

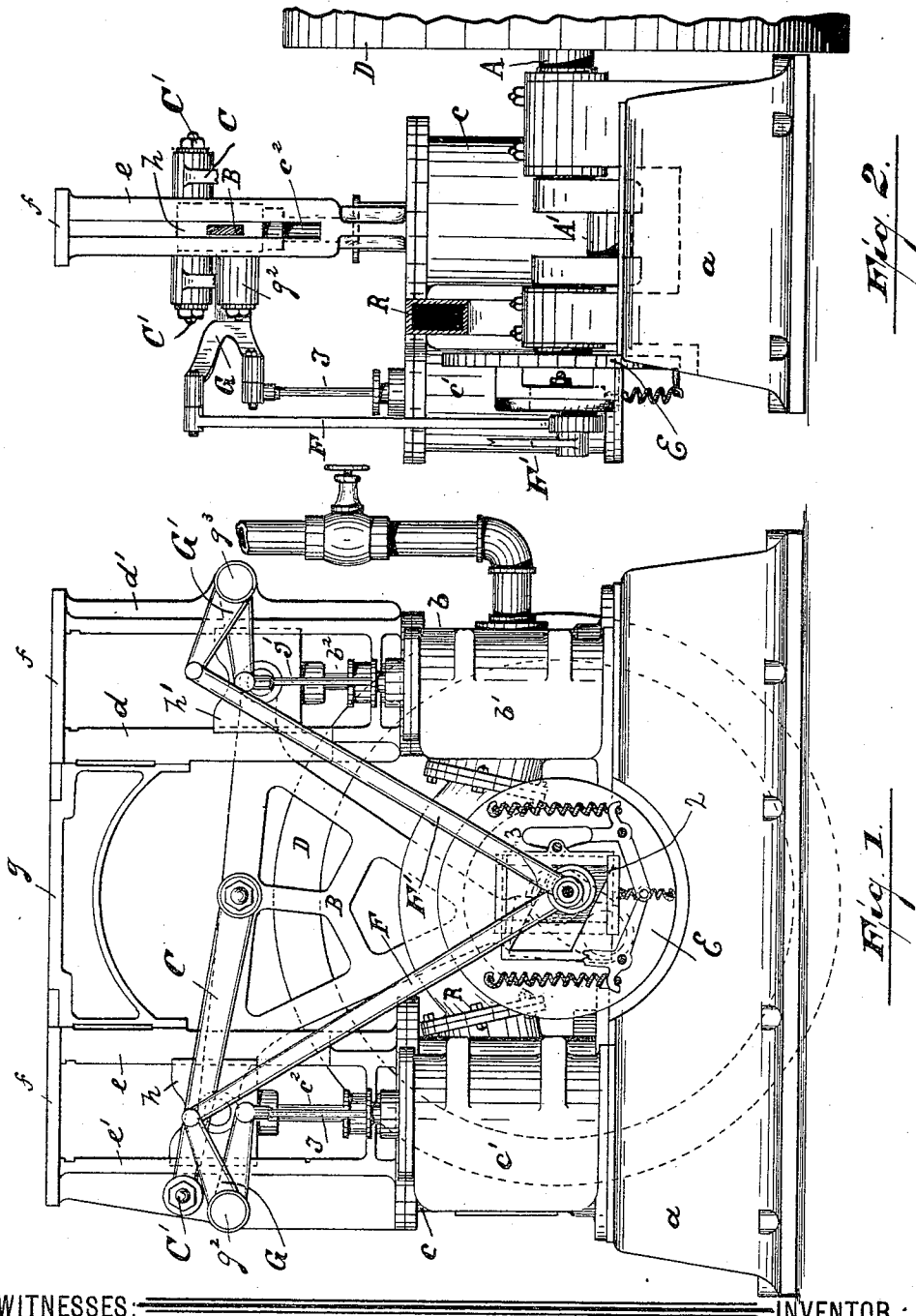
(No Model.)

2 Sheets—Sheet 1.

T. SCHEFFLER.
STEAM ENGINE.

No. 480,213.

Patented Aug. 2, 1892.



WITNESSES:

Wm. D. Bell.
Walter Thompson.

INVENTOR:

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BY

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ATTORNEYS

(No Model.)

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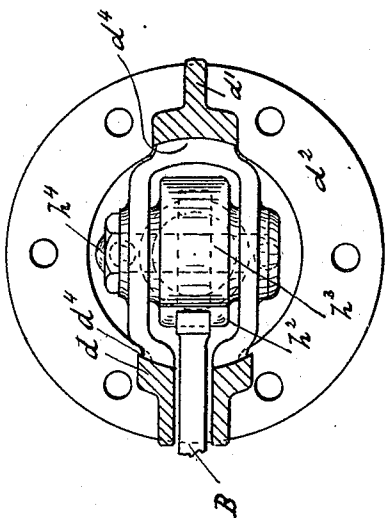
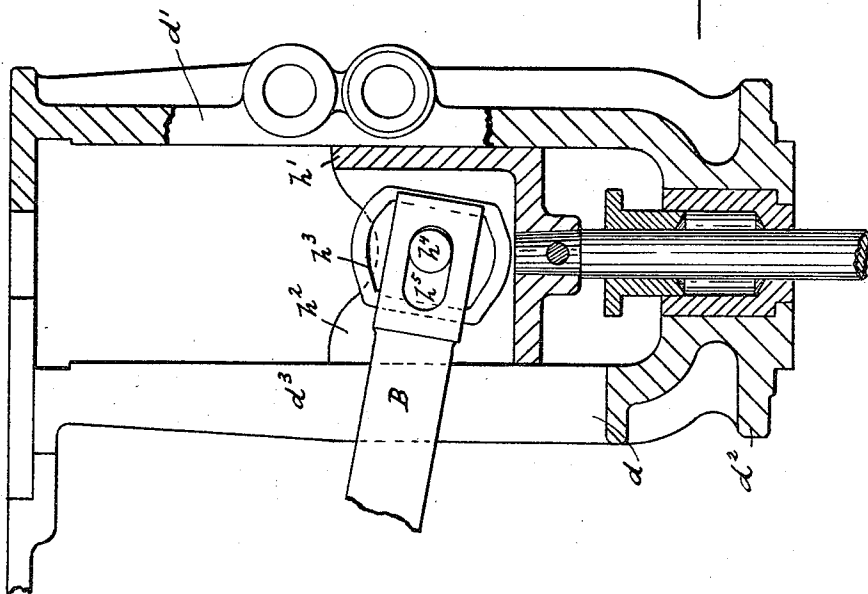


Fig. 4.

Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

THEODORE SCHEFFLER, OF PATERSON, NEW JERSEY.

STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 480,213, dated August 2, 1892.

Application filed October 7, 1891. Serial No. 407,994. (No model.)

To all whom it may concern:

Be it known that I, THEODORE SCHEFFLER, a citizen of the United States, residing at Paterson, county of Passaic, and State of New Jersey, have invented certain new and useful Improvements in Steam-Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to construct a high-speed steam-engine, simple in construction, having great efficiency and occupying comparatively little space.

The invention consists in the improved steam-engine and the arrangement and combination of the various parts thereof, substantially as will be hereinafter more fully described, and finally embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several figures, Figure 1 is a front elevation of my improved steam-engine. Fig. 2 is a side elevation thereof with the high-pressure cylinder and its connections removed. Figs. 3 and 4 are enlarged detail views of one of the cross-heads and its guides.

The drawings and the specification illustrate and describe my improved steam-engine as a compound engine; but it will be clear that the same construction with slight modification can be used in building high-pressure or other expansion engines.

In said drawings, *a* represents the base of my improved compound engine, to which are secured by bolts or in any desired manner the cylinders *b c*, *b* being the high-pressure and *c* the low-pressure cylinder. *b' c'* are the valve-chambers, cast integral with said cylinders. To the top of said cylinders are secured guides *d d'* and *e e'*, which are connected at their upper ends by cross-bars *f f* and securely braced by strengthening-frame *g*. Within said guides work up and down the cross-heads *h h'* of piston-rods *b² c²* and are connected with and transmit their motion to the shaft *A* through crank-pin *A'* by means of a triangular-shaped

beam *B*. To the center of the upper part of said beam is pivoted a lever *C*, which with its other end is pivotally secured at *C'* to one of the guide-frames, thus reducing the strain on the cross-heads.

The guide-frame *d d'* is secured to the top of the cylinder *b* with its bed-plate *d²* by bolts or in any desired manner. The frame *d* has an elongated opening *d³*, (shown in Figs. 3 and 4,) through which passes one end of the beam *B*. The inner surfaces of said frames *d d'* are slightly concave, as at *d⁴*, and form the guideways for cross-head *h'*. The said cross-head has a pocket *h²*, in which is arranged a slide *h³*, adapted to receive the end of the triangular beam. The said end is provided with an elongated slot *h⁵*, which surrounds a pin *h⁴*, secured to cross-head *h'* and passing through the slide *h³*. To the rear end of the shaft is secured the fly-wheel *D* and to the front end a spring-governor *E*, with eccentrics 2 3. To these eccentrics are pivotally secured connecting-rods *F F'*, pivoted at their upper ends to one arm of angle-lever *G G'*. These levers are fulcrumed at *g² g³* to the guide-frames and are pivoted with their other arms to the valve-rods *I I'*.

The steam connection of the high-pressure cylinder and the steam-chest of the low-pressure cylinder is made through pipe *R*, as shown in Figs. 1 and 2.

The operation of my improved steam-engine is as follows: When steam is applied to the cylinders, the pistons will move simultaneously and in the same direction during most of their stroke, and the valves being so set that when one piston is starting on its upstroke the other will not have quite completed its downstroke, which operation produces a reciprocating motion of the beam *B*. By this arrangement a dead-center is completely avoided.

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

1. A steam-engine comprising a shaft, two cylinders and their respective valve-chambers, a double guide-frame secured to the top of each cylinder and provided with inner concave surfaces, an elongated slot arranged in the inner portion of each guide-frame, cross-heads carrying the piston-rods and adapted

to slide within said guide-frames, pockets h^2 , arranged in said cross-heads, a slide h^3 , adapted to oscillate within said pocket, a triangular beam provided at each outer end with a flattened portion adapted to operate in said slide, a slot arranged in said flattened portion, a pin secured to the cross-head and passing through said slide and slot and adapted to form the fulcrum for the oscillating slide, said triangular beam being adapted by means of its connection to the cross-heads to transmit their motion to the shaft, and a governor adapted to control through eccentrics the valve-chambers and their respective cylinders, all said parts being combined to operate substantially as described, and for the purposes set forth.

2. A steam-engine comprising a shaft, two cylinders and their respective valve-chambers, a double guide-frame secured to the top of each cylinder and provided with inner concave surfaces, an elongated slot arranged in the inner portion of each guide-frame, cross-heads carrying the piston-rods and adapted

to slide within said guide-frames, pockets arranged in said cross-heads, a slide adapted to oscillate within said pocket, a triangular beam provided at each outer end with a flattened portion adapted to operate in said slide, a slot arranged in said flattened portion, a pin secured to the cross-head and passing through said slide and slot and adapted to form the fulcrum for said oscillating slide, said triangular beam being adapted by means of its connection to the cross-heads to transmit their motion to the shaft, and a lever pivoted at one end to one of the said guide-frames and at its other end to the center of the upper portion of said triangular beam, all said parts being combined to operate substantially as described, and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 2d day of October, 1891.

THEODORE SCHEFFLER.

Witnesses:

ALFRED GARTNER,

ALFRED A. VAN HOVENBERG.