2 Sheets—Sheet 1.

W. D. CLIFF.

CARRIAGES FOR CLAY RETORTS.

No. 180,845. Patented Aug. 8, 1876.

Fig. 1.

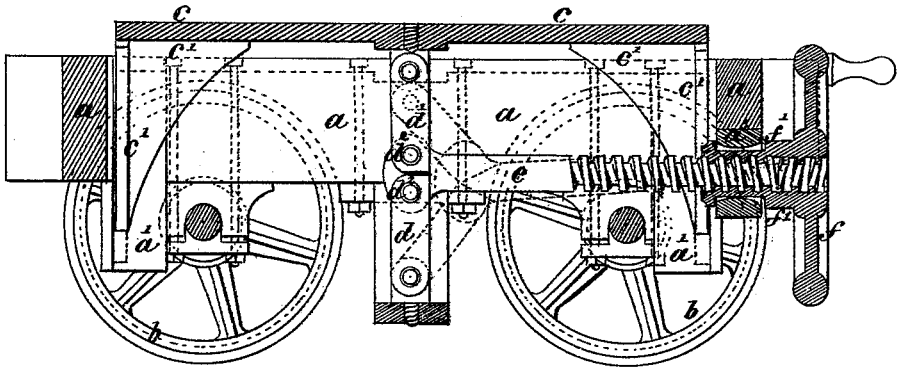


Fig. 2.

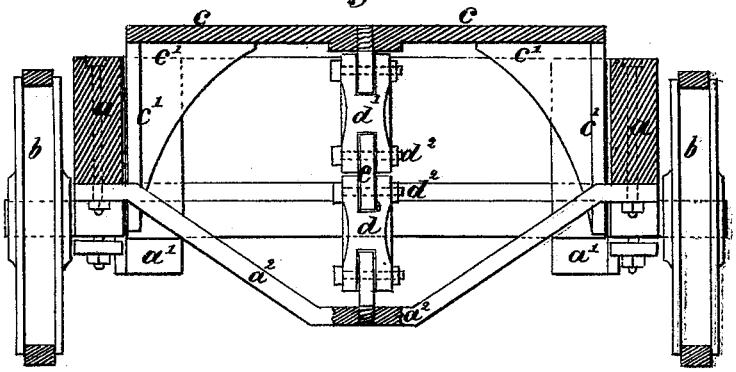
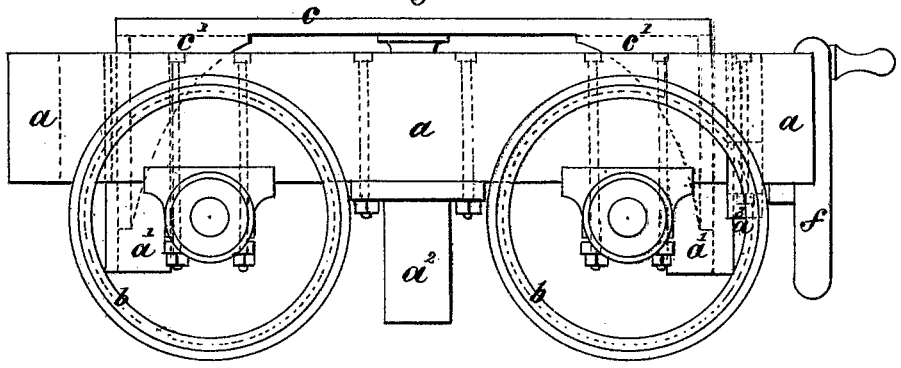


Fig. 3.



WITNESSES

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2 Sheets—Sheet 2.

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CARRIAGES FOR CLAY RETORTS.

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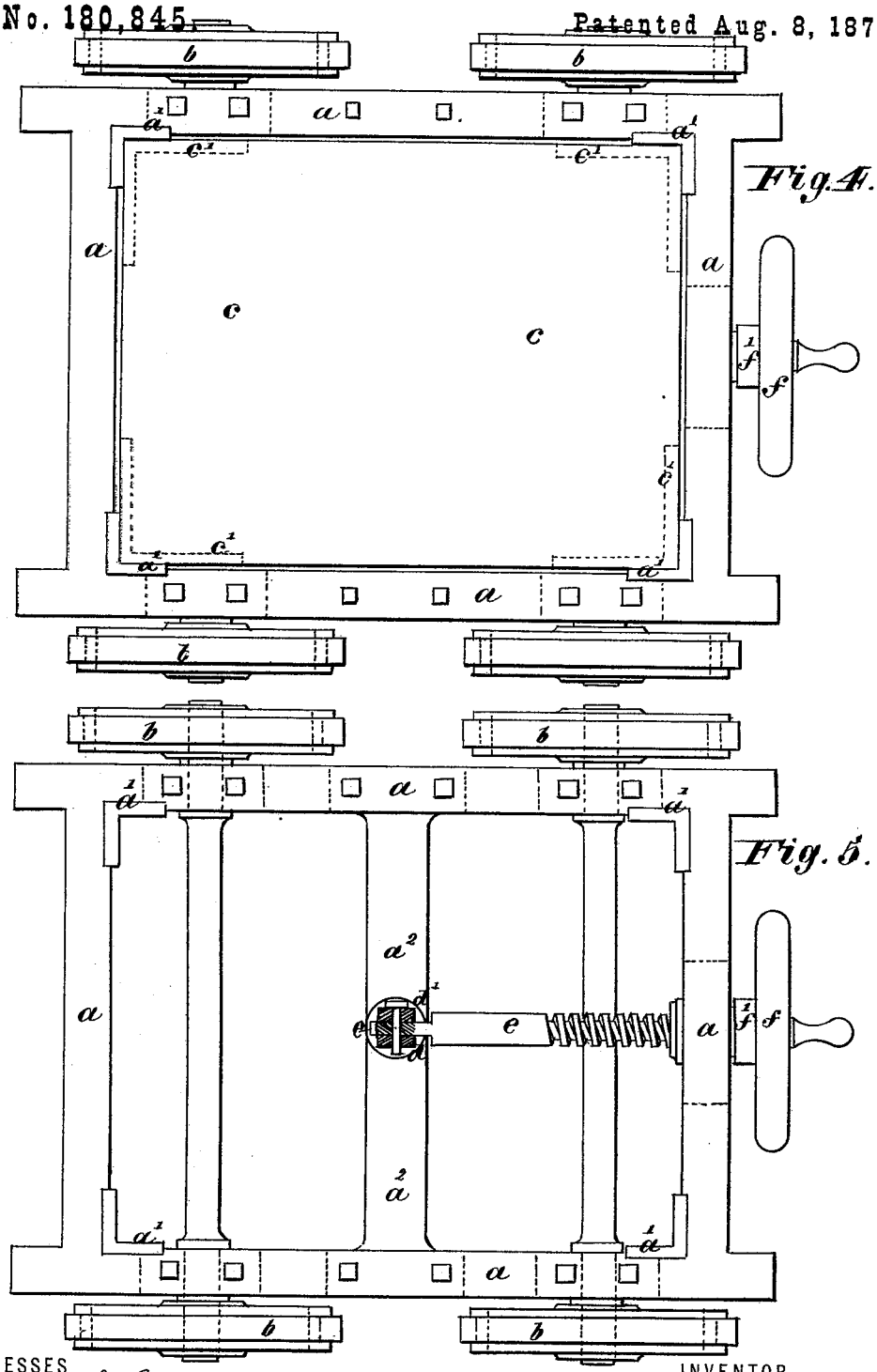

Fig. 4.

Fig. 5.

WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM D. CLIFF, OF WORTLEY NEAR LEEDS, ENGLAND.

IMPROVEMENT IN CARRIAGES FOR CLAY RETORTS.

Specification forming part of Letters Patent No. **180,845**, dated August 8, 1876; application filed May 26, 1876.

To all whom it may concern:

Be it known that I, WILLIAM DEWHIRST CLIFF, of Wortley near Leeds, in the county of York, England, have invented new and useful Improvements in Carriages for Receiving Clay Retorts and other similar heavy articles as they are made, and for carrying them away and depositing them where required, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

The invention consists in so constructing the carriage that the top thereof, which is properly supported and guided, is capable of being raised and lowered at pleasure. This may be done in various ways—for instance, by arrangements of worms and worm-wheels, racks and pinions, screws, wheels and levers, by hydraulic pressure, or by the pressure of steam or compressed air, in combination with cylinders and pistons, or by eccentrics, cams, or cranks mounted or formed on shafts carried by the framing of the carriage, or on the axles of the carrying-wheels, in which latter case the wheels would be arranged to run loosely on their axles.

The present invention is specially adapted for use in combination with my improvements in machinery for making clay retorts, and other similar heavy articles made from clay, forming the subject of former Letters Patent granted to me dated September 15, 1874.

The drawings hereunto annexed represent the mode of construction I prefer to employ.

Figure 1 is a longitudinal section. Fig. 2 is a cross-section. Fig. 3 is a side elevation. Fig. 4 is a plan; and Fig. 5 is a plan, with the top of the carriage removed, and showing some of the parts in section.

a is the body or frame of the carriage, which is provided with wheels *b*, preferably flanged, and provided with india-rubber rings or tires, as shown, in order to cause the carriage to run smoothly, without communicating any concussion to the article thereon. *c* is the top of the carriage, which is movable in a vertical direction in guides a^1 fixed at each corner of the carriage-frame, the movable top *c* being provided with descending legs or guides *c'*, to work in connection with the guides a^1. Under the frame *a* of the carriage is rigidly fixed a cross-bar or girder, a^2, which carries the weight of the top *c*, such top being connected thereto by the toggle levers or links *d* d^1. The lever or link *d* is pin-jointed to the girder a^2, and the link or lever d^1 to the top *c*, as shown, while such links or levers *d* d^1 are also pin-jointed at d^2 d^2 to one end of a rod or shaft, *e*, the other end of which is formed with a screw to work in and be operated by a nut, *f'*, formed in the boss of the hand-wheel *f*, which is prolonged for that purpose, as shown. This nut *f'* is formed to work with some amount of play in the bearing a^3, to permit free action to all the parts. Thus, by simply turning the hand-wheel in the one or the other direction the top *c* is readily raised or lowered through the action of the toggle links or levers *d* d^1.

The mode in which carriages constructed according to my present invention are used is as follows: The carriage is placed in position on, or run onto, the table H, described in the specification of Letters Patent hereinbefore referred to, either with the movable top *c* thereof in a raised, lowered, or intermediate position. On the movable top *c* of the carriage is placed a loose board or receiver, which overhangs or projects beyond the sides or frame *a* of the carriage. The aforesaid table H is then moved up to the die used in the formation of the retort or other similar heavy article. When the retort or other article is made, the carriage is run off to the place where it is desired to place it. Loose blocks or packings, or other supports, are then inserted underneath two or three of the overhanging sides of the loose board or receiver, or the carriage may be run into position between suitable supports. The movable top *c* of the carriage is then lowered, when the packings or supports take the weight of the retort or other article, after which the top *c* is still further lowered, when the carriage is drawn out, leaving the retort in the desired position. If the movable top *c* of the carriage is in its normal or lowest position when the retort is made, then, when taken to its place in the shed, the movable top of the carriage must be first raised, in order to enable the loose board to be placed in position on the movable blocks or packings, or other supports, after

which the movable top *c* is lowered, leaving the retort or other article in its desired position.

What I claim, and desire to secure by Letters Patent, is—

The combination, in carriages for receiving and transporting heavy articles, of the vertically-moving top *c*, working in guides running in grooves in the frame, said top being supported by the girder a^2, and raised or lowered from its center by the toggle-levers *d*, actuated by the screw-shaft *e*, all substantially as set forth.

WM. D. CLIFF.

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