

(No Model.)

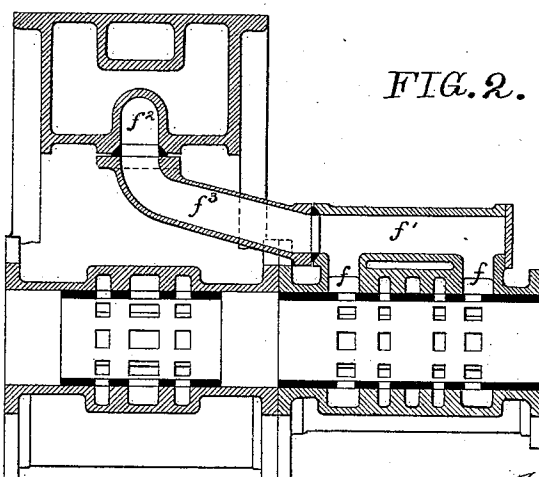
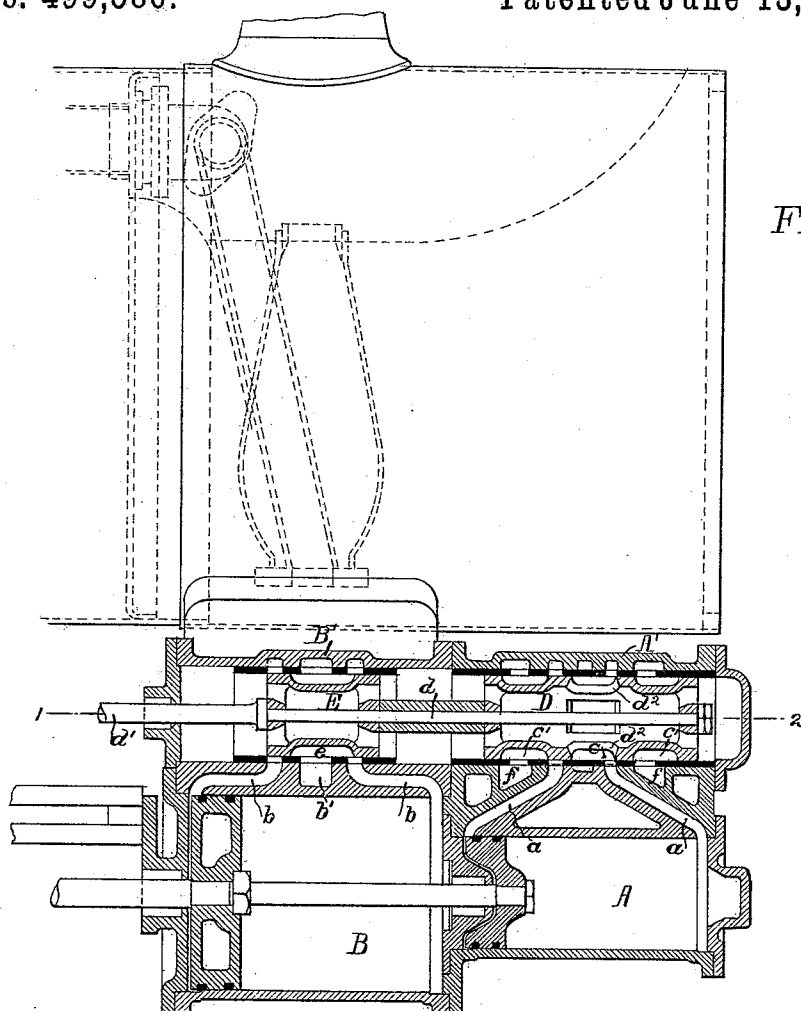
2 Sheets—Sheet 1.

J. PLAYER.

VALVE MOTION FOR TANDEM COMPOUND ENGINES.

No. 499,586.

Patented June 13, 1893.



WITNESSES:
R. Schleicher.
A. V. Groupes

INVENTOR
John Player
By his
Attorneys

Horseshoe & Horns

(No Model.)

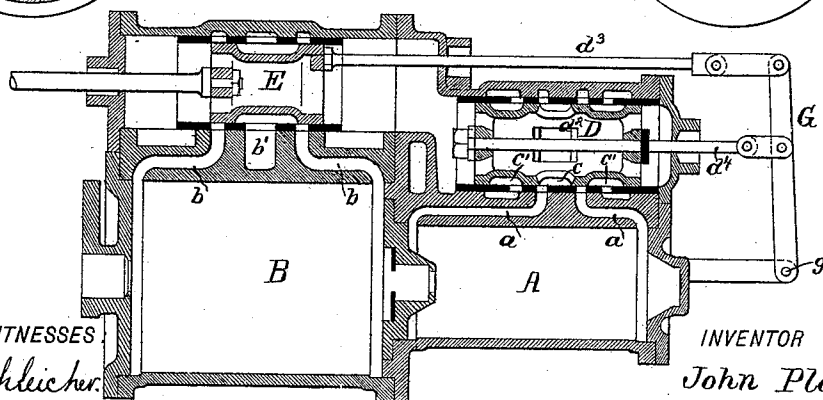
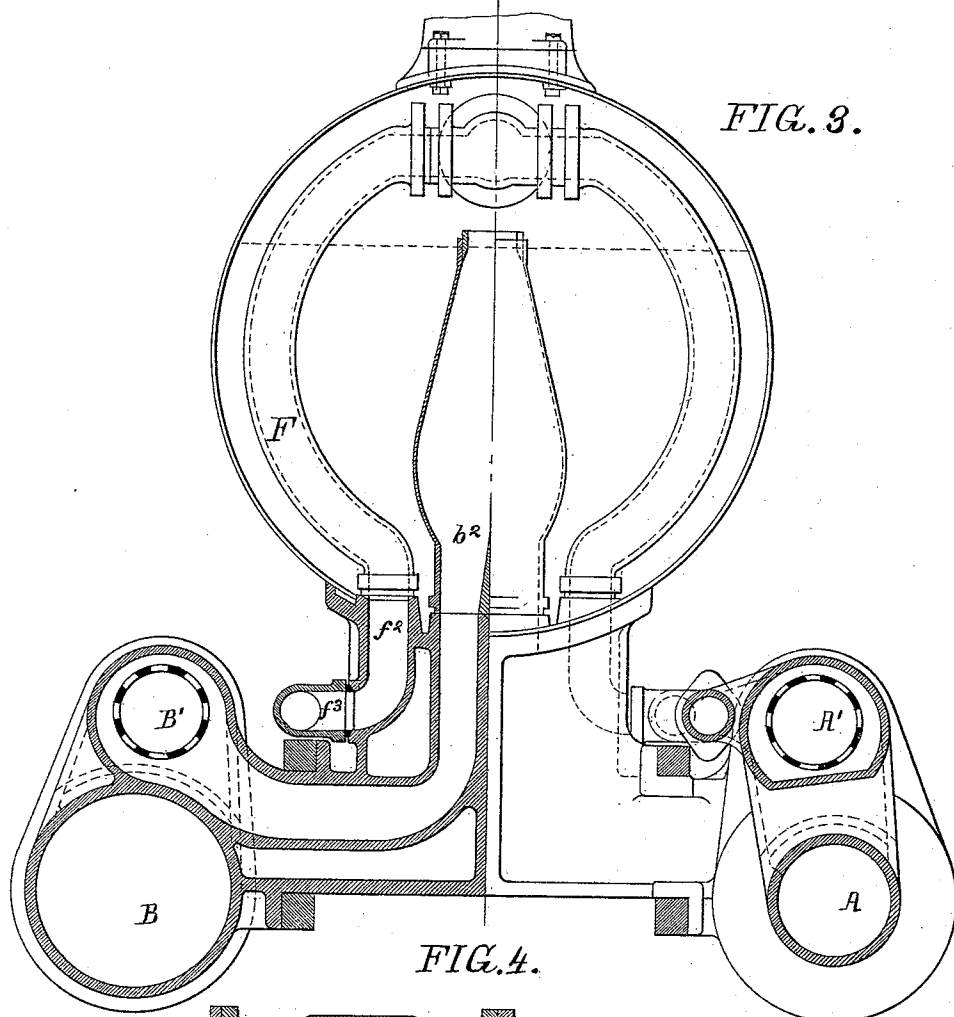
2 Sheets—Sheet 2.

J. PLAYER.

VALVE MOTION FOR TANDEM COMPOUND ENGINES.

No. 499,586.

Patented June 13, 1893.



WITNESSES
R. Schlicher
A. V. Groupé

INVENTOR
John Player
By his
Attorneys
Wm. & H. H. H. H.

UNITED STATES PATENT OFFICE.

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

VALVE-MOTION FOR TANDEM COMPOUND ENGINES.

SPECIFICATION forming part of Letters Patent No. 499,586, dated June 13, 1893.

Application filed July 14, 1892. Serial No. 440,013. (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 certain Improvements in Valve-Motions for Tandem 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 view on the line 1—2, Fig. 1. Fig. 3, is a transverse sectional view through the cylinders of the locomotive. Fig. 4, is a view of a modification of my invention.

A is the high pressure cylinder, B the low pressure cylinder, A' the high pressure valve chest, and B' the low pressure valve chest. The valve chests as shown in Fig. 1 are in line with each other and their valves D and E are connected together by a straight valve rod *d* forming a continuation of the valve rod *d'*. The valves D and E are hollow, and the valve chests for the two valves communicate, a central opening *d*² in the valve D communicating with the annular space *c* allowing the exhaust steam from the high pressure cylinder A to pass into the hollow valve D and in the chests of both valves, these chests forming the chamber or receiver for the high pressure exhaust steam and they contain sufficient steam to allow for the full operation of the low pressure cylinder.

a a are the ports forming a communication between the high pressure valve chest and the high pressure cylinder A. These ports enter the chest A' at each side of the center so as to communicate with the passage *c* in the valve D. Entering the chest at each end are live steam inlet passages *f f* communicating with a receiver *f'* which in turn communicates with the live steam pipe F through passages *f*² and tube *f*³. The steam inlet passages *f f* are arranged in such position to the ports *a* that when the valve B is traversed over the ports and passages the spaces *c'* in the valve will allow steam

to flow into the cylinder A from one or other of the steam passages *f*. By this means the live steam is not brought into contact with the walls of the exhaust passage, and by arranging the receiver *f'* at one side of the valve chest and coupling the receiver to the cylinder casting through the medium of the tube *f*³ I am enabled to pack the said parts in such a manner as to prevent rapid condensation of steam before it enters the cylinder A. The valve D being open at both ends is balanced by the exhaust steam from the high pressure cylinder. The valve E is similar in construction to the ordinary D valve having a central exhaust space *e*. Steam being admitted to the ports *b b* at the end of the valve, the exhaust steam from the low pressure cylinder passes through a central exhaust port *b'* to the exhaust nozzle B². The valve E being open at both ends is also balanced by the exhaust steam from the high pressure cylinder.

In Fig. 4 I have shown the two valves B and E arranged out of line one with the other, and connected together through the medium of a lever G which is attached to the valve stem D² of the low pressure valve E and to the valve stem D³ of the high pressure valve D, the lever being pivoted at *g*, and the leverage is such that the low pressure valve will have a greater throw than the high pressure valve. The two valves, however, are similar in construction to the valves shown in Fig. 1, with the exception that the ports are arranged so as to allow for the additional throw.

I do not claim herein the arrangement of the valves, the passages, the connecting receiver, &c., without the valve mechanism, for that forms the subject of my pending application, Serial No. 440,012, of even date herewith.

I claim as my invention—

The combination of the low pressure cylinder of a locomotive or other engine, steam chest therefor having induction and eduction ports, and a central final exhaust port, a valve working in said chest, said valve being arranged to admit steam to the low pressure cylinder by its external cut-off edges, and to exhaust steam therefrom by its internal cut-off edges, and arranged so that the exhaust steam from the high pressure cylinder will

act equally on both ends of the valve, with a high pressure cylinder, its steam chest, induction and eduction ports at the center of the chest, and two live steam passages adjacent and exterior thereto, an annular valve working in said chest, said valve being so arranged as to admit live steam to the high pressure cylinder through the cavities *c'* and exhaust it therefrom by its internal cut-off edges and cavity *c*, passages forming a communication between the cavity *c* and the interior of the valve, said valve being open at both ends, permitting the exhaust from the high pressure cylinder to act equally on both

ends of the valve, the valves and their casings forming a conduit for the said steam from the high pressure cylinder to the low pressure cylinder, both valves being connected together so that they travel by links and the lever in the same direction, substantially as described.

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.