

(No Model.)

2 Sheets—Sheet 1.

A. B. KEYES.
TWO WHEELED VEHICLE.

No. 475,943.

Patented May 31, 1892.

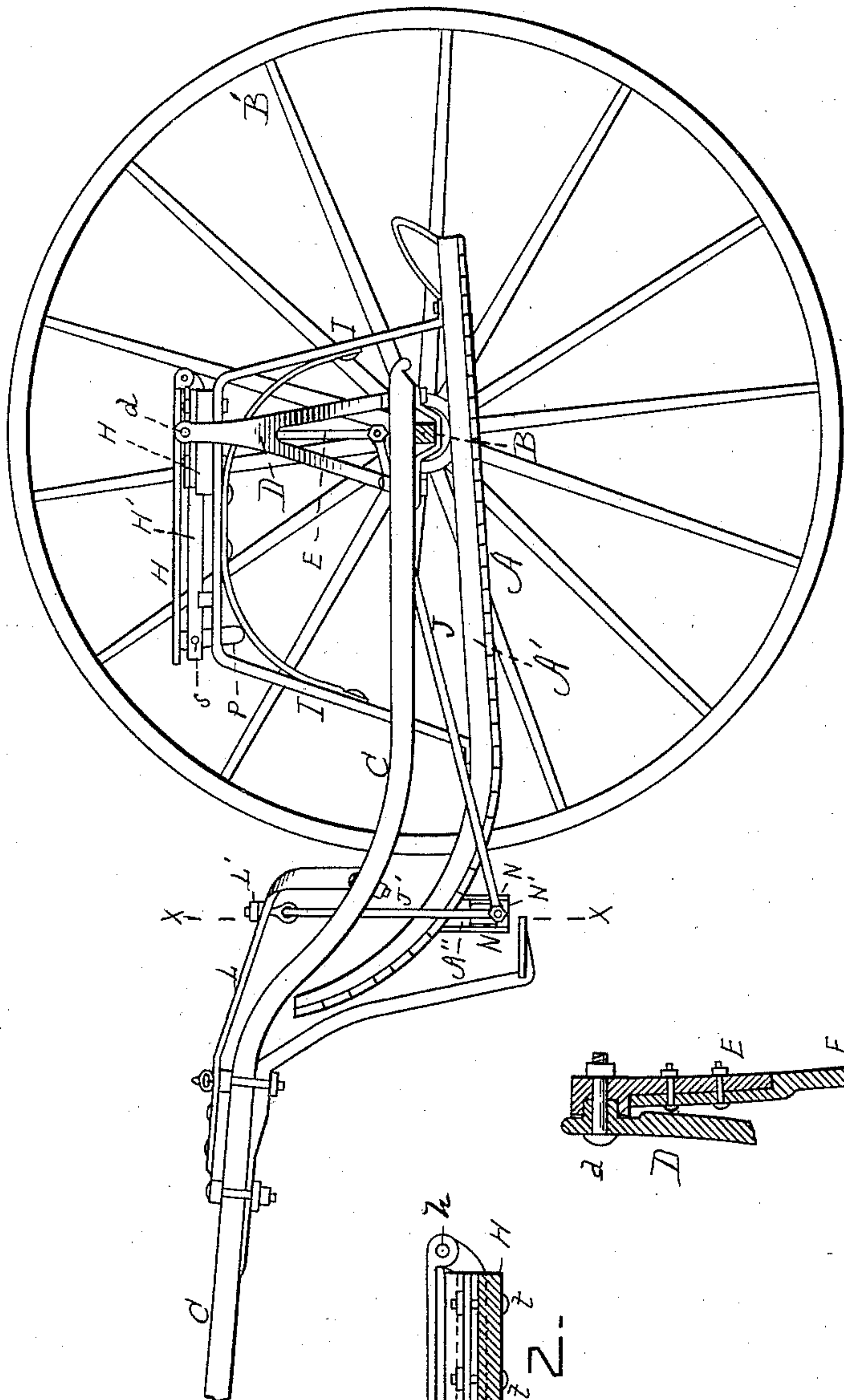


FIG. 1.

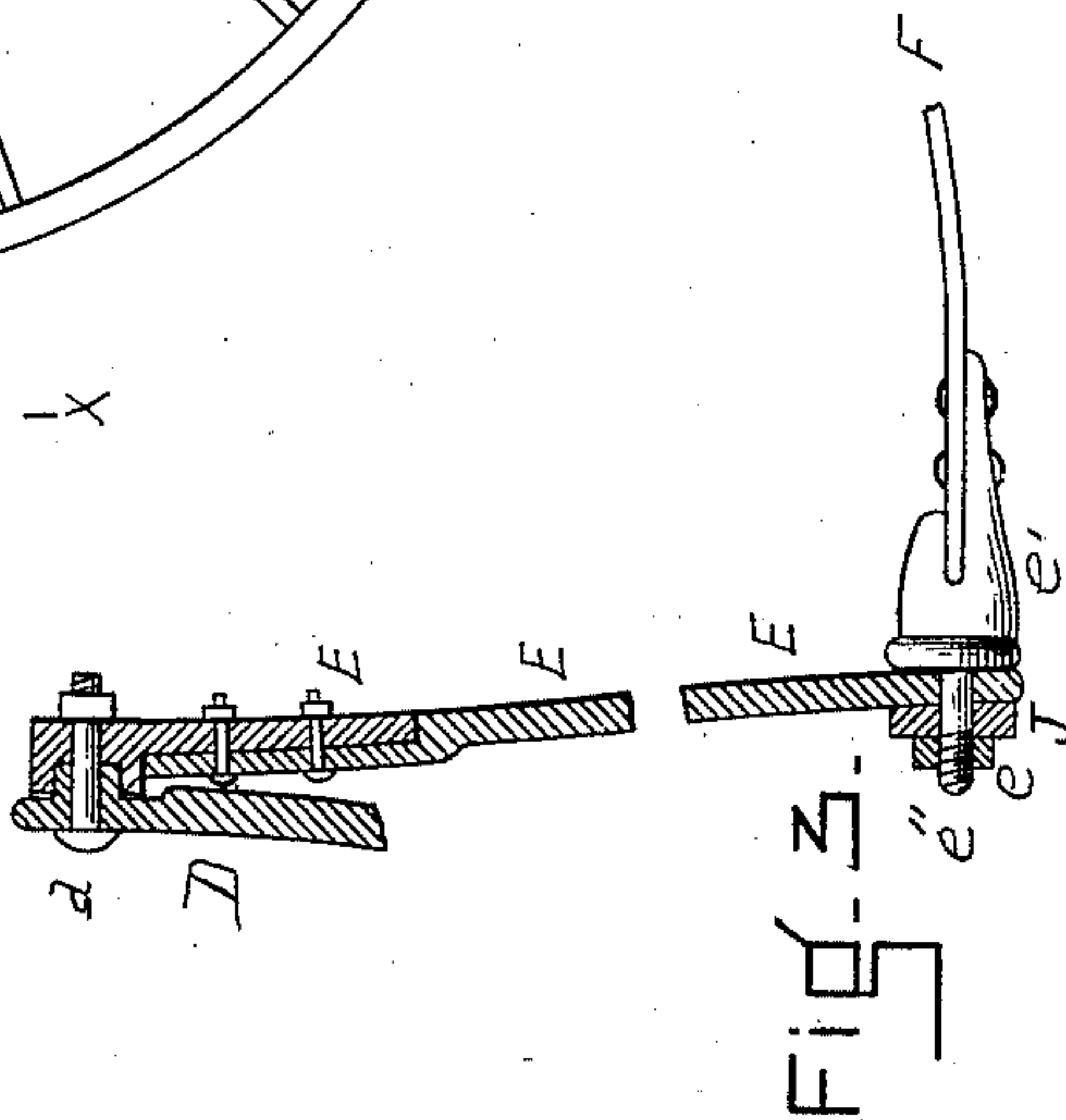


FIG. 2.

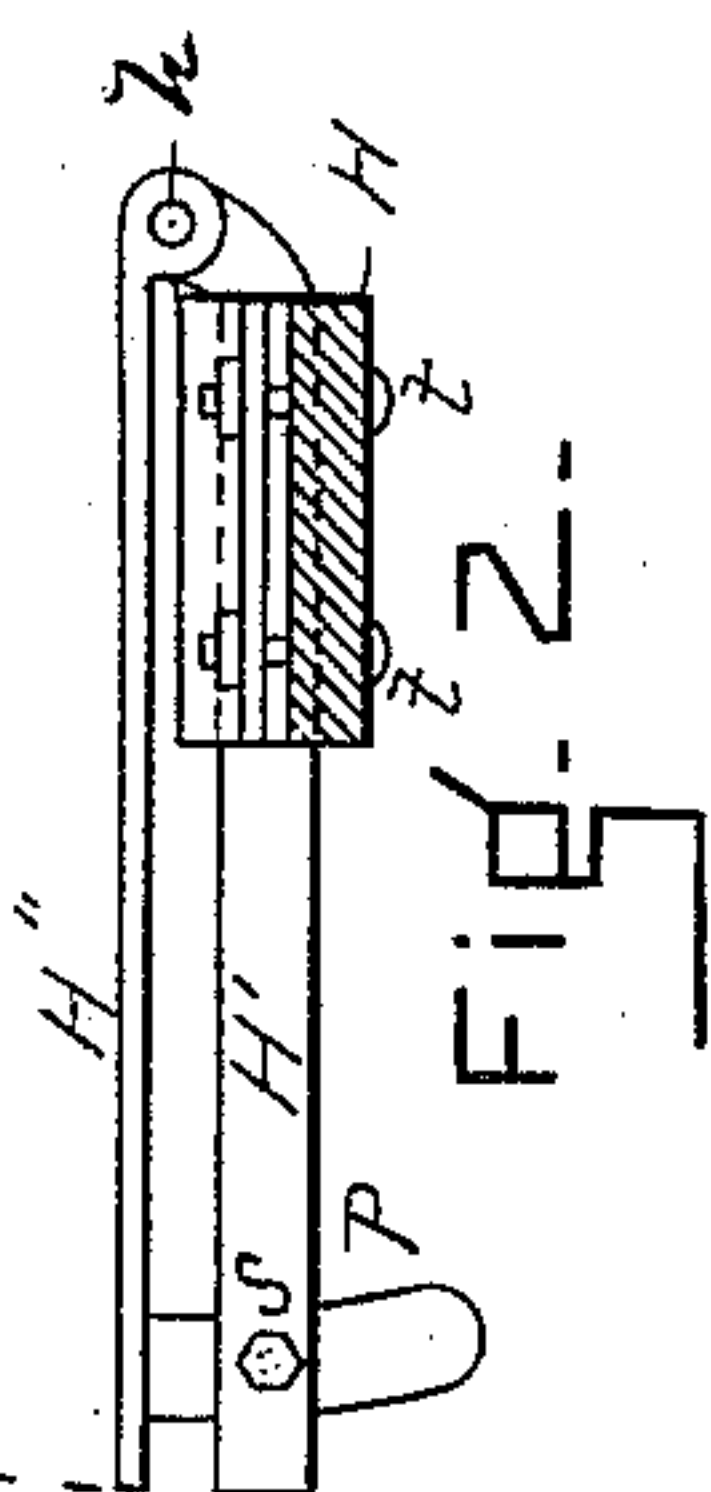


FIG. 3.

WITNESSES.

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Henry Williams

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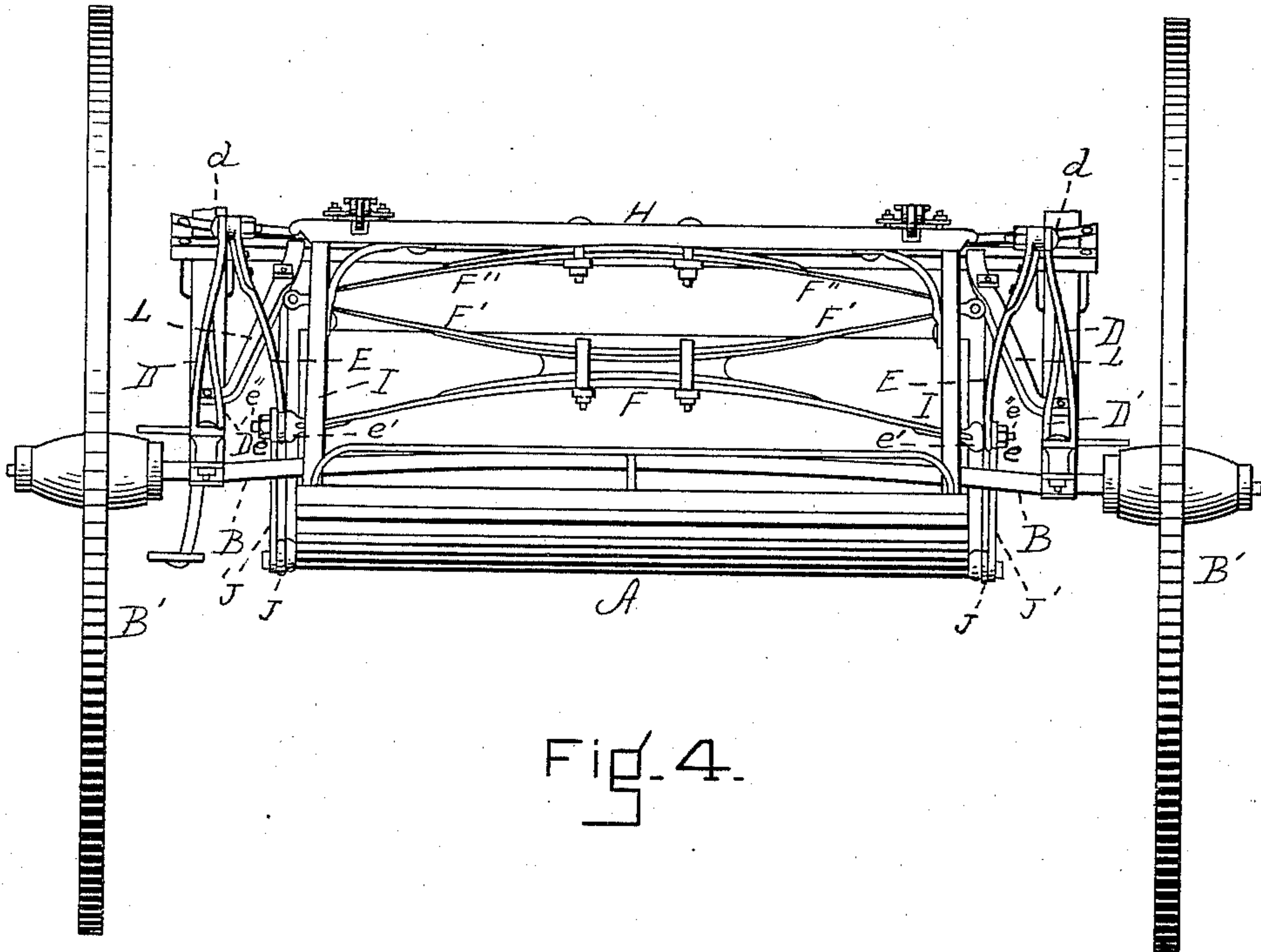


Fig. 4.

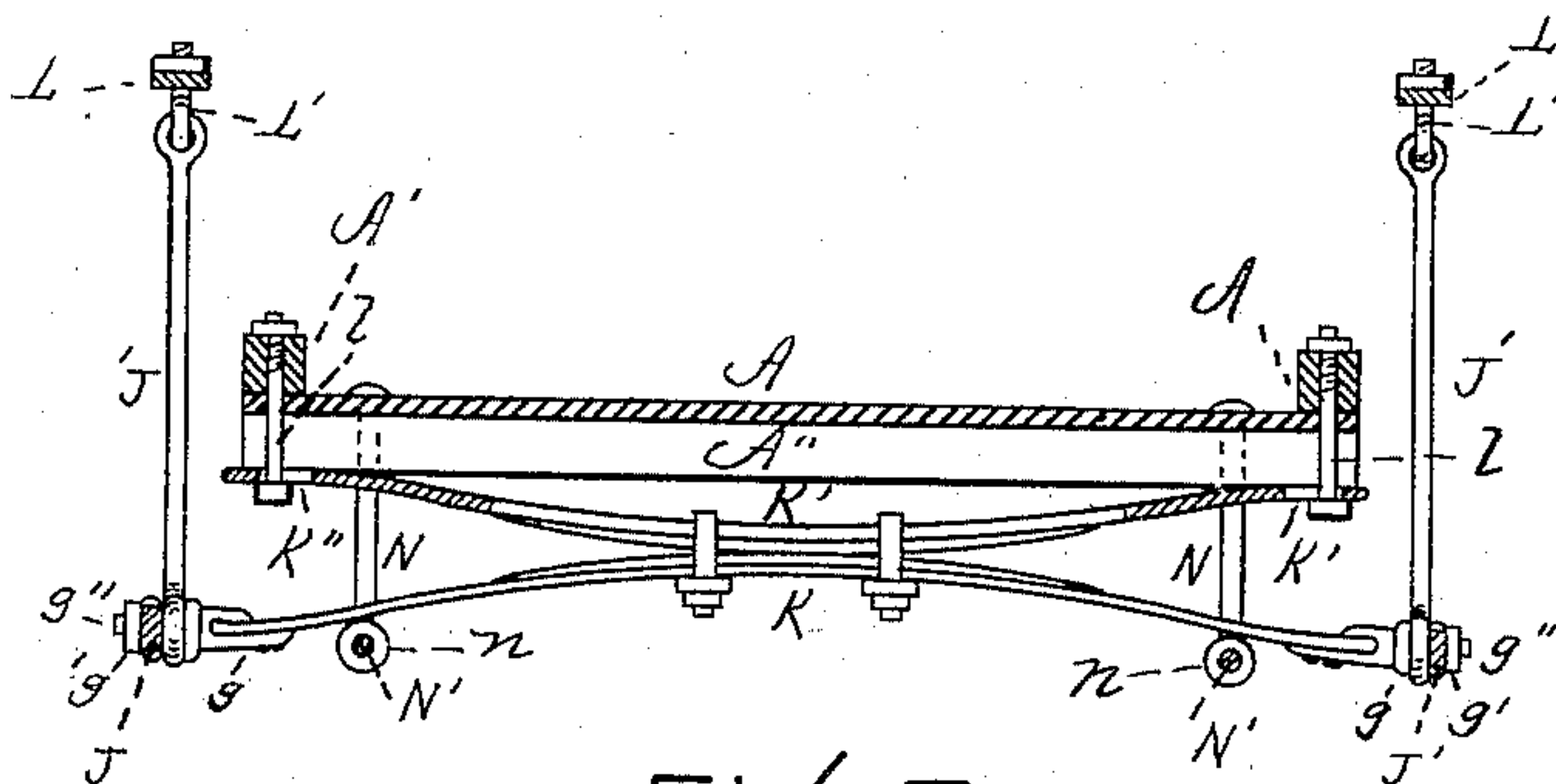


Fig. 5.

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UNITED STATES PATENT OFFICE.

ATWOOD B. KEYES, OF PRINCETON, ASSIGNOR OF ONE-HALF TO EBEN D. BLOOD, OF STERLING, MASSACHUSETTS.

TWO-WHEELED VEHICLE.

SPECIFICATION forming part of Letters Patent No. 475,943, dated May 31, 1892.

Application filed November 27, 1891. Serial No. 413,170. (No model.)

To all whom it may concern:

Be it known that I, ATWOOD B. KEYES, of Princeton, in the county of Worcester and State of Massachusetts, have invented new and useful Improvements in Two-Wheeled Carriages, of which the following is a specification.

This invention relates to two-wheeled vehicles; and it has for its object to neutralize the motion produced by the action of the horse. In other words, it is intended to prevent the sudden and jerky movements of the horse, whether vertical or horizontal in direction, from being communicated to the carriage or at least to that part of it on which the occupant sits.

The nature of the invention is fully described below; and it consists in the novel construction and combination of parts whereby the above effect is produced.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is a side elevation of a two-wheeled carriage embodying my invention, a portion of the shafts being represented as broken off and one of the wheels having been removed. Fig. 2 is a longitudinal vertical section of the seat-frame. Fig. 3 is a detailed vertical section of the uprights D and hangers E and connecting parts. Fig. 4 is a rear elevation of the carriage. Fig. 5 is a cross vertical section on line *x*, Fig. 1.

A represents the floor of the carriage-body; A', the sills; B, the axle; B', the wheels, and C the shafts, all constructed substantially as usual.

D D are metallic uprights, one placed upon each side of the carriage-body, and each having its lower bifurcated end D' rigidly secured to the shaft on that side, at opposite sides—i. e., forward and rear—of the axle. (See Figs. 1 and 4.) The upper ends of these uprights D are pivotally secured at *d* to the upper ends of the swinging or vibrating hangers E. (See Figs. 3 and 4.) The lower ends of these hangers are pivotally secured to the opposite ends of the spring F by means of the spindles *e''*, which project from bosses *e'*, which are secured to opposite ends of said

spring F, the hangers being held in position by nuts *e*. This spring is centrally secured to and supports the spring F', which supports in the usual manner the spring F'', which is secured to and supports the seat-frame H. This seat-frame is connected with the floor A of the carriage by the base-rods I. Thus it will be seen that the connections between the shafts and the seat and body are the uprights D, hangers E, and springs. The effect is that a large portion of the movement or shake produced by the action of the horse is neutralized before it reaches the seat and results in a rapid and intense longitudinal vibration at the upper ends or pivotal points of the uprights D and hangers E, and while there is great vibration at these points the seat and the carriage-body suspended therefrom are relatively quiet and have but little motion.

J J are rods, whose rear ends are held by the spindle *e''*, which extend from the bosses *e'*, (see Figs. 3 and 4,) and whose front ends are pivotally secured to the vertical rods J' by means of the spindles *g''*, which project from the bosses *g*, secured to the opposite ends of the springs K, Fig. 5, said rods J J' being held in position by the nuts *g'*. The upper ends of the rods J' are pivotally secured to and hung from suitable brackets L', which are supported by the braces L, secured to the shafts. The spring K is centrally secured to the spring K', Fig. 5, whose opposite ends are slotted at K'' to receive the bolts *l*, by means of which said spring is secured to the frame or cross-piece A'' on the under side of the floor A. The slots K' are for the purpose of allowing the spring to spread as it yields to pressure.

N N are hangers, whose lower portions N' are surrounded by rubber buffers *n* and lie under the spring K. These hangers are secured to the under side of the carriage-body and surround the springs K K' and limit their movements. The above-described rods J J' and specified connections act in combination with the uprights D and hangers E and their connections in neutralizing the movements of the horse, so that both vertical and horizontal actions or movements are so counter-

acted that the seat and carriage-body are practically motionless, the only substantial motion being the continuous and uniform movement produced by the travel of the animal over the road.

In order to provide a greater degree of perfection in the operation of my device, I arrange my seat so that it can be tipped or inclined in order to move the weight of the occupant backward or forward at will, and the seat is also arranged to slide back or forth, as desired. I accomplish this by providing two sets of supporting-bars to the seat, each consisting of a horizontal bar H' and a bar H'' , said bars being pivotally connected at their rear ends at h . (See Figs. 1 and 2.) The angle of inclination of the bar H'' with relation to the bar H' is determined and regulated by a tongue P , which extends from the bar H'' down through a suitable slot in the bar H' , and which is adjustably held in said slot by a set-screw or equivalent device s . Each lower bar H' slides horizontally in the frame H . A slight adjustment of the weight is accomplished by raising or lowering the front ends of the bars H'' , thus including the seat, while a greater adjustment is had by loosening the bolts l and sliding the bars H' horizontally in the seat-frame H . Thus it will be seen that the seat-adjusting mechanism, the rods $J J'$, and the connections and the uprights and hangers $D E$ all coact in neutralizing the movements of the horse and in balancing the vehicle.

Having thus fully described my invention,

what I claim, and desire to secure by Letters Patent, is—

1. In a two-wheeled carriage, the combination of the shafts provided with the uprights D , the hangers E , pivotally secured at their upper ends to the upper ends of said uprights and secured at their lower ends to opposite ends of the spring F , the connecting-rods J , rods J' , pivotally secured to the front ends of said rods J , braces L , secured to the shafts, and the seat-frame supported by suitable springs, substantially as described.

2. In a two-wheeled carriage, the combination of the body, the seat-frame, the shafts provided with the uprights D , the pivoted hangers E , the springs for supporting the seat-frame, the rods J , pivoted rods J' , braces L , spring K , having its opposite ends connected with the rods J , spring K' , slotted at its ends, as shown, and hangers or stirrups N , substantially as set forth.

3. In a two-wheeled carriage, the combination, with a device for neutralizing the movements of the horse, of the adjustable seat described, and consisting, essentially, of the clamping-frame H , sliding frame or rail H' , and bars H'' , pivoted at their rear ends to the said rails H' and adapted to have their front ends adjustably raised, substantially as described.

ATWOOD B. KEYES.

Witnesses:

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