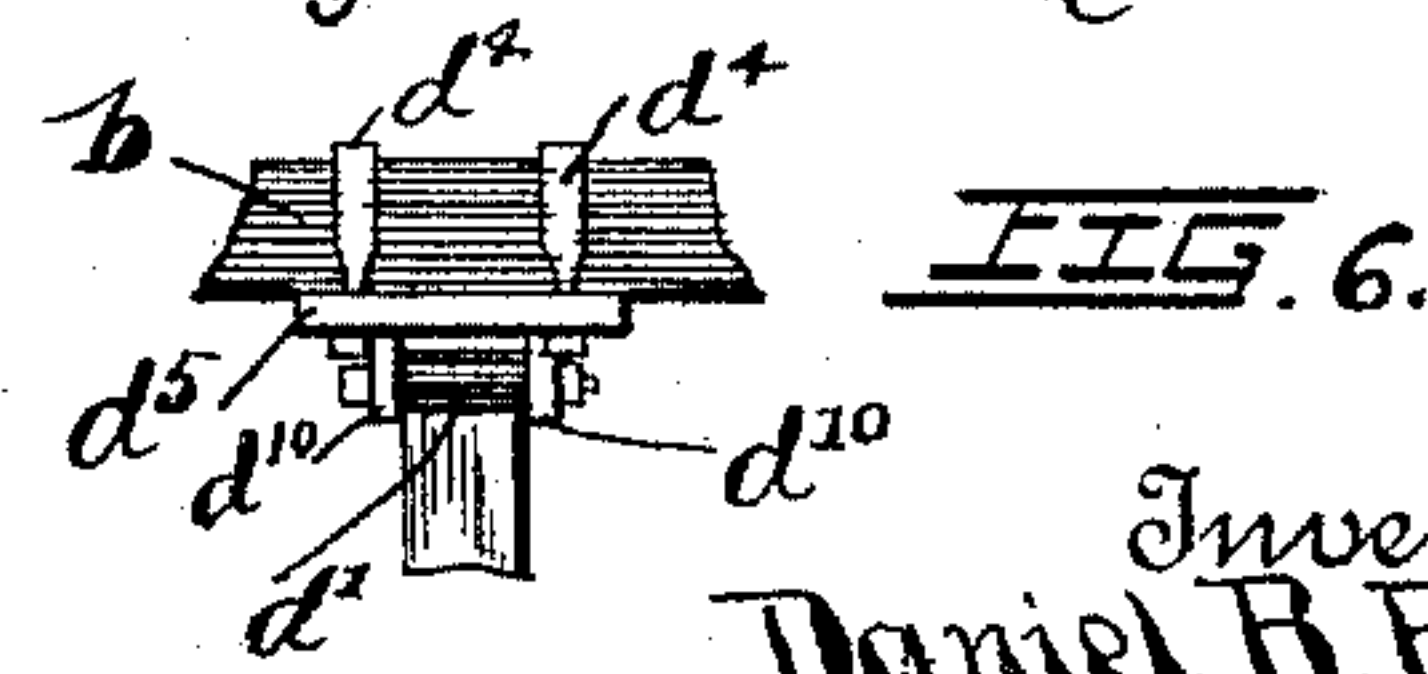
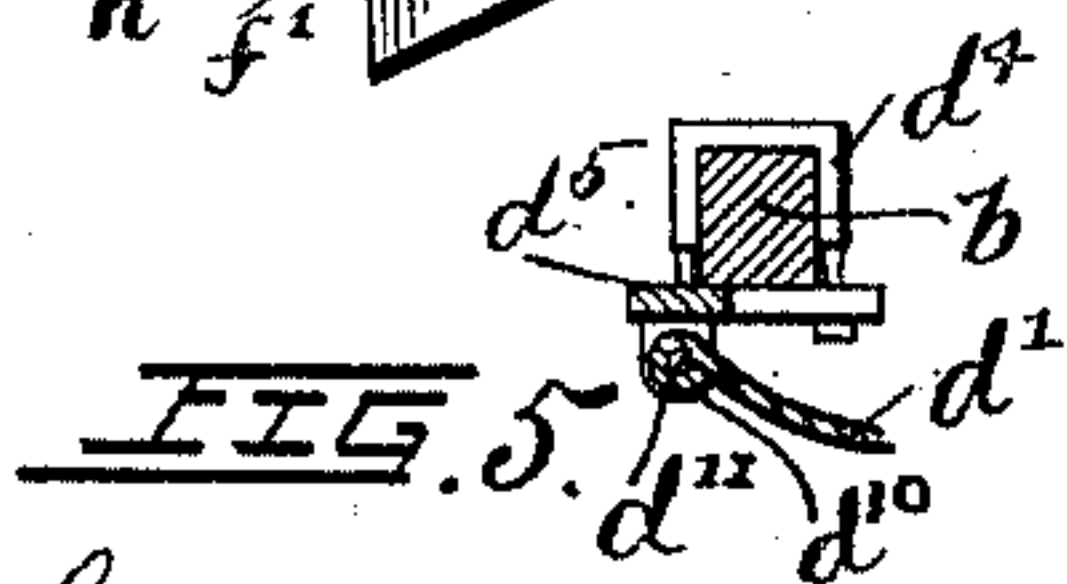
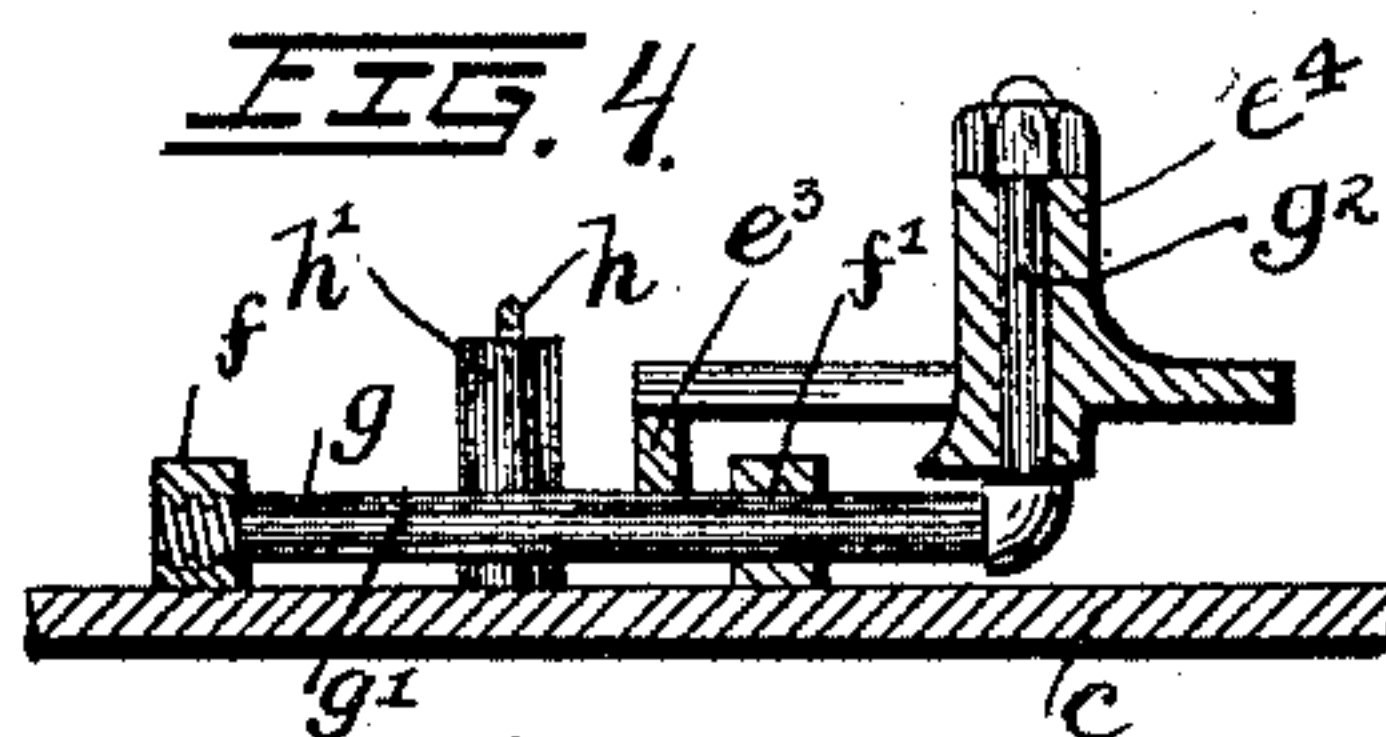
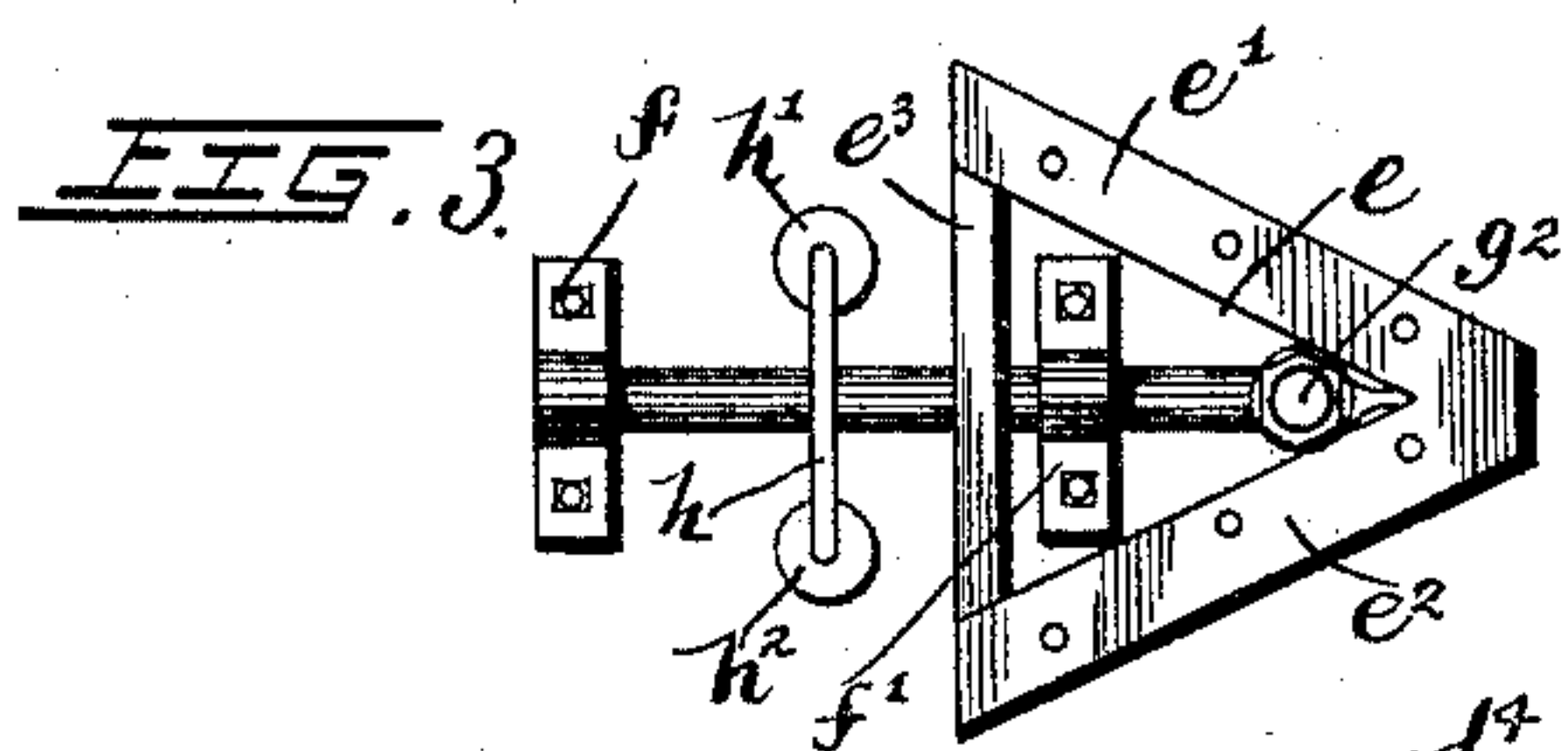
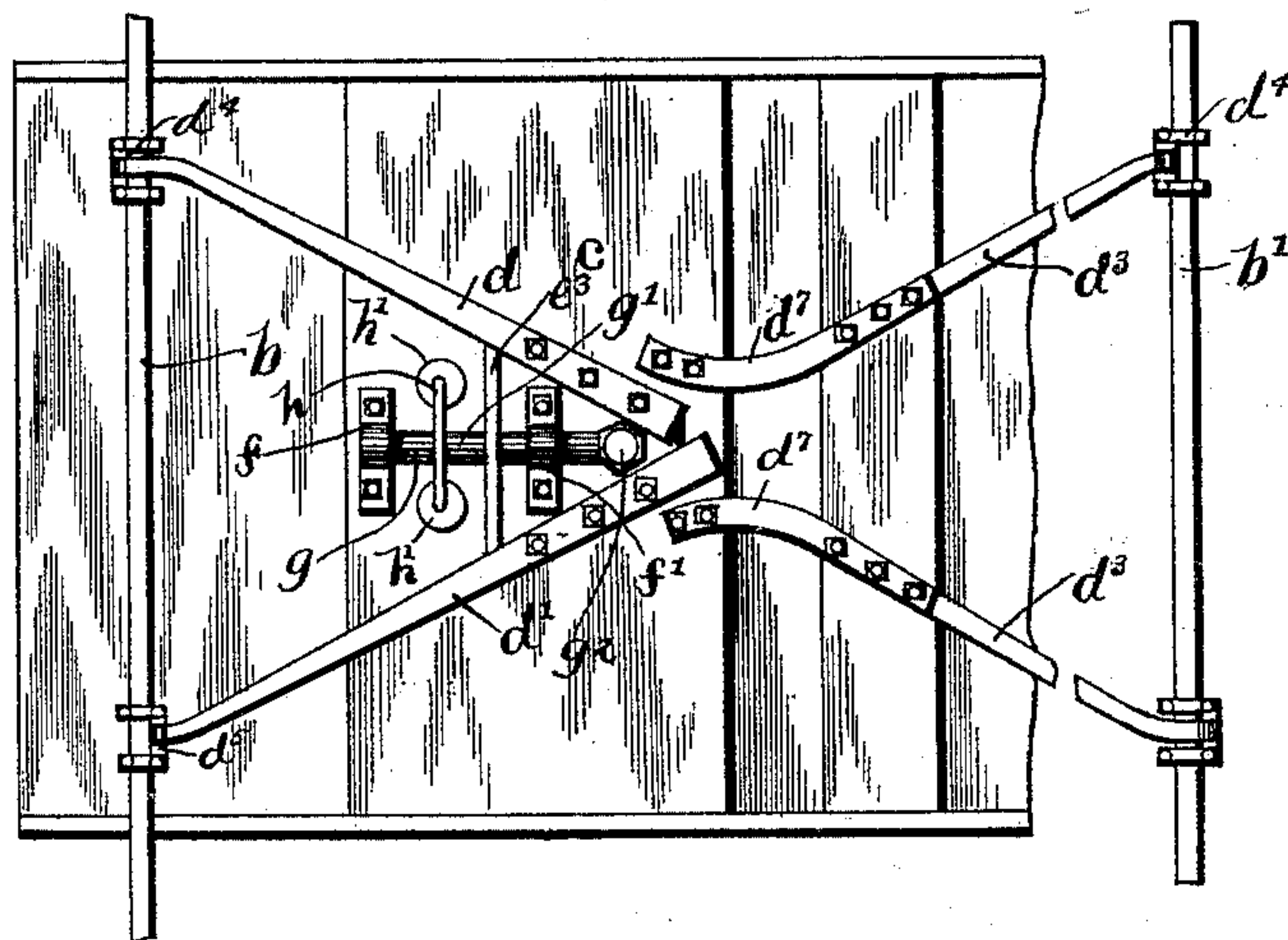
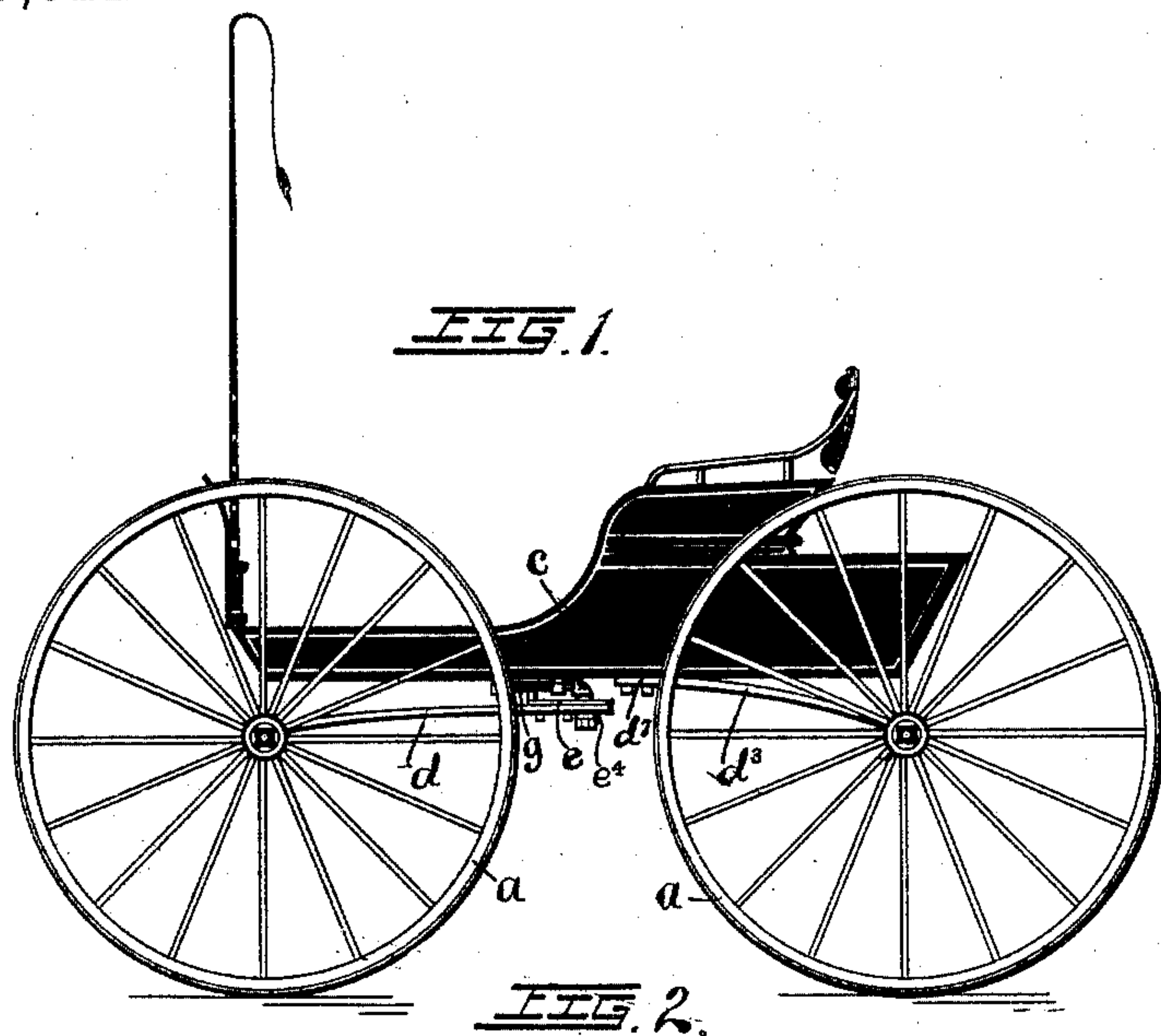


(No Model.)

D. B. RUPLE.
VEHICLE GEARING.

No. 476,822.

Patented June 14, 1892.



Witnesses
H. B. Bradshaw
J. H. Travel.

Inventor
Daniel B. Ruple.
By his Attorneys
Staley and Shepherd.

UNITED STATES PATENT OFFICE.

DANIEL B. RUPLE, OF COLUMBUS, OHIO.

VEHICLE-GEARING.

SPECIFICATION forming part of Letters Patent No. 476,822, dated June 14, 1892.

Application filed September 3, 1891. Serial No. 404,615. (No model.)

To all whom it may concern:

Be it known that I, DANIEL B. RUPLE, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Vehicle-Gearing, of which the following is a specification.

My invention relates to the improvement of vehicle-gears; and the object of my invention is to provide a simple and novel method of connecting the vehicle-body to the running-gear, dispensing with the ordinary fifth-wheel connection and bolsters, and at the same time providing for the different angular positions of the forward axle in reference to the body in turning corners or changing direction.

A further object of my invention is to provide a novel construction and connection of the spring in connection with the vehicle-body.

A further object of my invention is to provide a novel arrangement of the parts by which the vehicle-body is permitted an oscillatory or side movement in reference to the axle and wheels to compensate for the elevation or depression of one wheel above the other in passing over obstructions or into ruts or depressions.

I attain these objects by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the vehicle to which my improved device has been applied. Fig. 2 is a bottom plan view of the same, some of the parts having been broken away and the wheels omitted for perspicacity. Fig. 3 is a plan, and Fig. 4 is a longitudinal sectional view, of the spring connections and turning devices. Figs. 5 and 6 are respectively a cross-section and side view of the clips and shackles which secure the ends of the springs to the respective axles.

Like parts are indicated by similar letters of reference throughout the several views.

In the said drawings, *a* represents the vehicle-wheels, and *b b'* the front and rear axles, respectively.

c is the vehicle-body, which may be of any desirable shape, size, or conformation.

d and *d'* are the front springs, and *d² d³* the rear springs, each of which is connected at its outer end to one of the axles *b b'*, and is ex-

tended inwardly at an angle toward the center of the vehicle. These springs are each connected at their outer end to the respective axles by a clip *d⁴*, which embraces the axle in the usual way, and a shackle *d⁵*, connected to said clip at an angle thereto, as shown in Figs. 5 and 6.

In the construction of the clips and shackles above mentioned the form of the shackle-plate is approximately that of a U-shaped horizontal frame, from one side of which projects the ears *d¹⁰*, between which extends the bolt *d¹¹*, upon which is journaled the end of the spring *d*. The clip *d⁴* projects, as shown, from that side of the shackle-plate which is opposite the ears *d¹⁰*. As shown in the drawings, the bolt *d¹¹* is beneath one side of the shackle-plate.

In connecting the ends of each pair of the springs *d d'* or *d² d³* the shackles are so reversed as to result not only as to cause one of the springs of a pair to be connected with the shackle on the forward side of the axle and to cause the remaining spring of said pair to be connected with the shackle on the rear side of the axle, the spring proper being thus pivoted into the axle in a line substantially at right angles with the body of the spring and at an acute angle in a line with the axle. The rear springs *d² d³* are secured at their inner ends directly to the vehicle-body through the medium of connecting-plates *d⁷* or in any other suitable or desirable manner. The front springs *d* and *d'*, however, are connected at their inner ends to a triangular-shaped frame *e*, the side wings *e' e²* of which are formed to correspond with the angle of the springs and are connected together at their outer extremities by a cross-bar *e³*, preferably arranged in a different horizontal plane, as shown in Figs. 3 and 4.

Connected to the bottom of the vehicle-body at any convenient point near the middle thereof, through the medium of suitable bearings *f f'*, is an L-shaped oscillating shaft *g*, the horizontal arm *e'* of which is adapted to turn in said bearings *f* and *f'*, while the vertical portion *g²* passes through a bearing-sleeve *e⁴* on the frame *e*, and thus pivots said frame, and consequently the front springs and axle, to the vehicle body. It will be seen that as thus described the sole connection between

the body and front axle is secured through the medium of the vertical pivot g^2 , which, being placed considerably back of the front of the body, gives the wheels greater latitude in turning, and thus permits a shorter turn than when the axle is pivoted in the center in its ordinary way. At the same time the use of the ordinary fifth-wheel is dispensed with.

To provide for limiting the movement of the frame e and the front axle connected thereto, I pass a short distance in front of said frame a U-shaped yoke or staple h , which embraces the horizontal portion g' of the L-shaped shaft, and is provided on each end thereof with rubber cushions $h' h^2$, adapted to contact with the connecting-bar e^3 of the frame as said frame is moved in either direction, and thus limits the movement thereof.

It will be seen that the vertical stud g^2 furnishes the means for permitting the necessary movement of the axle in connection with the vehicle-body in turning corners or changing direction, while at the same time by supporting the horizontal portion g' of the shaft g in the bearing, as described, an oscillatory movement of the frame is permitted, which compensates for any side movement of the wheels or axles in passing obstructions or depressions. The front bearing f is preferably tapped out or formed with internal screw-threads, the end of the horizontal shaft g' being correspondingly screw-threaded, as shown in Fig. 4, and the parts adapted to fit snugly, so as to create a certain amount of friction to prevent the parts turning in either direction in the bearings, and at the same time furnishing the means for holding the shaft from longitudinal or end movement through the side bearings.

From the construction and operation herein shown and described it will be observed that the axles are so joined or pivotally connected with the body as to produce but slight friction between the parts, thus greatly adding to the ease of action and durability thereof.

The herein-described method of connecting the springs of each pair, respectively, in rear

and in front of the axle will operate to form a stop on each of two opposite sides of the axle, which will result in the prevention of any undesirable twisting or rotation of the axle.

As will be observed, the construction herein shown is exceedingly simple and neat and can be produced at a reasonable cost of manufacture.

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

1. In a vehicle-gear, the combination, with the body, wheels, and axles, of an L-shaped shaft having its horizontal arm journaled, as described, beneath the vehicle-body, a frame e , pivoted or journaled upon the vertical arm of said shaft, and springs $d d'$, connected as described, the frame e , and axle b , substantially as specified.

2. In a vehicle-gear, the combination, with the body, wheels, and axles, of an L-shaped shaft having its horizontal arm journaled, as described, beneath the vehicle-body, a frame e , pivoted or journaled upon the vertical arm of said shaft, springs $d d'$, connected as described, the frame e and axle b , yoke h , embracing loosely the horizontal portion of the shaft, and cushions h' on the vertical arms of said yoke, substantially as and for the purpose specified.

3. In a vehicle-gear, the combination, with the body, wheels, and axles, of the L-shaped shaft g , journaled, as described, beneath said body, triangular frame e , pivoted on the vertical portion of said shaft, shackles d^5 on axle b , and springs $d d'$, rigidly connected with the side bars or wings of the frame e at their rear end and jointedly connected with the shackles d^5 at their forward ends, said shackles being reversed, as described, and said spring connection therewith being formed on opposite sides of said axle, substantially as specified.

DANIEL B. RUPLE.

In presence of—

BARTON GRIFFITH,
EMILY E. BRAGG.