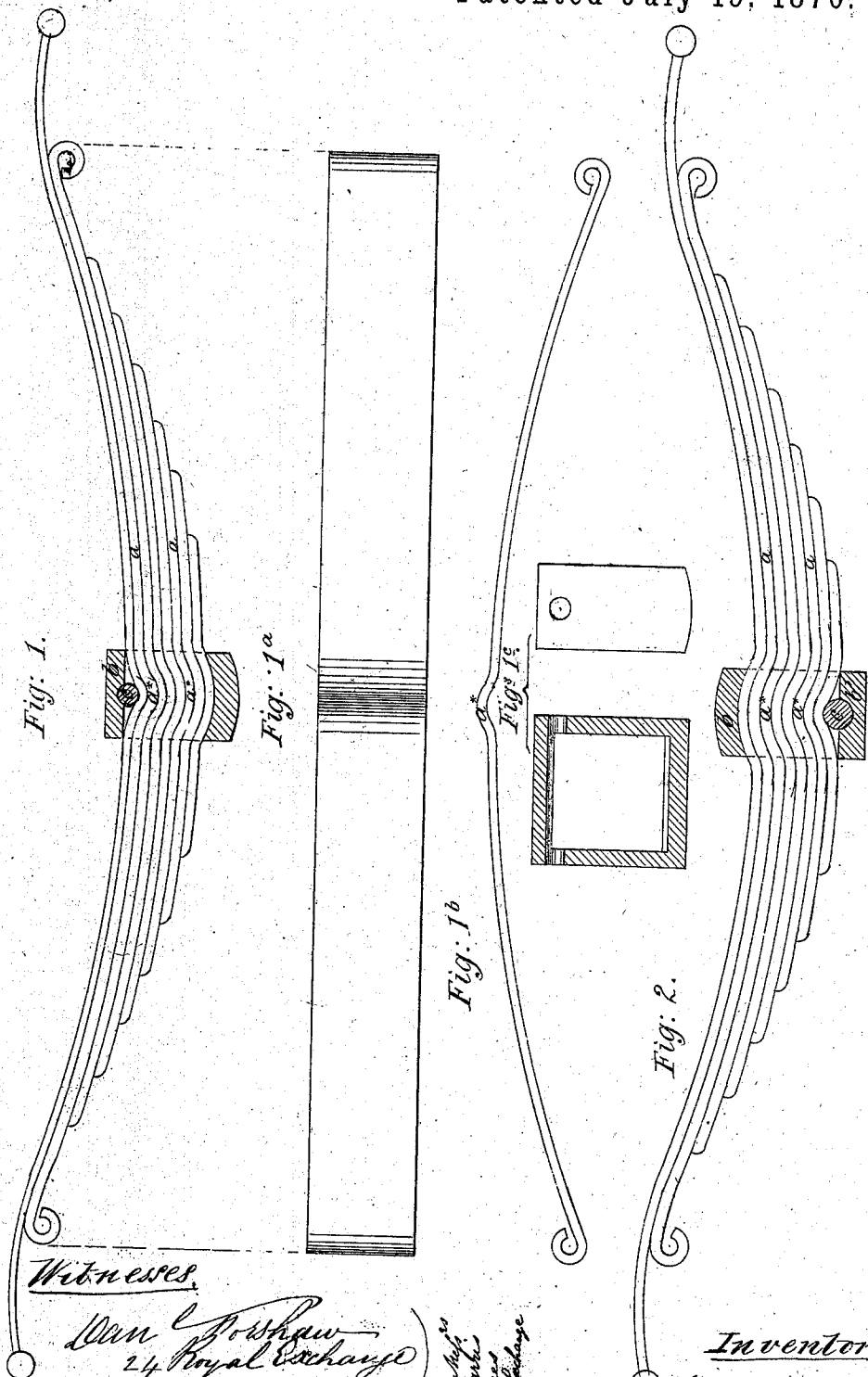


J. MITCHELL.

Car Spring.

No. 105,478.

Patented July 19, 1870.



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Inventor

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Wm. G. Fosshaw

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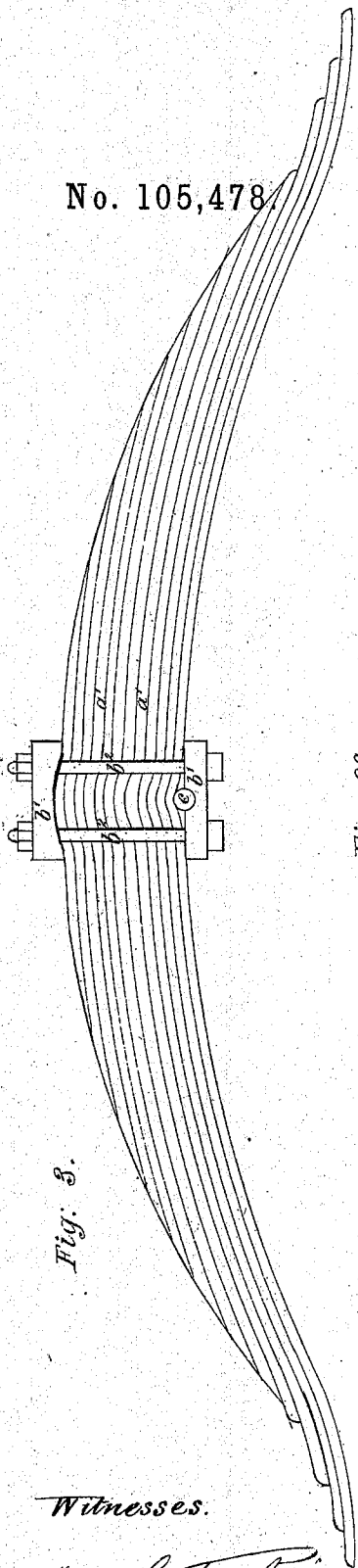


Fig. 3.

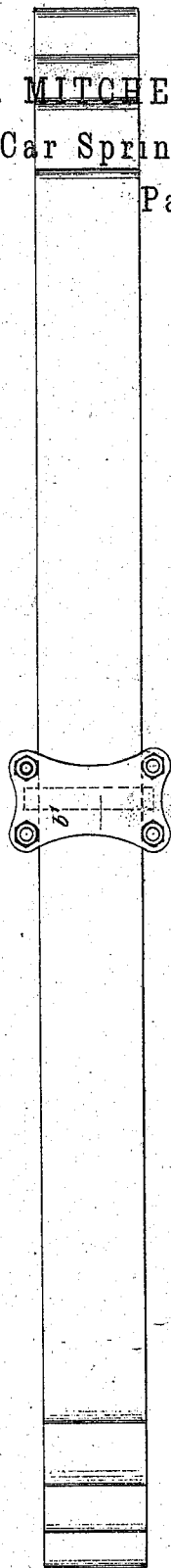


Fig. 3^a

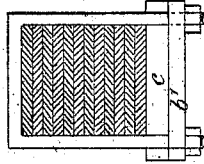


Fig. 3^b



Fig. 4^a



Fig. 4.



Fig. 4^c

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NEWTON, OF LONDON, ENGLAND.

Letters Patent No. 105,478, dated July 19, 1870; patented in England May 18, 1868.

IMPROVEMENT IN RAILWAY CAR-SPRINGS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOSEPH MITCHELL, of Sheffield, in the county of York, England, have invented a new and useful Improvement in Railway and other Carriage-Springs; and I do hereby declare 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.

This invention has for its object improvement in that class of elliptical car or carriage-springs in which the plates composing said springs are held together, without the aid of bolts passing through them, by means of indentations or corrugations formed on the plates themselves; and

The invention consists in providing a cross-pin or bolt, which fits snugly into the concave recess of one of the plates, for the purpose of securing them in a box adapted to receive the same, as hereinafter set forth.

In the accompanying drawing—

Figure 1 is an elevation of an elliptic or flat bearing-spring, consisting of several plates *a a*, the square metal box or collar *b*, which holds the plates *a* together, being shown in section.

Figure 1^a is a plan view: and

Figure 1^b, an edge view of one of the plates *a* detached, showing the corrugation *a** made therein.

Figure 1^c are front and sectional views of the box or collar *b*, in which the plates *a* are secured by the cylindrical or semi-cylindrical cross-pin *c*, as shown at fig. 1.

Figure 2 is a sectional elevation of a modification of the above, the only difference being that the cor-

rugations *a**, at the central part of the spring plates, are in a reverse position to that shown at fig. 1.

In Sheet II, Figures 3 and 3^a are side elevation and plan views of a bearing-spring for a buggy-carriage, or it may be used as a buffer-spring.

These figures also show another mode of holding the plates *a* together.

In this instance the spring-plates *a* are held between two plates, *b'*, technically called butterfly-plates, and are secured between the butterfly-plates by bolts *b''*, which are held firmly in place by screw-nuts, as shown in the drawing; or a single butterfly-plate may be used and secured in place by U-straps or bolts *b''*, as shown at fig. 3^b.

In other inventions, indentations have been made in the center of the plates, as shown in figs. 4 and 4^a and 4^b the indentations fitting each other, but this I lay no claim to.

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

The cross-pin *c*, arranged with the plates composing the spring, and with the box *b*, as and for the purpose specified.

In witness whereof, I, the said JOSEPH MITCHELL, have hereunto set my hand and seal, the tenth day of March, in the year of our Lord one thousand eight hundred and seventy.

JOSEPH MITCHELL. [L. s.]

Witnesses:

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