

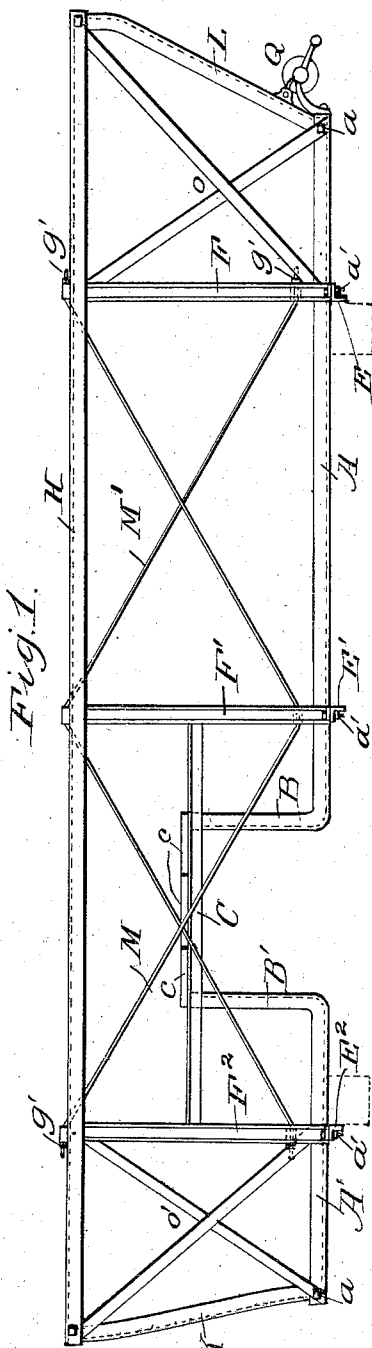
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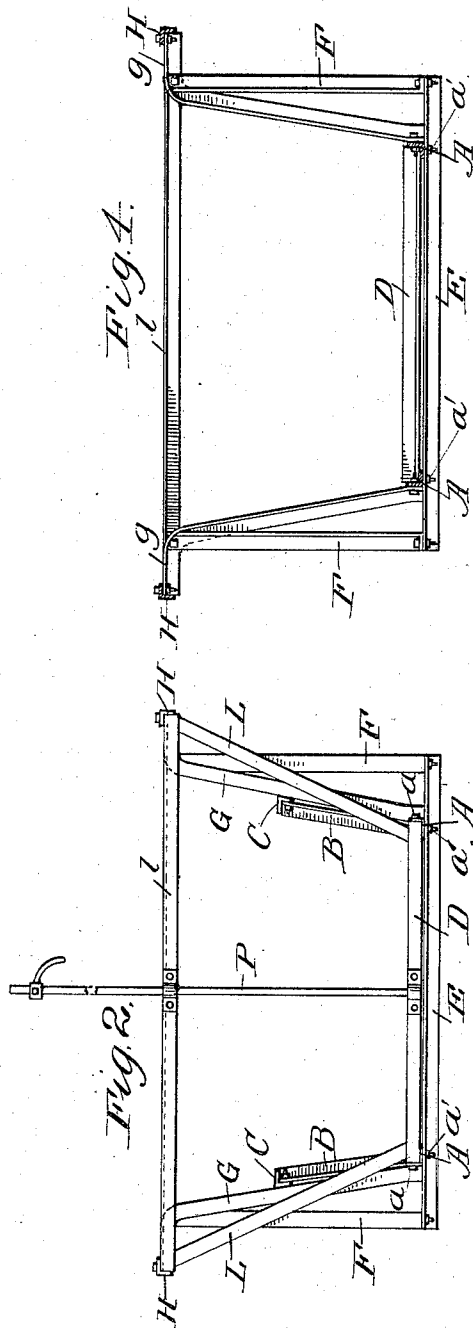
J. L. REEVES & J. F. MORRIS.
HAY RACK.

No. 558,842.

Patented Apr. 21, 1896.



Witnesses,
Chas. W. Parker.
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Inventors,
John L. Reeves
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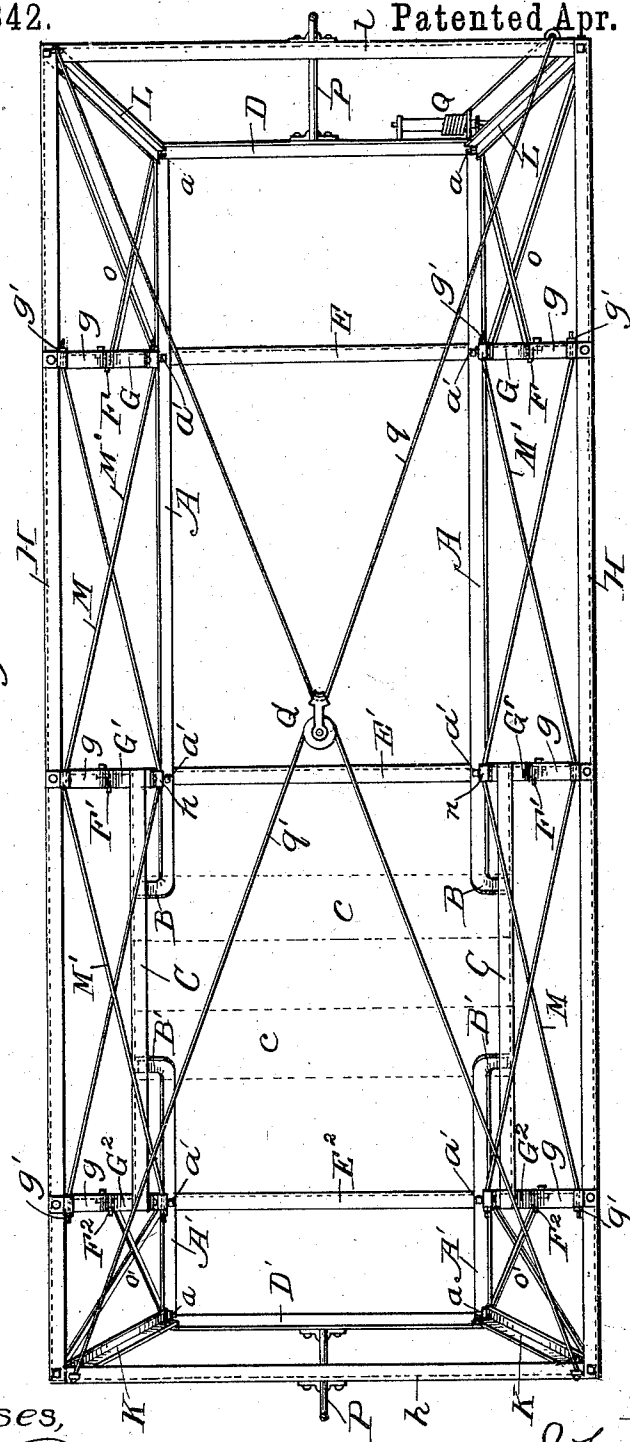
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Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN L. REEVES AND JOHN F. MORRIS, OF FORDYCE, PENNSYLVANIA;
SAID MORRIS ASSIGNOR TO SAID REEVES.

HAY-RACK.

SPECIFICATION forming part of Letters Patent No. 558,842, dated April 21, 1896.

Application filed July 25, 1895. Serial No. 557,113. (No model.)

To all whom it may concern:

Be it known that we, JOHN L. REEVES and JOHN F. MORRIS, citizens of the United States, residing at Fordyce, in the county of Greene and State of Pennsylvania, have invented certain new and useful Improvements in Hay-Racks; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improvement in hay-racks; and it is embodied in the structure hereinafter described, and definitely pointed out in the claims.

The invention consists, primarily, in an improvement in the formation and arrangement of the constituent members of a hay-rack, whereby metal may be employed to an advantage in the structure throughout, and, further, to construct a hay-rack which will be a commercial article—that is, one which may be disposed of to dealers, who can conveniently handle the racks as articles of trade.

Heretofore it has been usual and customary for farmers to have their racks built to order, and owing to the size and weight it has not as a rule been practical to put racks on the market as other farming-machines, such as reapers, &c., are. It is therefore clearly apparent that were it possible to construct a hay-rack so that it would meet all the requirements and could be manufactured and shipped to dealers as are farming-machines and by them sold as entireties it would be an important advance in this art.

In constructing a commercial hay-rack it is first necessary to supply the requisite strength to the structure and at the same time to have it light and susceptible of easy handling.

The object of this invention is to form a light, strong, and durable rack, and to so fashion the same that it will overcome the commercial objections heretofore existing.

The invention is illustrated in the accompanying drawings, wherein like letters of reference designate corresponding parts in the several views, and in which—

Figure 1 is a side elevation. Fig. 2 is an end view. Fig. 3 is a top plan. Fig. 4 is a cross-section.

In constructing the rack we employ metal for all of the parts.

A designates the longitudinal bottom sills, one on each side, extending from the rear end of the rack to points slightly forward of the center. These sills are formed of angle-steel and their forward ends are struck or bent up at right angles, as at B.

A' designates the forward bottom sills, extending from the front of the rack back a short distance, their rear ends being bent up at right angles, as at B'. The ends B B' terminate on the same plane, preferably intermediate between the bottom and top planes of the rack, and are united at their upper ends only by the connecting-bars C, which extend in opposite directions beyond the ends B B', for purposes hereinafter described.

The sills A A' are each united with its companion sill at their outer ends by the cross-bars D D', preferably of angle-steel. The horizontal flanges of the angle-steel in the cross-bars and sills are below the vertical flanges and preferably extend inward. In uniting the cross-bars to the sills we employ suitable tap-bolts *a*, so that the parts may be readily disconnected. Spanning the frame which constitutes the bottom are the transverse or sub sills E E' E² arranged, preferably, equidistantly apart. These subsills are formed of angle-steel and project at opposite ends beyond the sills A A'. They are bolted to the longitudinal sills by removable bolts *a'*, passing through the horizontal flanges of the sills, the horizontal flanges of the subsills being above the vertical flanges.

Springing vertically from the outer ends of the subsills are the uprights or pillars F F' F², formed of angle-steel. Located between the uprights and the longitudinal sills are the inclined braces G G' G², each having its lower end made fast to the longitudinal sills. These braces are carried up at an outward inclination, and their upper ends are bent or curved outwardly, as at *g*, beyond the uprights, which latter are secured to the bends *g* at or near the inner ends of the curved or angle-section, so that there is substantially a direct incline of the brace from the top of the upright to the longitudinal sill.

On the outer ends of the sections *g* are se-

cured the longitudinal tie-beams H, extending in a straight unbroken line from front to rear of the rack. These tie-beams are formed of angle-steel and project beyond the plane of the sides of the sills A A'. They constitute in addition to their function as tie-beams the fender for the wheels, their position being to lie above and laterally beyond the plane of the wheels. The forward ends of the beams H and sills A' are united by the upright forwardly and laterally curved braces K, rigidly secured at opposite ends, and the ends of the beams H are united by the cross-bar *h*, spanning the rack and united to the beams by removable tap-bolts, so that the bar may be readily removed. The rear ends of the beams H are united with the rear ends of the sills A by the rearwardly and laterally inclined braces L, while the upper ends of the beams at their rear are united by the cross-bar *l*, the union being effected by removable bolts.

The uprights F' F² are arranged, respectively, at the center of the rack and at a point directly in advance of the point across which the forward bolster extends, as shown in dotted lines, Fig. 1. The braces of these uprights are united firmly to the opposite ends, respectively, of the connecting-bars C. By this means the wheel-arch is formed and the strength of the union between the forward and central parts of the rack unimpaired, as the upright sections of sills A A', in conjunction with the braces and bars C, constitute a well-braced and rigid connection. The bars C also serve to support the bottom boards *c*.

The rear subsill E is located to assume a position directly behind the rear bolster, as shown in dotted lines, Fig. 1, so that any forward creeping or movement of the rack will be interrupted or prevented.

By the construction above described it will be seen that an open framework rack is formed in which the fewest possible number of parts are employed.

To adapt the rack to heavy loads or loads of the usual as well as greater weight than it is customary to place on racks we distribute the thrust or strain in opposite directions from the center to the rear and front subsills and braces. To accomplish this we secure to the upper and lower ends of the braces G G² of the uprights, or, if desirable, to the uprights, the truss-rods M M', the former extending obliquely down to the base of brace G', passing through a sleeve *n* on the brace and from there upward to the top of brace G². The latter truss M' is extended from the bottom of brace G to the top of brace G', passing through a sleeve on the brace and from there down to the base of brace G². Each end of the truss-rods is passed through suitable apertures and has the tap-nuts *g'* thereon, so that the tension of the braces may be varied by manipulating the nuts at either end.

The frame between the end braces and braces G G² is trussed by the diagonal crossed

braces *o o'*. By trussing the frame as described and employing the continuous tie-beams the compression tendency of the frame at the center is wholly overcome by virtue of centering the load on the axles of the wagon and against the bolsters.

The truss M' may be termed the "drawing" truss, while the truss M is the compression-resisting truss. As the load is placed on the center it is evident that the strain on the central part will be resisted by the truss M, which will tend to draw the tops of braces G and G² with their uprights toward the center. This tendency is checked by the braces *o* and *o'*, through the end connecting-brace, lower sills, and tie-beams.

It will be noticed that the top of the rack has no cross or lateral central connections, and we have found that such is wholly unnecessary, inasmuch as the peculiar location of the uprights and their inclined braces effectually prevent any lateral movement or spreading of the rack at the center, the braces acting as trusses.

It will be noticed that the principal feature of the structure is its formation of light strong material, which is preferably rolled steel, and so arranging the parts that the central portion will not sag or break by the load. This feature, we may state, is the essential feature which enables us to construct a rack which will be sufficiently light and strong to enable it to be handled by the trade, and when in use to answer as well, if not better, all of the requirements of the ordinary racks.

It is to be understood that the construction may be variously altered and modified and yet retain its feature of preventing the central unsupported section from collapsing or warping, by bracing it from the ends, on lines with the sides of the rack.

In shipment, each side, which constitute entireties, may be separated by removing the cross-bars and subsills, the side frames placed together, and the parts properly crated. The assembling of the parts will be readily effected.

In connection with the rack we may employ the boom-supports P, which are supported at opposite ends in slips on the cross-bars. We have found that the better form is to mount a small drum Q on one of the lower cross-bars and to connect a rope *q* to the drum, passing the same through suitable block or pulley Q', and thence back to the opposite end of the cross-bar. A similar rope *q'* is attached to the forward cross-bar and passes through the pulley-eye.

While we have shown a practical and, by actual test, a very efficient form of rack, we wish it understood that we do not limit ourselves to the identical form described and shown.

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

1. A metallic hay-rack comprising two open side frames, cross-bars connecting the bases of the frames, and cross-bars connecting the upper sides of the rear and forward ends of the frames, laterally-braced uprights at the sides of the frames, and means for supporting the central portions of the frames from points at or near the ends thereof, substantially as described.

2. A metallic hay-rack consisting of two like open metallic frames, means for detachably connecting the lower sills of the frames, detachable cross-bars uniting the upper portions of the ends of the frames, laterally-braced uprights at the center of the frames, and suitable means for bracing the center of the frames from the ends, substantially as described.

3. A metallic hay-rack, comprising two open frames, forming the sides, connections between the frames, trussed uprights at the sides of the frames having their upper ends bent laterally beyond the frames, trusses extending from at or near the ends to the center of the frame, and each frame having continuous tie-beams at their tops, secured to the lateral extensions of the uprights substantially as described.

4. A metallic hay-rack consisting of open side frames, having overhanging continuous tie-beams at their upper edges, laterally-braced uprights supporting the beams, and a trussed connection between the opposite end portions of the frames and center, and means for uniting the frames, substantially as described.

5. A metallic hay-rack consisting of open side frames, each comprising longitudinal sills and transverse subsills uprights on the subsills, inclined braces extending from the sills to the upper ends of the uprights, a tie-beam extending from end to end of the frame, connections between the end of the beam and sill, truss-braces between the inclined braces and between the braces and end connections, substantially as described.

6. A metallic hay-rack consisting of two open side frames, each comprising sectional longitudinal sills, separated and having upright projections at their contiguous ends, uprights at the sides of the frames, and a connecting-bar between two of the uprights and the upper ends of the upright projections, substantially as described.

7. A metal hay-rack consisting of independent open side frames, means for preventing the deflection of the center of the frames, comprising suitable braces extending from the center to points adjacent to the end, side uprights provided with lateral truss-braces, and cross-bars at the tops of the ends only of the frames substantially as described.

8. A metallic hay-rack comprising two open side frames means for detachably securing the frames together at the bottom and ends, and braces for preventing the vertical deflection of the center of the frames, extending from at or near the ends to the center thereof, substantially as described.

9. A metallic hay-rack consisting of two open longitudinal side frames, means for securing the bottoms and ends of the frames together, means for bracing the center of the frames from at or near the end, and overhanging tie-braces on the upper portion of the frames, substantially as described.

10. A metallic hay-rack consisting of two independent open side frames, means for securing the bottoms and ends of the frames together, braces for supporting the centers of the frames from points at or near the ends, to prevent their vertical deflection, and means at or near the center of the frames for preventing their lateral deflection, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN L. REEVES.

JOHN F. MORRIS.

Witnesses:

J. P. TOUGARDEN,

S. F. GRIM.