

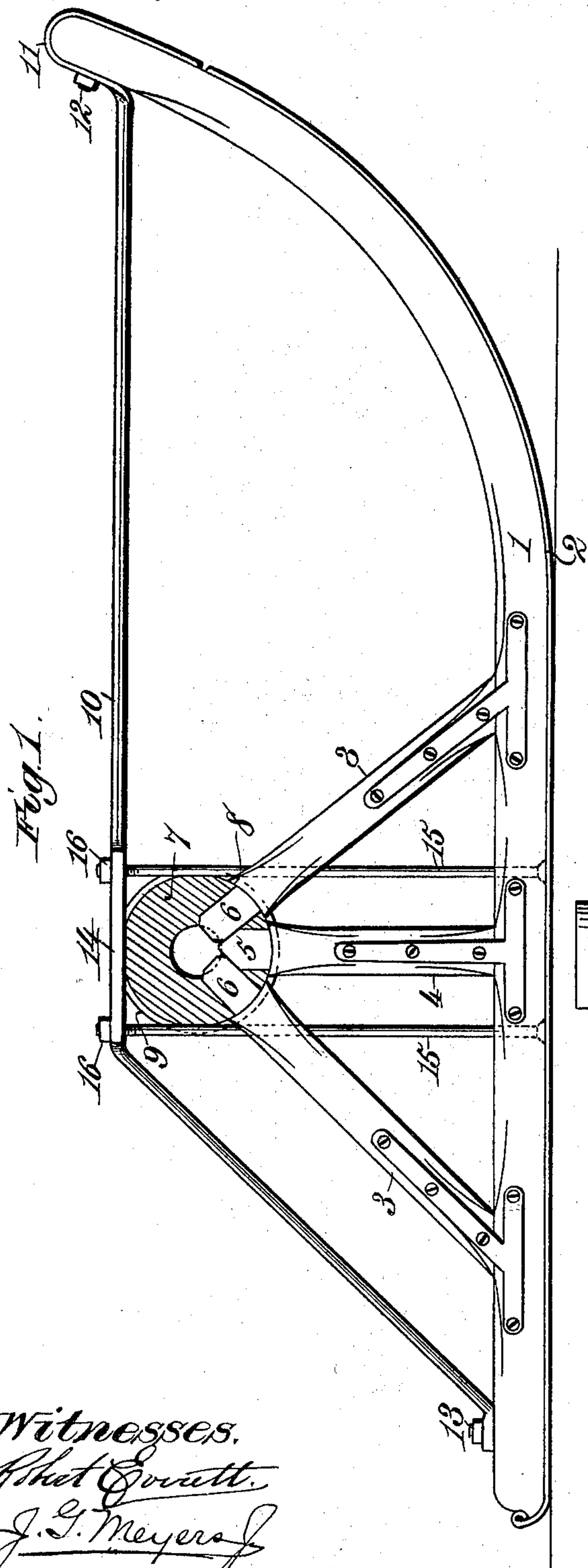
No. 610,082.

**Patented Aug. 30, 1898.**

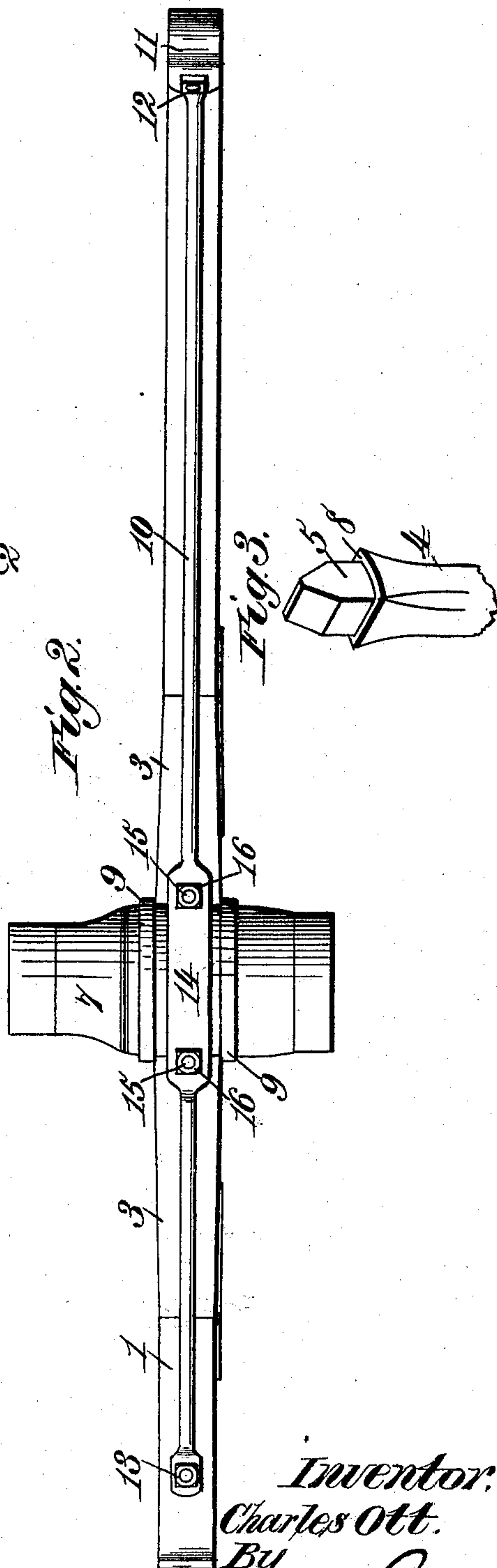
C. OTT.  
SLEIGH RUNNER.


(Application filed Apr. 21, 1898.)

(No Model.)



Witnesses,  
Robert Everett,  
J. G. Meyers



18  *Inventor:*  
*Charles Ott.*  
*By*  
*James L. Norris.*  
*Att'y.*



# UNITED STATES PATENT OFFICE.

CHARLES OTT, OF CLINTON, IOWA.

## SLEIGH-RUNNER.

SPECIFICATION forming part of Letters Patent No. 610,082, dated August 30, 1898.

Application filed April 21, 1898. Serial No. 678,379. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES OTT, a citizen of the United States, residing at Clinton, in the county of Clinton and State of Iowa, have invented new and useful Improvements in Sleigh-Runners, of which the following is a specification.

This invention relates to sleigh-runners, and particularly to that class of runners that are designed to be substituted for the wheels of vehicles, whereby the latter may be converted from wheeled vehicles into sleighs; and it has for its object to provide sleigh-runners of the type described which will combine lightness with exceeding strength and which will be capable of supporting very heavy loads.

To this end my invention consists in the features and in the construction, combination, and arrangement of parts hereinafter described, and particularly pointed out in the claims following the description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a sectional elevation of my improved sleigh-runner. Fig. 2 is a top plan view thereof, and Fig. 3 is a detail perspective view of one of the knees.

Referring to the drawings, the numeral 1 indicates the runner, formed of bent wood and shod on its under side with an iron or steel strip or shoe 2, as usual. Mortised in the runner 1 are three knees, the numeral 3 indicating the outer inclined knees and 4 the central knee, which is arranged vertically between the outer knees. The upper end of the central knee 4 is provided with a wedge-shaped tenon 5, and the upper ends of the inclined knees 3 are provided with straight tenons 6. The tenons 5 and 6 are fitted in a mortise in a hub 7, the shoulders 8 on the ends of the knees resting against the periphery of the hub and the inner faces of the tenons 6 pressing against the inclined faces of the wedge-shaped tenon 5. When the central tenon is driven into the mortise between the tenons 6, its wedge-shaped end operates to firmly press the tenons together in the mortise, making a tight and strong connection between the knees and the hub. Annular metallic bands or hoops 9 are driven over the opposite ends of the hubs and against the knees, bracing and strengthening the hub and guarding against splitting.

Extending over the hub between the bands or hoops 9 is a rave 10, consisting of a metallic rod which at its forward end is bent into hook shape, as at 11, to straddle the upper end of the runner and is bolted to the latter by a bolt 12. The rear portion of the rave is bent downward and extends from the hub to the rear end of the runner and is rigidly fastened to the latter by a bolt 13. That portion of the rave which lies on the hub is preferably flattened, as at 14, to afford a broad bearing-surface for engaging the hub and to afford additional strength. Arranged on the opposite sides of the hub are tie-bolts 15, the headed lower ends of which pass through bolt-holes in the runner and up through perforations in the knees 3 and at their upper ends are threaded and pass through bolt-holes in the flattened portion 14 of the rave.

Nuts 16 are screwed on the upper ends of the tie-bolts, and by tightening up said nuts the tie-bolts operate to firmly draw the knees and hub together. The rave 10, extending from the upturned front end of the runner to the rear end thereof, forms a very strong brace against all longitudinal strains on the runner and in connection with the knees, mortised in the hub in the manner shown, gives to the entire runner great stiffness and rigidity and enables it to safely support and carry very heavy loads. Moreover, the tie-bolts extending from the runner to the rave operate to tie both of said parts and the hub and knees tightly together, and should the knees become loose in either the hub or the runner they may be instantly tightened therein by screwing up the nuts on the upper ends of the bolts.

As will be readily understood by those skilled in the art, the runners constructed as above described are designed to be substituted for the wheels of vehicles, the hubs of the runners being applied to the wheel-axles in the same manner as the wheel-hubs, whereby the vehicle may be immediately converted from a wheeled vehicle into a sleigh, and vice versa, as conditions may render desirable or necessary.

Having described my invention, what I claim is—

1. The combination with a sleigh-runner,



of a hub, a plurality of knees mortised at their opposite ends in the runner and hub, a rave attached at its opposite ends to the opposite ends of the runner and extending over and bearing on the hub, and tie-bolts for attaching the rave to the runner on opposite sides of the hub, substantially as described.

2. The combination with a sleigh-runner of a hub, a plurality of knees mortised at their opposite ends to said runner and hub, a rave consisting of a metallic rod having a hook-shaped forward end embracing the turned-up end of the runner and bolted thereto, and extending over the hub and bolted to the rear end of the runner, said rave having a flattened portion resting on the hub and bolted to the runner, substantially as described.

3. The combination with a sleigh-runner, of a hub, a plurality of knees mortised at their opposite ends in said runner and hub, a rave extending over and resting on the hub and attached at its opposite ends to the opposite ends of the runner, tie-bolts attached at their lower ends to the runner and at their upper,

threaded ends passing through the rave on opposite sides of the hub, and nuts screwed over the upper ends of the rave and operating to draw the latter and the hub, knees and runner tightly together, substantially as described.

4. The combination with a sleigh-runner, of a hub, three knees attached at their lower ends to the runner, and provided at their upper ends with tenons mortised into the hub, the tenon on the central knee being wedge-shaped and pressing against the adjacent faces of the tenons on the inclined knees, a rave resting on top of the hub, and tie-bolts attached to the rave and runner on opposite sides of the hub, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHARLES OTT.

Witnesses:

WILLIAM HENRY GEARMAN,  
GEORGE D. McDAID.