(No Model.) 2 Sheets—Sheet 1.

J. LEDMAN.

SLED.

No. 548,759. Patented Oct. 29, 1895.

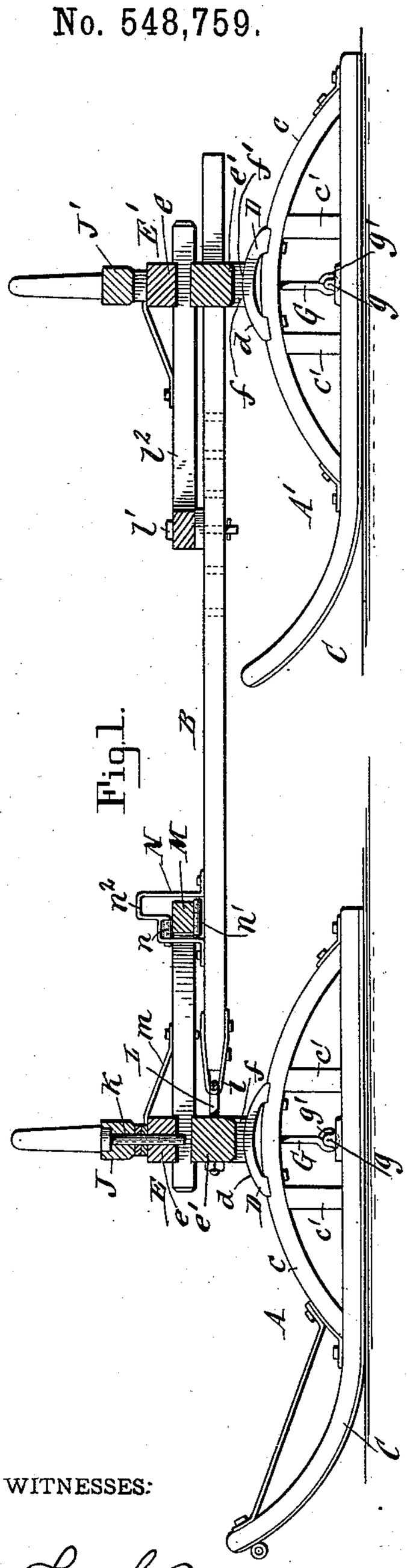

Fig. 1.

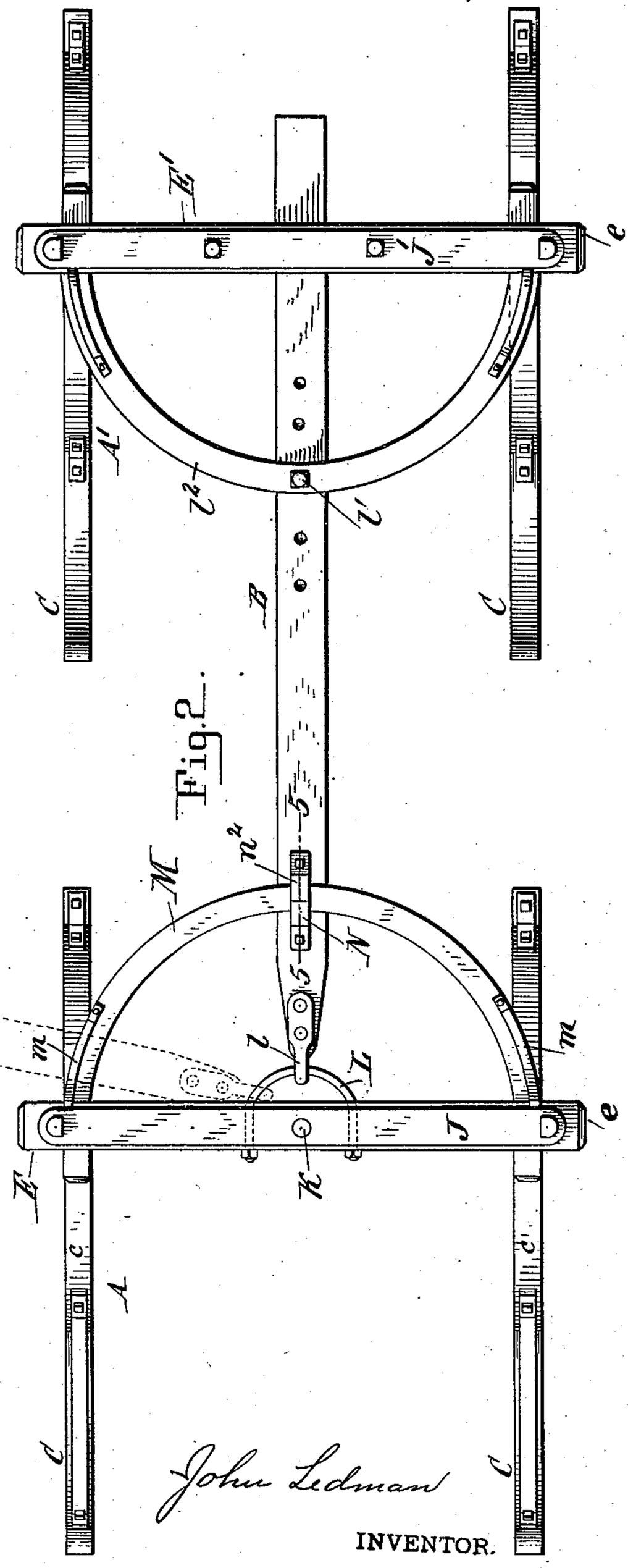

Fig. 2.

WITNESSES:

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John Ledman
INVENTOR.

By Wilhelm & Bonnet.
ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

J. LEDMAN.

SLED.

No. 548,759. Patented Oct. 29, 1895.

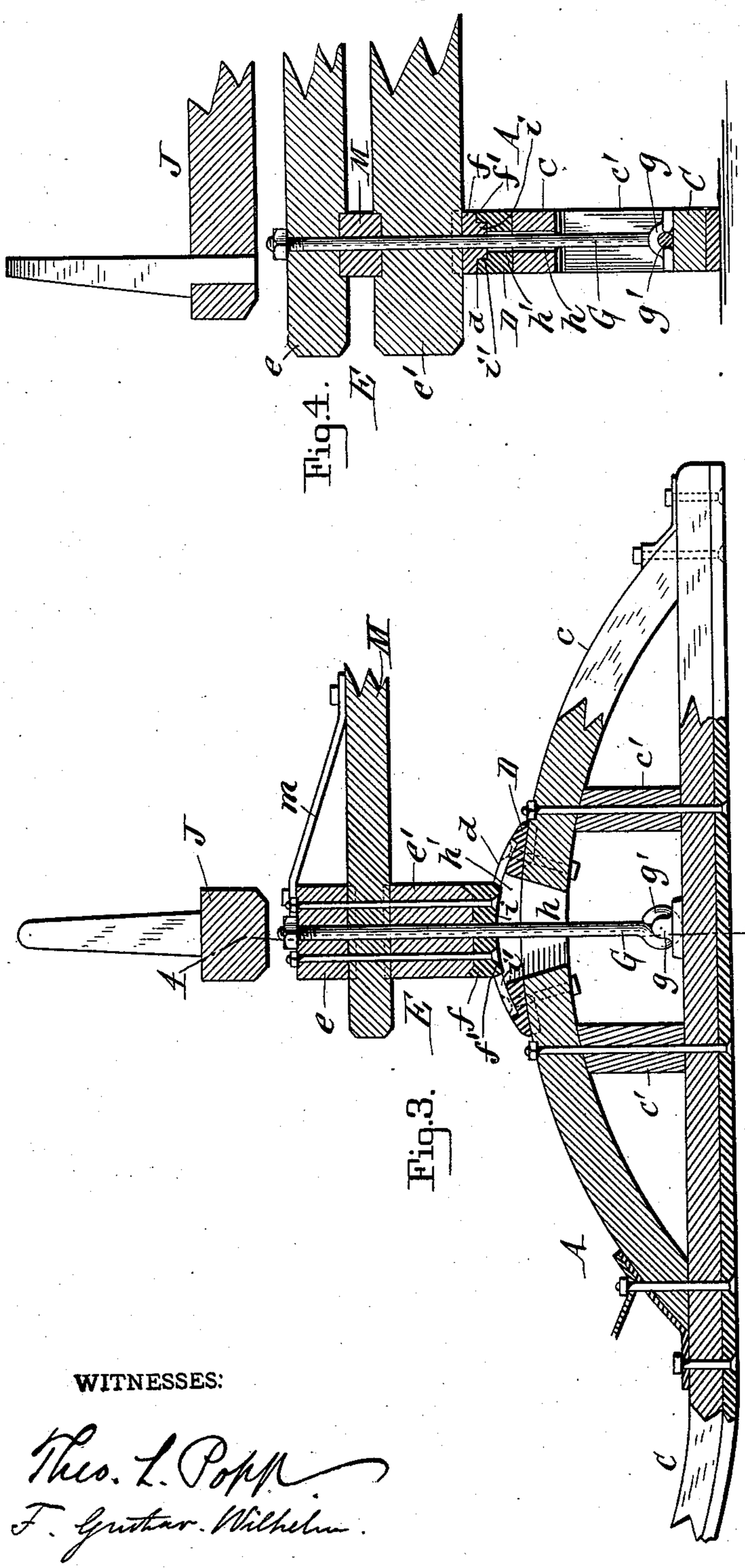

Fig. 4.

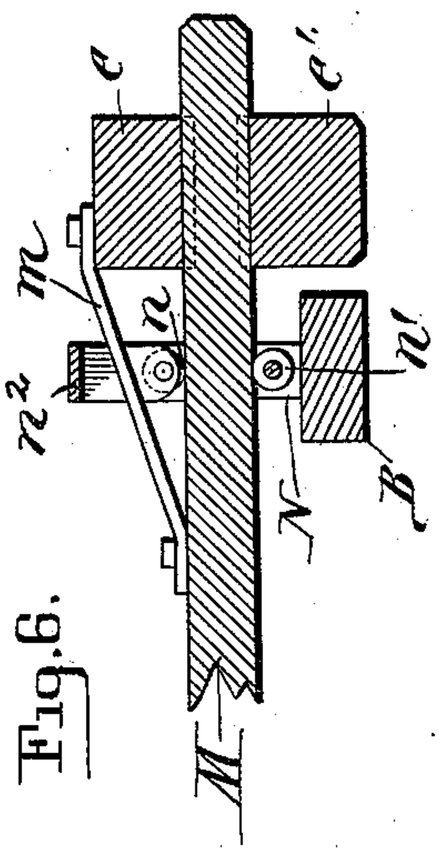

Fig. 6.

Fig. 3.

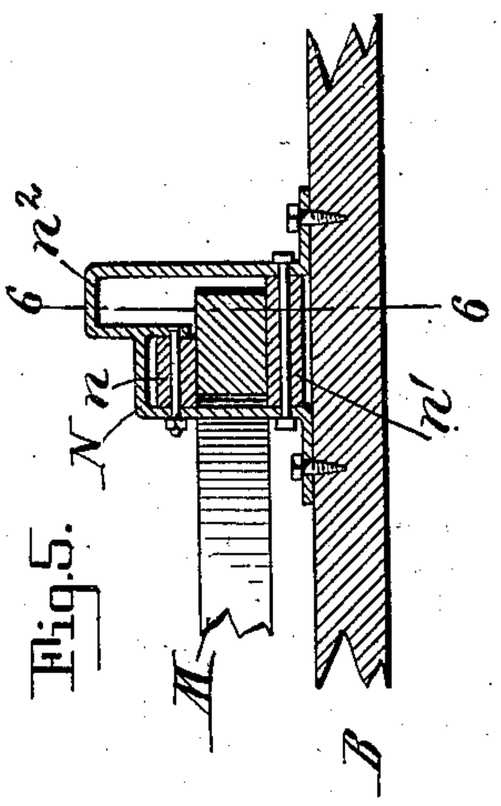

Fig. 5.

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UNITED STATES PATENT OFFICE.

JOHN LEDMAN, OF SILVER CREEK, NEW YORK, ASSIGNOR OF ONE-THIRD TO WALTER I. LANPHERE, OF SAME PLACE.

SLED.

SPECIFICATION forming part of Letters Patent No. 548,759, dated October 29, 1895.

Application filed May 28, 1894. Serial No. 512,631. (No model.)

To all whom it may concern:

Be it known that I, JOHN LEDMAN, a citizen of the United States, residing at Silver Creek, in the county of Chautauqua and State of New York, have invented a new and useful Improvement in Sleds, of which the following is a specification.

This invention relates to that class of sleds which are composed of front and rear sleds connected by a reach.

My invention has the object to improve the pivotal connection between the runners and the cross-beams, to improve the connection between the reach and the front sled, and to improve the sled in various details of construction.

In the accompanying drawings, consisting of two sheets, Figure 1 is a longitudinal sectional elevation of a pair of sleds provided with my improvement. Fig. 2 is a top plan view of the same. Fig. 3 is a fragmentary vertical section, on an enlarged scale, taken lengthwise through one of the runners and connecting parts. Fig. 4 is a vertical cross-section in line 4 4, Fig. 3. Fig. 5 is a fragmentary vertical section, on an enlarged scale, in line 5 5, Fig. 2, showing the means for reducing the friction between the segment and the reach. Fig. 6 is a fragmentary vertical section in line 6 6, Fig. 5, showing the position of the parts when the front sled is turned to one side.

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

A A′ represent the front and rear sleds, and B the reach connecting the same.

C represents the runners of the sleds, each of which is provided on its upper side with a curved arch *c* and two vertical braces *c′*, connecting the arch with the runner.

D represents a rider-plate secured lengthwise upon the crown of the arch and provided on its upper side with a curved face *d*.

E E′ represent the cross-beams of the front and rear sleds, each of which consists, preferably, of an upper member *e* and a lower member *e′*. Each of the lower members of these beams is provided on its under side, near each end, with a rider-block *f*, having a curved face *f′* on its under side, which rests upon the curved face of a rider-plate. When the runner rocks in passing over uneven surfaces, the rider-plate slides back and forth on the rider-block as the runner changes its position with reference to the cross-beam.

G represents vertical tie-rods whereby the runners are connected with the cross-beams. Each of these rods is pivotally connected with one of the runners by a loop *g*, secured to the upper side of the runner and passing loosely through an eye *g′* on the lower end of the tie-rod. The contact-faces of the rider plate and block are curved concentric with the pivotal connection between the tie-rod and runner, which avoids binding of the parts when the runner rocks. The upper portion of the tie-rod passes through the rider-block and the beam, and is secured thereto by a nut applied to the upper end of the rod and bearing against the upper member of the cross-beam. The central portion of the tie-rod passes through longitudinal slots *h h′*, formed, respectively, in the arch and the rider-plate, thereby permitting the runner to rock without interfering with the tie-rod.

In order to prevent the tie-rod from being bent or sheared off when the runner is strained laterally, the under side of the rider-block is provided with a rib or projection *i*, which fits into a longitudinal groove *i′* in the top of the rider-plate, as represented in Figs. 2, 3, and 4. The rib and groove of the rider plate and block interlock these parts and prevent any lateral pressure against the runner from affecting the tie-rod, thereby enabling the runner to rock freely on the rider-block. The ends of the rib are adapted to strike stops or shoulders formed by the ends of the groove in the rider-plate for limiting the rocking movement of the runner.

J is the front bolster, which is pivoted upon the front cross-beam by a king-bolt *k*, and J′ is the rear bolster, which is rigidly secured to the rear cross-beam.

L represents a reach-attaching segment arranged in rear of the front cross-beam and provided with arms at its ends which are secured to the front cross-beam. The front end of the reach is provided with a loop *l*, which embraces the attaching-segment and slides thereon upon turning the front sled. This connection between the reach and front sled

is very strong and permits the front sled to turn very short. By connecting the reach with the front cross-beam instead of with the front bolster, as practiced heretofore, a much stronger connection is made between these parts and tilting of the bolster is avoided. The rear end of the reach is capable of sliding through the cross-beam of the rear sled, and is secured by a bolt l' to a forwardly-projecting segment l^2, connected with the rear beam.

M represents a steadying-segment or sway-bar arranged above the reach in rear of the front cross-beam and secured with its ends between the upper and lower members of said beam.

m represents inclined braces extending from the top of the upper member of the front cross-beam downwardly and rearwardly to the end portions of the steadying-segment.

The front cross-beam is held in an upright position by means of a frame N, secured to the upper side of the reach, embracing the steadying-segment and provided with anti-friction-rollers $n\,n'$, which bear, respectively, against the upper and lower sides of the steadying-segment. In order to prevent the roller-frame from striking the braces m when the front sled is turned its fullest extent, said frame is provided with an upwardly-bent loop or bridge n^2, which is adapted to straddle either brace, as represented in Fig. 6, upon turning the front sled to its limit in either direction.

The attaching and steadying segments are curved concentric with the king-bolt, so as to prevent binding of the parts.

I claim as my invention—

1. The combination with the runner and the cross beam, of an arch secured to the runner, a rider plate secured upon the arch and provided with a curved face and a groove having stops or shoulders at its ends, a rider block secured to the cross beam and provided with a curved face bearing against the face of the rider plate, a rib formed on the rider block and adapted to engage with its sides against the sides of said groove to hold the rider block against lateral movement and against the stops or shoulders at the ends of the groove to limit the lengthwise movement of the rider block on the rider plate and a rod movably connecting the cross beam and the runner, substantially as set forth.

2. The combination with the runner and the cross beam, of an arch secured to the runner, a rider plate secured to the arch and provided with a curved face, a rider block secured to the beam and bearing against the rider plate, a loop secured to the runner and a rod connected with its upper end to said beam and provided at its lower end with an eye which is pivoted on said loop, the bearing faces of the rider plate and rider block being concentric with the pivotal connection between the rod and loop, substantially as set forth.

3. The combination with the runner and the cross beam, of an arch secured with its ends to the upper side of the runner, vertical braces connecting the intermediate portion of the arch with the runner, a curved rider plate secured to the arch, a curved rider block secured to the beam and bearing against said plate and a rod movably connecting the runner with the beam, substantially as set forth.

4. The combination with the runner and the cross beam, of an arch secured with its ends to the runner and provided in its crown with a longitudinal slot, a rider plate secured upon said arch and provided with a convex face and with a longitudinal slot in line with the slot of the arch, a rider block secured to said cross beam and provided with a concave face bearing against the convex face of the rider plate, a vertical tie rod arranged in the slots of the arch and the rider plate and secured with its upper end to the beam, and a loop secured to the runner and passing loosely through an eye formed on the lower end of the tie rod, substantially as set forth.

Witness my hand this 21st day of May, 1894.

JNO. LEDMAN.

Witnesses:
W. I. LANPHERE,
GUY L. SMITH.