

C. H. GRAY.

Improvement in Velocipede Sled.

No. 123,691.

Patented Feb. 13, 1872.

Fig 1.

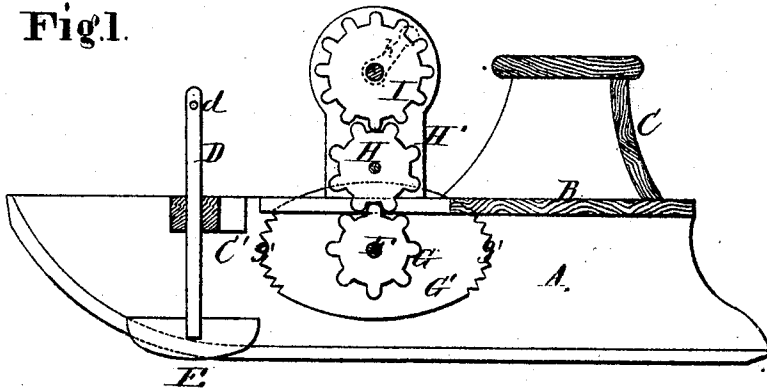
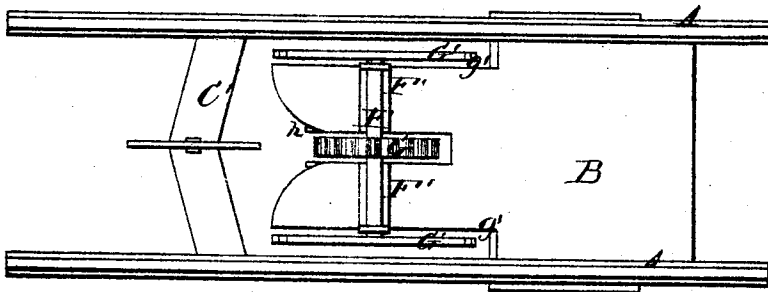


Fig 2.



Witnesses
C. H. Bates
F. B. Curtis

Inventor:
Chester H. Gray,
Chipman & Co
Attys

UNITED STATES PATENT OFFICE.

CHESTER H. GRAY, OF MILTON, MASSACHUSETTS.

IMPROVEMENT IN VELOCIPEDE-SLEDS.

Specification forming part of Letters Patent No. 123,691, dated February 13, 1872.

To all whom it may concern:

Be it known that I, CHESTER H. GRAY, of Milton, in the county of Norfolk and State of Massachusetts, have invented a new and valuable Improvement in Sleds, operated upon the principle of a velocipede; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a vertical longitudinal section of my invention. Fig. 2 is an under-side view.

This invention has relation to sleds; and consists in the construction and novel arrangement of devices for propelling and guiding the same, as hereinafter described.

Referring to the accompanying drawing illustrating this invention, A A represent the runners of a sled. B is the top board, and C an elevated seat. F designates a transverse shaft journaled to brackets F', depending from the forward part of the top board B. To the ends of said shaft are secured the rotary propelling-cams G'. These cams consist of oblong plates nearly elliptic in form. The curvature of the ends of said plates coincides with the arc of a circle greater than that with which the side edges correspond. Upon said ends pointed teeth *g* are cut, as shown. The cams G' are designed for the purpose of propelling the sleds. As said cams rotate, the ends strike the ice alternately, the teeth gaining a firm hold. The action of the cams in propelling the sled is somewhat the same as that of ordinary toothed wheels. If, however, the latter were used instead of the cams, a constant exertion of power would be required to overcome the friction and to keep the vehicle in motion. The cams G are designed only to keep up the easy sliding movement of the sled instead of substituting another movement; hence the teeth *g* are made to strike the ice at intervals, between which the runners glide along like those of the ordinary sled. The curvature of the ends of the cams prevents their stroke from causing the sled to jump. The contact of the teeth is gradual. *g'* designates slots cut in the top board B to allow the cams freedom of motion. G represents a toothed

pinion secured to the shaft F, and engaging with a similar wheel, H, journaled between the standards H'. I designates a spur, which is also journaled between the standards H'. This wheel is worked by means of cranks *h* within easy reach of the operator seated at C, and conveys motion to the cams through the medium of the pinions. C' designates a V-shaped bar or bracket journaled to the runners A a short distance in front of the cams G'. Through the middle part or apex of said bar a vertical post, D, passes, and is journaled. To the lower end of said post is secured a semi-elliptical plate, E, its curved edge toward the ice. From the upper part of the post arms *d* project. The plate E is designed to act as a guide to govern the direction of the sled. The operator places his feet on the arm *d* and can readily turn the guide to any angle required. The object of journaling the bar C' is to allow the operator to regulate the pressure of the guide on the ice. In a swiftly-running sled, the guide must be pressed against the ice with considerable force. The construction of the bar C' and the arrangement of the post allows the requisite force to be more easily exerted, as the leverage is increased according to the size of the arc which the guide describes. The guide may be raised from the ice by drawing the upper end of the post D backward, thus turning the bar C'. When the guide is not required, it may be elevated in its bearing, and secured at any height by means of a set-screw.

I claim as my invention—

1. In a sled, the elliptical propelling-cams G', having the teeth *g* at opposite ends, and constructed with plane-side edges, as described and shown, in combination with the shaft F, pinion G, spur-wheel I, and crank *h*, arranged and operating substantially as specified.

2. In a velocipede-sled, the combination of the V-shaped bar C', or its equivalent, journaled between the runners A, the vertical post D, and the curved guiding-plate E, substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

Witnesses: CHESTER H. GRAY.
EDMD. J. BAKER,
JOHN HUTCHINSON.