

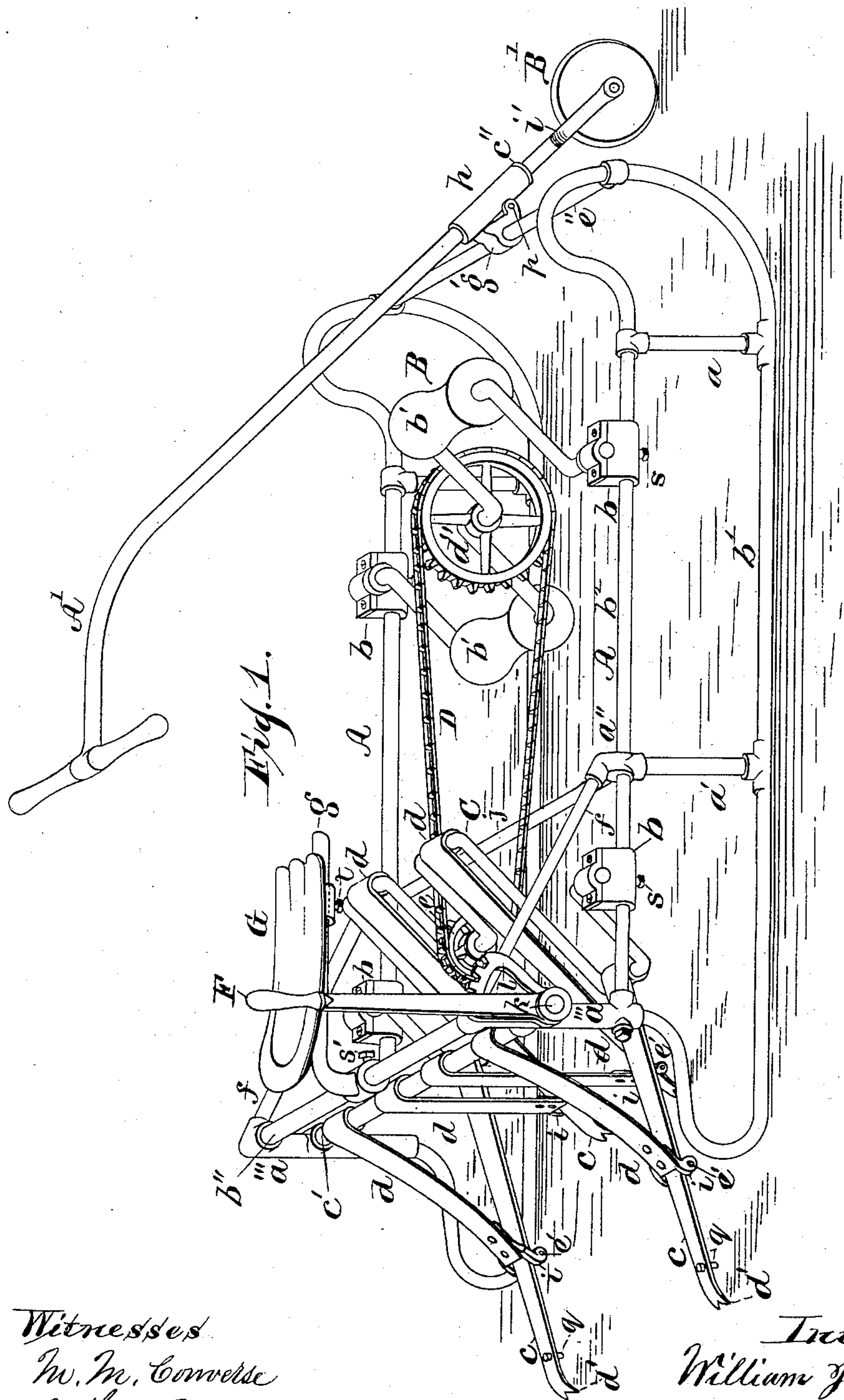
(No Model.)

2 Sheets—Sheet 1.

W. J. BAIRD.
COASTING SLED.

No. 375,914.

Patented Jan. 3, 1888.



Witnesses
W. M. Converse
J. L. Koester

Inventor
William J. Baird
B. C. Converse,
Attorney

(No Model.)

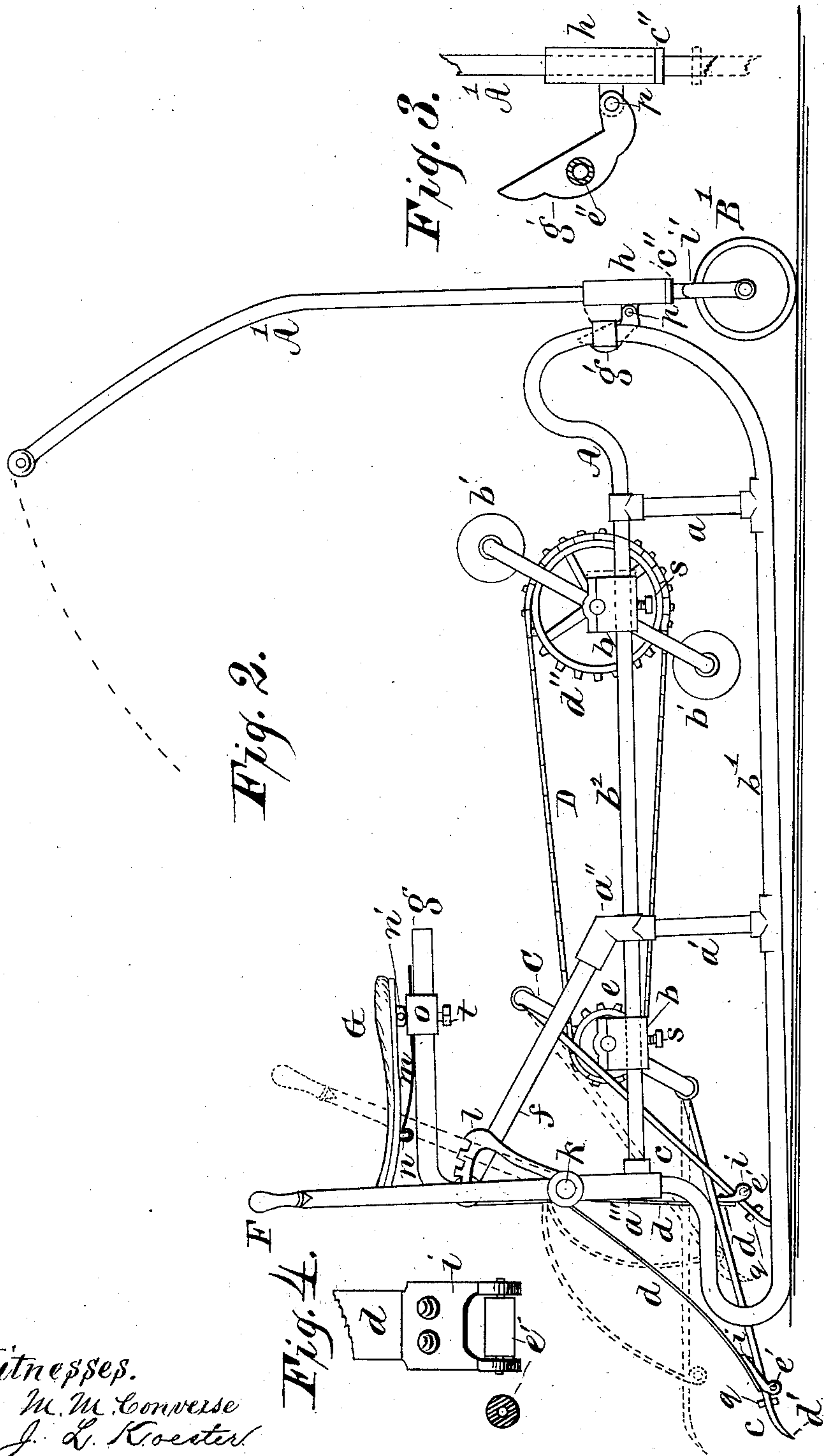
2 Sheets—Sheet 2.

W. J. BAIRD.

COASTING SLED.

No. 375,914.

Patented Jan. 3, 1888.



Witnesses.

M. M. Converse
J. L. Koester

Inventor.

William J. Baird
B. C. Converse, atty.

UNITED STATES PATENT OFFICE.

WILLIAM J. BAIRD, OF SPRINGFIELD, OHIO, ASSIGNOR OF ONE-HALF TO
CLARENCE H. KAY, OF SAME PLACE.

COASTING-SLED.

SPECIFICATION forming part of Letters Patent No. 375,914, dated January 3, 1888.

Application filed October 17, 1887. Serial No. 252,561. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. BAIRD, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvement in Coasting Sleds; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in coasting-sleds, consisting of certain devices for propulsion and for guiding the sled, all of which are described in the specification, and are particularly pointed out in the claims.

My invention is more applicable to that class of sleds used for coasting upon the snow and ice.

The devices embraced in my invention consist, mainly, in longitudinal push-levers armed at their rear ends with spur-points and operating on the snow or ice with a reciprocating movement obtained from a crank-shaft, to which they are pivoted by one end. This crank-shaft receives its motion from another crank-shaft having footspools or treadles on it for operating it by the feet, and which is connected with the first one by sprocket-and-chain gearing. An adjustable seat is mounted above the sled in convenient position for the operator. The seat will be made the subject of another application, together with its adjustable devices. The sled is guided by a small pilot-wheel operated by a swiveled handle-bar having a sleeve, through which it is allowed to slide in manipulating, the latter being hinged to the front cross-bar to permit of its movements in turning, &c.

Figure 1 is an isometric view of a sled having my invention embodied therein. Fig. 2 is a side elevation of the same. Fig. 3 is a detail showing the handle-bar connection, the dotted lines showing the endwise movement of the latter. Fig. 4 is an enlarged detail of one of the roller-plates and a portion of the spring to which it is attached.

A A are the runner-frames consisting of the runner proper, b' , and the top rail, b^2 . These

are formed of a single piece of pipe-bar bent near the middle to form the proper curve for the front end of the runner, and doubled backward from thence to form the top rail, b^2 . The rear end of the runner portion b' is bent forward and then upward and enters the tubular upright a''' at the lower end. The end of the part forming the top rail, b^2 , enters the same upright on the front side, extends through it, and is secured on the rear side by a nut. The uprights a''' , as well as the connections a'' , which connect the braces f to the uprights and (by means of the transverse tie-bar j) the two runner-frames together, are made in the form of gas-pipe connections, with angular sleeve parts to receive the pieces which compose the frame, as in ordinary pipe-connections. The two posts a and a' connect the rail and runner together. At the top of these is an ordinary T-coupling, which, by preference, is shrunk on. At the lower ends is a similar coupling, which has the lower half of the horizontal part cut away and is riveted or otherwise fastened to the top of the runner portion b' . The edges of the horizontal part are chamfered off to prevent the lodging of ice or snow on them, and so as not to impede the passage of the sled through it.

The runner-frames are alike with the exception of the attachment of the toothed segment l to the post a''' on the right side, which is used in connection with the hand-lever F, as will be described hereinafter. The top ends of the two uprights a''' are secured together by the top tie-bar, b'' , and the front ends of the runners by the front tie-bar, e'' . On this latter is secured a block of nearly segmental shape, g' , to which the sleeve h of the handle-bar A' is hinged.

The operation of the pilot-wheel B' by means of the handle-bar will be described in connection with the operation of the other devices.

The means of propulsion consists of two pairs of levers, c c , which are made of flat bars of steel, having an eye formed on or attached to their front ends, which latter are pivoted upon the wrists of the quadruplex cranks seen on the crank-shaft C. These levers extend downward and rearward and have their free ends curved downward and armed with points d' , which enables them to penetrate the hard

crust of snow or ice sufficiently to push the sled forward as they are operated by the rotation of the shaft C. The shaft C has its respective ends supported in adjustable bearing-blocks *b*, near the rear end of the sled on the rails *b*² *b*² between the coupling *a*^{''} and the upright *a*^{'''} on either side. A pivoted bar, *c*['], has its ends journaled in the two uprights *a*^{'''} *a*^{'''} under the tie-bar *b*^{''} and parallel therewith, one end extending through the upright *a*^{'''} on the right, and having the hand-lever F secured thereto for giving the bar *b*^{''} a partial rotation. Springs *d* *d*, each made of a broad strip of steel, extend downward from the pivoted bar *b*^{''} (to which they are fastened by one end) over each of the push-levers *c* *c*, and have attached to their lower ends a forked plate, *i*, which latter straddles the push-lever, and while pressing upon the lever to cause its engaging end to take hold of the ice or snow-crust the plate *i* serves to guide it and keep it in line during its movements in connection with a pivoted roller, *e*['], which is journaled in the ends of the fork-plate *i* under the lever *c*, and on which the latter slides. Pins *q* in the rear ends of levers *c* *c* extend vertically through them, projecting sufficiently to prevent the ends of the springs from slipping off. Preferably the ends of the springs are coiled on the bar *b*^{''} to give them greater resiliency. Both plate and roller, as attached to the end of spring *d*, are more fully shown in the detail, Fig. 4, in which the roller *e*['] is seen in both elevation and section.

The crank-shaft C has a sprocket-wheel, *e*, mounted centrally thereon, and this wheel is connected by a chain, D, with a sprocket-wheel, *d*^{''}, on the front crank-shaft, B, which latter has its respective ends journaled in similar bearing-blocks, *b*, with those of the crank-shaft C. In both these shafts the blocks *b* (which are oblong in shape) are provided with a longitudinal hole, as seen by the dotted lines, Fig. 2, and are slipped upon the rail *b*² and secured thereto by means of a set-screw, *s*, entering the block from the under side. The crank-shaft B is provided with foot spools or treadles *b*['] *b*['] on its cranks.

The operator sits upon an elevated seat, G, which latter is adjustably secured upon an overhanging pipe-bar, *g*. This bar has its rear end bent downward and attached to a sleeve secured to the transverse top bar, *b*^{''}. The handle-bar A['] consists of a long piece of pipe-bar, which is bent slightly at a sufficient height to allow it to be within convenient reach of the operator, and has a fork, *i*['], at the lower end, within which is pivoted a small wheel, B², which is operated in guiding and turning the sled. A fixed collar, *c*^{''}, on the handle-bar near the fork *i*['] operates as a stop for the sleeve *h* when the handle-bar is thrown up to a perpendicular, as seen in Fig. 2, in which position the front end of the sled is elevated slightly, enabling the operator to more easily turn it by means of the pilot-wheel B['], which latter bears a large proportion of the weight of the

sled and its load. The handle-bar rotates easily within the sleeve *h*; but as this feature, in connection with that of the wheel and fork, is not new I do not claim it. The sleeve *h* is hinged to the block *g*['] by a flexible joint, *p*, at the lower end of the latter. The block *g*['] being fixed upon the cross-bar *c*^{''} in an inclined position with its straight part in front, allows the handle-bar to rest on it, as seen in Fig. 1, in the proper position for guiding the sled.

In operating the sled the operator gives motion to the crank-shaft B with his feet upon the spools *b*['], setting in motion the rear crank-shaft, C, through the connecting-chain D. As this latter crank-shaft is rotated the push-levers *c* (alternating in pairs) are thrown rearward, and at the same time, as they pass through the loops on the ends of springs *d*, formed by the plates *i* and the roller *e*['], they are held down by said springs, causing the points of their rear ends to engage the ice or snow, and thus push the sled forward. This means of propulsion can be used either on level places, where the sled would not otherwise slide without pushing, and also in ascending elevations where the grade is not too great.

In using the sled for sliding downhill, or where it may be drawn by hand, the levers *c* and springs *d* are thrown up out of the way, as seen in the dotted lines in Fig. 2, by means of the hand-lever F, which can be thrown forward, partially rotating the bar *c*['], and thus lifting the levers *c* from the surface of the ice or snow, as the case may be. The hand-lever F may also be used to press the springs *d* down upon the levers when rotated in the opposite direction, should it become necessary. When the chain D becomes slack, it can readily be tightened by loosening the set-screws *s* *s* and moving the blocks *b* *b*.

I claim as my invention—

1. In a coasting-sled, the tubular runner-frames A, each composed of the runner *b*['] and the rail *b*² in a single piece, bent about the middle to form the front end, the end of said runner and rail being attached at the rear to a single upright, *a*^{'''}, as described, and the intermediate vertical posts, *a* *a*['], connecting said rail and runner, said runner-frames being coupled together by the tie-bars *c*^{''} *j* *b*^{''}, the latter connecting the tops of the uprights *a*^{'''} to form a support for an elevated seat, substantially as set forth.

2. In a coasting-sled composed of the two runner-frames coupled together, as described, and having the rear uprights extending above the rails of said runner-frames, the propelling mechanism consisting of the sprocket-and-chain gearing, the crank-shafts, and the reciprocating levers and springs, the pivotal shaft supporting the latter, and the hand-lever connected with said pivotal shaft, adapted to operate it, and provided with the means for adjustment, substantially as set forth.

3. In a coasting-sled, the means of propulsion shown, consisting of the front and rear crank-shafts, the levers pivoted to the latter,

the springs for pressing said levers into engagement, with the means described for elevating said springs, and levers to throw them out of engagement, substantially as and for the purpose set forth.

4. In combination, in a coasting-sled, the treadles, crank-shafts, and connecting sprocket-and-chain gearing, the system of levers and springs for forcing said sled forward, and the pilot-wheel having the attachments and connections described, whereby the sled may be readily guided and turned, substantially as hereinbefore set forth.

5. In combination with the sled having the rigid block *g'* on its front bar, provided with the hinge-connection *p*, the hand-lever *A'*, having the sleeve *h*, flexibly attached to said block *g'*, the collar *c*, on which said sleeve rests, the fork *v'*, and the wheel *B'*, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM J. BAIRD.

Witnesses:

B. C. CONVERSE,
A. E. ALDRICH.