

No. 753,013.

PATENTED FEB. 23, 1904.

J. W. SUTTON.

COOLING ATTACHMENT FOR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED OCT. 22, 1902.

NO MODEL.

Fig: 1.

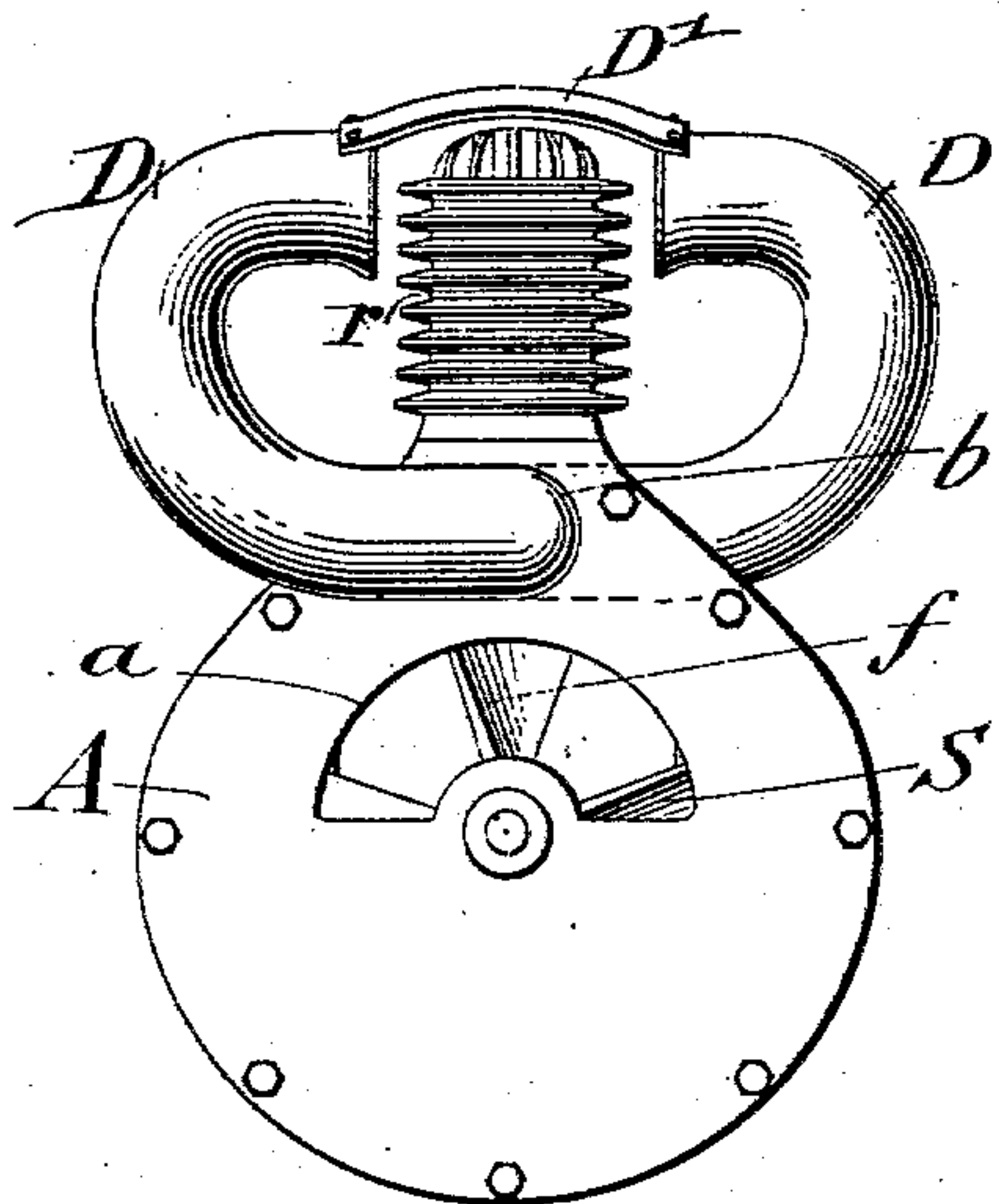


Fig: 2.

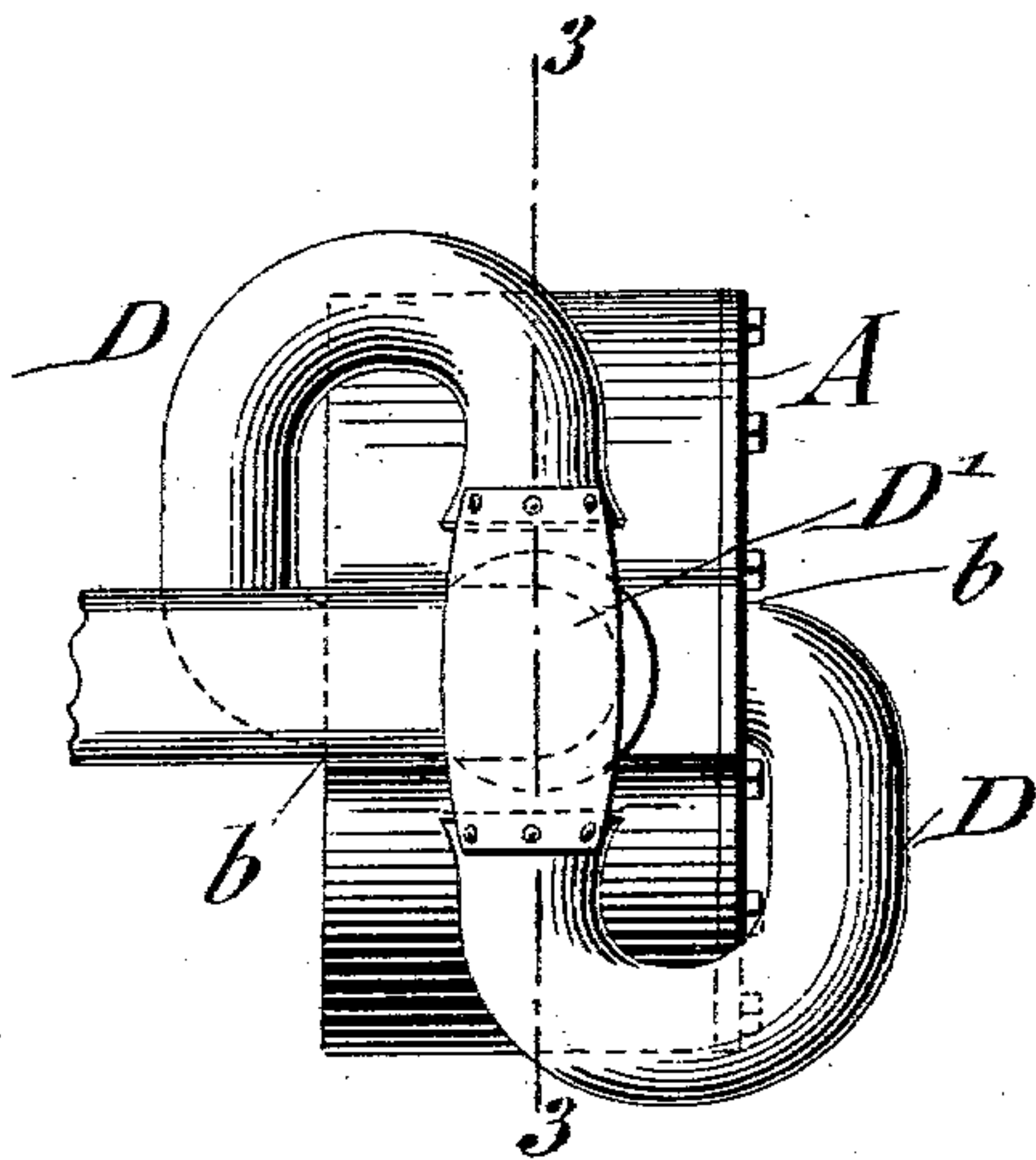


Fig: 3.

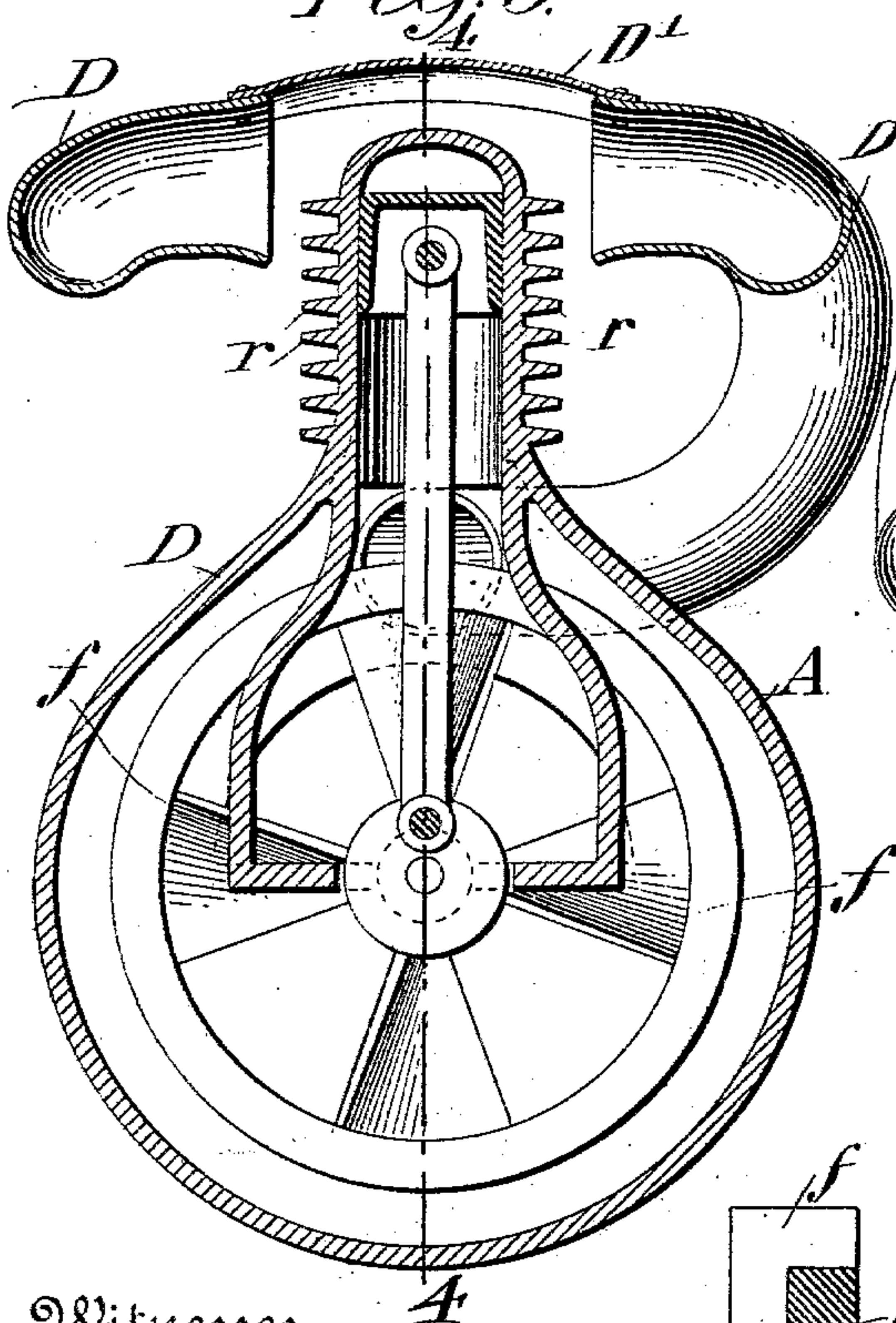
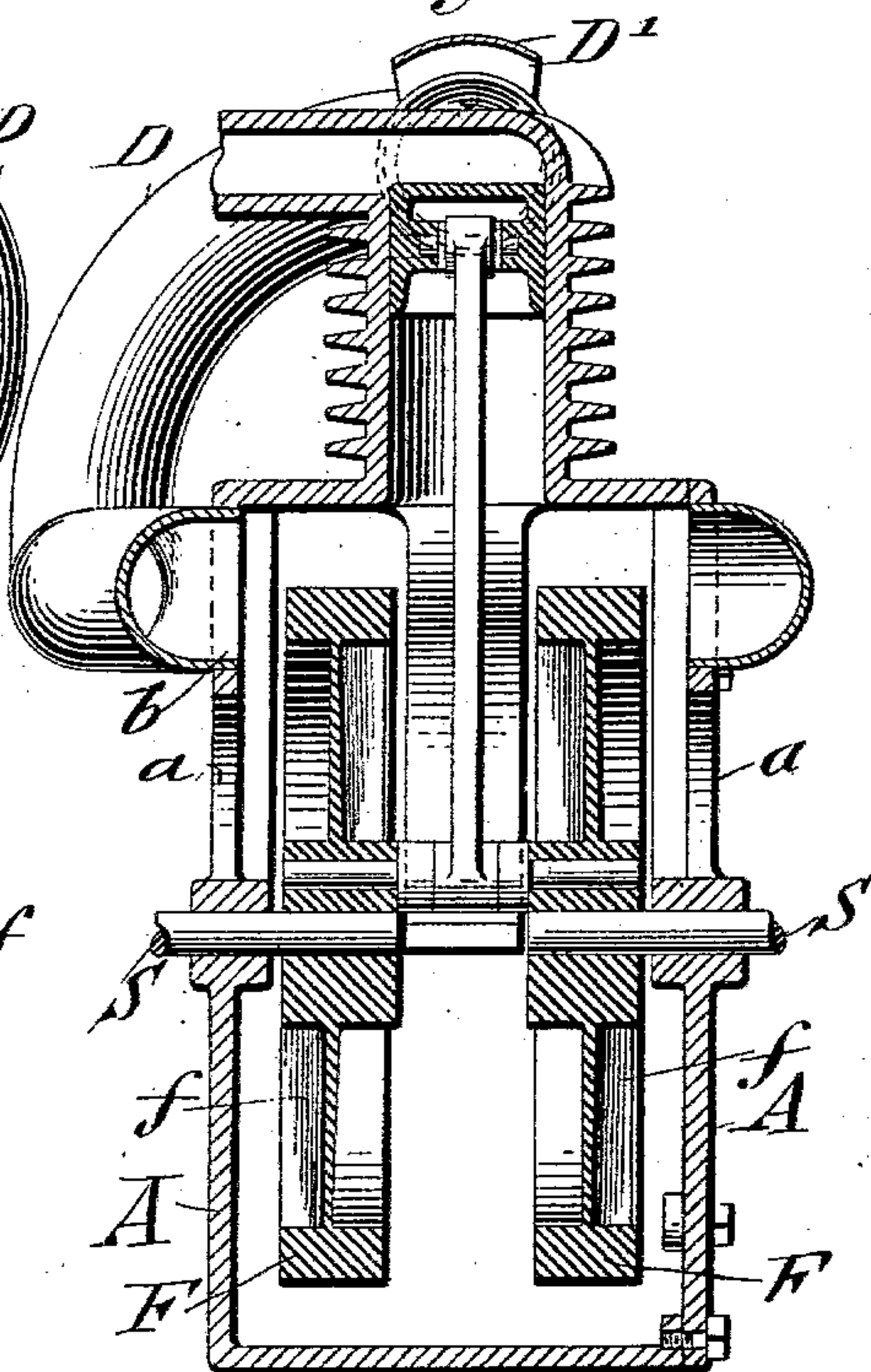
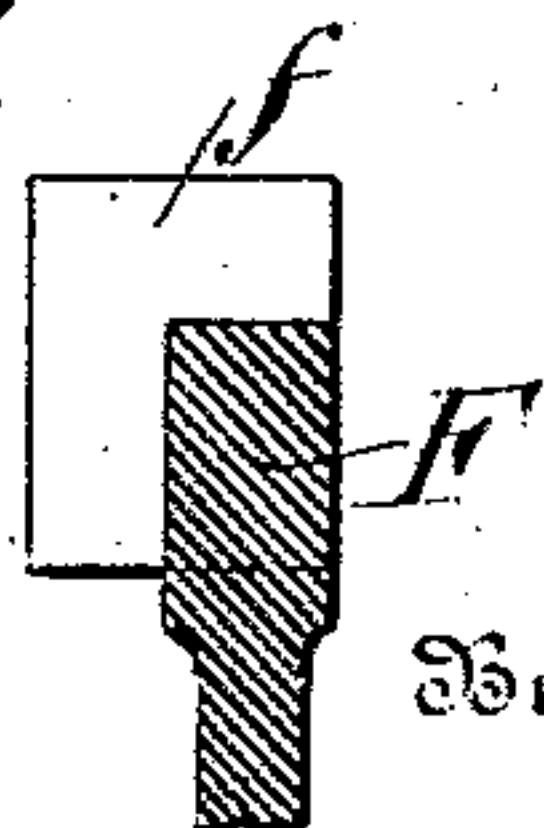


Fig: 4.



Witnesses
C. P. Goebel
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Fig: 5.



By his Attorneys

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UNITED STATES PATENT OFFICE.

JOHN W. SUTTON, OF BROOKLYN, NEW YORK.

COOLING ATTACHMENT FOR INTERNAL-COMBUSTION ENGINES.

SPECIFICATION forming part of Letters Patent No. 753,013, dated February 23, 1904.

Application filed October 22, 1902. Serial No. 128,281. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. SUTTON, a citizen of the United States, residing in New York, borough of Brooklyn, and State of New York, have invented certain new and useful Improvements in Cooling Attachments for Internal-Combustion Motors, of which the following is a specification.

This invention relates to certain improvements in cooling attachments for internal-combustion motors of that class which are employed in motor-cycles, automobiles, and similar vehicles, said cooling attachment serving to draw in continuously a certain quantity of the outside atmospheric air to the interior of the crank-case and deliver it by suitable channels to the interior piston and cylinder and to the head and exterior portion of the combustion-chamber, so as to exert an effective cooling action on the same; and for this purpose the invention consists of an internal-combustion motor the crank-case of which is provided with openings, a cylinder and piston, ventilating means actuated by the fly-wheel of the motor, a deflecting-hood above the cylinder, and channels connecting the ventilating means and crank-case with the deflecting-hood for imparting an interior and exterior cooling action on the piston and cylinder.

The invention consists further of certain additional details of construction and combinations of parts which will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side elevation of an internal-combustion motor with my improved cooling attachment, in which the fan is arranged at the interior of the crank-case. Fig. 2 is a plan view of Fig. 1. Fig. 3 is a vertical longitudinal section of the motor-cooling attachment on line 3 3, Fig. 2. Fig. 4 is a vertical transverse section on line 4 4, Fig. 3; and Fig. 5 is a detail section of the rim of the fly-wheel with a modified form of same.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents the crank-case of an internal-combustion motor of that type which is used for motor-cy-

cles, automobiles, and similar vehicles. The upper part of the crank-case is made pear-shaped, while the lower part is semicircular. The pear-shaped portion of the crank-case communicates with the lower end of a cylinder, which is provided with the usual exterior cooling-ribs *r*. The upper portion of the crank-case is made pear-shaped for the purpose of enlarging the communicating space between the crank-case and the cylinder by removing the projecting corners of the crank-casing heretofore in use, so that air is permitted to pass freely to the interior surface of the cylinder and piston.

The driving crank-shaft S of the motor A is provided with two fly-wheels which are supported in bearings of the side walls of the crank-case, said fly-wheels being arranged at each side of the connecting-rod by which the crank and wrist-pin of the crank-shaft is connected with the interior of the piston. The fly-wheels F are of as large size as can be conveniently arranged in the crank-case, said fly-wheels being made to balance each other and provided with spokes that are made in the shape of spirally-twisted fan-vanes *f*, that draw in the outer atmospheric air through the openings in the crank-case to the interior of the same and force it into contact with the interior surface of the walls of the cylinder and piston, so as to exert a direct cooling action on the same. Instead of the spirally-twisted fan-vanes *f* of Fig. 3 vanes may be affixed to the fly-wheel, as shown in Fig. 5. The casing is made eccentric, so that the vanes of the fly-wheel run close to the casing on one side, so as to force the current of air outward into the cylinder and casing.

To give exit to the air after the same has been forced into contact with the interior of the cylinder and piston, the crank-case is provided with openings *b* above the inlet-openings *a*, which outlet-openings are connected by two flattened tubular channels D with the upper part or head of the cylinder, said channels being connected above the combustion-chamber with a deflecting-hood D', so that the air that is drawn into the crank-case by the vanes of the fly-wheel is forced through the outlet-openings and the connecting-channels

and delivered continuously with considerable force on the head and upper portion of the combustion-chamber, so as to produce an effective cooling action on the head, ribs, and exterior surface of the same.

The continuous and steady supply of air to the interior and exterior of the cylinder cools the same and maintains the reduced temperature of the cylinder and piston in such a manner as to obviate the many disadvantages of heated cylinders, as loss of compression, poor lubrication with attendant friction, and troublesome packing. A piston fitting more closely the bore of the cylinder is permitted, as a considerable amount of allowance for packing is not necessary. By providing a strong current of air against the interior surface of the cylinder and piston and against the outer surface of the head and side walls of the cylinder and combustion-chamber the cylinder is cooled inside and outside, and the cylinder as well as piston is not subject to excessive expansion.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with the crank-case, cylinder and piston of an internal-combustion motor, of a fly-wheel on the crank-shaft of said motor, ventilating means actuated by said

fly-wheel, air-inlet openings in said crank-case, an exterior deflecting-hood extending over and around the top of the cylinder, an opening at the upper part of each side of the crank-case, and pipes connecting the openings with said deflecting-hood for cooling the exterior of the cylinder, substantially as set forth.

2. The combination, with the crank-case, cylinder and piston of an internal-combustion motor, said crank-case being provided with air-inlet openings, of fly-wheels arranged at the interior of said crank-case and provided with spirally-bent spokes or vanes so as to force the current of air into the cylinder, a deflecting-hood located at the outside of the cylinder and over the same, outlet-openings in the upper part of the crank-case and in each side of the same, and pipes connecting the outlet-openings of the crank-case with said hood, so as to supply air to the exterior of the cylinder, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

JOHN W. SUTTON.

Witnesses:

PAUL GOEPEL,
C. P. GOEPEL.