W. G. HAWLEY.

FIRE PUMP MOTOR COOLING SYSTEM.

APPLICATION FILED OCT. 31, 1916.

1,291,502.

Patented Jan. 14, 1919.

3 SHEETS—SHEET 1.

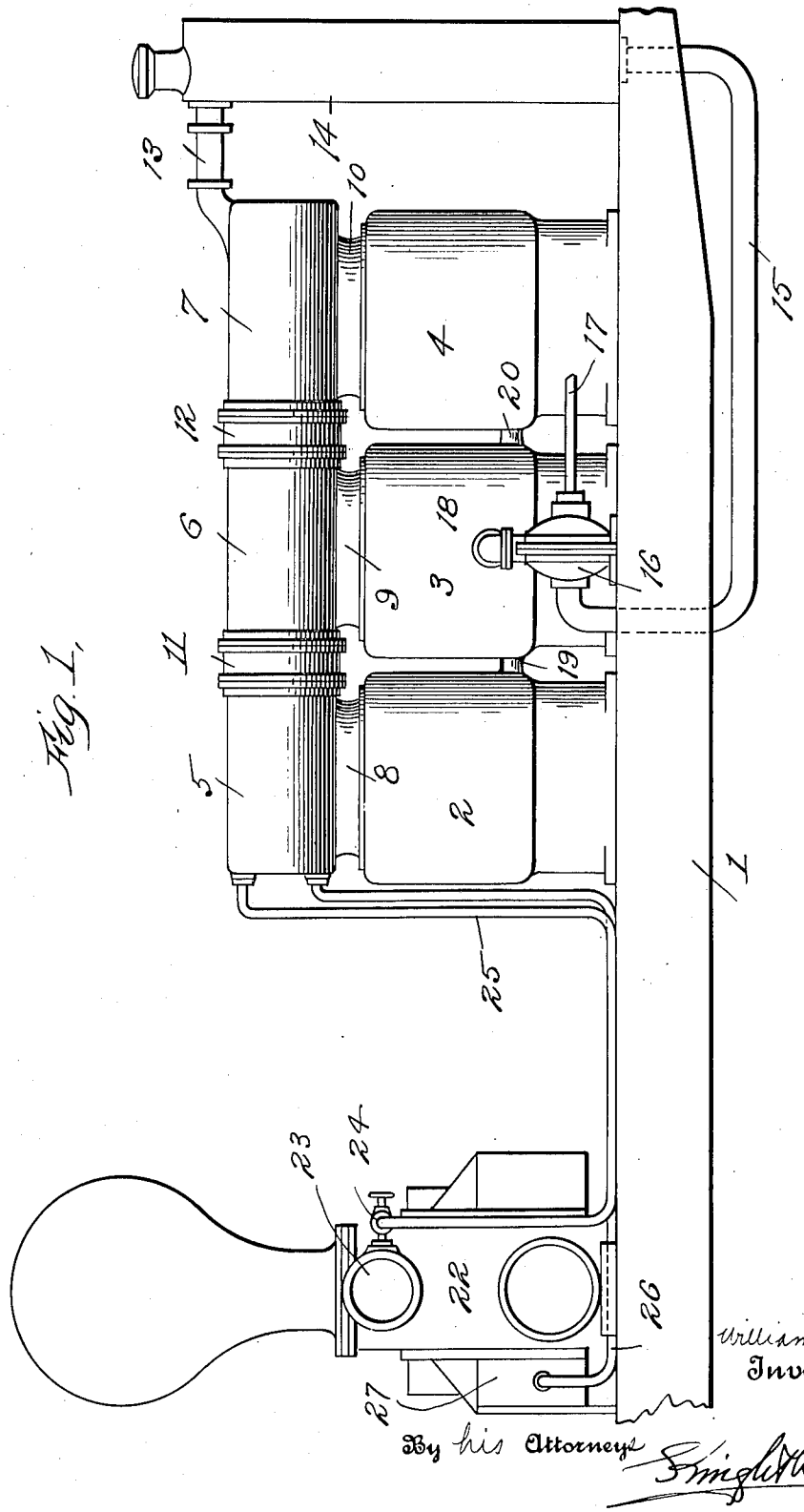


Fig. 1.

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Inventor

By his Attorneys
Knight Bros.

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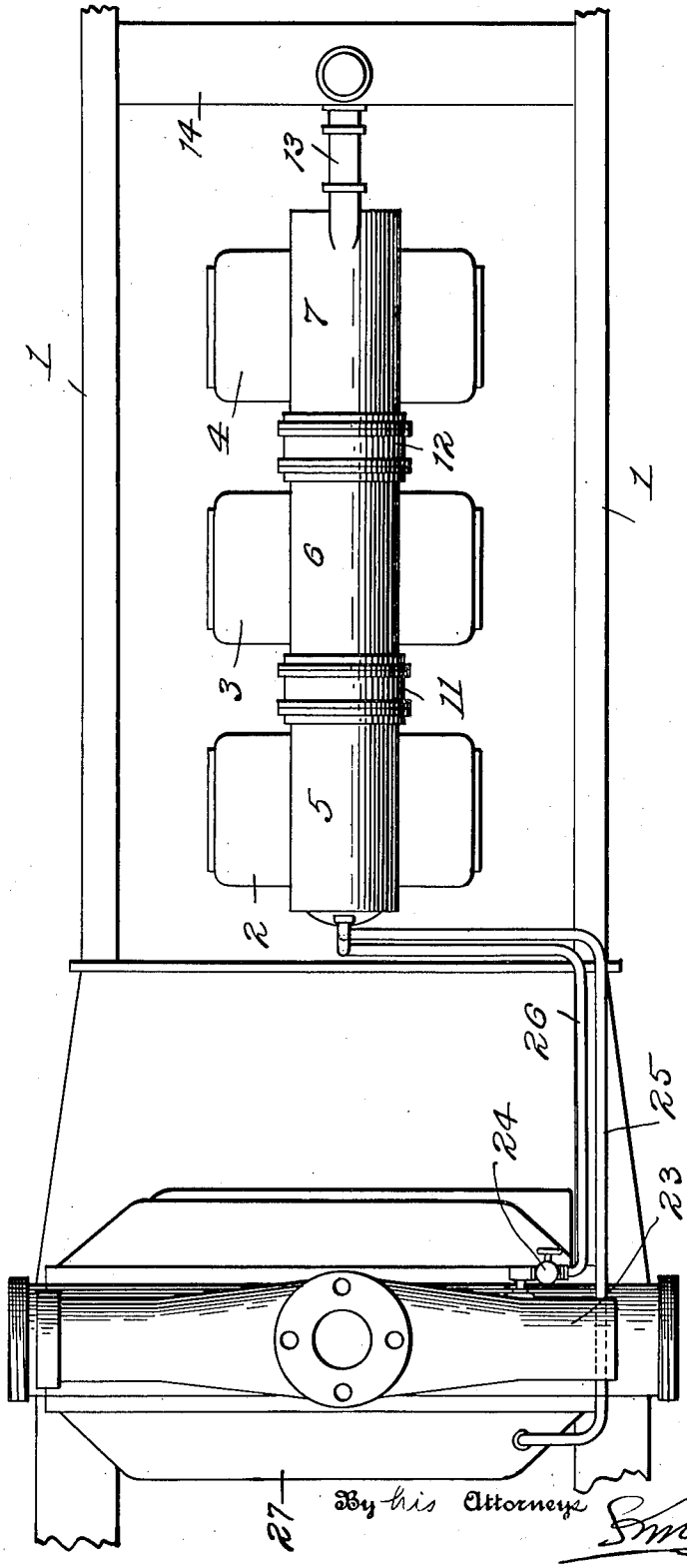
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3 SHEETS—SHEET 2.

Fig. 2



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3 SHEETS—SHEET 3.

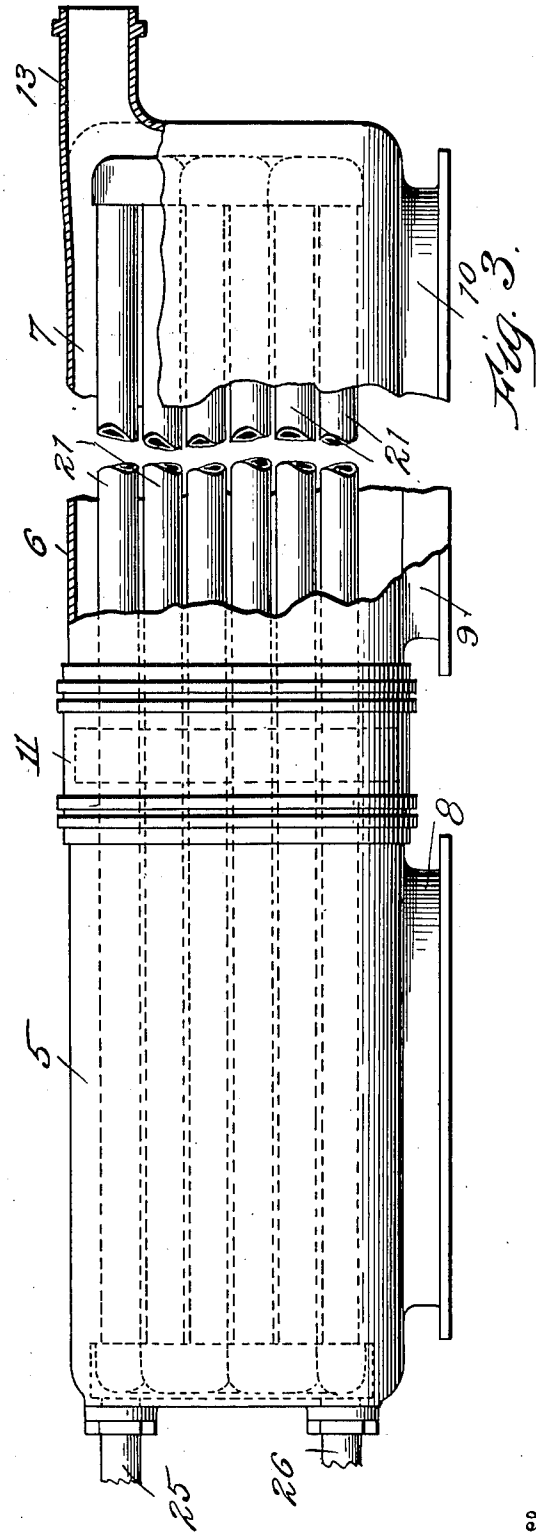


Fig. 3.

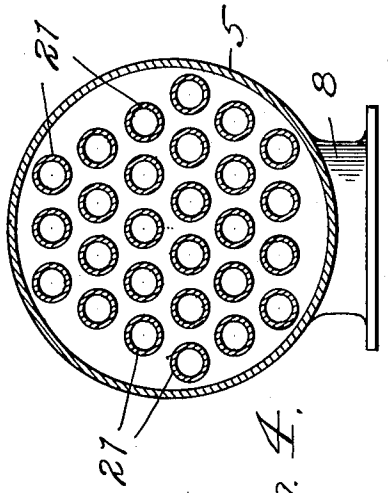


Fig. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM GUY HAWLEY, OF ELMIRA, NEW YORK, ASSIGNOR TO AMERICAN-LA FRANCE FIRE ENGINE COMPANY, INC., OF ELMIRA, NEW YORK, A CORPORATION OF NEW YORK.

FIRE-PUMP MOTOR-COOLING SYSTEM.

1,291,502. Specification of Letters Patent. Patented Jan. 14, 1919.

Application filed October 31, 1916. Serial No. 128,726.

To all whom it may concern:

Be it known that I, WILLIAM G. HAWLEY, a citizen of the United States, and a resident of Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Fire-Pump Motor-Cooling Systems, of which the following is a specification.

This invention relates more specifically to means for cooling the engine of an automobile fire engine and has for its primary object to provide an improved device for increasing the cooling effects on the engine during the operation of the pump at a fire. One of the objects of the present invention is to provide improved means utilizing portions of the water which is being pumped by the engine for cooling the cylinders of said engine. Other and further objects will appear in the specification and be pointed out in the appended claims, reference being had to the accompanying drawings which exemplify my invention in its preferred embodiment and in which;

Figure 1 is a side elevation of portions of an automobile fire engine having my invention applied thereto;

Fig. 2 is a top plan view of the same;

Fig. 3 is a side elevation on an enlarged scale, of the auxiliary cooling chamber or casing, parts being broken away and parts shown in section; and

Fig. 4 is a transverse section of the same.

Referring more particularly to the drawings, the frame 1 of an automobile fire engine serves to mount an engine therefor, comprising cylinders housed in water jackets 2, 3 and 4. Surmounting said water jackets are sections 5, 6 and 7 of an auxiliary cooling chamber or casing which open into and constitute substantially continuations of or extensions to the jackets 2, 3 and 4 by means of connections 8, 9 and 10. Sections 5, 6 and 7 are connected together by flexible couplings 11 and 12 which may be constructed of rubber tubing or the like. Leading from the forward end of section 7 is a pipe 13 which discharges into a radiator 14, the bottom of said radiator being connected by a return pipe 15 to a pump 16 which may be operated by a rod 17 driving a piston or rotor within. The pump 16 discharges by way of an elbow 18 into the centrally disposed water jacket 3, said water jacket 3 being connected to the water jacket 2 by a coupling 19 and with the water jacket 4 by a coupling 20. As shown best in Fig. 3, the auxiliary casing or chamber includes the sectional outer wall, the sections thereof being arranged end to end and yieldably connected. Within this auxiliary chamber or casing, are a number of lengths of piping 21, the walls of which constitute an extensive heat-absorbing surface. According to the present embodiment of my invention, water is employed for the cooling fluid, being conveyed from the pump 22 which serves the water for quenching a fire. Preferably, and as I have illustrated on the drawings, this auxiliary cooling water is taken from the pressure outlet 23 of the pump, under the control of a valve 24 and conveyed by a pipe 25 into the coil or tubing 21 within the casing or chamber 5, 6 and 7. Leading from said coil or tubing 21, is a return pipe 26 which empties into an intake chamber 27 on the low pressure side of the pump according to this embodiment. Obviously, this auxiliary cooling system could be connected up with the pump in other suitable ways.

What I claim is:—

1. The combination with the cylinder of an internal combustion engine, of a cooling jacket therefor provided with a chamber, a main pump driven by said engine, a circulatory cooling system leading from the pressure side of said main pump through said jacket and back to the suction side of said pump, and a second circulatory system independent of said main pump and including said cooling jacket, a radiator and an auxiliary pump.

2. The combination with a pump provided with a suction inlet and a pressure outlet, of an internal combustion engine for driving said pump, said engine being provided with a chamber for a cooling medium, and a pipe receiving fluid under pressure from the main pressure column of said pump adjacent said outlet and discharging into the suction inlet of said pump, said pipe having a heat absorbing portion disposed within said chamber.

3. In a machine of the character described, an internal combustion engine having a plurality of cylinders provided respectively with water jackets, a casing or cham-

ber comprising relatively movable sections connected to said water jackets respectively, a circulatory cooling system including said water jackets and said casing or chamber, a cooling pipe or coil arranged within said casing or chamber and exposed to fluid circulated by said cooling system, and means for passing a cooling medium through said pipe or coil.

4. In an automobile, a pump, an internal combustion engine, for driving said pump, said engine being provided with a cooling medium jacket, a circulatory system including said jacket, a heat absorbing coil disposed within said circulatory system outside of said jacket, means for connecting one end of said coil to the pressure column of said pump and means for connecting the other end of said coil to the suction column of said pump.

5. In an automobile, an internal combustion engine having a plurality of cylinders respectively provided with water jackets, casing or chamber sections connected up with said water jackets respectively, means flexibly connecting said sections to form them into a casing or chamber common to all of said water jackets, a circulatory system extending through said water jackets and said casing or chamber, and another circulatory system extending through said casing or chamber independently of said water jackets, said circulatory systems having contiguously disposed channels within said casing or chamber.

6. The combination with an internal combustion engine comprising a plurality of cylinders provided with fluid holding jackets, of a chamber section connected to each of said jackets, means for connecting all said chamber sections into a chamber common to all of said jackets, means for effecting a circulation of cooling medium through said jackets and chamber, and an auxiliary cooling system having a portion thereof disposed in said chamber.

7. The combination with an internal combustion engine comprising a plurality of cylinders provided with fluid holding jackets, of a chamber common to all of said jackets, means for effecting a circulation of cooling medium through said jackets and chamber, and an auxiliary cooling system having a portion thereof disposed in said chamber, said chamber comprising sections separately connected up with said jackets.

8. The combination with an internal combustion engine comprising a plurality of cylinders provided with fluid holding jackets, of a chamber common to all of said jackets, means for effecting a circulation of cooling medium through said jackets and chamber, and an auxiliary cooling system having a portion thereof disposed in said chamber, said chamber comprising sections respectively mounted on and in open communication with said jackets, and yieldable means for coupling chamber sections together.

9. In an automobile, an internal combustion engine comprising a plurality of cylinders, each provided with a water jacket, a casing or chamber common to but having separate connections with each of said water jackets, means for circulating cooling water through said water jackets and said casing or chamber, piping extending through said casing or chamber and exposed to the cooling water flowing therethrough, and means for circulating cooling water through said piping from a source without the circulating system which includes said water jackets, said casing or chamber comprising relatively movable sections rigidly connected to said water jackets respectively and flexible couplings uniting said sections.

10. In an automobile, an internal combustion engine comprising a plurality of cylinders, each provided with a water jacket, a casing or chamber common to but having separate connections with each of said water jackets, means for circulating cooling water through said water jackets and said casing or chamber, piping extending through said casing or chamber and exposed to the cooling water flowing therethrough, and means for circulating cooling water through said piping from a source without the circulating system which includes said water jackets, said casing or chamber comprising relatively movable sections rigidly connected to said water jackets respectively and flexible couplings uniting said sections, said means for circulating cooling water through the piping in said casing or chamber including a pump driven by said engine.

WILLIAM GUY HAWLEY.