

No. 841,312.

PATENTED JAN. 15, 1907.

A. CORNELL & W. J. SWARTZ.
COOLING EXPLOSIVE ENGINES.

APPLICATION FILED MAR. 6, 1906.

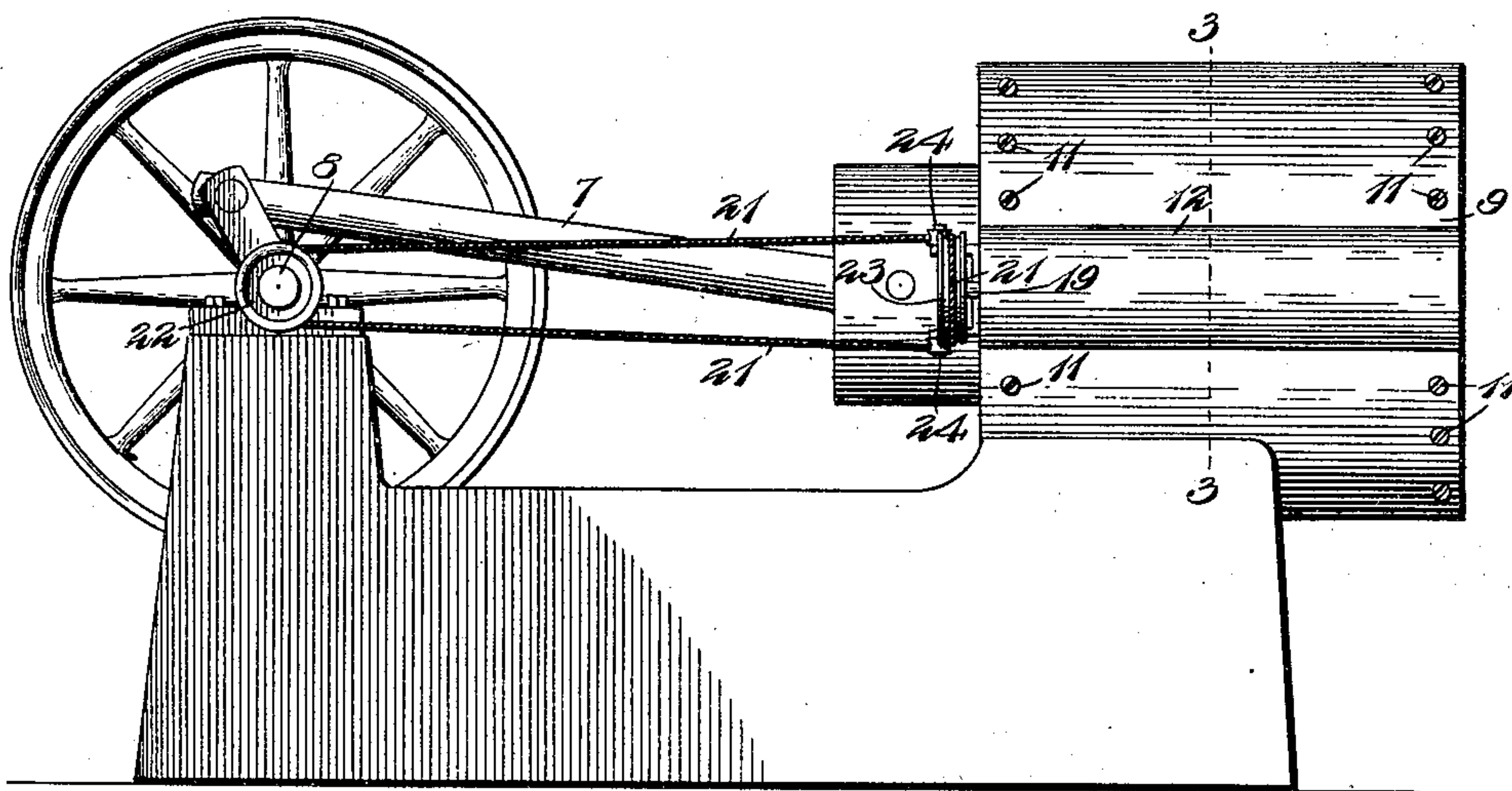


Fig. 1.

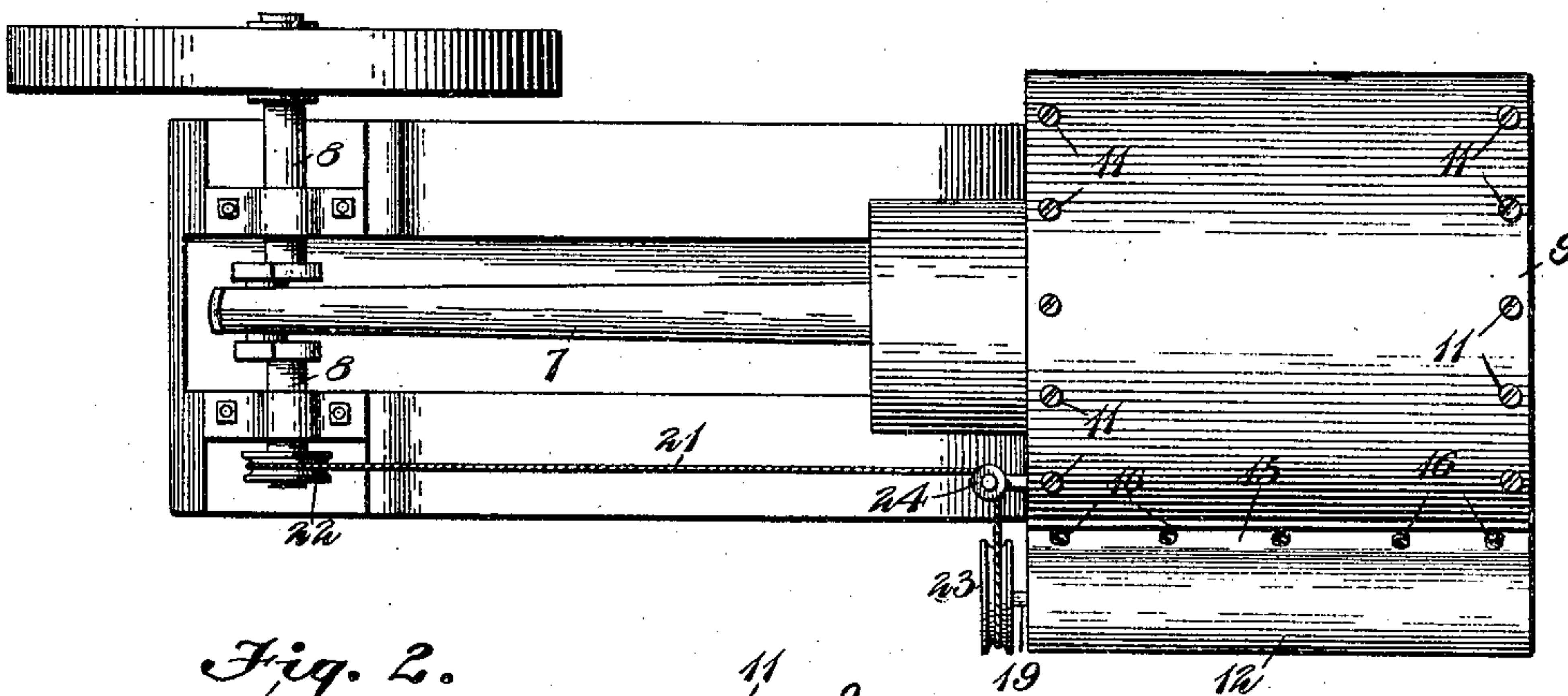


Fig. 2.

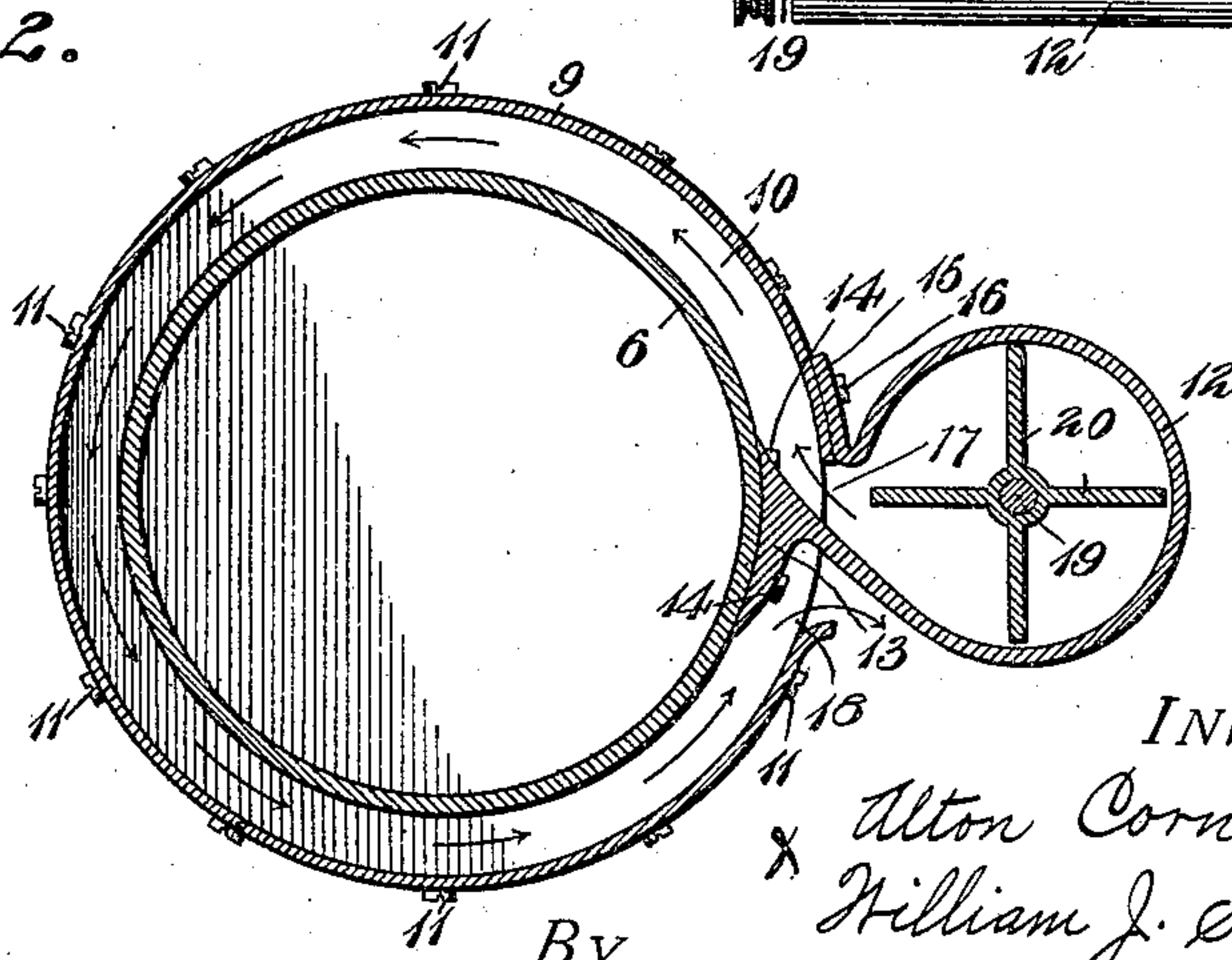


Fig. 3.

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UNITED STATES PATENT OFFICE.

ALTON CORNELL AND WILLIAM J. SWARTZ, OF DETROIT, MICHIGAN.

COOLING EXPLOSIVE-ENGINES.

No. 841,312.

Specification of Letters Patent.

Patented Jan. 15, 1907.

Application filed March 6, 1906. Serial No. 304,516.

To all whom it may concern:

Be it known that we, ALTON CORNELL and WILLIAM J. SWARTZ, citizens of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented new and useful Improvements in Cooling Explosive-Engines, of which the following is a specification.

This invention comprises means for cooling the cylinder of an internal-combustion or explosive engine, and embodies a fan for blowing a cooling blast of air over the cylinder, the invention being especially marked by novel and efficient arrangement of the fan and its casing with respect to the cylinder, whereby a large amount of air is made to pass around the cylinder, between the same and its jacket, for the purpose referred to.

The invention is illustrated in the accompanying drawings.

Figure 1 is a side elevation of a gas-engine provided with the improvement. Fig. 2 is a top plan view. Fig. 3 is a cross-section on the line 3 3 of the other figures.

Referring specifically to the drawings, the cylinder is indicated at 6, the piston-rod at 7, and the crank-shaft at 8. The cylinder has a jacket 9 extending around the same, and this may conveniently be made of light sheet metal supported at the ends by rings 10, to which it is secured by screws 11. These rings close the ends of the space between the cylinder and jacket.

The fan is disposed lengthwise along one side of the cylinder. Its casing consists of a cylindrical casting or metal structure, (indicated at 12,) the length of which is substantially equal to the length of the jacket. It has a longitudinal delivery-opening or slot along its inner side or the side next to the jacket, and its edge adjacent to said slot is extended and flanged, as at 13, to permit of its being secured to the wall of the engine-cylinder, as by screws 14. The opposite edge of the casing is flanged outwardly, as at 15, and secured to the outer side of the jacket, as by screws 16. The jacket has a longitudinal slot or recess, through which at or about the middle thereof, the projecting edge of the fan-casing having the flanges 13 extends, whereby the slot or recess is divided into two parts, one of which forms an inlet from the fan-casing, as indicated at 17, and the other of which forms an outlet for the air after it flows around the cylinder, as indicated at 18.

The fan is mounted in the casing 12, comprising a shaft 19, extending lengthwise through the casing and having a set of radial blades 20 extending along the full length thereof. The fan is thus of long axis and small diameter, and consequently without much vibration. It may be driven by any suitable means. Those shown consist of a belt 21, which extends around a pulley 22 on the crank-shaft and a pulley 23 on the fan-shaft and around intermediate guide-pulleys 24, supported on the engine structure to give proper direction to the belt.

The operation of the engine rotates the fan and drives a blast of air from the fan-casing through the mouth 17 and around the space between the jacket and the engine-cylinder, after which it escapes through the opening 18 under the fan-casing. The arrangement of the fan is convenient and adapted to supply a large quantity of air to the cylinder for cooling purposes, and said air is distributed evenly over the whole surface of the cylinder. The fan-casing being connected directly to the cylinder along its entire length also gives additional surface for radiation.

The compact construction makes the invention particularly well adapted for automobiles, although of course it is not limited thereto.

We claim—

1. The combination with an engine-cylinder and a jacket around the same having a longitudinal opening therethrough, of a fan-casing extending along beside the jacket and open on the side adjacent thereto and extending at one edge through the opening in the jacket to connection with the cylinder, and connected at the other edge to the jacket, and a fan within the casing.

2. The combination with an engine-cylinder and a jacket around the same, of a fan-casing extending along beside the jacket, the casing and jacket being of substantially equal length and having communicating openings along their full length, and a fan comprising a shaft extending lengthwise through the casing and having blades thereon.

3. The combination with an engine-cylinder and a jacket around the same having a longitudinal opening therethrough, of a fan-casing comprising a cylinder extending beside and parallel to the jacket, the cylinder having a longitudinal opening, and one edge of the same being extended through the open-

ing in the jacket, dividing the same into two
slots one of which communicates with the
fan-casing to form an inlet and the other of
which forms an outlet, and a fan located in
5 the casing and extending along beside the
inlet.

In testimony whereof we have signed our

names to this specification in the presence of
two subscribing witnesses.

ALTON CORNELL.

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Witnesses:

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