

J. KIRKLEY & H. GRAY.  
RAILWAY CAR TRUCK.

No. 86,416.

Patented Feb. 2, 1869.

Fig. 1.

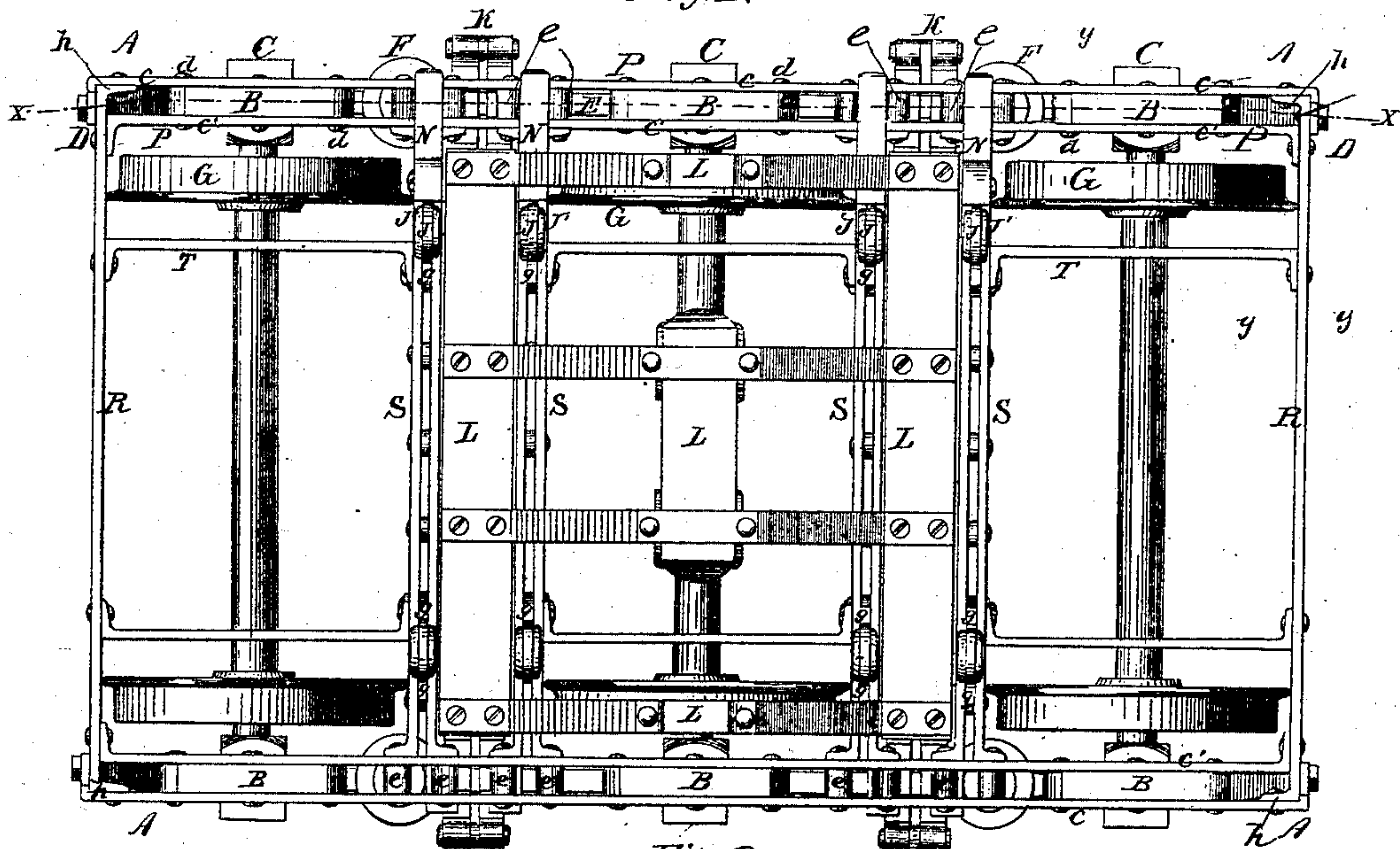


Fig. 2.

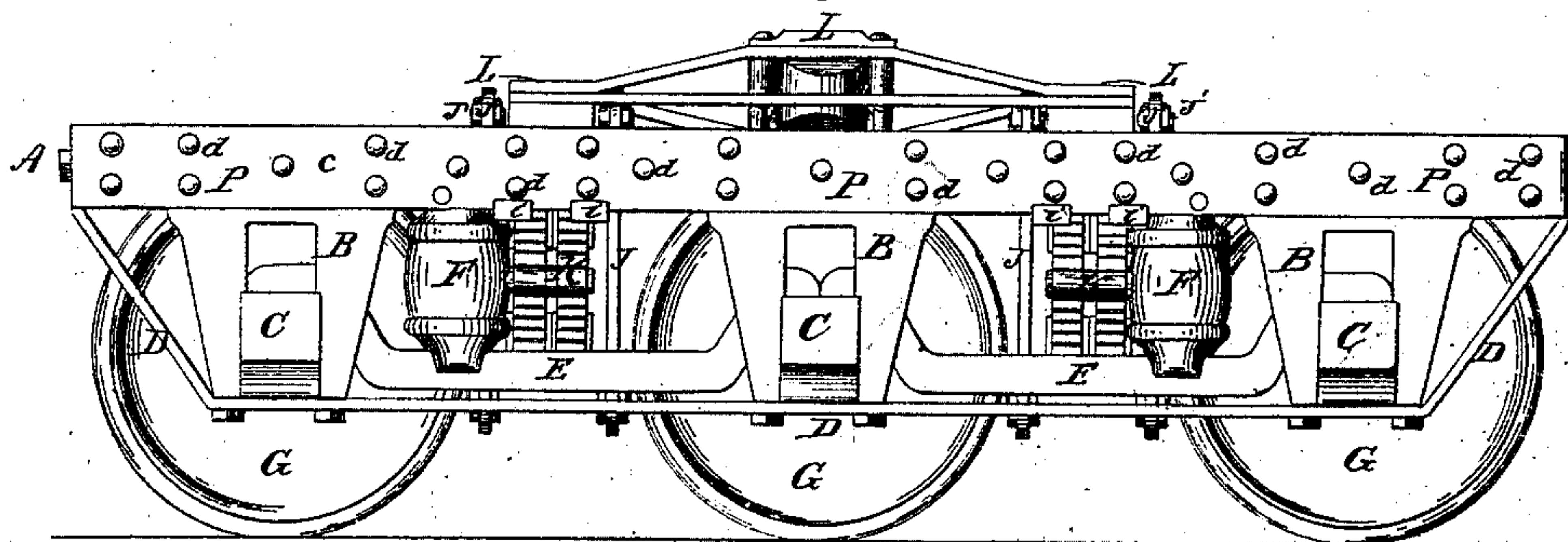
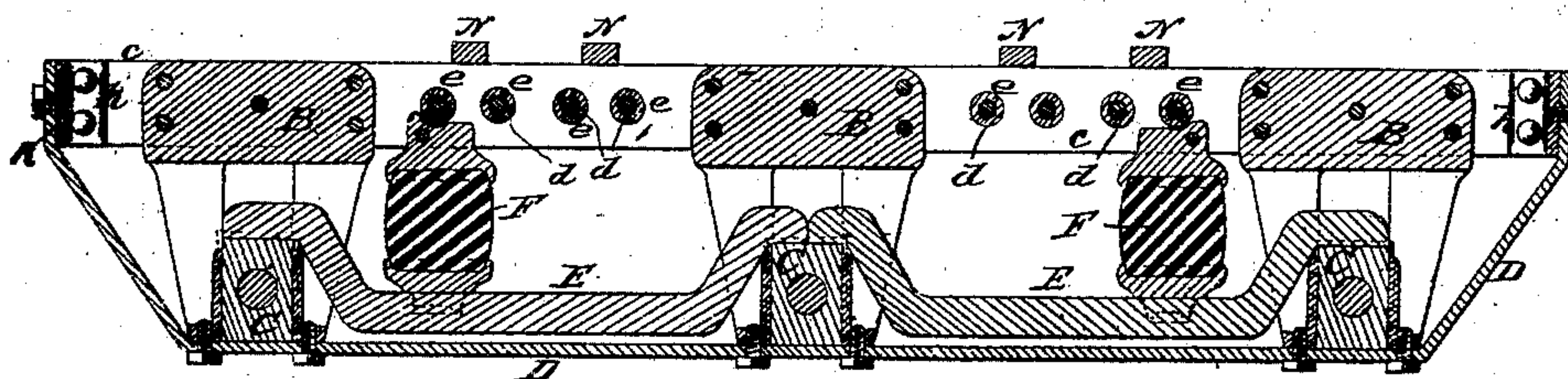


Fig. 3.



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Fig. 4

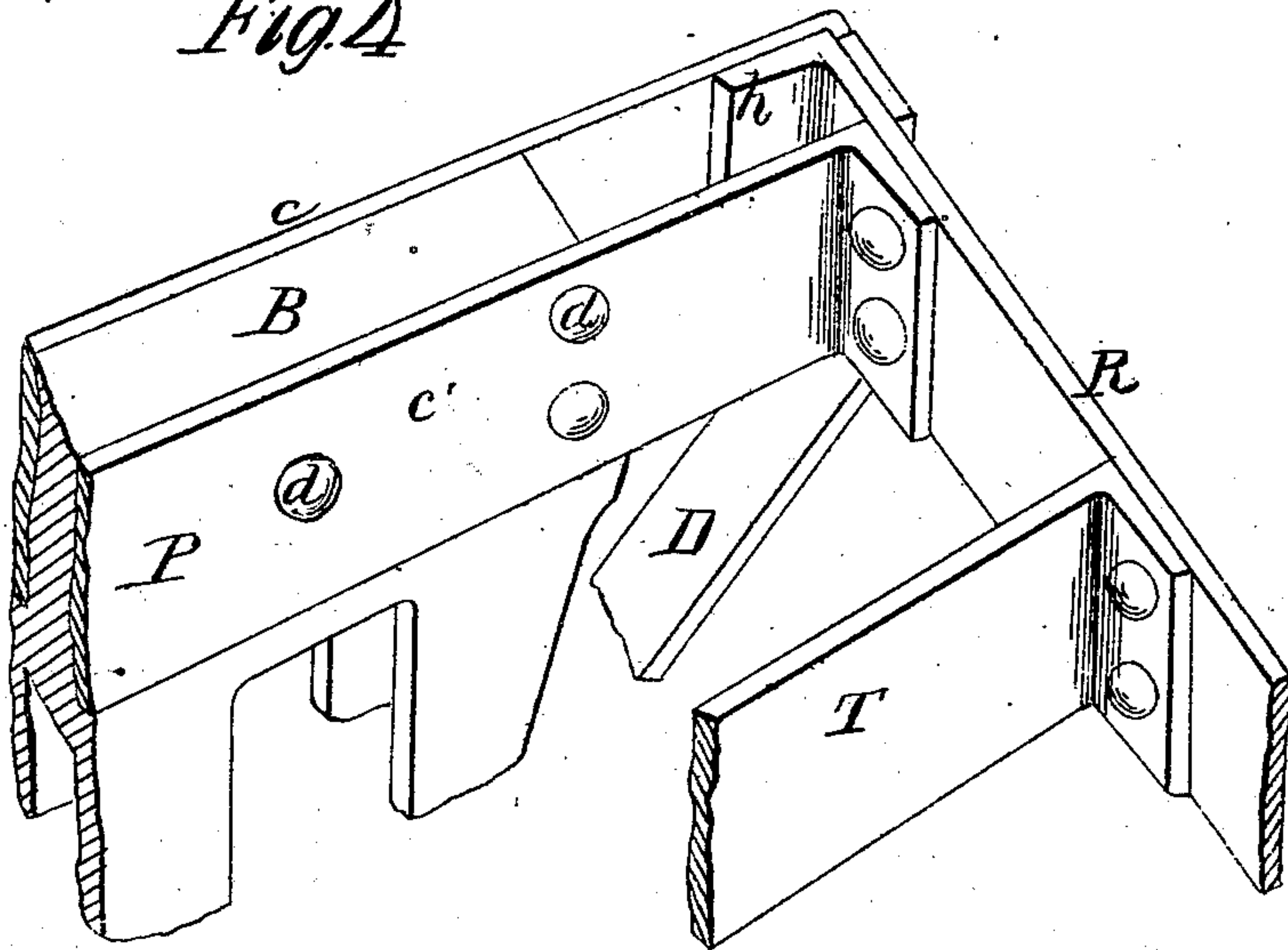


Fig. 5

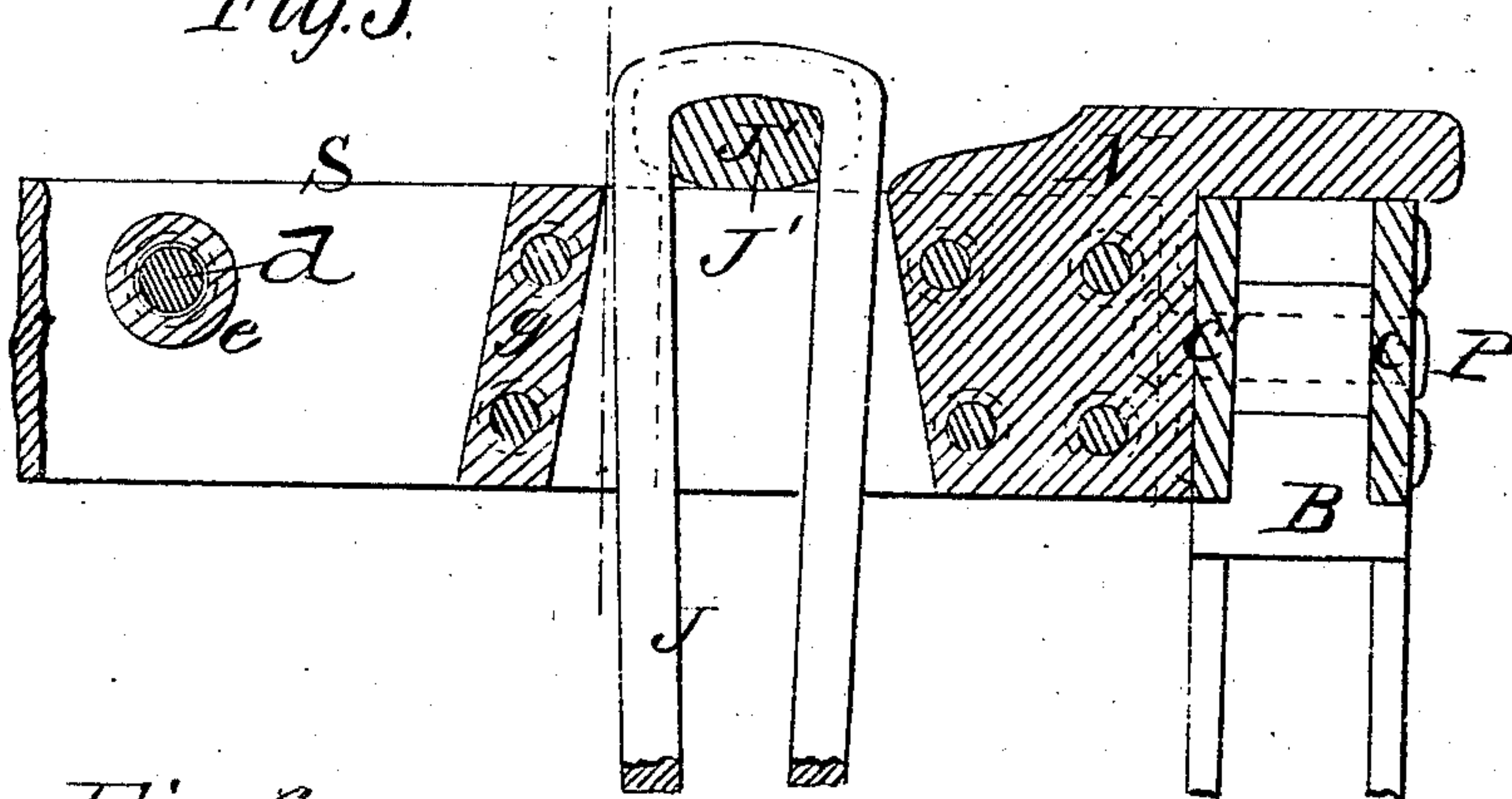


Fig. 6

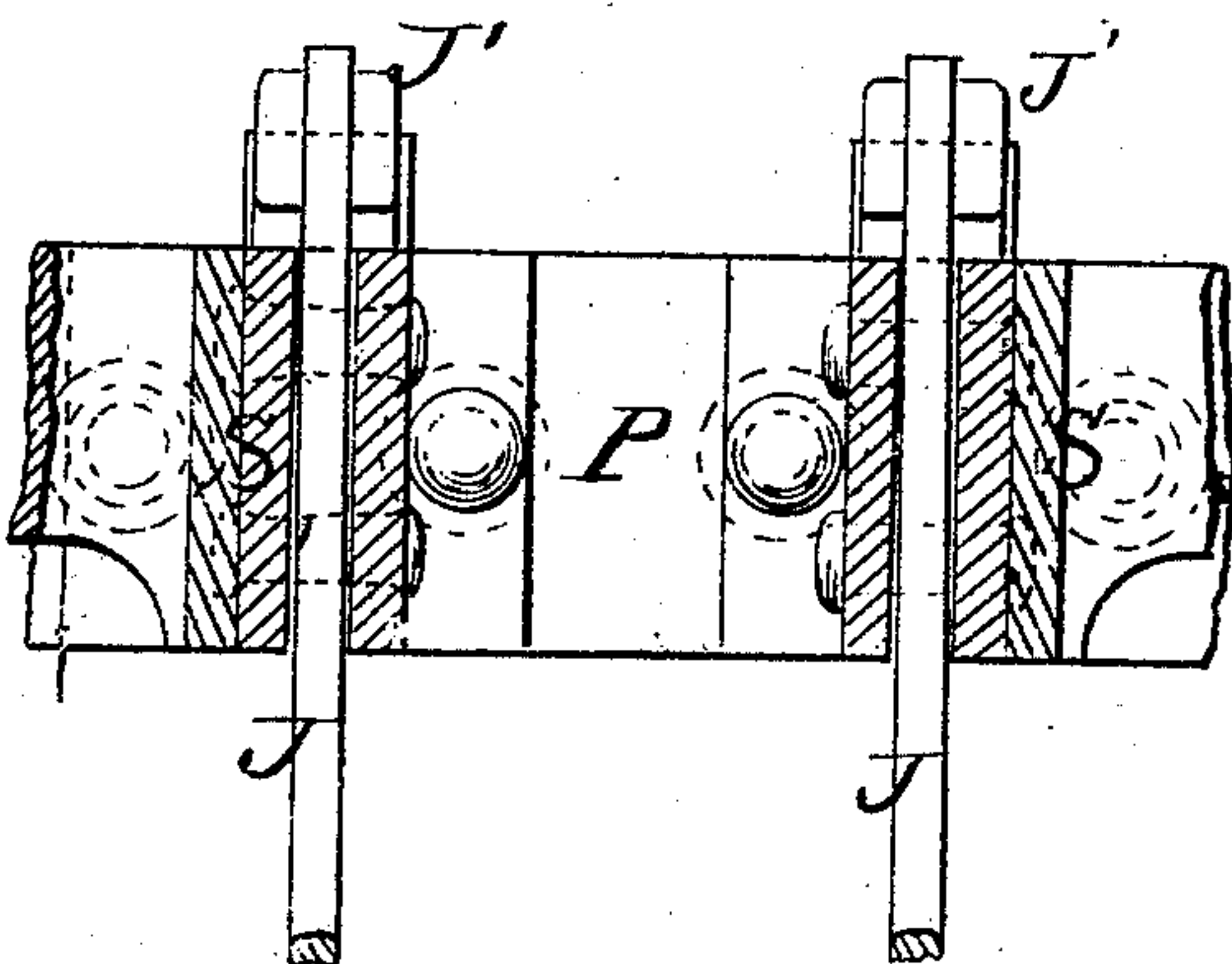
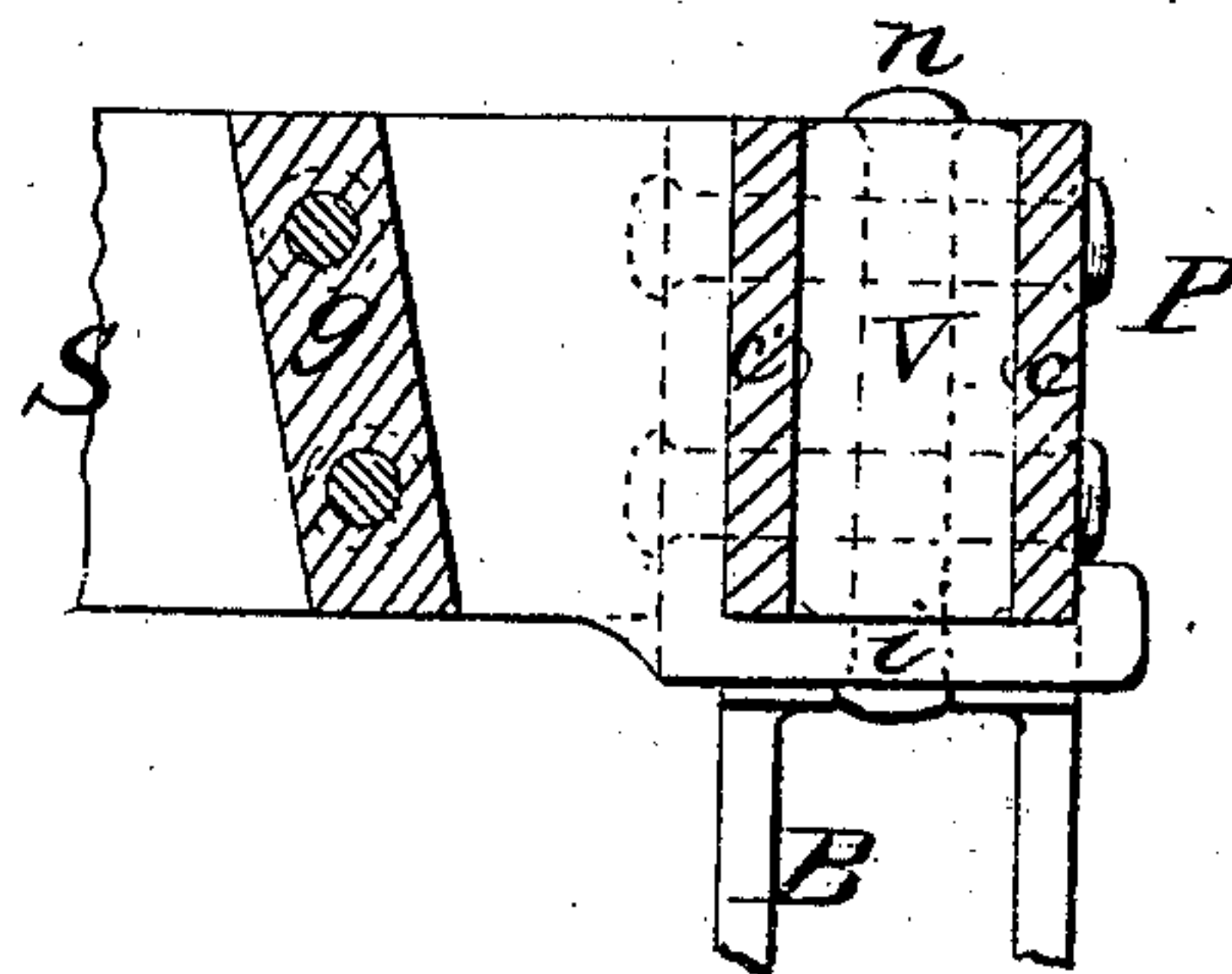


Fig. 7



Witnesses

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# United States Patent Office.

JAMES KIRKLEY AND HUGH GRAY, OF CHICAGO, ILLINOIS.

Letters Patent No. 86,416, dated February 2, 1869.

## IMPROVED RAILWAY-CAR TRUCK

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, JAMES KIRKLEY and HUGH GRAY, of Chicago, in the county of Cook, and State of Illinois, have invented certain new and useful Improvements on the Construction of Railroad-Car Trucks; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, sheet 1, is a top view of a six-wheel truck, constructed after our invention.

Figure 2, sheet 1, is an elevation of one side of our improved truck.

Figure 3, sheet 1, is a longitudinal section through one side of the truck, taken in the vertical plane indicated by line *x x* in fig. 1.

Figure 4, sheet 2, is a perspective view, showing the manner of uniting the cross-girders or bars to the longitudinal girders.

Figure 5, sheet 2, is a sectional view enlarged, taken in the vertical planes indicated by line *y y* in fig. 1, showing one mode of uniting the intermediate girders to the longitudinal girders.

Figure 6, sheet 2, shows another mode of connecting the ends of the intermediate transverse girders to the longitudinal girders.

Figure 7, sheet 2, is a section taken transversely through two of the intermediate transverse girders, showing portions of two of the stirrups which sustain the swing-beam.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain novel improvements on the construction of iron trucks for railway passenger-cars, whereby the frame-work of iron trucks can be made much stronger and more durable, with a given weight of metal, than can be done under the modes hitherto adopted of constructing truck-frames.

One object of our invention is to employ, in the construction of car-trucks, thin plates or bars of metal, and to unite these bars in such manner as to form compound girders, which will possess great strength and stiffness, both vertically and laterally.

Another object is to so construct, combine, and arrange the compound girders in a truck-frame, that they can be firmly secured together at their ends, so as to form rigid connections at these points, and also so that the girders afford means for rigidly attaching to them, in a very complete manner, the several parts which are necessary to complete the truck, as will be hereinafter explained.

To enable others skilled in the art to understand our invention, we will describe its construction and operation.

The drawings represent a six-wheel truck, adapted for passenger-cars or coaches, the general arrangement of which is the same as is now commonly adopted in the

construction of six-wheel trucks with wooden frames, or combined wood and metal frames.

A represents the improved rectangular truck-frame. B, the pedestals, which are secured to the longitudinal girders of the frame A.

C C, the journal-boxes, which are free to slide in the pedestals.

D, the ties and braces, which extend from one end to the other of the frame A, and serve to strengthen the pedestals and frame.

E E are equalizing-bars, which are supported upon the journal-boxes, and which have springs F interposed between them and the longitudinal girders, so that the weight of the superimposed load will be equally distributed upon the several journal-boxes.

G G are the car-wheels, the axles of which may be applied to the journal-boxes C in the usual well-known manner.

There are six wheels applied to the frame shown in the drawings, but in carrying out our invention, we shall construct frames adapted for four wheels or for eight wheels, as may be required.

H H represent the transverse swing-beams, which are suspended from intermediate transverse girders of frame A, by means of hangers or laterally-swinging stirrups J J, and rocking blocks J' J'; and

K K represent springs, of an elliptic or other form, which are supported upon swing-beams H, and upon which springs the frame L rests, as shown in the drawings.

It will thus be seen that the general arrangement of the several parts composing the truck shown in the drawings, is substantially the same as is adopted in the construction of six-wheel trucks which are chiefly of wood.

The truck-frame A is composed of thin strips or bars of metal, so arranged and combined, that the whole strain of the superimposed load is supported by the depth of the bars, the requisite stiffness laterally being given to them, by securing them together in the following manner: Each one of the longitudinal or side girders P of the frame A, is composed of two thin strips or bars *c c'*, secured together so as to leave a narrow space between them, by means of rivets or bolts *d d*, which pass through holes made through said bars, and also through ferrules or spacing-tubes *e*, which tubes are interposed between the bars *c c'*, and serve to hold the latter apart, and form bearings for making rigid connections, which will prevent the bars from yielding under lateral strain.

As a further means for strengthening the girders P P, and of uniting in a firm manner the pedestals B to them, the upper solid portions of these pedestals are reduced, and inserted between the bars *c c'*, and secured in place thereto by means of rivets or bolts, as clearly shown in sheet 1.

The outer strip or bar *c* of each girder P has its ex-



tremities hooked inward, and the ends of the inner bar *c'* of each girder has right-angular foot-pieces formed thereon, as clearly shown in figs. 1 and 4.

The outer bars *c c*, of the girders *P P*, are a little longer than the inner bars *c' c'* thereof, and to the ends of these girders the angular ends *h h* of single bars *R R*, which are of greater depth than thickness, are secured by rivets passed through angles *h h*, and through the outer bars *c c*, as shown.

The inner bars *c' c'* are then bolted or riveted by their angles to the cross-bars *R*.

This gives three points of security at each corner of the frame *A*, and affords rigid connections.

The transverse girders *S S*, which are arranged between the single end bars *R R*, and intermediate longitudinal braces and tie-bars *T T*, are constructed of thin bars, of greater depth than thickness, united in pairs by rivets and spacing-ferrules as described, for the longitudinal girders *P P*, and as clearly shown in figs. 1 and 6.

The girders *S S* are designed for tying together laterally the side girders *P*, and preventing lateral thrust thereof, and also for sustaining the superincumbent load.

Four of these girders *S* are shown in the drawings, arranged in pairs, at proper distances apart, to have suspended from them the hangers or stirrups *J J*, that carry the swing-beams *H*.

The castings *g g*, which are applied to the girders *S*, on opposite sides of each hanger *J*, for the purpose of keeping it in its place, are riveted or bolted firmly between the two bars composing each girder *S*, and assist in stiffening the same.

These pieces *g g* are clearly shown in the sectional view, figs. 5 and 7.

We have represented in the drawings two modes of securing the ends of the cross-girders *S S* to the side girders *P P*, one of which modes is shown in fig. 5, and the other in fig. 7.

In fig. 5, the bracket *N* is strongly bolted or riveted between the two bars forming the girder *S*, and that portion of this bracket which extends beyond the end of the girder *S*, rests upon the top edge of the longitudinal girder *P*, and sustains said girder *S* thereupon, against downward pressure.

By means of rivets, the angular ends or feet of the girders *S* are secured to the girder *P*.

In fig. 7, the girder *P* has a block, *V*, confined in it

by transverse rivets, and beneath this block *V*, the hooked projection or chair *i* extends, and embraces the lower edge of the girder *P*, so as to form a tie.

Through the chair *i* and the block *V*, a rivet or bolt, *n*, is passed, for the purpose of confining the parts in place.

In addition to this fastening, the angular ends or feet of the girder *S* are secured to the inner plates of the girders *P*.

Having described our invention,

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

1. The combination of thin metal bars *c c'*, tubes or thimbles *e e*, and bolts or rivets *d*, in the formation of side and transverse girders *P S* of a railroad-car truck, substantially in the manner shown and described.

2. The combination of the hooking and angular ends of the two thin metal bars *c c'*, with the angular ends of the single thin metal bars or girders *R*, substantially in the manner described and shown.

3. The transverse girders *S S*, made of thin metal bars, such as *c c'*, and united and stayed by thimbles or tubes, and bolts or rivets, such as *d e*, and constructed with brackets *N*, in combination with the girders *P*, composed of thin metal bars *c c'*, all substantially in the manner shown and described.

4. The pedestals *B*, having their upper ends reduced and arranged between the thin metal bars *c c'*, which, with the tubes and bolts *d e*, compose the side girders, all in the manner shown and described, and for the purpose set forth.

5. The combination of the stay-stops *g*, and the bracket-stops *N*, and the thin metal side-beams *c c*, in such manner that the hangers *J J'* can be applied upon and hung to swing between the plates *c c'*, substantially as shown.

6. The combination of the hook-brackets *i*, blocks *V*, and thin plates *e e* of the girders *S*, substantially as herein described and shown.

7. The thin metal bar truck-frame, having its side and transverse beams, and its pedestals, all constructed, stayed, and united together in the manner shown and described.

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