

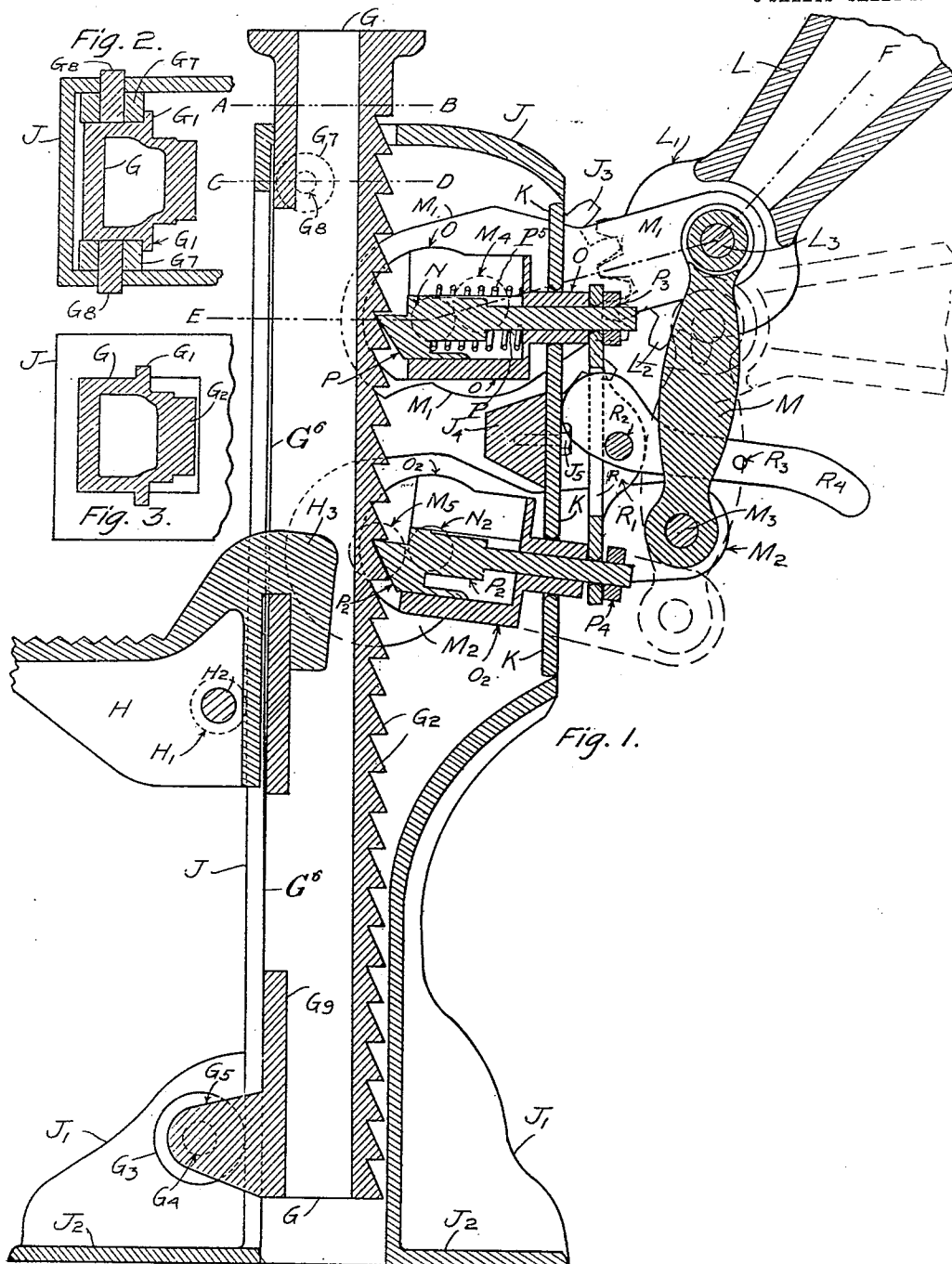
No. 831,756.

PATENTED SEPT. 25, 1906.

N. WEILER.
LIFTING JACK.

APPLICATION FILED JUNE 12, 1905.

3 SHEETS—SHEET 1.



Witnesses
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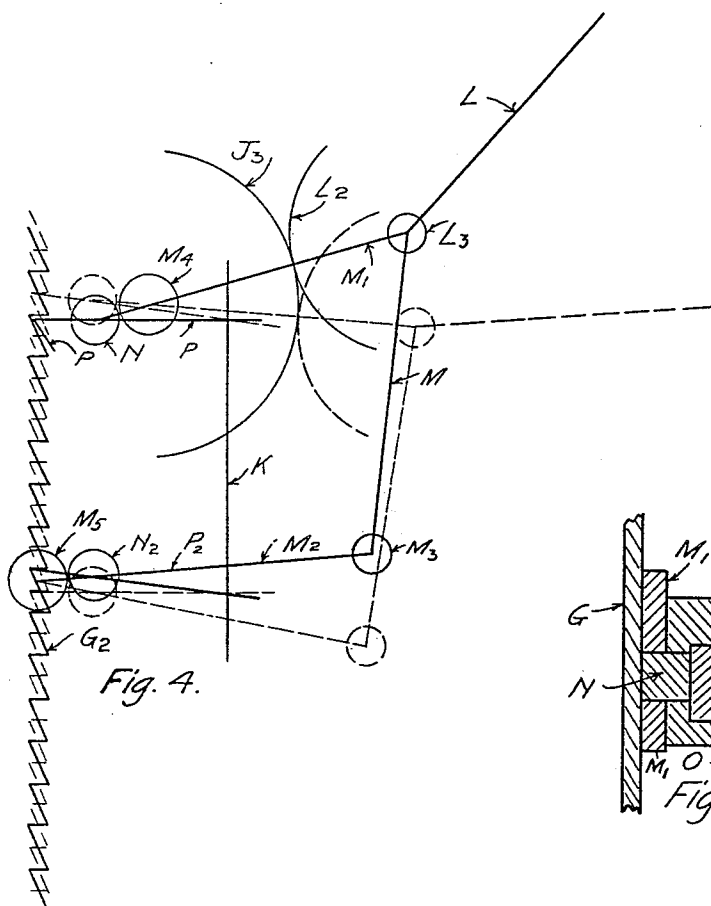


Fig. 4.

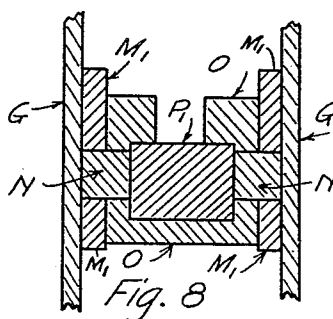


Fig. 8.

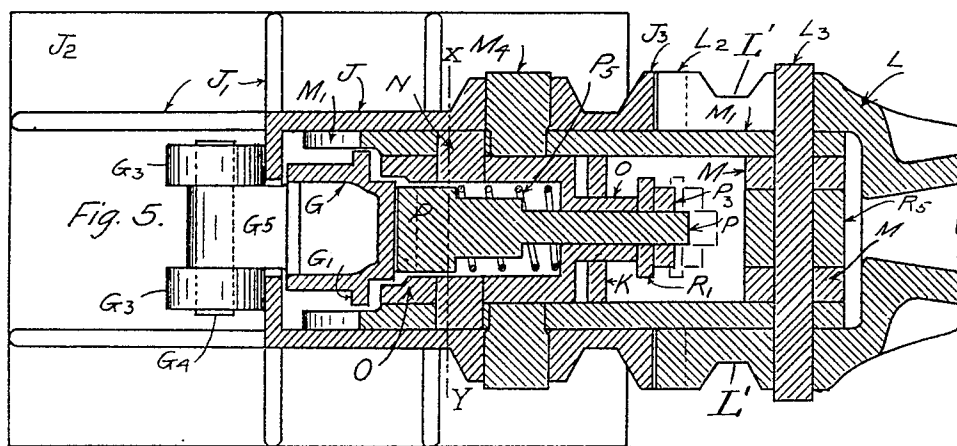


Fig. 5.

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E. H. [Signature]
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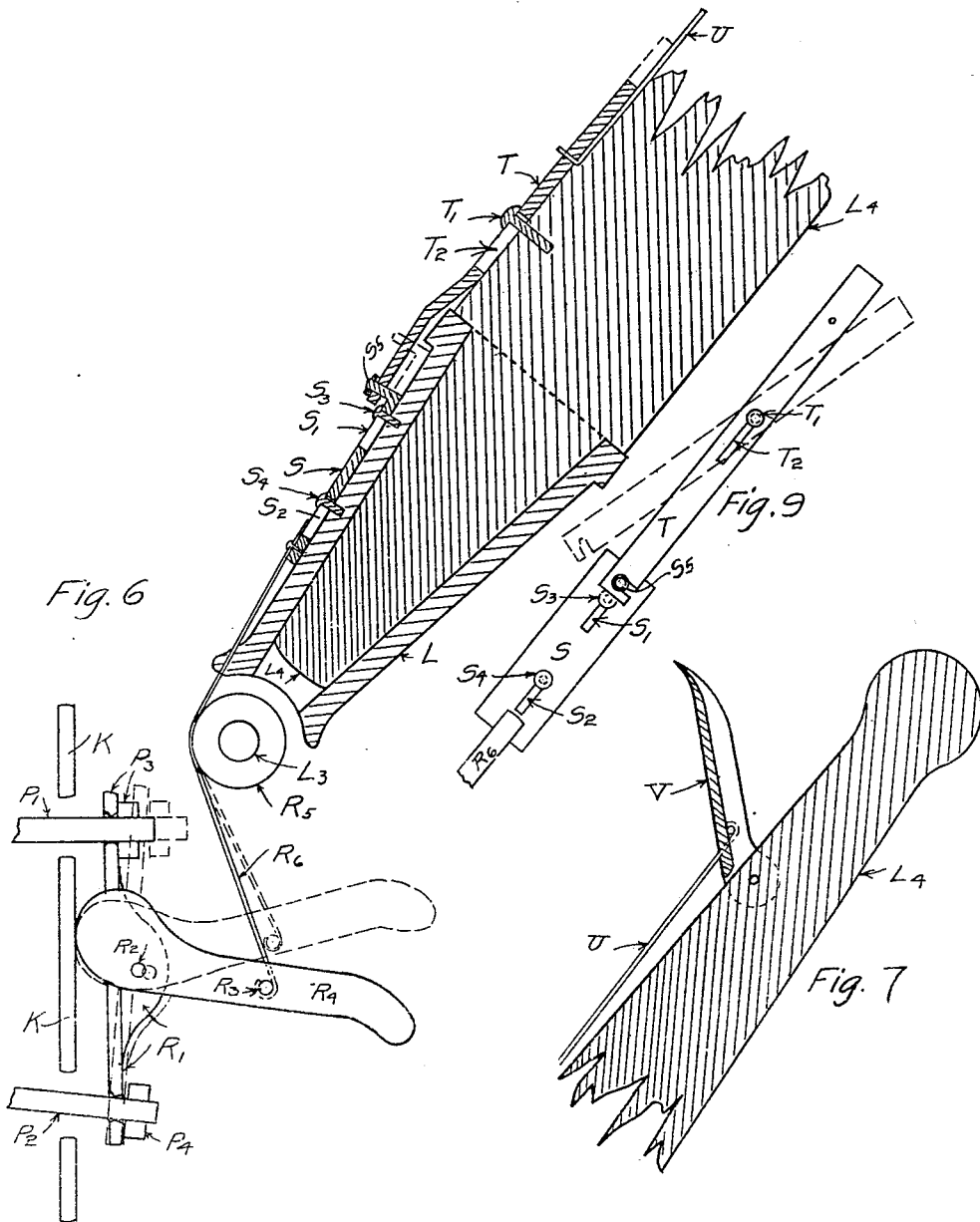
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3 SHEETS—SHEET 3.



Witnesses
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UNITED STATES PATENT OFFICE

NICHOLAS WEILER, OF SIOUX CITY, IOWA.

LIFTING-JACK.

No. 831,756.

Specification of Letters Patent.

Patented Sept. 25, 1906.

Application filed June 12, 1905. Serial No. 264,826.

To all whom it may concern:

Be it known that I, NICHOLAS WEILER, a citizen of the United States, residing at Sioux City, in the county of Woodbury and State of Iowa, have invented a new and useful Improvement in Lifting-Jacks; and I do declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to lifting-jacks; and the object of my invention is to provide a jack which may be operated in one direction to raise the load and reversed when it is desired to lower it.

It is designed as an improvement upon my lifting-jack patented June 27, 1905, No. 793,167.

In the accompanying drawings, Figure 1 is a vertical sectional view showing the operating parts of the jack, the springs being removed. Fig. 2 is a cross-sectional view on line C D, Fig. 1. Fig. 3 is cross-sectional view on line A B, Fig. 1. Fig. 4 is a diagrammatic view showing the operation of levers. Fig. 5 is a cross-sectional view on line E F, Fig. 1. Fig. 6 is an enlarged detail view showing longitudinal section of operating-lever and the reversing mechanism. Fig. 7 is a section of outer end of operating-lever. Fig. 8 is a cross-sectional view on line X Y, Fig. 5. Fig. 9 is a detail view of joints in rod used when load is lowered.

The invention consists of a frame inclosing a hollow bar having teeth upon one side, levers pivotally connected with the frame, pawls supported by carriages in the frame and operated by springs and levers, and a reversing mechanism operated in connection with the principal lever.

Referring now to the drawings, J is the outer frame, inclosing the hollow toothed bar G, having teeth G².

J² is the base of the frame, and J' J' braces connecting the frame and base and supporting the frame. On each side of the front of the frame are cogged sectors J³ J³, projecting somewhat from the frame and formed in one piece with the frame. A lever L, forked at the end applied to raising the load, has sectors L' L', with cogs L², adapted to mesh with the cogs on the sectors J³. The forked ends of the lever L are pivotally supported by an axis L³, extending through them and also through the flat vertical bars M M, which extend from the axis L³ to an axis M³, and the

narrow horizontal bars M' M', which are pivotally supported at their inner ends by the short axes M⁴ M⁴ in the outside of the frame. The axis M³ corresponds to the axis L³, and the outer ends of the narrow horizontal bars M² are pivotally supported at the inner ends by the axes M⁵ M⁵, corresponding to the axes M⁴. An adjustable piece K, having two annular openings one above the other, is adapted for adjustment to the frame of the jack between the horizontal bars and is secured to the frame by screw-bolts J⁵, inserted into a brace J⁴, connecting the two sides of the frame of the jack. The pawl-carriage O is hollow and is pivotally supported between the horizontal bars M' near the inner ends of said bars by short axes N N, secured to the bars and extending inwardly into annular openings in the sides of the pawl-carriage, Fig. 8. The outer end of the carriage is rounded and extends outward through the annular opening in the piece K. The pawl P, having a large head and narrow stem, is located inside of the carriage and is adapted to engage the teeth of the toothed bar. The stem of the pawl extends outward through the rounded part of the carriage, and the outer extremity is threaded and provided with a nut P³. A coil-spring P⁵ encircles the pawl and rests between the head of the pawl and the outer part of the pawl-carriage, the pressure of the springs on the carriage holding the pawl firmly against the toothed bar. A pawl-carriage O², similar to the carriage O, is pivotally supported between the horizontal bars M² by axes N² N², the rounded part of the carriage extending through the other opening in the piece K. This carriage is provided with a like pawl P², having the same kind of spring and at the outer end a nut P⁴.

The axes M⁴, supporting the inner ends of the bars M', between which the upper pawl-carriage is pivoted, being situated at about the center of the carriage and in front of the axes N of the pawl-carriage, this carriage and pawl are lowered when the lever is raised. The axes M⁵ being situated in the rear of the lower pawl-carriage and of its axes N², this carriage and pawl are raised when the operating-lever is raised. When a movement is imparted to the operating-lever, the pawls and carriages are alternately elevated, the lower ones being raised when the outer end of the lever is elevated, the spring holding the pawl in engagement. At the same time the upper pawl is lowered and forced out of en-

gement with the toothed bar. At the downward stroke of the lever the upper pawl is raised, carrying the bar upward, and at the same time the lower pawl is forced out of engagement, and, being free of the load, permits the bar to pass. The coil-springs normally hold both pawls against the bar, and they are only out of engagement during the alternating stroke of the lever. When it is desired to lower the load, the operation is reversed. By throwing the pawls outward at each stroke of the lever the bar is lowered instead of raised. A flat perpendicular piece R, having two slots corresponding to the two pawls and a rounded projection R', is adjusted to the stems of the pawls and held in place between the rounded parts of the carriages and the nuts on the ends of the stems, the projection being about midway between the pawls. A lever R⁴, having a cam projection or enlarged end, is pivoted to the rounded projection of the piece R by means of the axis R², and when the outer end of the lever R⁴ is raised the rounded part presses against the piece K above the center of the piece, pulling the lower end of the piece R outward and forces the lower pawl out of engagement. When the lever is lowered, the movement is reversed and the upper pawl is forced out. This lever may thus be used at will to alternately throw the pawls out in lowering the load. In Figs. 6, 7, and 9 is shown a means for using this lever in connection with the operating-lever L, which, being hollow, is lengthened by the insertion of the handle L⁴. A button R³ is secured to the lever R⁴ and a cord R⁶ secured thereto, passing over a pulley R⁵ upon the shaft L³ and over the lever L, where it is secured to a rod having jointed parts S, T, and U, the latter being secured to a hand-lever V, pivotally secured to the handle L⁴. The joints are provided in order that the rod may be easily taken apart when the handle is removed. The part S is provided with slots S' and S², through which are inserted, respectively, the headed brads S³ and S⁴, which are driven into the handle L⁴. At the upper end of the part S is a button S⁵, and the lower end of the part T is provided with a slot or eye, which hooks upon the button. The part T has near the center a slot T², through which is inserted into the handle L⁴ the headed brad T'. The lower end of the upper part U is formed into a hook and inserted in a hole in the upper end of the part T. The parts S and T are thus permitted to slide upon the lever and handle during the operation of the lever R⁴. When the handle is removed, the part T is first unhooked from the button S⁵ and removed from the brad T'.

To remove as much friction as possible from the bar G during its operation, the bar is provided with projecting tongues G' G' upon each side, which slide along the pulleys G⁷ upon the axes G⁸ in the upper part of the sides

of the frame. At the lower end the bar is provided with a pulley G³ upon an axis G⁴, pivotally secured in an extension G⁵ on the back side of the bar. The slot in the back side of the frame, Fig. 5, extending the whole height of the frame, permits the passage of the roller, which presses upon the sides of the frame adjacent to the slot. The bar G is hollow and on the back side is provided with slots, as G⁶, in which may be inserted a foot H, by means of a hook H³. The foot is also provided with a roller H' upon an axis H², pivotally secured in the frame of the foot. The foot may be adjusted to the slot, and thus utilized when low objects are to be raised.

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

1. The combination with an upright movable bar having teeth on one side thereof, and a frame supporting said bar, of bars fulcrumed to the frame, pawls supported by said bars and adapted for engagement with said toothed bar, springs for normally holding said pawls in engagement, and a lever fulcrumed to said bars and adapted to elevate said pawls whereby the same are alternately thrown into engagement with said toothed bar and said bar raised, substantially as described.
2. The combination with an upright movable bar having teeth on one side thereof, and a frame supporting said bar, of bars fulcrumed to the frame, pawl-carriages fulcrumed to said bars, pawls movable in said carriages and adapted for engagement with said bar, springs for normally holding said pawls in engagement, and a lever fulcrumed to said bars and adapted to alternately elevate said carriages and pawls whereby said toothed bar is raised, substantially as described.
3. The combination with an upright movable bar having teeth on one side thereof, and a frame forming a guide or passage way for said bar, of parallel, horizontal bars fulcrumed to said frame, pawl-carriages supported by said bars, pawls movable in said carriages, and adapted to engage the teeth of said bars, springs for normally holding said pawls in engagement, and a lever fulcrumed to said parallel bars and adapted to elevate the same whereby the pawls alternately engage the teeth of said toothed bar and said bar is raised, substantially as described.
4. The combination with an upright movable bar having teeth on one side thereof, and a frame supporting said bar, of normally horizontal bars fulcrumed near the center to the frame, a pawl-carriage fulcrumed to said bars near the inner ends thereof, a pawl movable in said carriage and adapted to engage the teeth of said toothed bar, a spring for normally holding said pawl in engage-

ment, bars normally horizontal fulcrumed at the inner ends to said frame, a pawl-carriage fulcrumed to said bars near the middle thereof, a pawl movable in said carriage to engage the teeth of said upright bar, a spring for normally holding said pawl in engagement, and a lever fulcrumed to said horizontal bars and adapted to alternately raise and lower the same, substantially as described.

5. The combination with an upright movable bar having teeth on the front side thereof, a frame supporting said bar, and cogged sectors on the front side of said frame, of normally horizontal bars fulcrumed to said frame, pawls supported by said bars and adapted to engage said toothed bar, springs for normally holding said pawls in engagement, and a lever fulcrumed to said bars having cogs adapted to engage the cogs of said sectors and raise said bars whereby the pawls are alternately elevated and the upright bar raised, substantially as described.

6. The combination with an upright movable bar having teeth on the front side thereof, a frame supporting said bar, and cogged sectors on the front side of said frame, of normally horizontal bars fulcrumed near the center to the frame, a pawl fulcrumed to said bars near the inner ends thereof and adapted to engage the teeth of said upright bar, bars normally horizontal fulcrumed at the inner ends to the frame, a pawl fulcrumed to said bars near the middle thereof and adapted to engage the teeth of said upright bar, means for normally holding said pawls in engagement, and a lever having cogs adapted to engage the cogs of said sectors, fulcrumed to said horizontal bars and adapted to alternately raise and lower the same, substantially as described.

7. The combination with an upright movable bar having teeth on one side thereof, and a frame supporting said bar, of bars fulcrumed to the frame, pawl-carriages supported by said bars, pawls movable in said carriages adapted to engage said upright bar, means for normally holding said pawls in engagement, a lever fulcrumed to said bars and adapted to elevate the same, and a lever pivotally connected with said pawls and adapted to throw the pawls out of engagement, substantially as described.

8. The combination with an upright movable bar having teeth on the front side thereof, a frame supporting said bar, and cogged sectors on the front side of said frame, of normally horizontal bars fulcrumed to said frame, pawl-carriages supported by said bars, pawls movable in said carriages and adapted to engage said upright bar, means for normally holding said pawls in engagement, an operating-lever fulcrumed to said bars having cogs adapted to engage the cogs of said sectors, a lever pivotally connected with said pawls and adapted to throw the pawls out of engagement, and means connecting said lever with the operating-lever whereby both levers may be used together for lowering the load, substantially as described.

9. The combination with a hollow, upright movable bar having teeth on one side thereof, and a frame supporting said bar, of bars fulcrumed to the frame, pawls supported by said bars and adapted for engagement with said toothed bar, springs for normally holding said pawls in engagement, a lever fulcrumed to said bars and adapted to elevate said pawls whereby the same are alternately thrown into engagement with said toothed bar and said bar raised, and rollers against which said bar is adapted to slide when raised and lowered, substantially as described.

10. The combination with a hollow, upright movable bar having teeth on one side thereof and slots in one of the other sides of said bar, and a frame supporting said bar and having a slot in one side thereof, of pawls adapted for engagement with said toothed bar, means for operating said pawls and means for holding said pawls in engagement with said bar whereby the bar is raised and lowered, a foot adapted for adjustment to the slots in said bar and a roller for reducing the friction between the foot and frame, substantially as described.

In testimony whereof I have hereunto affixed my signature in the presence of two witnesses.

NICHOLAS WEILER.

Witnesses:

E. F. SIMMONS,
RALPH H. MUNRO.