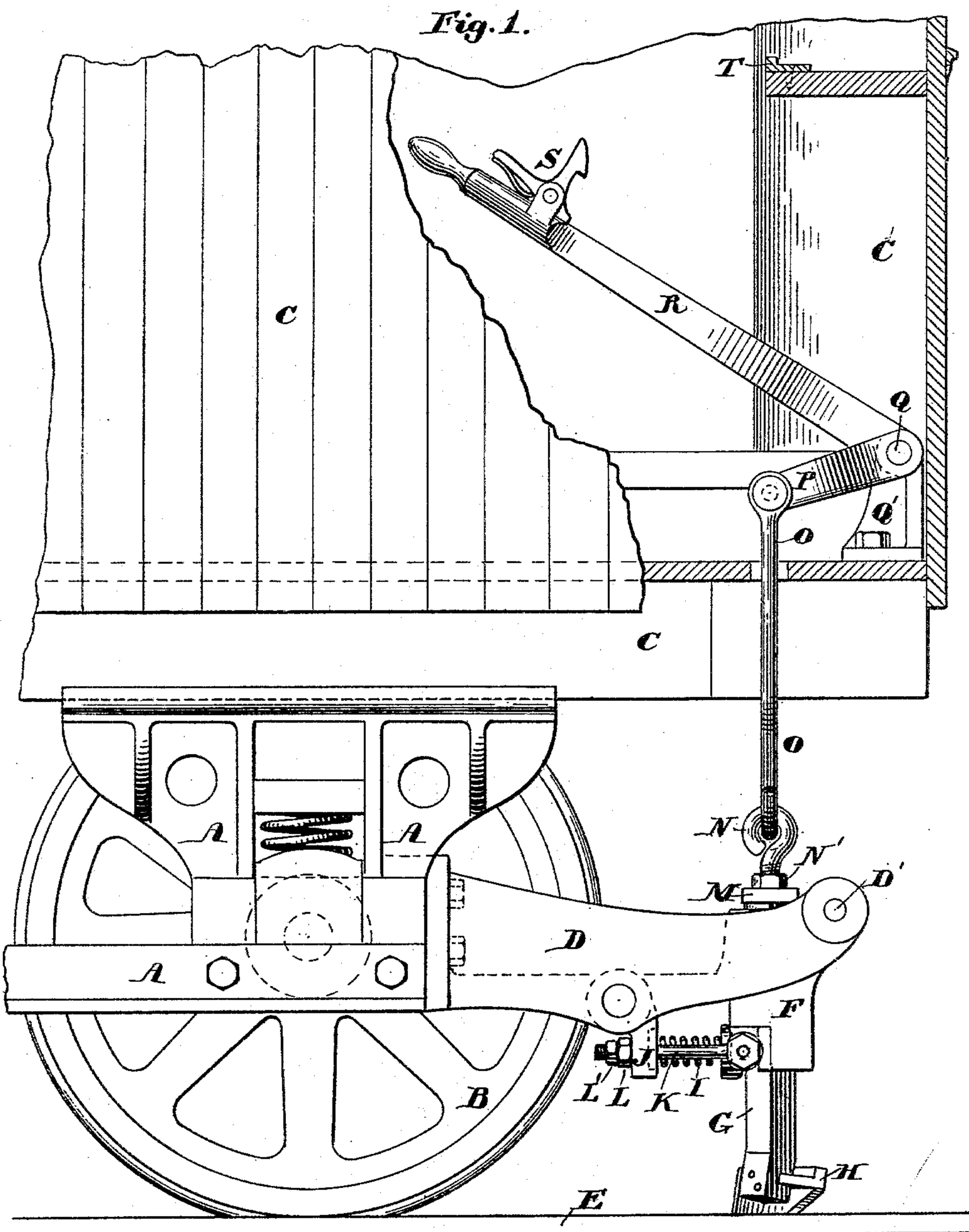
(No Model.) 2 Sheets—Sheet 1.

W. R. BILLINGS & E. C. COLLINS.

ICE BREAKER AND CLEARER FOR SNOW PLOWS.

No. 597,939. Patented Jan. 25, 1898.

Fig. 1.



Witnesses:
Walter E. Lombard
William E Davis

Inventors:
William R. Billings,
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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

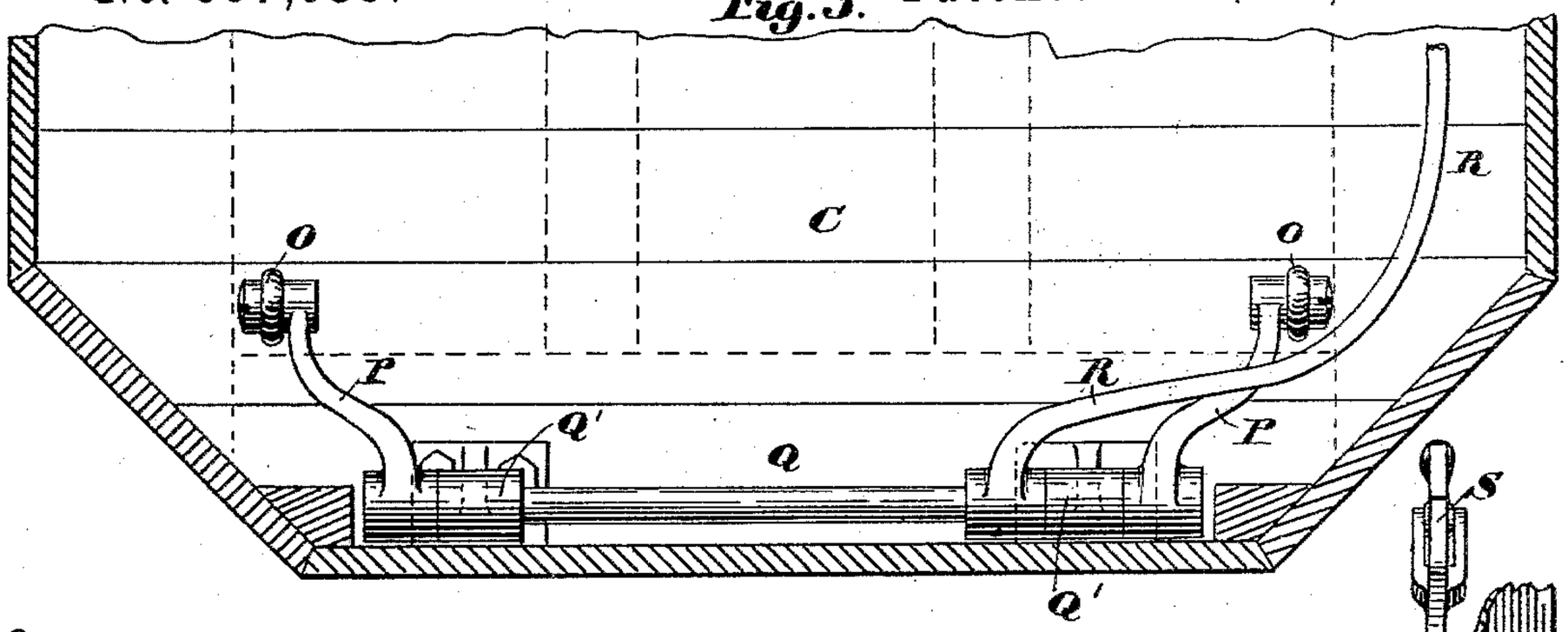
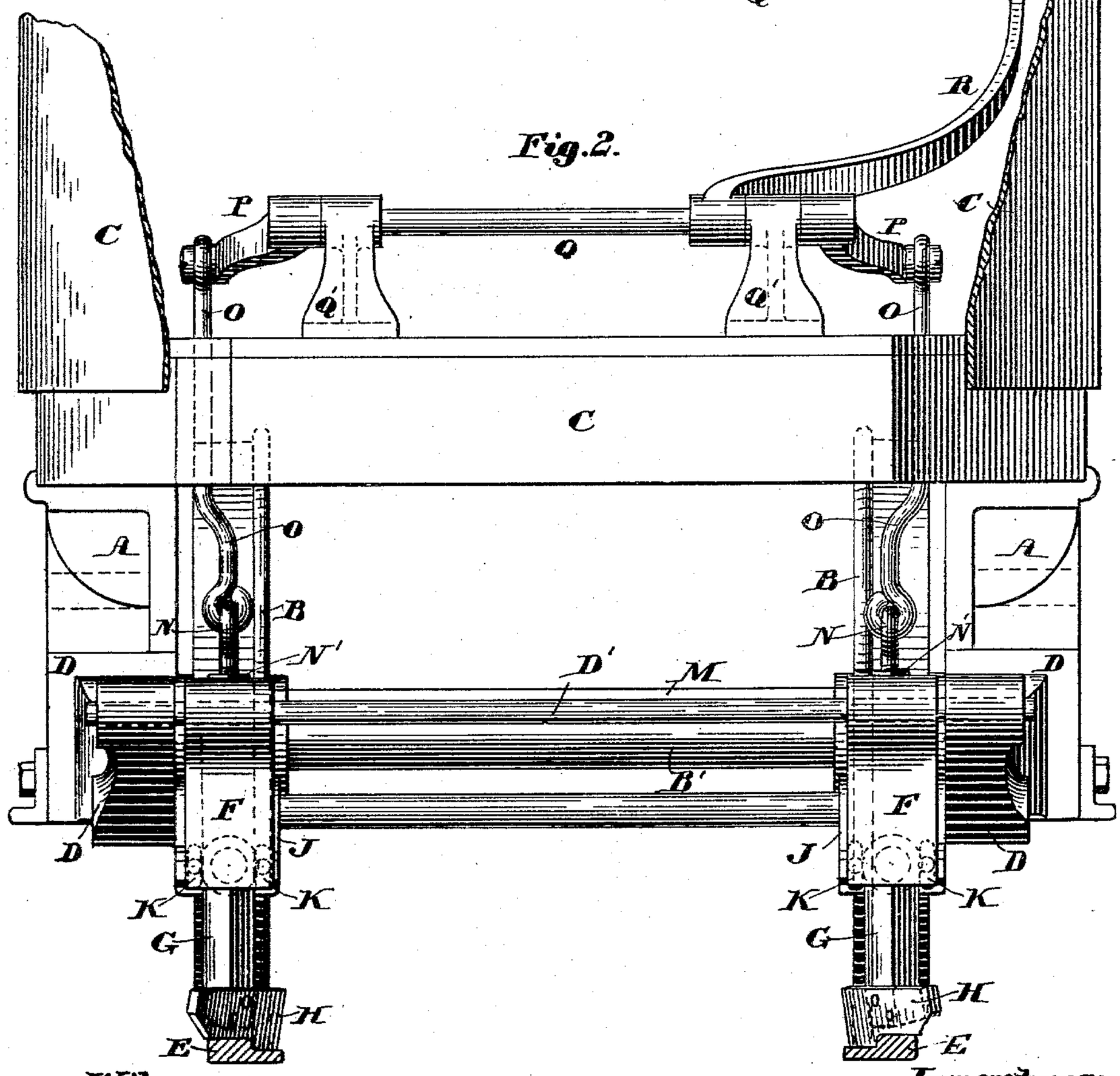


Fig. 2.



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by N. C. Lombard Attys.

UNITED STATES PATENT OFFICE.

WILLIAM R. BILLINGS AND EDWARD C. COLLINS, OF TAUNTON, MASSACHUSETTS, ASSIGNORS TO THE TAUNTON LOCOMOTIVE MANUFACTURING COMPANY, OF SAME PLACE.

ICE BREAKER AND CLEARER FOR SNOW-PLOWS.

SPECIFICATION forming part of Letters Patent No. 597,939, dated January 25, 1898.

Application filed November 30, 1897. Serial No. 660,207. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM R. BILLINGS and EDWARD C. COLLINS, of Taunton, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Ice Breakers and Clearers for Snow-Plows, of which the following, taken in connection with the accompanying drawings, is a specification.

Our invention relates to ice breakers and clearers for snow-plows; and it consists in certain novel features of construction, arrangement, and combination of parts which will be readily understood by reference to the description of the accompanying drawings and to the claims hereto appended and in which our invention is clearly pointed out.

Figure 1 of the drawings is a sectional side elevation of a portion of one end of so much of a snow-plow for street-railways as is necessary to illustrate our invention, the plow-share and its operating mechanism being omitted from the drawings in order the better to illustrate our present invention. Fig. 2 is an end elevation of the same with a portion of the end wall of the cab removed in order to show the breaker-operating mechanism within the cab, and Fig. 3 is a horizontal section through a portion of one end of the cab and showing the breaker-operating mechanism in plan.

In the drawings, A is the truck-frame; B B, the wheels; B′, the axle, and C the cab-body, which may be of any suitable construction. Each end of the truck-frame A has firmly bolted thereto two outwardly-projecting arms D D, connected together at their outer ends by the rod D′, upon which, just inside said arms and directly above the track-rails E E, are mounted so as to be movable about said rod the pendent blocks F F, each having a rectangular vertical opening extending through the same, in which is fitted so as to be movable endwise therein the rectangular steel bar G, arranged so that each of its four sides is at an angle of forty-five degrees to the plane in which lies the longitudinal center of the track-rail. A short section of said bar G at its lower end is bent obliquely toward the rear and the outside of the rail and has firmly secured to its inclined surface that faces forward and toward the inside of the track-rail the ice-breaking shoe H, preferably of chilled cast-iron, as shown in Figs. 1 and 2.

The rear side of the block F has formed therein at its lower end a shallow circular socket to receive one end of the spring I, the opposite end of which enters a corresponding socket in the flange J, pendent from the arm D, said sockets being shown only in dotted lines in Figs. 1 and 2. Said block F has pivoted thereto, upon each side thereof, an eyebolt K, which projects to the rear through said flange J and has fitted thereon at the rear of said flange the stop-nut L and check-nut L′, which limits the movement of said block F, bar G, and ice-breaking shoe H toward the front, while said parts may be moved toward the rear about the rod D′ against the tension of the springs I whenever the shoe H comes in contact with a substance harder than ice, like the end of a track-rail or a paving-stone, which projects above the general level of the track. The pivotal connections of said blocks F are in a vertical plane some distance in advance of the vertical plane in which lie the center lines of the bars G, so that when the shoes H, one or both, meet an obstruction of sufficient rigidity to overcome the tension of the springs I the edges of the shoes H will be lifted so as to pass over the obstruction, the inclination of the front face of said shoe materially assisting in said passage of said obstruction, it being understood that the springs I must be sufficiently stiff to resist any considerable backward movement of the shoes H when operating upon ice or snow adhering to the track-rails.

The bars G G upon opposite sides of the truck are connected together by the bar M, each end of which is secured to one of said blocks by the eyebolt N and the clamping-nut N′, and each of said eyebolts N has connected thereto a link O, which projects upward therefrom through the floor of the cab and is pivoted to the free or movable end of a lever P, firmly secured upon the rocker-shaft Q, mounted in bearings in the stands Q′ and having firmly secured thereon the operating-lever R, as shown.

The lever R has pivoted thereto near its handle end the elbow latch-lever S, the hook on which engages the catch-plate T whenever said lever R is raised to throw the shoes H out of action when not needed.

The operation of our invention will be readily understood from the foregoing without further explanation here.

What we claim as new, and desire to secure by Letters Patent of the United States, is—

1. An ice breaker and clearer for snow-plows comprising a pivoted pendent block; a vertically-movable bar fitted to a bearing in said block at the rear of its pivotal axis; an ice breaking and clearing shoe attached to the lower end of said bar with its operating-face oblique to the track-rail, a spring to press the lower end of said block toward the front; means for limiting said forward movement; and means for raising said bar and shoe when not required in operation.

2. In an ice breaking and clearing device for snow-plows, the combination of a pair of pivoted pendent blocks one above each track-rail; vertically-movable bars mounted in bearings in said blocks; springs interposed between the rear sides of said blocks and fixed abutments; stop-rods pivoted to said blocks and extending through said abutments and provided with adjustable stop-nuts to limit the forward movements of the lower end of said blocks; ice-breaking shoes secured to the lower ends of said vertically-movable bars; a transverse bar connecting the upper ends of said vertically-movable bars; a horizontal rocker-shaft extending transversely of the cab; a pair of radius-arms firmly secured to said rocker-shaft; a link connecting each of said radius-arms to one of said vertically-movable shoe-carrying bars; a hand-lever for operating said rocker-shaft; and means for locking said hand-lever in its raised position.

3. In an ice breaker and clearer for snow-plows, the combination of the arms D secured to and projecting forward from the truck-frame and each provided with the pendent flange J; the rod D′ connecting the outer end of said arms D; the blocks F mounted upon and movable about said rod; the bars G mounted and movable endwise in bearings in said block at the rear of said rod D′ and having their lower end portions bent at an angle to their main bodies; the shoes H secured to said bent portions with their operating sides extending obliquely across the rails; the springs I interposed between the lower portions of the blocks F and the flanges J; the stop-bolts K and nuts L; means for raising said bars and shoes; and means for locking said parts in said raised position when not required in operation.

4. An ice breaker and clearer for snow-plows comprising a vertically-movable bar provided with a suitable ice-breaking shoe at its lower end; a sleeve-like block forming a bearing for said bar and mounted on a fixed pivot at its upper end, and in a vertical plane in advance of the vertical plane in which lies the operating edge of said ice-breaking shoe; means for limiting the forward movement of the lower end of said bar relative to said fixed pivot; means for normally holding the lower end of bar in its foremost position and permitting it to yield when the shoe comes in contact with an upwardly-projecting rail, paving-stone, or other unyielding obstruction.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, on this 24th day of November, A. D. 1897.

WM. R. BILLINGS.
EDWARD C. COLLINS.

Witnesses:
EDGAR L. CROSSMAN,
HARRIE T. ALBRO.