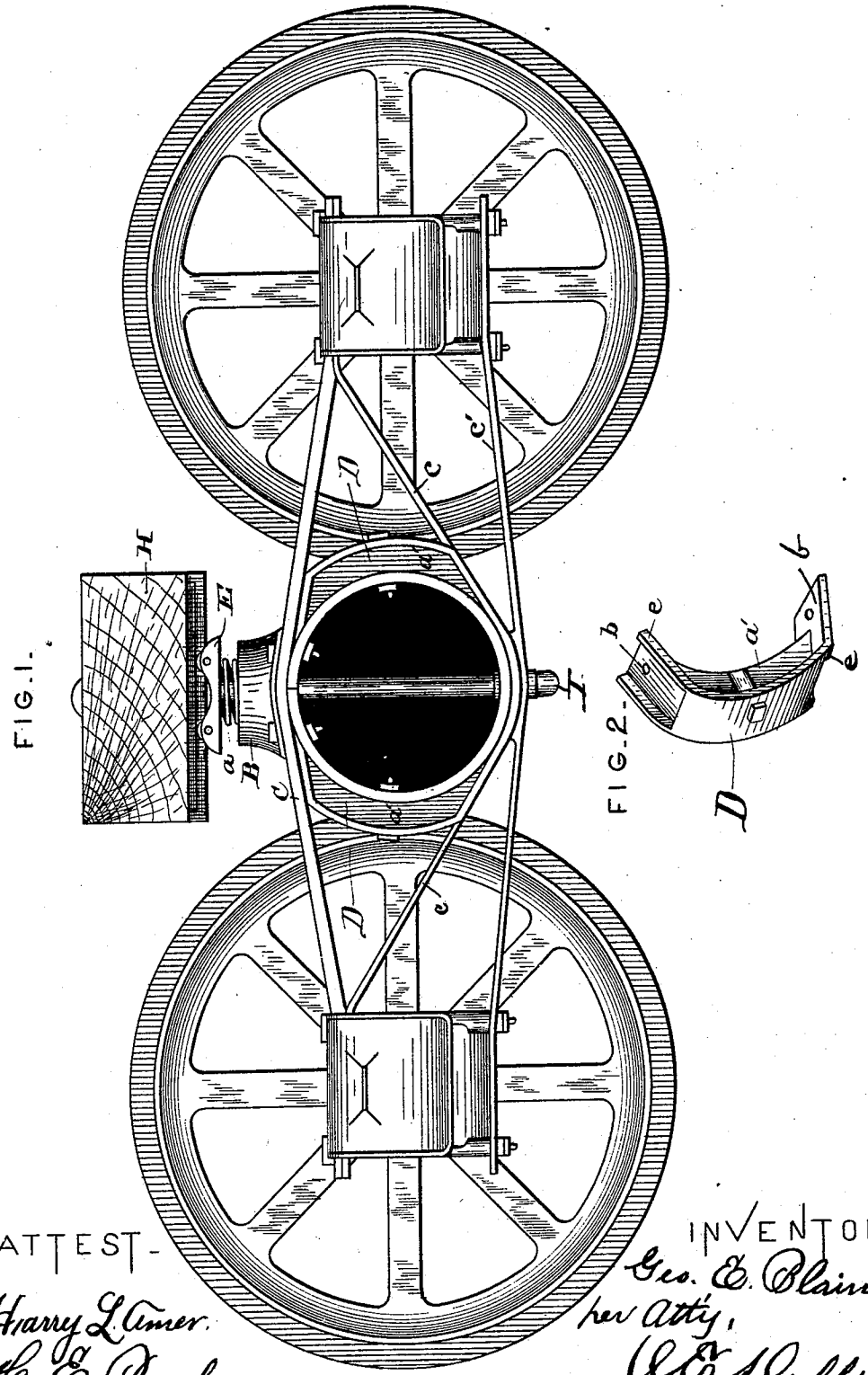
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G. E. BLAINE.

CAR TRUCK.

No. 404,676. Patented June 4, 1889.



ATTEST-

Harry L. Amer.

H. E. Peck.

INVENTOR-

Geo. E. Blaine

per Atty,

A. E. Duffy.

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 3 Sheets—Sheet 2.

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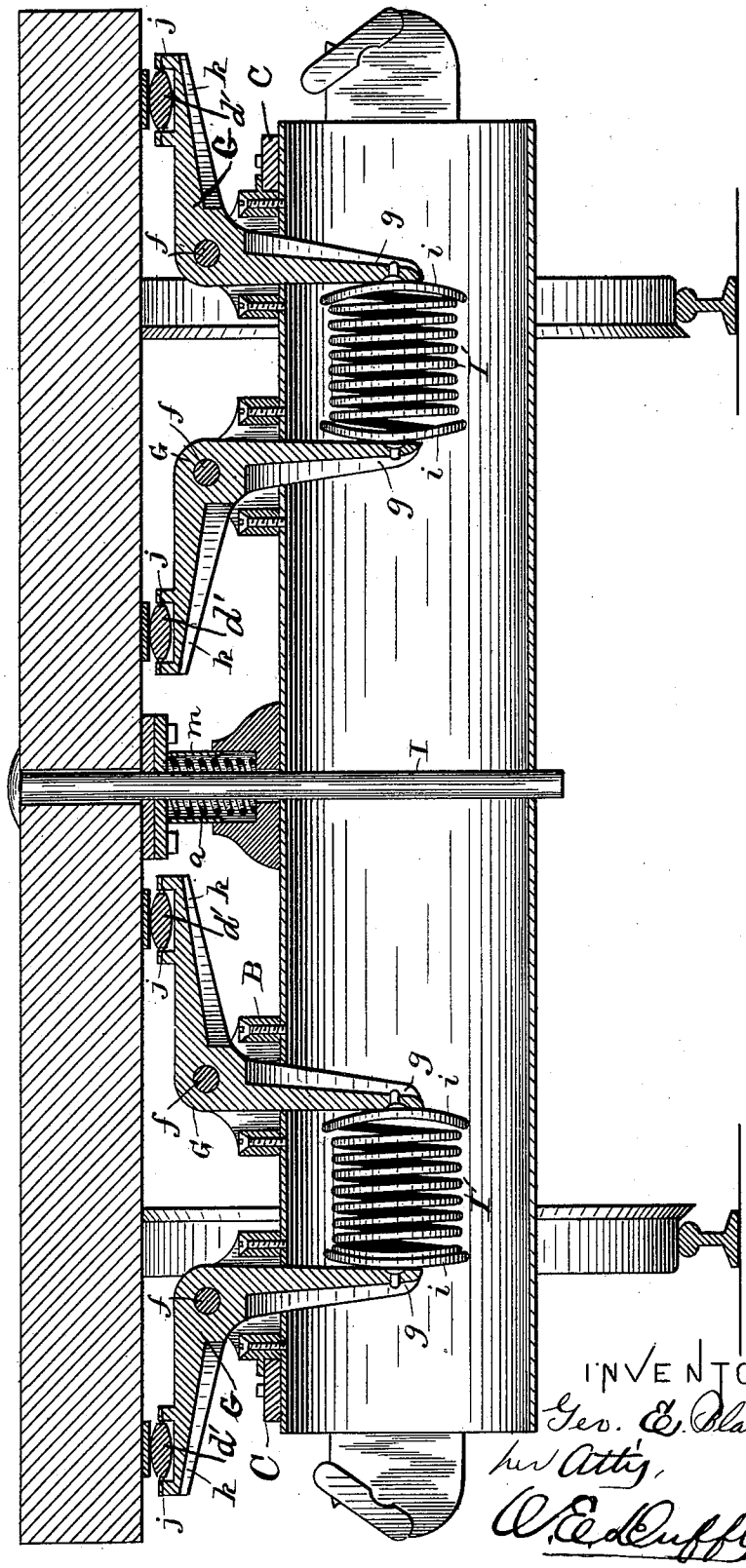


FIG. 3.

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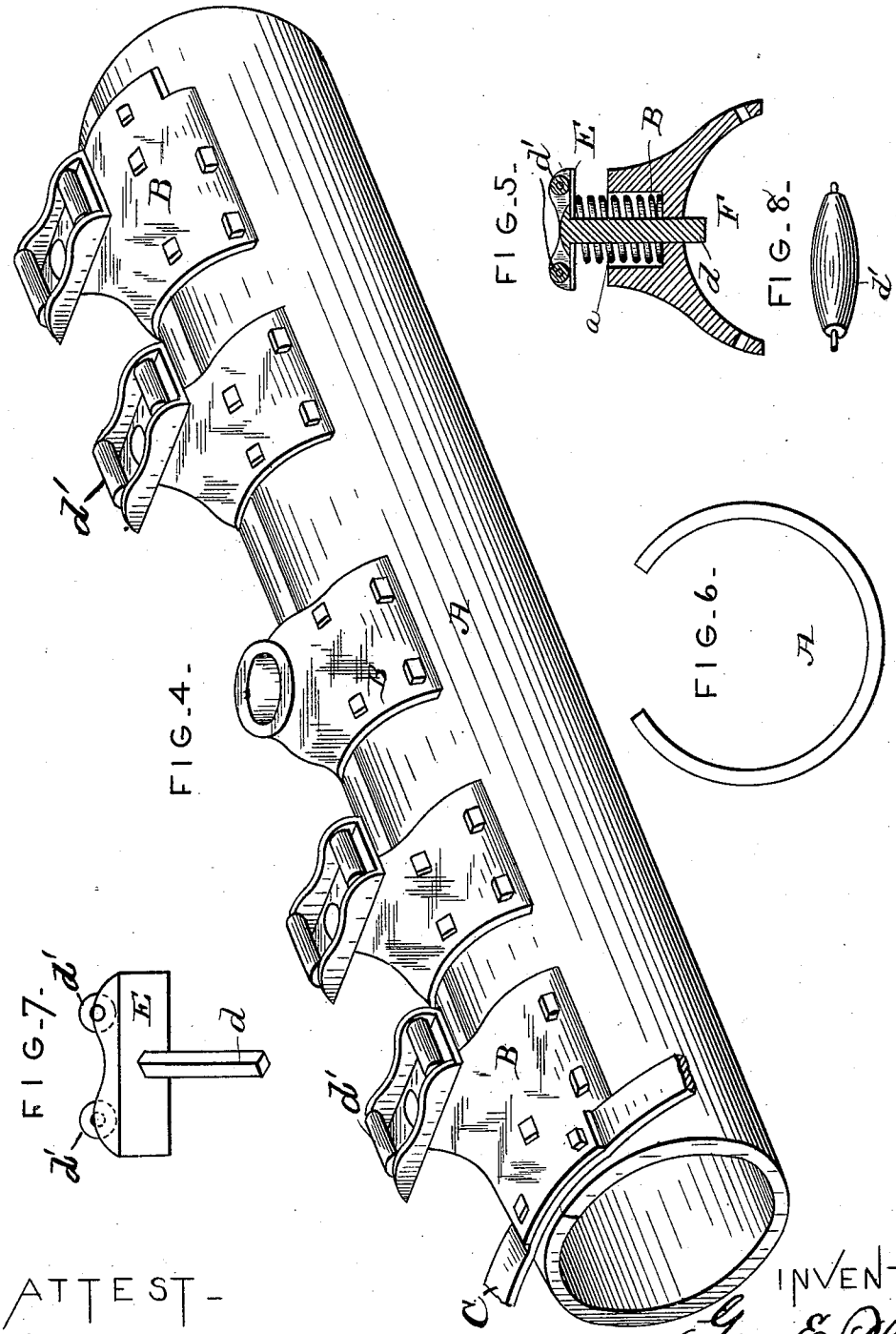


FIG. 4.

FIG. 5.

FIG. 8.

FIG. 6.

FIG. 7.

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UNITED STATES PATENT OFFICE.

GEORGE E. BLAINE, OF DAYTON, OHIO.

CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 404,676, dated June 4, 1889.

Application filed October 5, 1888. Serial No. 287,262. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. BLAINE, of Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Car-Trucks; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to an improvement in railway-car trucks.

The object of the invention is to provide an improved car-truck of great strength and durability, exceedingly cheap in first cost, and extremely light and simple in construction, and composed of a minimum number of of parts, and wherein the bolster is formed of a single sheet of steel rolled into or approximately into the form of a cylinder, the ends of which are joined by the saddles, thus giving the cylinder the strength and character of a continuous joined tube without the expense and labor of welding, as the edges themselves remain unjoined. These objects are accomplished by, and my invention consists in, certain novel features of construction and combinations of parts more fully described hereinafter, and particularly pointed out in the claims.

Referring to the drawings hereto annexed, Figure 1 is a side elevation of the truck. Fig. 2 is a perspective view of the flanged block column or strengthening-brace. Fig. 3 shows a transverse section of the lower part of a railroad-car and the improved truck supporting the same, the bolster being shown in longitudinal section. Fig. 4 is a perspective view of the complete cylindrical bolster and the bearing-saddles ready for use. Fig. 5 shows a sectional view of one of the saddles detached, showing the spring, bolt, and beam-bearing, with anti-friction rolls in section. Fig. 6 shows an end view of the cylindrical bolster in a partially-completed condition to plainly illustrate the simplicity of its construction. Fig. 7 is a detached perspective view of one of the spring caps or seats supported by the saddles and carrying the anti-friction rollers, and Fig. 8 is a detail perspective view of one of the anti-friction rollers carried by the crank-arms and upon which the car-body directly rests.

Like letters indicate like parts in all the figures, in which—

A is the cylindrical bolster, which is rolled out of a single piece of metal, preferably steel. I prefer to have the longitudinal edges meet at the top, and when in this position the saddles B are placed in position upon the cylinder, extending across the meeting ends of the plate and bolted to the same, thus holding the plate in its cylindrical form. Of course the saddles and cylinder-plate are provided with bolt-holes to register with each other before they are put together. The holes in the plate may be punched or formed in any suitable manner.

A suitable number of saddles B are used upon each bolster, and the saddles are concaved upon their under sides to fit snugly upon the periphery of the cylinder and extend across the break in the same, and they also extend upwardly from the bolster a suitable distance, and, as shown in Fig. 5, each (preferably) saddle is provided with a socket in its upper side, in which a coiled spring *a* is located and surrounds a square arm *d*, carrying upon its upper end a cap or seat E, which the spring yieldingly supports. This cap or seat is provided with flanges, between which the anti-friction rollers *d'* are mounted. It will thus be seen that the spring caps or seats E have a yielding movement, and the arms *d* extend through the saddles and bolster, and their external shape prevents the caps from turning. The cross-beam H rests directly upon these rollers, which allows independent movement of the same without friction or injury to the parts. The center saddle receives the king-bolt I, which passes loosely through the same, and this saddle has the coiled spring *a* located in its socket, and the cross-beam of the car or the king-bolt is provided with a cap or socket *m*, embracing the spring and extending loosely into the socket, so as to slide therein with the movement of the car-body. By means of this king-bolt construction the trucks can easily swing and have an inde-

pendent movement when passing around curves, &c.

Strengthening braces or blocks D are exteriorly located upon each end of the bolster and upon both sides of the same, and each brace upon its lower side is provided with a seat formed by a flange or wing *b*, provided with side flanges *e*, in which the truss-bar *c* rests and to which it is firmly bolted between the flanges, and from the truss-bar the brace extends upwardly to the arch-bar, where it is provided with a corresponding bearing-wing *b* and flanges *e*, in which the arch-bar C is bolted. These braces are curved to conform to the curve of the bolster and are provided with internal ribs or flanges *a'*, fitting closely upon the exterior of the bolster and provided with apertures by which the brace is firmly bolted to the same. The end saddles are fitted over the arch-bars and ends of braces D and secured by bolts passing through these parts and the bolster, thereby most rigidly securing the parts together and increasing the strength of the bolster, while the seats in the braces for the arch and truss bars firmly hold these parts and prevent lateral play or knuckling or bending of the same, and also the braces prevent spreading or bulging of the bolster by means of the ribs *a'*, thus increasing the strength and rigidity of the bolster, so as to exceed those formed solid of metal or wood and avoiding the expense of these old constructions.

In Fig. 3 a different form of yielding suporting arrangement is shown, especially adapted for use with passenger-cars. In this case an aperture is made both through the saddle and cylindrical bolster, through which passes an arm of what might be termed a "bell-crank," the fulcrum of which may be formed on the saddle. Two of these crank-arms G G are required for one spring when this construction is used, the parts being arranged as follows: The cylindrical bolster being in place and provided with the saddles, having apertures through them, and the fulcrums *f f* being properly placed, the bell-crank arms G are put in position, one of their arms *g* passing down through the cylindrical bolster, while the other arm *k* stretches out to receive the cross-beam H. The arm *g* passing into the hollow bolster is provided at its lower end with a curved spring-plate *i*, which is pivotally secured thereto, and when in position a coil or other spring I' is placed between the arms *g g*, the ends of the spring I' resting in or against the plates *i i*, which form seats therefor.

The arm *k* of crank G is provided with seats or caps *j j* for journal-bearings for anti-friction rollers *d'*. These rollers are round, of course, in the direction of their rotation, but they are also rounded in the direction of their length, as may be readily seen by reference to Figs. 3 and 8; or the roller may be described as tapering from the middle toward the ends. The object of giving these rollers a rounded surface, as described, is that when the crank-arm *k* moves up or down by more or less load or weight of the car or the irregularity of its motion the contact of the rub-iron with the roller will be uniform.

It will be evident that as the car is loaded and the arms *k k* are pressed down the weight is gradually transferred nearer the fulcrum, so that the leverage on the springs becomes lessened. The distance from the outer end of the roller from the fulcrum being greater than the distance from the inner end, the leverage is therefore lessened and will act upon the spring in proportion to the weight of the car, and hence the resiliency of the spring remains intact, as it is not subjected to the sudden varying shocks usual to springs of the ordinary arrangement.

It is obvious that various other arrangement and disposition of parts may be adopted as experience or requirements may suggest without departing from the spirit of my invention, and I therefore do not desire to be confined to the exact form shown.

Having thus described my invention and the best means at present known to me for carrying the same into effect, what I claim as new, and desire to secure by Letters Patent, is—

1. A bolster for railway-car trucks, consisting of a single plate of metal bent or rolled into the form, or substantially the form, of a hollow cylinder, with the longitudinal opposite or meeting edges of the plate unjoined, substantially as described.

2. A railway-car-truck bolster consisting of a single metal plate bent or rolled so that its longitudinal edges are brought opposite or directly meet, in combination with saddles and braces strengthening the bolster and preventing the longitudinal opposite ends of the plate from spreading, substantially as described.

3. In a car-truck, the combination, with a tubular bolster, of saddles secured upon and extending above the bolster and having openings or sockets extending therethrough, and arms located in said openings and supported by the saddles and provided with caps or seats on their upper ends, for the purpose set forth.

4. In a car-truck, a bolster composed of a bent or rolled metal plate and means for preventing the adjoining longitudinal ends of the same from spreading, in combination with the frames secured to the ends of the bolster for supporting the wheel-journal boxes, substantially as described.

5. A car-truck comprising a cylindrical bolster formed of a bent or rolled metal plate, in combination with saddles secured upon said bolster across and connecting the opposite ends of the plate forming the same, and thereby preventing the longitudinal edges from spreading, substantially as described.

6. A car-truck comprising a bolster formed of a metal plate rolled or bent into the form of an unjoined tube, in combination with exterior strengthening-braces secured to and partially embracing the same and preventing

the bolster from spreading, substantially as described.

7. A tubular car-truck bolster, in combination with braces rigidly secured to the ends of the same, each provided with an inwardly-extending flange fitting upon the exterior of the bolster, and with wings at its opposite ends having side flanges forming seats and the arch and truss bars secured in said seats, substantially as described.

8. A tubular car-truck bolster and the arch and truss bars, in combination with curved strengthening-braces secured upon the exterior of the bolster and provided with end seats in which said bars are secured to prevent the same from bending, substantially as described.

9. In a car-truck, the combination of a metallic bolster, yielding arms supported by and extending above the bolster, and anti-friction rollers carried by the arms upon which the car-body rests, substantially as described.

10. In a car-truck, a bolster, in combination with vertically-yielding caps or seats supported by and located above the bolster, and anti-friction rollers mounted in the caps or seats, substantially as described.

11. A tubular car-truck bolster, in combination with saddles secured upon the same and provided with openings extending therethrough, and vertically-movable arms carried by and extending above the saddles and provided with springs to yieldingly hold their upper ends at the limit of upward movement, for the purpose set forth.

12. In a car-truck, the combination of a bolster, saddles secured to the same and provided with openings or sockets, springs in the openings, caps or seats yieldingly supported by the springs and provided with downwardly-extending arms, and rollers mounted on the caps or seats, substantially as described.

13. In combination, a car-truck bolster provided with saddles, caps or seats yieldingly supported and carrying rollers, the central saddle having an opening, and a king-bolt secured to the car and extending through said opening, substantially as described.

14. In combination, a car-truck bolster having saddles, the central saddle having a socket and opening therethrough, a spring in the socket, a king-bolt carried by the car and extending through the spring and opening, and a cap or socket moving with the bolt and bearing on the spring, substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

GEORGE E. BLAINE.

Witnesses:
H. A. ANDREWS,
S. C. ANDREWS.