

(No Model.)

2 Sheets—Sheet 1.

J. PLAYER.

VALVE MOTION FOR COMPOUND ENGINES.

No. 499,585.

Patented June 13, 1893.

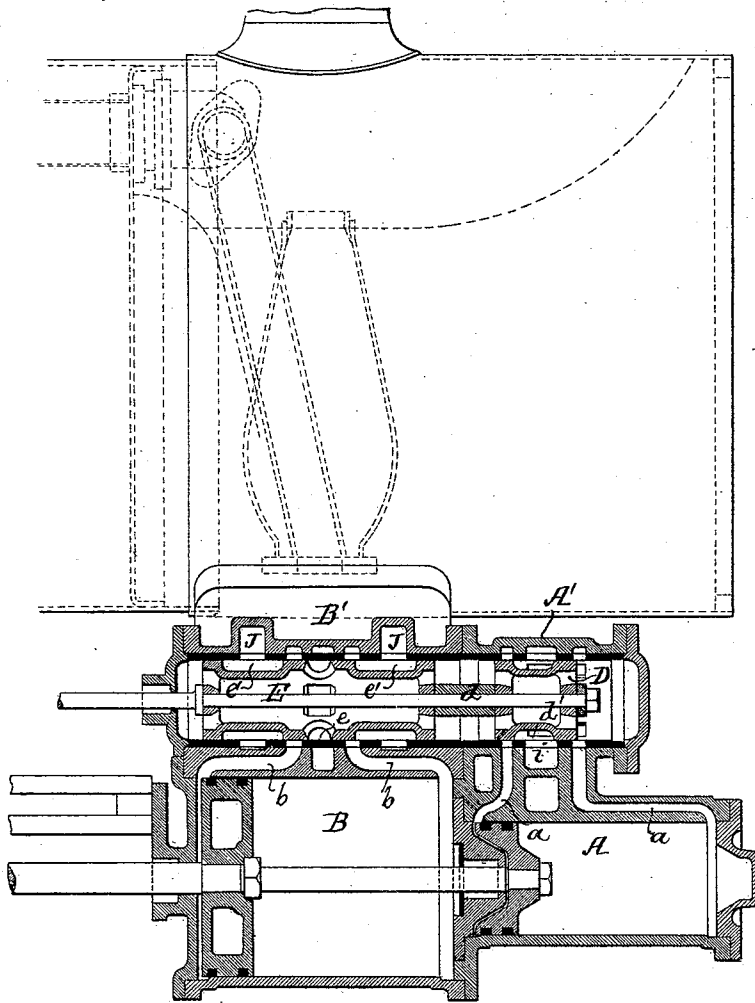


FIG. 1.

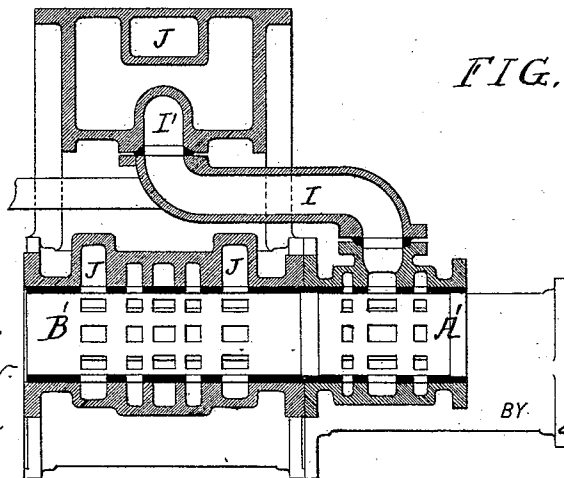


FIG. 2.

WITNESSES:

R. Schleicher.

A. R. Goodwin

INVENTOR

John Player

BY.

Howard & Howard

ATTORNEYS.

J. PLAYER.

VALVE MOTION FOR COMPOUND ENGINES.

No. 499,585.

Patented June 13, 1893.

FIG. 3.

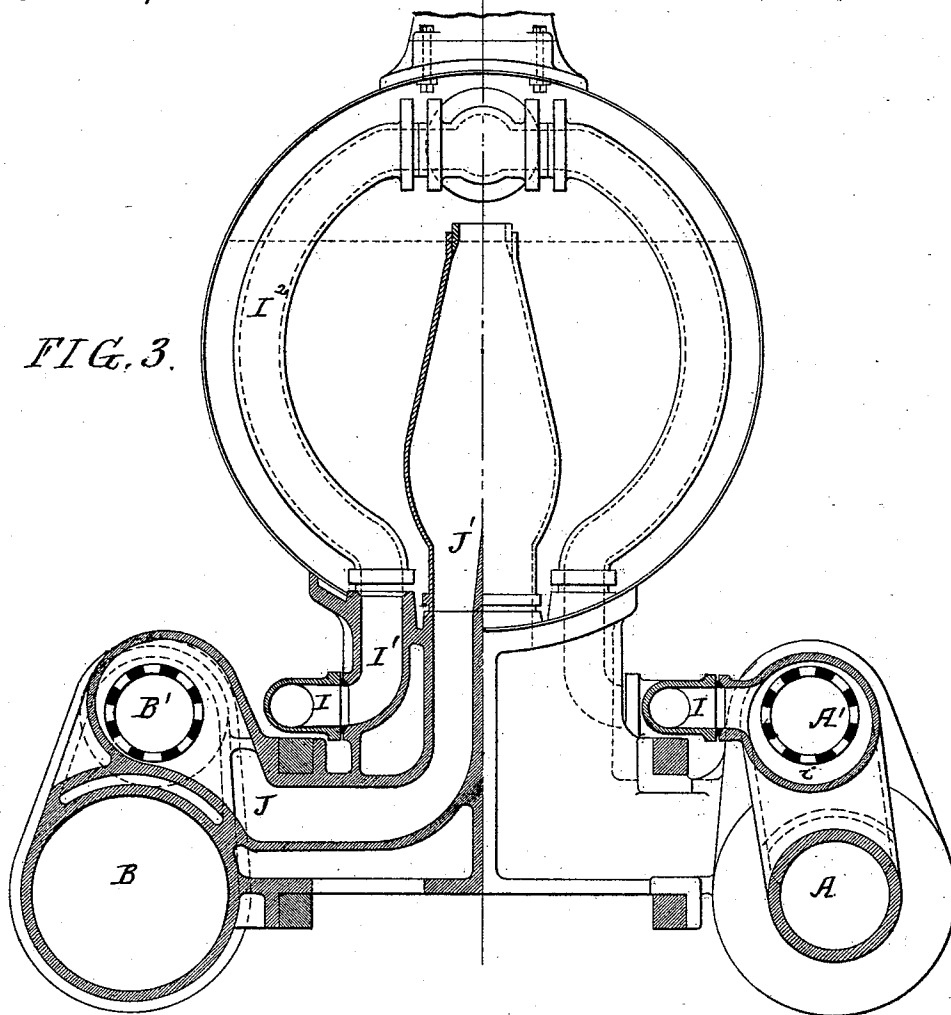
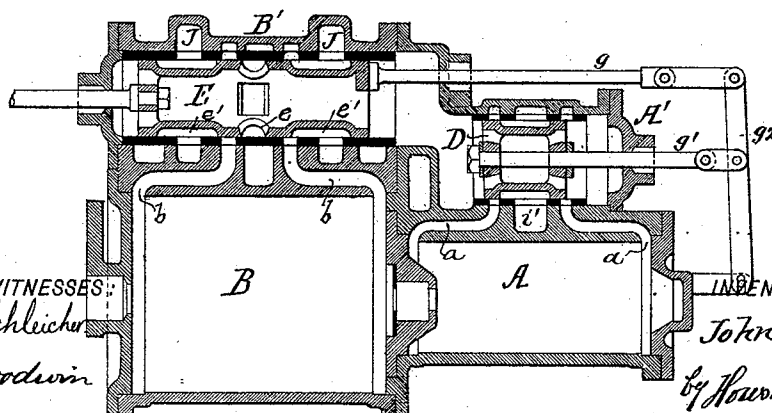


FIG. 4.



WITNESSES:  
R. Schleicher  
J. D. Gordon

INVENTOR  
John Player  
By Howard & Howard  
ATTORNEYS,

# UNITED STATES PATENT OFFICE.

JOHN PLAYER, OF DUNKIRK, NEW YORK, ASSIGNOR TO THE BROOKS  
LOCOMOTIVE WORKS, OF SAME PLACE.

## VALVE-MOTION FOR COMPOUND ENGINES.

SPECIFICATION forming part of Letters Patent No. 499,585, dated June 13, 1893.

Application filed July 14, 1892. Serial No. 440,012. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN PLAYER, a resident of Dunkirk, Chautauqua county, New York, have invented a certain Improved Valve-Motion for Compound Engines, of which the following is a specification.

The object of my invention is to construct an improved valve mechanism for compound engines, preferably of the "tandem" type, although my invention may in many instances be used on other types of compound engines.

In the accompanying drawings:—Figure 1, is a side view of sufficient of a compound engine to illustrate my invention. Fig. 2, is a sectional plan view of Fig. 1. Fig. 3, is a transverse sectional view of the cylinders of the locomotive; and Fig. 4, is a view of a modification.

A is the high pressure cylinder, B the low pressure cylinder; A' the high pressure valve chest and B' the low pressure valve chest; these valve chests as shown in Fig. 1, are in line with each other and have suitable ports for the two cylinders and for the inlet of steam and for the exhaust of steam. The valves D and E are, in the present instance, cylinder valves. The valves are connected together by a valve rod *d*, so that they move in unison. The high pressure valve D in this instance is a short valve, taking steam at the center, and exhausting at its edges, while the valve E is a long valve, taking steam at the center and exhausting at each end, aligning with two exhaust passages.

Referring to Fig. 1, the chest A' of the high pressure cylinder has a central steam inlet port *i*, communicating directly with the connecting pipe I, one end of which is secured to the steam chest, as shown in Fig. 2, the other end being secured to the cylinder saddle. The pipe communicates at this point with the passage I', which in turn communicates with the steam inlet pipe I<sup>2</sup>, from the boiler, as clearly shown in Fig. 3.

It will be noticed on referring to the drawings, that the steam inlet passage from the boiler to the valve chest does not come in close proximity to the exhaust passage, and that the pipe I is so formed and arranged that it

can be readily packed with non-conducting material, so that a very small proportion of steam is condensed before it reaches the chest.

At each side of the steam inlet passage *i*, are the ports *a a*, communicating with the high pressure cylinder. The valve D is so proportioned as to properly uncover the ports *a a* and has an annular recess *b'* which forms a communication between one or other of the cylinder ports *a a*, and the inlet port *i*.

The high pressure steam as it is exhausted from the cylinder A, passes into the chest A', and into the chest B' as it will be understood that both valves are hollow, open at each end, and are balanced by the high pressure exhaust steam, the chests forming a sufficient chamber or receiver for the steam.

The valve E has a central steam inlet passage, which, on the reciprocation of the valve, will open to one or the other of the ports *b* of the low pressure cylinder D. At each side of the central passage *e* in the valve E, are grooves *e'*, which form a communication between one or other of the ports *b*, and the exhaust passages J, the construction of the valve necessitating two exhaust passages one at each side of the center of the valve casing.

The exhaust passages J communicate with the exhaust nozzle J' in the smoke box of the locomotive, as clearly shown in Fig. 3.

In Fig. 4, I have shown the valves out of line, but connected together through the medium of rods *g*, *g'*, and a pivoted lever *g''*, so that the travel of the valve E will be greater than the travel of the valve D, the ports and valves being proportioned accordingly.

I do not claim the specific valve mechanism shown in Fig. 4, in this application for that forms the subject matter of my pending application of even date, Serial No. 440,013.

I claim as my invention—

1. The combination in a compound engine, of the high and the low pressure cylinders, arranged in line, high and low pressure valve chests, ports therein, with separate hollow valves adapted to their respective chests, valve stems connecting said valves together, the valves being open from end to end, and arranged to receive the exhaust steam from the

high pressure cylinder, said steam passing into the chests and balancing the valve, substantially as described.

2. The combination of the low pressure cylinder, of a locomotive or other engine, its steam chest having induction and eduction ports at the center, and two final exhaust ports adjacent and exterior thereto, an annular valve working in said chest, said valve being arranged to admit steam to the low pressure cylinder by its passage *e*, and internal cut off edges, and to exhaust steam therefrom by its external cut off edges, and grooves *e'*, and arranged with a passage therethrough, so that the exhaust from the high pressure cylinder acts equally on both ends of the valve, and a high pressure cylinder having its steam chest containing the live steam passage, and induction and eduction ports, a sepa-

rate annular valve adapted to said steam chest, and arranged to admit steam to the high pressure cylinder by its internal cut off edges, and exhausted therefrom by its external edges, said valve having a passage therethrough permitting the pressure of the exhaust steam from the high pressure cylinder on both ends, the high pressure and low pressure valves being connected together so that they travel in the same direction, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN PLAYER.

Witnesses:

JAMES F. HAGEN,  
HENRY HOWSON.