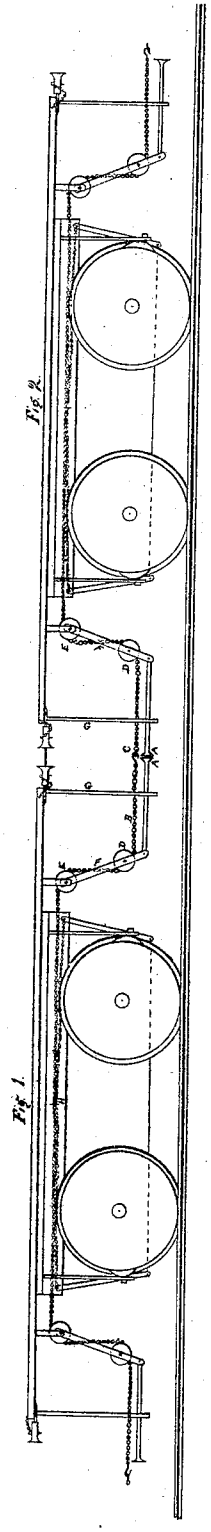
T. & H. Hopper & C. C. Coats,

Steam Car Brake.

No. 103,886. Patented June 7. 1870.



Witnesses
J. Veritas Clark
Thos Nugent

Thomas Hopper
Hatfield Hopper
Chandler C. Coats

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

THOMAS HOPPER, HATFIELD HOPPER, AND CHANDLER C. COATS, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN RAILWAY-CAR BRAKES.

Specification forming part of Letters Patent No. **103,886**, dated June 7, 1870.

Be it known that we, THOMAS HOPPER, HATFIELD HOPPER, and CHANDLER C. COATS, of Newark, in the county of Essex and State of New Jersey, have invented a new and Improved Steam Car-Brake; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

The drawing represents two cars coupled together and provided with our improved mechanism for preventing the slack of the brake-chain.

It is well known that in the application of steam for braking trains of cars it is necessary to connect the brakes of the several cars in such a manner that power may be applied to all simultaneously.

It is found in practical operation that some means must be employed to take up or prevent the "slack" of the brake chain or cord between the several cars, since their coupling devices are such as to allow an almost constant variation in the distance between them.

It is the object of our invention to provide an improvement in the devices heretofore used for overcoming this difficulty.

In the drawing, B indicates the brake-chain, which is connected with the brake-beams of each car. The same, in passing from one car to the other, passes over pulleys E and D in the arms F, which are pivoted to the cars at their upper ends. To the lower ends of the arms F are pivoted the rods A, which slide or work in guide-rods G, and whose free ends are always held in contact thereby. The chain B may be provided with a hook at C to allow the cars to be readily uncoupled.

It is evident that, whether the cars be forced close together or drawn asunder to any extent, the arms F and rods A will always preserve such a relation to each other as to cause the tension of the chain B to remain the same.

We are aware of the existence and use of hinged arms carrying pulleys over which the brake-chain passes; but to such devices we lay no claim.

What we claim as new, and desire to secure by Letters Patent, is—

The combination and arrangement of the guide-rods G and rods A with the arms F, pulleys D and E, and chain B, as and for the purpose shown and described.

THOMAS HOPPER.
HATFIELD HOPPER.
CHANDLER C. COATS.

Witnesses:
J. ARETAS CLARK,
THOMAS NUGENT.