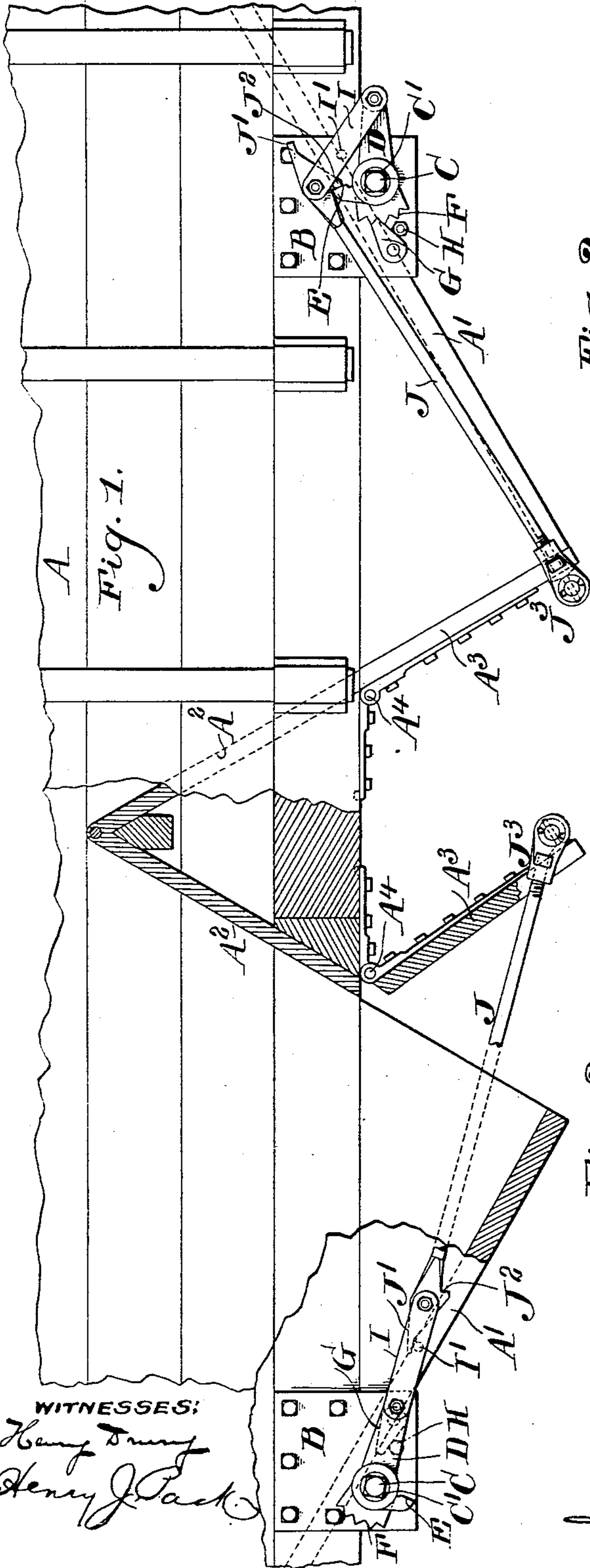


(No Model.)

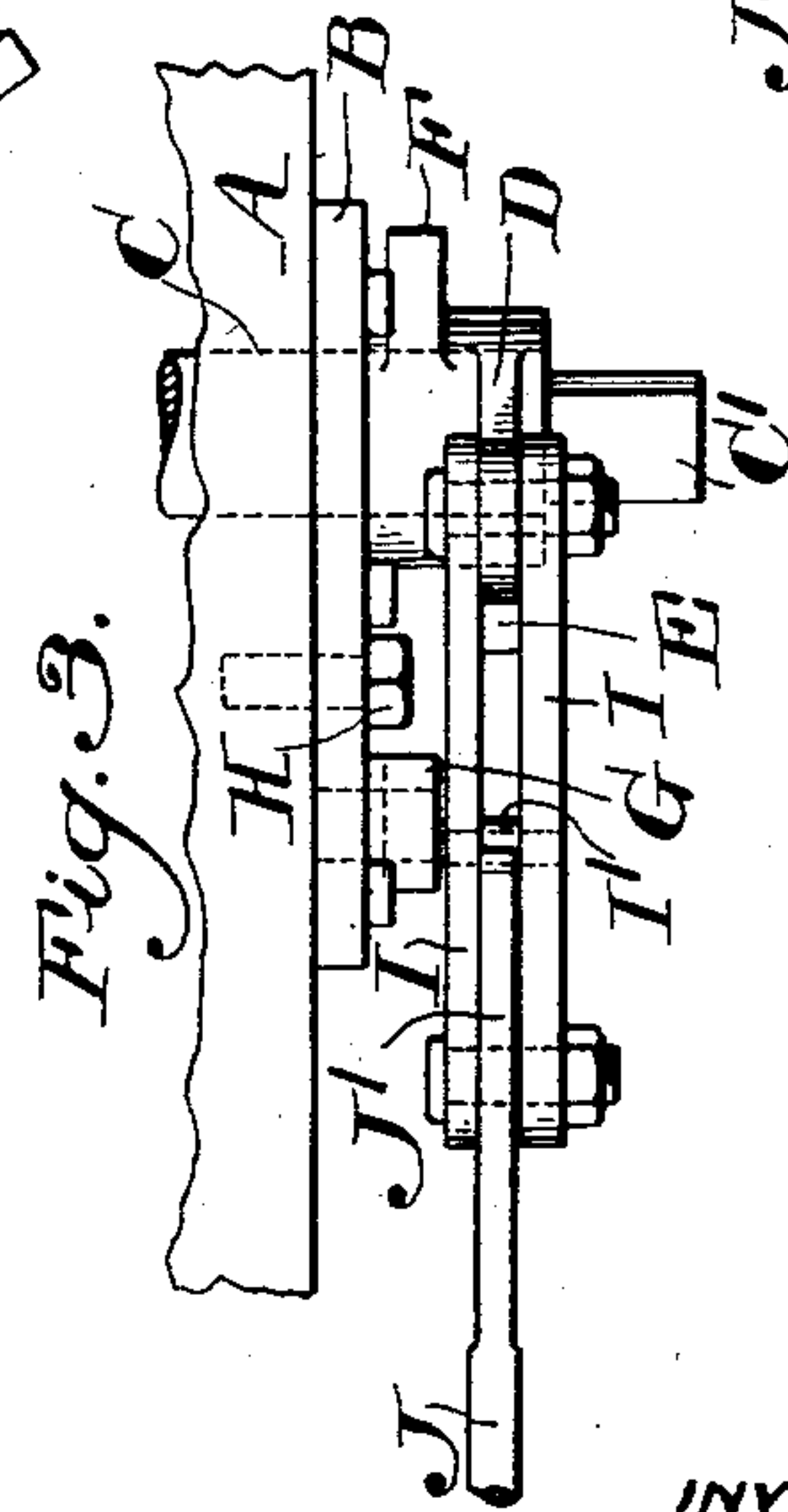
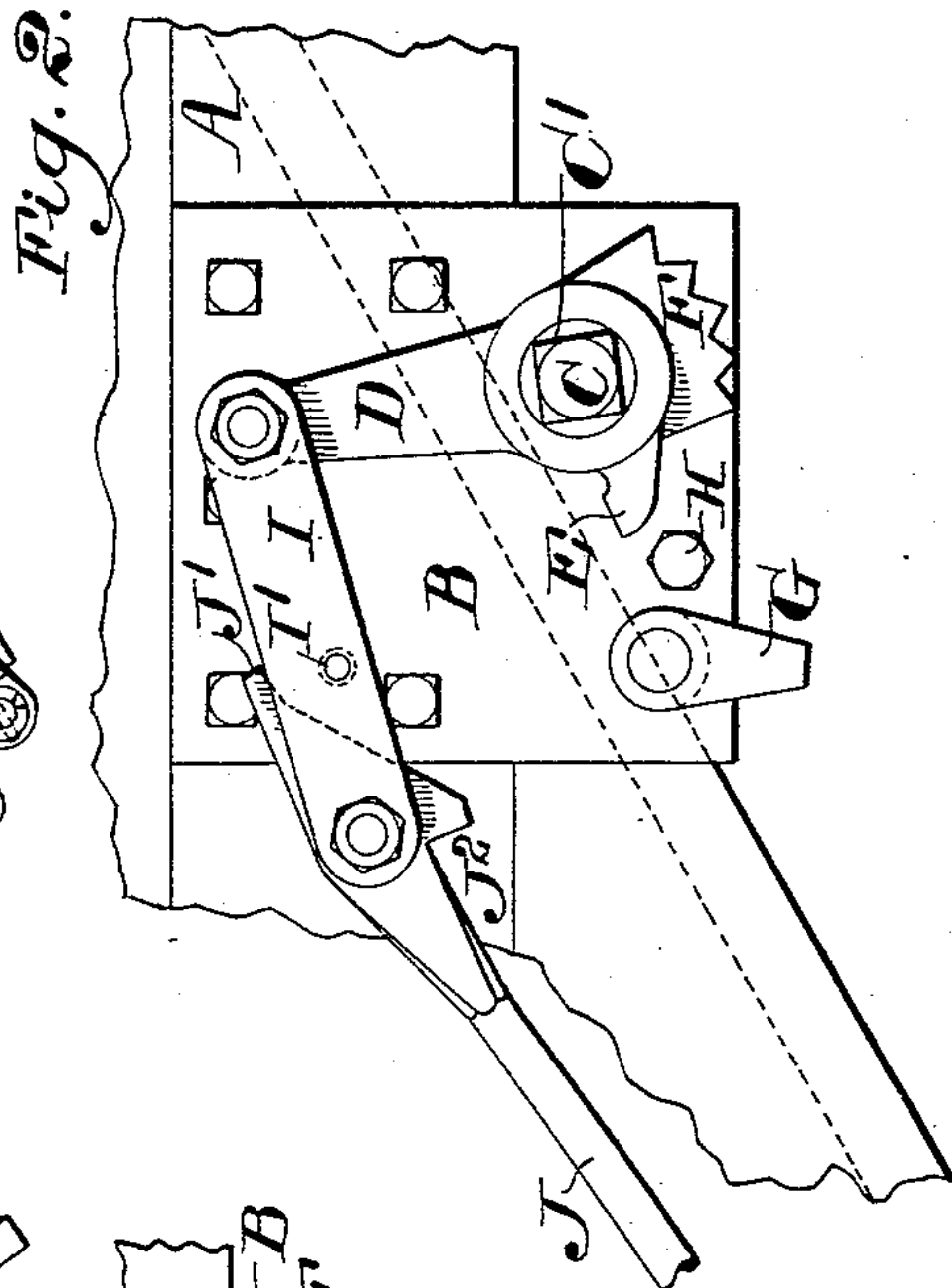
W. STEPHAN.  
MECHANISM FOR CLOSING DOORS.

No. 541,295.

Patented June 18, 1895.



WITNESSES:  
*Henry Dunning*  
*Henry J. Pack*



INVENTOR:

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# UNITED STATES PATENT OFFICE.

WILLIAM STEPHAN, OF FORT WAYNE, INDIANA.

## MECHANISM FOR CLOSING DOORS.

SPECIFICATION forming part of Letters Patent No. 541,295, dated June 18, 1895.

Application filed April 18, 1895. Serial No. 546,182. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM STEPHAN, a citizen of the United States, residing in the city of Fort Wayne, county of Allen, State of Indiana, have invented a certain new and useful Improvement in Mechanism for Closing Doors, of which the following specification is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to mechanism for closing and holding doors in position, and is particularly designed for use in connection with the drop bottoms or doors used in connection with hopper bottomed cars.

The object of my invention is to provide strong and efficient mechanism for closing and holding these drop bottoms in position, but as will be readily seen the invention can be usefully applied in any structure where a door is to be held closed against considerable pressure.

The nature of my improvements will be best understood as described in connection with the drawings in which they are illustrated in connection with a hopper bottomed railroad car, and in which—

Figure 1 is a side elevation, partly in section, of a portion of such a car, showing two doors in the bottom thereof. Fig. 2 is a side elevation on an enlarged scale, showing the operative portions of my device in a position intermediate to those illustrated in Fig. 1; and Fig. 3 is a plan view of the device in the position shown in Fig. 2.

A indicates the body of the car; A' and A<sup>2</sup>, the walls of the hoppers which form the bottom of the car; A<sup>3</sup> A<sup>3</sup>, the doors through which the contents of the car are discharged and which, as shown, are hinged at A<sup>4</sup> A<sup>4</sup>.

BB indicate metal plates bolted to the sides of the car and in which are journaled the transverse shaft C C which, in the construction shown, would extend transversely across the car and have the attachments which I am about to describe on each end. The ends of the shaft C are, as shown, made square, to afford a convenient grip for a crank used in closing and preferably in opening the doors. At each end of each shaft C is rigidly attached a lever arm D and jaw E, which is preferably set at about ninety degrees with the lever arm,

and a detent by which the shaft can be held in the position it occupies when the door is closed. As shown, and as I preferably use it, this detent consists of a ratchet segment F, and whether in this form or another, a pawl G is provided to engage the detent and hold the shaft in position as indicated at the right hand side of Fig. 1. To the end of the lever arm D I pivotally attach links I, to the other end of which is pivotally connected the head of a rod J, the other end of which is attached to the outer end of the door A<sup>3</sup> as indicated, and preferably by means of an adjustable head J<sup>3</sup> screwing on the end of the rod and by which its effective length can be adjusted so as to insure the tight closing of the door. The other head, that attached to the links, is provided with a hook J<sup>2</sup> which engages with the jaw E when the door is closed as indicated at the right hand side of Fig. 1, and so that, whatever pull there is upon the rod J is supported on the said jaw which, in the position of engagement, is held in place by the pawl G acting on the detent on the shaft.

In order to hold the door wide open while the car is being discharged, and to prevent the sagging of the mechanism below the car body, I so construct the rod J and links I that they will rigidly engage each other in the position they occupy when approximately in line with each other as shown at the left hand of Fig. 1. This may be done in any convenient way, but a strong and simple device for the purpose consists in providing a pin I' between the links and extending the head of the rod J beyond the pivotal point as shown at J' and so that the extended head will come in contact with the pin I' when the door is open, thus locking the pivotal connection and holding the parts in the position as shown at the left hand side of Fig. 1.

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

1. The device for closing doors consisting of a shaft C in combination with a lever arm D secured to it, a detent and a jaw E also secured to said shaft, links I pivotally attached at one end to the arm D, a rod J connected at one end to the door to be closed and at the other to links I, said rod having a hooked end J<sup>2</sup> adapted to engage the jaw E when the door is



closed, and a pawl G arranged to engage the detent and retain the shaft and attached parts in position to keep the door closed.

2. The device for closing doors consisting of  
5 a shaft C in combination with a lever arm D secured to it, a ratchet segment F and a jaw E also secured to said shaft, links I pivotally attached at one end to the arm D a rod J connected at one end to the door to be closed and  
10 at the other to links I, said rod having a hooked end J<sup>2</sup> adapted to engage the jaw E when the door is closed, and a pawl G arranged to engage the ratchet segment F and retain the shaft and attached parts in position to keep  
15 the door closed.

3. The device for closing doors consisting of a shaft C in combination with a lever arm D secured to it, a detent and a jaw E also secured to said shaft, links I pivotally attached at one  
20 end to the arm D, a rod J connected at one end to the door to be closed and at the other to links I by means of an adjustable head J<sup>3</sup>, said rod having a hooked end J<sup>2</sup> adapted to engage the jaw E when the door is closed, and  
25 a pawl G arranged to engage the detent and retain the shaft and attached parts in position to keep the door closed.

4. The device for closing doors consisting of a shaft C in combination with a lever arm D  
30 secured to it, a detent and a jaw E also secured to said shaft, links I pivotally attached at one

end to the arm D, a rod J connected at one end to the door to be closed and at the other to links I said rod having a hooked end J<sup>2</sup> adapted to engage the jaw E when the door  
35 is closed and being also arranged to engage with the links I when the door is fully open and in such a way that the links and the rod will lie approximately in line with each other, and a pawl G arranged to engage the detent and  
40 retain the shaft and attached parts in position to keep the door closed.

5. The device for closing doors consisting of a shaft C in combination with a lever arm D secured to it, a detent and a jaw E also secured  
45 to said shaft, links I pivotally attached at one end to the arm D and having a detent I', a rod J connected at one end to the door to be closed and at the other end to the links I, said rod having a hooked end J<sup>2</sup> adapted to engage  
50 the jaw E when the door is closed, and an outwardly extending end J' adapted to engage the detent I' on the links when the rod and links lie approximately in line with each other, and a pawl G arranged to engage the detent  
55 and retain the shaft and attached parts in position to keep the door closed.

WM. STEPHAN.

Witnesses:

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