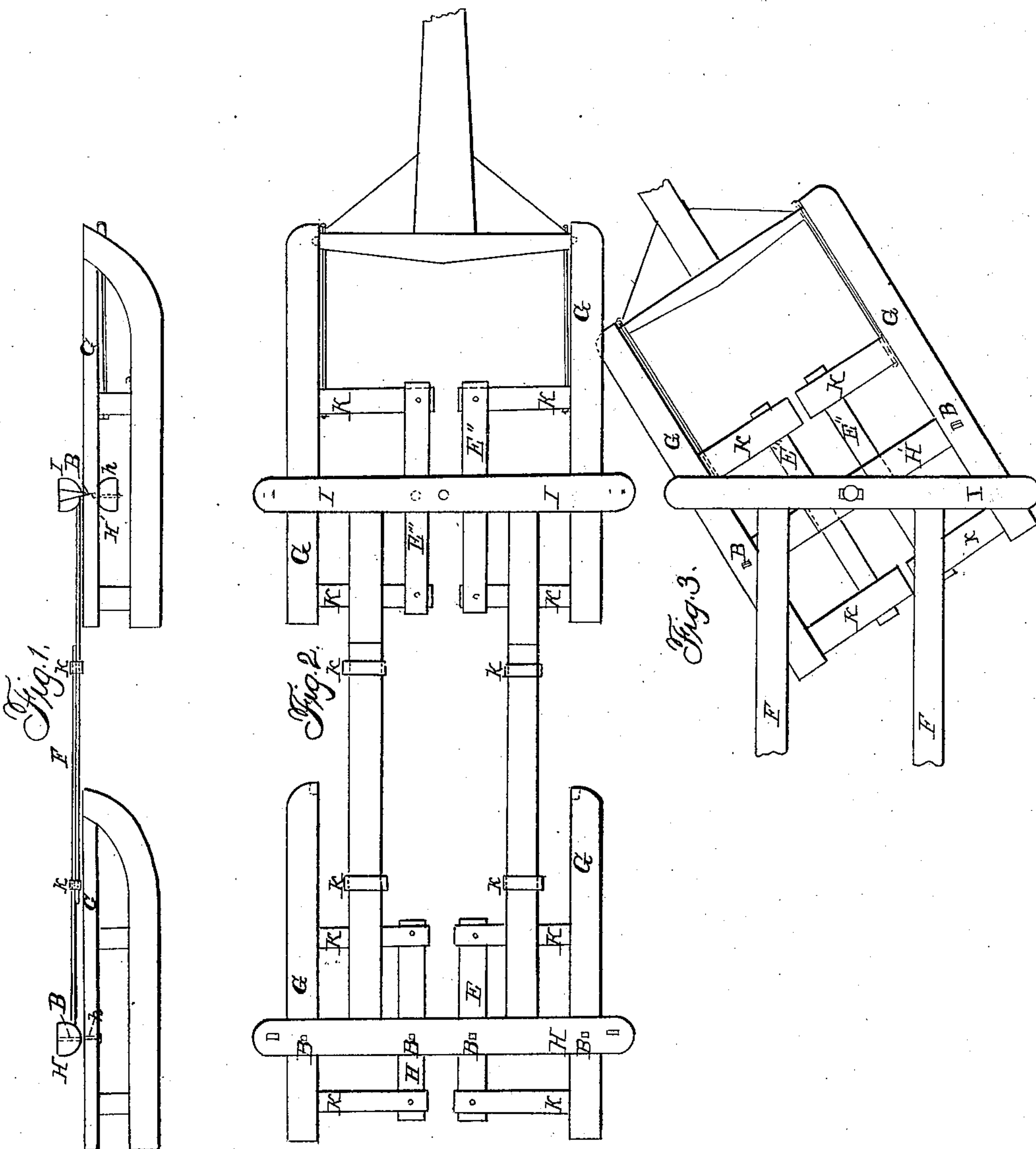


S. BULLARD.

Sled-Runner.

No. 19,980.

Patented Apr. 20, 1858.



UNITED STATES PATENT OFFICE.

SILAS BULLARD, OF HARTLAND, MICHIGAN.

RUNNER OF SLEDS.

Specification of Letters Patent No. 19,980, dated April 20, 1858.

To all whom it may concern:

Be it known that I, SILAS BULLARD, of Hartland, in the county of Livingston and State of Michigan, have invented a new and useful Improvement on Sleighs; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The nature of my invention consists in the self acting, or self adjusting principle shown in the construction of the rear and forward runners so that each one of the two pairs of runners, on each of the four single runners shall have a movement to adapt itself to the surface of the ground independent of the other runners, by making that movement in a particular way which is described below.

In the accompanying drawings Figure 1, exhibits the two pairs of runners with the connecting adjustable reach. Fig. 2, a vertical, or plan view, showing the independent rear runners suspended to the under side of the cross bar H, and the forward runners also having a movement each independent of the other. Fig. 3 is a top view showing the method of connecting the adjustable reach with the forward runners.

Similar figures or letters represent the same parts in all the figures of the drawings.

The whole design of this invention is to construct a sleigh, in which each of the four runners shall have to a certain extent a self adjusting movement that shall be independent of the movement of the others. This end is accomplished in the rear runners by hanging them to the cross beam H, by the link joints (Bⁿ) Fig. 1, by which each runner has a fore and aft rising and pitching movement that enables it to adapt itself to the irregularities of the ground. But it will also be observed, by inspecting Fig. 2, that the rear runners are independent of each other, by being built in separate frames, and each frame being connected to the cross-beam H by a link joint Bⁿ, Bⁿ, as also seen noticed in part, in Fig. 1, one-half of the said joint being in the top plate of the runner, and the other in the cross beam H, into which is also framed the rear end of the adjustable reaches F, F, held in place by means of the bands *k*, *k*, through which and corresponding holes in the reach (not shown in the drawings) pins are placed to secure the parts in any particular position.

The same independent movement of the two forward runners is obtained by having each of the two runner frames K, E'', K, so constructed that the two bars E'' shall play freely through the bar H', which, performing the function of a tie-beam to keep the runners always at the same distance from each other, and at the same time containing the link joint to allow the rising and pitching movement of the runners, gives to them a certain range of motion, which is sufficient to enable them to adapt themselves to the uneven surface of the ground and yet to control them within the suitable limit. It is therefore the tie-beam H' which performs a prominent function in the movement and control of the forward runners. As the runners rise or pitch so the tie beam slightly rolls forward or backward and thus a free movement to all parts within a certain limit, is admitted. Now as the tie beam H' is a most important timber in the forward runner-frame—so its exact range of height is equally important. It should be placed near as possible to the top of the runners; and bars E'', E'', should also be placed about on the same level, in order that both may be sufficiently elevated to be out of the way of stones, projecting ice, and stiffened snow, any or all of which would tend to destroy any braces or cross pieces projecting below this frame work. In order therefore to bring H' and E'' on the same elevated level and allow independent motion in H', it was necessary that one of these should pass loosely through the other, and the wide mortises in H' produced this result, and enabled the inventor to construct the frame work out of the reach of obstructions, and thus accomplish strength and safety.

I do not claim giving a movement to sleigh runners independent of the load that is above them. Nor do I claim giving the runner on one side a movement independent of that on the other. Nor do I claim the use of the link joint for connecting sleigh runners to the frame-work of a sleigh; but

What I claim as my invention and desire to secure by Letters Patent is—

1. Constructing the rear runners of sleighs in separate frames, each frame being hung by link joints to the cross bar H, so as to admit of a fore and aft rising and pitching movement in each runner which shall be independent of the movement of the opposite runner, as set forth.

2. I also claim the construction of the tie-beam H' so contrived as to hold the separate forward runner frames at the proper distance apart by the fastening bolts Bⁿ,
5 near its ends, and at the same time, to allow the independent rising and pitching movement in each runner, by making the mortise holes in H' so large as to admit the bars

E'', E'', to play loosely therein so as to allow of a slight rolling motion on the axis 10 of H' whenever the runners rise or pitch, from the irregularities of the ground.

SILAS BULLARD.

Witnesses:

WARNER LAKE,
REUBEN M. CURRY.