

No. 830,610.

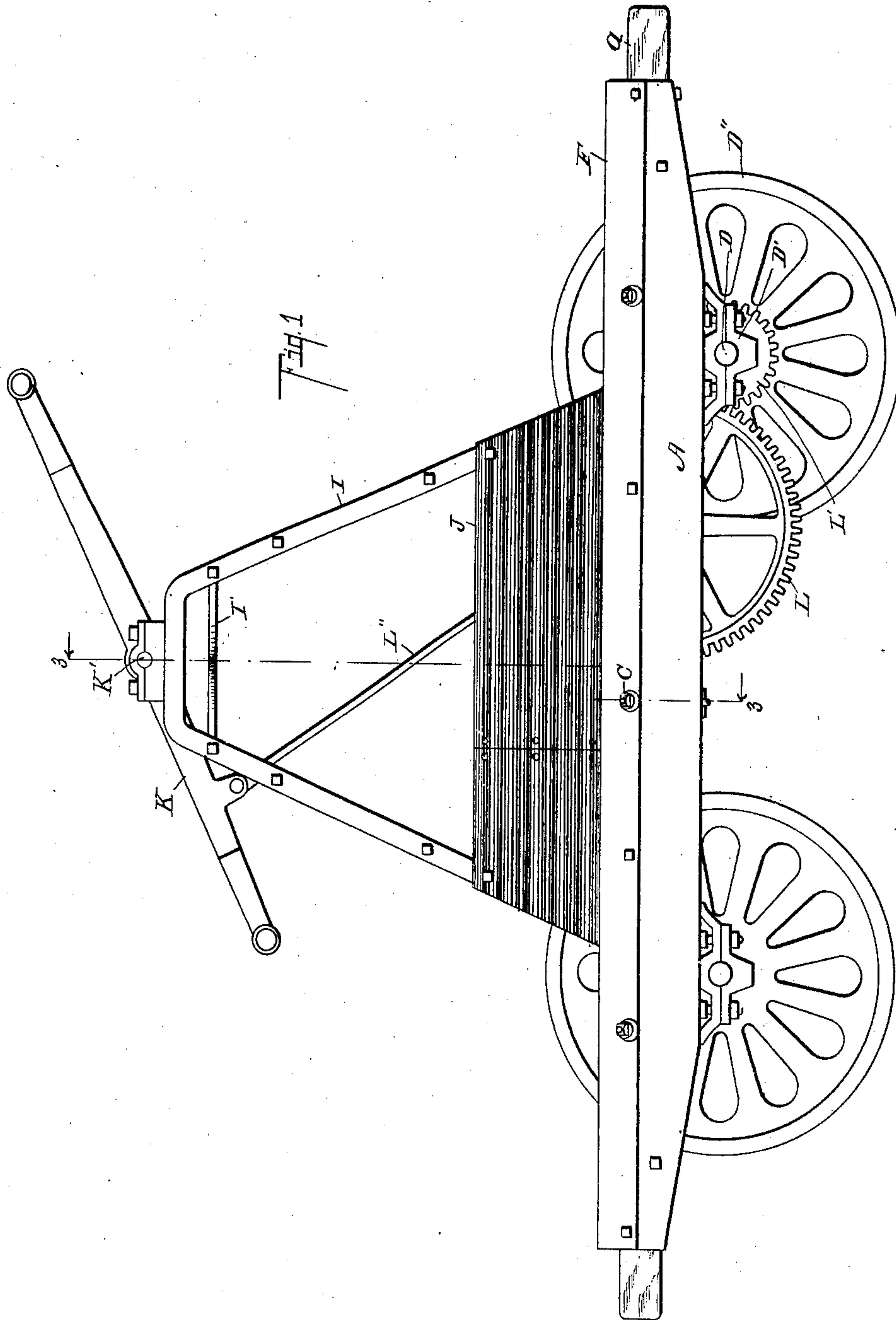
PATENTED SEPT. 11, 1906.

W. H. MILLER.

HAND CAR.

APPLICATION FILED JULY 22, 1965.

3 SHEETS—SHEET 1.



Witnesses:

Ethel A Bradford  
E. M. Jackson.

Inventor,

Warren H. Miller

By *Chappell & Earl*  
Att'ys

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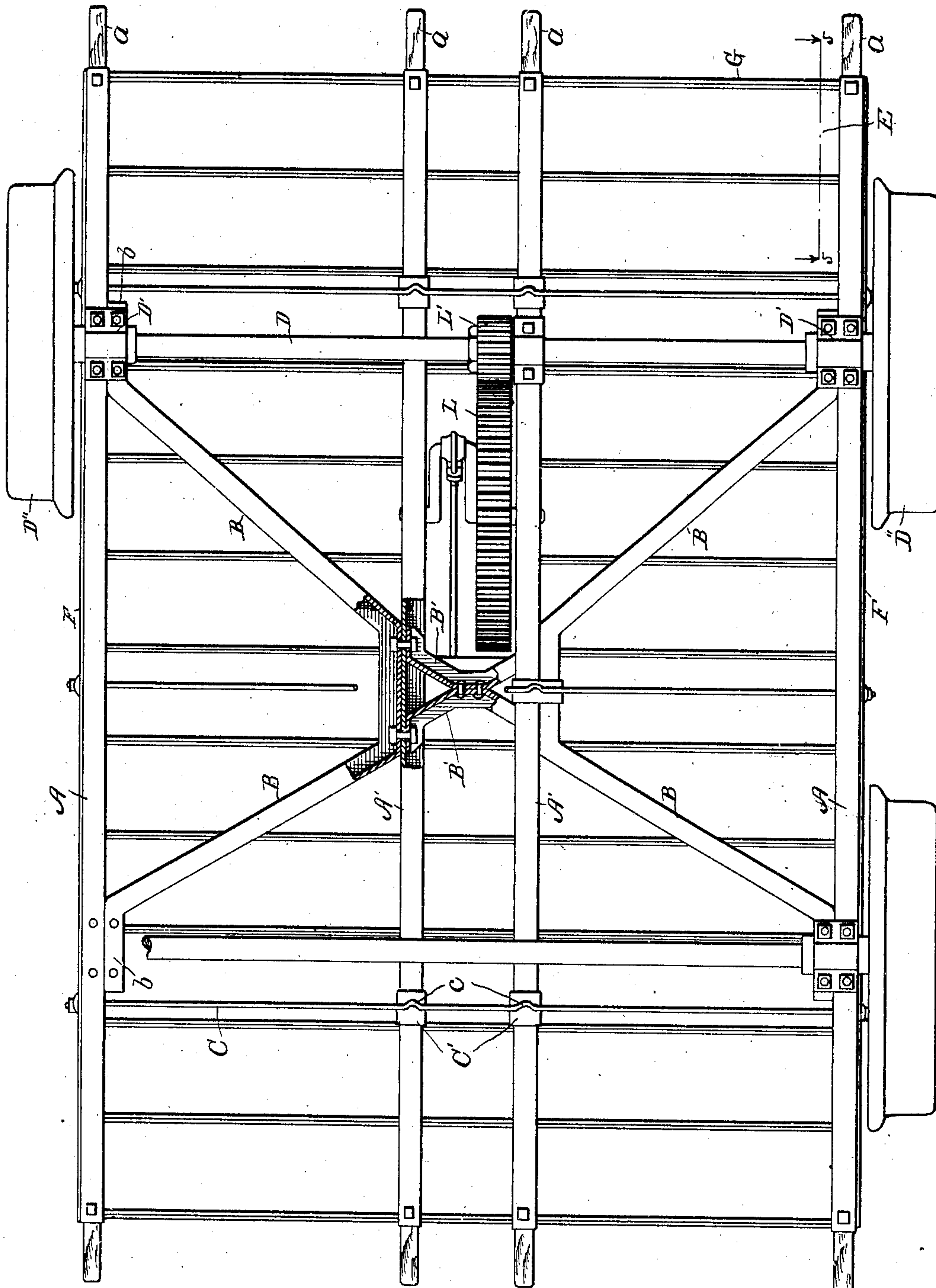
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3 SHEETS—SHEET 2.



Witnesses:

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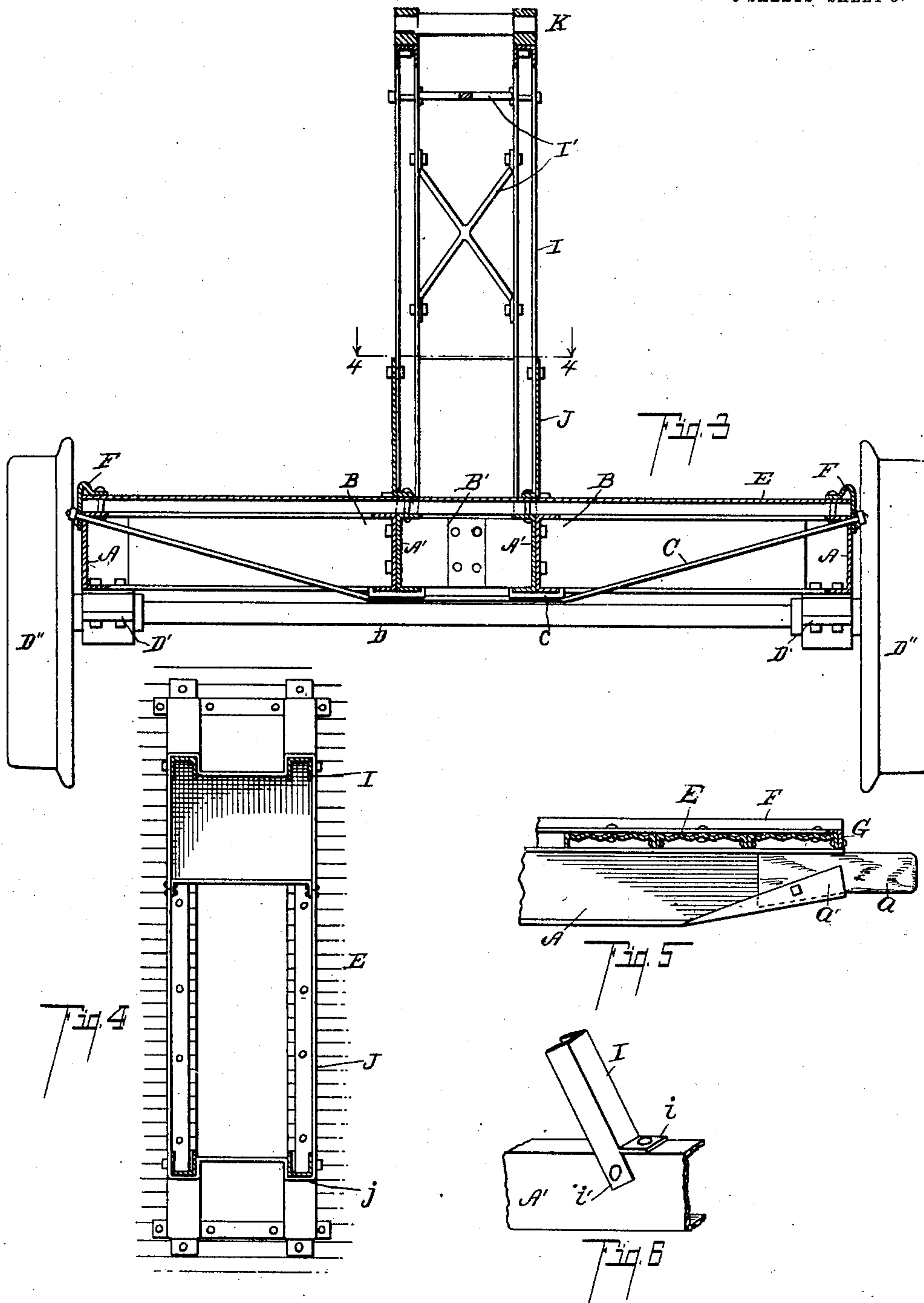
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3 SHEETS—SHEET 3.



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Inventor,

*Warren H. Miller*

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# UNITED STATES PATENT OFFICE.

WARREN H. MILLER, OF THREE RIVERS, MICHIGAN, ASSIGNOR TO  
SHEFFIELD CAR COMPANY, OF THREE RIVERS, MICHIGAN.

## HAND-CAR.

No. 830,610.

Specification of Letters Patent.

Patented Sept. 11, 1906.

Application filed July 22, 1905. Serial No. 270,818.

*To all whom it may concern:*

Be it known that I, WARREN H. MILLER, a citizen of the United States, residing at the city of Three Rivers, county of St. Joseph, State of Michigan, have invented certain new and useful Improvements in Hand-Cars, of which the following is a specification.

This invention relates to improvements in cars.

It is particularly adapted to hand-cars, and I have illustrated it in that relation in the accompanying drawings, although it is applicable in the main, as will be evident, to push-cars, shop-trucks, and the like.

The objects of my invention are, first, to provide an improved car constructed of metal which is light and at the same time strong, rigid, and durable; second, to provide in a car structure of metal an improved construction and arrangement of parts which renders them economical to produce and assemble; third, to provide an improved car-frame combining the greatest lightness with a maximum carrying capacity; fourth, to provide an improved metal framework in combination with a metal gallows-frame arranged in such manner as to produce a strong, durable, and inexpensive means for locating and securing the car-driving mechanism.

Further objects and objects relating to structural details will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a structure embodying the features of my invention, portions being broken away to show the structural details. Fig. 2 is a plan view of the structure appearing in Fig. 1. Fig. 3 is a vertical sectional view taken on a line corresponding to line 3 3 of Fig. 2. Fig. 4 is a detail horizontal sectional view taken on a line corresponding to line 4 4 of Fig. 3. Fig. 5 is an enlarged detail longitudinal sectional view showing the form of the sills and the manner of securing the deck thereon. Fig. 6 is an enlarged perspective view showing the struc-

tural details of the gallows-frame and the manner of securing it in position.

In the drawings, the sectional views are taken looking in the direction of the little arrows at the ends of the section-lines, and similar letters of reference refer to similar parts throughout the several views.

Referring to the drawings, I provide longitudinal sills A A' and diagonally-arranged sills B. The longitudinal sills are arranged in pairs, and the diagonal sills are arranged between them. These sills are made up of sheet metal which is bent into channel shape and are arranged on the edge, as clearly appears from the drawings. The lower flanges of the longitudinal sills are bent up at each end, as at a', to form a socket for the handles a, which are preferably of wood.

The diagonal sills B are arranged between the longitudinal sills A A' and not only serve as sills for the deck, but also serve to brace the sills A. The sills B are preferably A-shaped, although they might be separated, if desired. The brace-sills B' are arranged between the longitudinal sills A' and serve as continuations of the diagonal sills B, being substantially in alinement therewith. The sills B B' are constructed in the same manner as the sills A A'.

Transversely-arranged truss-rods C, the ends of which are arranged through the outer sills A, are provided. Truss-blocks c' are arranged under the sills A'. These truss-blocks are provided with sockets, which are engaged by the kinks c, formed in the truss-rods. The truss-rods thus connected to the sills not only serve the purpose of truss-rods, but also act as ties. The truss-rods are suitably threaded and are provided with nuts, by means of which they can be adjusted.

Bearings D' for the axles D are secured to the sills A and also to the sills B at the point of their connection to the sills. Suitable wheels, as D'', are provided.

The deck is preferably formed of metal planks E. These planks are preferably formed of sheet metal bent into channel form. (See Fig. 5.) The planks E are corrugated longitudinally to add to their strength and also to form footholds. Angular-shaped raves F engage the ends of the planks. These raves are riveted to the sills. The rivets, which are arranged through the horizontal legs



of the raves, are passed through the planks. The planks E are arranged transversely of the car to coact with the sills and truss-rods in making a rigid trussed platform, the deck being arranged to form the compression member of the truss. End or buffer rails G, of angle-iron, are secured over the edges of the end planks. These rails prevent injury to the planks.

By constructing the frame and deck as I have described I secure one which is very strong and rigid. The parts are arranged in a manner calculated to best resist the reaction of the axle-boxes against the load longitudinally by virtue of the longitudinal sills, transversely by the truss-rods and deck-planks, and diagonally by the diagonal sills. I thus produce a structure which is adapted to resist strain from any direction, and it is found in practice that cars of this class are subjected to all manner of stresses, owing to their comparatively heavy loads and to being tilted on and off of the tracks on one wheel and to numerous other strains.

The gallows-frame is made up of a pair of A-shaped standards I, which I also preferably form of sheet metal in channel-iron. These standards are slitted at their lower ends and turned up to engage the central sills A', to which they are secured by suitable rivets. The standards are further secured by means of the casing J, which embraces the lower portion thereof. This casing is formed of sheet metal and is shaped to embrace and closely fit upon the standards. The casing is provided with seats j to embrace the legs. The casing is made of such size as to engage the legs slightly before its lower edge contacts with the deck, so that when it is drawn down to the deck it is drawn very snugly upon the standards. The lower edge of the casing is flanged, as clearly appears in Fig. 4, and is secured to the deck by suitable rivets. The standards are thus rigidly locked together and secured in position. To further brace the same, X-shaped braces I' are arranged between the pair of standards. These braces are arranged both vertically and horizontally, so that the standards are braced against strain in all directions. By thus arranging the parts of the gallows-frame it may be of very light material and at the same time very rigid. The gallows-frame is, by arranging as I have described, braced so that the tendency to distort by the torsional and racking strains of the walking-beam is strongly resisted.

The walking-beam K is journaled in a suitable bearing K' on the top of the gallows-frame. The walking-beam is connected to the gear L by means of a suitable pitman L''. The gear L is arranged to mesh with the gear L' on one of the axles.

As before remarked, I am enabled to construct the same of very light material and at

the same time produce a structure which is strong and rigid.

I have illustrated and described my improved car in detail in the form preferred by me on account of its structural simplicity and economy. I am, however, aware that it is capable of very considerable variation in structural details without departing from my invention.

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

1. The combination of the longitudinal sills arranged in pairs; A-shaped diagonal sills arranged between said pairs of longitudinal sills; brace-sills arranged between the inner sills, forming continuations of said diagonal sills, said sills being formed of sheet metal bent into channel form, and being arranged on their edges; transverse truss-rods arranged through the outer sills and under the inner sills; truss-blocks for said rods arranged on said inner sills; a deck formed of plank arranged transversely to said longitudinal sills, said plank being formed of sheet metal and bent into channel form, and having longitudinal corrugations therein; angle-shaped raves arranged to engage the ends of said planks, secured to the outer sills; angle-iron end rails for said deck; and axle-boxes secured to said sills, for the purpose specified.

2. The combination of the longitudinal sills arranged in pairs; A-shaped diagonal sills arranged between said pairs of longitudinal sills; brace-sills arranged between the inner sills, forming continuations of said diagonal sills, said sills being formed of sheet metal bent into channel form, and being arranged on their edges; transverse truss-rods arranged through the outer sills and under the inner sills; truss-blocks for said rods arranged on said inner sills; a deck formed of plank arranged transversely to said longitudinal sills, said plank being formed of sheet metal and bent into channel form; angle-shaped raves arranged to engage the ends of said planks, secured to the outer sills; angle-iron end rails for said deck; and axle-boxes secured to said sills, for the purpose specified.

3. The combination of the longitudinal sills arranged in pairs; A-shaped diagonal sills arranged between said pairs of longitudinal sills; brace-sills arranged between the inner sills, forming continuations of said diagonal sills, said sills being formed of sheet metal bent into channel form, and being arranged on their edges; transverse truss-rods arranged through the outer sills and under the inner sills; truss-blocks for said rods arranged on said inner sills; a deck formed of plank arranged transversely to said longitudinal sills, said plank being formed of sheet metal and bent into channel form, and having longitudinal corrugations therein; angle-shaped raves arranged to engage the ends of said



plank being formed of sheet metal and bent into channel form and having longitudinal corrugations therein; angle-shaped raves arranged to engage the ends of said planks, secured to the outer sills; and axle-boxes secured to said sills, for the purpose specified.

8. The combination of the longitudinal sills arranged in pairs; **A**-shaped diagonal sills arranged between said pairs of longitudinal sills; brace-sills arranged between the inner sills, forming continuations of said diagonal sills, said sills being formed of sheet metal bent into channel form, and being arranged on their edges; transverse truss-rods arranged through the outer sills and under the inner sills; a deck formed of plank arranged transversely to said longitudinal sills, said plank being formed of sheet metal and bent into channel form; angle-shaped raves arranged to engage the ends of said planks, secured to the outer sills; and axle-boxes secured to said sills, for the purpose specified.

9. The combination of the longitudinal sills arranged in pairs; **A**-shaped diagonal sills arranged between said pairs of longitudinal sills; brace-sills arranged between the inner sills, forming continuations of said diagonal sills, said sills being formed of sheet metal bent into channel form, and being arranged on their edges; transverse truss-rods arranged through the outer sills and under the inner sills; a deck formed of plank, arranged transversely to said longitudinal sills, said plank being formed of sheet metal and bent into channel form, and having longitudinal corrugations therein; and axle-boxes secured to said sills, for the purpose specified.

10. The combination of the longitudinal sills arranged in pairs; A-shaped diagonal sills arranged between said pairs of longitudinal sills; brace-sills arranged between the inner sills, forming continuations of said diagonal sills, said sills being formed of sheet metal bent into channel form, and being arranged on their edges; transverse truss-rods arranged through the outer sills and under the inner sills; a deck formed of plank arranged transversely to said longitudinal sills, said plank being formed of sheet metal and bent into channel form; and axle-boxes secured to said sills, for the purpose specified.

11. The combination of the longitudinally-arranged sills; diagonally-arranged sills, said sills being formed of sheet metal bent into channel form, and being arranged on their edges; transverse truss-rods; a deck formed of plank arranged transversely to said longitudinal sills, said plank being formed of sheet metal bent into channel form, and having longitudinal corrugations therein; angle-shaped raves arranged to engage the ends of said planks, secured to the outer sills, for the purpose specified.

12. The combination of the longitudinally-arranged sills; diagonally-arranged sills, said 130



sills being formed of sheet metal bent into channel form, and being arranged on their edges; transverse truss-rods; a deck formed of plank arranged transversely to said longitudinal sills, said plank being formed of sheet metal bent into channel form; angle-shaped raves arranged to engage the ends of said planks, secured to the outer sills, for the purpose specified.

13. The combination of the longitudinally-arranged sills; diagonally-arranged sills, said sills being formed of sheet metal bent into channel form, and being arranged on their edges; transverse truss-rods; a deck formed of plank arranged transversely to said longitudinal sills, said plank being formed of sheet metal bent into channel form and having longitudinal corrugations therein, for the purpose specified.

14. The combination of the longitudinally-arranged sills; diagonally-arranged sills, said sills being formed of sheet metal bent into channel form, and being arranged on their edges; transverse truss-rods; a deck formed of plank arranged transversely to said longitudinal sills, said plank being formed of sheet metal bent into channel form, for the purpose specified.

15. The combination of longitudinally and diagonally arranged metal sills; a deck; truss-rods coacting with said deck and sills to form a trussed platform; and truss-blocks having grooves therein in which said truss-rods are arranged for locking the sills in position, for the purpose specified.

16. The combination with a deck of longitudinal sills therefor arranged at the sides and centrally thereof; diagonally-arranged sills for said deck secured to said longitudinal sills; truss-rods arranged transversely of said longitudinal sills, coacting with said deck and sills to form a trussed platform, the said deck being arranged to form the compression member of the truss, and means of securing the center sills to the truss-rods, for the purpose specified.

17. The combination of longitudinally and diagonally arranged metal sills; a deck made up of trough-shaped metal planks; top raves secured to the outer sills engaging over the ends of said planks; and truss-rods coacting with the deck and sills to form a trussed platform, for the purpose specified.

18. The combination of longitudinally and diagonally arranged metal sills; a deck formed of corrugated metal; and truss-rods arranged to coact with said deck and sills to form a trussed platform, for the purpose specified.

19. The combination with longitudinal sills of metal, of diagonally-arranged sills of metal; a deck formed of sheet-metal planks; metal top raves inclosing the ends of said deck-planks; and truss-rods, said truss-rods coacting with said sills and deck and top

raves to form a trussed platform, for the purpose specified.

20. The combination with a deck of longitudinal sills therefor of metal arranged at the sides and centrally thereof; diagonally-arranged sills of metal for said deck, secured to said longitudinal sills; and truss-rods arranged transversely of said longitudinal sills, coacting with said deck and sills to form a trussed platform, the said deck being arranged to form the compression member of the truss, for the purpose specified.

21. The combination with a deck of longitudinal sills therefor arranged at the sides and centrally thereof; diagonally-arranged sills for said deck, secured to said longitudinal sills; and truss-rods arranged transversely of said longitudinal sills, coacting with said deck and sills to form a trussed platform, the said deck being arranged to form the compression member of the truss, for the purpose specified.

22. In a hand-car, the combination of the sills; a deck; a gallows-frame consisting of a pair of A-shaped standards formed of sheet metal bent into channel form, secured to said sills; a sheet-metal casing embracing and engaging the lower part of said supports, said casing having seats therein to receive said supports, secured to said sills and deck; and X-shaped connecting-brace for said standards, for the purpose specified.

23. In a hand-car, the combination of the sills; a deck; a gallows-frame consisting of a pair of A-shaped standards formed of sheet metal bent into channel form, secured to said sills; a sheet-metal casing embracing and engaging the lower part of said supports, said casing having seats therein to receive said supports, secured to said sills and deck, for the purpose specified.

24. In a hand-car, the combination of the sills; a deck; a gallows-frame consisting of a pair of A-shaped standards formed of sheet metal bent into channel form, secured to the sills; a sheet-metal casing embracing and engaging the lower part of said supports, secured to said deck and sills; and a horizontally-disposed X-shaped connecting-brace for said standards, for the purpose specified.

25. In a hand-car, the combination with a deck of a pair of A-shaped standards formed of sheet metal bent into channel form; an upwardly-tapering sheet-metal casing having seats therein to receive said standards, said casing being made of such size as to engage the standards before its lower edge contacts with the deck; means for drawing said casing down upon said standards and securing it to said deck for compressing and supporting said standards; and a horizontally-arranged X-shaped brace connecting the upper ends of said standards, for the purpose specified.

26. In a hand-car, the combination with a



deck of a pair of **A**-shaped standards formed of sheet metal bent into channel form; an upwardly-tapering sheet-metal casing having seats therein to receive said standards, said casing being made of such size as to engage the standards before its lower edge contacts with the deck; and means for drawing said casing down upon said standards and securing it to said deck for compressing and supporting said standards, for the purpose specified.

27. In a hand-car, the combination with a deck of a pair of **A**-shaped standards formed of sheet metal bent into channel form; an upwardly-tapering sheet-metal casing, said casing being made of such size as to engage the standards before its lower edge contacts with the deck; means for drawing said casing down upon said standards and securing it to said deck for compressing and supporting said standards; and a horizontally-arranged **X**-shaped brace connecting the upper ends of said standards, for the purpose specified.

28. In a hand-car, the combination with a deck of a pair of **A**-shaped standards formed of sheet metal bent into channel form; an upwardly-tapering sheet-metal casing; said casing being made of such size as to engage the standards before its lower edge contacts with the deck; and means for drawing said casing down upon said standards and securing it to said deck for compressing and supporting said standards, for the purpose specified.

29. In a hand-car, the combination with a deck of a pair of **A**-shaped standards; an upwardly-tapering sheet-metal casing having seats therein to receive said standards, said casing being made of such size as to engage the standards before its lower edge contacts with the deck; means for drawing said casing down upon said standards and secur-

ing it to said deck for supporting said standards; and a horizontally-arranged **X**-shaped brace connecting the upper ends of said standards, for the purpose specified

30. In a hand-car, the combination with a deck of a pair of **A**-shaped standards; an upwardly-tapering sheet-metal casing having seats therein to receive said standards, said casing being made of such size as to engage the standards before its lower edge contacts with the deck; and means for drawing said casing down upon said standards and securing it to said deck for supporting said standards, for the purpose specified.

31. In a hand-car, the combination with a deck of a pair of **A**-shaped standards; an upwardly-tapering sheet-metal casing, said casing being made of such size as to engage the standards before its lower edge contacts with the deck; means for drawing said casing down upon said standards and securing it to said deck for supporting said standards; and a horizontally-arranged **X**-shaped brace connecting the upper ends of said standards, for the purpose specified.

32. In a hand-car, the combination with a deck of a pair of **A**-shaped standards; an upwardly-tapering sheet-metal casing, said casing being made of such size as to engage the standards before its lower edge contacts with the deck; and means for drawing said casing down upon said standards and securing it to said deck for supporting said standards, for the purpose specified.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

WARREN H. MILLER. [L. s.]

Witnesses:

AMELIA J. ALBER,  
OTIS A. EARL