

(No Model.)

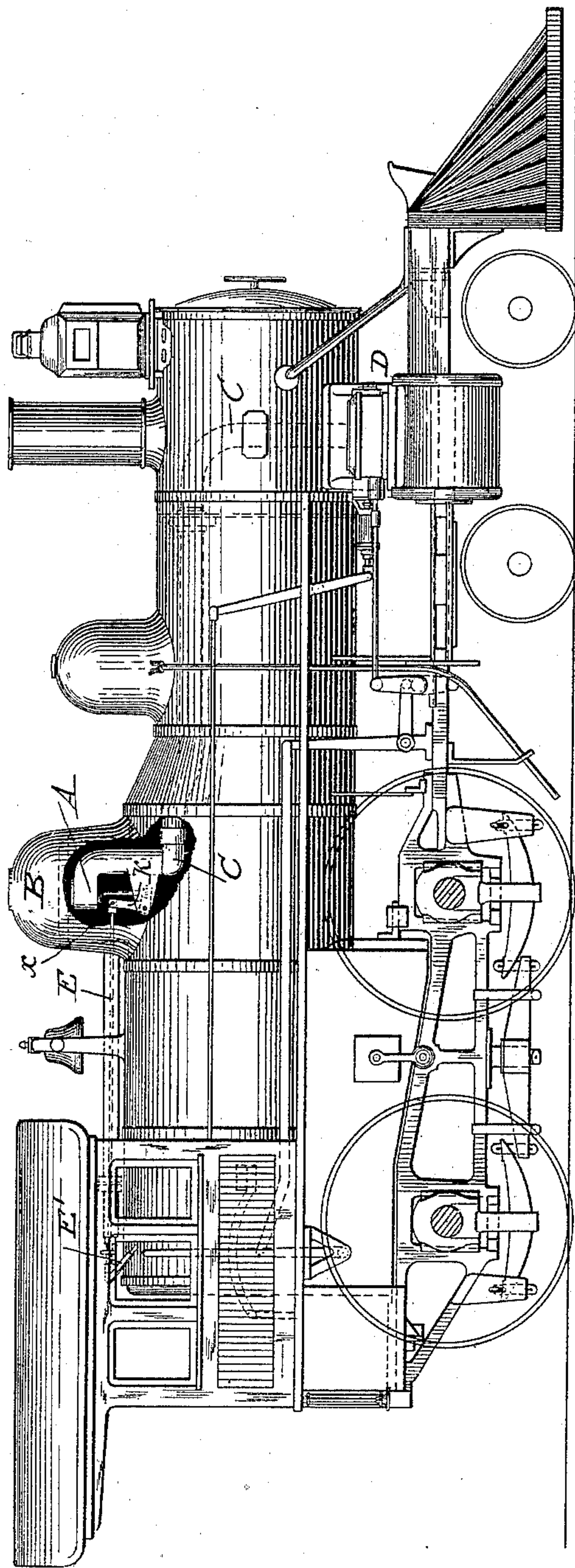
2 Sheets—Sheet 1.

A. J. PITKIN.
THROTTLE VALVE.

No. 493,836.

Patented Mar. 21, 1893.

Fig. 1.



Witnesses
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his Attorneys

(No Model.)

2 Sheets—Sheet 2.

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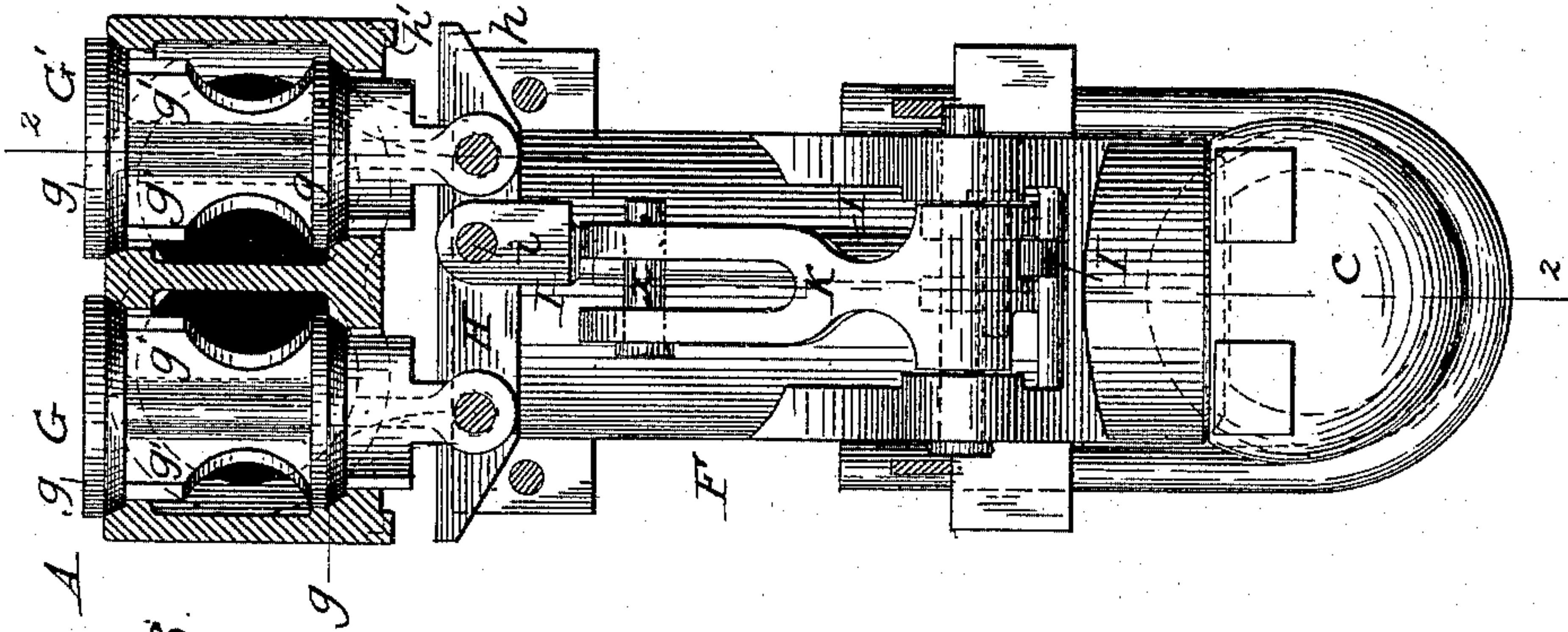


Fig. 3.
ON 3-3

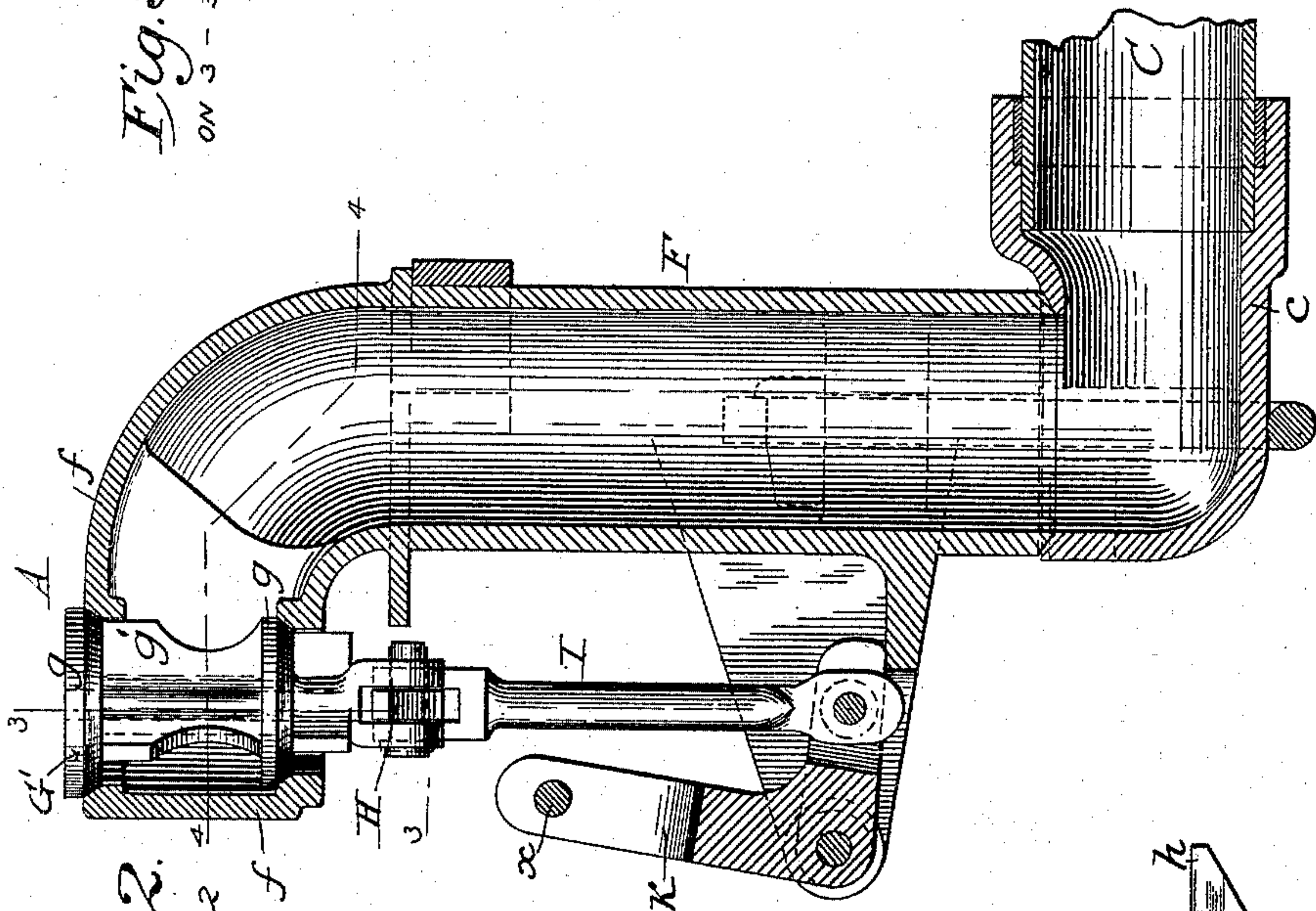


Fig. 2.
ON 2-2



Fig. 5.

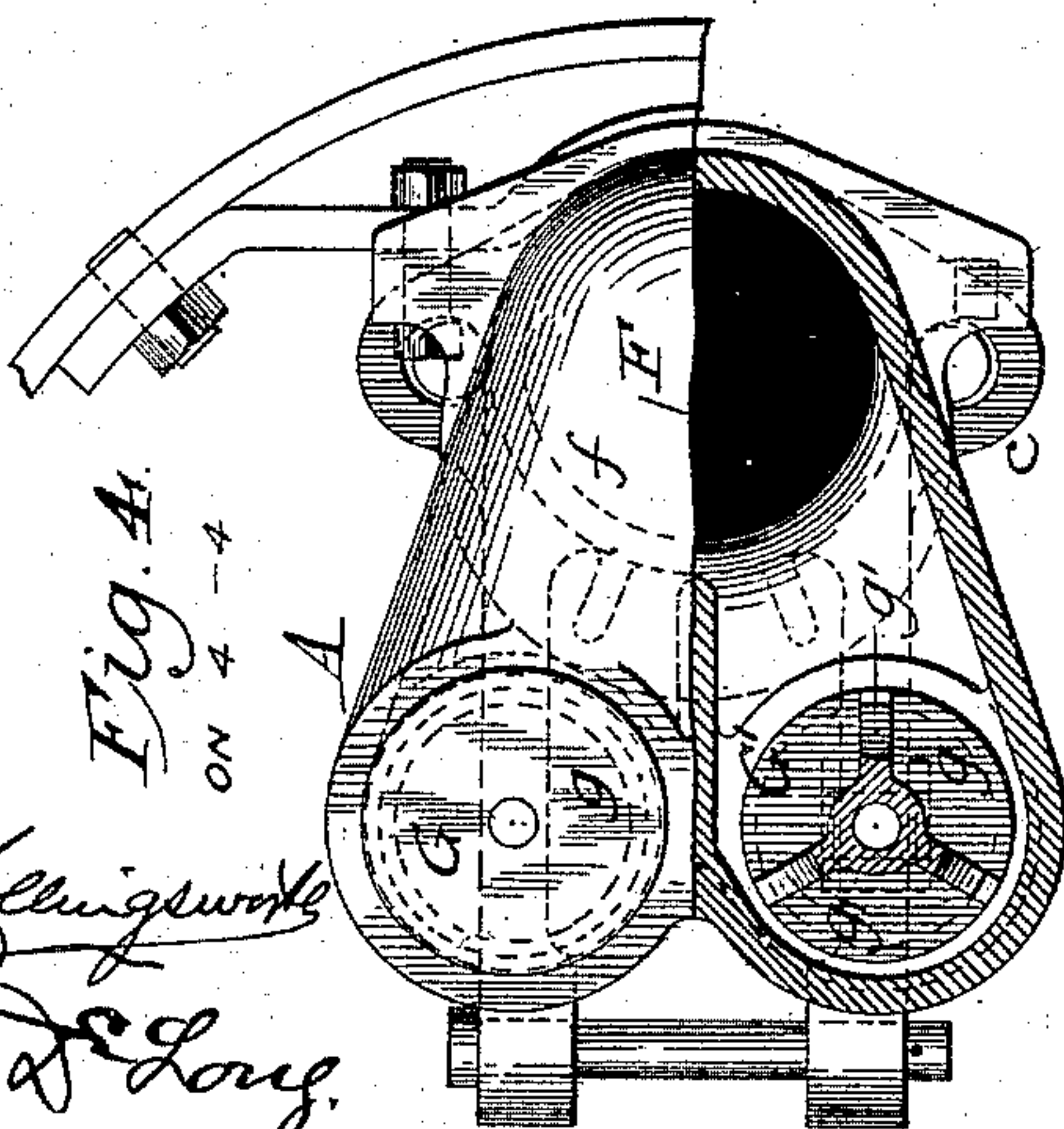


Fig. 4.
ON 4-4

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UNITED STATES PATENT OFFICE.

ALBERT J. PITKIN, OF SCHENECTADY, NEW YORK.

THROTTLE-VALVE.

SPECIFICATION forming part of Letters Patent No. 493,836, dated March 21, 1893.

Application filed July 13, 1892. Serial No. 439,882. (No model.)

To all whom it may concern:

Be it known that I, ALBERT J. PITKIN, a citizen of the United States, residing at Schenectady, in the county of Schenectady and State of New York, have invented certain new and useful Improvements in Throttle-Valves for Locomotive-Engines, of which the following is a specification.

In locomotives usually a single valve is employed in the steam dome to control the passage of steam from the dome through connecting pipes to the cylinders. On large engines in order to supply sufficient steam to the cylinders, a very large valve has been employed, and much difficulty has been encountered in opening the valve, on account of the outside steam pressure, and it is difficult to keep the valve tight, owing to the expansion of metal in the pipe, valve seat and valve, and by reason of the high pressure on the large surface of the valve.

According to my invention, I employ two valves instead of one to control the passage of steam from the dome to both cylinders of the engine, and I operate these valves successively or dissimultaneously by a single set of operating rods and levers, in order that sufficient steam may be first admitted to start the engine, and then a larger amount of steam admitted to continue the operation of the engine at high speed. By thus employing two valves, each of them may be smaller than the single large valve usually employed, but their total area is greater, so that steam is supplied to the connecting pipe to its full capacity, and the reduced size of each valve insures less tendency to leakage, or expansion of metals.

In the accompanying drawings—Figure 1 is a side elevation of a locomotive engine embodying my improvements. Fig. 2 is a section of the throttle valve on the line 2—2 of Fig. 3. Fig. 3 is a section on the line 3—3 of Fig. 2. Fig. 4 is a view, partly in plan and partly in section on the line 4—4 of Fig. 2; and Fig. 5 is a detail view of the valve-operating cross head.

Throttle valve A, is located within the dome B, of the engine, as usual, and pipes C lead from the valve to the cylinders D. A rod E connects the bell crank lever K, of the valve-

operating mechanism with the hand lever E', within the cab. The pipe C, is connected by a coupling c, with an upright pipe or chamber F, which has an enlarged top portion f, extending backwardly and containing valve chambers, and seats for the valves G, G'. These may be of usual well known construction, having upper and lower heads g, and guide ribs or webs g'. Both valve chambers communicate with the pipe or chamber F, and the valves are adapted to admit steam from the dome into the valve chambers at both top and bottom. Each valve is pivotally connected with a cross head H, which is, in turn, connected by a link I, to the inner, shorter arm of a bell crank lever K. The upper, longer arm of the lever K, is connected to the rod E, at x, as indicated in Fig. 1.

It will be observed that the pin i, which connects the cross head H, to the link I, is located closer to the pivotal connection of the cross head with one valve than to the pivotal connection of the cross head with the other valve. As shown in Fig. 3, the pin i, is closer to the valve G', than to the valve G, so that when the bell-crank lever is first operated, the valve G', will be first opened without opening the valve G. A sufficient amount of steam is thereby admitted to start the engine, and steam is admitted to the inside of the valve G, and balances it. As the bell-crank lever continues to turn, the end h, of the cross head H, abuts against the lug h', which acts as a fulcrum on which the cross head turns, and the valve G, is thereby also opened, admitting the full amount of steam through both valve chambers to the chamber F, and thence through the connecting pipe C, to the cylinders.

Other parts of the apparatus shown need not be described, as many of them are of usual well known construction, and may be varied without departing from the novel features of my invention, which have been fully described.

I claim as my invention—

1. In combination with a steam dome throttle-valve comprising two valve-chambers, arranged side by side, and provided with four valve-seats, a single pipe or passage C, leading to the engine-cylinders, to which both

valve-chambers are connected, a pair of independently moving valves, each having two heads and means, substantially as described, for operating the valves, successively or dis-
 5 simultaneously, the organization being such that a sufficient amount of steam is first admitted to start the engine and then a larger amount of steam is admitted to continue the operation of the engine at high speed.

10 2. In combination with a steam dome, a throttle valve comprising two valve chambers and seats of substantially the same area, a pair of balanced valves of substantially the same area each having two heads, and ar-
 15 ranged side by side and fitting said seats, and means, substantially as described, for operating the valves successively or dis-simultaneously.

20 3. The combination of a steam dome, the engine cylinders, a throttle valve in the steam dome and connected with the cylinders, said throttle valve comprising two valve seats and chambers of substantially the same area and arranged side by side, and means, substan-
 25 tially as described, for operating the valves successively or dis-simultaneously.

4. In combination with a steam dome, a throttle valve comprising a pipe or chamber

F, having an enlarged top portion *f*, provided with four separate valve seats each of com- 30
 paratively small area, two valves each hav-
 ing two heads for said seats, means for oper-
 ating the valve successively or dis-simultane-
 35 ously, and a single pipe to which the steam
 admitted by both valves passes.

5. The combination of the valve chambers and seats, two valves, a cross head to which they are connected, a link connected to the cross head between the valve stems and
 40 closer to one valve than to the other, a stop
 or fulcrum against which the shorter end of
 the cross head strikes, and connections be-
 tween the link and an operating lever.

6. The combination of the valve chambers and seats, two valves, a cross head pivotally 45
 connected with the valves, the link pivotally
 connected with the cross head between its
 connection with the valves, and means for
 moving the link toward and from the valve
 50 chambers.

In testimony whereof I have hereunto sub-
 scribed my name.

ALBERT J. PITKIN.

Witnesses:

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 THOMAS N. PITKIN.