(No Model.)

C. BAUMGARTEN.

STEAM ENGINE.

No. 283,558. Patented Aug. 21, 1883.

Fig. 1.

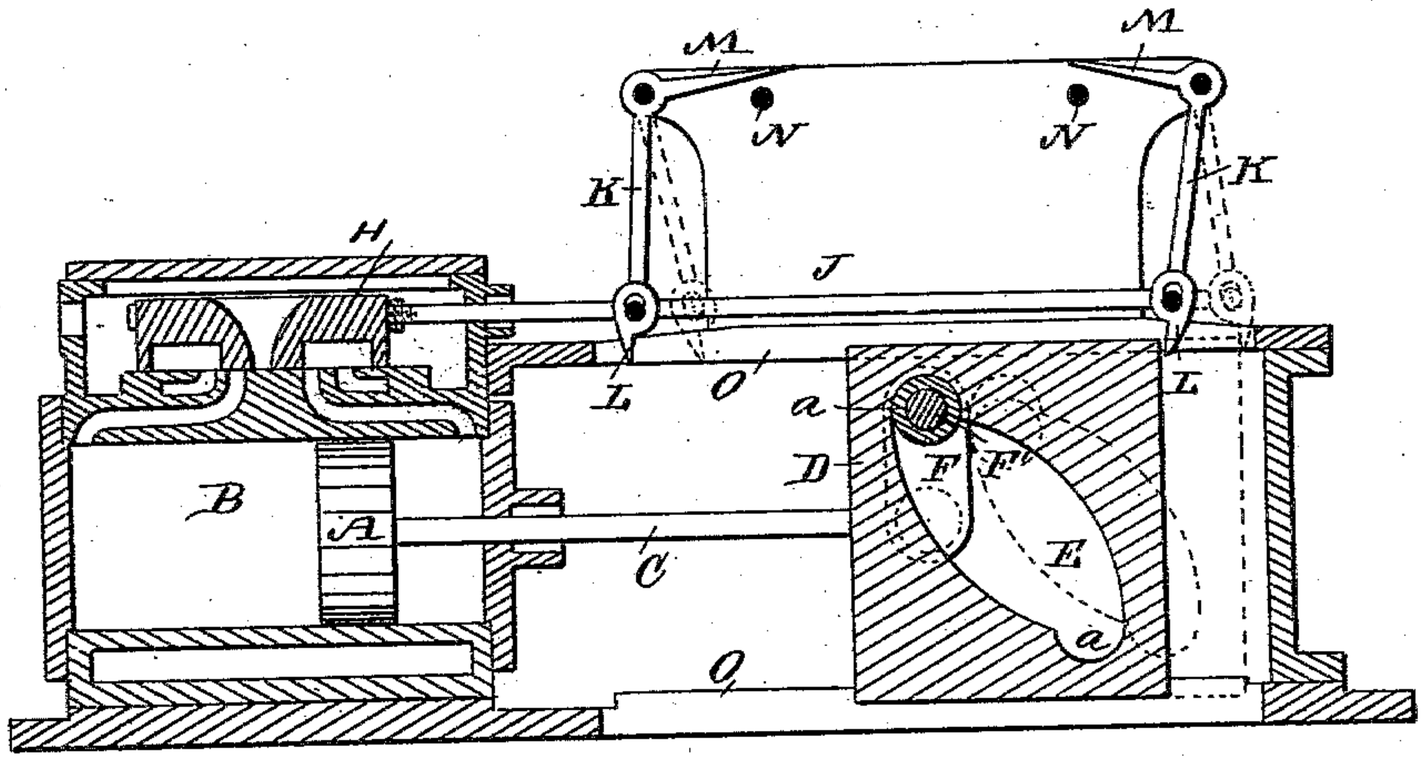
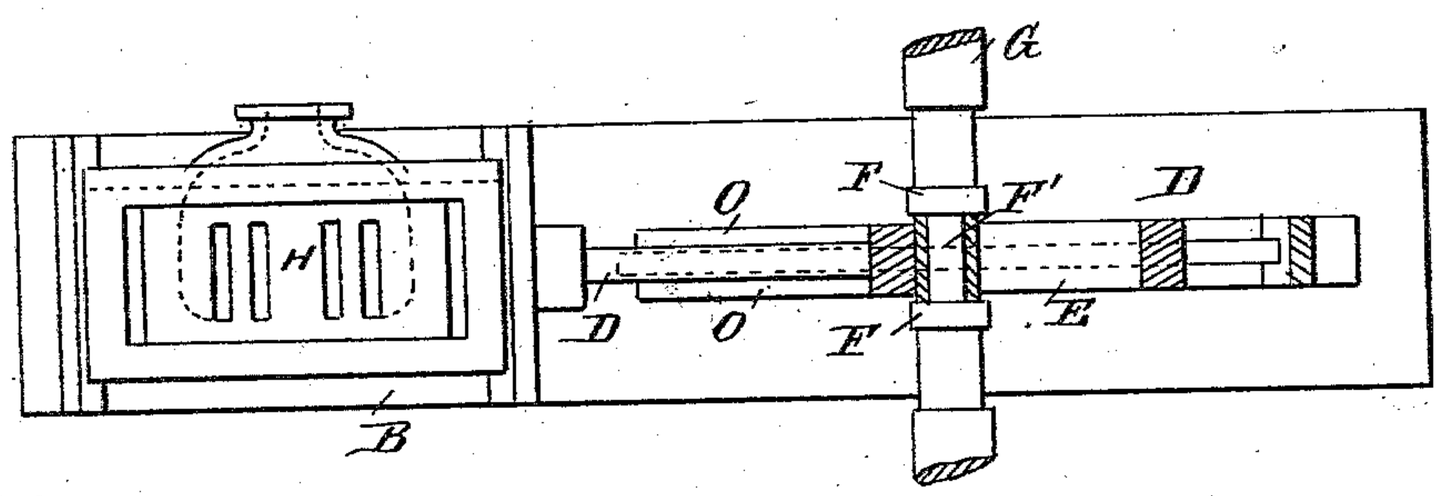


Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

CARL BAUMGARTEN, OF BERLIN, GERMANY.

STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 283,558, dated August 21, 1883.

Application filed July 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, CARL BAUMGARTEN, of the city of Berlin, Prussia, have invented a new and useful Improvement in Steam-Engines Working Without a Dead-Point, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved steam-engine which works without a dead point or center, and can be started at all times without any additional help, whatever the position of the crank may be.

The invention consists in a steam-engine having a block secured to the piston-rod, which block is provided with a diagonal slot through which the crank-pin passes, the said slot having concaved edges facing each other, and being also provided with a recess at each end. The slide-valve is attached to a rod suspended from levers provided at the lower ends with tappets, against which the ends of the sliding block can strike, thereby reciprocating the slide-valve rod. The levers from which the said rods are suspended are provided with spring-arms for giving the desired degree of expansion.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal sectional elevation of my improved steam-engine. Fig. 2 is a plan view of the same, parts being shown in section.

The piston A, working in the cylinder B, is provided with a piston-rod, C, attached to an upright sliding plate or block, D, provided with a diagonal slot, E, extending from the upper corner nearest the piston-head to the opposite lower corner, through which slot a cross-piece, F', of the crank F on the main shaft G passes. The sides of the slot are curved, or made segmental, so that the two concave curves will face each other, and the slot will be wider at the middle than at the ends. At each end the slot is provided with a semicircular recess, *a*. The slide-valve H, for admitting steam into the ends of the cylinder, is attached to a rod, J, which is suspended from two levers, K, pivoted above the rod J, which levers have tappets L projecting from the lower ends such a distance that they can be struck by the ends of the sliding plate D. At the upper ends the levers K are provided with rectangular spring-arms M, which are adapted to strike on rods N, for a purpose that will be set forth hereinafter. The block D is suitably guided between tracks O.

As shown, the crank F stands vertically, and is in the top recess, *a*, and as the block D tends to move from the end of the cylinder the crank is swung downward and out of the recess *a*, and when the piston has completed its stroke the crank stands at an angle of forty-five degrees. The piston then begins to make its return-stroke, and that edge of the slot E farthest from the piston acts on the cross-piece of the crank and swings the same down into a horizontal position, and then downward until the crank is again at an inclination of forty-five degrees downward to the piston, when the block D begins its return-stroke and the piston is swung to the horizontal position, and the size of the angle the slot forms with the crank is large enough to obtain impelling components which are in the direction of the rotation. At the end of each stroke the block D strikes one of the tappets L and moves the slide-valve H in one direction or the other. If the block D strikes one of the tappets L, the corresponding spring-arm M is bent, and when the block D leaves the said tappet the reaction of the spring throws the rod J and the slide H back sufficiently to obtain the desired degree of expansion.

I do not abandon or dedicate to the public any patentable feature set forth herein and not hereinafter claimed, but reserve the right to claim the same, either in a reissue of any patent that may be granted upon this application or in other applications for Letters Patent that I may make.

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

1. The herein-described device for converting reciprocating motion, consisting of a sliding block provided with a slot, the edges of which act on the crank in such a manner as

to rotate it in all positions of the crank, substantially as herein shown and described, and for the purpose set forth.

2. The combination, with a cylinder and piston, of a block provided with a diagonal slot, through which the crank-pin passes, substantially as herein shown and described, and for the purpose set forth.

3. The combination, with a cylinder and piston, of a sliding block attached to the piston-rod and provided with a diagonal slot, the width of which increases from the ends toward the middle, substantially as herein shown and described, and for the purpose set forth.

4. The combination, with a cylinder and piston, of a sliding block attached to the piston-rod and provided with a diagonal slot, the sides of which are curved in such a manner that the concave edges of the slot face each other, substantially as herein shown and described, and for the purpose set forth.

5. The combination, with a cylinder and piston, of a sliding block attached to the piston-rod and provided with a diagonal slot having concave edges, and a semicircular recess at each end of the slot, substantially as herein shown and described, and for the purpose set forth.

6. The combination, with a piston-cylinder and slide-valve, of a sliding block provided with a diagonal slot, through which the crank-pin passes, a rod secured to the slide-valve, levers from which the said rod is suspended, and tappets projecting from the lower ends of the rod, substantially as herein shown and described, and for the purpose set forth.

CARL BAUMGARTEN.

Witnesses:
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