F. H. CLARK.

THROTTLE VALVE MECHANISM.

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1,203,184. Patented Oct. 31, 1916.

Fig. 1.

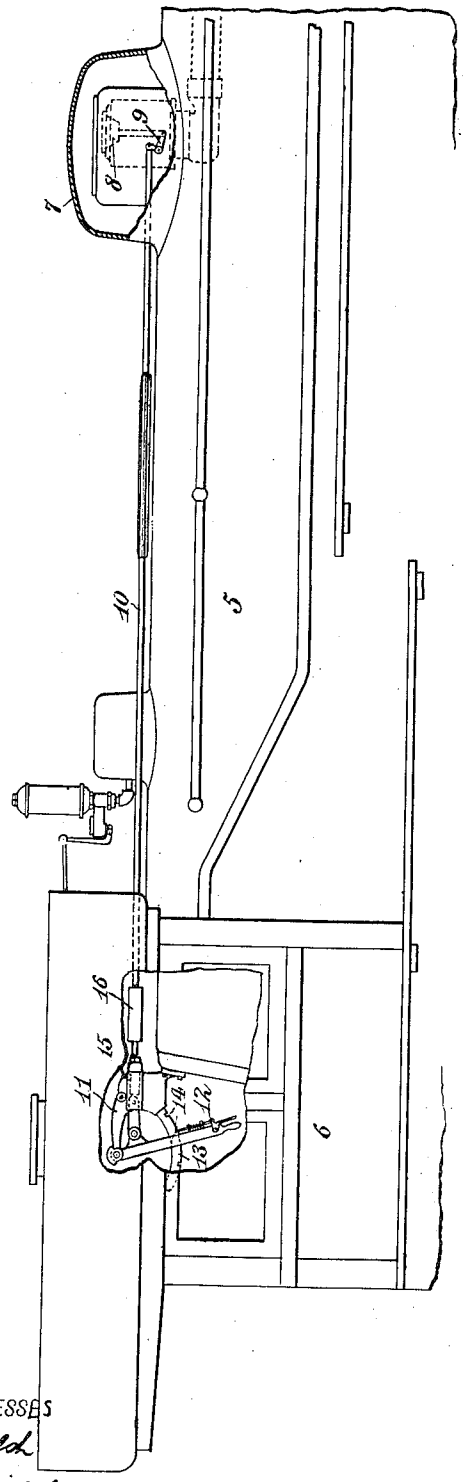
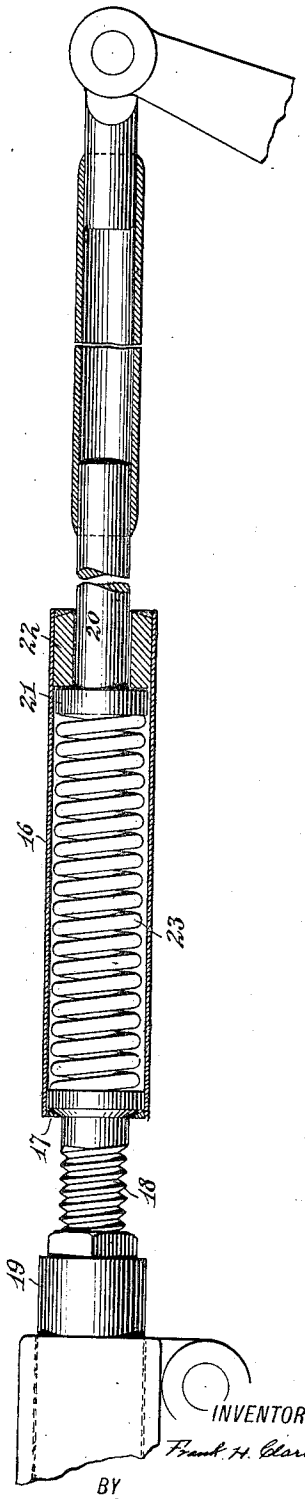


Fig. 2.



WITNESSES

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THROTTLE-VALVE MECHANISM.

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To all whom it may concern:

Be it known that I, FRANK H. CLARK, a citizen of the United States, and a resident of New York, borough of Manhattan, in the county of New York and State of New York, have made and invented certain new and useful Improvements in Throttle-Valve Mechanisms, of which the following is a specification.

This invention relates to throttle valve mechanisms for locomotives, and has particular reference to that type or class of valves wherein the rod which extends between the throttle valve proper and the throttle valve lever, is exposed to atmospheric temperatures. The exposed position of this rod, and the fact that it is spaced a slight distance from the locomotive boiler, prevent the rod from assuming temperatures similar to those of the boiler and immediate parts. The expansion or contraction of the boiler, as it is fired or allowed to cool, is accordingly much greater than the expansion and contraction of the rod, the rod therefore remaining of substantially uniform length; and the distance between the throttle valve proper and the throttle valve lever, which latter is carried by the boiler, varying between considerable limits, oftentimes causes the throttle valve to be opened as the locomotive is fired. This unintentional opening of the throttle valve results in the entrance of steam into the locomotive cylinders, and either the forward or rearward progression of the locomotive, and to this cause have been attributed severe accidents and wreckage. On the other hand, if the throttle valve rod be made of such length as to prevent this opening up of the throttle valve upon the firing of the locomotive, then the rod will become buckled and distorted as the engine is allowed to cool down and the fire extinguished at the end of the run.

It is therefore the object of the present invention to provide a throttle valve mechanism wherein the valve rod may be exposed, and accordingly subject, to atmospheric temperatures, which will allow the throttle to be locked in its closed position without danger of the rod becoming buckled and distorted as the locomotive boiler cools and contracts; and with the further feature that the throttle valve proper is held in its closed position during the subsequent firing, heating and expansion of the boiler.

A further object is to provide a throttle valve rod having a telescopic section, the length of which section is normally maintained by a resilient member which is capable of resisting, without distortion, all normal compressive strains which will be brought to bear thereon during the actual use of the throttle valve mechanism, but which telescopic section is adapted to resiliently yield, and telescope, under abnormal forces.

A further object is to accomplish the aforementioned ends in a thoroughly practical, efficient and expeditious manner, the structures embodying but few parts, and of rugged construction, consistent with the class of service with which the mechanism is to be used.

Other objects and advantages will appear as the description proceeds, wherein it is to be understood that changes in the precise embodiment of the invention can be made within the scope of what is claimed without departing from the spirit thereof.

The preferred embodiment of my invention is disclosed in the accompanying drawings, wherein:—

Figure 1 is a fragmental view in side elevation of a locomotive equipped with a throttle valve mechanism, embodying the characteristic features of my invention, portions of the steam dome and cab being broken away so as to illustrate the several parts in their operative positions; Fig. 2 is a view in longitudinal vertical section of the throttle valve rod and accompanying parts.

Referring specifically to the several views, the locomotive boiler 5, upon which is mounted the cab 6, is provided with the steam dome 7, in which is located the throttle valve proper 8. The throttle valve is connected to a crank arm 9, to which is also secured the valve rod 10, the latter extending along the outside of the boiler, shell, or casing, and projecting within the locomotive cab 6.

Located within the cab, and mounted directly upon the boiler, is the bracket 11, to which is pivotally secured the throttle valve lever 12, these parts being illustrated in a vertical, rather than inclined, position, for the purpose of clearness. A segment 13, having notches 14 therein, is carried by the bracket 11, and the usual type of throttle latch is incorporated in the valve lever so as

to hold it locked in its closed position. A connecting member 19 is pivotally secured to the throttle lever 12 and throttle valve rod 10, and is guided in its movements by a sleeve 15.

A telescopic section, illustrated in Fig. 2, is provided within the valve rod 10, and is formed with the cylindrical casing 16, to the one end of which is rigidly secured, or formed integral therewith, the attaching end 17. This attaching end is threaded as at 18, and engages the connecting member 19 of the throttle valve lever 12. The remote end of the casing 16 is provided with an apertured end member 22, through which slidably extends the end 20 of the valve rod 10. This end of the valve rod is provided with the enlarged head 21, slidably contained within the casing 16, and normally resting against the inner wall of the end member 22, and so held by the resilient compression spring 23. The ends of this compression spring impinge against the attaching end 17, and against the head 21 of the valve rod, and hold the attaching end 17 and the valve rod head 21 spaced a maximum distance apart, the head 21 being held against the end member 22 with a force greatly in excess of any normal strains which will be brought to bear upon the throttle valve rod by the actuation of the throttle valve lever and accompanying movements of the throttle valve proper.

The rod 10, with its telescopic section, is of such length that with the locomotive boiler heated and expanded, the throttle valve lever 12 may be locked in its closed position and the valve proper closed, without contracting the telescopic section of the throttle valve rod. The contraction of the locomotive boiler, and accompanying decrease in distance between the throttle valve lever and the throttle valve proper as the locomotive is allowed to cool, is taken up within the telescopic section of the throttle valve rod, the head 21 of the valve rod being forced away from the end member 22 of the casing, thus preventing the warping and distortion of the valve rod. The expansion of the locomotive boiler during the subsequent firing, is offset by the elongation or expansion of the telescopic section, the head of the valve rod moving up to, and against, the end member 22, thus preventing the opening of the throttle valve proper, and avoiding accidents and wreckage due to such occurrence.

What I claim is:—

1. In combination, a locomotive boiler, a throttle valve supported by said boiler, a throttle valve lever support connected to said boiler and spaced from said throttle valve, a throttle valve lever mounted on said support, and a resiliently contractible throttle valve rod extending between, and connected to, said throttle valve lever and throttle valve.

2. In combination, a locomotive boiler, a throttle valve supported by said boiler, a throttle valve lever support connected to said boiler and spaced from said throttle valve, a throttle valve lever mounted on said support, and a resiliently contractible throttle valve rod extending external of said boiler, exposed to atmospheric temperatures, and connected to said throttle valve and throttle valve lever.

Signed at New York, borough of Manhattan, in the county of New York and State of New York, this 16th day of February, A. D. 1916.

FRANK H. CLARK.

Witnesses:
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