

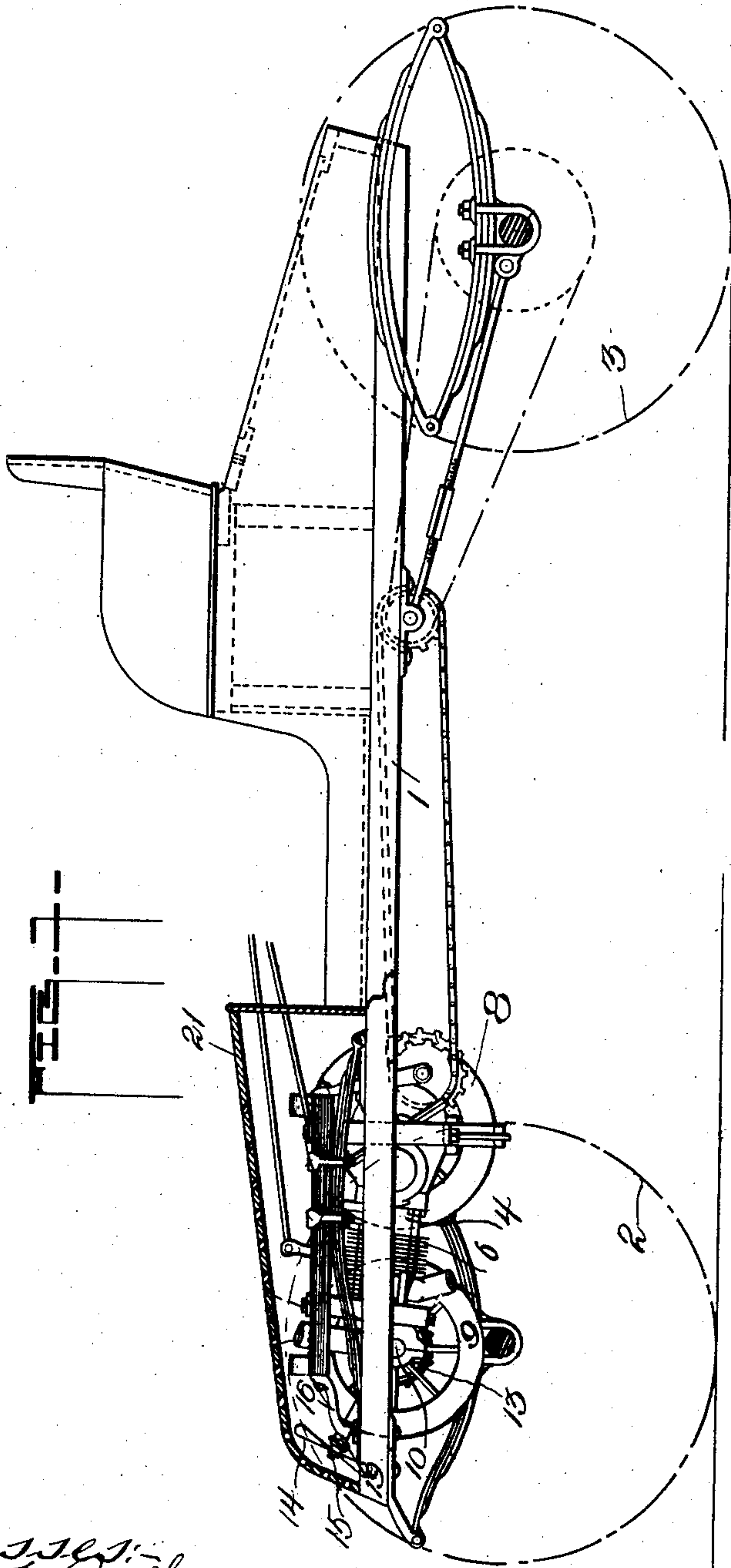
No. 829,599.

PATENTED AUG. 28, 1906.

F. PATEE.  
COOLING DEVICE FOR EXPLOSION MOTORS.

APPLICATION FILED SEPT. 4, 1902.

2 SHEETS—SHEET 1.



Witnesses:  
Chas. F. Bailey  
J. J. Feldt.

Inventor.  
Fred Patee.  
By Chas. W. La Porte  
Att'y.

No. 829,599.

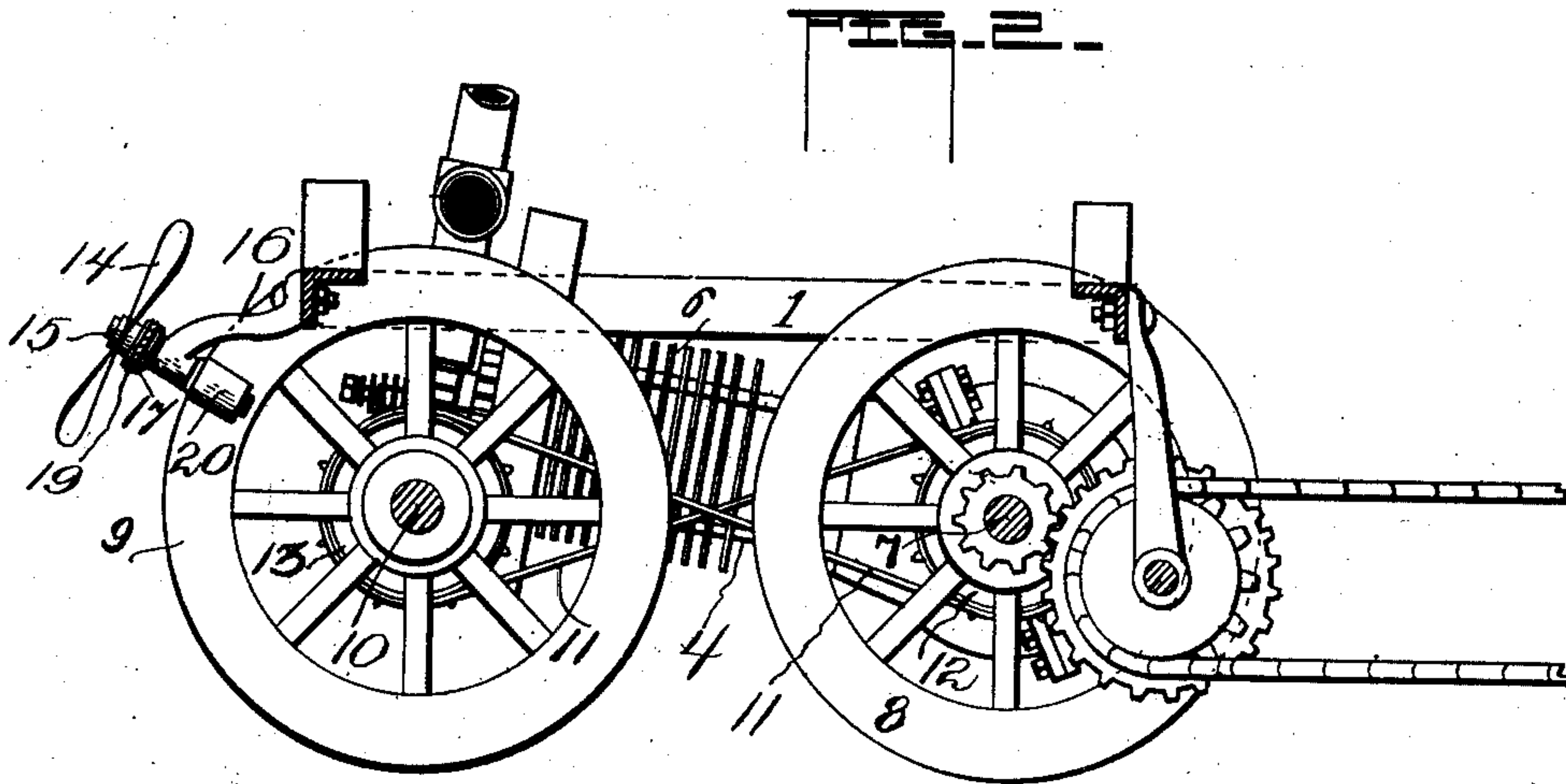
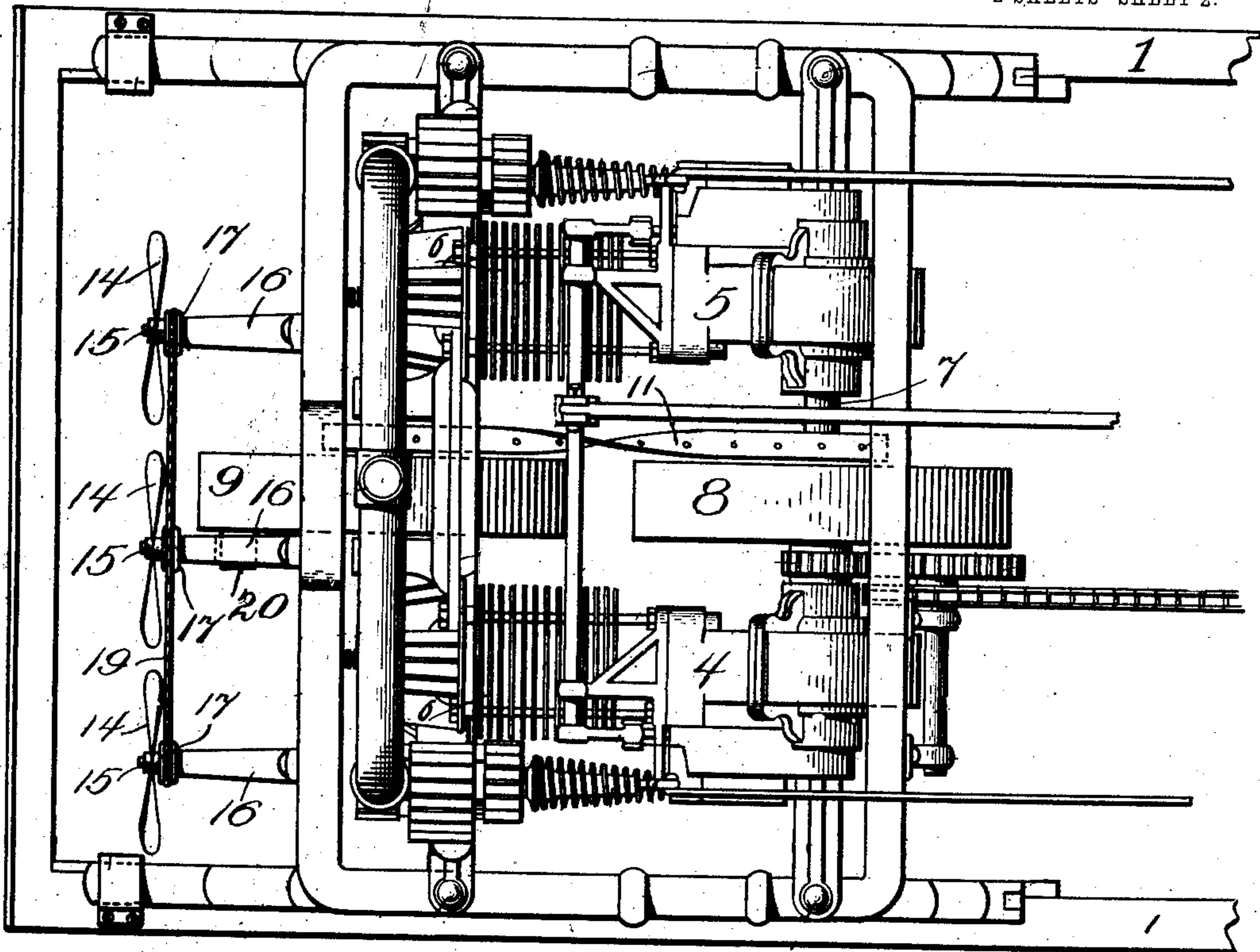
PATENTED AUG. 28, 1906,

F. PATEE.

COOLING DEVICE FOR EXPLOSION MOTORS.

APPLICATION FILED SEPT. 4, 1902.

2 SHEETS—SHEET 2.



Witnesses:

Chas T. Bailey  
J. J. Fiddt.

FIG. 3.

Inventor.

Fred Patee

By Chas A. Conte  
Att'y.



# UNITED STATES PATENT OFFICE.

FRED PATEE, OF INDIANAPOLIS, INDIANA.

## COOLING DEVICE FOR EXPLOSION-MOTORS.

No. 829,599.

Specification of Letters Patent.

Patented Aug. 28, 1906.

Application filed September 4, 1902. Serial No. 122,095.

*To all whom it may concern:*

Be it known that I, FRED PATEE, 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 Cooling Devices for Explosive-Motors; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain new and useful improvements in cooling devices for explosive-motors, and has for its object to improve and perfect the construction of such devices, so that they shall be better adapted for their intended use.

The invention has special reference to air-cooled motors in automobile construction, in which annular radiating flanges surround the motor-cylinders and upon which an artificially-produced air-current is directed.

Reference will be had to the accompanying drawings, forming a part of this specification, and in which like numerals of reference designate corresponding parts throughout the several views, in which—

Figure 1 is a view, partly in side elevation and partly in longitudinal section, of a motor-vehicle embodying my improvements. Fig. 2 is a plan view of the forward part of the vehicle-body with the bonnet removed, illustrating the arrangement of the motor and the cooling device therefor; and Fig. 3 is a vertical longitudinal section of the forward part of the vehicle-frame, showing an elevation of the motor, fly and balance wheels, and the cooling-fans.

Reference-numeral 1 designates the vehicle-frame, 2 the front wheels, and 3 the rear wheels thereof. Upon the forward portion of the frame is mounted in the usual manner the motor, which may comprise as many cylinders as desired, though in the present case two cylinders 4 and 5 are embodied. Each of these cylinders is encircled by annular perforated radiating flanges 6, common to this type of motors. Upon the motor-shaft 7 is arranged a fly-wheel 8, preferably centrally of the vehicle-frame. Forward of and opposite the fly-wheel 8 is mounted a balance-wheel 9 on a shaft 10, suitably supported from the frame. As seen in Fig. 3, the balance-wheel receives motion from the fly-wheel shaft 7 through the medium of a belt

11, passing around pulley 12, secured on the said shaft 7 and pulley 13 on the balance-wheel shaft 10.

For cooling the motor a plurality of rotary fans 14 are mounted in advance of and opposite one end of the cylinders of the motor to direct an air-current upon the said annular flanges 6. These fans are each mounted on a spindle 15, journaled in a hanger 16, secured to and supported from the vehicle-frame 1. Each spindle carries a sheave-wheel 17, connected by a belt 19 with the sheave-wheels of the other fan-spindles. The mode of simultaneously driving said fans through the belt and sheave wheels is through a friction-roller 20 on the spindle of the fan adjacent the balance-wheel 9, which roller frictionally engages the wheel 9, receiving motion therefrom when the motor is set into operation. To shield the motor and cooling devices, the usual bonnet 21 is employed.

Of course it will be understood that I do not wish to limit the invention to the details of construction, as various changes wholly within the scope of the claims may be made without departing from the spirit of the invention.

The invention has special reference to artificially-cooled motors in automobile construction and for convenience is herein shown applied to a series of motors or a horizontal twin air-cooled motor. Each motor of the series is preferably provided with radiating devices suitably attached thereto and are here shown as perforated annular flanges, around and through which a current of air may circulate; further, to one or more or a series of cooling-fans adapted to create a current of air upon and around the motor. In this particular structure the fans are placed forward of the cylinders and suitably driven for the purposes herein.

With the motors and cooling devices is associated suitable means for actuating the fans, a resilient supporting-frame for the motors for the purpose of absorbing the vibration of the motors independent of the springs of the vehicle, and to other and various features of construction hereinafter more particularly referred to and pointed out in the drawings.

The engine comprises the cylinder 15, which I prefer to make of "cast-iron," but other material may be employed, if desirable, and 16 refers to a series of heat-radiating de-



vices which I prefer to make in the form of an annular flange and of "open-hearth steel" and perforate the same, as shown at 17. It is to be understood, however, that with the provision of an artificial cooling means to create a current of air upon the motor the flanges may or may not be perforated and other radiating devices employed from which may be obtained the same results, the main object of the fans being to create a current of air upon the body of the motor and around and between the radiating devices. This may be accomplished by fans which will create a current of air and blow on the head and body of the motor or to draw the current to and around the motors, thoroughly cooling the motors, as is apparent, providing for each cylinder a fan or cooling means, so as to act direct thereupon.

20 Having thus fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

25 1. In combination, a multiple-cylinder engine, said cylinders having perforated radiating flanges, a fly-wheel on the crank-shaft, a balance-wheel, cooling-fans supported at the head of each cylinder, driving connections between the fly-wheel and balance-

wheel, and driving connections between the balance-wheel and fans. 30

2. In combination with a plurality of cylinders, and the pistons thereof, a shaft for operating said pistons, a fly-wheel mounted on the shaft, a balance-wheel mounted in advance of the fly-wheel, means for operating the balance-wheel from said shaft, a plurality of simultaneously-actuated cooling elements arranged opposite the cylinders at one end and adjacent to said balance-wheel, and means for operating said cooling elements from the balance-wheel. 35 40

3. In combination with a plurality of cylinders, short shafts disposed opposite the forward ends thereof, sheaves and fans mounted on the said shafts, an endless belt passing over said sheaves, a balance-wheel mounted between said cylinders, and a roller mounted on one of said shafts and frictionally engaging the said balance-wheel. 45 50

In testimony whereof I affix my signature in presence of two witnesses.

FRED PATEE.

Witnesses:

E. E. SICHLER.

LESTER PATEE.