N° 11,511 A.D. 1900

Date of Application, 25th June, 1900—Accepted, 28th July, 1900

COMPLETE SPECIFICATION.

Improvements in or relating to the Slide Valves of Steam Engines.

I, GEORGES CARETTE, Manufacturer, of 7, Schillerstrasse, Nuernberg, Bavaria, in the Empire of Germany, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in the slide valves of steam engines and has special reference to toy or model engines having stationary cylinders, although its application is not limited thereto.

According to this invention the slide valve is uncovered, that is to say, it does not work within an enclosed chamber or steam chest; it carries rigidly secured to it or formed in it a steam chamber which is closed except for a longitudinal slot preferably near the centre and two openings one near each end of the chamber. The slot and the openings are upon the underside of the valve and form communicating passages between the steam chamber and openings in the cylinder face.

The steam supply comes through an opening or passage formed in the cylinder face and passes out from an opening in that face through the longitudinal slot in the slide valve into the steam chest, the slot being of such a length that steam can pass continuously from the inlet opening to the steam chamber.

Two inlet ports are formed in the cylinder face and these are alternately placed in communication with the steam chamber by means of the openings in the face of the valve.

In one construction of engine according to this invention an exhaust passage is formed within the cylinder face opening into that face at each end by a hole, and recesses are formed in the slide valve which as the latter is reciprocated serve to connect the ports with the corresponding exhaust openings.

In some forms of toy engines as hitherto manufactured, the face of the slide valve has been kept in contact with the cylinder face by means of a spring. One disadvantage of this arrangement is that the steam pressure forces the valve strongly against the spring and thus sets up unnecessary friction and causes wear.

According to this invention this disadvantage is obviated by interposing a ball or roller bearing between the spring and the slide valve so that rolling friction is substituted for the sliding friction.

In the accompanying drawings which illustrate one construction of slide valve mechanism according to this invention:

Figure 1 is a perspective view showing the cylinder and slide valve mechanism.

Figure 2 is a perspective view partly in section showing the slide valve separated from the cylinder, and

Figure 3 is a longitudinal section on the line 3—3 of Figure 2.

Like letters indicate like parts throughout the drawings.

A is a cylinder having a piston A^1 and piston rod A^2 working within it. The cylinder face B is pierced with ports B^1 and provided with a steam inlet pipe B^2 which opens at a point approximately at the centre of the face as at B^3. A

[*Price* 8*d*.]

passage B^4 is formed beneath the cylinder face B and communicates about midway of its length with an exhaust pipe B^5, the ends of the passage opening to the outer surface of the face B as at B^6.

Secured to the cylinder face B are guide-pins C two of them being screwed and provided with nuts C^1 for a purpose hereinafter described. Between the guide-pins C an uncovered slide valve D is placed, its face working upon the cylinder face B in the usual way.

A steam chamber D^1 of comparatively large dimensions is formed in the slide valve D and a slot D^2 provided in the face of the valve is arranged so that some portion of it is always over the steam inlet opening B^3 in the cylinder face B. Openings D^3 one at each end of the steam chamber D^1 are arranged so that they alternately place each port B^1 in communication with the steam chamber. Recesses D^4 are formed in the face of the slide valve D and serve to place the ports B^1, at the proper period of the stroke, in communication with the corresponding exhaust opening B^6.

In order to keep the working face of the slide valve D in sufficiently close contact with the cylinder face B without introducing unnecessary friction, the following arrangement is employed:—

A plate E having holes in it which slip over the screwed guide-pins C accommodates a ball F which while free to roll is maintained in its operative position by slots E^1 formed in the guide-plate E and a second plate E^2 attached to it. The slot in the plate E is large enough to allow the surface of the ball F to bear against the outer surface of the slide valve D. A light spring G provided with holes through which the screwed guide-pins C pass presses upon the plate E^2, and thus through the action of the ball F tends to keep the slide valve D in close contact with the cylinder face B. Although the plate E^2 is shown as slotted it need not necessarily be formed in that way, the slot in the plate E will suffice to keep the ball from lateral motion and the plate E^2 may have a plain surface. The pressure acting upon the slide valve D may be regulated by means of the nuts C^1 which act upon the ends of the spring G. The course of the steam is indicated in Figure 2 by the small arrows.

If desired the exhaust passage B^4 with its openings B^6 in the cylinder face may be dispensed with and the recesses D^4 lengthened so that they extend right across the face of the slide valve D. In this case the exhaust will take place directly into the air when the recesses D^4 coincide with the ports B^1.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In a steam engine the combination with the cylinder face of an uncovered hollow slide valve such as D whose interior D^1 is in permanent communication with the steam supply.

2. In a steam engine an uncoverd slide valve having a steam chamber D^1 in constant communication by the slot D^2 with the steam supply and openings D^3 at each end of the chamber which are alternately placed in communication with the cylinder ports substantially as described.

3. In a steam engine an uncovered side valve having a steam chamber D^1 slot D^2 openings D^3 and recesses D^4 arranged and operating substantially as described.

4. In a steam engine a cylinder face B having inlet and exhaust openings B^1 B^6 which are placed in communication with each other substantially as described by recesses in the face of the slide valve.

5. In a steam engine the combination with a cylinder having a steam inlet opening B^3 of an uncovered slide valve having a steam chamber D^1 in constant communication with the opening substantially as described.

6. In a steam engine the employment of a ball or roller bearing interposed between a spring and the slide valve substantially as and for the purpose described.

Carette's Improvements in or relating to the Slide Valves of Steam Engines.

7. In a steam engine the combination with a slide valve of a slotted guide-plate E ball F and adjustable spring G substantially as described.

8. The complete slide valve mechanism substantially as described or illustrated in the accompanying drawings.

Dated this 25th day of June 1900.

BOULT, WADE & KILBURN,
Agents for the Applicant.

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CARETTE'S COMPLETE SPECIFICATION. (1 SHEET)

Fig. 1.

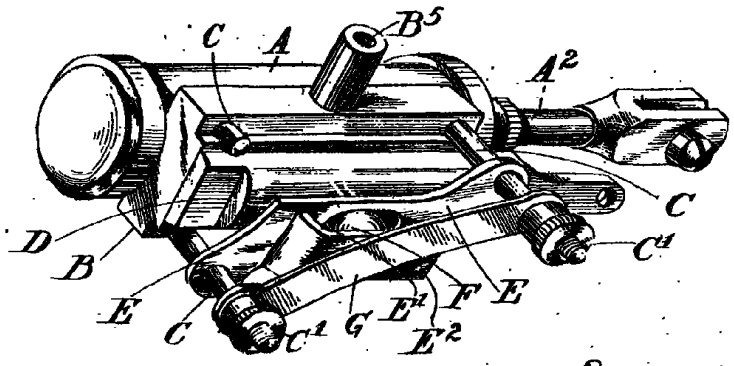


Fig. 2.

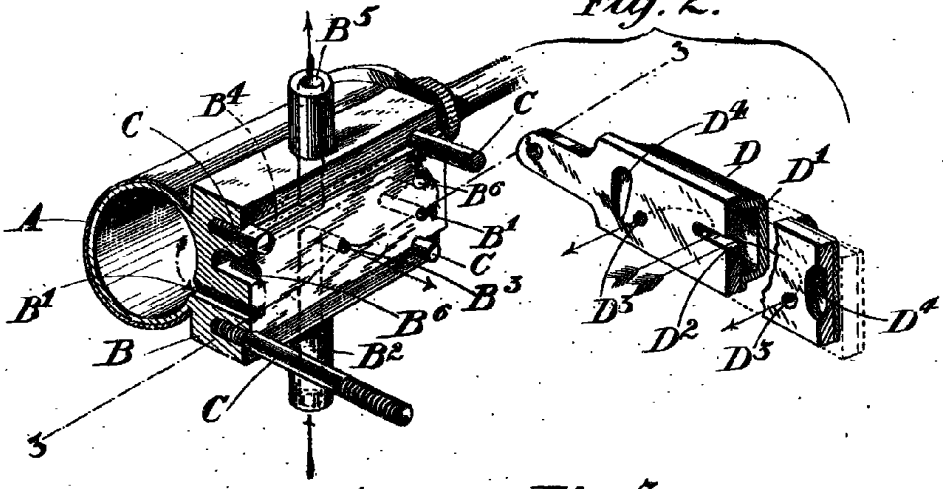
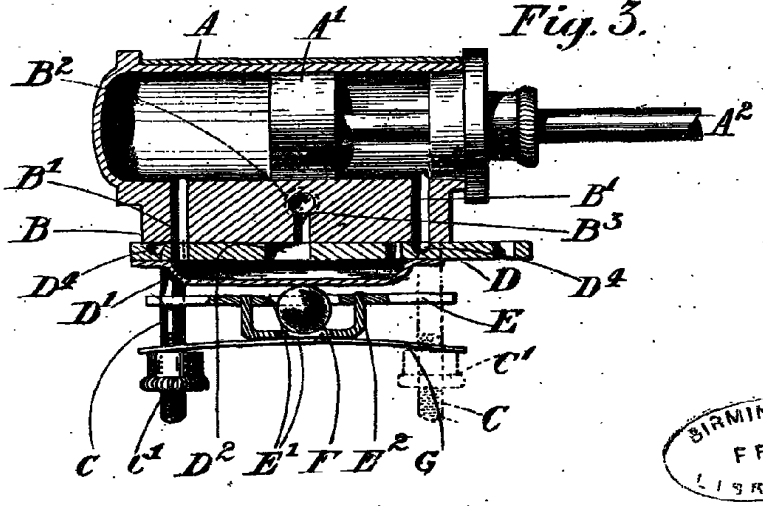


Fig. 3.



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[This Drawing is a reproduction of the Original on a reduced scale.]