No. 790,478. PATENTED MAY 23, 1905.

E. L. BYRON.

BOOM FOR EXCAVATORS.

APPLICATION FILED JAN. 28, 1905.

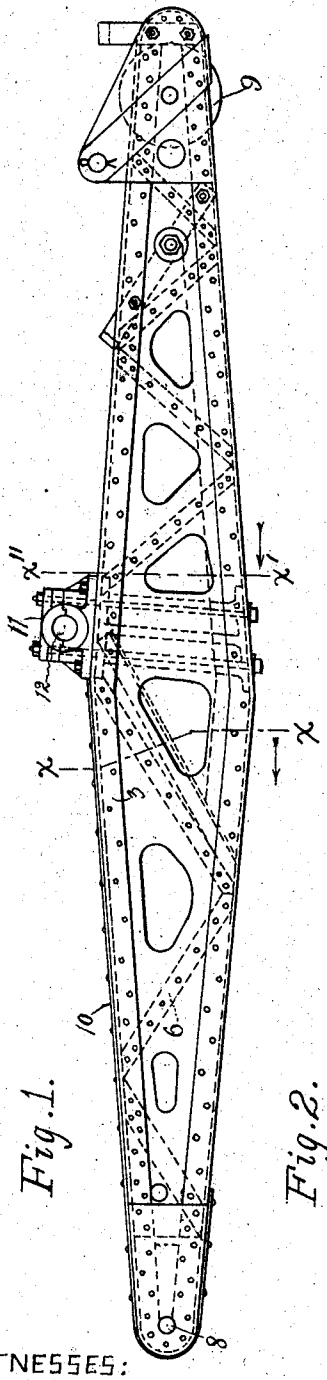


Fig. 1.

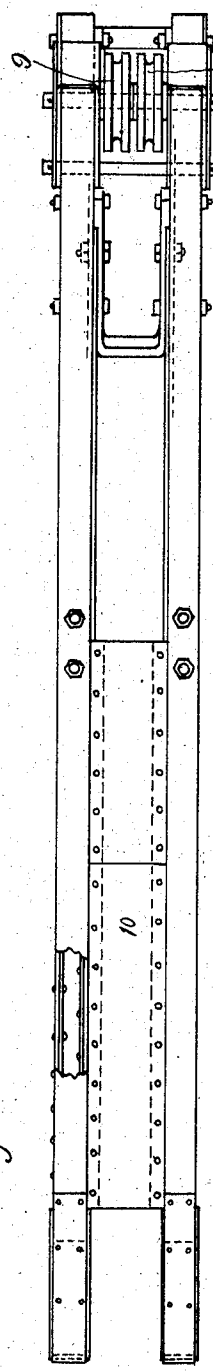


Fig. 2.

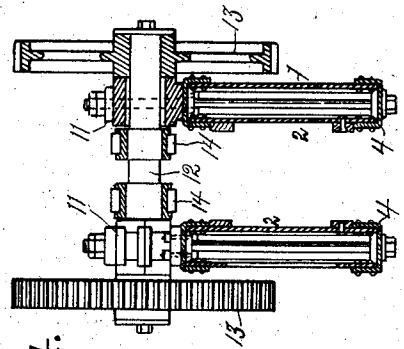


Fig. 4.

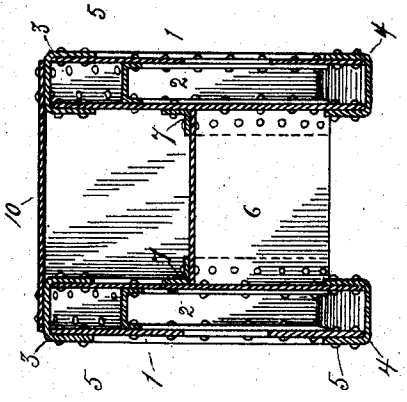


Fig. 3.

WITNESSES:

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No. 790,478. Patented May 23, 1905.

UNITED STATES PATENT OFFICE.

EDWARD L. BYRON, OF TOLEDO, OHIO, ASSIGNOR TO THE VULCAN IRON WORKS COMPANY, OF TOLEDO, OHIO.

BOOM FOR EXCAVATORS.

SPECIFICATION forming part of Letters Patent No. 790,478, dated May 23, 1905.

Application filed January 28, 1905. Serial No. 243,003.

To all whom it may concern:

Be it known that I, EDWARD L. BYRON, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Booms for Excavators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

In that class of excavating-machines or "steam-shovels" which are designed to handle large quantities of earth and which are sometimes required to excavate clays of great tenacity and even shale and rock it has been found difficult to so construct the boom of the derrick which carries the dipper-arm that it will bear without injury the enormous strains to which it is subjected. This difficulty is increased by the fact that these booms usually carry a stout steam-engine for actuating the dipper-arm.

My invention relates to and its object is to provide a boom for a derrick of an excavating-machine which shall obviate the difficulty here referred to and more particularly to furnish a boom which may be constructed of steel plates pressed to form and rigidly riveted together, thus securing a maximum of strength and rigidity with a minimum of weight and cost. I attain these objects by means of the devices and arrangement of parts hereinafter described, and shown and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my device; Fig. 2, a top plan view of the same; Fig. 3, an end elevation in section, taken on line $x\,x$, Fig. 1; and Fig. 4, a like sectional elevation taken on line $x'\,x'$, Fig. 1.

Like numerals of reference indicate like parts throughout the drawings.

In the drawings, 1 and 2 are a pair of parallel side plates of the length of the boom, broader at their middle and tapered toward each end, as shown. The two plates 1 and 2 are spaced apart and secured rigidly in fixed parallel relation by means of channel bars or plates 3 4. The channel of the upper bar or plate 3 receives the upper margins of the plates 1 2, and the channel of the lower bar or plate 4 receives the lower margins of the plates 1 2. The overlapping flanges of the channel-plates are riveted, as at 5, throughout their length to the margins of the plates 1 2. In my boom there are two pairs of plates 1 2, secured together as above described, and these two pairs of plates, disposed in parallel vertical planes, are rigidly secured in fixed parallel relation by means of interposed plates 6 and angle-bars 7, the latter being disposed in the angle of the plates 2 and the margins of the plate 6. The vertical flange of the angle-bar 7 is riveted to the plates 1 and 2, and the horizontal flanges of the angle-bars are riveted to the plate 6. The plate 6 is disposed in zigzag form, as indicated by the dotted lines in Fig. 1, to form trusses or braces. It will be seen that now each pair of the side plates is rigidly secured together by the channel-bars 3 and that the two pairs of side plates are rigidly secured together and trussed and braced by means of the interposed zigzag plate 6.

At one end of the boom is a transverse hole 8 for the reception of a pivot-pin, by means of which the boom is pivoted at the foot of its mast. At its opposite or outer end the boom is provided with pulleys 9 for the reception of toggles or chains leading to the lower end of the dipper-arm and over the top of the mast and by means of which the dipper-arm is raised and lowered. Upon the top of the inner half of the boom is riveted a stout plate 10 for the reception of an engine employed to project and retract the dipper-arm. The top of the boom near its middle has bearings 11 for a shaft 12, having gear-wheels 13 to be engaged by pinions on the engine above referred to, but not shown. Upon the shaft 12 is also a pair of pinions 14, designed to engage a toothed rack on the dipper-arm. The attachments for raising and lowering the outer end of the boom and for projecting and retracting and raising and lowering the dipper and dipper-arm form no part of this in-

vention and need not, therefore, be further described.

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

1. In a device of the class described, a pair of plates tapered from near their middle toward both ends, channel-bars which engage the margins of said pair of plates, and means for rigidly securing said pair of plates, in parallel relation, to said channel bars.

2. A device of the described class, comprising in its construction two pairs of parallel plates, means for rigidly securing said plates in fixed relation in pairs, a plate interposed between said pairs in zigzag form, and means for securing said interposed plate and said pairs of plates in fixed relation.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD L. BYRON.

Witnesses:

ELMER R. GARL,

M. L. MARKS.