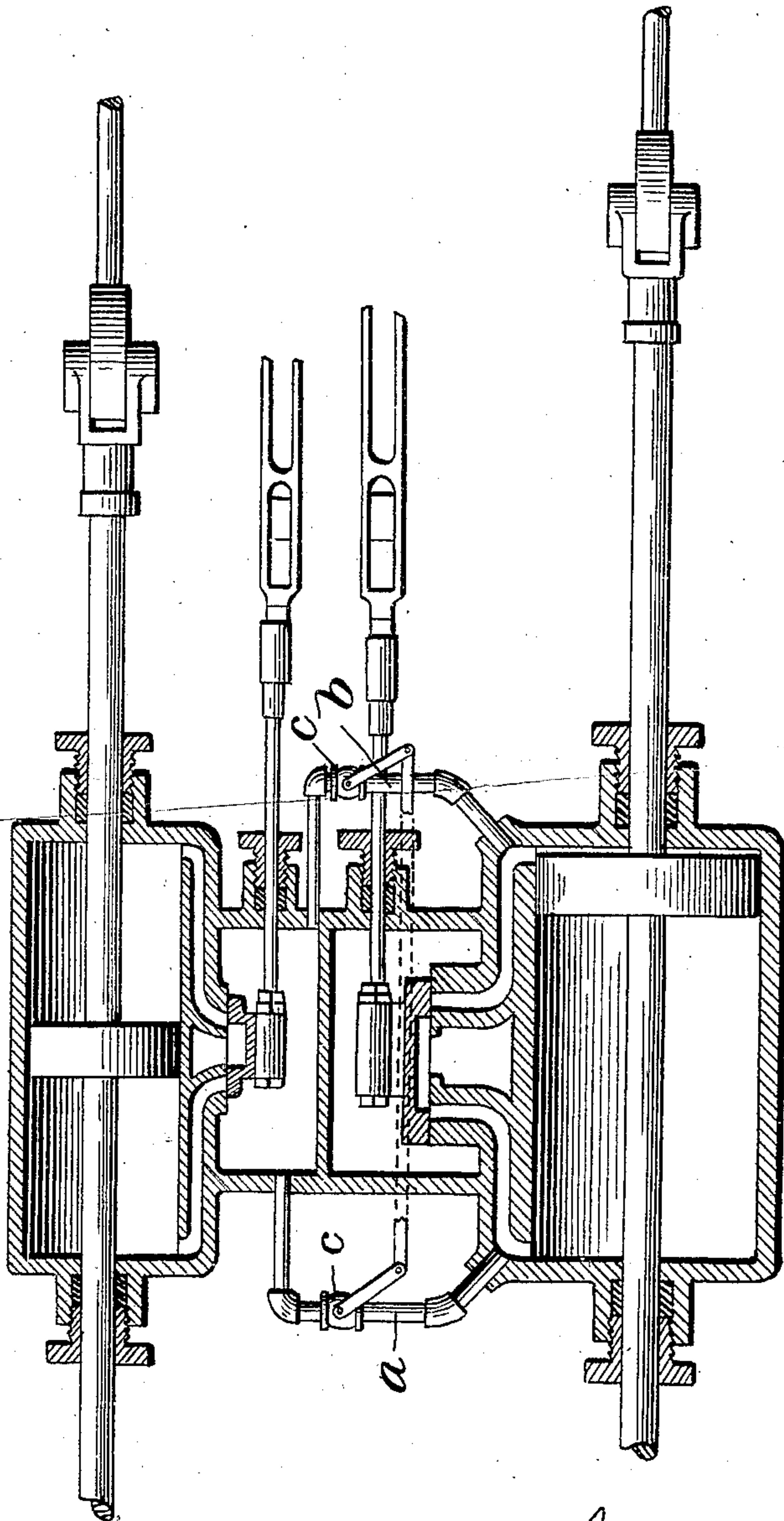


No. 863,249.

PATENTED AUG. 13, 1907.

J. ZILLGEN.
STARTING DEVICE FOR ENGINES.

APPLICATION FILED MAR. 22, 1907.



Witnesses

R. H. Dwyer.
Dorothy L. Bodner.

Joseph Zillgen
By *J. H. Singer.*

Inventor

Attorney

UNITED STATES PATENT OFFICE.

JOSEPH ZILLGEN, OF BERLIN, GERMANY.

STARTING DEVICE FOR ENGINES.

No. 863,249.

Specification of Letters Patent.

Patented Aug. 13, 1907.

Application filed March 22, 1907. Serial No. 363,798.

To all whom it may concern:

Be it known that I, JOSEPH ZILLGEN, a subject of the German Emperor, and a resident of Berlin, Germany, have invented certain new and useful Improvements in Starting Devices for Locomotives and other Steam-Engines, of which the following is a specification.

This invention relates to locomotives and other steam engines and more especially to a starting device for such engines.

10 It is a well known fact that in twin steam engines or locomotives the cranks of which are angularly shifted by 90 degrees, it sometimes happens when the starting resistance is too great, that the engine does not start. The reason of this failure may be that one of the motive
15 pistons of the locomotive has assumed a position in which the steam distributing slide-valve, even when the distribution mechanism has been placed for the greatest admission, has already closed the steam admission port and that the other driving piston, although
20 under pressure cannot furnish alone the necessary starting power.

The object of my present invention is to remedy this drawback by leading live steam to both sides of the piston but to provide means adapted to allow the
25 steam to produce pressure only on one side of the piston, while on the other piston side the live steam is allowed to escape directly into the atmosphere through the escape ports.

30 The annexed drawing shows in top plan and partly in section my improved starting device for twin locomotives.

The device comprises two relatively narrow ducts *a*, and *b*, which convey live steam to opposite sides of the piston after the valves *c*, have been opened. On
35 that side of the cylinder which has already been closed by the steam distributing member, an effective starting pressure is produced while on the opposite side the introduced live steam immediately escapes again, without producing a counter pressure through the
40 escape port which is still left open. As readily seen this device allows when necessary of the greatest steam introduction given by the distributing mechanism to the cylinder, being still increased to a certain extent and consequently of the starting power being enhanced.

45 The new starting device may directly be adapted with the necessary modifications, to such compound locomotives as are provided with special devices enabling them to act temporarily as twin locomotives.

In such compound locomotives as are not provided
50 with a special device allowing them to work temporarily as twin locomotives, the described starting device is applied to the low pressure cylinder, when the locomotive is a two cylinder locomotive. It is however advantageous to provide also the high pressure
55 cylinder with the device. However as the high pres-

sure cylinder cannot cause the steam to escape into the atmosphere but yields the steam to the receiver, the pressure on both sides of the piston of the high pressure cylinder is the same or nearly the same when the piston assumes certain positions. In spite of this fact the
60 starting power is considerably increased as live steam upon the larger low pressure piston and only on the active side of the latter, the live steam conveyed on the opposite side of the low pressure piston escaping into the atmosphere without producing pressure. In this
65 case the application of the new starting device only produces so to speak the putting out of circuit of the high pressure cylinder.

In four cylinder compound locomotives the new starting device above described is only applied to the
70 low pressure cylinders and then produces a sufficient starting power owing to the mutual piston position which is modified with reference to the two cylinder engine.

In the starting device constructed up to the present
75 day it has been the custom to take the live steam from the boiler. This device however has proved to be too complicated as it needs a special duct leading from the engineer's stand to the cylinder and non return valves inserted into the said duct.
80

According to the present invention the live steam used in the starting device is taken from the valve box (uniter) and the construction is thus greatly simplified and the function of the device greatly improved as no special ducts nor non return valves are needed.
85

As will be readily understood the improved starting device above described may be applied to steam engines of any kind, having one or more cylinders

I am aware that starting devices have already been constructed wherein live steam is admitted to both
90 sides of a steam cylinder piston, such as the device described in the U. S. P. 499066 (S. M. Vaucrain). But in this device the steam does not escape into the atmosphere from the rear side of the piston but into the receiver, thus leaving on this side of the piston a
95 counter-pressure greatly reducing the efficiency of the device. This drawback is avoided in my device.

Having now fully described my said invention what I claim and desire to secure by Letters Patent is:

In two cylinder compound steam locomotives and other
100 steam engines a starting device comprising two live steam ducts connected each with one end of the low pressure cylinder and means for controlling the passage of steam in the said ducts, substantially as and for the purpose set forth.
105

In testimony whereof I have hereunto set my hand in presence of two witnesses.

JOSEPH ZILLGEN.

Witnesses:

HENRY HASPER,

WOLDEMAR HAUPT.