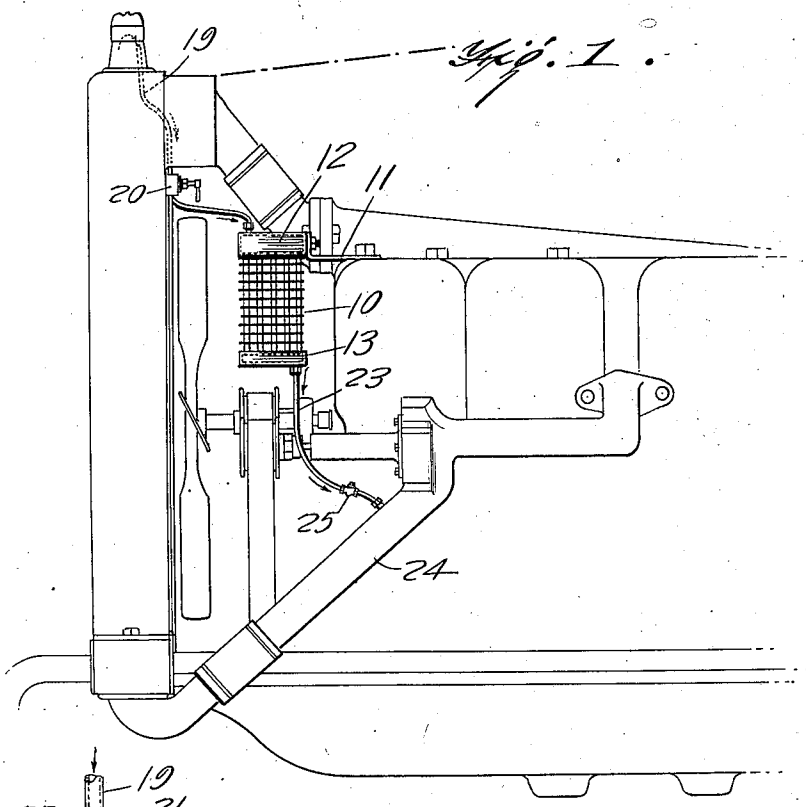
July 12, 1927. 1,635,549

H. F. HOLLISTER

CONDENSER AND COOLER

Filed Feb. 4, 1924

Fig. 1.



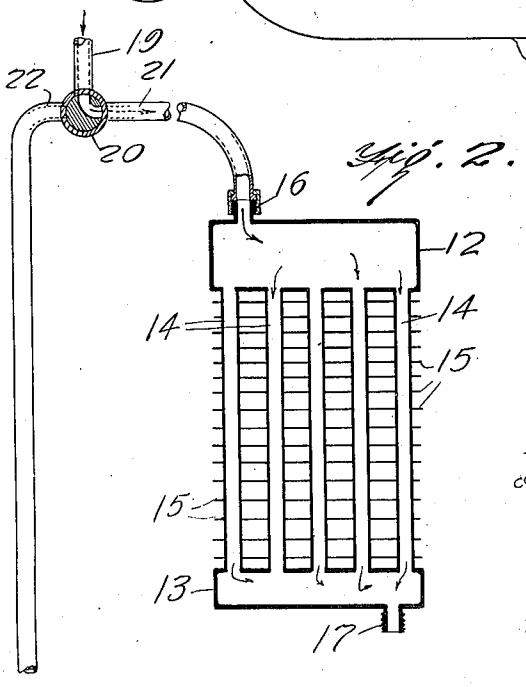
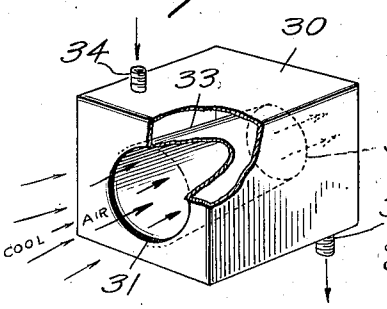


Fig. 2.

Fig. 3.



Inventor

HARVEY F. HOLLISTER,

By Lasi R. Allen

Attorney

Patented July 12, 1927. 1,635,549

UNITED STATES PATENT OFFICE.

HARVEY F. HOLLISTER, OF SPENCER, IOWA.

CONDENSER AND COOLER.

Application filed February 4, 1924. Serial No. 690,466.

My invention relates to condensers adapted for use in connection with explosive engines for conserving radiator water and has for an object to provide a very simple, economical, effective and highly efficient device that is adapted to receive the vapor and boiling liquid from the overflow pipe of the radiator and to condense the vapor, thereby permitting the liquid to flow back into the water circulating system. The scope of my invention extends to whatever construction may be defined by or included within the terms or language of the appended claims.

In the drawing:

Figure is a side elevation of my improved condenser shown applied to a motor;

Figure 2 illustrates a somewhat diagrammatic view of my improved condenser, and

Figure 3 is a view in perspective partially broken away, illustrating another embodiment of my invention.

My invention in the form or embodiment shown in the drawing and briefly described, comprises a condenser 10, which is, as shown in Figure 1, supported from the upper portion of the cylinder block by means of an angular bent strip 11, which is bolted to the upper portion of the cylinder block. I prefer to mount my improved condenser approximately midway between the fan and the engine block.

The condenser 10 is provided with an upper compartment 12, and a lower compartment 13 which is relatively shorter than the upper compartment.

The compartments 12 and 13 are connected together by a plurality of suitably spaced apart and vertical tubes 14, which are either expanded into their proper position in the compartments, soldered or secured thereto in any other desired manner. This construction, of course, affords easy communication and free circulation between the compartments 12 and 13.

For very readily assisting the cooling of the vertical tubes 14, I have provided a plurality of horizontally disposed and relatively thin metallic strips or plates 15, which may be held in their spaced relation by soldering or in any other desired manner.

On the upper end of the compartment 12 I provide a threaded nipple 16 and a threaded nipple 17 is likewise provided on the lower end of the lower compartment 13 for a purpose hereinafter described.

An overflow pipe 19 is provided in the upper portion of the radiator in the usual manner and is extended downwardly and connecting with the upper end of a three-way valve 20. The valve 20 is provided with side openings which are adapted to communicate with the pipes 21 and 22. When the opening in the valve communicates with the pipe 21, as is clearly shown in Figure 2, it will be readily seen that the vapor from within the upper portion of the radiator will be drawn downwardly through the pipes 19 and 21 into the upper or condensing compartment 12.

Should it ever be desired to cut out the condenser 10, as for repairs, the valve may be turned so that the pipe 22 will be in communication with the inlet pipe 19, which will, of course, permit the vapor to pass out to the atmosphere in the usual manner instead of conserving it.

23 indicates the return pipe which is connected at the bottom of the lower compartment 13 by means of the threaded nipple 17, from which point it extends downwardly, connecting with the main return water pipe 24, which, of course, directs the water to the engine from the lower end of the radiator.

To prevent the water from the pipe 24 to be forced up into the tube 23, I provide a check valve as indicated at 25 in Figure 1.

In the condenser illustrated in Figure 3, I have provided a substantially rectangular casing 30, having circular and oppositely disposed openings 31 and 32. The opening 32 is slightly smaller than the opening 31, and a circular metallic and slightly converging tube 33 is fastened therein in a suitable manner.

Threaded nipples 34 and 35 are located in the upper and lower ends of the rectangular casing or condenser 30 and preferably in diametrically opposite corners, so that the vapor entering the nipple 34 will be fully condensed before reaching the nipple 35.

It will thus be readily seen that the cool air entering the tube 33 through its large end 31 will readily condense the vapors within the condenser 30 and surrounding the tube.

It is to be understood that the structural

elements are susceptible to such constructions and changes as fully within the scope or terms of the appended claims.

I claim:

1. In combination with an internal combustion engine radiator having water circulating pipes, a condenser, comprising an upper and lower compartment, condensing means, interposed therebetween, an overflow tube leading from the radiator, a three-way valve connected thereto, a feeding tube leading from the three-way valve and communicating with the upper compartment, a second tube diametrically opposite said feeding tube, a condensate tube leading from the lower compartment to one of said water circulating pipes and a check valve located in said condensate tube.

2. In a cooling system for an internal combustion engine, the combination with a radiator of a condenser supported in rear of the radiator, means for by-passing the overflow from the upper header of the radiator to the condenser, said means being operable to cut-out the condenser at will, and means for directing the condensate from the condenser to the cooling system beyond the radiator.

3. In a cooling system for an internal combustion engine, the combination with a radiator of a condenser arranged in the rear of and open to the full cooling influences affecting the radiator, a feeding pipe connected with the radiator overflow pipe and leading into the condenser, means whereby the overflow of the radiator may be directed to the condenser at will, and a condensate pipe leading from the condenser to the cooling system.

In testimony whereof I affix my signature.

HARVEY F. HOLLISTER.