

No. 707,702.

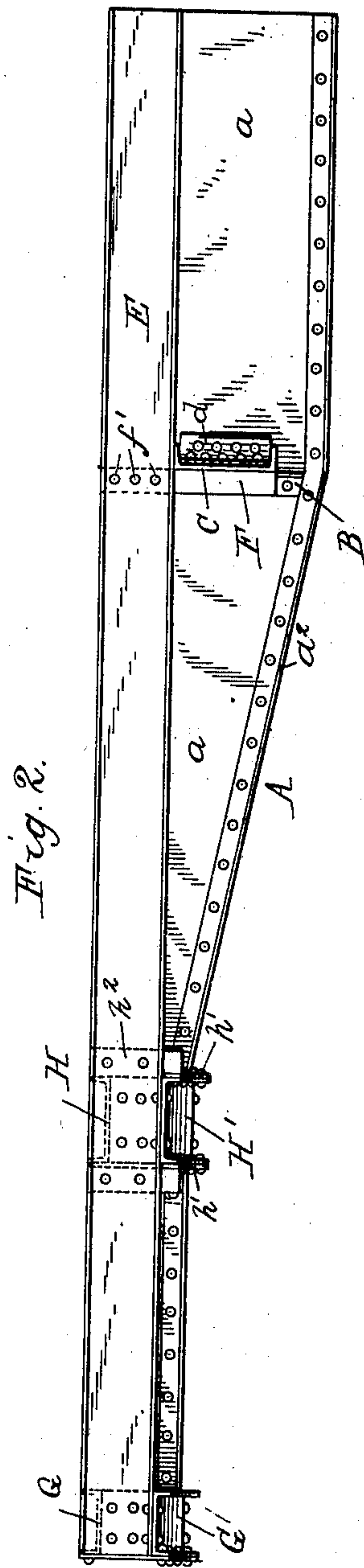
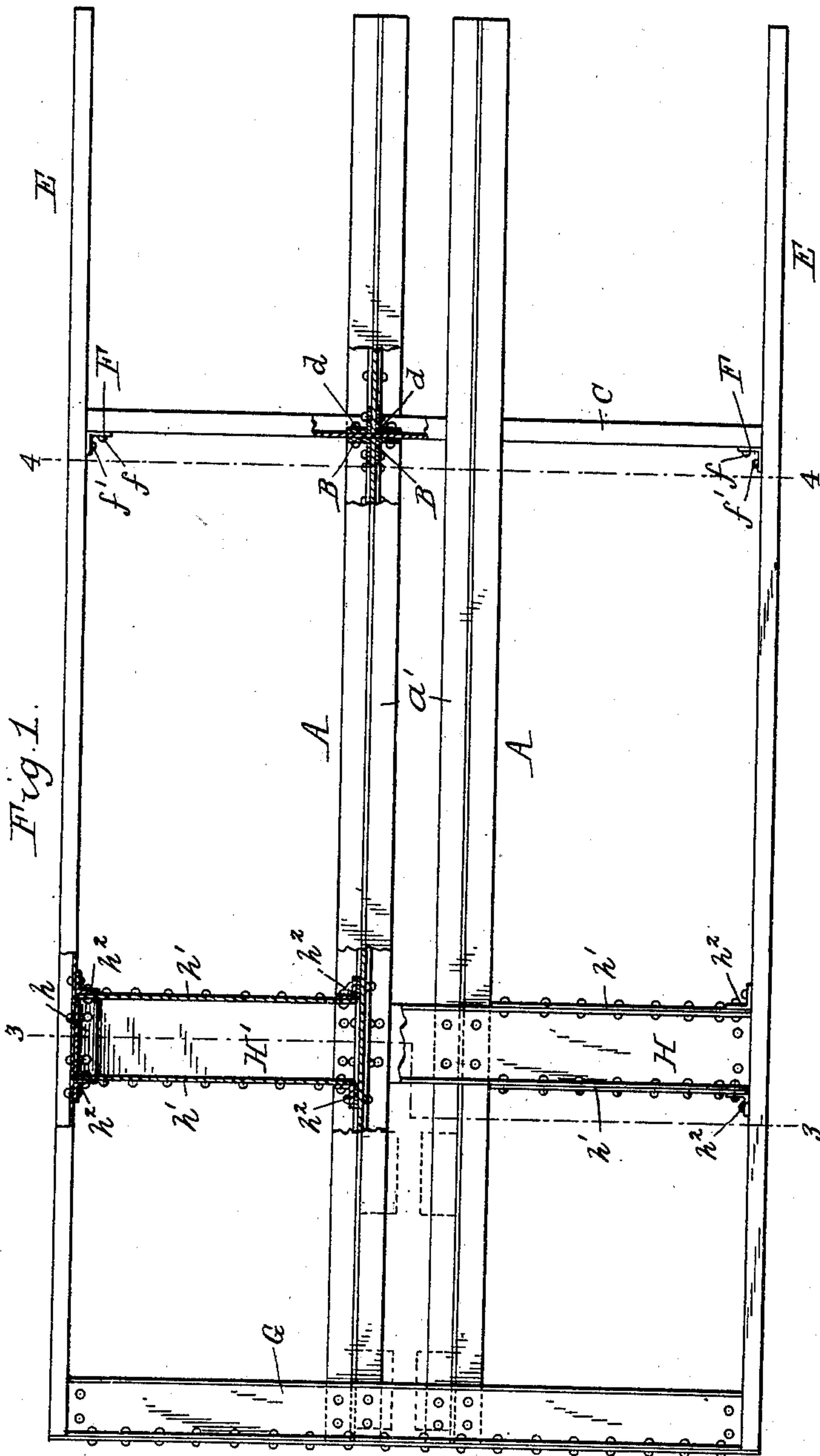
Patented Aug. 26, 1902.

H. R. KEITHLEY.
UNDERFRAME FOR RAILWAY CARS.

(Application filed June 14, 1902.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

E. A. Volk.

C. M. Bentley.

H. R. Keithley

Inventor.

By William D. Brown.

Attorneys.

No. 707,702.

Patented Aug. 26, 1902.

H. R. KEITHLEY.
UNDERFRAME FOR RAILWAY CARS.

(Application filed June 14, 1902.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 3.

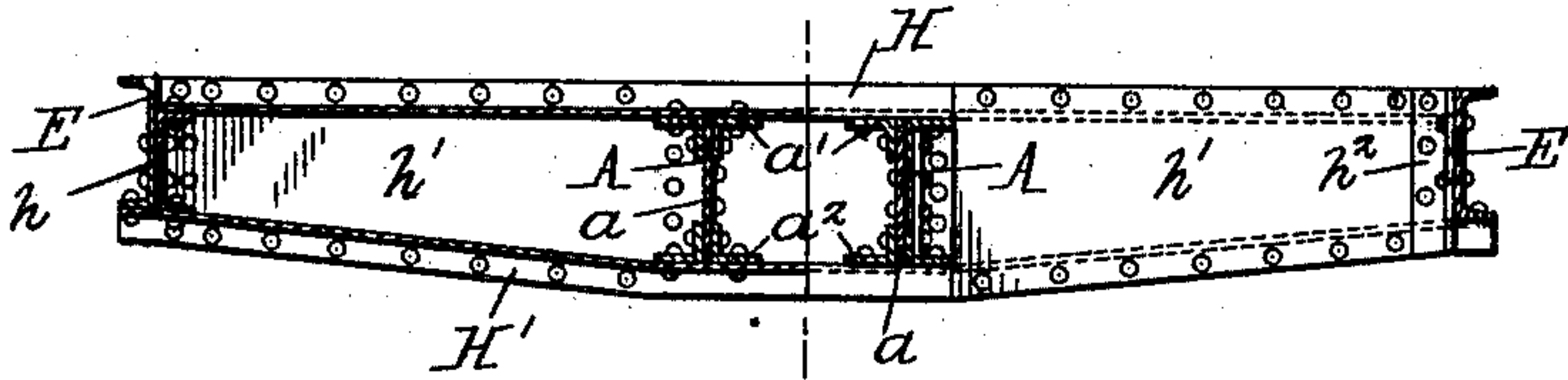


Fig. 4.

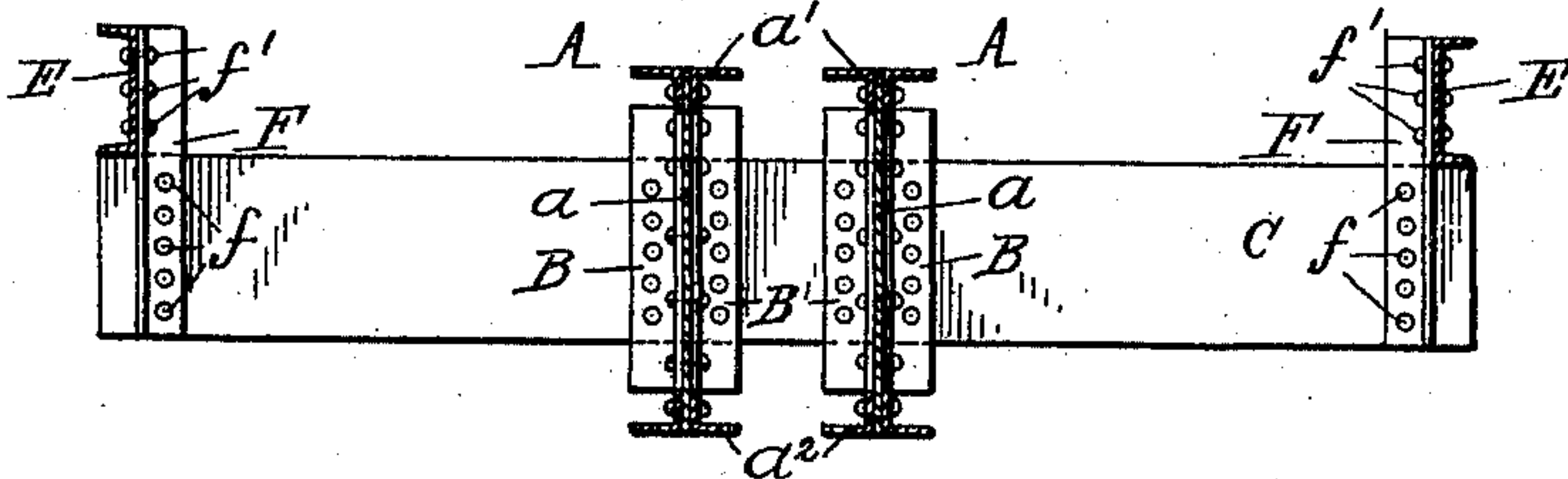
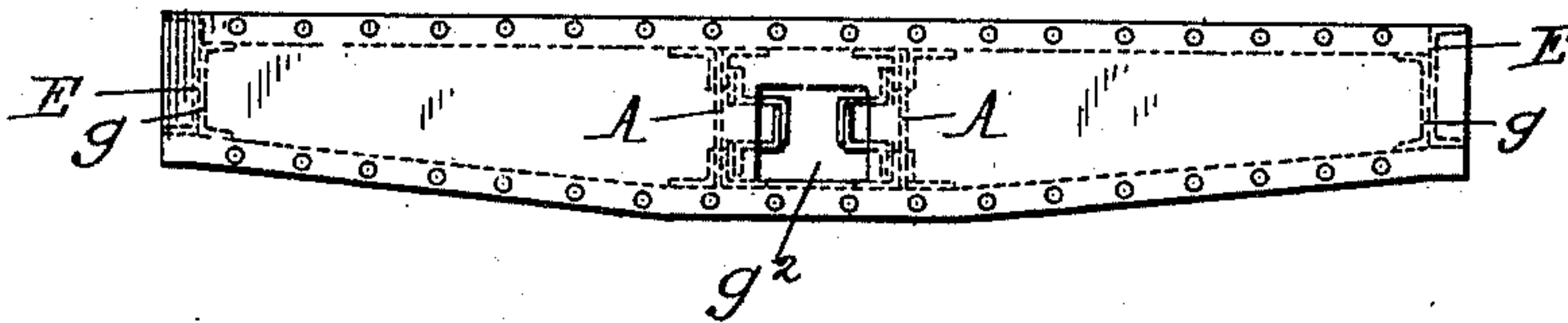


Fig. 5.



Witnesses:

E. A. Volk.

C. M. Bentley

H. R. Keithley

Inventor

By Wilhelm Bonner

Attorneys

UNITED STATES PATENT OFFICE.

HERBERT R. KEITHLEY, OF BUFFALO, NEW YORK.

UNDERFRAME FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 707,702, dated August 26, 1902.

Application filed June 14, 1902. Serial No. 111,660. (No model.)

To all whom it may concern:

Be it known that I, HERBERT R. KEITHLEY, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Underframes for Railway-Cars, of which the following is a specification.

This invention relates to a metallic underframe for railway-cars which is of that type constructed of commercial rolled shapes and plates, and comprises a pair of longitudinal center sills, beams, or girders, which extend from end to end of the underframe, transverse transoms, which extend through and are supported by the center sills, side sills or beams, which are supported by the ends of the transoms, end sills supported by the center sills and connected to the side sills, and bolsters arranged between the transoms and end sills and connected to the center and side sills.

The object of the invention is to provide a light underframe which is composed of the minimum number of parts, has the maximum rigidity to resist the draft and buffing strains and shocks, and great strength to support heavy loads.

In the accompanying drawings, consisting of two sheets, Figure 1 is a plan view, partly in section, of one-half of an underframe embodying the invention. Fig. 2 is a side elevation thereof. Fig. 3 is a transverse section in line 3 3, Fig. 1, showing the bolster one half in elevation and the other half in section. Fig. 4 is a transverse section in line 4 4, Fig. 1, showing the transom. Fig. 5 is an end elevation showing the end sill.

Like letters of reference refer to like parts in the several figures.

A A represent the longitudinal center sills, girders, or beams, which extend from one end to the other of the frame and are arranged in the same relation as the center or draft sills of an ordinary underframe. Each sill is preferably in the form of a plate-girder consisting of a web-plate a , an upper flange a' , and a lower flange a'' . In the construction shown each flange is composed of two angle-bars arranged on opposite sides of the web-plate and having their vertical flanges riveted to the web-plate, while their horizontal flanges project to opposite sides of the web-plate. Each

girder is deeper at its central part than at its end portions. The upper flange is straight throughout its length, and the end portions of the lower flange are parallel with the upper flange, while the central portion thereof is depressed or bent downwardly away from the upper flange.

B represents flanged bars, which are arranged vertically between the central portions of the flanges of each girder, forming struts therefor. The struts are riveted to the girder web-plate and serve to stiffen the latter. These center sills or girders support the greater part of the weight of the car and its load and transmit the draft and buffing strains and shocks directly from the draft-rigging at one end of the car to that at the other end of the car.

C represents one of the transverse transoms, of which there are two. The transom shown is in the form of a flanged metal beam, preferably a channel-beam, and extends from one side to the other of the frame, passing through openings formed for the purpose in the web-plates of the center sills. The transom is supported by the girder web-plates and is rigidly secured to each girder by rivets or the like, which connect the web of the transom-beam to the flanges of the struts or stiffener-bars B. The connections of the sills and transoms are further strengthened by verticle angle bars or plates d , arranged between the flanges of the transom-beams, having one flange riveted to the web-plate of the girder and the other flange connected to the web of the transom-beam and the strut by the rivets which connect the transom-beam and strut together.

E E represent the side sills or beams, which are arranged parallel with the center girders at the sides of the underframe, extending from end to end thereof. In the construction shown each side sill is in the form of a flanged beam, preferably a channel-beam, and rests upon the ends of the transverse transoms. Each side beam is rigidly secured to each transom by a vertical flanged bar F , which is connected, by rivets or the like f , to the web of the transom-beam and by rivets or the like f' to the web of the side sill or beam. The ends of the center girders and side sills are connected by end sills, only one of which

is shown in the drawings. The end sill may be of any suitable construction, but is preferably constructed as follows:

G represents an upper horizontal channel-beam, which is arranged with its flanges extending vertically upward, rests on the tops of the center girders, and abuts at its ends against the inner faces of the side sills.

G' represents a lower channel-beam, which is arranged with its flanges extending vertically downward and extends beneath the ends of the center girders and side sills. The upper and lower end sill channel-beams are riveted to the flanges of the center girders and are rigidly secured to the side sills in any suitable manner—for instance, by metal plates *g*, which are riveted to the webs of the side sills and have upper and lower horizontal portions riveted, respectively, to the webs of the upper and lower channel-beams of the end sill. The end sill is completed by a vertical cover-plate, which connects and is riveted to the outer flanges of the upper and lower channel-beams of the end sill. The cover-plate is provided centrally with the usual opening *g*² for the draft-bar to pass through.

The underframe is provided with two transverse bolsters, which are arranged in their usual or ordinary relation between the end sills and transom and extend from one side sill to the other, being connected to the center girders and side sills. The bolster shown in the drawings is constructed as follows:

H represents a horizontal channel-beam, which is arranged with its flanges extending vertically upward, and rests centrally on the tops of the center sills, abutting at its ends against the faces of the side sills.

H' represents a second channel-beam, which is arranged horizontally beneath the center girders and side sills, with its flanges extending vertically downward, and is riveted to the lower flanges of the girders and side sills.

The ends of the upper and lower channel-beams are preferably secured to the side sills by metal plates *h*, riveted to the webs of the side sills and channel-beams of the bolster. The upper and lower channel-beams of the bolster are connected at opposite sides between the center girders and side sills by vertical cover or tie plates *h'*. The connections of the tie or cover plates are strengthened and the bolster made much more rigid by vertical angle plates or bars *h*², which are riveted to the ends of the tie or cover plates and to the webs of the center girders and side sills. If desired or necessary, the bolster may be provided with any well-known or suitable center bearing plate or casting for the truck king-pin.

I claim as my invention—

1. An underframe comprising longitudinal center sills spaced apart each in the form of a plate-girder having a vertical web-plate and upper and lower flanges, transverse transoms which extend through the web-plates of said

center sills and are connected thereto, and bolsters connected to said center sills, substantially as set forth.

2. An underframe comprising longitudinal center sills spaced apart each in the form of a plate-girder having a vertical web-plate and upper and lower flanges, transverse transoms which extend through the web-plates of said center sills and are connected thereto, side sills supported by said transoms, and bolsters connected to said center and side sills, substantially as set forth.

3. An underframe comprising longitudinal center sills spaced apart each in the form of a plate-girder having a vertical web-plate and upper and lower flanges, the web-plate of said girder being deeper at its central portion than at its end portions, transverse transoms which extend through the web-plates of said center sills and are connected thereto, and bolsters connected to said center sills, substantially as set forth.

4. An underframe comprising longitudinal center sills spaced apart each in the form of a plate-girder having a vertical web-plate, upper and lower flanges, and vertical flanged bars riveted to the web-plate, transverse transoms which extend through openings in the web-plates of said center sills and are riveted to said vertical flanged bars, and bolsters connected to said center sills, substantially as set forth.

5. An underframe comprising longitudinal center sills spaced apart each in the form of a plate-girder having a vertical web-plate, upper and lower flanges and vertical flanged bars riveted to the web-plate, transverse transoms which extend through openings in the web-plates of said center sills and are riveted to said vertical flanged bars, side sills supported by said transoms, and bolsters connected to said center and side sills, substantially as set forth.

6. An underframe comprising longitudinal center sills spaced apart each in the form of a plate-girder having a vertical web-plate, upper and lower flanges, and vertical angle-bars riveted to the web-plate, transverse transoms each in the form of a flanged beam which extends through openings in the web-plates of the center sills and is riveted to the vertical angle-bars, angle-bars riveted to said transoms and to said web-plates of the center girders, side sills supported by said transverse transoms, and bolsters connecting said center and side sills, substantially as set forth.

7. In an underframe, longitudinal center sills spaced apart and bolsters each comprising a flanged beam resting on the center sills and secured to the same, a flanged beam arranged beneath and secured to the center sills, and members connecting said flanged beams at opposite sides of said center sills, substantially as set forth.

8. An underframe comprising longitudinal center sills spaced apart, transverse transoms which are supported by and extend to oppo-

site sides of said center sills, side sills supported by said transoms, and bolsters connecting said center and side sills, each bolster comprising a flanged beam resting on the
5 center sills and secured to the same and to the side sills, a flanged beam arranged beneath and secured to the center and side sills, and plates connecting said flanged beams at opposite sides between the center and side
10 sills, said plates being connected to the center and side sills, substantially as set forth.

9. An underframe comprising longitudinal center sills spaced apart and each formed with

tension and compression members, a plate connecting the central portions of said tension and compression members, transverse
15 transoms which extend through openings in said plates and are secured thereto, and bolsters connected to said center sills, substantially as set forth. 20

Witness my hand this 11th day of June, 1902.

HERBERT R. KEITHLEY.

Witnesses:

CHAS. W. PARKER,
C. M. BENTLEY.