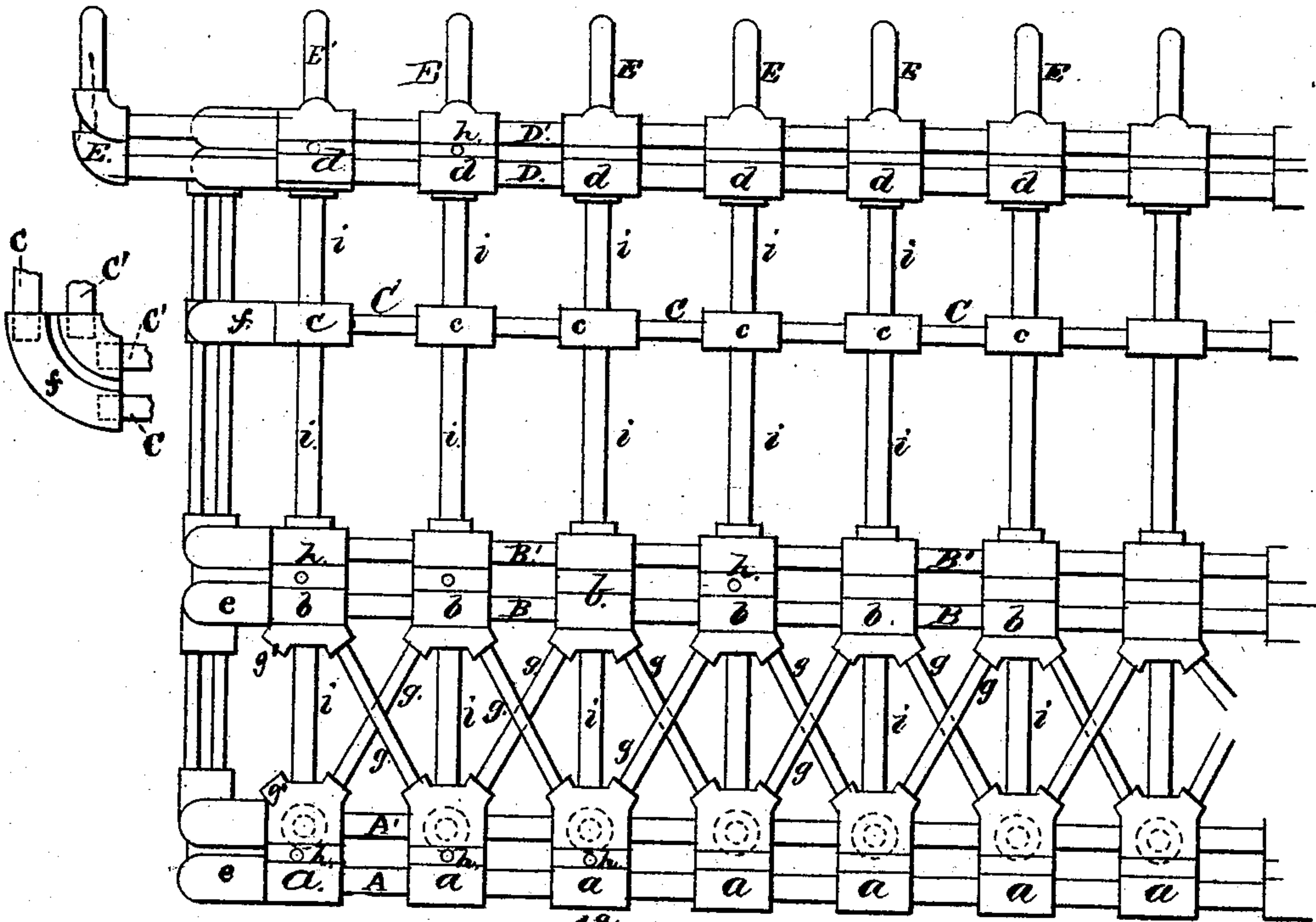


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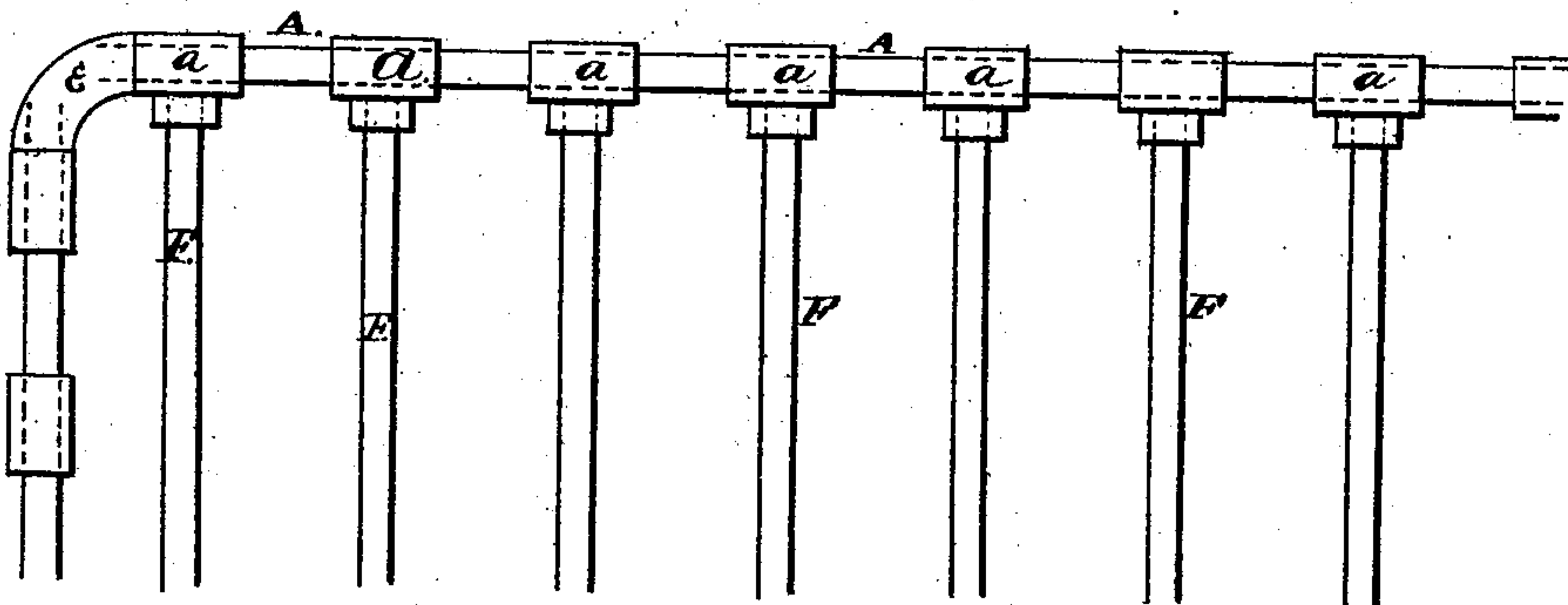
No. 149,079.

Patented March 31, 1874.

Fig. 1.



1.  
Fig. 2.



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A. S. Kaerke.  
D. A. Tarbell.

Inventor.

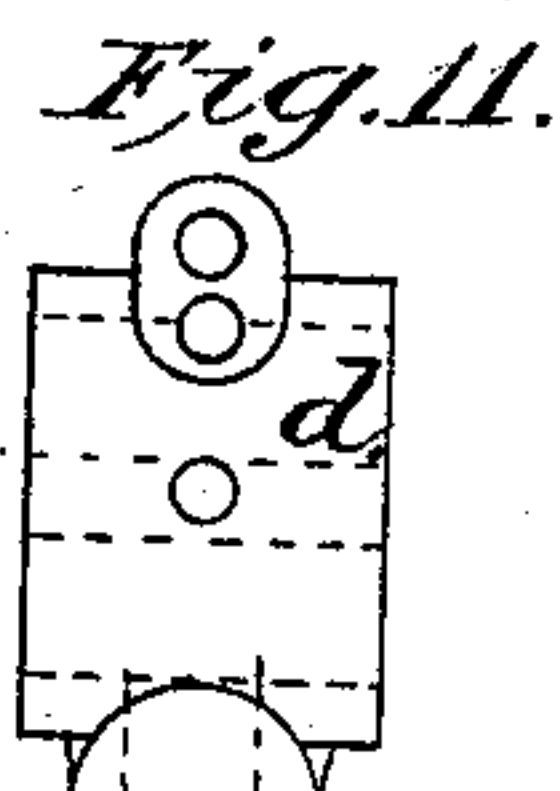
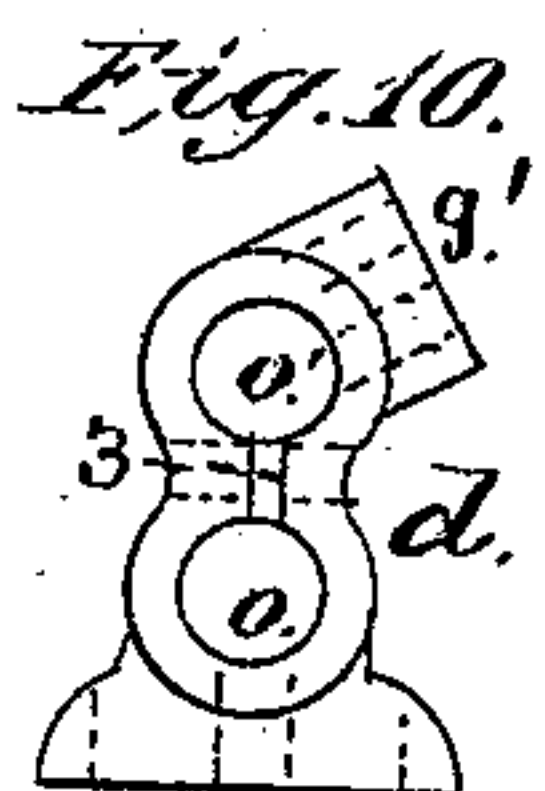
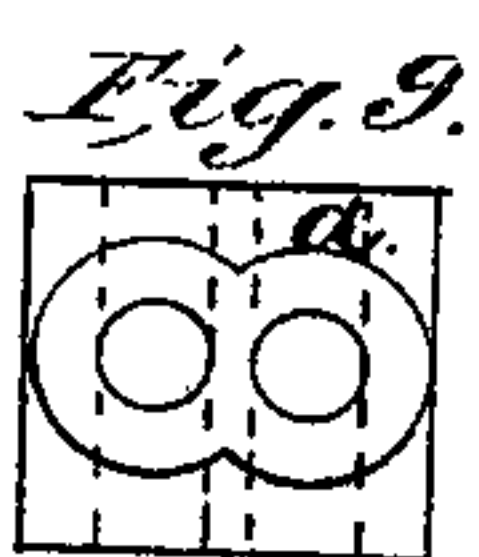
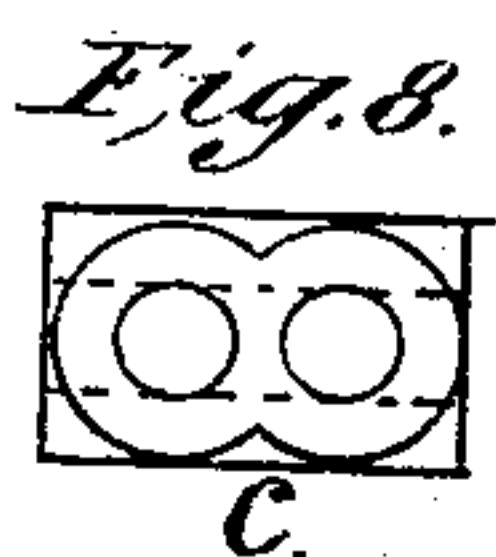
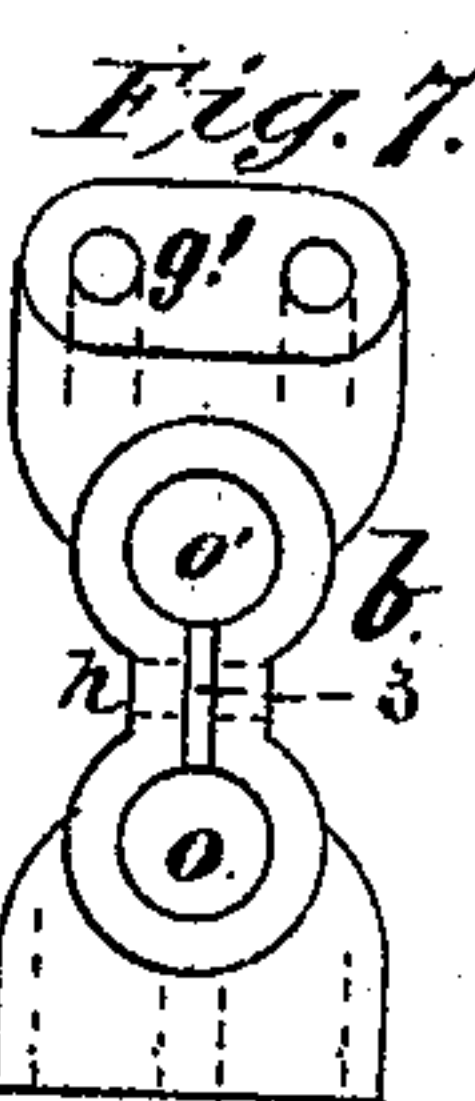
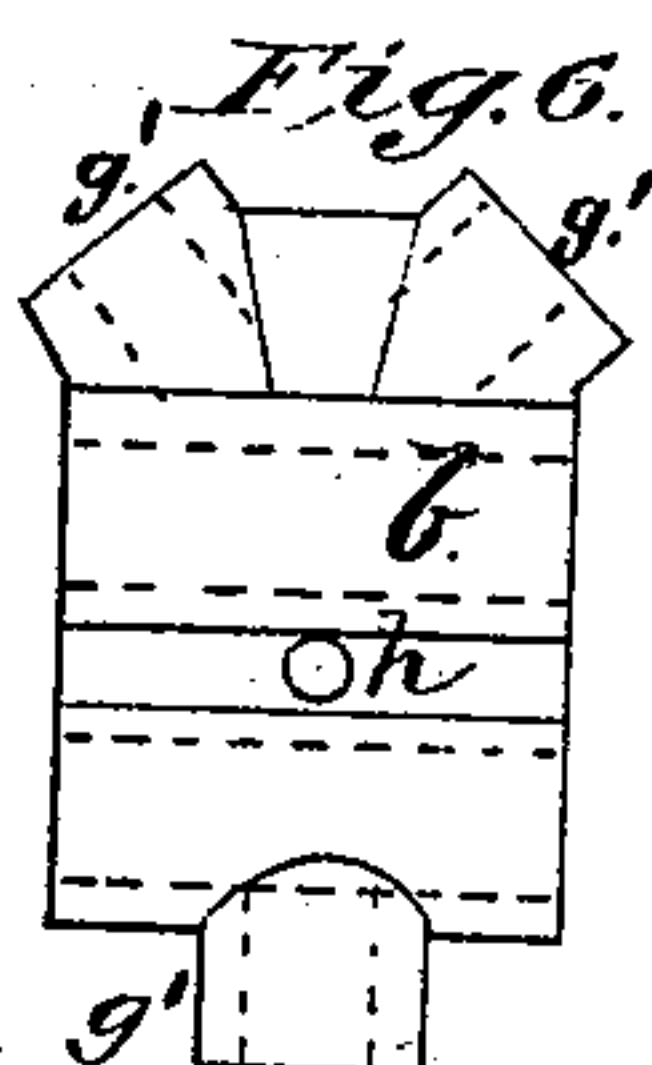
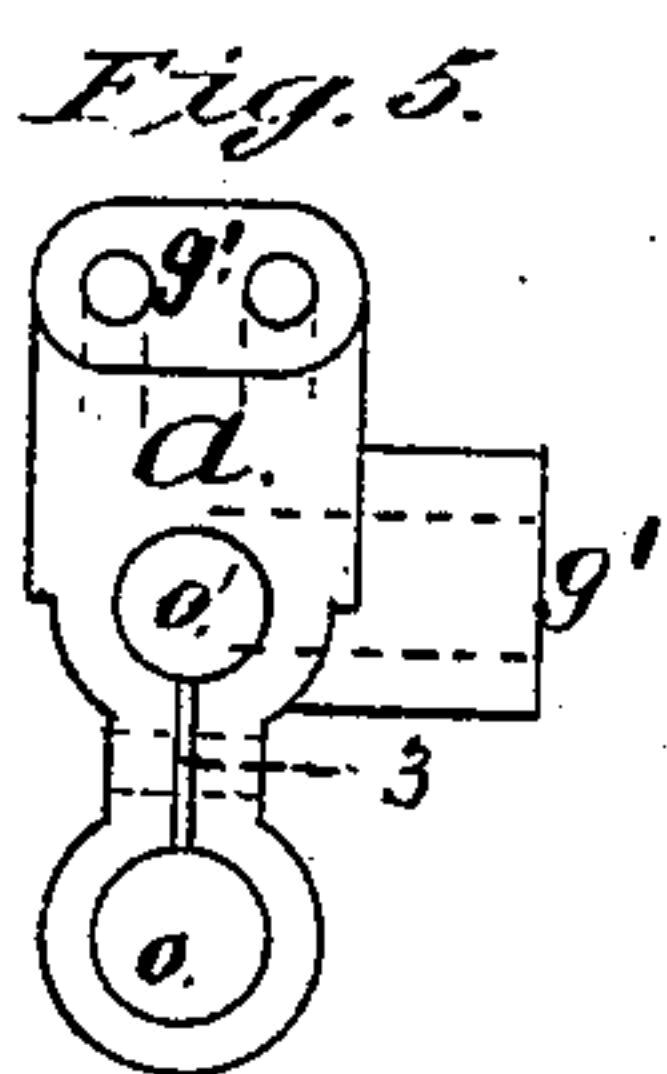
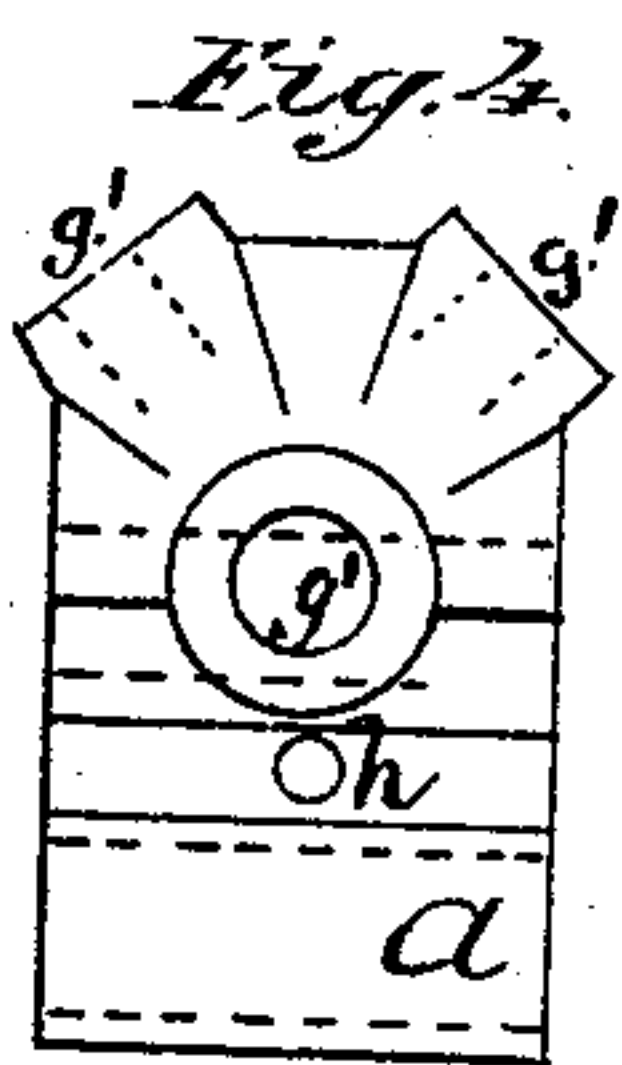
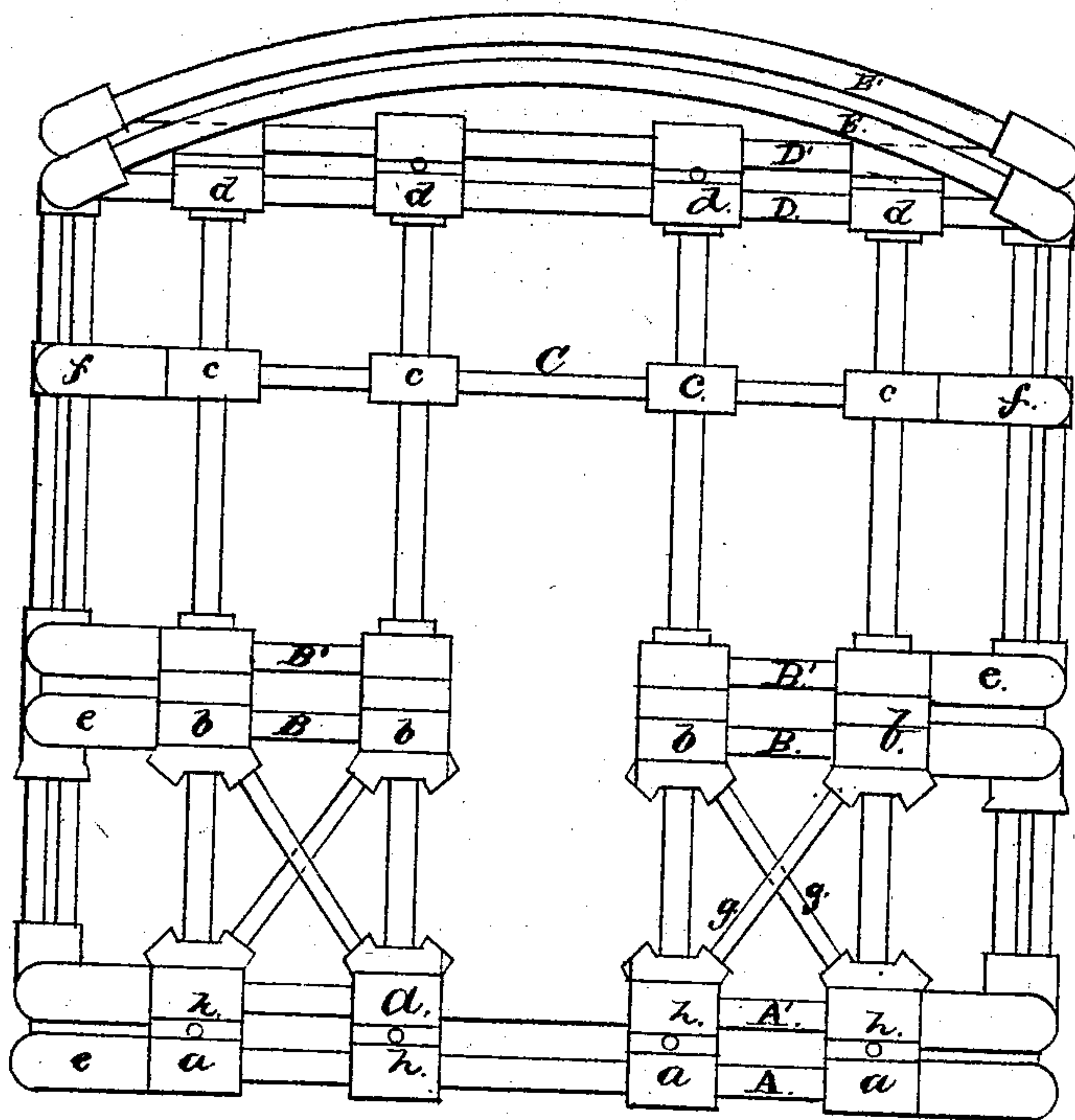
E. S. Stiles.

E. S. STILES  
Railway-Cars.

No. 149,079.

Patented March 31, 1874.

Fig. 3.



Attest

A. Skates  
D. A. Tarbell

Inventor

E. S. Stiles



# UNITED STATES PATENT OFFICE.

EZRA S. STILES, OF BRIDGEPORT, CONNECTICUT.

## IMPROVEMENT IN RAILWAY-CARS.

Specification forming part of Letters Patent No. 149,079, dated March 31, 1874; application filed October 6, 1873.

*To all whom it may concern:*

Be it known that I, EZRA S. STILES, of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Frames for Railroad-Cars; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

My invention relates to the construction of car-frames of iron tubing; and the nature of my invention consists, first, in the construction of the clamps or ties for securing the tubes in position; second, in the construction of the devices for holding and turning the corners; third, in the arrangement of double parallel tubes, for forming the posts to provide for recesses in which the sash and blind can slide, and to give the required thickness to the sides of the car; fourth, in the arrangement of double bracing; fifth, in a continuous and connected sill and girt tube, by which steam or hot water may be conveyed around the outside of the car for heating purposes; and sixth, in the combination of the various parts forming the tubular car-frame.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, which form a part of this specification, and in which—

Figure 1 is a side elevation of a part of my car-frame. Fig. 2 is a bottom view of the same. Fig. 3 is an end elevation of the car-frame. Figs. 4 and 5 show the sill-clamp. Figs. 6 and 7 show the lower girt-clamp. Figs. 8 and 9 show the upper girt-clamp; and Figs. 10 and 11, the plate-clamp.

A A' represent the sills of the car-frame; B B', the lower or window girts; C, the upper girts; and D D', the plates at the top. E E are the rafters, and F F the floor-beams. *a* represents the sill-clamps; *b* and *c*, the girt-clamps; *d*, the plate-clamp; and *e f*, the corner ties. *i i* are posts, and *g g* braces. The sills, girts, plates, rafters, posts, and braces are all made of wrought-iron tubing. The sills A A' are so constructed that the opening of the tube shall be continuous around

the car. The first or lower tier of girts B B' are made to connect with the sill-tubes when steam or hot water is used for heating the car. The posts are formed by uniting the clamps that receive the horizontal tubes with short pieces of tubing screwed into them with right and left hand thread. The clamps are all made of malleable iron, and provided with openings *o o'* large enough for the free passage of the horizontal tubing. In the clamps *a*, *b*, and *d* slots 3 3 are made, connecting the openings *o o'*, to allow the clamps to be drawn up to secure them in place by means of bolts through holes *h h*. The clamp *c* is held in its place on the tube C by the post-tubes being screwed against the tube within the clamp. The corners *e* and *f* are united by a web, the former having the same radius and united vertically, while the latter has two turns, the outer one having the same radius as the corner *e*, while the inner turn corresponds with the inner line of girt-tubing, and united by a horizontal web. These corners are cored out, and a thread cut internally in the ends for connecting with the horizontal tubing. The sills of the car are formed by two parallel tubes, A A', placed one above the other. The lower or window girts, as well as the plates at the top of the car, are likewise formed of parallel tubes, B B' and D D', respectively, placed one above the other. The upper girts are also formed of two parallel tubes, C C'; but these are placed side by side to show that either or both ways may be used in constructing the car-frame. The corners that unite the plates and end rafters are single, and also cast hollow and threaded. Upon the clamps *a*, *b*, and *d* are cast suitable hubs or projections *g'*, for the reception of the ends of the braces, rafters, and floor-beams, they being all made of tubing and fastened by right-and-left threads.

The rafters E may be bent, as shown, to form the curve of the roof; or they may each be made in two parts connected together in the center by a suitable coupling.

In setting up the car, the clamps *a b c d* are first put together with the post-tubes *i*, and then the sills A A', girts B B' C C' and plates D D' are passed through the openings *o o'* in their respective clamps. The braces *g g* are then fitted, commencing at the center of the

car, and working each way to the ends. The corners are then screwed onto the side tubes, and the end tubes with the cross-sills or floor-beams are entered and all screwed up together. The rafters are then fitted and united or bent.

When the tubes are to be used for steam or hot water the sills and lower girts are united and connected with the supply.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The malleable-iron clamps *a b d*, provided with openings *o o'*, slots 3, and projections *g'*, all substantially as and for the purposes set forth.

2. The tubular corner-ties *e* and *f*, with connecting-webs, in combination with the sills and girts of the frame, substantially as and for the purposes set forth.

3. The vertical tubes *i i*, in combination with

the clamps *a, b, c*, and *d*, to form the posts of the frame, as set forth.

4. The braces *g g*, in combination with the clamps *a b*, sills *A A'*, and girts *B B'*, substantially as and for the purposes set forth.

5. In a car-frame, the combination of the sills *A A'* and the girts *B B'* and *C C'* with one or more posts for the passage of steam or hot water, substantially as set forth.

6. The combination of the sills *A A'*, girts *B B'* and *C C'*, plates *D D'*, vertical tubes *i i*, clamps *a b c d*, braces *g*, cross-sills *F*, rafters *E*, and corners *e f*, all constructed substantially as and for the purposes set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

Witnesses: EZRA S. STILES.

D. A. TARBELL,

A. SKAATS.