

(No Model.)

2 Sheets—Sheet 1.

L. D. HURD.
RUNNING GEAR FOR WAGONS.

No. 473,577.

Patented Apr. 26, 1892.

Fig. 1.

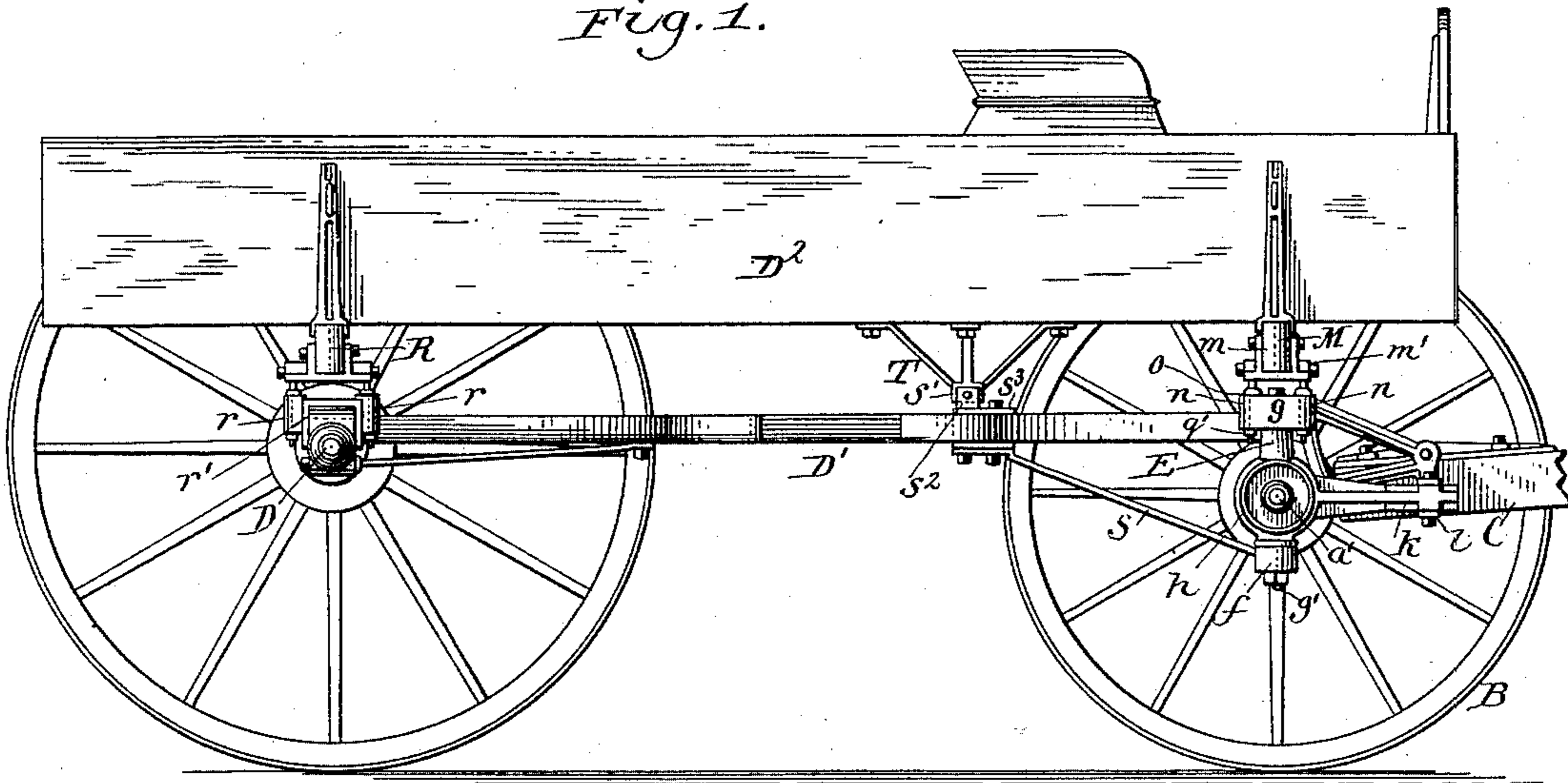
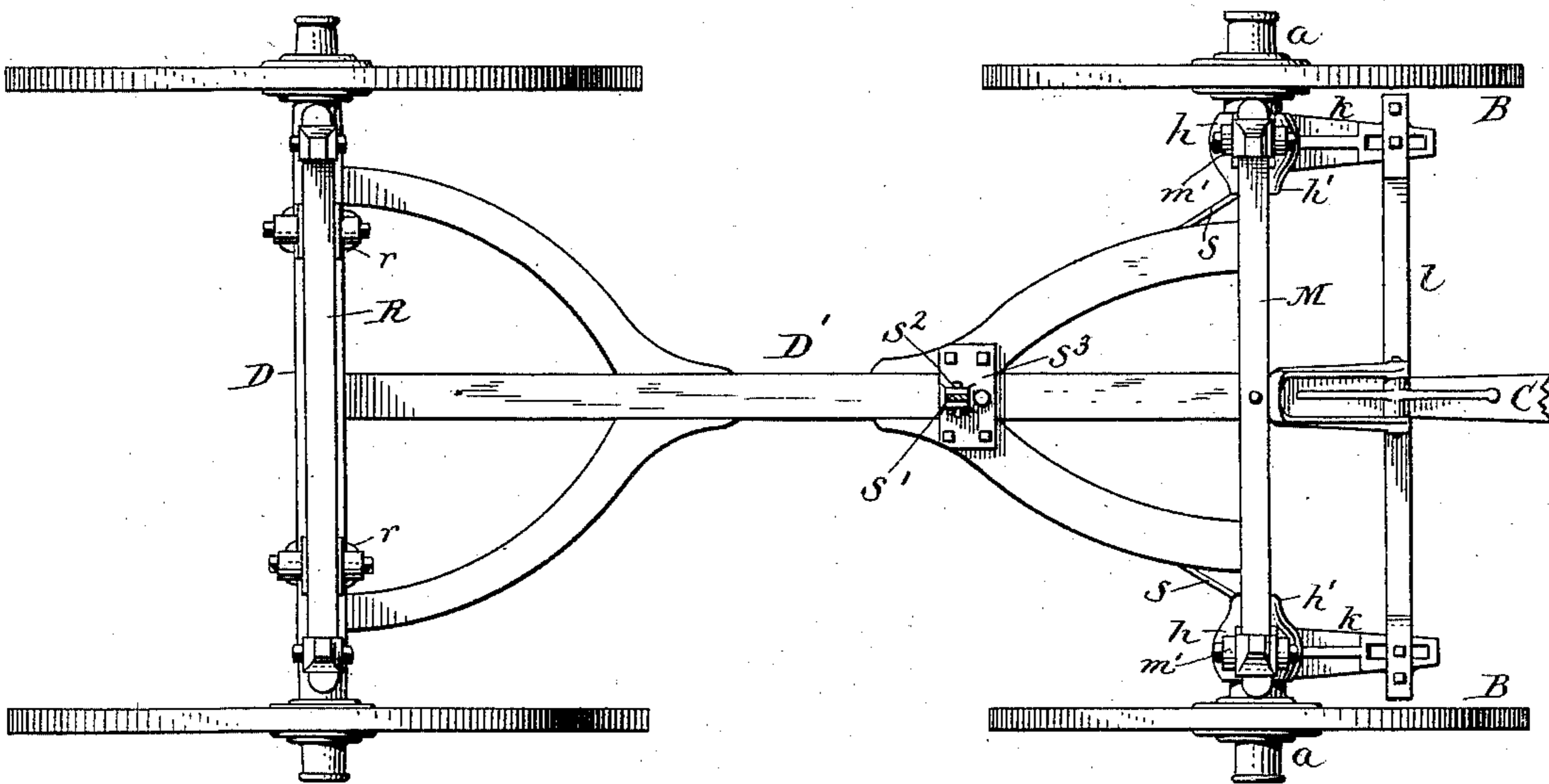


Fig. 2.



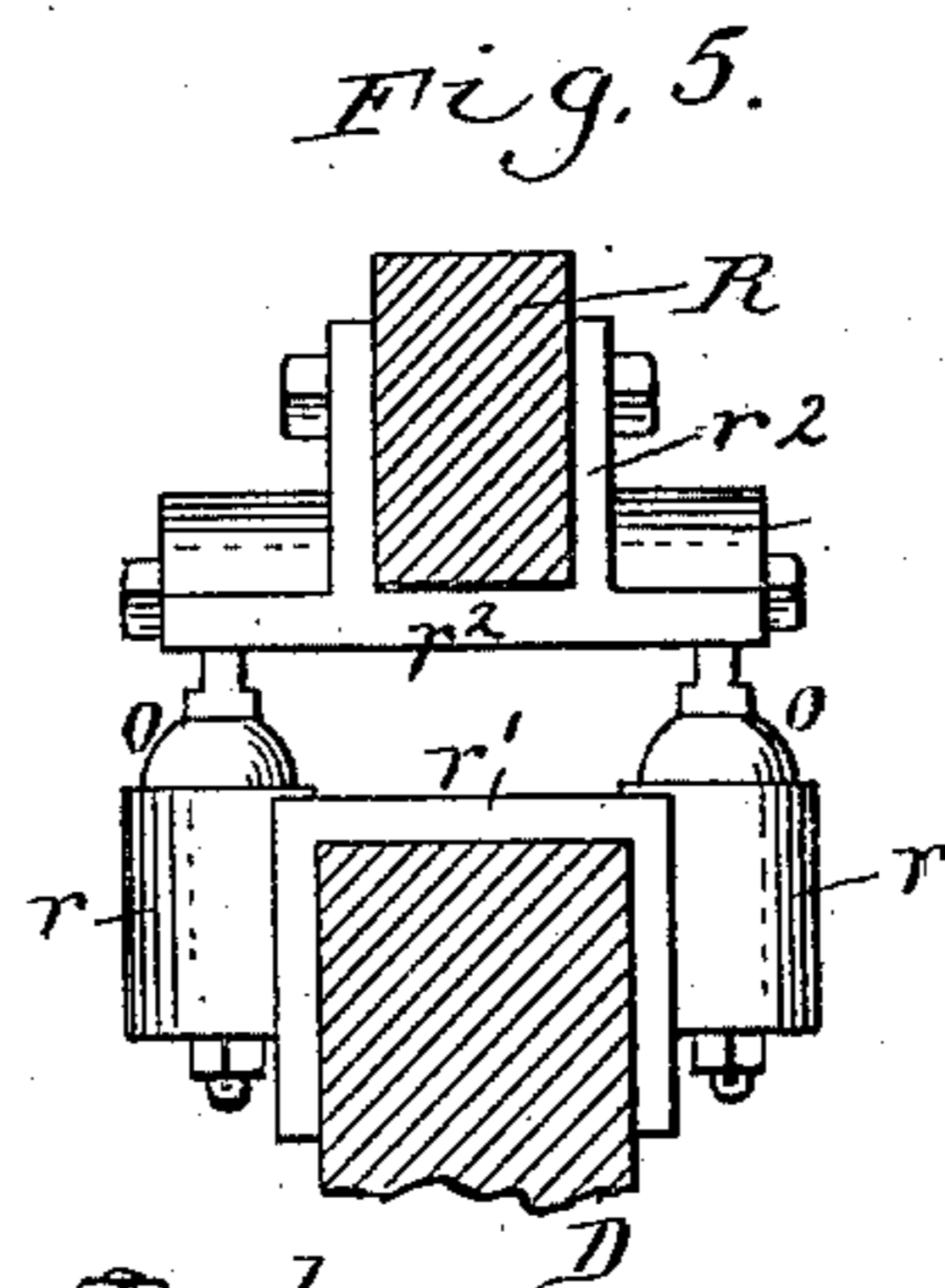
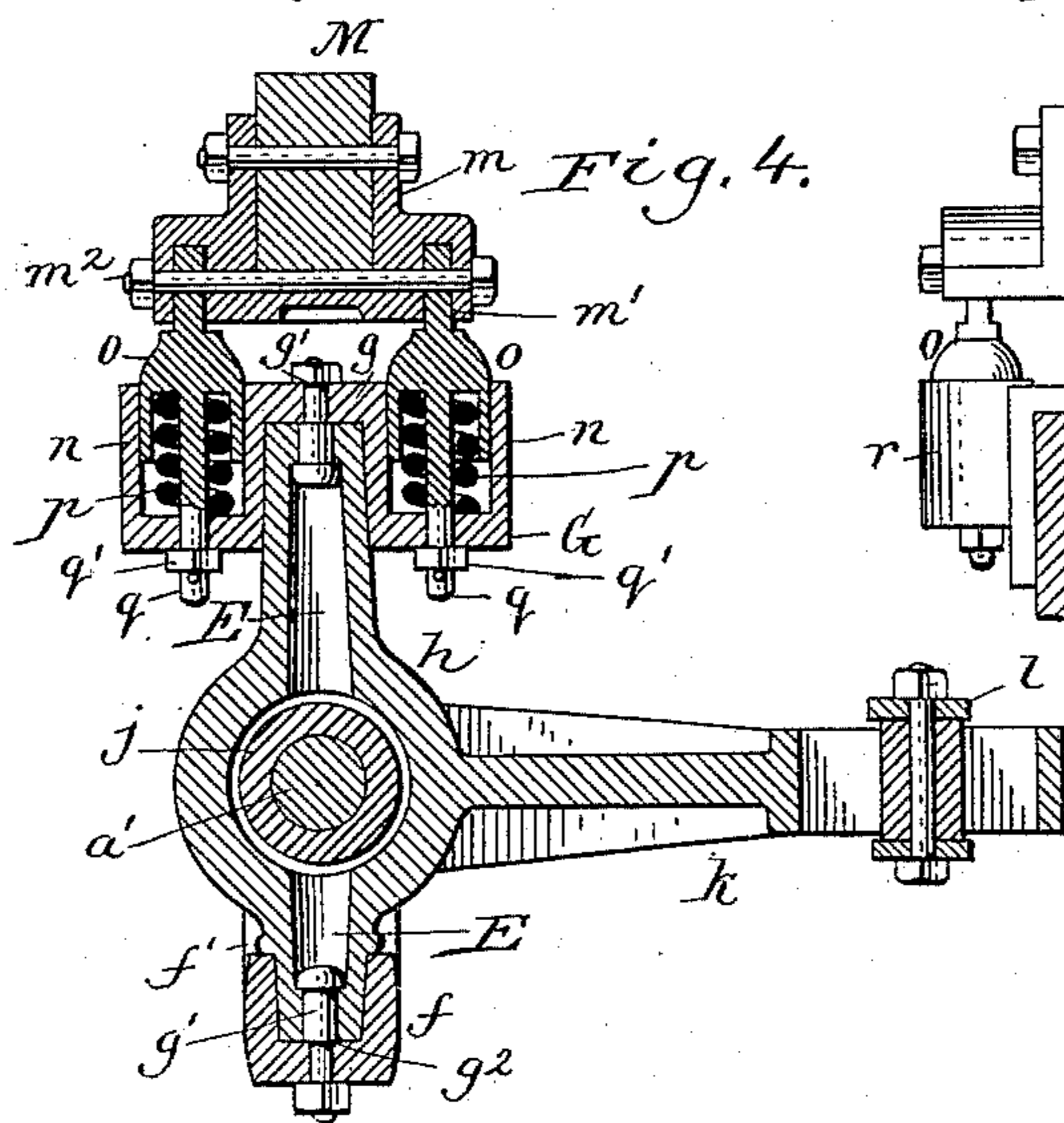
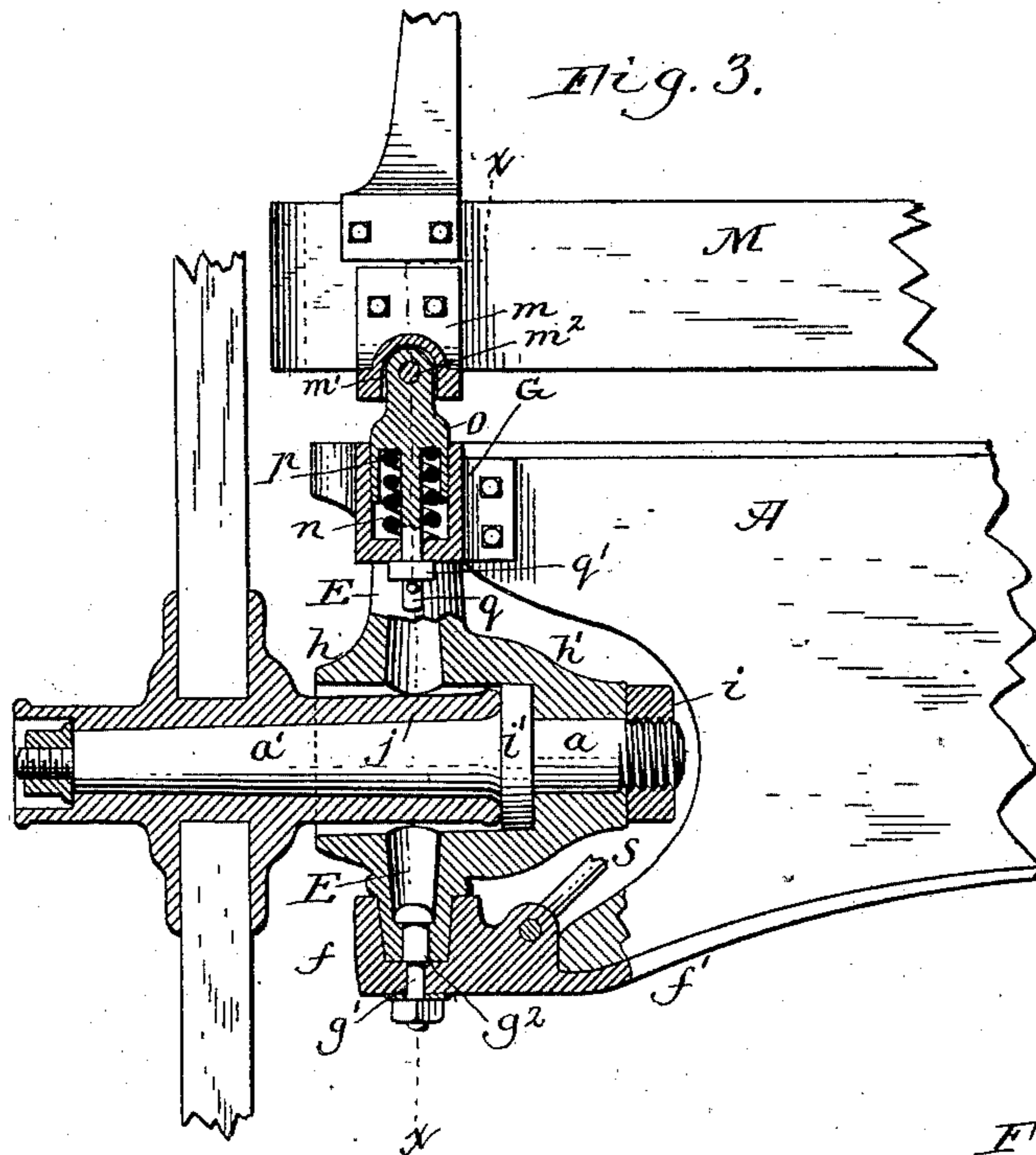
Witnesses:

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Emil J. Neuhart By Wilhelm Bonnet
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UNITED STATES PATENT OFFICE.

LORENZO D. HURD, OF WELLSVILLE, NEW YORK.

RUNNING-GEAR FOR WAGONS.

SPECIFICATION forming part of Letters Patent No. 473,577, dated April 26, 1892.

Application filed September 4, 1890. Serial No. 363,895. (No model.)

To all whom it may concern:

Be it known that I, LORENZO D. HURD, a citizen of the United States, residing at Wells-ville, in the county of Allegany and State of New York, have invented new and useful Im-
5 improvements in Running-Gear for Wagons, of which the following is a specification.

This invention relates to that class of wag-
ons in which the front wheels are mounted
10 upon short axles which are independently pivoted to the head-block or frame and both connected with the tongue, so that upon turn-
ing the latter both axles are turned in the same direction. A wagon of this character is
15 described and shown in Letters Patent of the United States No. 318,906, granted to me May 26, 1885, my present improvements having more especial reference to the running-gear covered by said patent.

20 One object of my invention is to obtain a closer build of the front gear, so as to per-
mit the wagon to turn in a smaller circle and relieve the draft-animals from side strains and to locate the turning-pivots of the axles
25 closer to the wheels, so as to bring the load more directly over the wheels and facilitate the steering of the wagon.

My invention has the further objects to
yieldingly support the wagon-body in a sim-
30 ple manner without raising the body above the ordinary height; also, to prevent undue deflection of the reach, so as to lessen the lia-
bility of its being broken by the draft when the wagon is heavily loaded or by the thrust
35 applied to the reach when the wheels strike an obstruction, and, finally, to prevent dis-
placement and wrenching of the yielding bol-
sters.

In the accompanying drawings, consisting
40 of two sheets, Figure 1 is a side elevation of a wagon containing my improvements with the rear wheels of the wagon removed. Fig. 2 is a top plan view of the running-gear partly
in section. Fig. 3 is a fragmentary sectional
45 elevation of the front gear on an enlarged scale. Fig. 4 is a vertical section at right an-
gles to Fig. 3 in line *xx*. Fig. 5 is a longi-
tudinal section of one of the spring-supports
of the rear bolster on an enlarged scale.

50 Like letters of reference refer to like parts in the several figures.

A represents the head-block or front axle-

tree; *a a*, the independent front axles; B, the front wheels, mounted on the spindles *a'* of said axles, and C the tongue.

D is the rear axle; D', the reach, rigidly con-
55 nected at opposite ends to the rear axle and head-block, and D² the body or box.

Referring to Figs. 3 and 4, E E are hollow
vertical spindles seated with their lower ends
60 in bearings *f*, arranged at the outer ends of a strap or brace *f'*, which is secured to the lower
portion of the head-block A, and with their
upper ends in bearings *g*, formed in support-
ing-plates G G, secured to the upper portion
65 of the head-block. The spindles are confined
in their bearings by vertical bolts *g'*, passing
through the bearings and the closed ends of
the hollow spindle and having shoulders *g*²,
70 which hold the bolts against vertical move-
ment in the bearings and whereby the bolts
are prevented from clamping the spindles.

The spindles E are each provided with a
horizontal socket *h*, which opens outwardly
and extends inwardly beyond the axial line
75 of the spindles, as represented in Fig. 3. The
sockets *h* are formed at their inner ends with
a long bearing *h'*, in which the inner portions
of the short axles are secured by nuts *i*, ap-
plied to the threaded inner ends of the axles
80 and abutting against the ends of said bear-
ings. The axles are held against inward move-
ment in these bearings by their collars *i'*,
which rest against the inner ends of the sock-
ets *h*, as represented in Fig. 3. The axles
85 may be formed in one piece with the spindle-
sockets; but they are preferably made sepa-
rate and detachably secured in the sockets, so
that in case an axle becomes worn or broken
it can be readily replaced by a new axle with-
90 out requiring any other parts to be renewed.

The hubs of the front wheels are preferably
provided with inwardly-projecting sleeves *j*,
which surround the axles and extend into
the sockets of the upright spindles E. These
95 sockets inclose the inner portions of the axle-
spindles *a'* and form caps, which exclude dust,
&c., from the axle-spindles.

k, Fig. 2, represents the actuating-arms
formed on or secured to the spindles E, and *l*
100 is the cross-bar connecting these arms with the
tongue and whereby both axles are turned to-
gether. The ends of this connecting-bar are
attached to the actuating-arms, preferably by

shifting connections such as are described and shown in the Letters Patent hereinbefore referred to, so that in steering the wagon the inner actuating-arm is moved through a greater arc than the outer arm and the inner wheel turned to a greater extent than the outer wheel.

By attaching the inner ends of the axles to an offset or lateral support located inside of the axial line of the spindles, as shown, the upright spindles are brought more closely to the wheels than when the axles are attached to the spindles outside of the axial line, thereby shortening the radius of the arc through which the wheels move and enabling the wheels to turn in a smaller circle or space. This arrangement also shortens the leverage of the axles from the upright spindles to the wheels, thereby reducing the whipping or side strains transmitted to the animals through the tongue when the wheels are deflected in passing over obstructions. The weight or load is also brought close to the wheels by this construction, rendering the steering easier for the animals.

M represents the front bolster of the wagon, provided near opposite ends with transverse bearing-plates *m*, having cavities or recesses *m'* in their under sides, as represented in Figs. 3 and 4.

n n are sockets formed in the supporting-plates G G on the front and rear sides of the head-block, and *o o* are inverted cups or followers arranged in said sockets and pivoted to the supporting-plates *m*. These cups or followers are provided with upwardly-projecting ears, which are pivoted in the recesses of the supporting-plates *m* by a transverse bolt *m*², passing through the plate and ears. *p* are spiral springs seated in the sockets of the supporting-plates G, upon which the cups or followers *o* rest. The upward movement of the followers in the sockets is limited by vertical rods or stems *q*, formed on the followers and passing through the bottom of the sockets and nuts or washers *q'*, applied to the projecting ends of said rods and bearing against the under sides of the sockets.

The spring-supporting sockets *n n* are arranged below the upper edge of the head-block, as represented in the drawings, so as to lower the bolster to about the position of an ordinary bolster having no spring-supports.

R is the rear bolster, which is supported by springs arranged in sockets *r*, attached to opposite sides of the rear axle. These sockets are formed on yokes *r'*, which embrace the rear axle. The followers arranged within the sockets are pivoted to the supporting-plates *r*² in a manner similar to the followers of the front sockets *n n*.

By arranging the springs below the upper edge of the head-block and rear axles the body, while being yieldingly supported, is not elevated above the height of an ordinary wagon-body, and by providing springs for the bol-

sters both on the front and rear sides thereof the ends of the bolsters are supported at two points located on opposite sides of the bolster, whereby the latter are prevented from tipping forwardly or backwardly and the liability of wrenching their supports is largely reduced. The longitudinal pivots connecting the bolsters with the followers permit the bolsters to rock or assume an inclined position without causing the followers to bind in their supports.

s s represent inclined braces extending from opposite ends of the head-block to the reach, whereby the head-block is held in its proper position.

T represents a compound brace connecting the upper side of the reach with the under side of the body or box, whereby excessive vertical and lateral deflection of the reach is prevented. This brace preferably consists of four inclined arms, two of which are arranged crosswise of the reach and the other two lengthwise thereof. These arms are secured at their upper ends to the under side of the body or box and are united at their lower ends by a perforated head *s'*, which is detachably secured to perforated jaws *s*², formed on a plate *s*³, secured to the upper side of the reach, the head being confined between said jaws by a transverse connecting-bolt passing through the head and jaws, as represented in Figs. 1 and 2. Upon withdrawing said connecting-bolt the box may be removed from the running-gear. As the reach is rigidly attached to the head-block or axle-tree and the draft being applied below the reach, the draft has a tendency to pull or deflect the reach downward through the inclined braces *s s*, while when the wheels strike an obstruction the tendency is to deflect the reach upward and laterally. By my improved construction the reach is braced vertically as well as crosswise, thereby preventing excessive deflection thereof in any direction and avoiding breakage of the same. This construction also permits the use of a comparatively light reach, as the reach is stiffened and supported by the body.

The reach possesses sufficient elasticity to accommodate itself to the movements of the yielding bolsters and follow the latter as they rise and fall. As the body is rigidly connected to the reach, it is held against lengthwise displacement by the same and the usual body-cleats on opposite sides of the bolsters are dispensed with. By this construction the body merely rests upon the bolsters, thereby relieving the latter from strains tending to wrench or unduly tip the bolsters and avoiding the liability of distorting or breaking the supporting-springs.

I claim as my invention—

1. The combination, with the axle-tree and bolster, of sockets attached to opposite sides of the axle-tree, supporting-springs seated in said sockets, and followers arranged in the

sockets upon the springs and pivotally attached to the bolster, substantially as set forth.

2. The combination, with the axle-tree or front frame having bearings, of an upright hollow spindle journaled in said bearings and provided with a horizontal axle-socket and vertical bolts passing through the ends of the hollow spindle and said bearings, whereby the spindle is confined in its bearings, substantially as set forth.

3. The combination, with the head-block or front axle and the rear axle, of a reach connecting the head-block and axle, yielding bolsters supported thereon, the body or box resting upon said bolsters, and a compound connecting-brace consisting of transverse and longitudinal arms secured at their upper ends to the box and at their lower ends to the

reach, whereby the brace resists both vertical and lateral deflection of the reach, substantially as set forth.

4. The combination, with the head-block or axle-tree and the rear axle, of a reach connecting the head-block and rear axle, yielding bolsters supported thereon, the body or box resting upon said bolsters, and a compound brace consisting of transverse and longitudinal arms secured at their upper ends to the body and connected at their lower ends by a head which is detachably secured to the reach, substantially as set forth.

Witness my hand this 23d day of August, 1890.

LORENZO D. HURD.

Witnesses:

GEO. H. BLACKMAN,
CALEB S. HALL.