

H. W. ADAMS.
 COOLING SYSTEM FOR GAS TRACTORS.
 APPLICATION FILED APR. 30, 1917.

1,303,003.

Patented May 6, 1919.

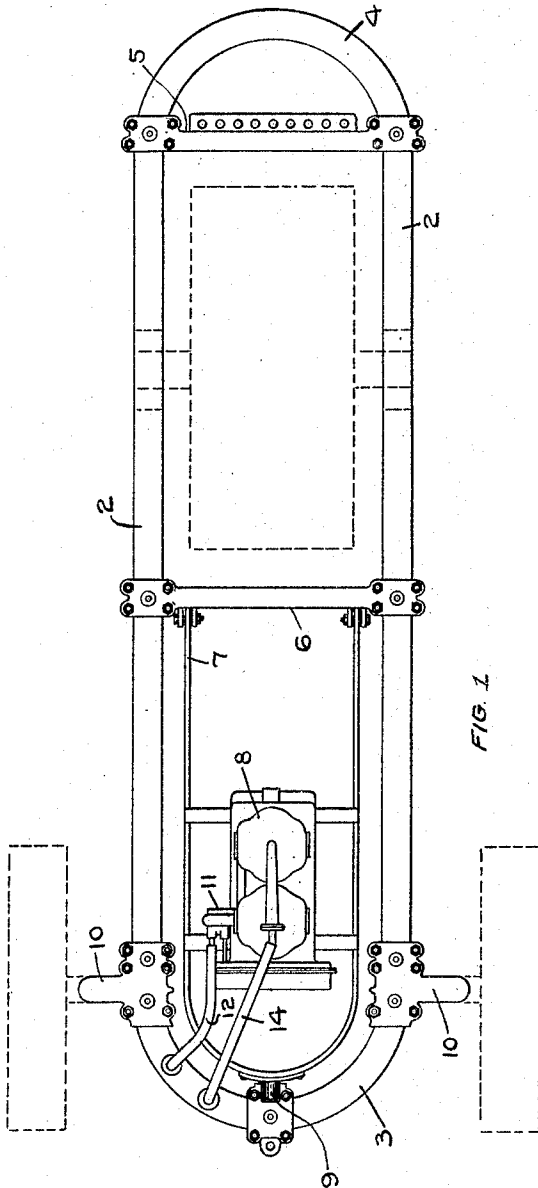


FIG. 1

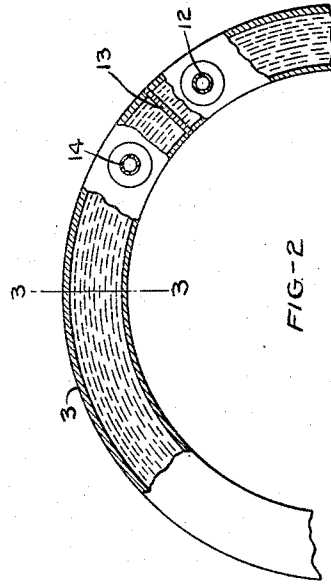


FIG. 2

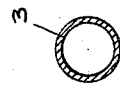


FIG. 3

WITNESSES:
B. Hall
E. A. Paul

INVENTOR:
 HARRY W. ADAMS.

BY
Paul Hall
 ATTORNEYS.

UNITED STATES PATENT OFFICE.

HARRY W. ADAMS, OF MINNEAPOLIS, MINNESOTA.

COOLING SYSTEM FOR GAS-TRACTORS.

1,303,003.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HARRY W. ADAMS, a citizen of the United States, resident of Minneapolis, county of Hennepin, State of Minnesota, have invented certain new and useful Improvements in Cooling Systems for Gas-Tractors, of which the following is a specification.

In the operation of a gas engine and particularly the type used on a traction machine, considerable difficulty has been experienced in preventing the connections of the water circulating system from leaking. This is particularly true of the radiator, usually made of thin sheets of copper, which easily become twisted or bent and will frequently spring a leak when in use in the field and cause the farmer great loss of time and considerable expense before repairs can be obtained.

The object of my invention, therefore, is to provide a circulating system whereby the use of the ordinary radiator is entirely avoided.

A further object is to provide a frame which will be extremely rigid and much cheaper to manufacture than tractor frames as usually constructed. Furthermore, in the present state of the metal market, pipe of various kinds can be procured much easier than angle or channel rails or bars.

A further object is to adapt the tractor for use in the place of artillery horses by eliminating the usual copper radiator which is so likely to be strained or opened up in running over rough roads, or perforated by bullets.

Other objects of the invention will appear from the following detailed description.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification,

Figure 1 is a plan view of a traction machine embodying my invention,

Fig. 2 is a detail sectional view of the forward portion of the machine frame,

Fig. 3 is a sectional view on the line 3—3 of Fig. 2.

In the drawing, I have shown the frame of the tractor substantially oval in form and composed of side rails 2 made up of sections of pipe of suitable diameter. These side rails are substantially parallel and are

joined together at the front and rear by curved sections of pipe 3 and 4. A cross bar 5 is provided at the rear end of the frame and a similar bar 6 near the middle portion thereof, to which a frame 7 is attached for supporting the internal combustion engine 8. This frame is preferably pivoted to the bar 6, as indicated in Fig. 1, and its forward end is free to rock in a bearing so that the frame 7 with the engine can accommodate itself to rough ground over which the machine may be passing. The forward end of the frame 7 has a bearing at 9 on the curved section 3. On each side of the engine are clamps 10 whereon the carrying wheel spindles are mounted. 11 is a pump of ordinary construction, mounted on the engine 8 and having a pipe connection 12 with the curved section 3 of the frame on one side of a partition 13 therein. A return pipe 14 leads from the other side of the partition 13 back to the engine, so that when the pump is in operation a circulation of water will be established through the pipe 12 to the forward end of the frame and from thence it will flow through one of the rails 2 to the rear of the frame and the curved section 4 to the other rail 2 and from thence to the forward end of the machine again and the pipe 14 to the engine. Thereby a circulation of water will be continuously maintained and there will be sufficient radiating surface in the hollow frame to keep the water at the desired temperature for cooling the engine.

A further advantage in a circulating system of this kind lies in the fact that the rear portion of the tractor frame will be so far from the engine that it will not be affected by radiation from the engine itself.

I may provide a single line of pipe for the frame or a double row may be used, with one line above the other, with suitable couplings between them to form communicating passages through which the water may flow from one section of the frame to the other. This arrangement would, of course, increase the radiating surface and would also add to the weight and expense of construction. For ordinary purposes, however, the single frame made of comparatively large type will probably be found to supply ample radiating surface to cool the water.

I have found by utilizing the frame as a radiator that I can not only dispense with the expensive copper construction of the ordinary radiator, but can cheapen the

cost of construction of the frame itself, owing to the fact that pipe is cheaper and easier to get at the present time than either channel or angle bars.

5 I have also found that a tractor of this type is particularly adapted for use in handling artillery in place of horses, as there is little danger of leaky radiation and the annoyance of having a thin walled radiator perforated with bullets is entirely
10 avoided.

I do not wish to be confined to the size of the frame nor to the oval form as shown, as obviously these details may be varied in
15 many ways and still be within the scope of my invention.

I claim as my invention:

1. A traction machine comprising a frame composed of sections of pipe joined together and carrying wheels therefor, an auxiliary
20 frame loosely mounted in said machine frame, a motor mounted on said auxiliary frame and having a circulating system, and circulating pipes connecting said system
25 with said machine frame.

2. A traction machine comprising a frame composed of pipe sections having their abutting ends joined together to form a circulating passage, an auxiliary frame within said
30 tractor frame and having a bearing at its forward end on said tractor frame and pivotally connected therewith at its rear end, an internal combustion engine mounted on said auxiliary frame, and circulating pipes
35 connecting said engine with the circulating passage of said tractor frame.

3. A traction machine comprising a frame composed of parallel pipe sections forming the sides of the frame and curved sections
40 connected to said side sections at the front and rear of the machine and forming therewith a water circulating passage, cross bars connecting said side sections, a motor supported by said frame and having a water
45 circulating system, pipes connecting said water circulating system with the circulating passage, and a partition provided in said passage between said circulating pipes connecting it with said motor.

4. A traction machine comprising a frame 50 composed of pipes having parallel side and curved end portions joined together to form a water circulating passage, a rear wheel positioned between said parallel pipes, forward wheels mounted on the forward 55 portion of said parallel pipes, an auxiliary frame mounted between the forward portion of said parallel pipes to oscillate and rock therein, a motor carried by said auxiliary frame and water circulating pipes connecting 60 ing said motor with the passage in said traction frame.

5. A traction machine comprising a substantially oval frame composed of pipe and supporting wheels therefor, a motor supported by said frame and having a circulating 65 ing system and supply and return pipes connecting said circulating system with said machine frame for the circulation of the water therethrough, and means in said machine frame for directing the water delivered 70 thereto in one direction through said frame.

6. A traction machine comprising a frame composed of sections of pipe joined together 75 and supporting wheels therefor, a motor supported by said frame and having a circulating system and supply and return pipes connecting said circulating system with said machine frame for the circulation of water 80 therethrough, and means in said machine frame for directing the water delivered thereto in one direction through said frame.

7. A tractor machine comprising a frame composed of sections of pipe joined together 85 to form a water-circulating passage, cross bars secured to the opposite sides of said frame for bracing the same, brackets for the forward wheels secured to the forward portions of said frame, and a motor supported 90 by said frame and having a circulating system and circulating pipes connecting said motor circulating system with the pipes of said frame.

In witness whereof, I have hereunto set 95 my hand this 24th day of April 1917.

HARRY W. ADAMS.