

(No Model.)

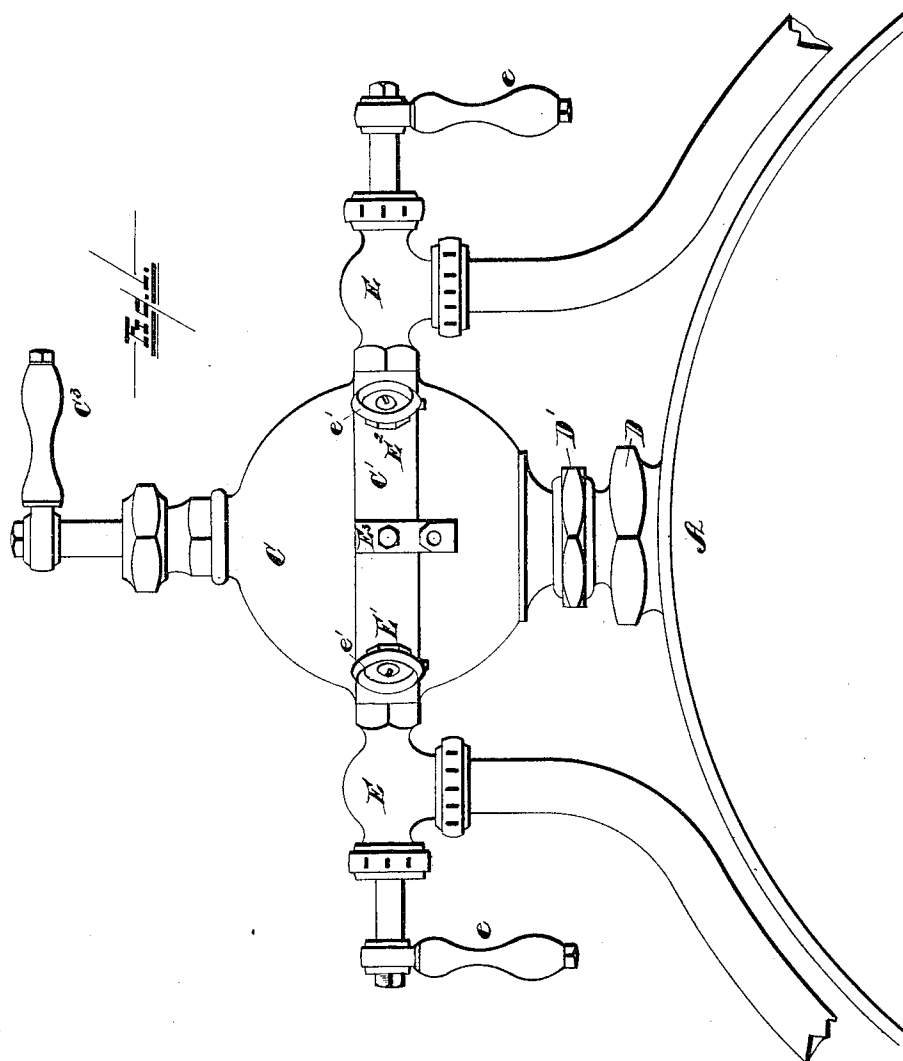
2 Sheets—Sheet 1.

C. B. HODGES & E. McCOY.

STEAM DOME FOR LOCOMOTIVES.

No. 320,354.

Patented June 16, 1885.



WITNESSES

Samuel C. Thomas
N. S. Wright

INVENTOR

Clarence B. Hodges
Elijah McCoy
W. W. Leggett
Attorney

(No Model.)

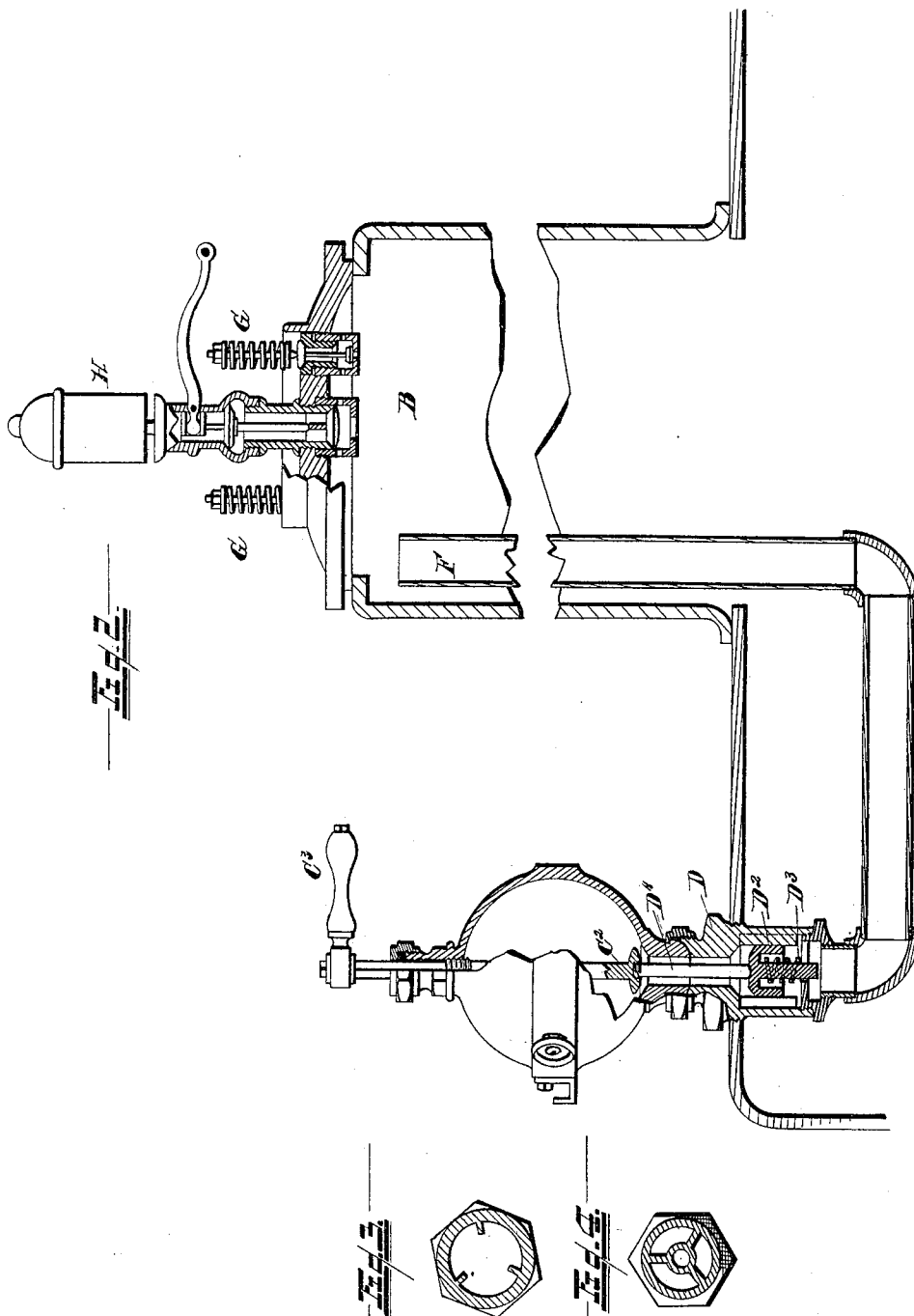
2 Sheets—Sheet 2.

C. B. HODGES & E. McCOY.

STEAM DOME FOR LOCOMOTIVES.

No. 320,354.

Patented June 16, 1885.



WITNESSES
Samuel C. Thomas.
N. S. Wright.

INVENTOR
Clarence B. Hodges
Elijah M. McCoy
By W. C. Ferris, att. Attorney

UNITED STATES PATENT OFFICE.

CLARENCE B. HODGES AND ELIJAH MCCOY, OF DETROIT, MICHIGAN.

STEAM-DOME FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 320,354, dated June 16, 1885.

Application filed January 15, 1885. (No model.)

To all whom it may concern:

Be it known that we, CLARENCE B. HODGES and ELIJAH MCCOY, of Detroit, county of Wayne, State of Michigan, have invented a new and useful Improvement in Supplemental Steam-Domes for Locomotives; and we do hereby declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

Our invention consists of the combinations of devices and appliances hereinafter specified, and more particularly pointed out in the claims.

In the drawings, Figure 1 is a view in elevation of the end of the boiler, showing our improvement attached thereto. Fig. 2 is a longitudinal section of the boiler, showing our improvement attached thereto in section. Fig. 3 is a sectional view of the valve-chamber within the boiler below the supplemental steam-dome. Fig. 4 is a view of the guide for the stem of the security-valve, and which forms a resistance for its spring.

Heretofore, in applying to a locomotive the fixtures which are invariably attached to the same, it has been found necessary to tap the boiler-shell in from ten to fifteen places (more or less) near the head of the boiler, thus materially weakening the shell and incurring liability to accidents. So, also, should any leakage occur or accidents ensue, it becomes necessary to let off steam from the boiler in order to remedy the difficulty or to plug the orifice.

Our invention consists, also, in applying a steam security-valve to the whistle, pop safety-valves, &c.

In carrying out our invention, A is a boiler-shell; B, its steam-dome.

C is a supplemental steam-dome, which constitutes one of the principal features of our invention. This supplemental steam-dome C is preferably connected with a separate plug, D, which is made very strong, and is tapped through or otherwise secured to the boiler-shell in such a manner as to be secure against any possible accident, the supplemental dome being secured rigidly thereto by a strong union, D'.

C' represents a belt formed upon the sup-

plemental dome, through which are tapped the various steam-connections that may be required. Several of these connections are indicated at E E' E² E³, &c. Thus the connections E may be for the injector steam-throttles; E' may be the connection for the blower; E², for the air-brake; E³, for the bracket which supports the lubricator, &c. Others may be provided for supplying the lubricator with condense-water, or for the attachment of the steam-gage, or for admitting steam to the heater, and any of the various purposes for which the shell of the boiler is usually tapped.

C² is a valve, governed by a wheel or lever, C³. This valve, it will be observed, is adapted to admit steam, or to close it off from all of the connections which lead from the supplemental steam-dome. If, therefore, at any time any one of these connections should need attention, this valve may be closed and the same accomplished without any trouble, and there is an opportunity afforded, whenever the engine is at rest, to close this valve and give the necessary attention to any or all of the connections, in order to keep them always in thorough repair.

D² is what we term a "security-valve," located in the plug D. It is always held open by a stem, D⁴, which leads downward from the valve C² above. The spring D³ is preferably provided on the under side of the valve D², in order that the same may be sure to be seated instantly should any accident occur, as we will hereinafter explain. We prefer to provide the valve D² with a central guide-stem passing through the perforated diaphragm d, although, of course, any other suitable arrangement might be employed instead. The object of this security-valve is as follows: It remains always open unless something should occur to knock the supplementary steam-dome off from the boiler. In that event, the pressure from above the valve being relieved, the issuing steam and the spring D³ would serve to instantly seat the valve D², and so close the opening and prevent hot water or steam from being thrown upon the engineer or fireman, and, in fact, would prevent the necessity of stopping the engine until it might run into the next station.

F is a dry pipe leading from the top of the steam-dome B, and which conveys steam to

the supplemental dome. This security-valve D² is equally applicable in any of the ordinary locomotive attachments—as, for instance, with the pop safety-valves G or with the steam-whistle H. With the pop safety-valves the security-valve D² would be adjusted to remain always open, except in an emergency which would detach the safety-valve from the engine; but in the case of the whistle, which is always opened or closed by hand, the security-valve might be made to open and close simultaneously with the whistle-valve, if desired. The injector steam-throttles we prefer to provide with levers *e*, instead of hand-wheels, as being more convenient to handle. The other connections may be provided with any suitable appliances—as, for instance, the ordinary wooden hand-wheel *e'*.

The advantages of this device are very apparent. It does away with the necessity of weakening the boiler-shell by the numerous ordinary attachments. So, also, it provides a flat uniform surface in the belt C', through which to tap and locate any desired attachment. It also brings all of the attachments within easy reach of the engineer. It affords a ready means for cutting off steam from all of the attachments to facilitate packing or repairs, and provides a perfect security against damage to the employes should the supplemental dome be accidentally broken from its place. This valve C² affords a ready means at all times for shutting off steam in case any accident happens to any particular attachment, and enables the engineer to proceed at once to fix the attachment without the necessity of stopping his locomotive, in case he is between stations. It should be observed that the supplemental steam-dome is made globular in form. This form greatly cheapens by facilitating the construction of the device. The whole structure can be turned in an ordinary lathe. This form, also, is desirable inasmuch as it insures substantially uniform expansion and contraction in every direction, thereby reducing the liability of leakage and derangement. We would also call particular attention to the fact that in ordinary connections, where made directly with the boiler, the steam-passages leading from the said connections are frequently charged with water by reason of the foaming and priming of the boiler. This is a source of great annoyance. We overcome this difficulty by the employment of a dry pipe, F, which leads from the supplemental steam-dome to or near the top of the main steam-dome B. This insures a supply of dry steam to these several steam-connections.

It will be observed that the security-valve D² in the construction shown is located within the limits of the boiler-shell. This is of course not absolutely essential, although it is preferable, inasmuch as it is beyond the liability of any accident which might displace the supplemental steam-dome. It will suffice, however, for the purpose of our invention, if this security-valve is located within the plug at

the base of the steam-dome, or in any position where it will be perfectly secure against such an accident. We have also suggested that this supplemental steam-dome may be tapped into the boiler or otherwise attached thereto. We prefer, however, to connect the same by tapping, as affording the most ready means for accomplishing the purpose and greatly facilitating the work, and therefore cheapening the article.

Having thus described our invention, what we claim is—

1. The combination, with a locomotive-boiler, of a supplemental steam-dome supported by a stem attached to the boiler-shell, said steam-dome having connected thereto steam attachments, substantially as and for the purpose described.

2. The combination, with a locomotive-boiler, of a supplemental steam-dome, globular in form, and having connected thereto steam attachments usually tapped into the shell of the boiler and supported by a single stem connected with the boiler, said stem provided with a valve for governing admission of steam into the said dome, substantially as and for the purpose described.

3. The combination, with a locomotive-boiler, of a supplemental steam dome having connected thereto steam attachments usually tapped into the shell of the boiler and supported by a single stem, said stem removably connected with a plug, which is in turn engaged with the boiler, substantially as and for the purpose described.

4. The combination, with a boiler, of a supplemental steam-dome having connected thereto steam attachments usually tapped into the shell of the boiler and connected with the boiler by a single stem, and in connection therewith a security-valve adapted and operating to close automatically and prevent escape of steam and water in case of accident to the steam-dome, substantially as described.

5. A supplemental steam-dome having connected thereto steam attachments usually tapped into the shell of the boiler, and provided with a single stem, said stem adapted for ready detachable connection with a boiler-shell, substantially as and for the purposes described.

6. A supplemental steam-dome having connected thereto steam attachments usually tapped into the shell of the boiler and provided with a valve for governing admission of steam into the dome, and an automatic security-valve beneath the two connected by a stem, whereby the security-valve is held open except in case of accident, substantially as described.

7. The combination, with a steam-dome having connected thereto steam attachments usually tapped into the shell of the boiler, its admission-valve, and a security-valve connected therewith, of a spring for assisting the security-valve to instantly close upon its seat in case of accident, substantially as described.

8. The combination, with the supplementary

steam-dome, of injector steam-throttles, the said throttles governed by hand-levers, substantially as described.

5 9. The combination, with the supplemental steam-dome having connected thereto steam attachments usually tapped into the shell of the boiler, of a dry pipe connecting said supplemental dome directly with the main steam-

dome of the boiler, substantially as described.

In testimony whereof we sign this specification in the presence of two witnesses.

CLARENCE B. HODGES.

ELIJAH McCOY.

Witnesses:

N. S. WRIGHT,

M. B. O'DOHERTY.