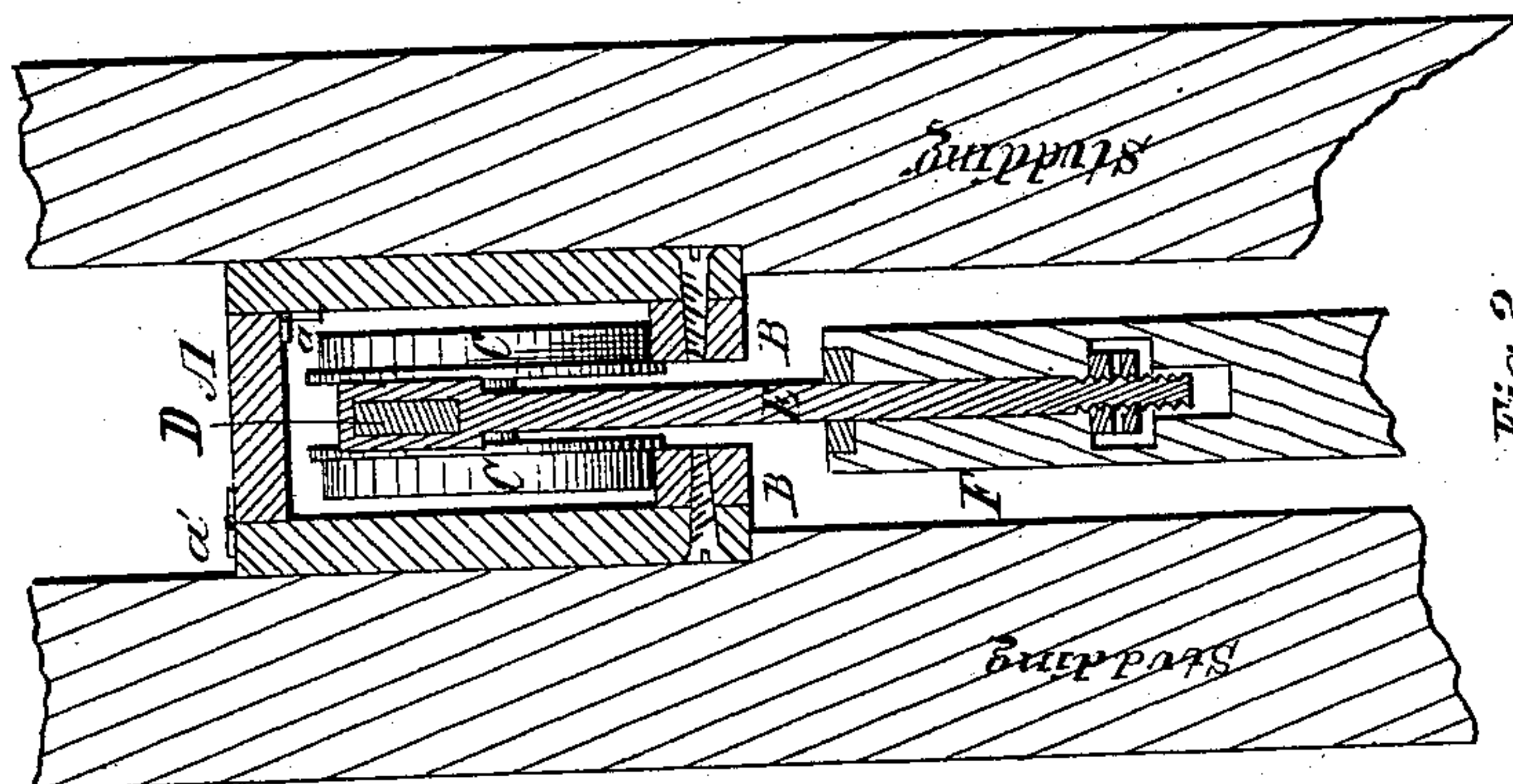


(Model.)

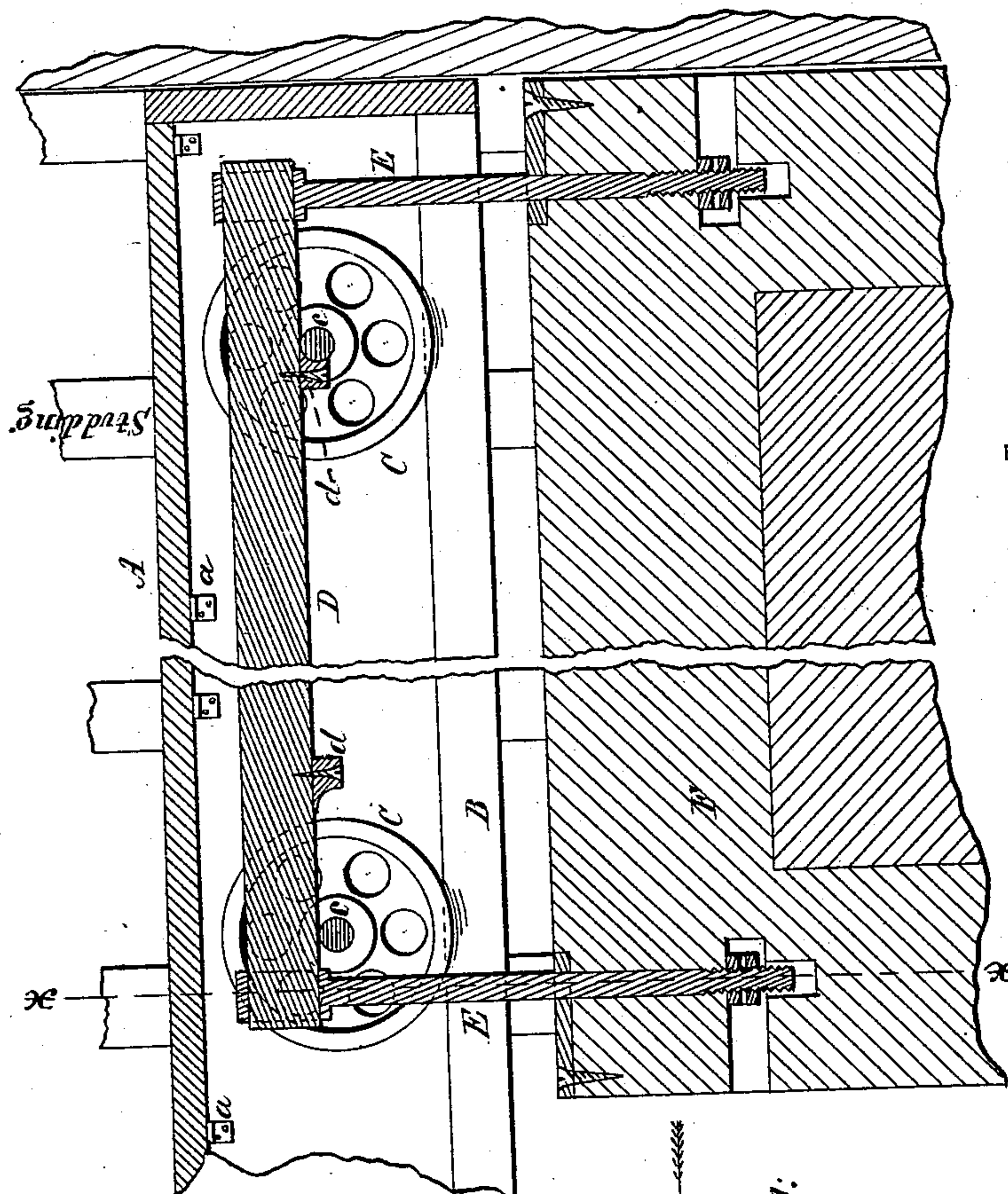
C. W. BULLARD.  
Door Hanger.

**No. 233,836.**

**Patented Nov. 2, 1880.**



*Fig. 2.*



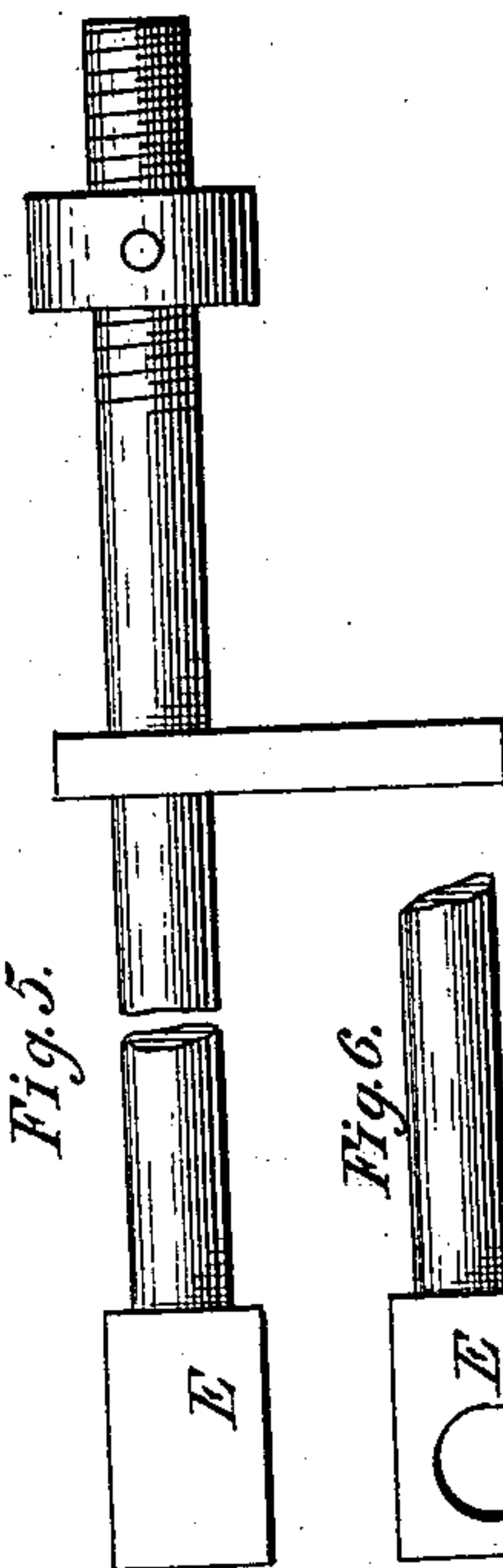
*Fig. 1.*

*Witnesses.*

W. C. Corlies  
Jno. C. MacGregor.

*Inventor.*  
*Charles W. Bullard.*

By *Coburn Thacher*  
Attorneys



*Fig. 5.*

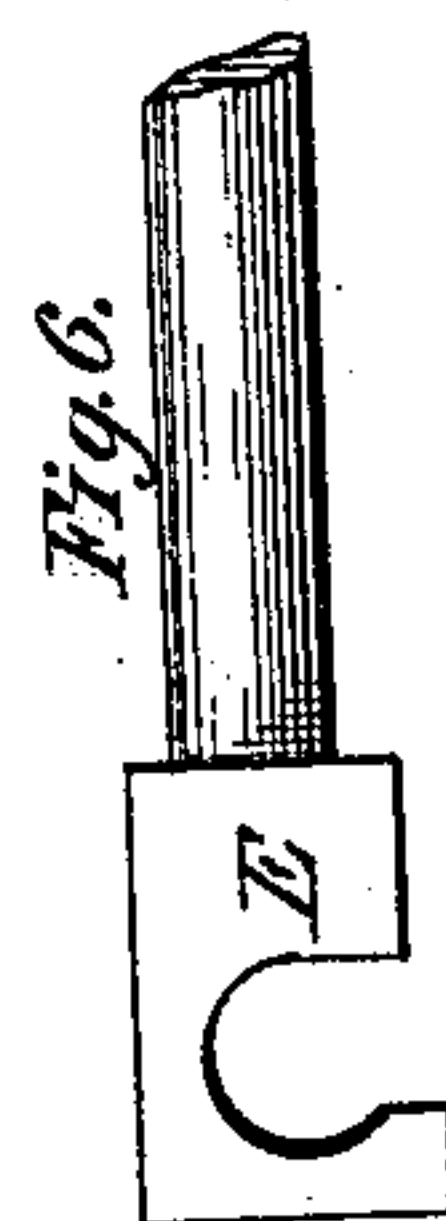


Fig. 6.

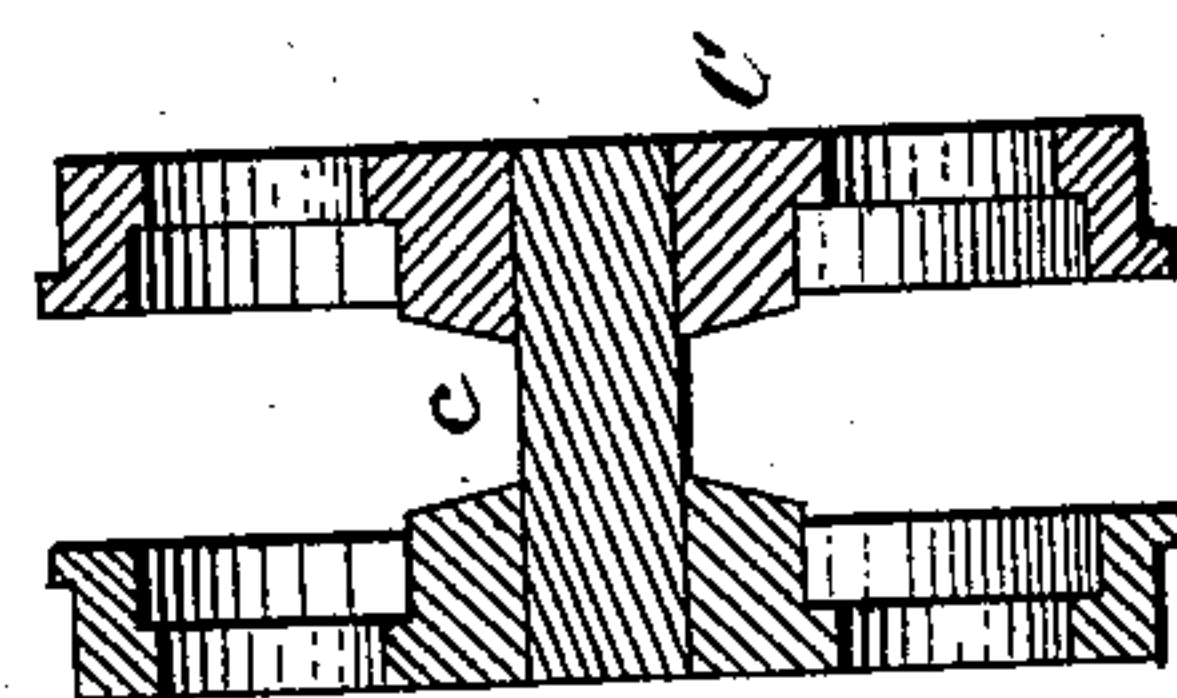


Fig. 4.

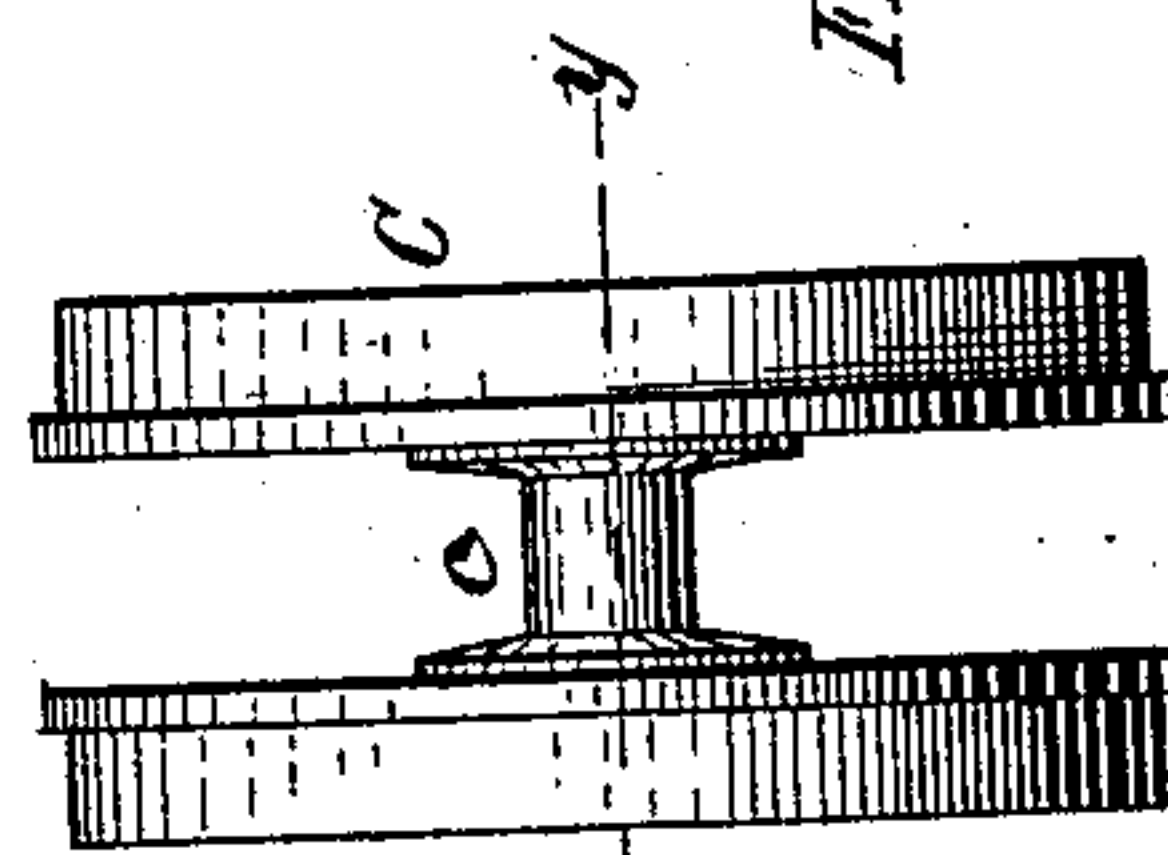


Fig. 3.



# UNITED STATES PATENT OFFICE.

CHARLES W. BULLARD, OF CHICAGO, ILLINOIS, ASSIGNOR OF TWO-THIRDS OF HIS RIGHT TO CHARLES R. LARRABEE AND ROBERT L. NORTH, OF SAME PLACE.

## DOOR-HANGER.

SPECIFICATION forming part of Letters Patent No. 233,836, dated November 2, 1880.

Application filed May 7, 1880. (Model.)

*To all whom it may concern:*

Be it known that I, CHARLES W. BULLARD, of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Door-Hangers; and I declare that the following is a full, clear, and exact description of my invention, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section of my invention. Fig. 2 represents a transverse section on the line  $xx$  in Fig. 1. Fig. 3 is an enlarged end elevation of the sheave of my hanger. Fig. 4 represents a section taken on the line  $yy$  in Fig. 3. Fig. 5 is an enlarged side elevation of the joint-bolt of my hanger, part of its length being broken out. Fig. 6 represents, in side elevation, a modified form of the upper end of the joint-bolt.

The same letters denote the same parts in all the figures.

My invention relates to apparatus for hanging house-doors; and the object of it is to provide an easily-working, noiseless, and simple contrivance for that purpose, such that the points of suspension on the door shall be midway between its inner and outer sides, and to dispense with the necessity for laying the rail or track on which sliding doors are to run before the walls are plastered.

It consists in the several devices and combinations of devices, which I will proceed to describe in detail.

A represents a box or sheath for the hanging apparatus, to be set in rabbets in the studding above the doorway and bolted to the joists. If the studding is first rabbeted to receive the box, the plastering can then be done, and the box afterward put into its place and bolted to the studding. The tendency to warp when the box is put in before plastering is thus avoided. The sides of this box are attached to the top by the hinges  $a$  and  $a'$ , the former being attached to the inner faces of the top and one side, and the latter to the upper face of the top and the upper end of the other side, so that the top can readily be lifted into a perpendicular position and one side folded against the other. The box can be readily slipped up into its place and taken out again, if necessary, for readjustment. It is, of course,

open at the bottom. On each of the inner sides, at its lower edge, is fastened a cleat, B, preferably of hard wood, and perfectly level on its upper side. The distance between the two cleats should be sufficient to allow the joint-bolts or upright connections of the door with the propelling apparatus to have a free horizontal motion between them. On the upper sides of these cleats roll two sheaves, entirely separate from each other, and therefore not liable to be drawn out of their places by any unevenness in the door. Each consists, preferably, of a pair of wheels, C and C, resting on the two cleats, respectively, as a track, and a cylindrical axle,  $c$ , to which the wheels are rigidly attached, so that it turns with them.

On the axles of the two sheaves rests the rail D, preferably of hard maple, attached at its ends to the joint-bolts E, either by mortising into them or in any other suitable way. On the lower side of D are fastened adjusters  $d$ , which serve to keep the sheaves from coming too near to each other, the joint-bolts E connecting with the rail, so as, between them, to inclose both sheaves and prevent the sheaves from getting too far apart. Should the sheaves get out of place the door may be slid back and forth once, and the adjusters, striking the sheaves, will send them back into their places. Of course they best sustain the weight of the door when they are respectively over the right and left ends of it.

The lower ends of the joint-bolts E, which suspend the door F from the rail, are attached to the door-stiles, near the upper corner, in any suitable way.

By putting a hooked head on each bolt, as shown in Fig. 6, the bolts may be hung directly on the axles of the sheaves and the rail dispensed with. The rail, however, is preferable, inasmuch as, bearing on the sheaves at a single point only in the circumference of each axle, it operates with a minimum of friction.

Instead of sheaves of the form described, plain rollers might be used, the joint-bolts in connection with the cleats and the door-casing being ordinarily sufficient to prevent the rail from veering to either side.

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

1. In a door-hanger, upright joint-bolts at-

tached at their lower ends to the upper part of the door midway between its inner and outer sides, and having a bar or rail at their upper ends bearing on rollers or sheaves which move  
5 on a double track directly over the door, the bearing-rail being midway between the two tracks, substantially as and for the purpose described.

2. In combination with a door-hanger, a box

for containing the same having hinged sides 10 for the purpose of being slipped in or out and fastened into its place after the inner walls of the rooms connected by the doorway have been plastered, substantially as described.

CHARLES W. BULLARD.

Witnesses:

JNO. C. MACGREGOR,

A. P. HOLLISTER.