(No Model.)

2 Sheets—Sheet 1.

I. NICHOLSON.

CAR BRAKE.

No. 386,024. Patented July 10, 1888.

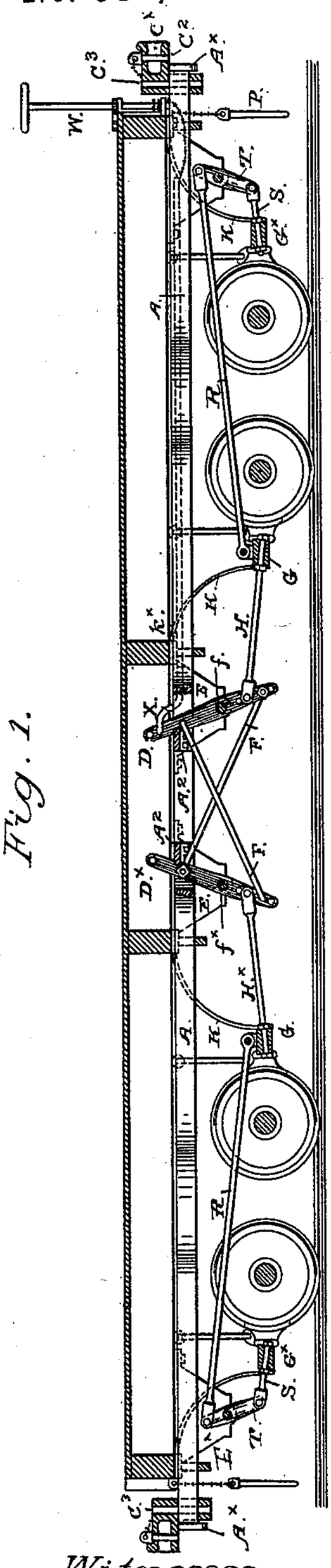

Fig. 1.

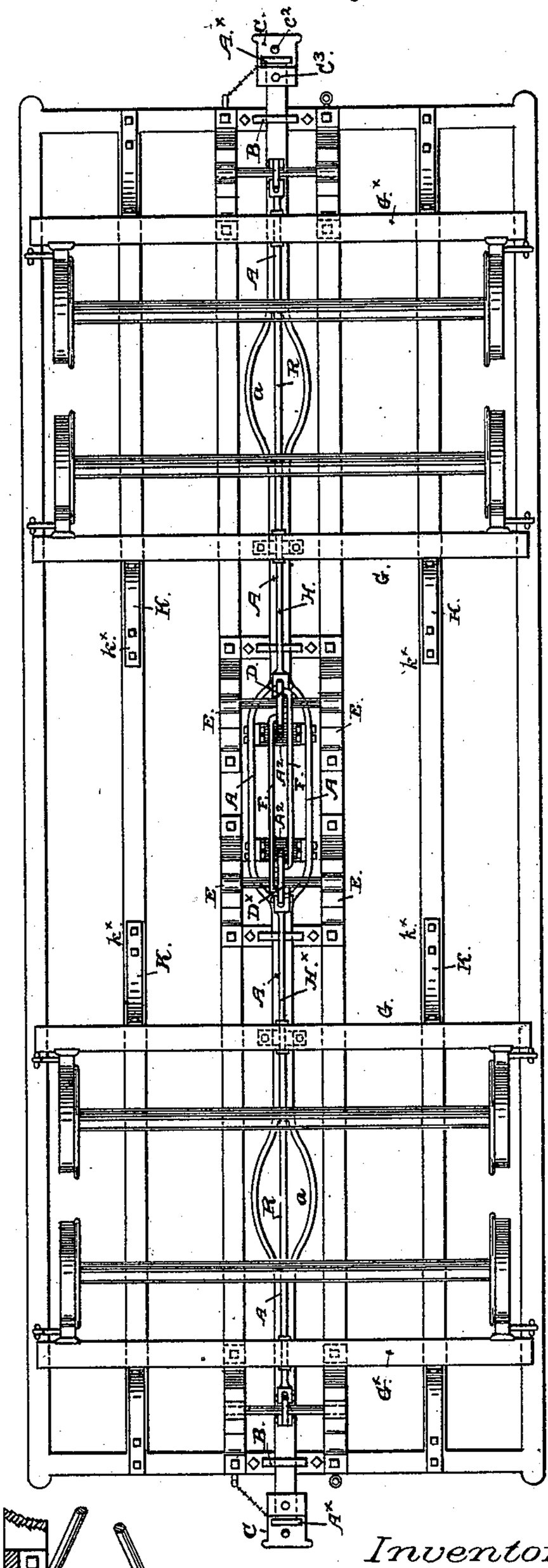

Fig. 2.

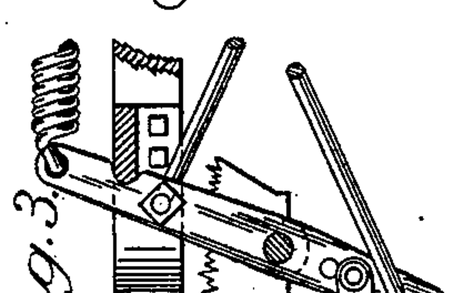

Fig. 3.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

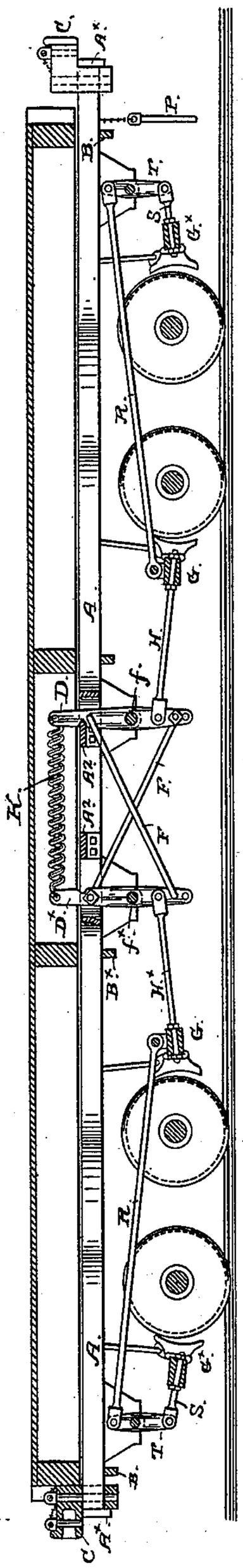
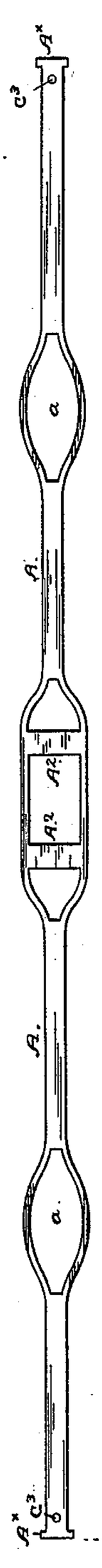


Fig. 5.



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UNITED STATES PATENT OFFICE.

ISAAC NICHOLSON, OF SAN FRANCISCO, ASSIGNOR OF ONE-HALF TO JOSEPH D. NICHOLSON, OF SIERRA CITY, CALIFORNIA.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 386,024, dated July 10, 1888.

Application filed February 3, 1888. Serial No. 262,962. (No model.)

To all whom it may concern:

Be it known that I, ISAAC NICHOLSON, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Self-Acting Railway-Car Brakes, of which the following is a specification.

My invention relates to improvements in railway-car brakes operated from a sliding draw-head, and which are held out of action by the strain or pulling force upon the draw-head when the train is in motion, but are applied or caused to act when the motion of the train is checked and the draw-heads are relieved from such strain or force.

The improvements constituting my invention consist in certain construction and combination of levers, draw-bars, sliding draw-heads, brake-beams, and springs, substantially as hereinafter set forth.

The nature of these improvements and the manner in which I construct, combine, and apply the same are explained in the following description, in which the drawings are referred to by figures and letters.

Figure 1 is a longitudinal section through the running-gear and bottom of a railway-car with my improved brake mechanism applied to all the wheels of the trucks. Fig. 2 is a reversed plan or bottom view, the axle-boxes and other parts of the trucks being omitted for the sake of clearness. Fig. 3 illustrates a modification in which the spring-power to throw on and hold the brakes is applied to the levers instead of directly to the brake-beams, this view being a detail of the lever and adjacent part of the draw-bar. Fig. 4 is a longitudinal section through a car-bottom and running-gear with the brake-beams suspended by links and the spring applied to the brake-levers. Fig. 5 is a view of the draw-bar.

In this invention the brakes are applied and held to the wheels by springs, which are always in condition to act. By means of levers and connecting-rods such connection is made with a sliding draw-head on the draw-bar that a strain or pulling force sustained by the draw-head which is sufficient to draw the car along will act contrary to the springs and hold off the brakes. Provision is made, also, for holding off the brakes when a train is to be backed or its direction of travel is to be reversed.

In the construction shown in Fig. 1 the springs which hold the brakes normally to the wheels are applied directly to the brake-beams; but the same results can be obtained by applying the springs at other points—as, for instance, between the corresponding ends of the two levers, as I have illustrated in Fig. 4. As applied to a railway-car of ordinary construction with two swiveled trucks, the draw-bar at either end of the car operates to hold off the brakes of both trucks.

The draw-bar A works in guides B B under the platform and carries on the end projecting beyond the platform a loose sliding draw-head, C, having the usual recess, $C^{\times}$, for the link, and holes C^{2} for the coupling-pin.

The draw-bar A runs under the car from end to end and carries a sliding draw-head at each end.

The draw-heads have a limited movement on the end of the draw-bar, but are held by a stop or shoulder, $A^{\times}$, on the ends.

D $D^{\times}$ are two levers pivoted in hangers E E, and having their arms or members extending in a vertical direction above and below the pivots. Direct connection between the lower arm of one lever and the brake-beam G of the truck nearest to that lever is made by a draw-rod, H. Connection is made in like manner of the lever $D^{\times}$ with the brake-beam of the other truck by the rod $H^{\times}$. The diagonal connecting-rods F F connect the opposite arms or members of these levers with each other, the upper end of the lever D with that end of the lever $D^{\times}$ which is below the fulcrum $f^{\times}$, and the lower end of the lever D with the end of the lever $D^{\times}$ which is on the opposite side of the fulcrum *f*. By this connection it will be seen that a force applied to the upper end of either one of the levers in an outward direction, or toward the ends of the car, of sufficient degree or power to draw out the bar A, will act to throw inward the ends of the levers on the opposite sides of the fulcrum-points f $f^{\times}$, and consequently to draw the brakes away from the wheels.

The draw-bar may be formed of straps or

bars riveted together and separated at points *a a*, to take around the swivel-bolts of the trucks, and also in the center of its length to embrace the levers; or it may be one piece with bends or openings formed at these points. In the center portion, and in position to set behind each lever D D×, is a cross-piece, A², on the draw-bar, of such character that it forms a stop to engage the lever. When a pulling force is applied to one end of the draw-bar, the leading stop A², or the one nearest that end, is brought up against the back of the lever in front of it, and if of sufficient strength to overcome the spring-power the lever will be drawn forward and the brakes held off by virtue of the connections between the levers and the beams or levers that carry the brake-shoes. As the two levers D D× are connected together, it follows that the movement of one by the engagement of the draw-bar stop with it will act upon the other, and thus operate both brake-beams or sets of brakes. In like manner a pushing force applied against either head of the draw-bar will bring a stop against the back of one of the levers, and by drawing or pressing that lever over will also take off the brakes. In such case it is the stop that is farthest from the point of application of the force which acts upon the farthest lever. To produce this action, the sliding draw-head is locked to the draw-bar by means of a pin, P, that is set into holes C³, provided for the purpose through the draw-head and the draw-bar at a point back of the usual aperture for the coupling-pin. This locking-pin is attached to the platform by a chain, and is always at hand for use. In the forward travel of the train the draw-heads are loose and set against the stops A× on the ends of the draw-bar; but when the movement is reversed and it is desired to back the train the draw-head on the front or leading end of each draw-bar throughout the train is locked to the bar.

The spring-power can be applied to the brakes either directly to the brake-beams, as I have shown in Figs. 1 and 2, or indirectly, as in Figs. 3 and 4. In the first arrangement the springs K K are secured to the framework of the car-bottom at *k**, and to the back of the brake-beam, while in the other application coil-springs are substituted for bar or plate springs, and are applied at suitable points on the levers D D to act upon the brake-beams.

The above-described construction and arrangement of brake mechanism to operate a set of brakes on the inner wheels of two trucks is the simplest form and application of my improvement; but by a simple combination of rods and levers, as represented in Figs. 1 and 4 of the drawings, a set of brakes can be operated at the same time on the outside wheels of the trucks. In such case the outside brake-beams, G×, will be connected to levers T by rods S, and these levers, having fulcrum in hangers E*, will be connected to the levers D by rods R, either directly or through the rods H and the brake-beams G, as shown.

Provision is made for throwing off the brakes by a hand-wheel, by connecting the end of one lever D to a brake-shaft, W, at the end of the platform by means of a rod or chain, X.

From the foregoing description any person skilled in the art can construct and apply my said invention. In the several views of the accompanying drawings only such parts of a car-body and running-gear are shown as are considered necessary to explain the manner of carrying out and operating these improvements in self-acting brakes.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a car-brake, the combination of a draw-bar, a loose sliding draw-head, levers D D×, having their contrary arms or the members on opposite sides of the pivots connected together, the brake-beams connected to the levers, as described, and springs which are applied to hold the brake-beam normally in action against the wheels of the trucks.

2. In a car-brake, a draw-bar, a sliding cross-head, levers D D×, and diagonal connections F, in combination with brake-beams, which are connected to the said levers, and springs so applied that they act upon the brakes to throw and hold them to the wheels when the pulling force or strain on the draw-bar becomes less than the force of the springs.

3. In a car-brake, a draw-bar extending from end to end of the car, having a loose sliding draw-head in each end, and stop or projection, in combination with levers set with relation to the draw-bar and these stops, as described, and connecting-rods which connect the levers together and to the brake-beams of both trucks, and springs applied to said beams or to the levers, as described, to hold the brakes to the wheels for operation, as set forth.

4. In a car-brake spring applied to throw and hold the brakes in action against the wheels, a draw-bar having a loosely-sliding draw-head on the end thereof, lever-connection between the draw-bar and the brake beam or lever, by which a pulling force or strain upon the draw-head acts upon or contrary to the spring force to hold back the brake, and means, substantially as described, for locking the draw-head to the draw-bar, for operation as set forth.

5. In a car-brake, a sliding draw-bar which is connected with the brake-beams to hold the brakes away from the wheels under the action of the pulling force sustained by the draw-bar, a spring applied to act contrary to such force and hold the brakes against the wheels, and a sliding draw-head and a locking-pin, in combination, as set forth.

6. The combination of the pivoted levers D

D×, diagonal connecting-rods F F′, sliding bar A, having stops or projections, as A², to engage the ends of said levers upon the same side of the pivots, and rods H H, connecting the opposite ends or members of the levers with beams or parts, as G G, to be moved, whereby said parts are simultaneously moved in opposite directions from a rectilinear movement of the slide-bar in one direction, as hereinbefore set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

ISAAC NICHOLSON. [L. S.]

Witnesses:

C. W. M. SMITH,

R. H. PEAT.