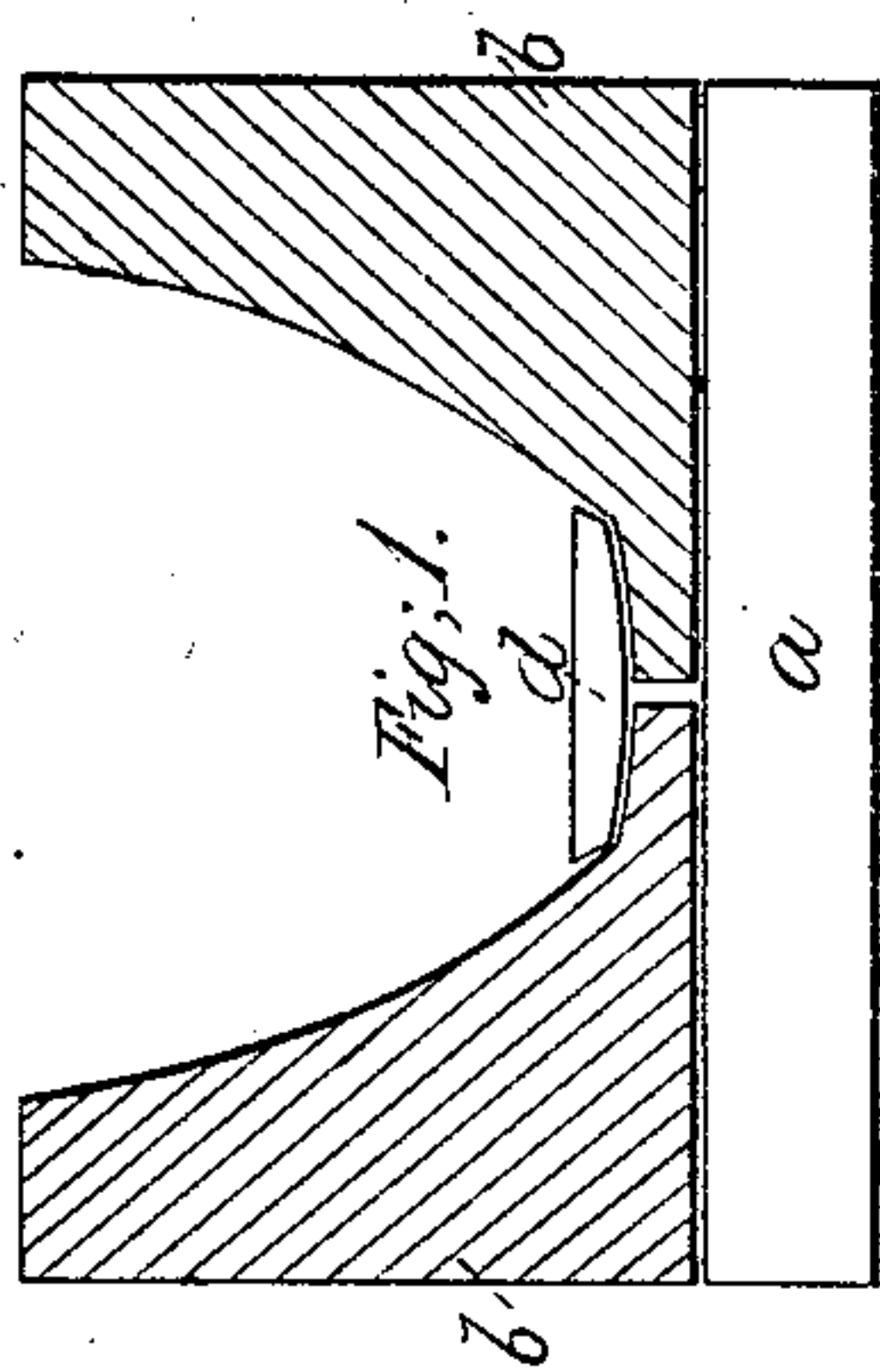


*J. Milliken,*

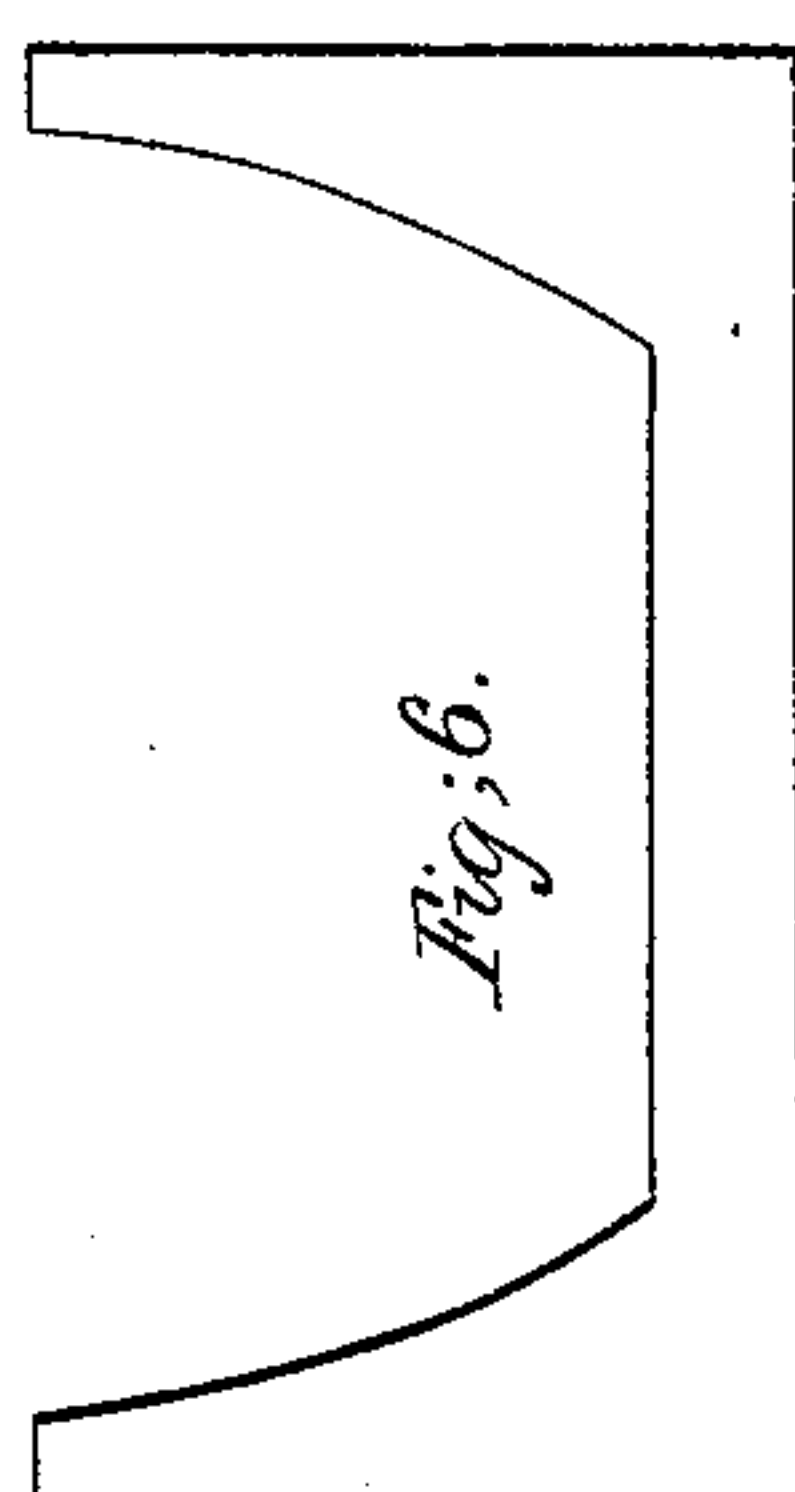
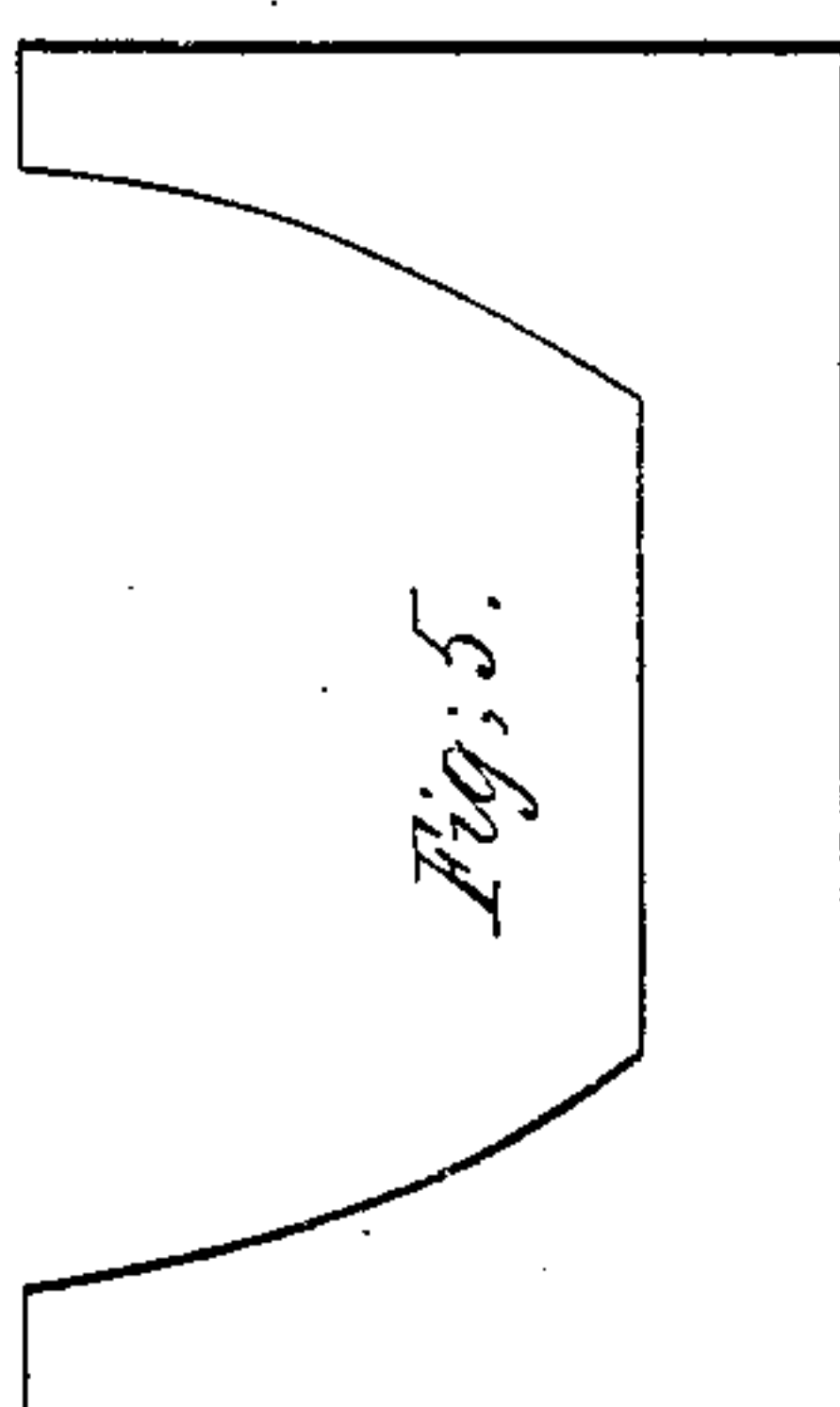
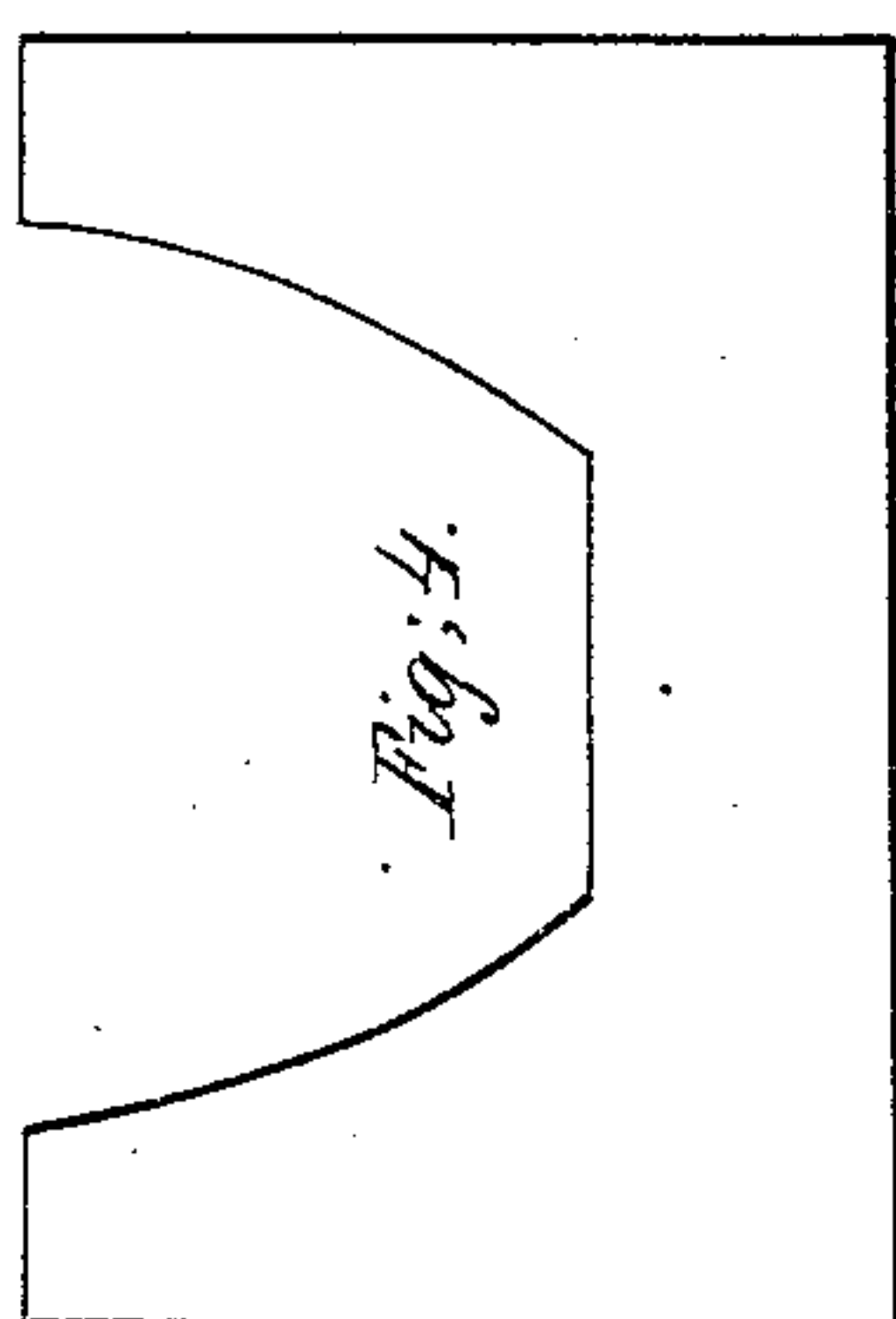
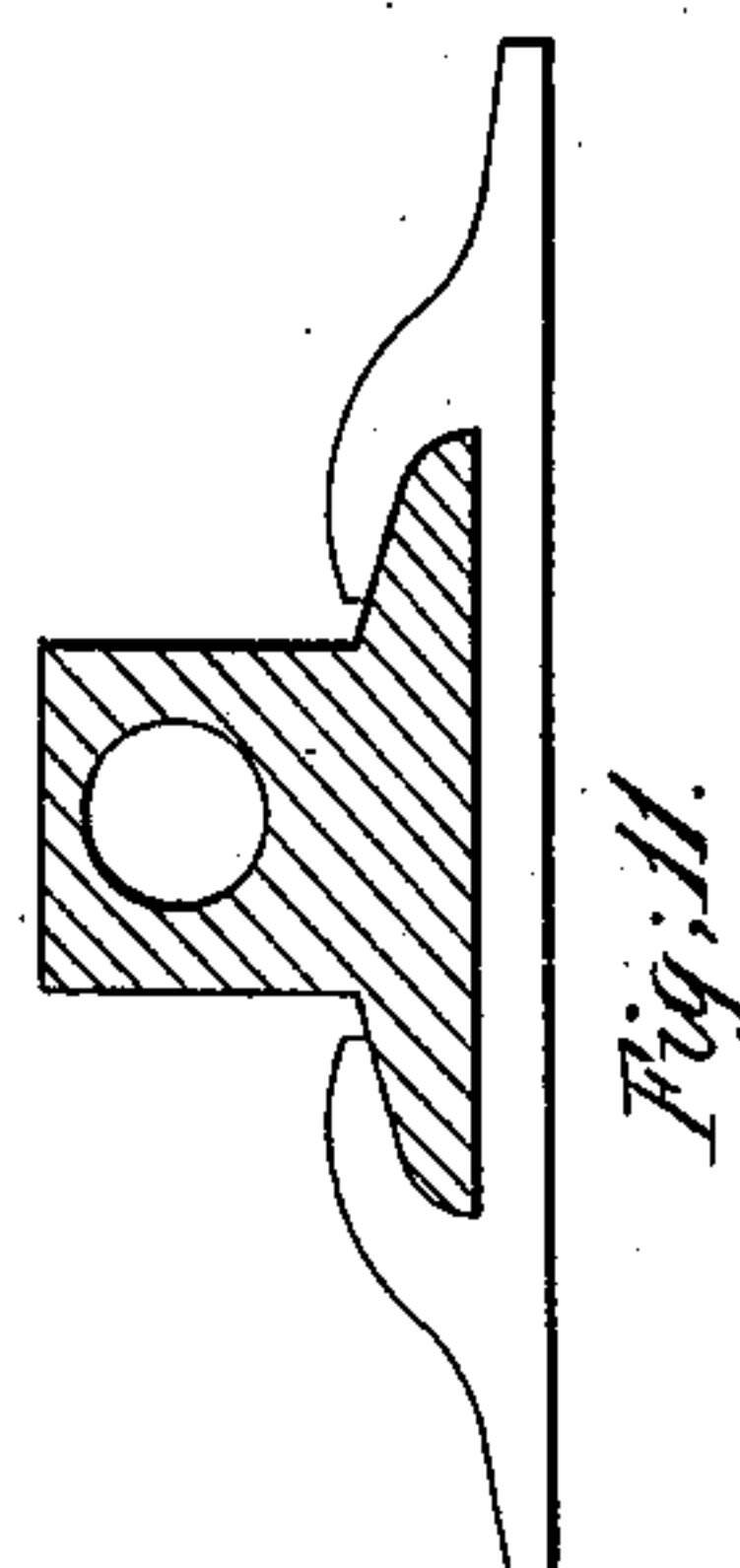
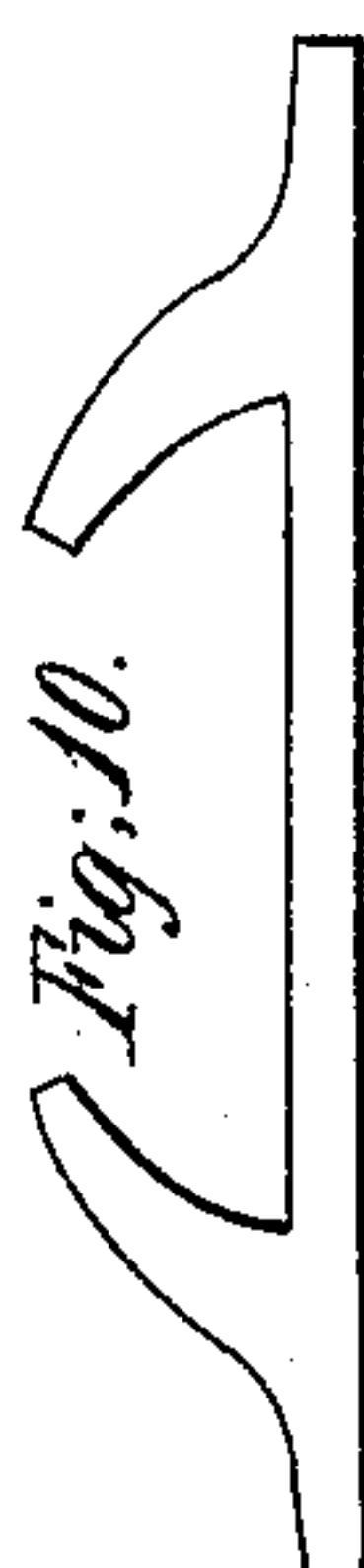
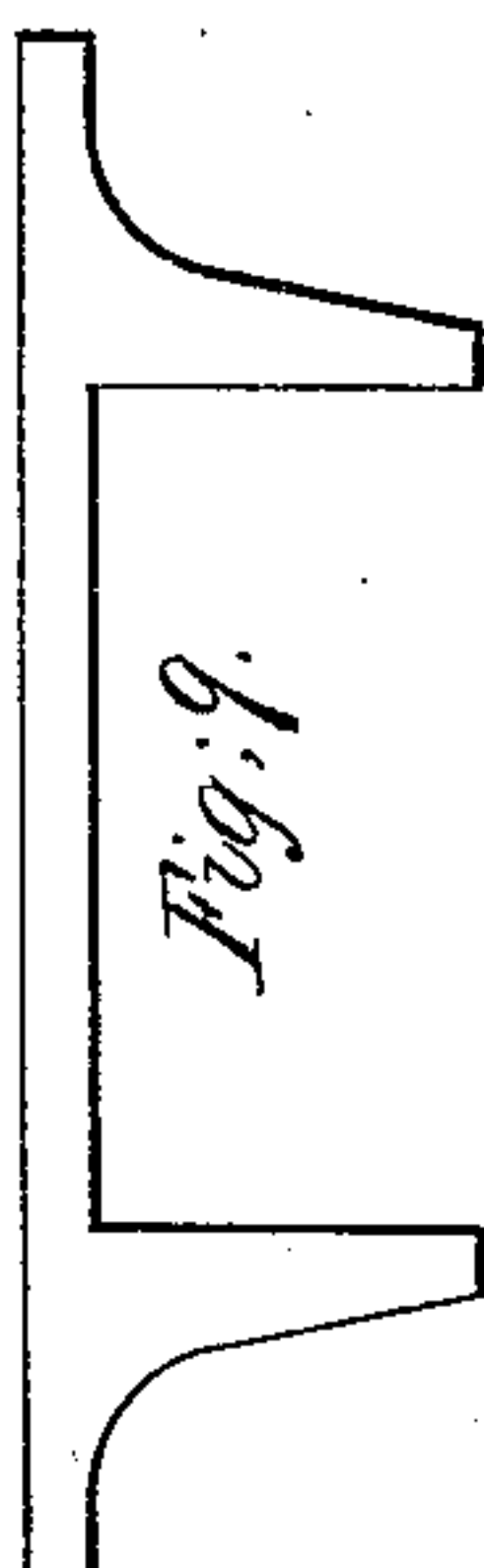
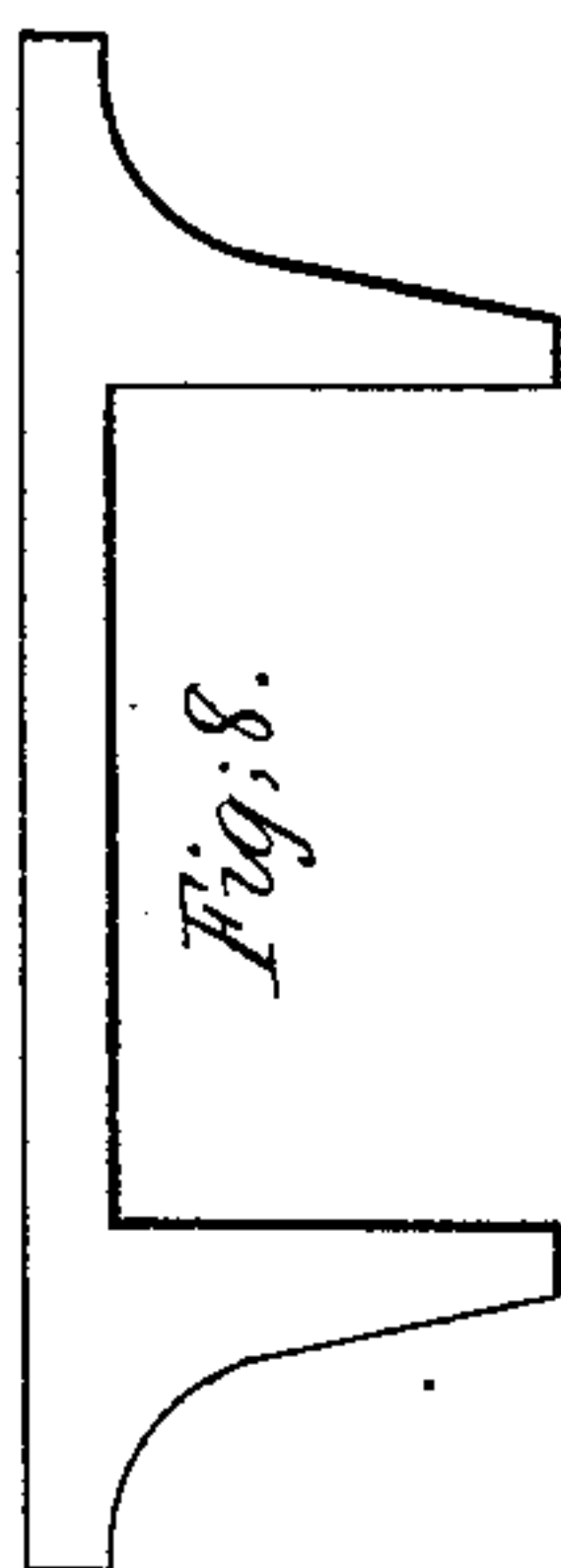
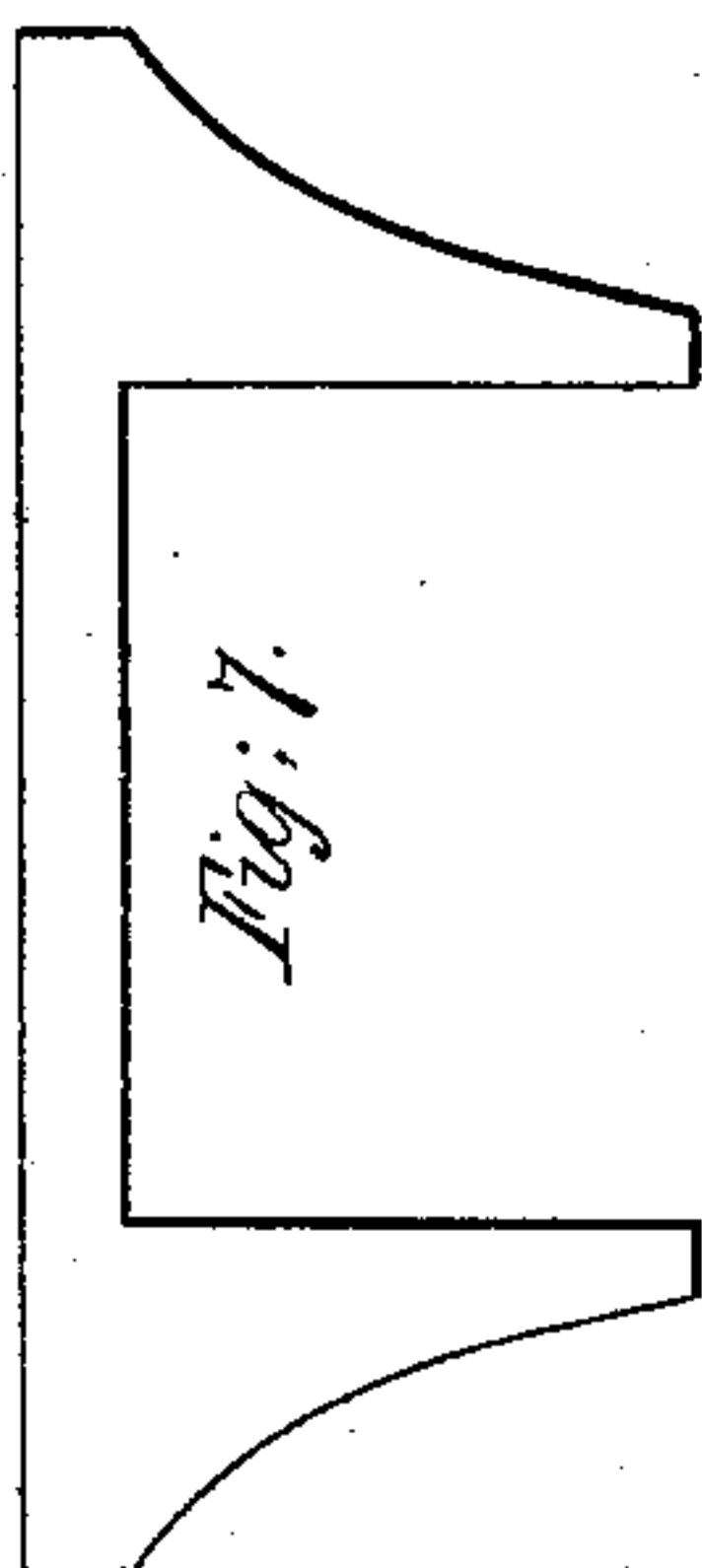
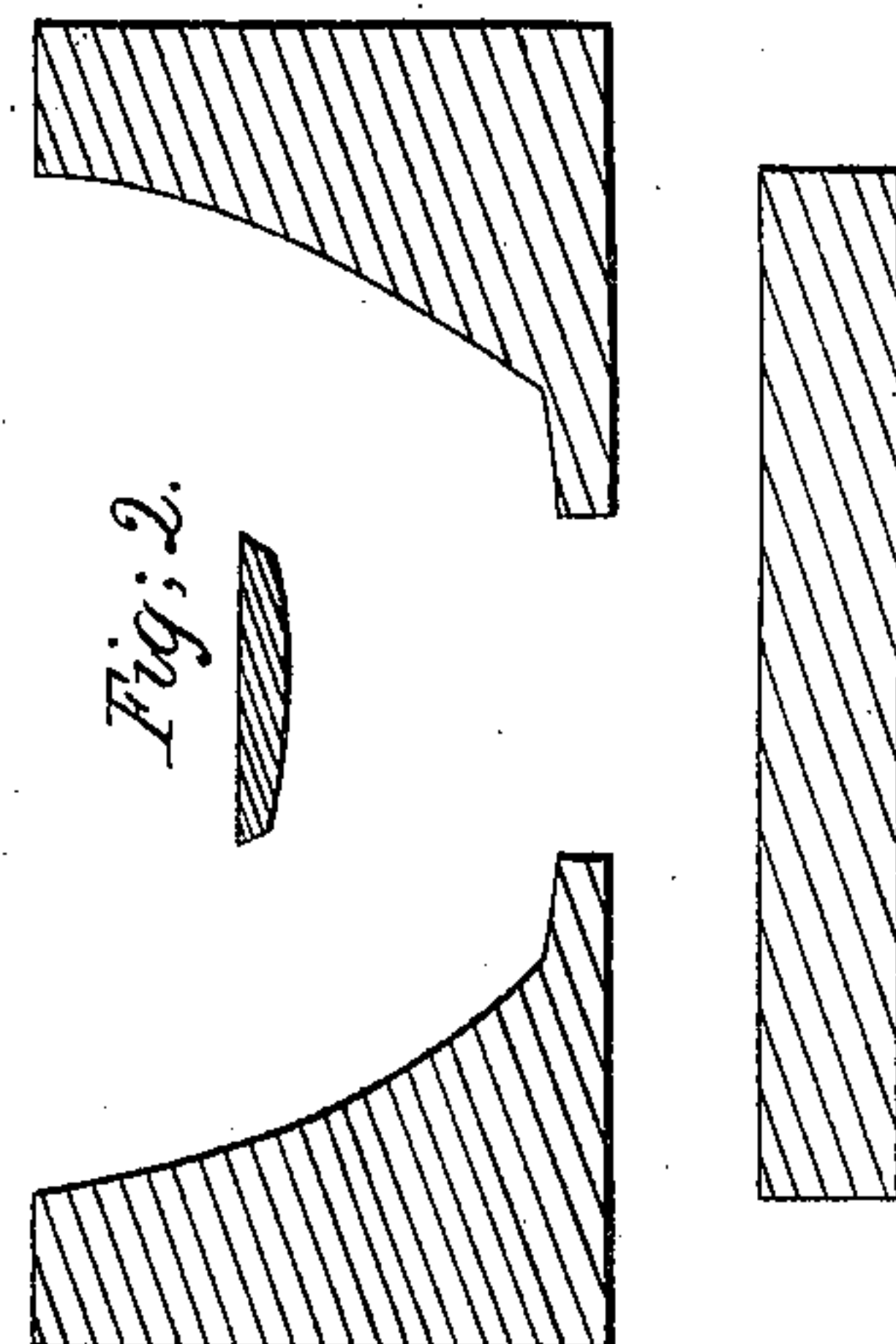
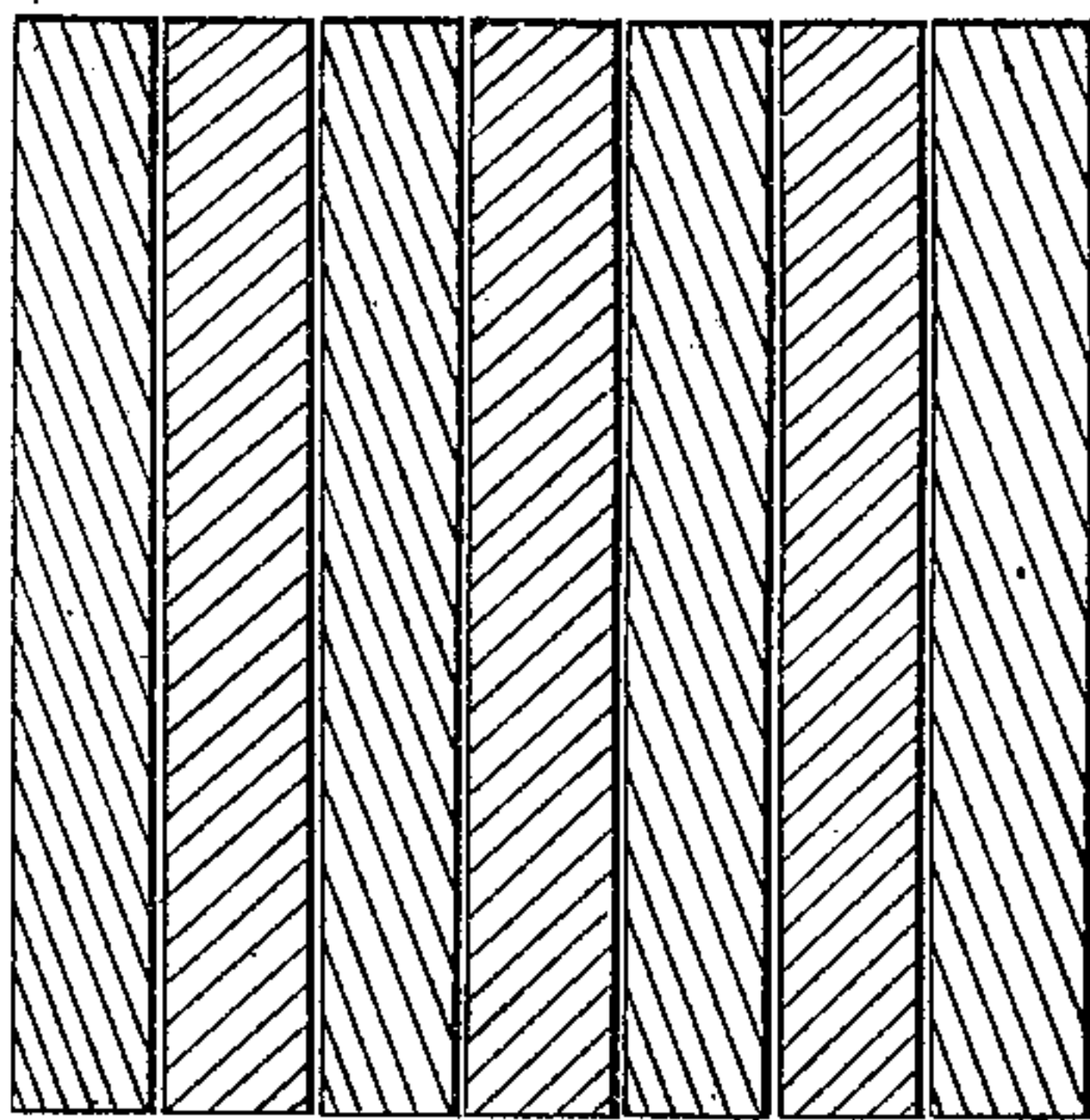
*Making Railroad Chairs.*

*No 19,306,*

*Patented Feb. 9, 1858.*



*Fig. 3.*



*Witnesses.*

*R. D. Norton*

*Paul T. Jones Jr.*

*Inventor.*

*James Milliken.*

# UNITED STATES PATENT OFFICE.

JAMES MILLIKEN, OF PHILADELPHIA, PENNSYLVANIA.

WROUGHT-IRON RAILROAD-CHAIR.

Specification of Letters Patent No. 19,306, dated February 9, 1858.

*To all whom it may concern:*

Be it known that I, JAMES MILLIKEN, of the city of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in the Manufacture of Wrought-Iron Railroad-Chairs; and I do hereby declare the following to be a full and exact description of the same, reference being had to the annexed drawing, making a part of this specification, in which—

Figure 1 represents a vertical sectional view of the pile for making the chair. Fig. 2 shows the detached parts of Fig. 1. Figs. 4, 5, 6, 7, 8, 9, 10, and 11 represent the series of grooves in the rolls through which the pile is passed. Fig. 3 represents the old mode of making the pile.

My invention consists in an improvement in the mode of making the wrought iron chair with continuous lips of the shape invented by Samuel J. Reeves. Hitherto such chairs were made from piles composed of a series of bars placed one above the other so as to form a solid pile of a rectangular section such as shown at Fig. 3. These piles so formed were placed in the furnace and when heated were passed through a series of grooves in rolls gradually approximating in shape to that of the ultimate chair, but the iron was found to be unduly compressed or strained in various parts. Chairs so made were very imperfect. Many chairs were entirely worthless and there was always a great waste in the manufacture. After numerous attempts to manufacture such chairs more perfectly I have discovered a mode of

preparing the pile by which all the above difficulties are overcome.

I prepare my pile of a series of bars or pieces rolled into the several shapes shown in Fig. 2. These pieces are then put together in the following manner: The piece *a*, (Fig. 1,) is laid on the floor. The pieces *b* and *b'* are then placed on top of it and *d*, is laid across *b* and *b'*, covering the joint as shown in Fig. 1. The pile so made is carefully adjusted and inserted in the furnace in this condition. The pieces are then welded in the furnace so as to stick together and are then passed successively through a series of grooves in rolls of the shapes shown in Figs. 4, 5, 6, 7, 8, 9, 10, and 11 and thus finally rolled into the shape shown at Fig. 11.

The advantages of this mode of forming the preparatory pile is that several passages of the rolls are dispensed with; the chairs are much more perfect; the tearing and breakage of chairs in the manufacture is reduced fifty per cent. and the waste is reduced in about the same proportion.

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

The manufacture of railroad chairs by forming a pile of the side-pieces *b* and *b'*, in connection with the pieces *a* and *d*, in the manner and substantially as above described.

JAMES MILLIKEN.

Witnesses:

J. H. B. JENKINS,  
G. GEORGE WHITE,