(No Model.)

H. P. TITUS.

SLEIGH KNEE.

No. 383,259. Patented May 22, 1888.

Fig. 1.

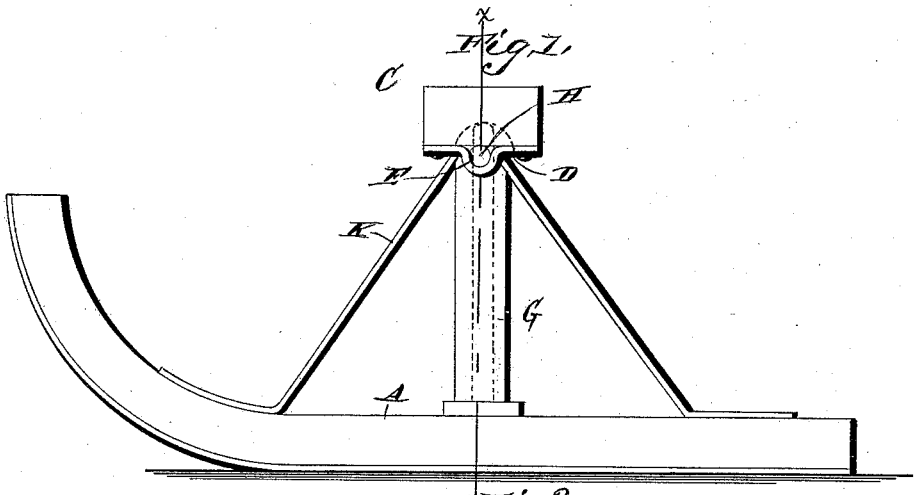


Fig. 2.

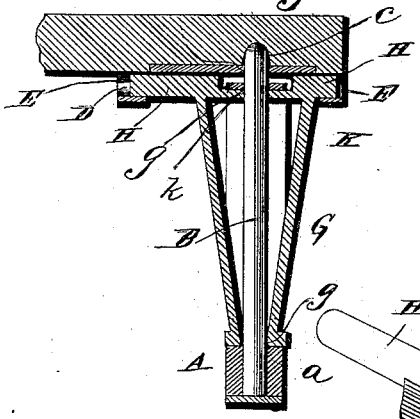


Fig. 3.

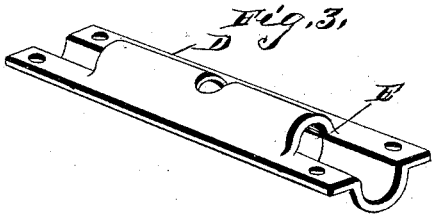
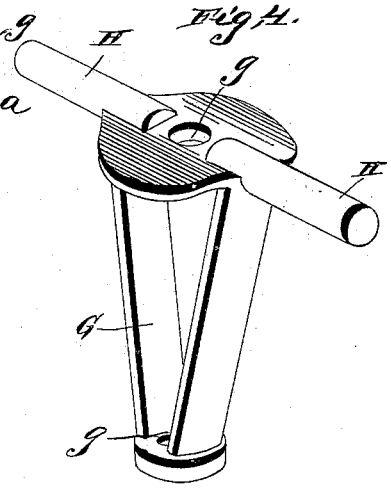


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

HERMAN PRESCOTT TITUS, OF LISBON, NEW HAMPSHIRE.

SLEIGH-KNEE.

SPECIFICATION forming part of Letters Patent No. 383,259, dated May 22, 1888.

Application filed January 25, 1888. Serial No. 261,870. (No model.)

To all whom it may concern:

Be it known that I, HERMAN PRESCOTT TITUS, a citizen of the United States, residing at Lisbon, in the county of Grafton and State of New Hampshire, have invented new and useful Improvements in Sleigh-Knees, of which the following is a specification.

My invention relates to improvements in sleigh-knees; and it has for its objects to provide means whereby the runner is allowed both a rocking, to enable it to accommodate itself to the uneven surface over which it travels, and a horizontal rotary movement to prevent a lateral strain from straining the connections of the runner to the sled.

A further object in providing the said rotary movement is to enable one runner to be started in advance of the other, when, by reason of the sled having been in one place for a considerable time, the runners are frozen to the surface of the snow or ice.

The improved knee consists, mainly, of a casting which is mounted on a vertical shaft which is socketed at its lower end in the runner, a strap which passes over the casting and is secured at its ends to the runner, and a plate which is secured to the under side of the bolster and is mounted on lateral trunnions at the upper end of the casting.

The details of construction of this invention are more fully described hereinafter in connection with the accompanying drawings, wherein—

Figure 1 is a side view of a portion of a sled, showing the improved knee. Fig. 2 is a vertical section on line *x x* of Fig. 1. Fig. 3 is a detail perspective view of the plate which is secured to the under side of the bolster. Fig. 4 is a similar view of the casting.

Referring by letter to the drawings, A designates the runner, having a socket, *a*, therein, and B designates a vertical shaft which is mounted at its lower end in this socket. The under side of the bolster C is provided with a recess, *c*, in which the upper end of the shaft B is loosely mounted. A plate, D, is secured to the under side of the bolster, and it is provided with the bearings E, for a purpose to be described.

On the vertical shaft above mentioned is mounted a casting, G, which is provided with the vertically-aligned bearings *g g*, and horizontal lateral trunnions H H at the upper end of the casting are mounted in the bearings E on the plate D.

K represents a metal strap which passes over the upper end of the casting beneath the plate D, and is secured at its ends to the upper side of the runner. The upper end of the casting is rounded to form a smooth bearing-surface for the strap, and the center of the strap is provided with a bearing, *k*, to receive the vertical shaft.

It will be observed that the vertical shaft is mounted loosely in sockets in the runner and bolster, so that either or both may turn freely thereon, and the casting, which is mounted on the said shaft, is provided with trunnions at its upper end which are mounted in suitable bearings on the bolster. This prevents the casting from rotating on the said shaft independent of the bolster, but does not prevent the runner from rotating on the lower end of the shaft.

The strap K, which is attached at its ends to the runner, passes over the upper end of the casting and under the plate on the bolster, which forms the bearings for the casting, and an opening which is formed in the said strap embraces the shaft. The adjacent ends of the trunnions H H form shoulders on the upper side of the plate at the upper end of the casting, which shoulders are arranged on opposite sides of the strap; but there is sufficient space between the shoulders and the edges of the strap, as shown in the drawings, to allow the strap to swing around the shaft as a center. Obviously as the strap is attached at its ends to the runner it must move with the runner, and therefore when the runner is rotated around the lower end of the shaft the strap is rotated around the upper end of the shaft between the upper end of the casting and the plate on the bolster.

It will be readily seen that this rotary motion of the runner does not interfere with the rocking motion thereof by reason of the trunnions on the upper end of the casting turning in the bearings on the bolster.

It will be seen from the above description that all the parts of the knee are held together by the strap K, as the vertical shaft is straight and is not headed in either the bolster or runner, and therefore to detach the runner from

the sled detach the ends of the strap from the runner, remove the runner from the lower end of the shaft, remove the shaft, (which may now be drawn straight out,) and remove the casting by moving it inward sufficiently to disengage the shorter trunnion from its bearing, the inner and longer trunnion being mounted near its end in the bearing, in order to allow the casting to be moved inward, in the manner described. When the shaft is in place, the casting cannot be moved laterally, as is evident.

Having thus described my invention, I claim—

1. The combination, with a bolster having bearings on its lower side, of the casting having trunnions mounted in the bearings and the runner pivotally attached to the lower end of the casting, whereby a horizontal rotary motion is allowed the runner, substantially as specified.

2. The combination of the vertical shaft mounted at opposite ends in bearings in the runner and bolster, and the casting mounted on the said shaft and pivoted at its upper end to the bolster, whereby a rocking and a rotary motion are allowed the runner, substantially as specified.

3. The combination of the plate secured to the under side of the bolster and having bearings thereon, the vertical shaft mounted at its lower end in a socket in the runner and at its upper end in a socket in the bolster, and the casting mounted on the vertical shaft and having lateral trunnions operating in the bearings on the said plate, substantially as and for the purpose specified.

4. In a sleigh knee, the combination of the plate secured to the bolster, the vertical shaft mounted in sockets in the runner and bolster, the casting mounted on the said shaft and having trunnions on its upper end which are mounted in bearings on the said plate, and the strap passing over the casting and attached at its ends to the runner, substantially as specified.

5. The combination, with the runner, of the casting mounted on a vertical spindle on the runner, and the bolster pivoted to the upper end of the casting, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

HERMAN PRESCOTT TITUS.

Witnesses:
A. A. WOOLSON,
F. R. CLOUGH.