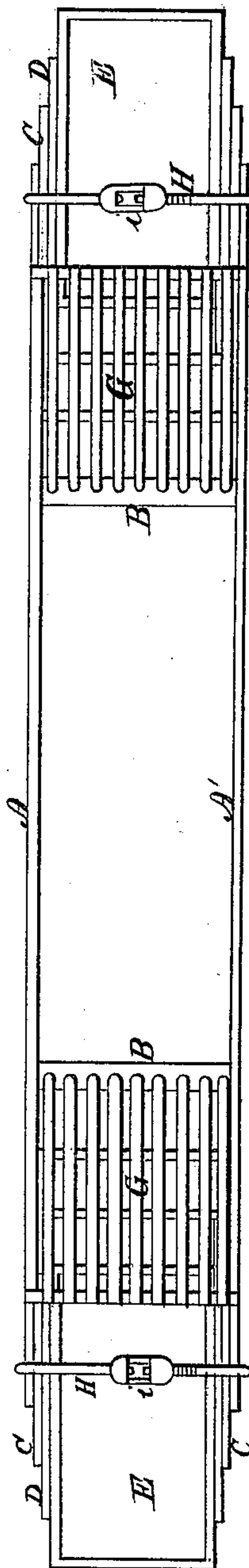
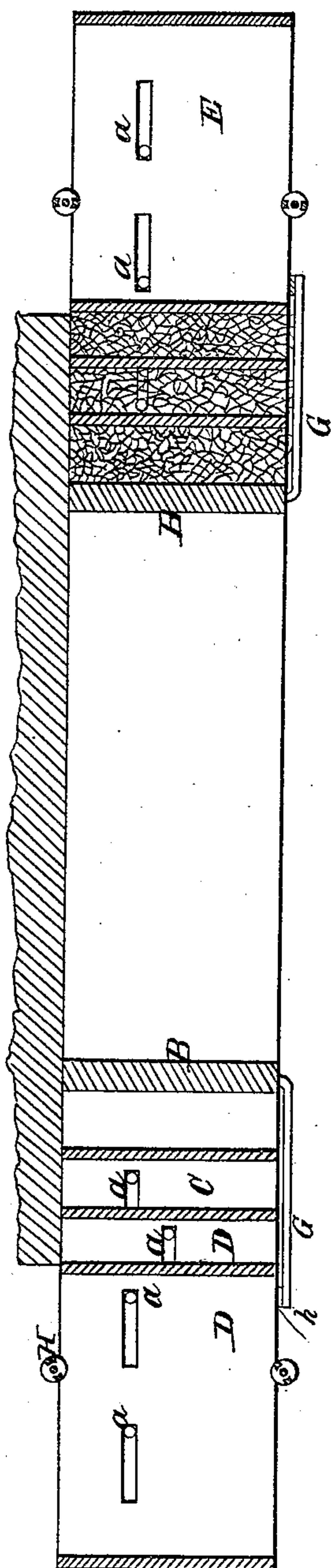


J. R. ROWAND.

Car Bumper.

No. } 2,661, {
33,665. }

Patented Nov. 5, 1861.



Witnesses:

Charles Houson
Charles E. Foster

Inventor:

Henry Houson
Atty for J. R. Rowand

UNITED STATES PATENT OFFICE.

JOHN RANDOLPH ROWAND, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVED MODE OF DIMINISHING EFFECT OF COLLISION ON RAILWAYS.

Specification forming part of Letters Patent No. 33,665, dated November 5, 1861.

To all whom it may concern:

Be it known that I, JOHN RANDOLPH ROWAND, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and Improved Apparatus for Diminishing the Effect of Collisions of Railway-Cars; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consist in the employment, in connection with railway-cars, of any suitable number of frames arranged to slide into each other and forming chambers which are filled with small blocks of friable material, the latter resting on a grating or its equivalent, as fully described hereinafter, so that when cars come in violent contact with each other the slides will yield and the shock will crush and be absorbed by the friable blocks, the nature of which will prevent any dangerous recoil of the cars.

My invention further consists in certain adjustable straps applied to the above-mentioned slides in the manner described hereinafter, so as to increase the friction of one against the other when they are slid inward by any violent collision of the cars.

In order to enable others to make and use my invention, I will now proceed to describe the manner in which I carry it into effect.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a vertical section of my apparatus for diminishing the effect of collisions of railway-cars, and Fig. 2 an inverted plan view of Fig. 1.

A and A' are two side beams connected together at a suitable distance from their opposite ends by the two transverse plates B B. A sliding frame C is fitted snugly between the side beams A and A' at both ends of the same, the opposite sides of this frame being provided with oblong slots *a* for receiving pins projecting from the inside of the opposite side beams, so that the frame can move horizontally only. Adapted to this sliding frame is a similar frame D, to which a third frame E is fitted, the last-mentioned frame being guided in the same manner as the first, so that

they can move in a horizontal direction only. The oblong slots, which in conjunction with the projecting pins serve to guide the several frames, are of such a length that when the said frames are slid into each other and the whole are moved inward between the side beams A and A' to their utmost limit the end of the frame C will be in contact or nearly in contact with the transverse plate B, the end of the frame D in contact, or nearly so, with the end of the frame C, and the end of the frame E with the end of the frame D. When the whole of the frames are slid outward, however, to their utmost limit, there will be a chamber between the end of the transverse plate B and the end of the frame C, a second chamber between the latter frame and the frame D, and a third chamber between the said frame D and the end of the frame E. These chambers I fill with small blocks of crushable or friable materials—such as anthracite coal, charcoal, or any other substance—which will readily break under pressure; but when undisturbed will retain the form of angular or cubical blocks or blocks of such other shape that when collected together in a mass the spaces occupied by the blocks will be about equal to the spaces formed by the interstices between the blocks. The mass of friable blocks contained in the chambers rest on a grating G, formed by a series of bars secured at one end to the transverse plate B and at the opposite end to a bar *h*, secured to the under side of both beams A and A'. A strap H is passed under, over, and down both sides of these beams A and A' and is furnished with coupling-screws *i i*, by means of which it may be drawn tight, so as to impart more or less friction to the sliding frames.

It will be observed that both ends of the above-described apparatus are furnished with similar slides, grating, and strap.

The side beams A and A' may represent the outer side beams of a railway-car, beyond the opposite ends of which project the sliding frames E, or the whole apparatus may be constructed separately and secured to the under side of the car-frame.

It should be understood that cars provided with this apparatus have the usual bumpers for obviating the effect of such moderate

shocks as are constantly occurring on starting and stopping the train, contact of the frame E of one car with that of an adjacent car never taking place excepting when a collision which may affect the safety of the passengers occurs.

When a forcible collision of railway-cars takes place and there is no provision to resist the collision other than the usual spring arrangements, a sudden recoil takes place immediately after the concussion—a recoil which in many cases may prove almost as disastrous to the passengers as the actual collision. The result of a collision of cars provided with my improvement, however, would be different. When the projecting sliding frames E are struck, there are two mediums of resistance: first, the friction of the frames sliding one into the other, a friction which may be increased at pleasure by the adjustment of the straps H; secondly, the resistance presented by the friable blocks contained in the chambers formed by the sliding frames. From neither of these resisting mediums can there be any recoil, the friction of the frames preventing the latter from rebounding after they have been slid into each other, while the force applied to crush the friable blocks will be absorbed by the material itself, the blocks being pulverized, disintegrated, and crushed into a mass occupying a space the extent of which, compared with that which they originally occupied, will depend upon the number and size of the interstices formed between the

blocks and the amount of pulverized material which will escape through the grating G. There can be no rebound from this crushed material unless the collision be of such a violent nature as to compress the whole of the blocks into one solid mass, and the blocks may be applied in such quantities by increasing the number of sliding frames and consequently the number of chambers for containing the blocks that the effect of the most violent shock would be absorbed before the material can be reduced to a compact unyielding mass.

I claim as my invention and desire to secure by Letters Patent—

1. The employment, in connection with railway-cars, of any convenient number of frames C, D, and E, arranged to slide into each other and forming chambers containing blocks of friable material, in combination with the grating G or its equivalent, for the purpose specified.

2. The adjustable strap H, applied to the above-mentioned sliding frames substantially in the manner and for the purpose herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN RANDOLPH ROWAND.

Witnesses:

HENRY HOWSON,
D. P. BROWN, Jr.