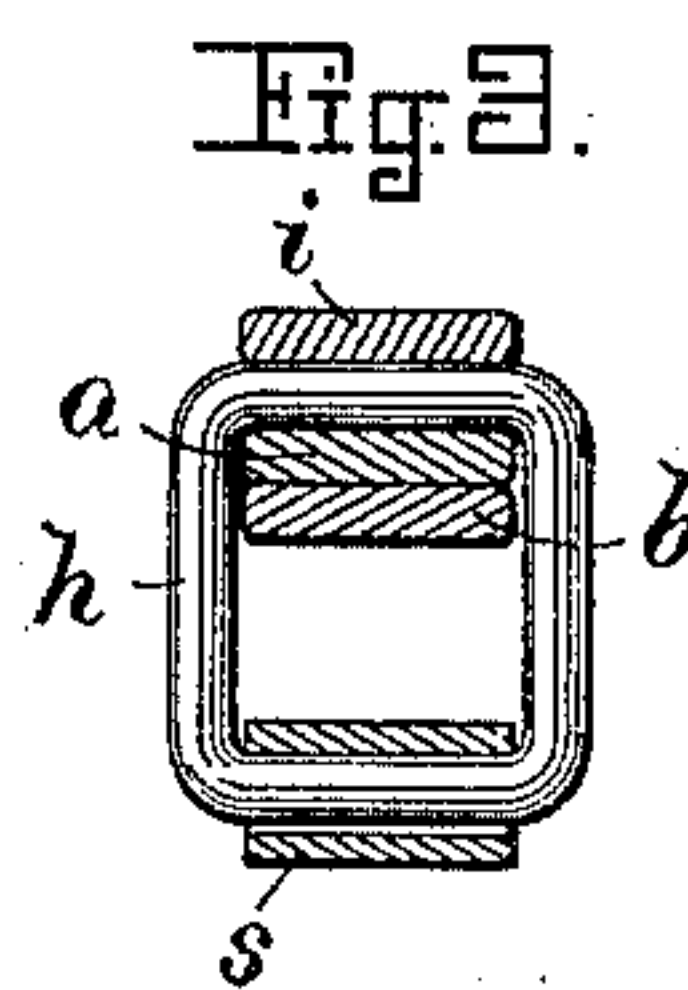
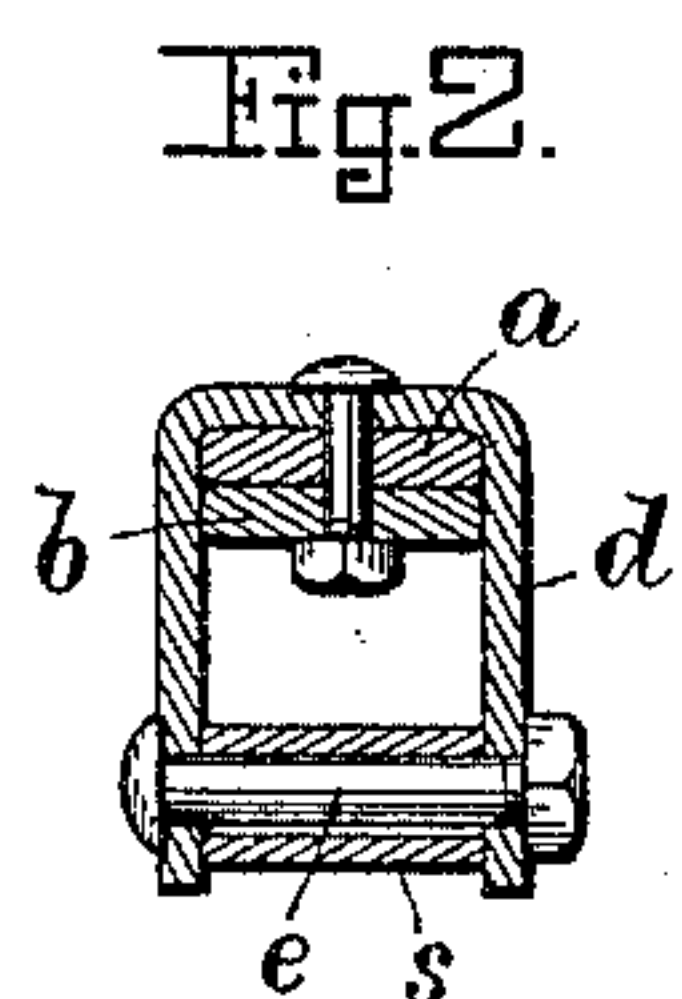
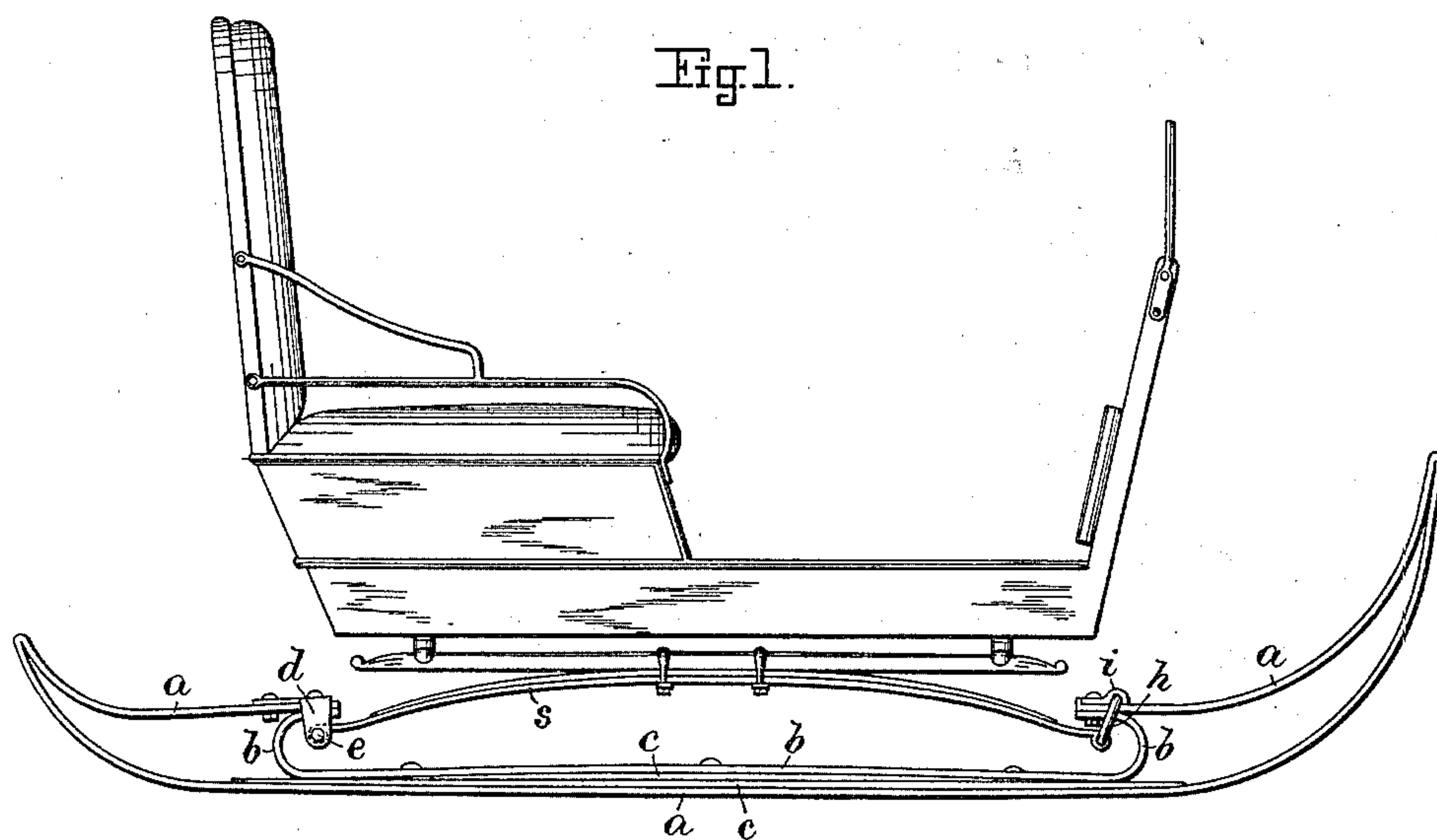


(No Model.)

A. BERRY.
SLEIGH.

No. 432,721.

Patented July 22, 1890.



Witnesses

Henry Chadbourn.
D. E. Kempster.

Inventor

Austin Berry
by Fred Joy.
his atty.

UNITED STATES PATENT OFFICE.

AUSTIN BERRY, OF WARDEN, QUEBEC, CANADA.

SLEIGH.

SPECIFICATION forming part of Letters Patent No. 432,721, dated July 22, 1890.

Application filed November 29, 1889. Serial No. 332,006. (No model.)

To all whom it may concern:

Be it known that I, AUSTIN BERRY, of Warden, in the county of Shefford and Province of Quebec, Canada, have invented certain new and useful Improvements in Sleighs, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to sleighs of that class patented by me September 25, 1888, No. 389,869, and has for its objects, first, to overcome and prevent the objectionable longitudinally-swinging movement of the sleigh-body when loaded and passing over rough or uneven surfaces; second, to make the connection between the sleigh-body and its runners stronger and more secure, and, third, to provide runners of such construction as will insure their having a certain amount of flexibility, whereby they are adapted to yield and adjust themselves to the inequalities of the road.

My invention consists in the construction and arrangement of the devices herein described and shown, and the special features thereof are clearly pointed out in the claims at the end of this specification.

In the drawings hereto annexed, and in which similar letters of reference indicate corresponding parts, Figure 1 represents a side view of a sleigh embodying my invention. Fig. 2 is a cross-section of one of the rigid connections at the rear ends of the semi-elliptical springs. Fig. 3 is a similar view of the free or swinging connection at the opposite ends of the aforesaid springs.

a a are the runners, which may be formed in any desired style, in the present case shown as having returned ends, and also having stiffening-pieces *b b*, provided with returned ends, which are secured to the returned ends of the runners by suitable fastenings, all in a similar manner to that shown in my former patent, excepting that said stiffening-pieces are unprovided with the strengthening-rib extending along the top side thereof, as shown in said former patent, but are left uniform and flexible.

c c are leaves of metal, wood, or other suitable material interposed between the runners *a* and stiffening-pieces *b* and are retained in place by rivets or other ordinary fastenings. By this construction the runners are made flexible, which allows them to conform to a

certain extent to the unevenness of the road, thereby giving to the sleigh an easy working motion, which not only adds to the comfort of the occupant, but also adds to the durability of the sleigh, and this feature is not found in my former patent, wherein the stiffening-pieces are formed rigid.

d d are hangers, which rest upon and straddle the rear returned ends of the runners and stiffening-pieces, and are all secured together by suitable rivets or bolts. The rear ends of the semi-elliptical springs *s s* are provided with eyes which enter into the aforesaid hangers and are secured therein by suitable pins or bolts *e e*, all as plainly shown in Figs. 1 and 2. The opposite ends of the aforesaid springs are provided with eyes which embrace the links *h h*, hanging upon the forward returned ends of the runners and stiffening-pieces, and are held in place so as to swing thereon by suitable grooved blocks *i i*, resting on said returned ends, and all held securely together by suitable rivets or bolts, as shown in Figs. 1 and 3, which is substantially the construction shown in my said former patent. By my present construction the swinging movement of the sleigh-body, as when supported in the manner shown in my former patent, is obviated, as by making the rigid connections at one end of the springs, while not interfering with their free elasticity and action, yet entirely prevents the forward and backward jerking motion occasioned by passing over a rough and uneven road, and which is not only very unpleasant to the occupant, but is also very detrimental to the wearing qualities of the sleigh.

It is obvious that some modification may be made in my invention—as, for instance, the hangers *d d* might be dispensed with and the semi-elliptical springs *s s* fastened direct upon the returned ends of the runners, or said returned ends might be extended and themselves form the bottom leaf of the aforesaid springs, and, further, the rigid connections might be reversed and placed upon the forward ends of the springs, and, still further, the swinging links *h h* might be dispensed with and rigid hangers or boxes attached to the runners, and in which the free ends of the springs might rest and be supported, so as to slide longitudinally as the

springs were acted upon by the load. These changes would of course all come within the scope of mechanical skill and would not depart from the essential spirit of my invention.

5 Having thus fully described the nature, construction, and operation of my invention, I desire to secure by Letters Patent, and claim—

1. In a sleigh, the combination, with the runners, of semi-elliptical springs having one
10 of their ends rigidly secured to the runners and their opposite ends held to said runners, so as to have a free longitudinal movement, substantially as and for the purpose herein set forth.

15 2. In a sleigh having semi-elliptical springs attached to the runners thereof, the combina-

tion, with said runners and springs, of the hangers *d d*, links *h h*, and suitable connecting devices, substantially as herein shown and described.

3. In a sleigh-runner, in combination, the runner *a*, stiffening-piece *b*, and leaves *c c*, all substantially as herein shown and described.

In testimony whereof I have signed my name to this specification, in the presence of
25 two subscribing witnesses, on this 23d day of November, A. D. 1889.

AUSTIN BERRY.

Witnesses:

NATHANIEL E. MARTIN,
ELIPHALET S. NUTTER.