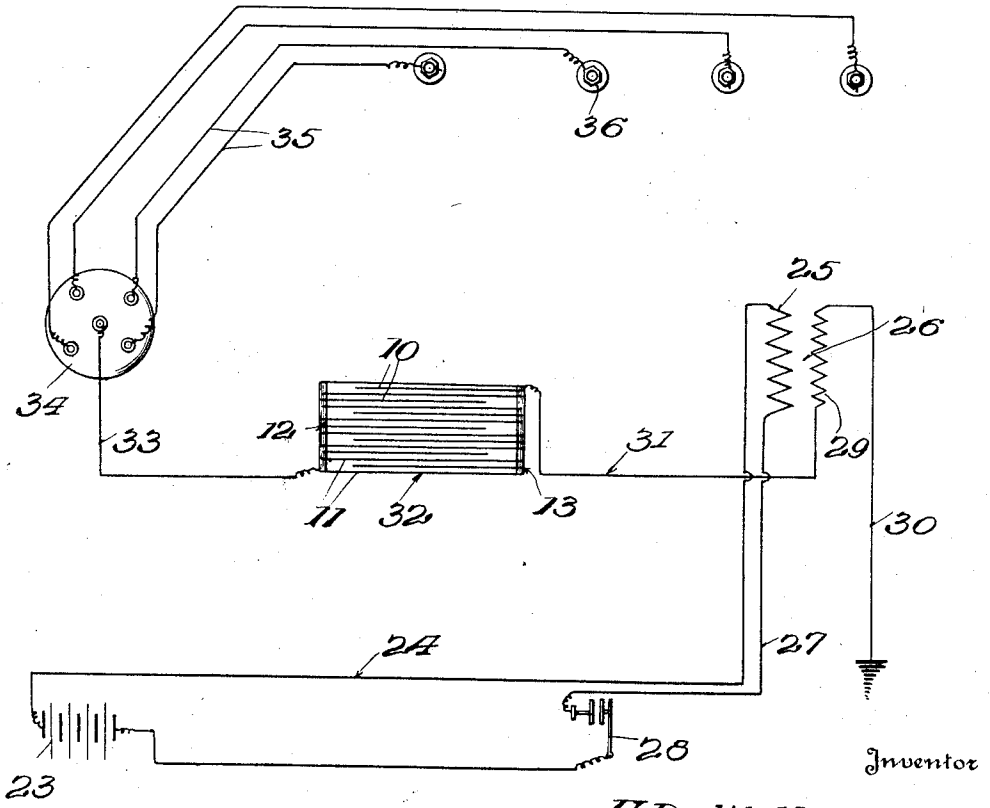


Fig. 4.



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UNITED STATES PATENT OFFICE.

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INTENSIFIER.

1,390,020. Specification of Letters Patent. Patented Sept. 6, 1921.

Application filed November 7, 1917. Serial No. 200,796.

To all whom it may concern:

Be it known that I, FRED DE WITT CHENEY, a citizen of the United States, residing at Gypsum, in the county of Saline and State of Kansas, have invented certain new and useful Improvements in Intensifiers, of which the following is a specification.

My invention relates to new and useful improvements in intensifiers and has for its primary object the provision of an intensifier for use in ignition systems of internal combustion engines, particularly on motor vehicles for the purpose of intensifying and increasing the electric spark used to create the explosion.

More particularly my intensifier is intended to be connected into the high tension circuit of the ignition system and operates upon the principle of the well-known Leyden-jar, consisting of a plurality of layers of tin foil, alternate layers of which are insulated from each other and electrically connected at their ends.

A further object which I have in view consists in providing an intensifier of the above character which may be cheaply constructed and which will occupy but little space.

With these and other objects in view, my invention will be more fully described, illustrated in the accompanying drawings and then specifically pointed out in the claims which form a part of this application.

In the drawings:

Figure 1 is a perspective view of my improved intensifier, a portion of the case being broken away to show the internal construction;

Fig. 2 is a vertical sectional view taken through the intensifier;

Fig. 3 is a perspective view of the intensifier proper removed from its case, the thickness of the various sheets of tin foil and insulating material being greatly exaggerated;

Fig. 4 is a diagrammatic view of a conventional form of ignition system with my intensifier incorporated therein.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

My intensifier proper, as best shown in Fig. 3 of the drawings, includes a plurality of layers 10 of tin foil and a plurality of layers 11 of suitable insulating material, such as oiled paper, a sheet or strip of paper being interposed between each pair of adjacent strips of tin foil. The strips of tin foil are somewhat shorter than the strips of paper and alternate strips of tin foil project at one end beyond the ends of the other strips and at their other ends terminate flush with the ends of the paper strips. A binding strap 12 of lead or other suitable metal connects the free ends of one set of strips of tin foil, together with the adjacent ends of the strips of insulating paper, while a similar binding strap 13 connects the free ends of the other series of layers of tin foil and the opposite ends of the strips of paper. These strips of tin foil and oiled paper engage closely against each other and therefore occupy a relatively small space, although a large number of strips are employed. The binding straps 12 and 13 are provided with inwardly extending spacing lugs 13′, the lugs on the binding strap 12 being disposed in staggered relation with respect to the lugs on the binding strap 13, so that when the strips of tin foil and paper are assembled, one end of each strip of tin foil will be seated between a pair of lugs on one binding strap and the other end of each strip of tin foil will be spaced from the adjacent lug on the other binding strap as best shown in Fig. 3 of the drawings. I have found that good results may be obtained by employing ninety-three layers of tin foil, forty-six layers making up one of the groups and being electrically connected with one of the binding straps, and forty-seven layers making up the other group and being connected to the other binding strap. In the drawings, however, I have made no attempt to illustrate such a large number of layers and have shown both the sheets of tin foil and of paper greatly exaggerated in thickness to insure a clear disclosure, these strips ordinarily being relatively thin. The intensifier proper, as above described, is sealed in by wax 14 or some other suitable insulating material and is inclosed in a casing 15 having a removable back wall 16 which at its ends extends beyond the top and bottom of the casing to receive screws 17 by which the intensifier may be attached to the dash or other suitable part of the vehicle.

Wires 18 lead from the binding straps 12 and 13 and are secured to screws 19 which extend through opposite ends of the casing and which are exteriorly provided with clamping nuts 20 furnishing binding posts 21 and 22.

In order to insure a clear and accurate understanding of my invention I have illustrated diagrammatically a conventional form of wiring system with my intensifier installed. Referring to Fig. 4 I have illustrated a battery 23 as a source of current, a wire 24 leading from one pole of the battery to one terminal of the primary coil 25 of a transformer 26 and a wire 27 leading from the other pole of the battery to the other terminal of the same coil. An engine driven timer 28 is interposed in this latter wire as is customary. The secondary coil 29 of the transformer is grounded, as indicated at 30, and a wire 31 leads from this secondary coil to one of the binding posts of the intensifier which as a whole is indicated by the numeral 32. A wire 33 leads from the other binding post of the intensifier to the distributer 34 and wires 35 lead from the distributer binding post to spark plugs 36.

The operation of the intensifier will be readily understood. Charging of one group of strips of tin foil sets up an opposite charge upon the strips of the other group and when the first strips become overcharged the intensifier will discharge, the discharging current from the other group of the strips being very strong and the discharge being very quick so that an intense spark is created at the spark plug.

By employing my improved intensifier a more certain, intense and quicker spark is obtained which does away, to a great extent, with ignition difficulties such as carbon, use of more fuel than is necessary, loss of power valve troubles and spark plug troubles. It also, of course makes it easier to start the engine.

Having thus described the invention, what is claimed as new is:

1. An intensifier including opposite binding straps having spacing lugs extending toward each other, a plurality of strips of insulating and conducting material arranged side by side in contact with each other and extending between said binding straps, one end of every other strip of conducting material being seated between two of the lugs on one of the binding straps and the other end of each of said strips of conducting material alining with and being spaced from the adjacent lug on the other binding strap, whereby the strips of conducting material are in parallel staggered relation.

2. An intensifier including opposite binding straps having inwardly extending spacing lugs, the lugs of one strap extending toward those of the other and the lugs of one disposed in staggered relation to the lugs of the other, a plurality of strips of insulating and conducting material arranged side by side in contact with each other and extending between said binding straps, one end of every other strip of conducting material being seated between two of the lugs on one binding strap and the other end of each of said strips of conducting material alining with an being spaced from the adjacent lug on the other binding strap whereby the strips of conducting material are in parallel staggered relation, and a seal of insulating material surrounding the assembled strips and binding straps for holding them in position.

3. An intensifier including a casing having means for attachment to a support and provided with binding posts, opposite binding straps housed within the casing and having spacing lugs, the lugs of one strap extending toward those of the other and the lugs of one disposed in staggered relation with respect to the lugs of the other, a plurality of strips of insulating and conducting material arranged side by side within the casing and in contact with each other and extending between said binding straps, one end of every other strip of conducting material being seated between two of the lugs of one of the binding straps and the other end of each of said strips of conducting material alining with and being spaced from the adjacent lug on the other binding strap whereby the strips of conducting material are in parallel staggered relation, conductors connecting the binding straps with the binding posts, and an insulating jacket housed within the casing and entirely surrounding the assembled strips and binding straps.

4. An intensifier including a casing having means for attachment to a support, binding posts extending from the top and bottom of the casing, opposite binding straps disposed within the casing and having spacing lugs, the lugs of one strap extending toward those of the other and the lugs of one disposed in staggered relation with respect to the lugs of the other, a plurality of strips of oiled paper and tin foil arranged side by side in contact with each other and extending between said binding straps, one end of every other strip of tin foil being seated between two of the lugs on one of the binding straps and the other end of each of said strips of tin foil alining with and being spaced from the adjacent lug on the other binding strap whereby the strips of tin foil are in parallel staggered relation, a seal of insulating wax arranged within the casing and entirely surrounding the assembled strips and binding straps, and conductors connected with the binding straps and extending through the insulating wax for attachment to the binding posts.

In testimony whereof I affix my signature.

FRED DE WITT CHENEY. [L. S.]