7 Sheets. Sheet 1.

[22.]

A. McKenzie. Carriage Top.

No. 119,166.

Patented Sep. 19, 1871.

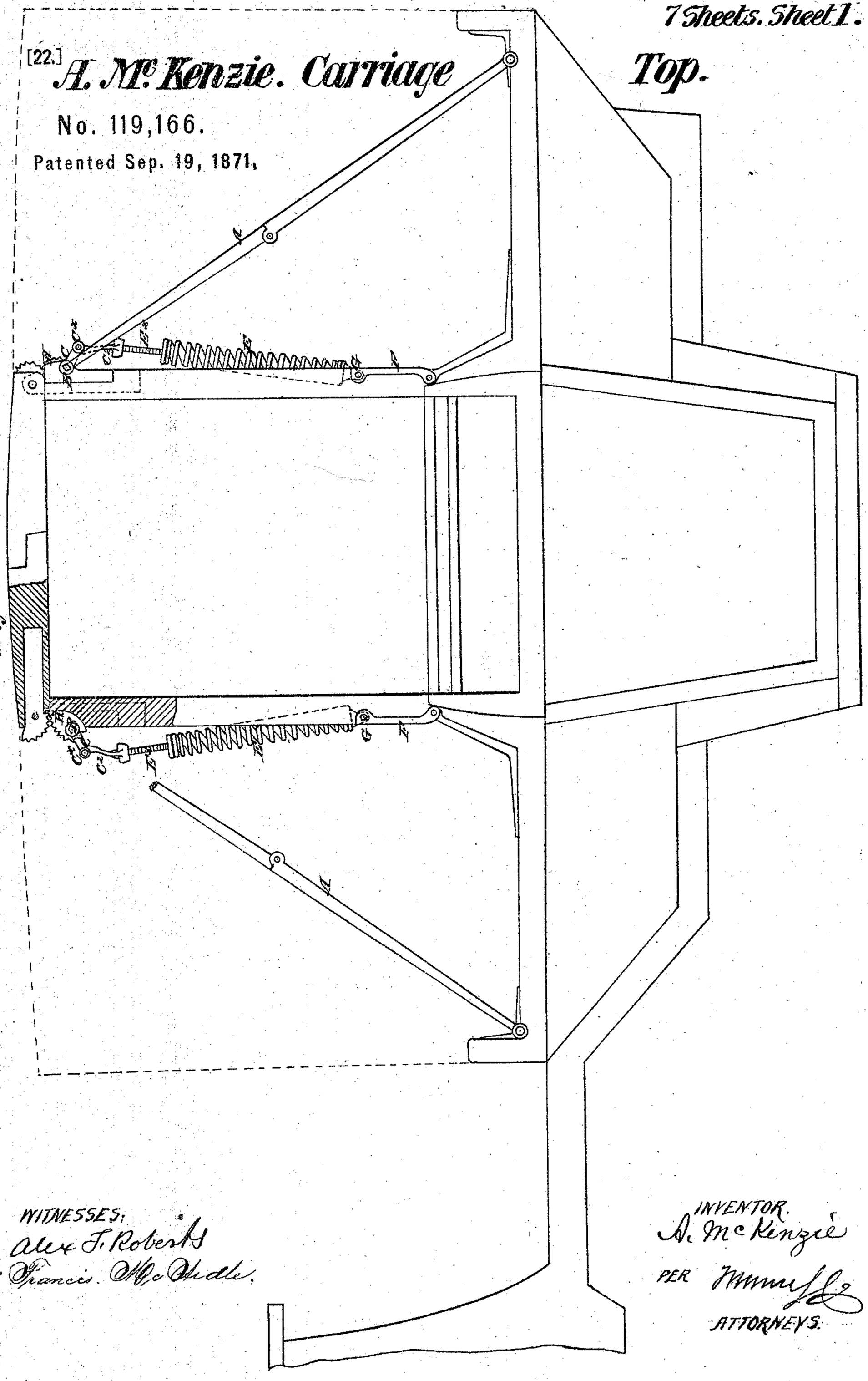

Fig. 1.

WITNESSES:
Alex F. Roberts
Francis McArdle.

INVENTOR.
A. McKenzie
PER Munn & Co
ATTORNEYS.

A. McKenzie.

Carriage Top.

7 Sheets. Sheet 2.

[22.]

No. 119,166.

Patented Sep. 19, 1871.

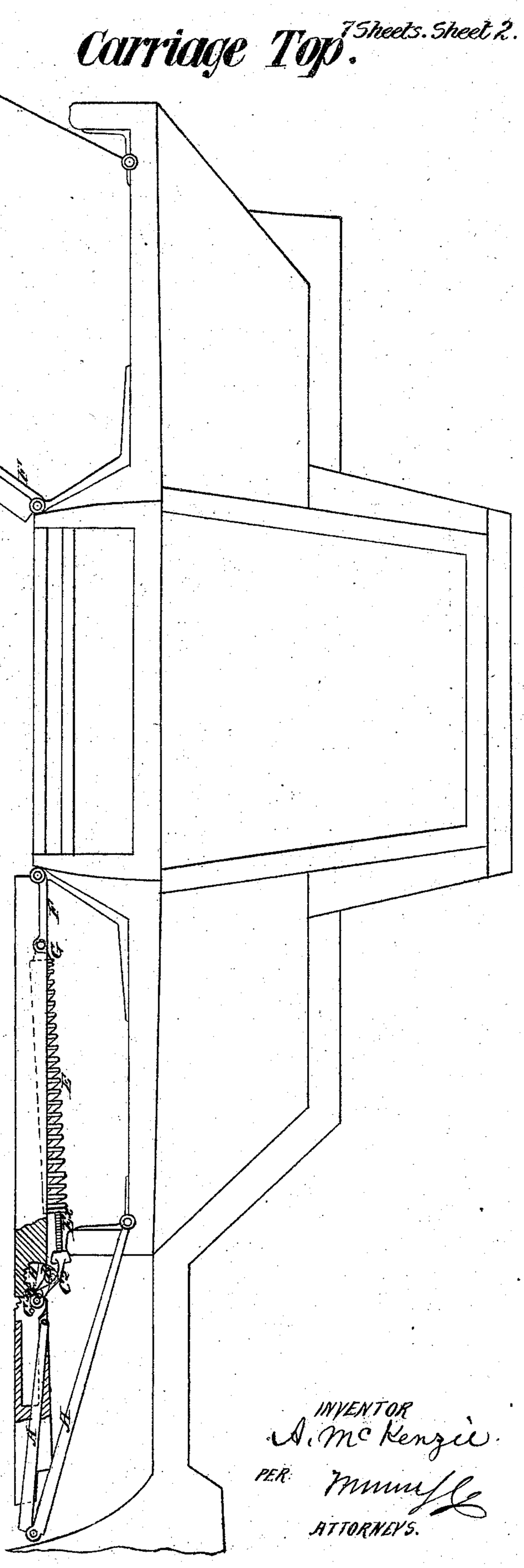

Fig. 2.

WITNESSES:
Alex F. Roberts
Frances McArdle.

INVENTOR
A. McKenzie.
PER: Munn & Co
ATTORNEYS.

7 Sheets. Sheet 3.

[22.]

A. McKenzie. Carriage Top.

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Fig. 4.

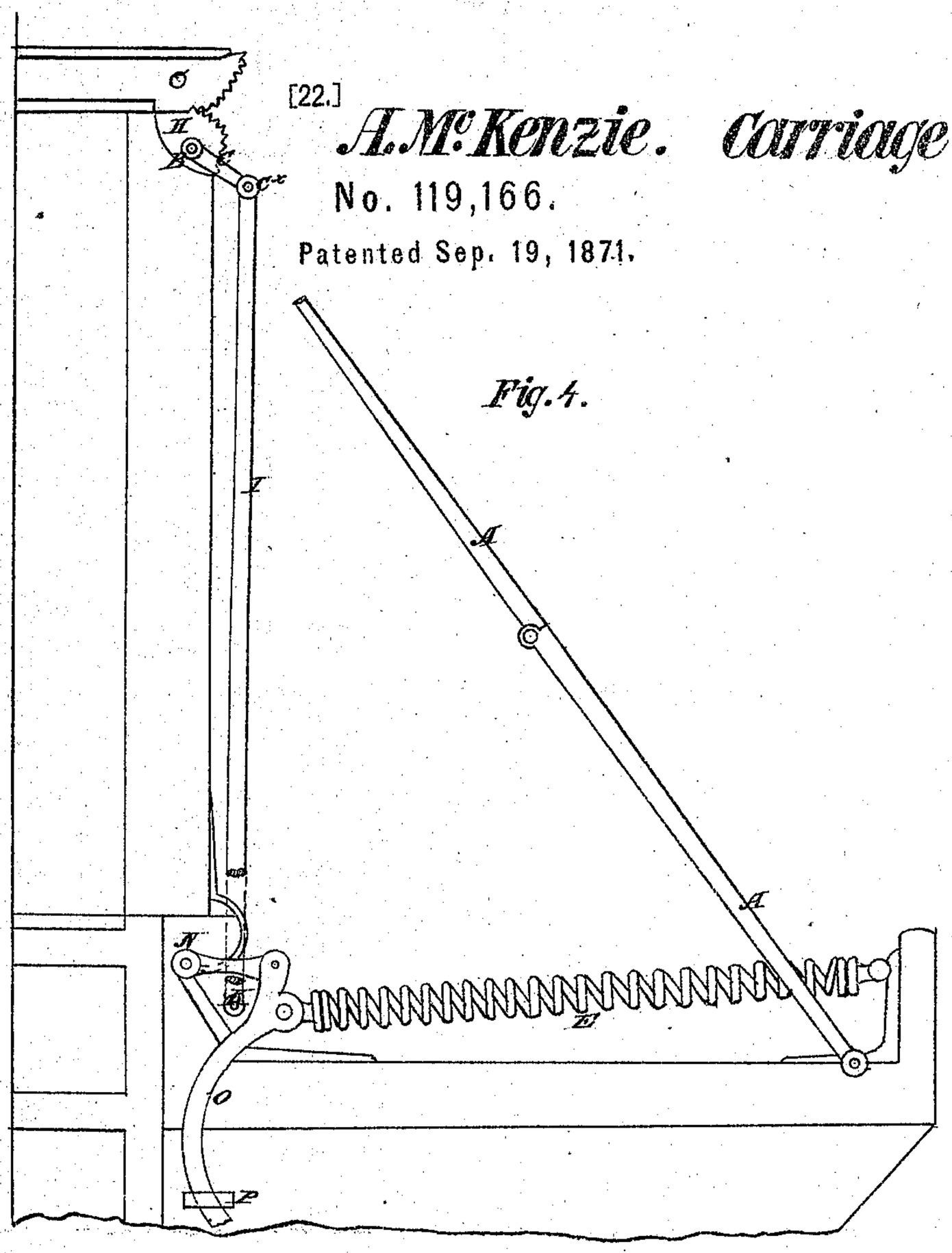
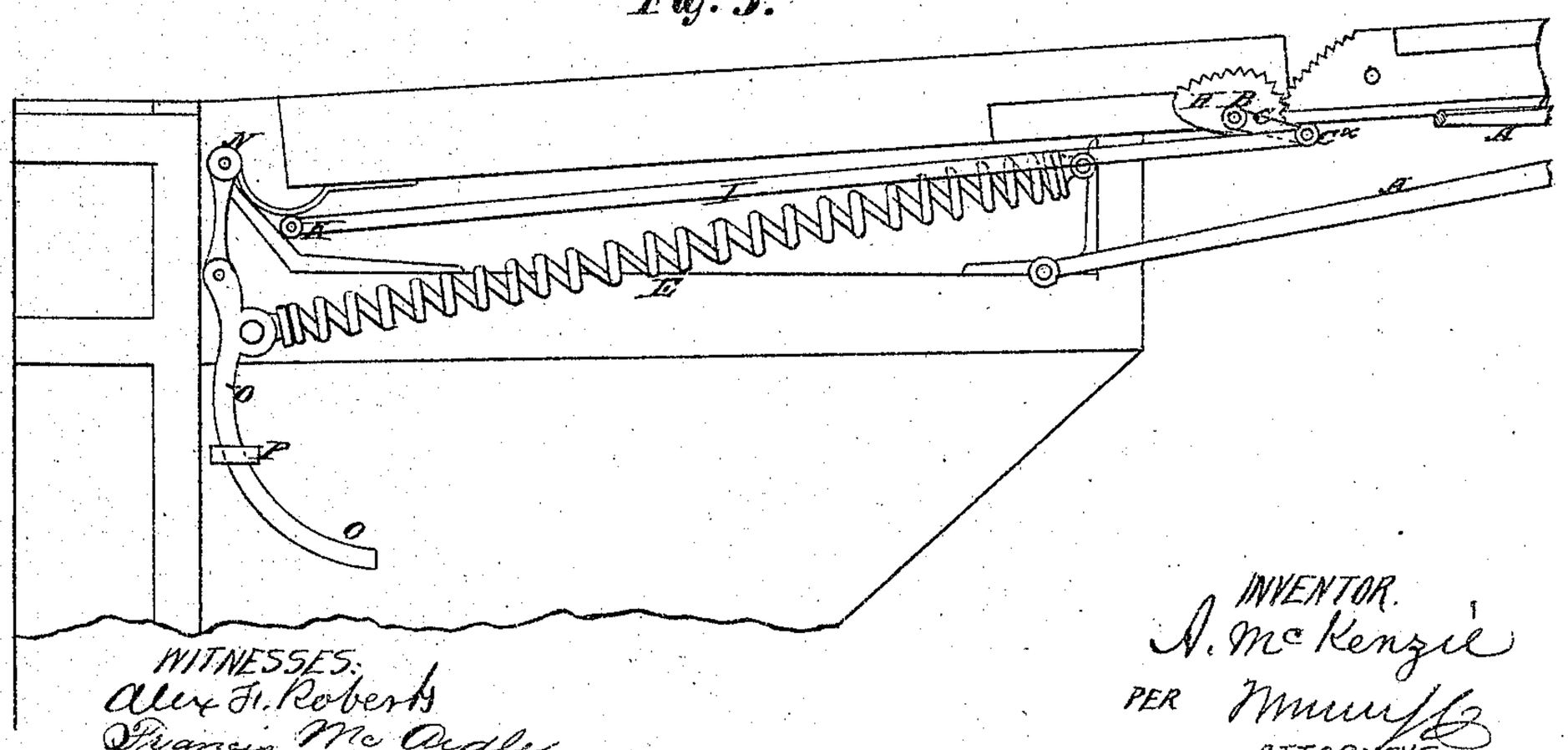


Fig. 3.



WITNESSES:
Alex H. Roberts
Francis McArdle

INVENTOR.
A. McKenzie
PER Munn & Co
ATTORNEYS.

A. McKenzie. Carriage Top.

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[22.]

No. 119,166.

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Fig.5.

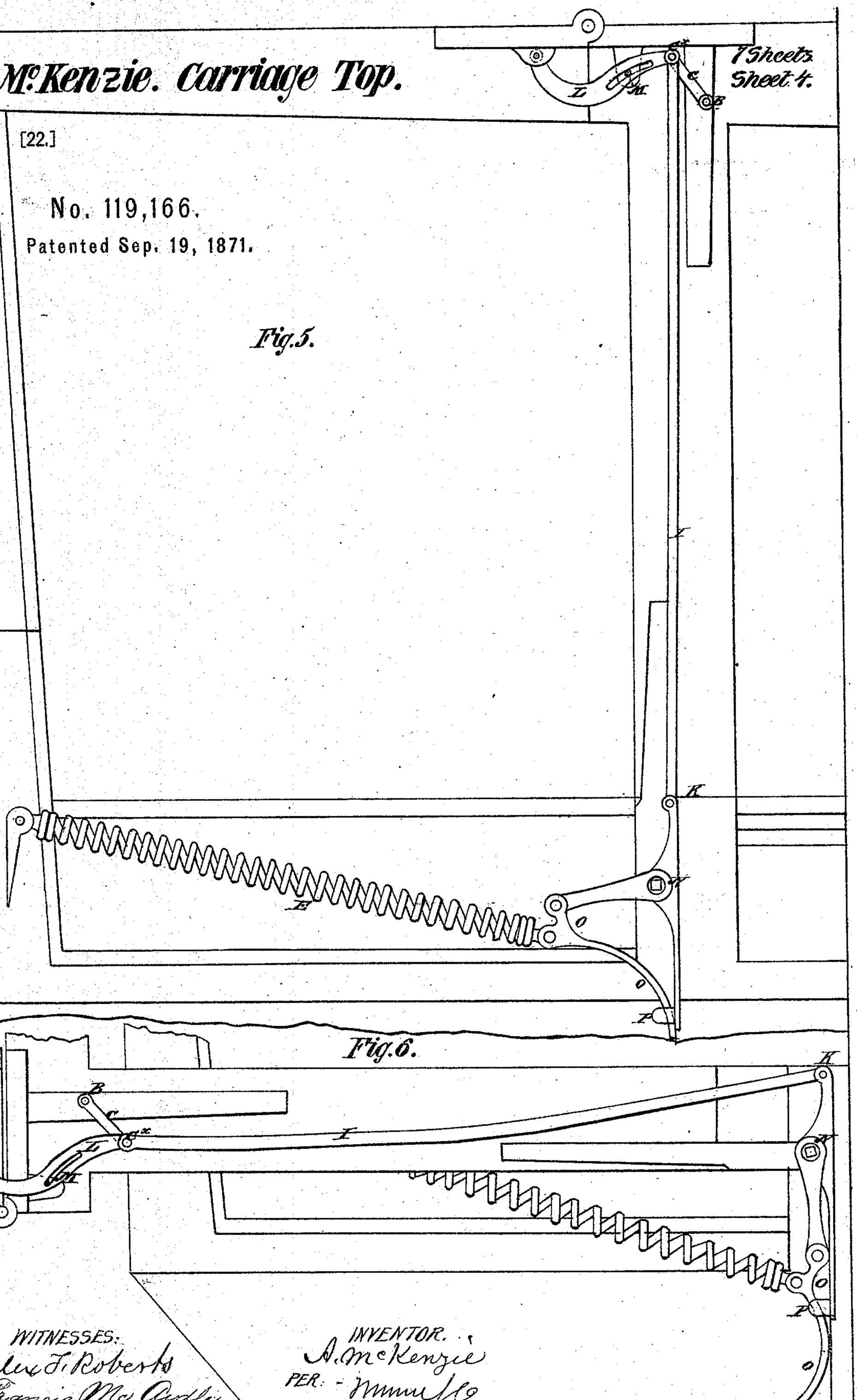

Fig.6.

WITNESSES:
Alex. F. Roberts
Francis McArdle.

INVENTOR.
A. McKenzie
PER. - Munn & Co
ATTORNEYS.

[22.]

A. McKenzie. Carriage Top.

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Fig. 8.

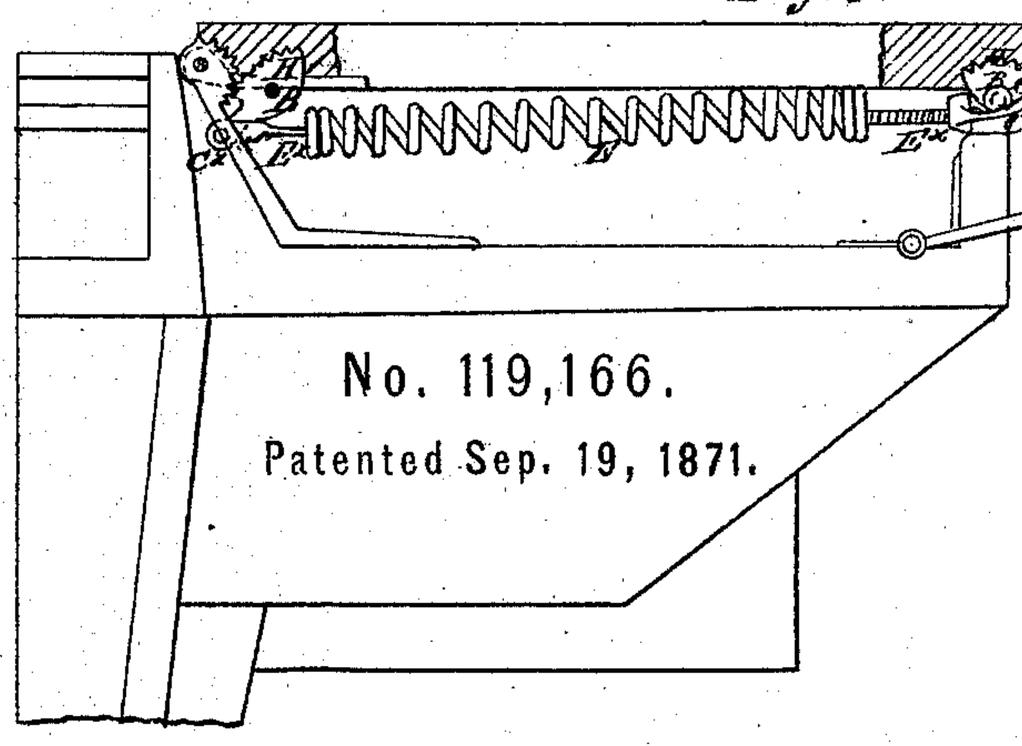

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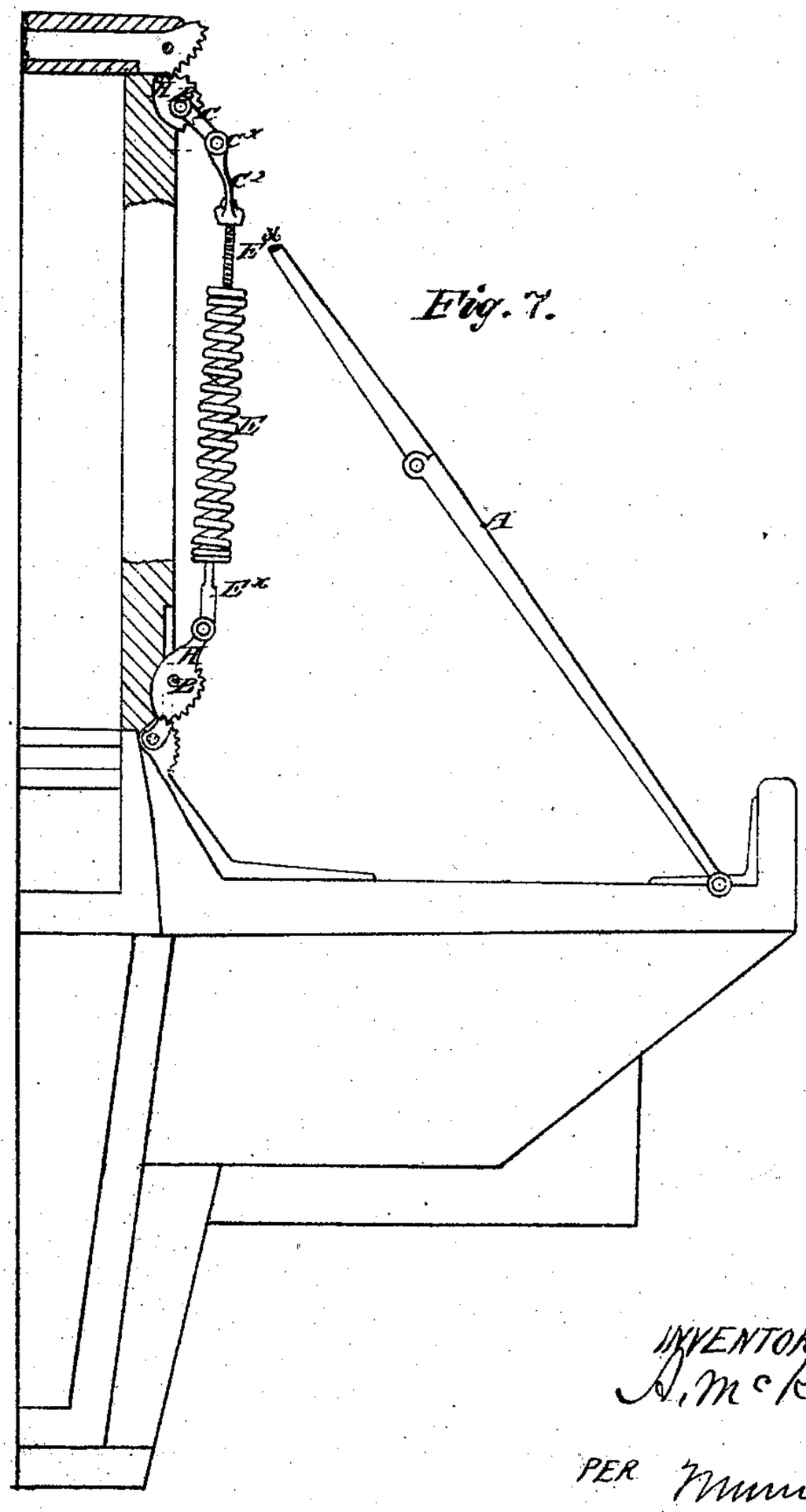
Fig. 7.



WITNESSES:

Alex. F. Roberts

Francis McArdle

INVENTOR.

A. McKenzie

PER Munn & Co

ATTORNEYS.

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[22.]

Fig. 9.

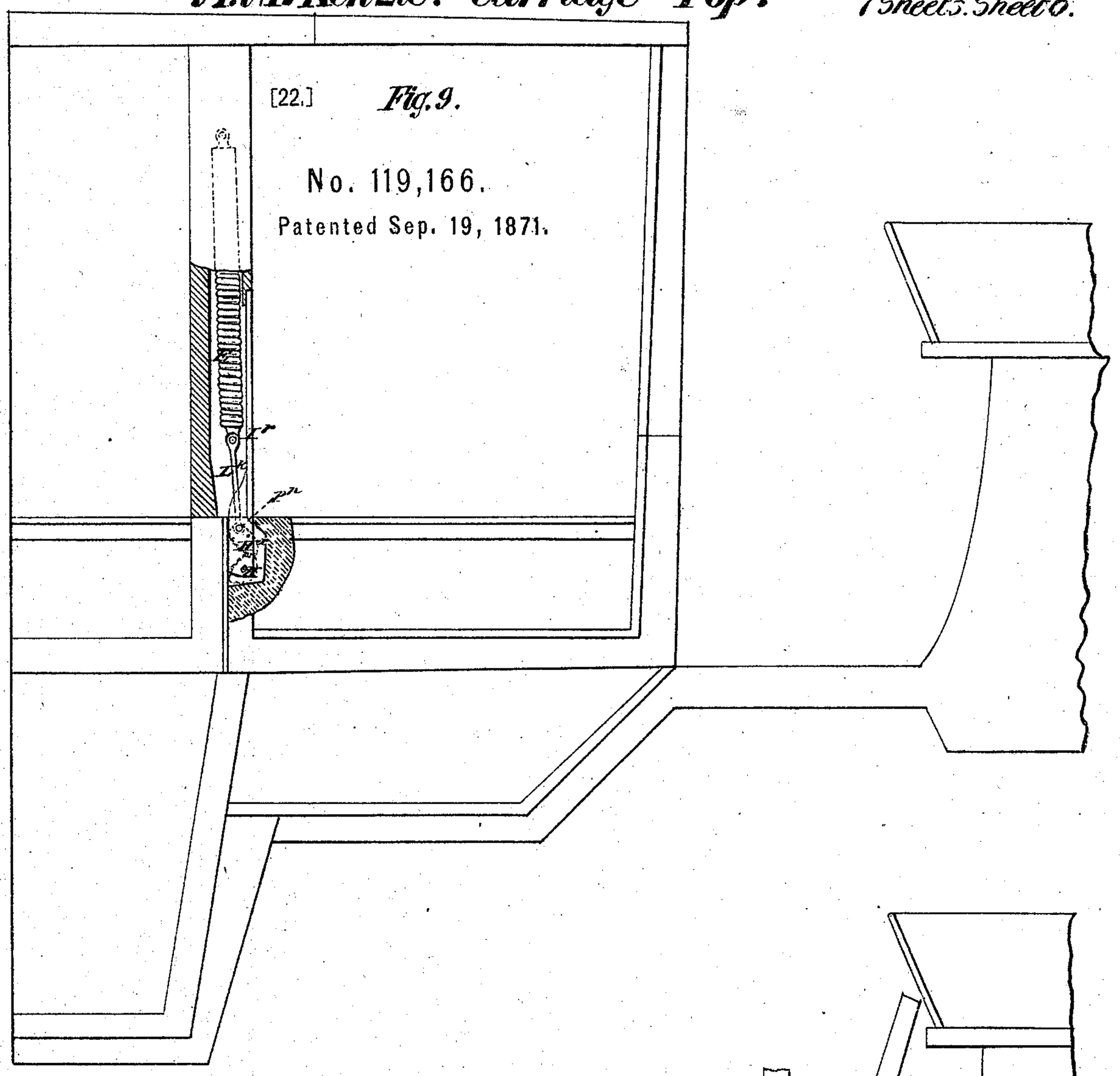

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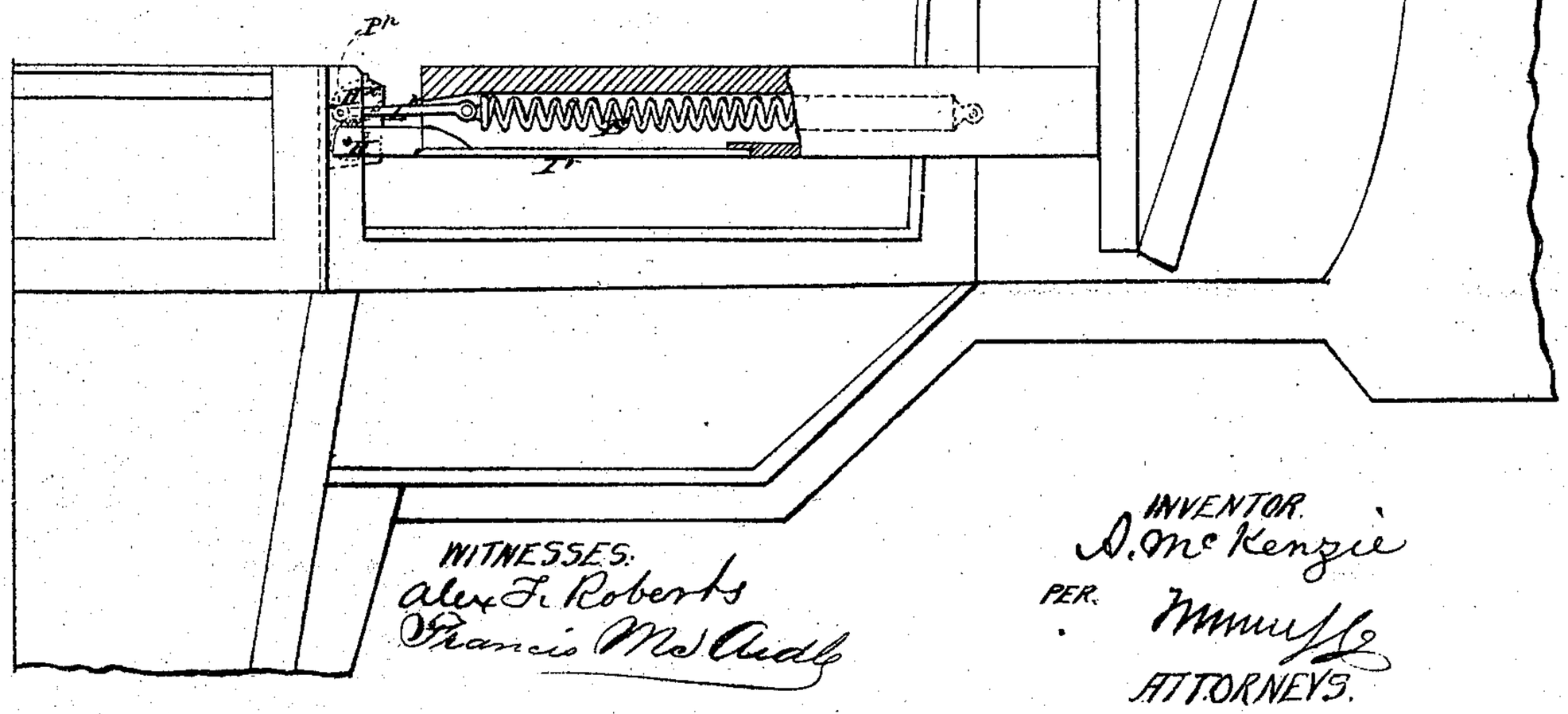
Fig. 10.



WITNESSES:
Alex. F. Roberts
Francis McArdle

INVENTOR.
A. McKenzie
PER.
Munn & Co
ATTORNEYS.

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Sheet 7.

Fig. 15.

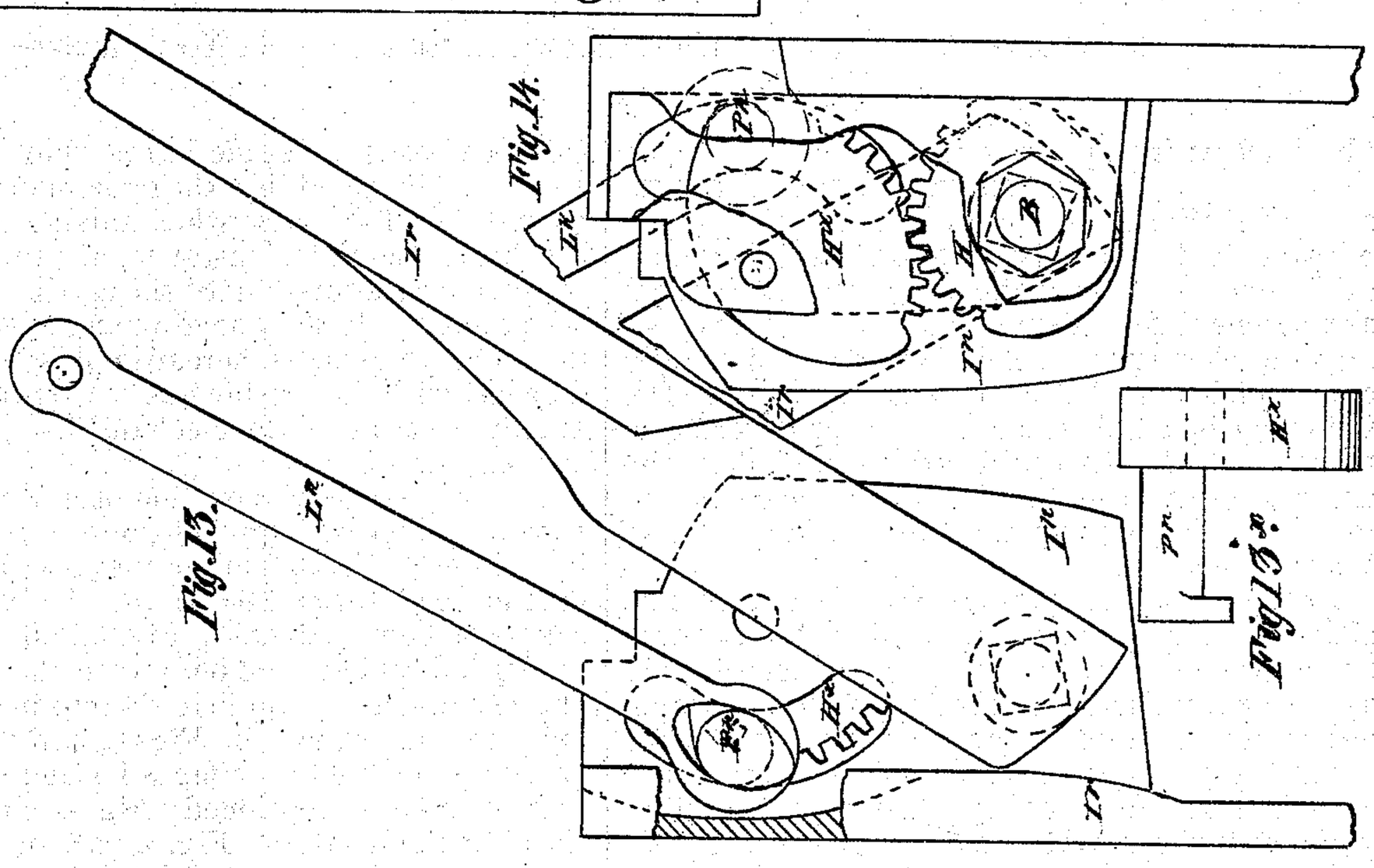


Fig. 14.

Fig. 16.

Fig. 13.

Fig. 12.

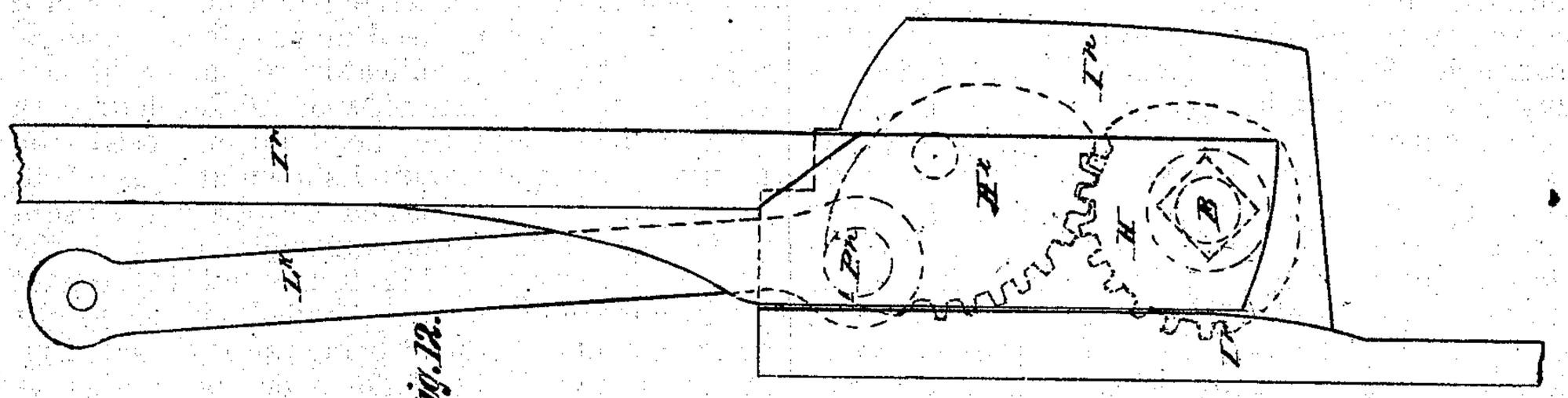
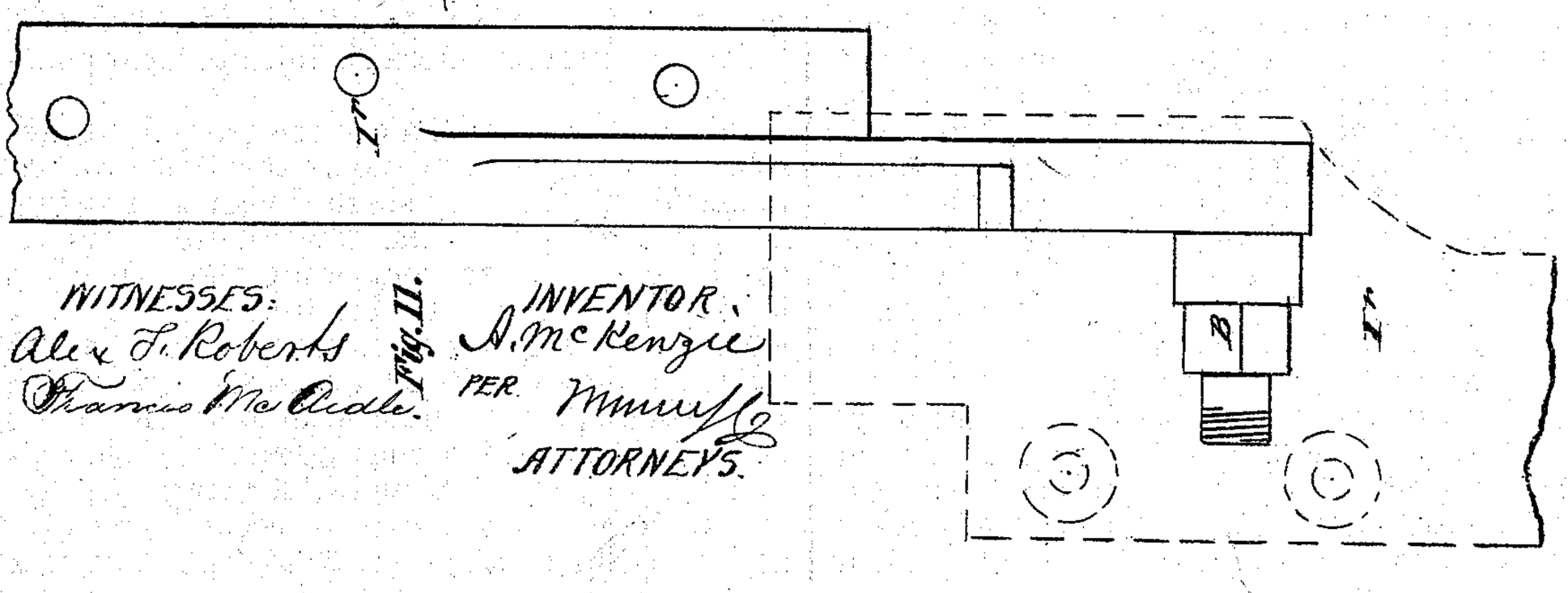


Fig. 11.



WITNESSES:
Alex F. Roberts
Francis McArdle.

INVENTOR.
A. McKenzie
PER Munn & Co
ATTORNEYS.

UNITED STATES PATENT OFFICE.

ALEXANDER McKENZIE, OF WESTMINSTER, ENGLAND.

IMPROVEMENT IN CARRIAGE-TOPS.

Specification forming part of Letters Patent No. 119,166, dated September 19, 1871.

To all whom it may concern:

Be it known that I, ALEXANDER McKENZIE, of Little Windmill street, Haymarket, Westminster, in the county of Middlesex, England, have invented a new and improved mechanical arrangement for raising and lowering or opening and closing the heads or tops of carriages and vehicles; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

In the construction of my said improved mechanical arrangements applicable to carriage-heads, which are made to open and close, such as the landau, I use the ordinary outside carriage-head joint or jointed support, although in some cases I can dispense with the use thereof, the same having, however, by preference, an action given to it the reverse of that usually adopted, as hereafter described—that is to say, the upper end thereof is attached to a turning axis, which works on the pillar top or equivalent part of the carriage. To this axis lever-teeth or other gearing is secured, which gearing is also connected to the cant-rail, hoop stick, or equivalent, and likewise to a spiral or other convenient spring made of India rubber or other suitable material, the lower end of which spring is secured to the lower part of the pillar top or equivalent. These parts can all be covered. The other end of the outside carriage-head joint can be provided with the same arrangement of gearing and spring either in addition to or substitution for that at the top end. Ropes or chains and pulleys may be used to enable the head to be raised or lowered, or opened and closed, from the coachman's or traveler's seat. The opening and shutting or raising and lowering are effected without handling the jointed supports, as is necessary in the ordinary arrangements, by pushing or pulling the head in the usual way, except when the ropes and chains are used, when it may be effected by acting on them; but this will, according to the arrangements I prefer to adopt, cause the carriage-head joint or support to strike outward and not inward, as generally is the case; hence, when the carriage-head has to be raised in order to close the same it can be much more easily effected than by the ordinary arrangements. Where carriage-heads have side lights which can be slid along and dropped into the door, or otherwise removed out of the way when raising or lowering the head—such, for instance, as are sometimes adopted for the fore-half of the carriage—I can so adapt and apply the above arrangements or modifications thereof, as hereafter described, as to dispense with the outside joint or jointed support, and by covering all the mechanism keep the same entirely out of view.

Figure 1 shows the outline of a carriage-body with my invention applied thereto, the head being closed; Fig. 2, similar view, with the front part of head lowered down and the back part in course of being lowered; Fig. 3, outline view of hinder half of carriage-body with the head down and my invention applied thereto in a modified form to that shown in Figs. 1 and 2, this form being applicable to carriages having side lights, as hereinbefore mentioned; Fig. 4, similar view, showing the head up; Fig. 5, part of fore-half of a carriage-body having the head up, with another modification of the motive gear applied thereto; Fig. 6, same having head down—these arrangements being also applicable to side-light carriages; Fig. 7, outline view of hinder half of a carriage-body with the head up or closed, the motive gearing of the kind shown at Figs. 1 and 2 being provided at both ends of the jointed support; Fig. 8, the same arrangement with the head down or open; Fig. 9, fore-half of body of a carriage which may be provided with side-light arrangements, the head being up or closed; Fig. 10, the same with head down or open; Figs. 11 to 15, detail views, showing motive-gear arrangements, such as shown, adopted in Figs. 9 and 10.

Similar letters of reference indicate corresponding parts.

In said figures, whenever the parts hereafter referred to appear, A denotes the joint support, indicated at Fig. 2 by single lines; B, turning-axis, centered to the pillar, top or bottom, or both, as shown; C, lever, connecting the axis by a joint, $C^{\times}$, with a double bent iron or sling, C^2, to which the spring E is connected by means of the adjusting-screw bolt $E^{\times}$ and nut thereon. F, Figs. 1 and 2, is an iron secured to the lower part of pillar, and securing the spring at the bottom by the joint G, C^1 and C^2 forming a jointed crank. H denotes the toothed eccentric or sector keyed on the turning-axis B, and gearing with

another toothed sector firmly secured to the cant-rail, the construction and action whereof will be readily understood from the foregoing statements and inspection of the accompanying drawing.

In Figs. 3, 4, 5, 6 the following letters are used in addition to some of those already mentioned, which refer to parts not before represented—namely, I *a*, connecting-rod, secured by the joint $C^{\times}$, and also, at the other end, by a joint, K, which secures it to an iron fixed to the body of the carriage. To the upper joint $C^{\times}$ a bent slotted lever, L, is secured, which is also secured to the frame of the top of the carriage, as shown, in the slot, whereof a guide-pin, M, works, such guide-pin being secured to the upper part of the carriage-frame, as shown. At the other end the connecting-rod I is secured to a plate fixed to the carriage-body, such plate being provided with a turning axis, N, on which the crank-lever arrangements O work, one end sliding in the guide P. To this crank-lever arrangement the spring E is attached, as also at its other end to a non-movable part of the carriage-framing, as shown. On inspection of the drawing it will be seen that in Figs. 3 and 4, while the toothed gear operates on the movable part of the top of the carriage, the crank arrangement and spring operate on the movable part of the pillar.

In Figs. 5 and 6, while the slotted lever and parts in connection therewith operate on the movable part of top, the crank arrangement and spring operate on the pillar, and thus opening and closing can be effected.

In Figs. 11 to 15 are shown separate views of details of the mechanism, shown applied in Figs. 9 and 10, for side-light carriages, in which views are additions to some of the parts already described. I^{R} denotes an iron secured to the jointed pillar of the carriage, and secured to the turning-axis B, such axis carrying the eccentric sector H, which gears with another eccentric sector $H^{\times}$, the axis of which is secured to an iron, I^{N}, which is let into the lower part of the shut pillar, this latter sector $H^{\times}$ being usually arranged to work in a slot, as shown in the drawing.

L^{K}, Figs. 9, 10, 12, 13, 14, 15, is a link which works loosely on a pin, P^{P}, which projects from the side of the sector $H^{\times}$, the pin being shown separately in Fig. 13, such pin being connected to the upper end plate of the spring, as shown.

Figs. 13 and 14 show the toothed-sector arrangements more clearly, and Figs. 11 and 15 are views taken at right angles to Figs. 12, 13, 14, the turning-axis B being clearly shown in these figures. The part marked ⊕ in Figs. 5 and 9 is hinged, and in lowering can be pushed so as to fall transversely, which enables the other part of head to be operated.

It will be observed that in my improvements as shown applied to carriages, as in Figs. 1, 2, 7, and 8, the arrangements for operating the jointed supports are fixed inside the pillar, whereas in Figs. 9 and 10 the mechanical arrangements for raising and lowering the head, dispensing with the jointed support, are let into the pillar, as shown in these last-mentioned figures; but the position in which the mechanical arrangements are placed may be varied as desired. Indeed it will be obvious that the various arrangements shown and described may be modified according to the circumstances of each case.

It is to be noted that although the drawing shows my arrangements applied to one side of a carriage, the same have to be repeated on the other side.

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

The combination of the head-joint A with the gearing and spring E, all arranged substantially as herein shown and described.

The above specification of my invention signed by me this 21st day of April, 1871.

A. McKENZIE.

Witnesses:

R. MARSDEN LATHAM,
21 *Cockspur Street, London.*

THOMAS MORGAN,
21 *Cockspur Street, London.*