X. X. Buckner,

Steam Brake.

No. 51,797. Patented Jan 2, 1866.

Fig. 1.

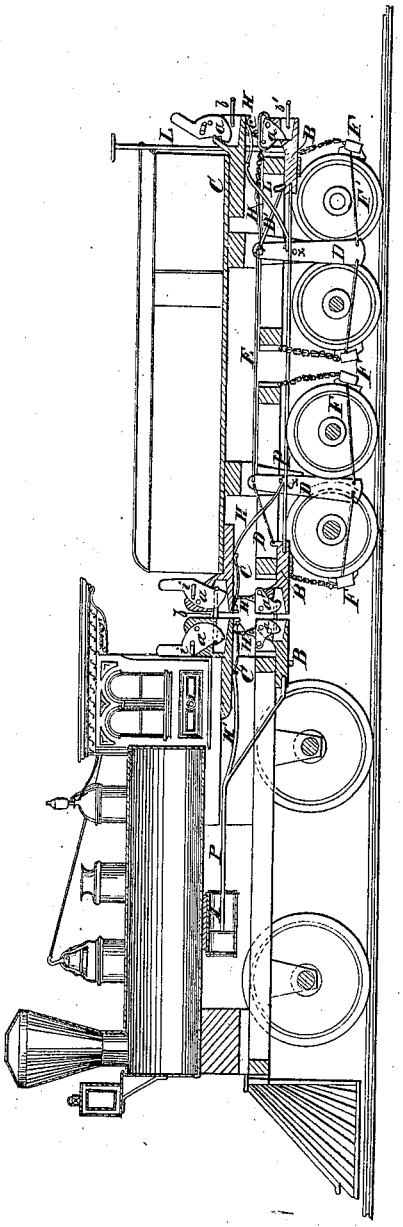


Fig. 3.

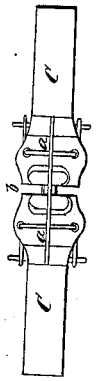
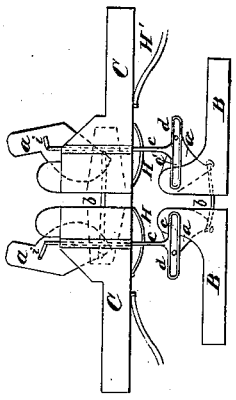


Fig. 2.



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UNITED STATES PATENT OFFICE.

X. X. BUCKNER, OF BOONVILLE, MISSOURI.

IMPROVED STEAM CAR-BRAKE.

Specification forming part of Letters Patent No. **51,797**, dated January 2, 1866.

To all whom it may concern:

Be it known that I, X. X. BUCKNER, of the city of Boonville, in the county of Cooper and State of Missouri, have invented a new and useful Improvement in Steam-Brakes for Railroad-Cars; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Of the annexed drawings, Figure 1 is a sectional elevation of a locomotive-engine and tender to which the improved steam-brakes are applied. Fig. 2 is a side elevation of the coupling, which is used for connecting the different cars of the train together, as well as the several sections of the connecting-rod. Fig. 3 is a plan of the coupling.

The nature of this invention consists in using one steam-cylinder and piston for the sole purpose of managing the brakes of the train, the cylinder which is used for this purpose being placed beneath the boiler of the locomotive, so that steam can be admitted to it directly from the boiler without a long pipe-connection between them, as is the case in other steam-brakes—an arrangement which is highly disadvantageous, especially in cold weather, owing to the rapid condensation of the steam in long pipes exposed, as they must be, to the inclemency of the weather. When such long pipe-connections are used a considerable time must elapse before the brake could be applied in case of accident, owing to the condensation of the steam in the pipe, and the most fatal consequences might result from such a cause—consequences which might be wholly averted by placing the steam-cylinder which is to do the work convenient to the hot boiler.

This invention also relates to the manner of coupling the different sections of the connecting-rod together at the same time that different cars of the train are coupled, and for this purpose new and novel coupling-head is introduced as an indispensable part of the whole invention.

This invention furthermore relates to the manner of holding the train distended, so as to allow the brakes to operate to their maximum limit.

To enable those skilled in the art to construct and use my steam-brake, I will proceed to describe its construction and operation.

The cylinder A is fastened to the lower portion of the boiler, or in that relative position to it, it may be secured to some of the framework of any ordinary locomotive. The piston-rod P, after passing through the rear head of the cylinder A, will be prolonged a sufficient distance to meet the coupling-head B, to which it will be securely fastened. The coupling-heads B will be placed directly beneath the coupling-heads C, which are used for coupling the different cars of the train together. The latches *a* are used in lieu of the ordinary iron pins for the purpose of attaching the links *b* to the coupling-heads C. Similar latches *a'* are used to attach the links *b'* to the heads B. The links *c* pass through the slots *i* in the latches *a*, and thence down on either side of said latches through the coupling-heads B, below which both ends of them terminate in horizontal links *c'*, through the openings of which the pins *d* of the latches *a'* are permitted to move freely laterally or longitudinally. When the train is coupled together by placing the links *b b'* over the lower ends of the latches *a a'*, as shown in Fig. 1, the outer ends of the slots *i* will rest firmly against the link *c*, and the latches *a a'* will thereby be held firmly in position against the action of the links *b b'*. When the train is slacked up and it is desired to uncouple it at any point, the upper end of one of the latches, *a*, should be pushed outward, so as to raise the lower end of it off of the link *b*. The same operation will cause the links *c* to rise up with the slot *i*, and consequently the latch *a'* will be raised at the same moment with the latch *a*, as the pin *d* is fastened to the latch *a'* and the outer ends of it are embraced within the links *c'*.

A longitudinal connecting-rod, P', is placed beneath each of the cars, and both ends of every rod must be provided with a coupling-head, B, for the purpose of fastening the rods together in a continuous line, and the one nearest the locomotive to the piston-rod P, as already described.

Between each pair of the wheels of the whole train there will be a vertical lever, D, pivoted at *x* to some stationary portion of the car-truck. The upper ends of the levers D on each

car will be connected together by means of the rod E, so the levers can be operated in harmony with each other. The upper ends of the levers D are also connected with the rods P′ by means of the connecting-rods D′. The lower ends of the levers D are connected with the brakes F by means of the brake-rods F′. On the bottom side of each of the coupling-heads C there are spring-bumpers H, which are connected with the piston-rod P or the connecting-rod P′ by means of the bumper-rods H′. The bumpers H are so arranged that when they are not acted upon by the rods H′ they will remain contracted under the coupling-heads, with the outer ends of which they are even.

When the train is in motion and the engineer desires to apply the brakes, he will admit steam into the cylinder A behind the piston. This will draw the rods P and P′ forward with great force, which will be transmitted to the brakes F through the medium of the connecting-rods D′ and E, the levers D, and brake-rods F′. At the same time that the rod P is drawn forward it will push one of the bumper-rods H′ forward in order to throw the bumper H out against the bumper of the next car, so as to hold the train distended in order to allow each of the connecting-rods P′ to be acted upon with the same force by the pressure of the steam in the cylinder A. The result of these combined arrangements will be to draw one-half of the brakes of the entire train up to their respective wheels with any degree of force the engineer may see fit to apply to the steam-piston in the cylinder A. It is obvious that the brakes of the entire train will at any and all times and in any weather be under the entire and absolute control of the engineer.

In order to use this steam-brake the coupling-heads already described are an indispensable and inseparable portion of the same invention.

Whenever it becomes necessary to use the brake on a car detached from the engine it can easily be accomplished if the ordinary vertical brake-shaft L be retained upon the car and connected with the rod P′ by means of the chain L′.

Having described my invention, what I claim is—

1. The steam-cylinder A, placed beneath the boiler of any locomotive for the purpose of operating the brakes of railroad-cars.

2. The coupling-heads C B, for the purpose of uniting the different cars and connecting-rods at one operation.

3. The spring-bumpers H, in combination with the bumper-rods H′ and rods P and P′, as and for the purpose set forth.

4. The cylinder A, in combination with the piston-rod P, connecting-rods P′, levers D, and rods E, D′, and F, when constructed as and for the purpose set forth.

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