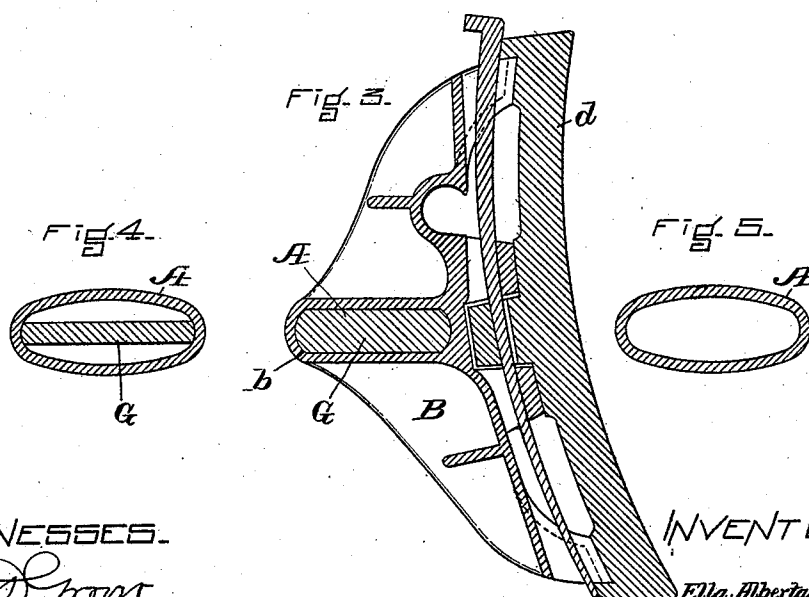
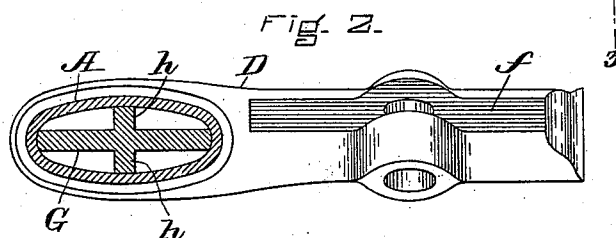
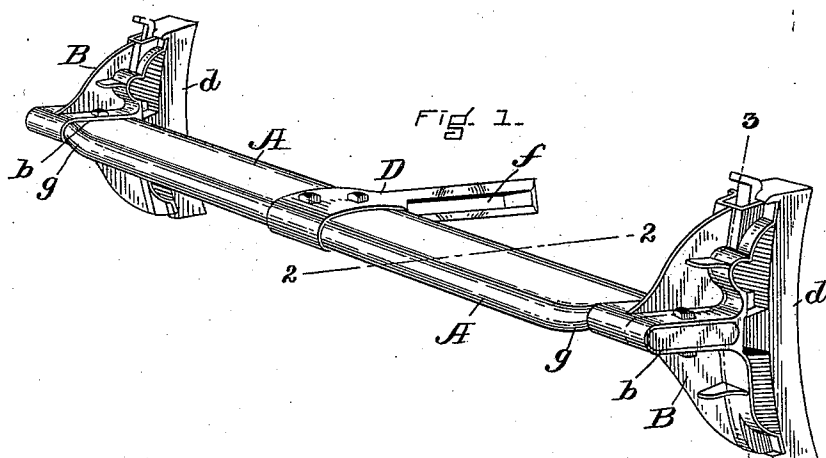


(No Model.)

E. A. MARDEN.
CAR BRAKE.

No. 577,515.

Patented Feb. 23, 1897.



WITNESSES.

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UNITED STATES PATENT OFFICE.

ELLA ALBERTA MARDEN, OF WATERTOWN, MASSACHUSETTS.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 577,515, dated February 23, 1897.

Application filed July 13, 1896. Serial No. 599,016. (No model.)

To all whom it may concern:

Be it known that I, ELLA ALBERTA MARDEN, a citizen of the United States, residing at Watertown, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Car-Brakes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of a brake-beam and brake-heads constructed in accordance with my invention. Fig. 2 is an enlarged vertical section of the same on the line 2 2 of Fig. 1. Fig. 3 is an enlarged section of the same, taken through one of the brake-heads, on the line 3 3 of Fig. 1. Figs. 4 and 5 are vertical sections of brake-beams, illustrating modifications of my invention.

My invention has for its object to improve the construction of tubular brake-beams for railway-cars, whereby they are rendered more durable and effective and better adapted to resist the strain to which they are subjected.

To this end my invention consists in certain novel features and details of construction, as hereinafter fully set forth, and specifically pointed out in the claims.

In the said drawings, A represents a tubular metallic brake-beam, preferably made of steel, and preferably of elliptical or oblong form in cross-section, in which case it is arranged, as shown in the drawings, with its narrower sides or edges facing in the line or direction of the strain, whereby the maximum degree of resistance is afforded to the bending force exerted in applying the brake.

B B represent the brake-heads, which are secured to the opposite ends of the tubular beam A, said heads being provided with stiffening-ribs, and each having a horizontally-elongated aperture *b* extending entirely through it for the reception of the end of the beam A, to which said heads are secured by rivets or in any other preferred manner. The brake-heads and their connecting-beam are adapted to be suspended from the car-truck, and are provided with shoes *d* in the usual manner. To the center of the beam A is secured the lever-clamp or connecting-bar D,

which encircles the beam, and is provided at its inner end with an inclined slot *f* for the reception of the usual brake-lever by which the power is applied to set the brake.

Within the tubular beam A, and extending therethrough from end to end, is placed a solid steel reinforcing-bar G, preferably flattened or of greater width than thickness, said bar being arranged with its narrower sides or edges in contact with the interior of the tube and presented in the direction or line of the strain, as shown, thereby offering the greatest resistance to the force applied to the beam to set the brake.

Before inserting the reinforcing-bar the tubular beam is preferably slightly expanded by heating to admit a bar of somewhat greater width than could otherwise be employed, the contraction of the metal in cooling causing the interior of the tube to lie closely against the narrower sides or edges of the bar at all points. After the reinforcing-bar has been inserted within the tube its ends are heated to the welding-point and compressed on all sides by hammering or swaging to bring them into contact and unite them with the bar to form solid homogeneous ends, as shown in Figs. 1 and 3, thereby increasing their strength, the reduction in size of the ends of the beam thus produced forming shoulders *g g*, against which rest the heads B B, as shown in Fig. 1. To still further stiffen and strengthen the tubular beam A, I preferably provide the reinforcing-bar G on its upper and lower surfaces with longitudinal central ribs *h h*, which extend outward in contact with the upper and lower interior surfaces of the tubular beam, as shown in Fig. 2, but these ribs may be dispensed with, if desired, and a plain flat bar employed, as shown in Fig. 4.

In some cases a tubular brake-beam of elliptical or flattened form in cross-section, if of sufficient thickness, may be employed without a reinforcing-bar, as shown in Fig. 5, its arrangement with its narrower sides or edges facing in the line or direction of the strain enabling it to resist great pressure and produce good results. I prefer, however, to use a flat reinforcing-bar in connection with the

tubular beam, as previously described, as I find such construction to be the most practical and productive of the best results.

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

1. In a car-brake, a tubular brake-beam having the brake-heads secured to its opposite ends, said tubular beam being reinforced by a solid bar placed within the same in contact with its interior surface and extending from one end to the other of said beam, substantially as described.

2. In a car-brake, a tubular brake-beam having the brake-heads secured to its opposite ends, combined with a solid flat reinforcing-bar placed within the same with its narrower sides or edges facing in the line or direction of the strain, substantially as described.

3. In a car-brake, a tubular brake-beam having the brake-heads secured to its opposite ends, combined with a solid flat reinforcing-bar placed within the same with its narrower sides or edges facing in the line or direction of the strain, and said flat reinforcing-bar being provided on its upper and lower surfaces with longitudinal ribs extending vertically therefrom into contact with the upper and lower interior surfaces of the tube within which said bar is placed, substantially as described.

4. A car-brake consisting of a tubular brake-beam of elliptical or oblong form in cross-section, and two brake-heads within which the ends of said beam are secured, said tubular beam being arranged with its narrower

sides or edges facing in the line or direction of the strain, substantially as described.

5. In a car-brake, a tubular brake-beam of elliptical or oblong form in cross-section and having the brake-heads secured to its opposite ends, in combination with a flattened reinforcing-bar placed within the same, said beam and reinforcing-bar being arranged with their narrower sides or edges facing in the line or direction of the strain, substantially as described.

6. In a car-brake, a tubular brake-beam having the brake-heads secured to its opposite ends, said beam being reinforced by a solid bar placed within the same, and said tubular beam being compressed at its ends to fit tightly around the reinforcing-bar on all sides of the same, thereby forming solid ends for insertion within apertures in the brake-heads, substantially as described.

7. In a car-brake, the combination of a tubular brake-beam, two brake-heads in which the ends of said beam are secured, and a solid flat reinforcing-bar placed within said tubular beam with its narrower sides or edges facing in the line or direction of the strain, and a lever-clamp or connecting-bar centrally secured to the tubular beam to receive the brake-lever, substantially as described.

Witness my hand this 11th day of July, A. D. 1896.

ELLA ALBERTA MARDEN.

In presence of—

P. E. TESCHEMACHER,
B. L. MARDEN.