

Sheet 1 of 2 Sheets

M. L. Callender & N. W. Northrup.

Armor for Ships.

No. 35412.

Patented May 27, 1862

Fig. 2

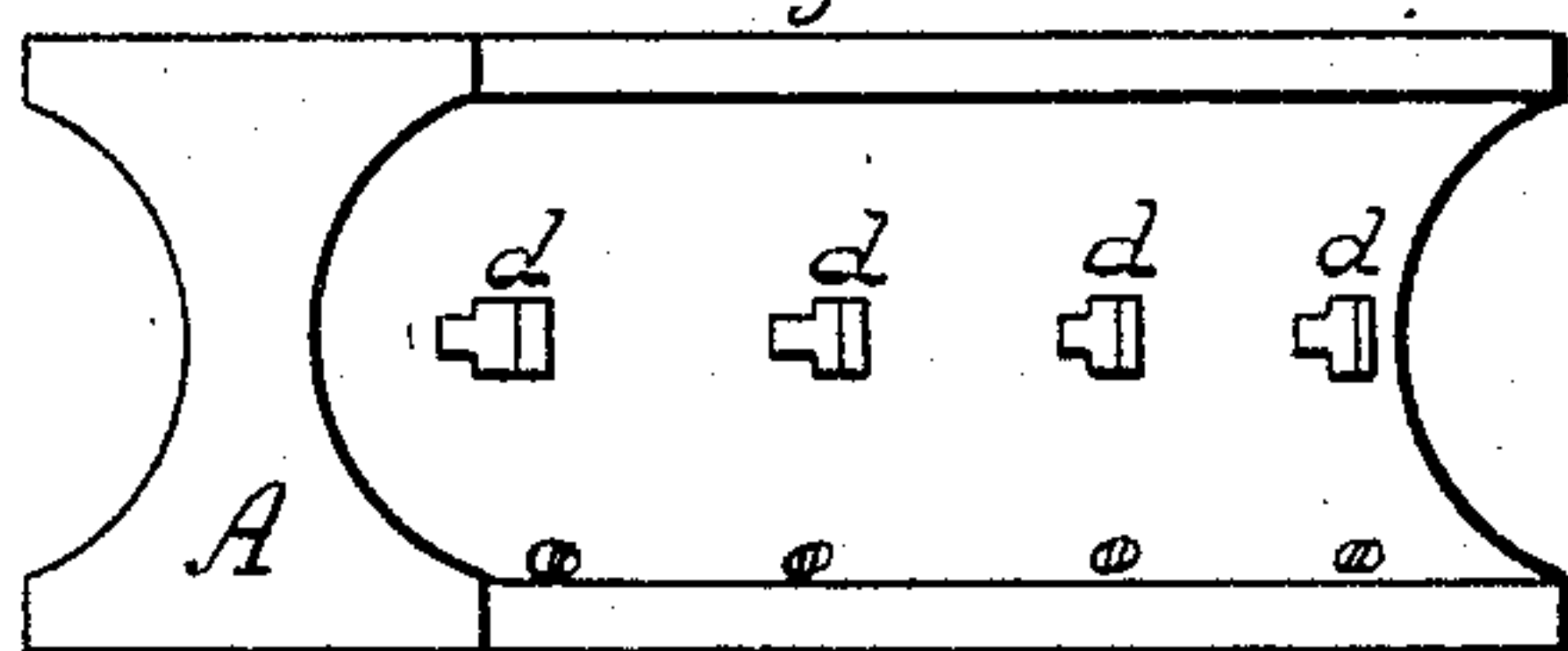


Fig. 3

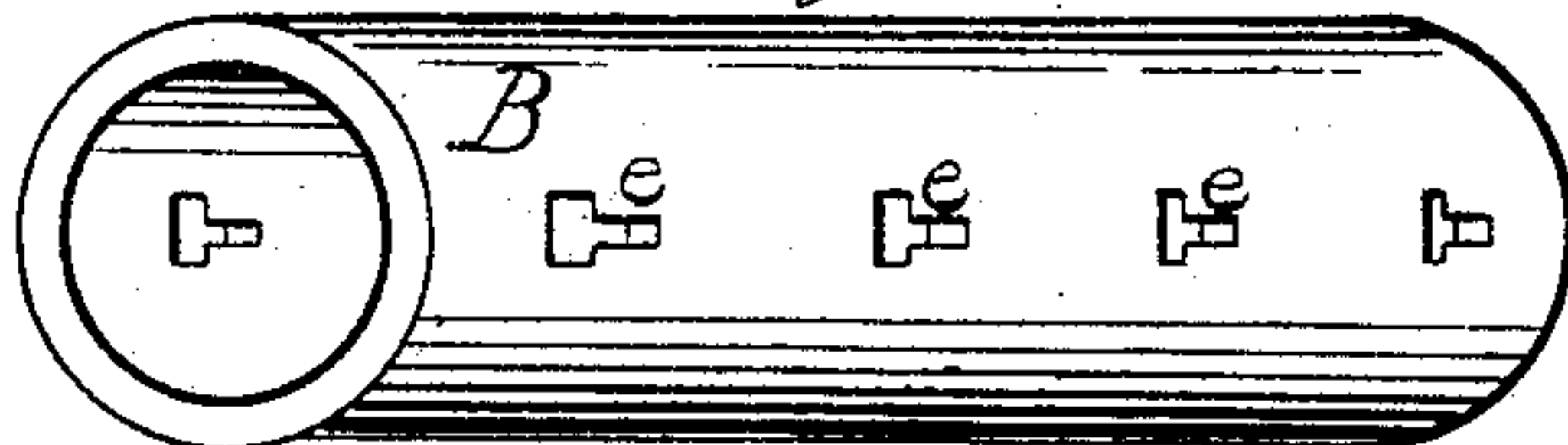


Fig. 4

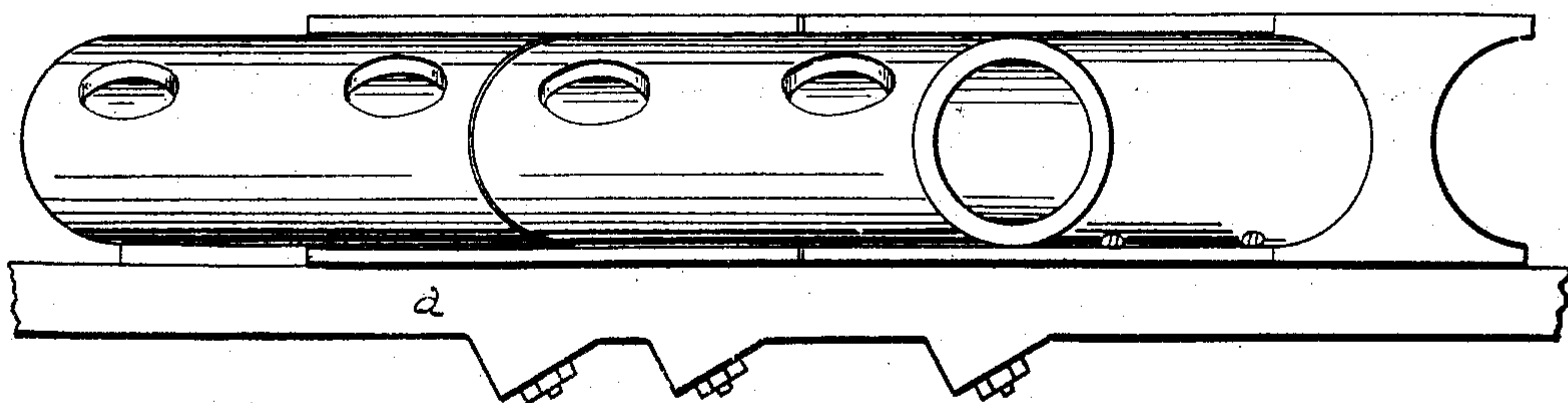
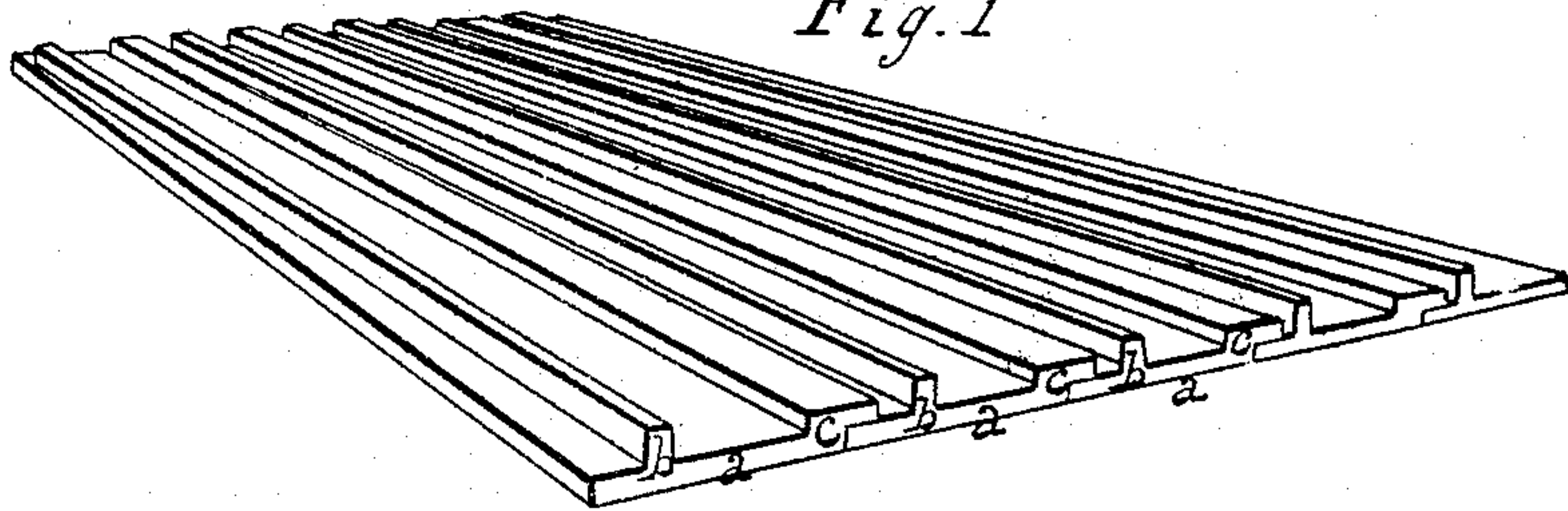


Fig. 1



Witnesses

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Fig. 5

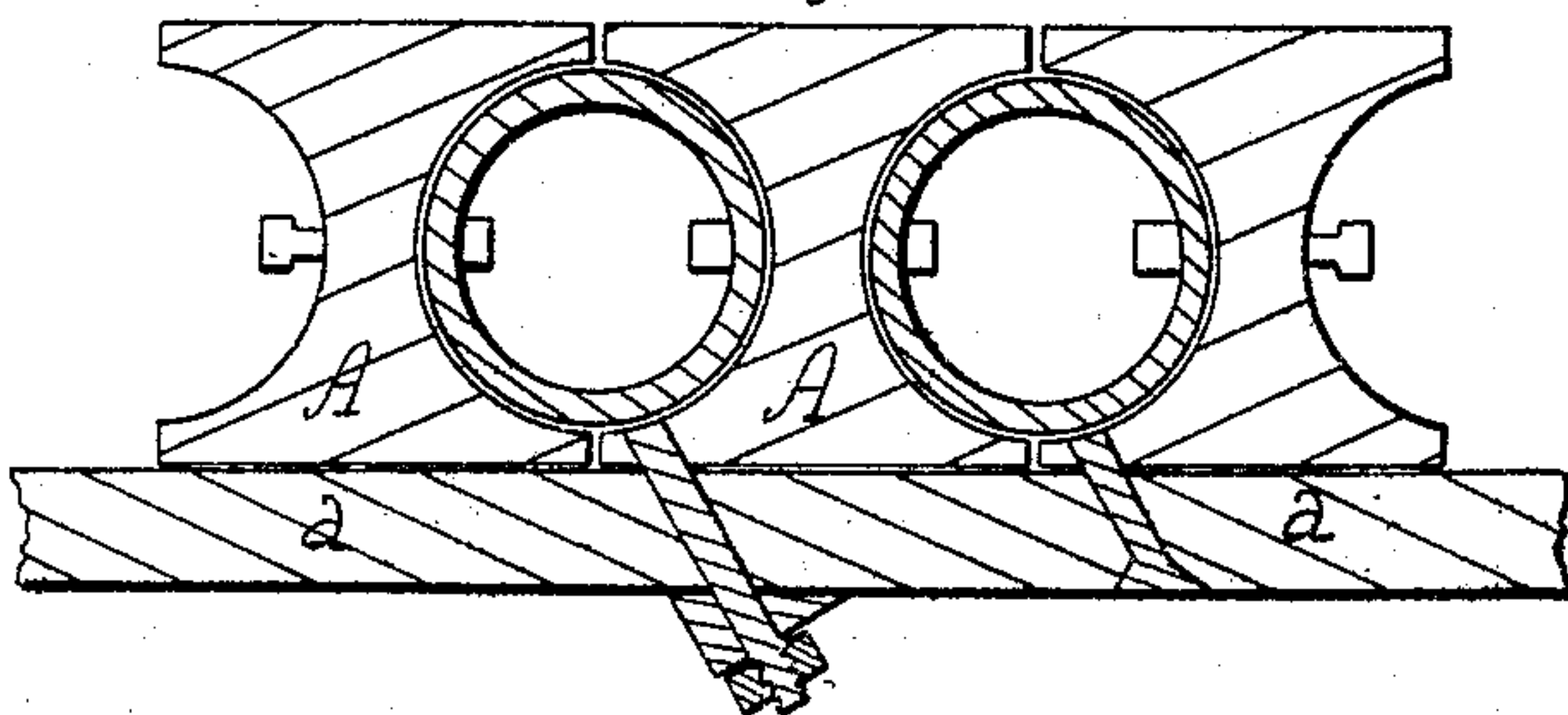


Fig. 6

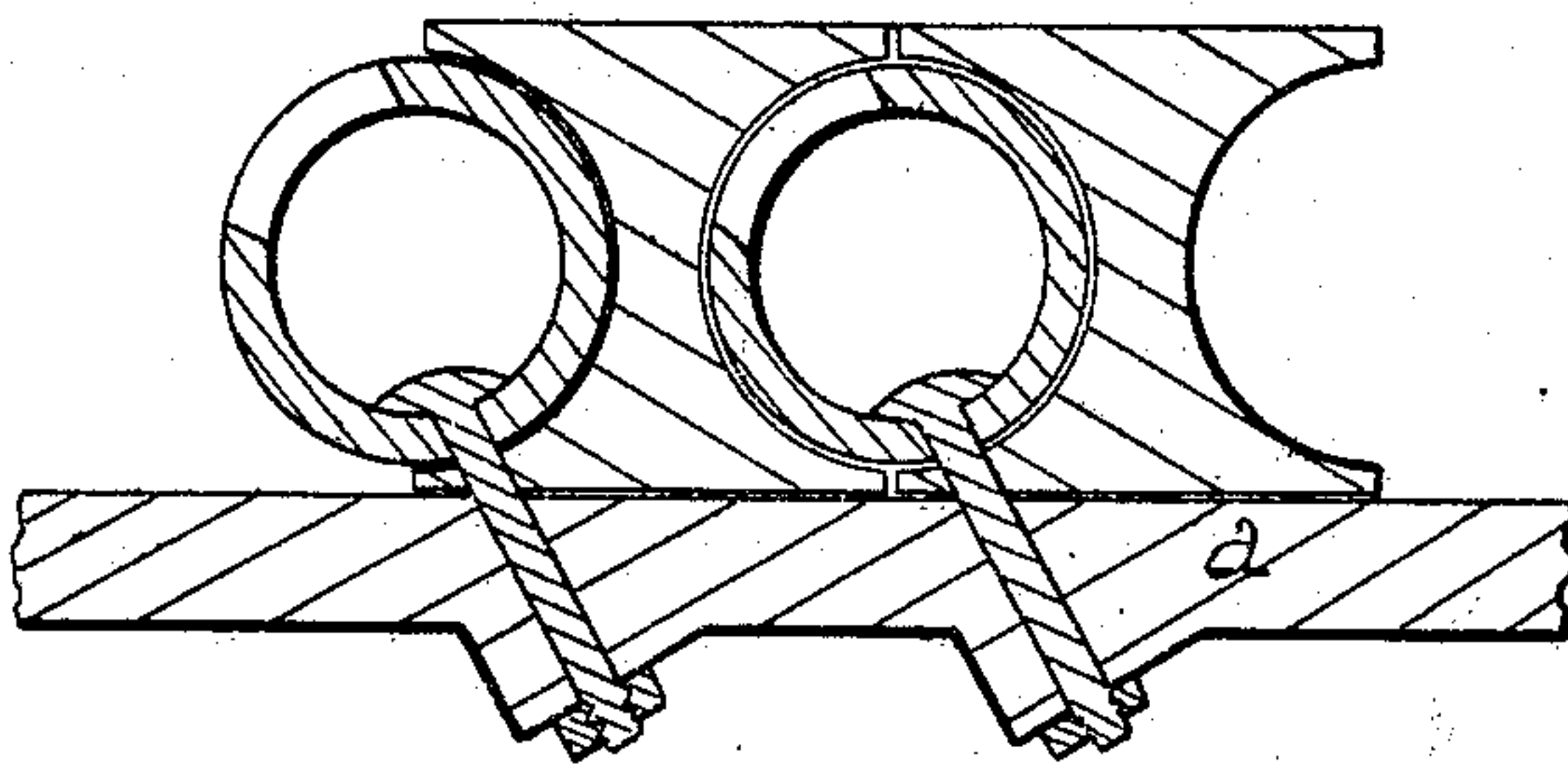
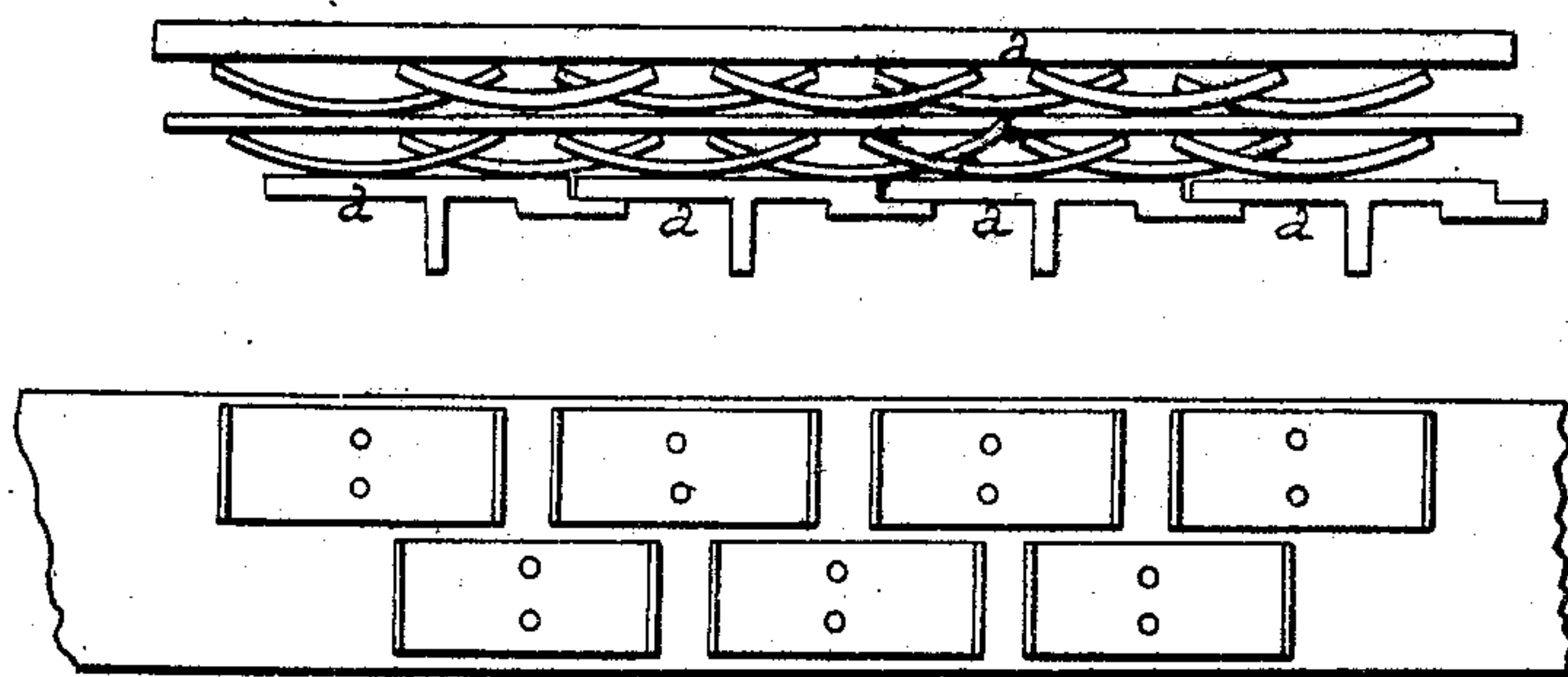


Fig. 7



Witnesses

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UNITED STATES PATENT OFFICE.

MILLS L. CALLENDER, OF NEW YORK, AND NELSON W. NORTHRUP, OF GREENE, NEW YORK, ASSIGNORS TO THEMSELVES AND CHARLES H. WELLING.

IMPROVED DEFENSIVE ARMOR FOR SHIPS.

Specification forming part of Letters Patent No. 35,412, dated May 27, 1862.

To all whom it may concern:

Be it known that we, MILLS L. CALLENDER, of the city and county of New York, and NELSON W. NORTHRUP, of the town of Greene, county of Chenango, and State of New York, have made new and useful improvements in iron plates and bars for constructing ships of war and mailing or shielding them to protect the men, guns, and machinery from shot and shell, and putting onto vessels of wood a shot-and-shell-proof clothing; and we hereby declare the following to be a full and exact description of our invention, reference being had to the letters and figures marked thereon.

The nature of our invention consists in making plates of iron with improved broad flanges or ribs to strengthen them, embracing a drop flange or lap on one edge to receive the adjoining plate to be riveted to it and form a smooth face on the outside; also, in making concave plates and tubes to be used in forming the shield or plating for vessels.

Figure 1 shows the style of plates used in making the lower part of the vessel and the inner plate of the shield. Fig. 2 shows the concave plate, with lugs to attach the tube. Fig. 3 shows the tube to be used in connecting the plates. Fig. 4 shows the mode of lapping the joints. Fig. 5 shows the plates and tubes fastened to the inner plates and attached by the lugs to each other. Fig. 6 shows the mode of bolting the tube and plate jointly to the inner plate. Fig. 7 shows the arrangement of the semi-elliptic springs where double sets are used; Fig. 8, top view of the springs attached to the plates.

To enable those skilled in the art to make and use our invention we will proceed to describe it, viz:

To make the plates *a a a*, suitable rollers are arranged, known to all persons acquainted with the manufacture of iron plates. These rollers have the necessary grooves and shoulders to form the flanges *b b b* and drop-edges *c c c* to receive the adjoining plate fitted to it and to be firmly riveted together. These plates are to be bent while hot to any required form. These plates may have two or more

ribs, as desired, to each plate, and of any thickness required, or length.

We make a plate with two or more concave faces, having a number of lugs in the face, Fig. 2, and rivet these plates to the face of the plates *a*, Fig. 5, and then by means of the lugs *d d d d*, Fig. 2, attach the tube B by means of inserting the lugs through the holes *e* to the inside of the tube, and then sliding the tube a small distance, so as to lock it fast by the head of the lugs, or they may be bolted jointly, as in Figs. 4 and 6 by making a hole in one side of the tube large enough to receive the head of the bolt and have it pass through the lower part of the tube and the base of the concave plate through the plate *a*. Where great resisting force is required, we apply one or more series of semi-elliptic springs on plates *a*, Fig. 7, and attach the concave plate A to the outer plate, *a*, and by this means form an elastic bed between the plates, to yield to the first shock from shell or shot and glance it off.

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

1. The use of long metallic plates of defensive armor, ribbed, as described, in combination with the circular stringers by which they are attached, substantially as and for the purpose described.

2. The manufacture and use of tubes placed between the surfaces of concave plates or stringers of iron, together with the mode of fastening them for mailing vessels and other military purposes, as hereinbefore described.

3. The combination of the flange and rib-plates, the concave plates, and connecting-tubes, with the intermediate plate and springs, to make a shot-and-shell-proof mailing for war-ships and other military purposes, substantially as described.

4. The use of metallic tubes for mailing war-vessels when constructed and applied substantially as described.

MILLS L. CALLENDER.
NELSON W. NORTHRUP.

Witnesses:

ELBERT PERCE,
C. H. WELLING.