

(No Model.)

2 Sheets—Sheet 1.

W. J. WILLITS.

HAND CAR.

No. 269,906.

Patented Jan. 2, 1883.

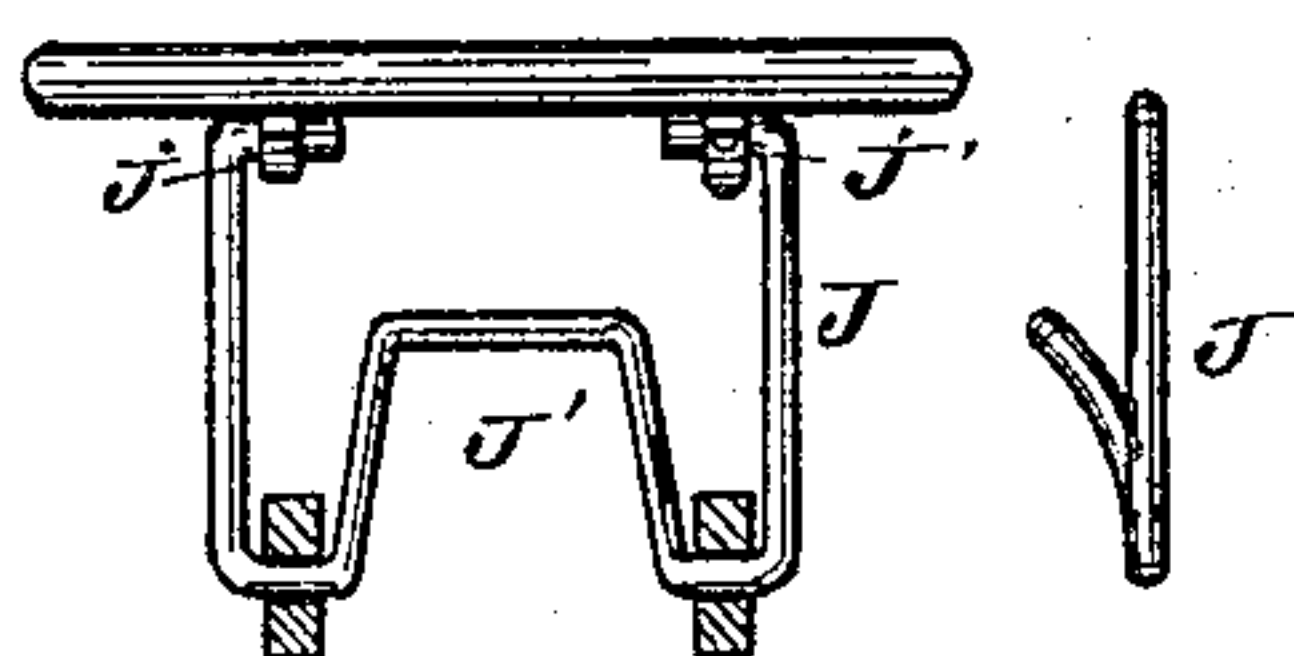
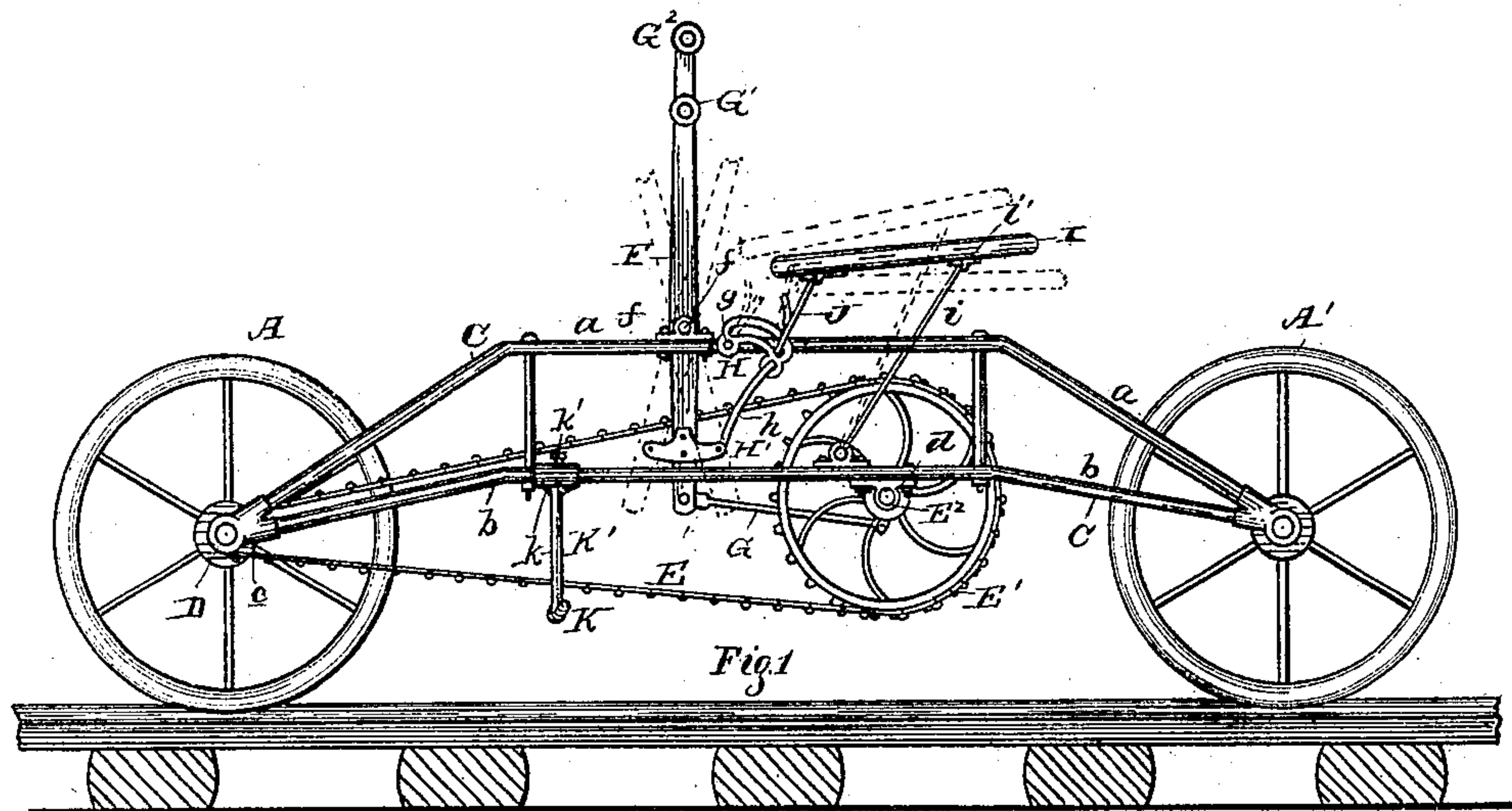


Fig. 2

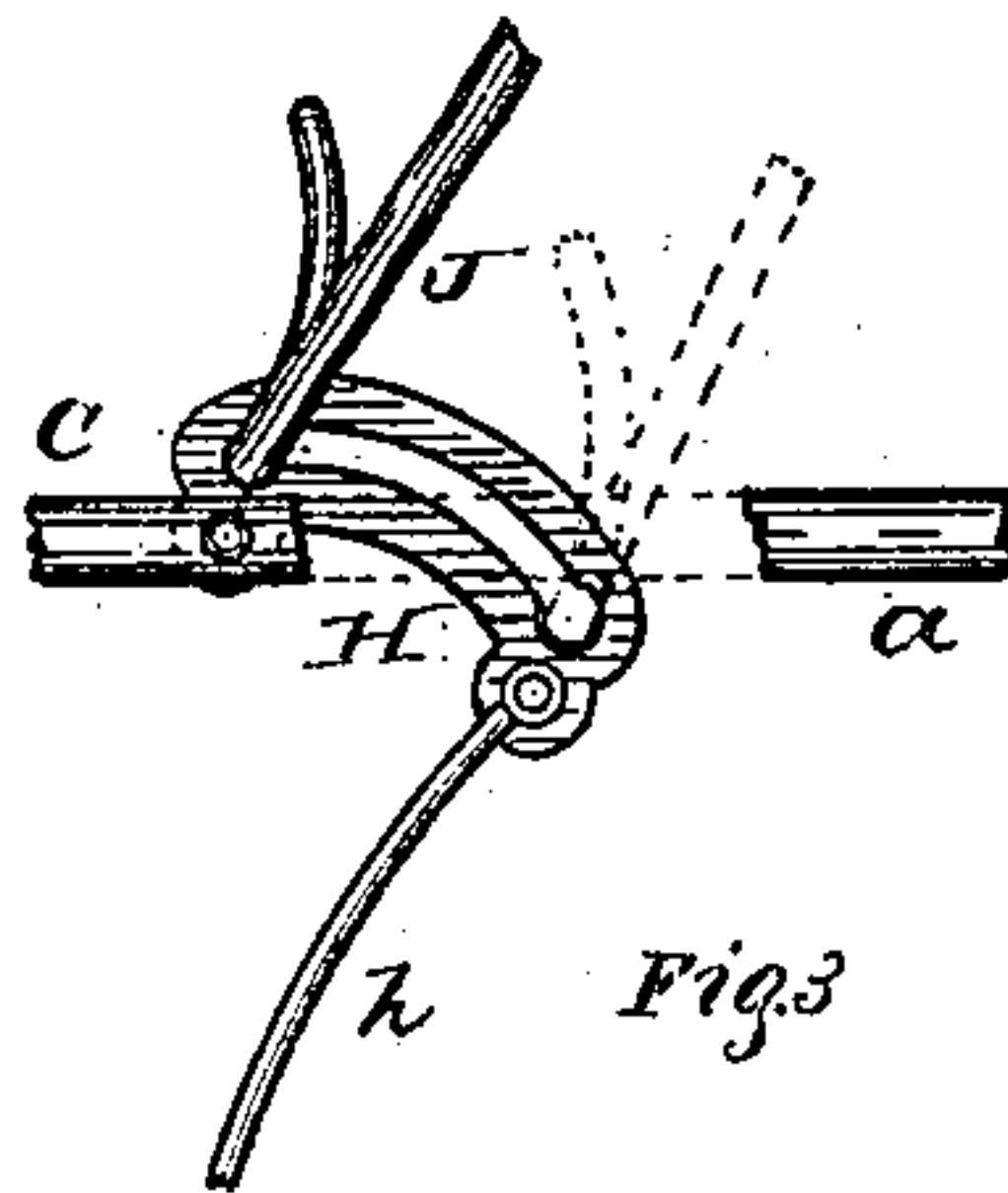


Fig. 3

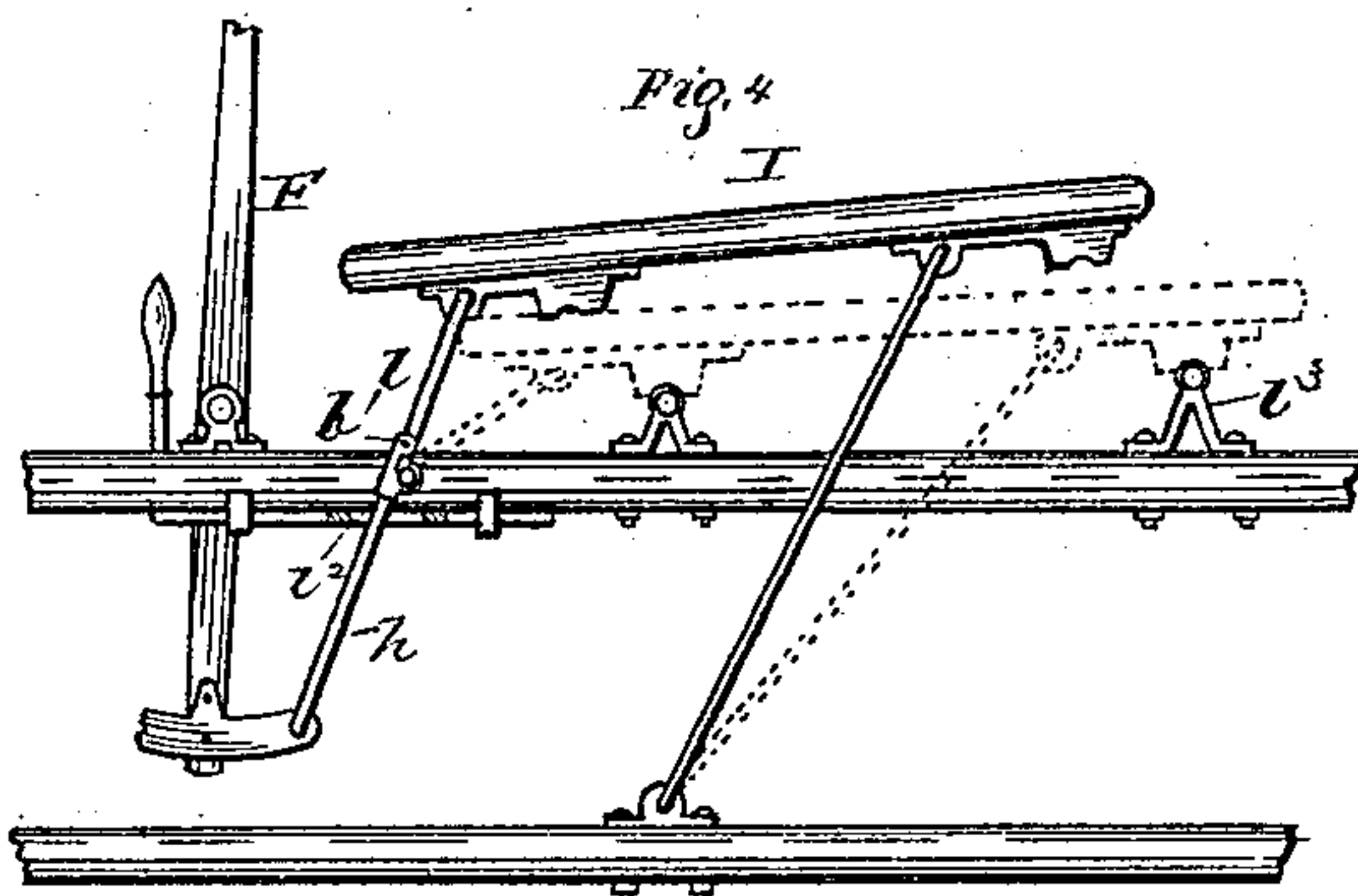


Fig. 4

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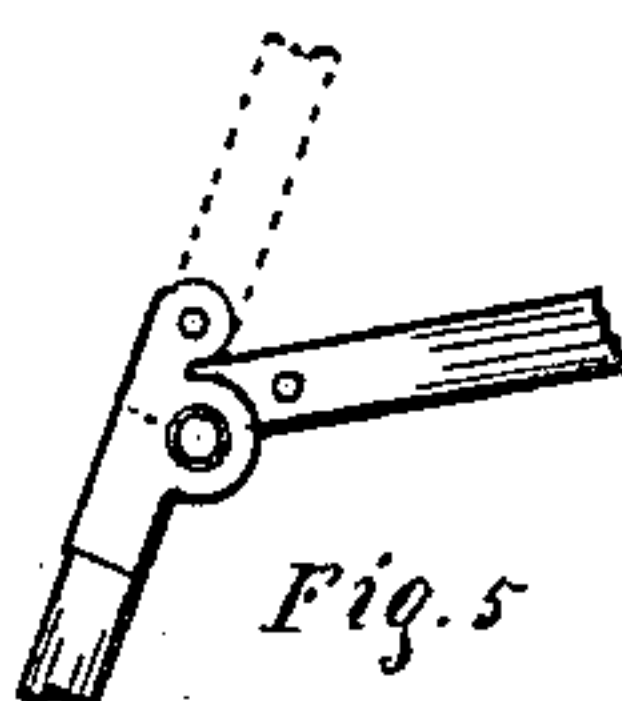


Fig. 5

(No Model.)

2 Sheets—Sheet 2.

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Fig. 6.

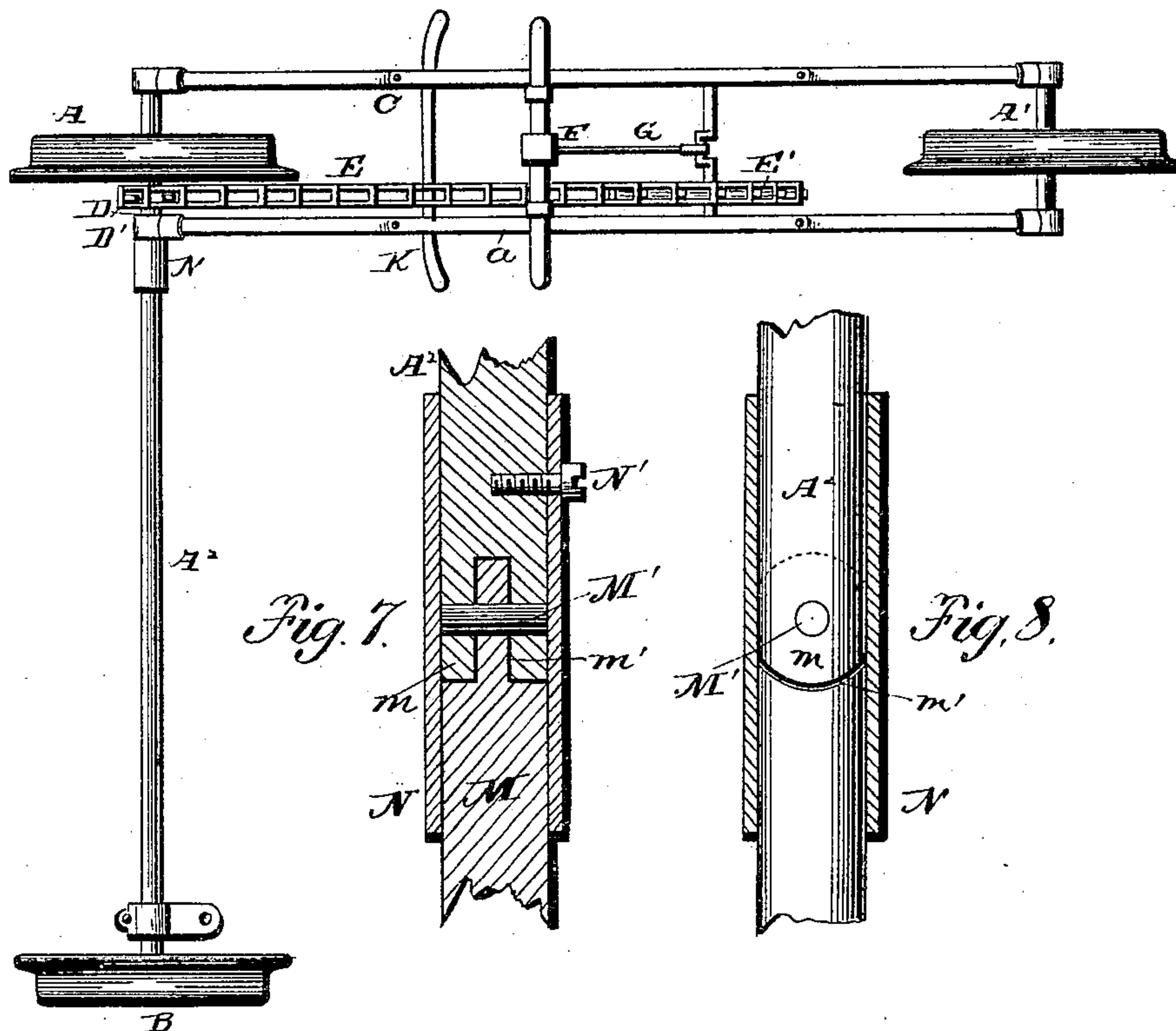


Fig. 7.

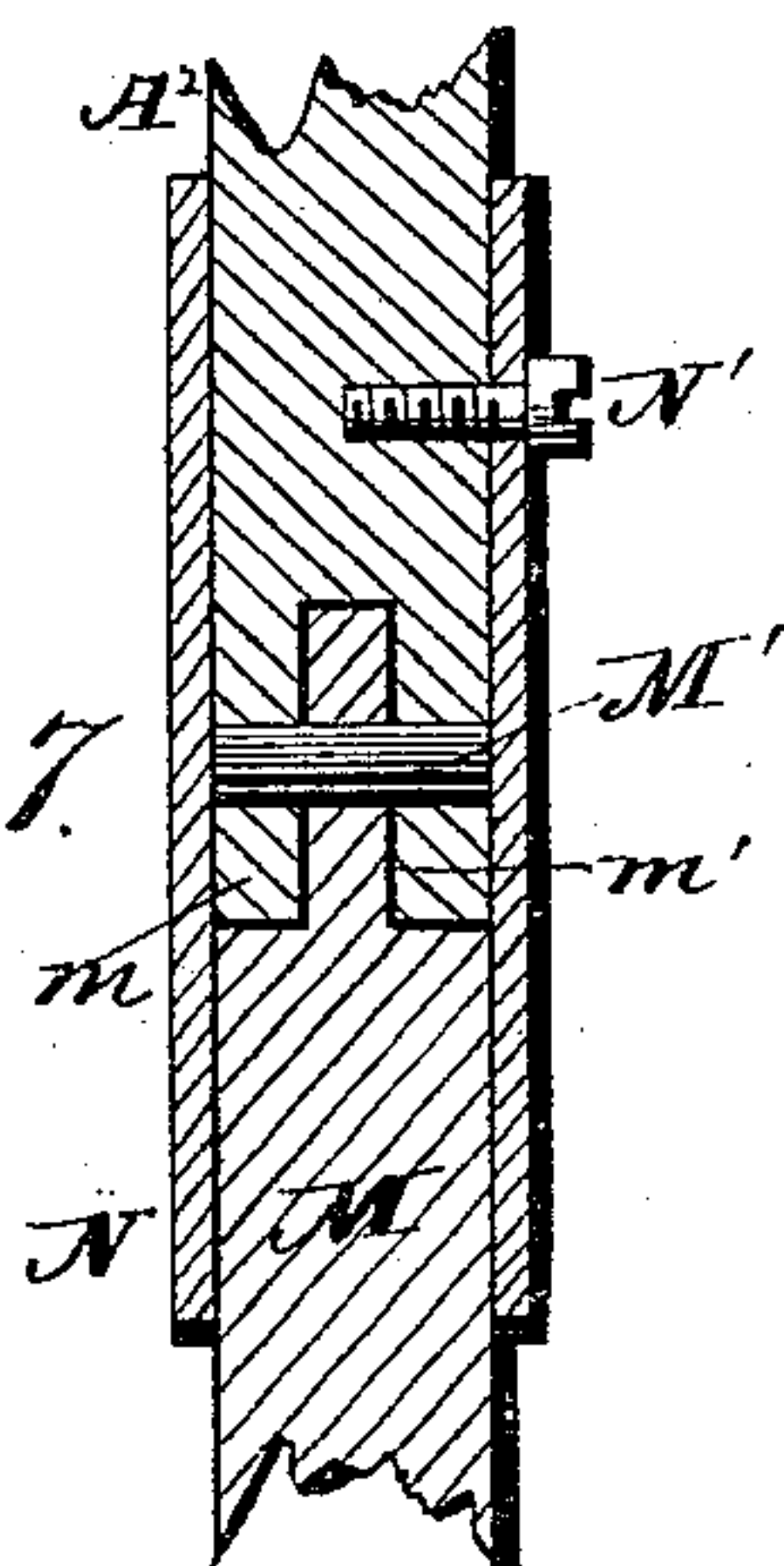


Fig. 8.

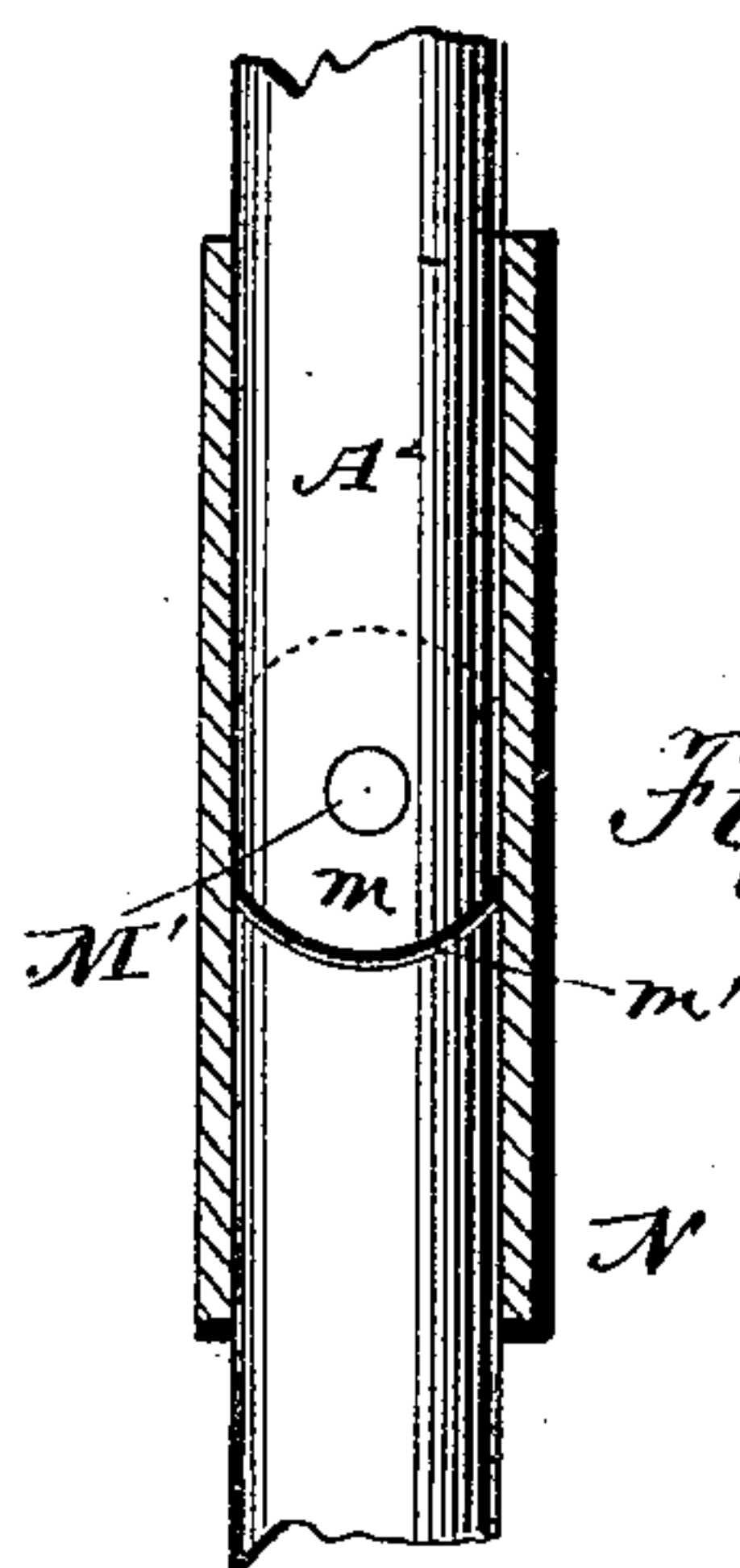


Fig. 9.

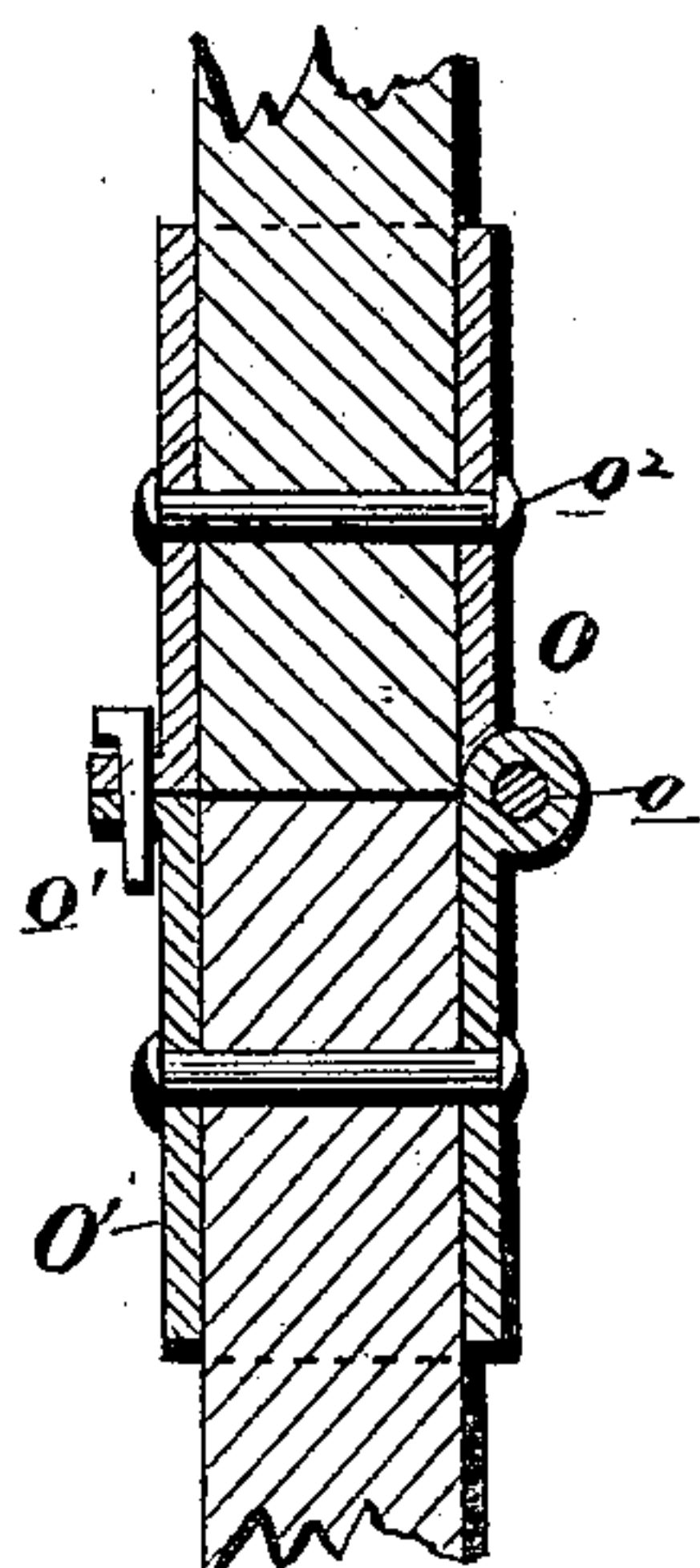
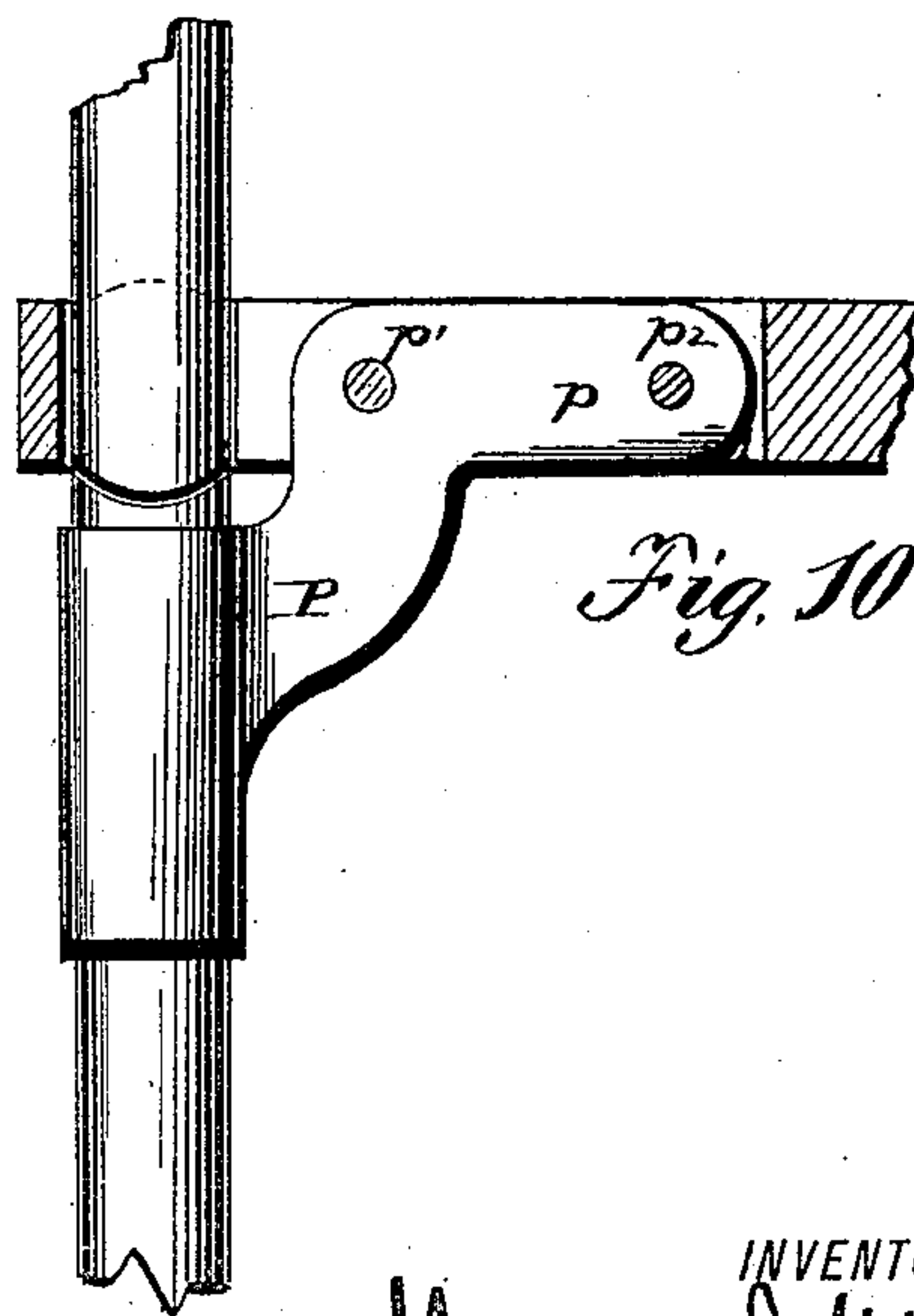


Fig. 10.



WITNESSES

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UNITED STATES PATENT OFFICE.

WARREN J. WILLITS, OF THREE RIVERS, MICHIGAN, ASSIGNOR TO THE
SHEFFIELD VELOCIPEDE CAR COMPANY, OF SAME PLACE.

HAND-CAR.

SPECIFICATION forming part of Letters Patent No. 269,906, dated January 2, 1883.

Application filed October 19, 1882. (No model.)

To all whom it may concern:

Be it known that I, WARREN J. WILLITS, of Three Rivers, in the county of St. Joseph and State of Michigan, have invented certain
5 new and useful Improvements in Three-Wheel Hand-Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make
10 and use the same.

My invention relates to an improvement in hand-cars, the object being, first, to provide a hand-car with a seat which may be secured in either a stationary position or to the operating lever and oscillate therewith, thereby utilizing the weight of the operator in propelling the car; second, to provide a stationary foot-rest capable of adjustment to suit different operators; third, to provide the axle supporting
15 the guide-wheel with a hinged joint or connection, so that it may be folded into small compass for storage or transportation.

With these objects in view my invention consists in certain features of construction and
25 combinations of parts, as will hereinafter be described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in side elevation of my improvement. Fig. 2 is a detached view of the seat and its forward supporting-bail. Fig. 3 is a detached
30 view of the link mechanism for securing the seat in either a stationary or movable position. Figs. 4 and 5 are detached views of a modified form of devices for adjusting the seat. Fig. 6 is a plan view of the hand-car. Figs. 7 and
35 8 are sectional views of one form of hinged axle. Figs. 9 and 10 show modified constructions of hinged axle-connections.

A A' represent the main wheels, and B the
40 guide-wheel, of my improved three-wheel hand-car.

C is the main supporting-frame, which is made in the form of a truss, and consists of the upper portion, *a*, and lower portion, *b*,
45 joined at their opposite ends by the boxes *c* and at their central portions by the studs or posts *c'*. The frame may be made of wrought-iron tubing, or of any other material desired. The forward axle, D, is journaled in boxes secured to the main frame, and has a small

sprocket-wheel, D', rigidly secured thereto, over which passes the driving-chain E, the latter also encircling a large sprocket-wheel, E', supported on a crank-shaft, E², which is journaled in bearings *d*, secured to the main
55 frame.

F is an operating-lever provided with a transverse shaft, *f*, which is journaled in bearings *f'*, attached to the upper portion, *a*, of the main frame. One end of a connecting rod, G, is pivoted to the lower end of the operating-lever, and its opposite end is mounted on the crank of the shaft E², and hence the operator, by grasping either of the handles G' or G² and imparting an oscillating movement to the lever
60 F, will propel the car forward or backward, as desired.

To the main frame is pivoted at *g* a sector-link, H, the free end of which has pivoted thereto the upper end of a rod, *h*, the lower
70 end of the latter being pivoted to a plate, H', secured to the lower portion of the operating-lever. Thus it will be observed that an oscillating movement is imparted to the sector-link whenever the lever F is being operated.

I represents the operator's seat, its rear end being supported on pivoted supporting-bars *i*, the upper ends being pivoted in bearings *i'*, attached to the under side of the seat, and their lower ends to bearings *i*², fixed to the main
80 frame. To the under side of the forward end of the seat are secured the inwardly-bent ends *j j* of the supporting-bail J, which extends downwardly, and extends through the sector-links, and then upward again, forming a handle, J'. By moving the bail forward and over the pivotal bearings of the sector-links the seat is retained in a stationary position while the car is being propelled by the operating-lever. When the bail is moved rearward to the free
90 ends of the links the seat will oscillate with the operating-lever, thereby enabling the weight of the operator to be utilized in the propulsion of the car.

In Figs. 4 and 5 I have represented another
95 arrangement of devices for securing the seat in a stationary or movable manner. Instead of employing a sector-link, as hereinbefore described, the forward end of the seat is supported by pivoted bars *l*, the lower ends of
100

which are pivoted to the upper pivotal bearing of the rods h . The upper end of rod h is provided with a sheath, h' , which receives the bar l , and to which it is secured by a pin inserted through the holes $l' l^2$, and thus the rods h and l constitute in effect a single rigid lever, thereby transmitting the weight of its operator to the operating-rod and allowing the seat to oscillate in unison therewith. When it is desired to have the seat remain stationary the pins securing the rods together are removed, allowing the seat to turn back and rest upon the supporting-standards l^3 , secured to the main frame.

K is a foot-rest, the side arms, K' , of which are each provided with a sleeve, k , encircling the lower bar of the main frame, which enables the foot-rest to be adjusted for different operators and secured in place by the set-screw k' . The foot-rests may be separate, and consist of short bars extending inwardly from the side arms K , or it may consist of a single cross-bar uniting the lower ends of the side bars. The forward axle, supporting the main wheel A' , is supported in stationary bearings. The inner end of the axle is provided with a slot, m , within which is inserted a mortise, m' , formed on the end of the axle M , the two being connected together by a pin, M' , thus forming a hinged joint, which is rendered stiff and serviceable by means of a sleeve, N , which is moved over the joint and held in place by a set-screw, N' . By loosening the set-screw and sliding the sleeve to one side of the joint the axle M and guide-wheel may be folded against the main frame, and thus enable the hand-car to be packed in small compass for storage or transportation without disengaging the parts.

Fig. 9 shows another construction of hinged connection. To the adjacent ends of the two axles are rigidly secured the two halves $O O'$ of a sleeve, which are hinged together at o and detachably connected at the opposite side of the hinge by means of a bolt or pin, o' . The sleeve-sections are secured by means of pins o^2 , passing through the axles. Instead of securing the sleeve by pins passing through the axles, it may be secured by set-screws, so as to be capable of longitudinal adjustment, and thus be adjusted so that one axle will overlap the hinged joint.

Fig. 10 shows another form of hinged connection. The axles are connected by a slot and tenon, the same as illustrated in Fig. 7; but instead of employing a sleeve for securing the parts together I employ a supplemental bearing, P , having rearwardly-projecting arms $p p$, which are pivoted to the main frame by the bolt p' . The bearing is retained in position by means of a removable pin, p^2 .

It is evident that many slight changes in the

construction and relative arrangement of the parts might be resorted to without departing from the spirit of my invention, and hence I do not limit myself to the exact construction and arrangement of parts shown and described; but

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

1. In a hand-car, the combination, with the hand propelling mechanism, of a seat mounted at its front and rear ends on swinging supports, and devices for adjusting the front supports to connect or disconnect the seat and said propelling mechanism, substantially as set forth.

2. The combination, with the operating-lever and a seat mounted at one end on swinging supports, of a sector-link connected to the operating-lever, so as to be moved thereby, and a swinging support or bail pivoted to the other end of the seat and connected to said sector-link, so as to be moved toward or from its pivotal bearing, substantially as set forth.

3. The combination, with the operating-lever, a sector-link pivoted to the car-frame, and a rod connecting the lower end of the lever and the free end of the sector-link, of a seat mounted at its rear end on swinging supports and at its forward end on a bail, the lower end of which is supported in the curved slots of said sector-link, substantially as set forth.

4. The combination, with the operating-lever and seat, of a stationary foot-rest located below the frame and adjustably secured to the side bars thereof, substantially as set forth.

5. In a three-wheel hand-car, a hinged axle having the guide-wheel secured to one end and one of the main wheels to its opposite end, substantially as set forth.

6. In a three-wheel hand-car, an axle hinged together and a sleeve adapted to be placed over the joint, said axle having the guide-wheel secured to one end and one of the main wheels to its opposite end, substantially as set forth.

7. In a three-wheel hand-car, the combination, with the main frame, of an axle hinged together at a point near the inner side of the frame, said axle having a guide-wheel secured to its outer end and a main wheel secured thereto between the sides of the main frame, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WARREN J. WILLITS.

Witnesses:

CHARLES P. WEBSTER,
A. W. BRIGHT.