

No. 730,722.

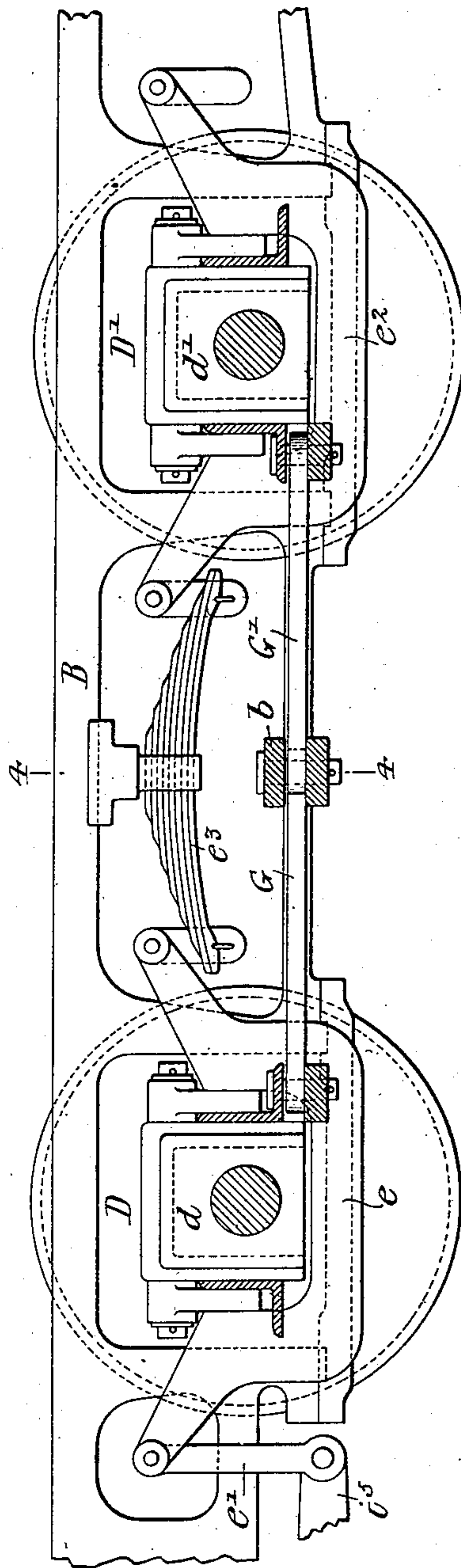
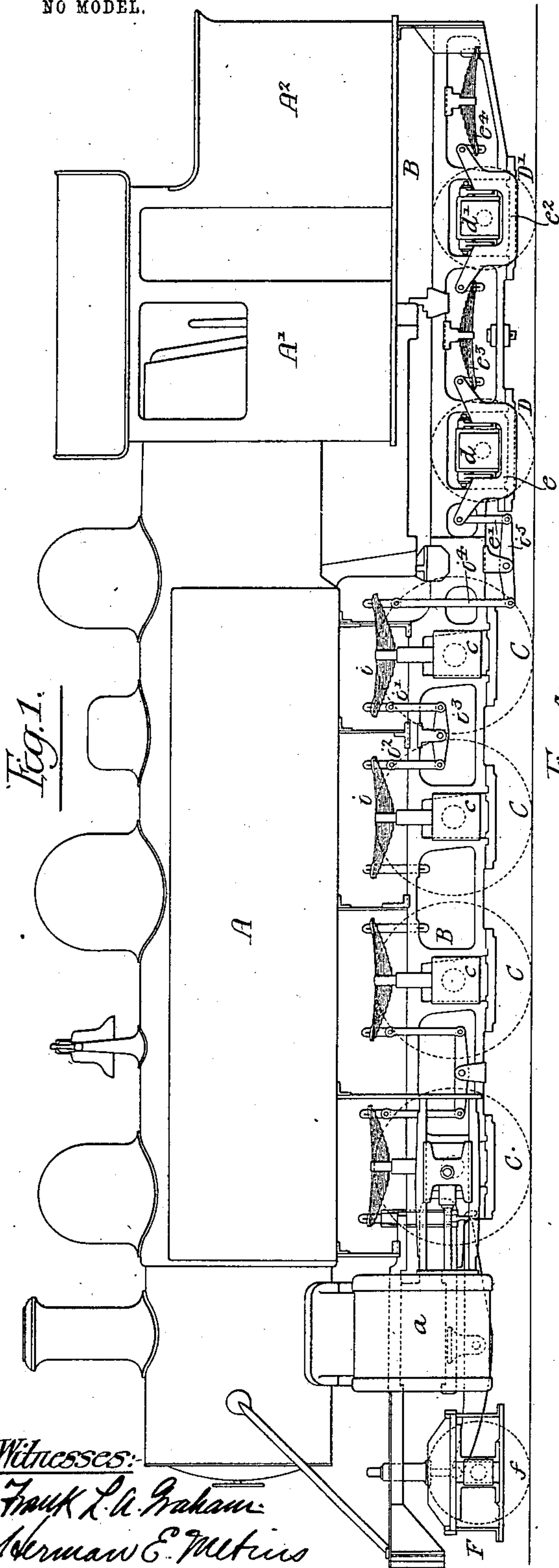
PATENTED JUNE 9, 1903.

B. R. VAN KIRK.
LOCOMOTIVE.

APPLICATION FILED MAR. 21, 1903.

NO MODEL.

4 SHEETS—SHEET 1.



Witnesses:
Frank L. Graham
Herman E. Melius

Inventor:
Benjamin R. Van Kirk
by his Attorneys;
Hawson & Hawson

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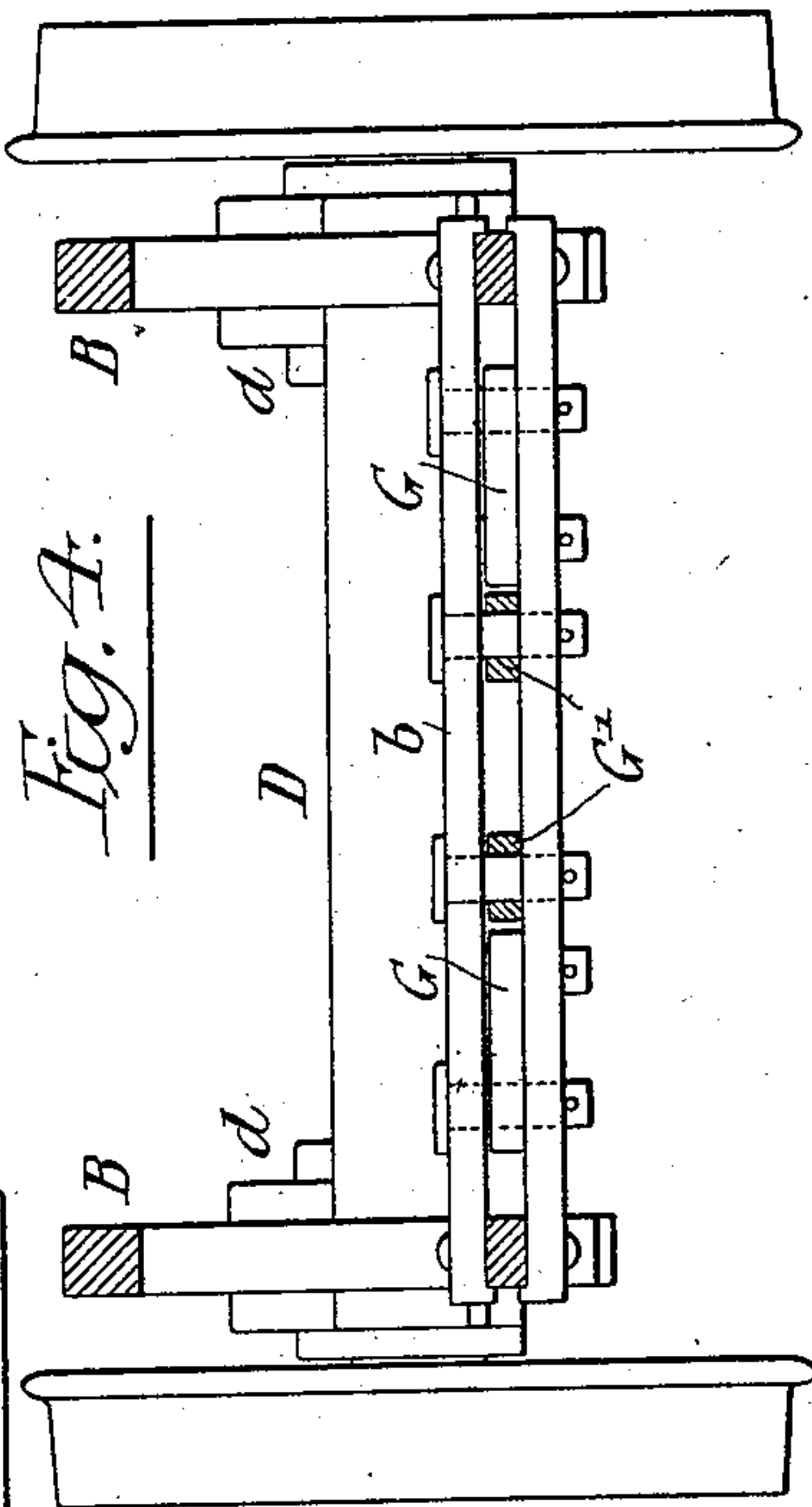
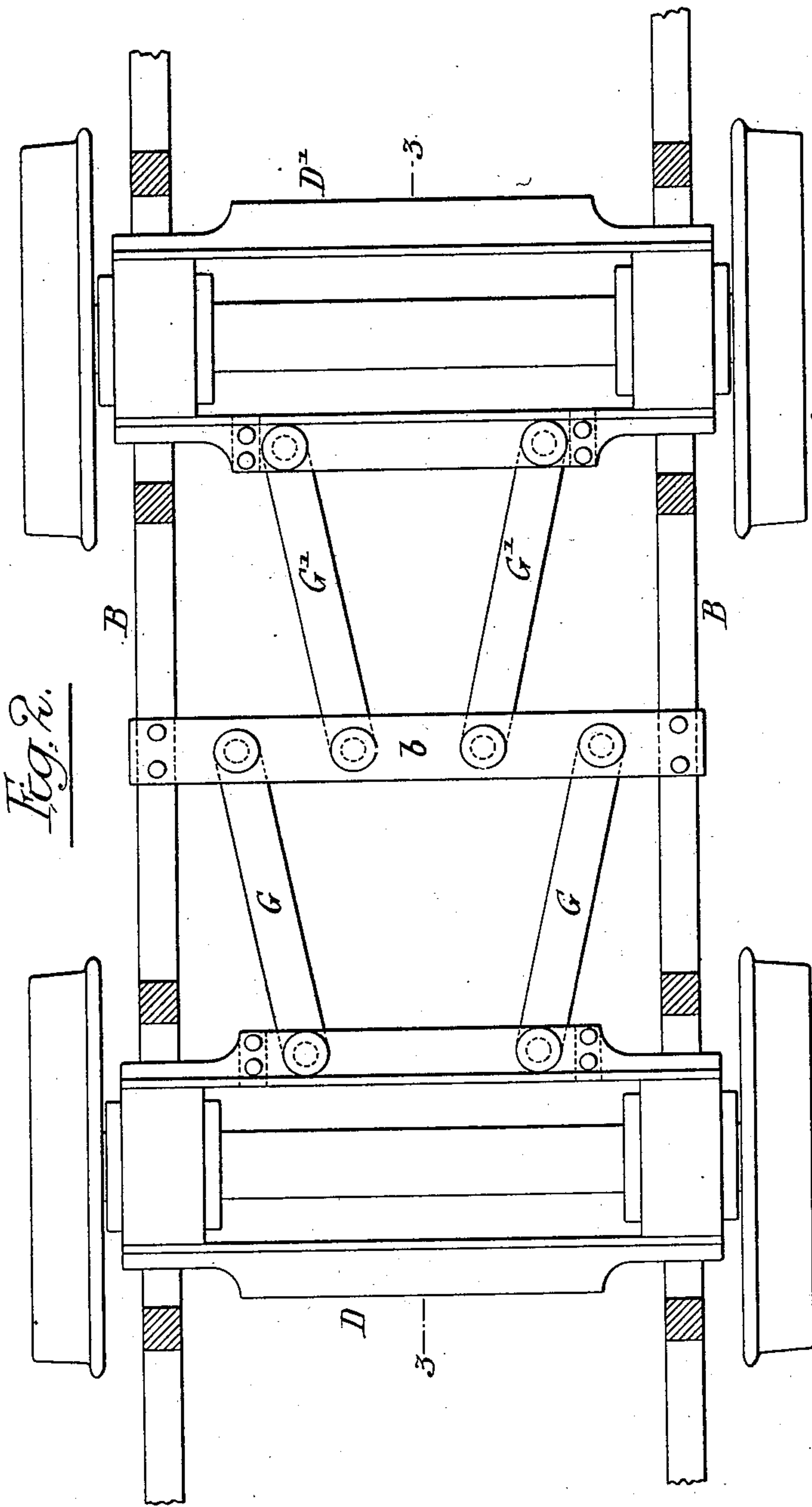
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4 SHEETS—SHEET 2.



Witnesses:-

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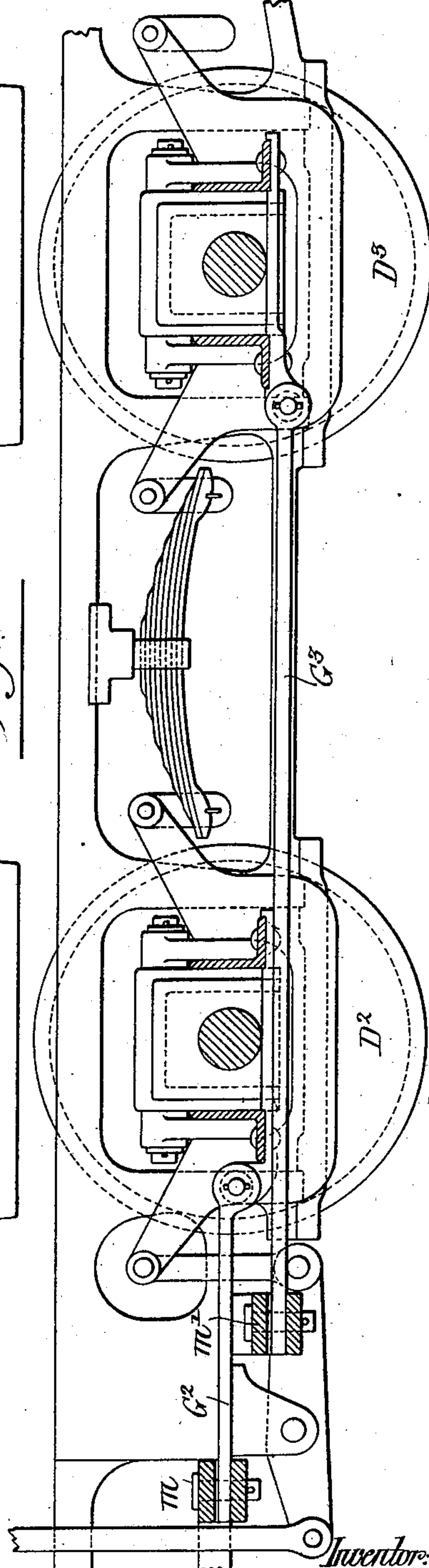
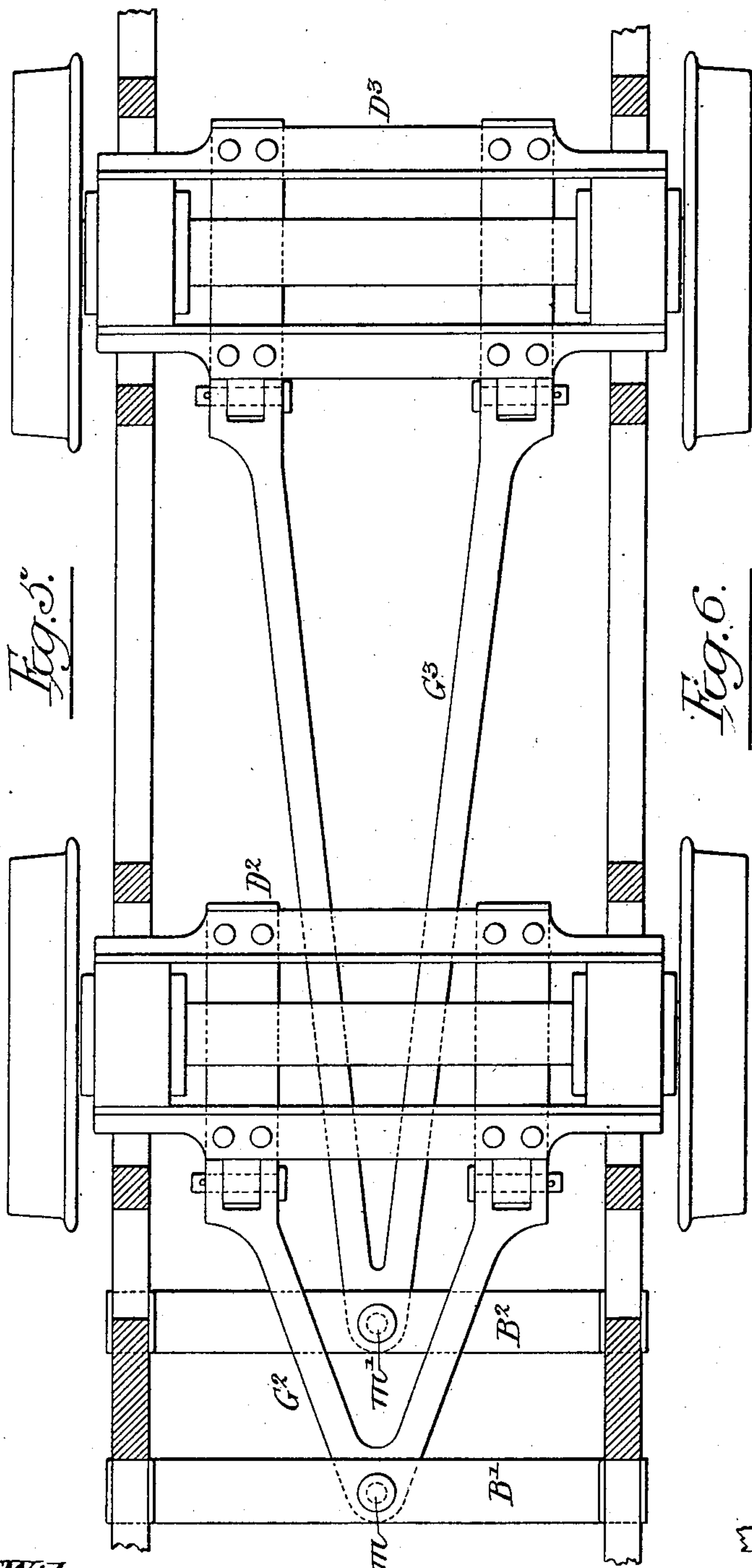
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4 SHEETS—SHEET 3.



Witnesses:-

Frank L. Graham
Herman E. Metius

Inventor:
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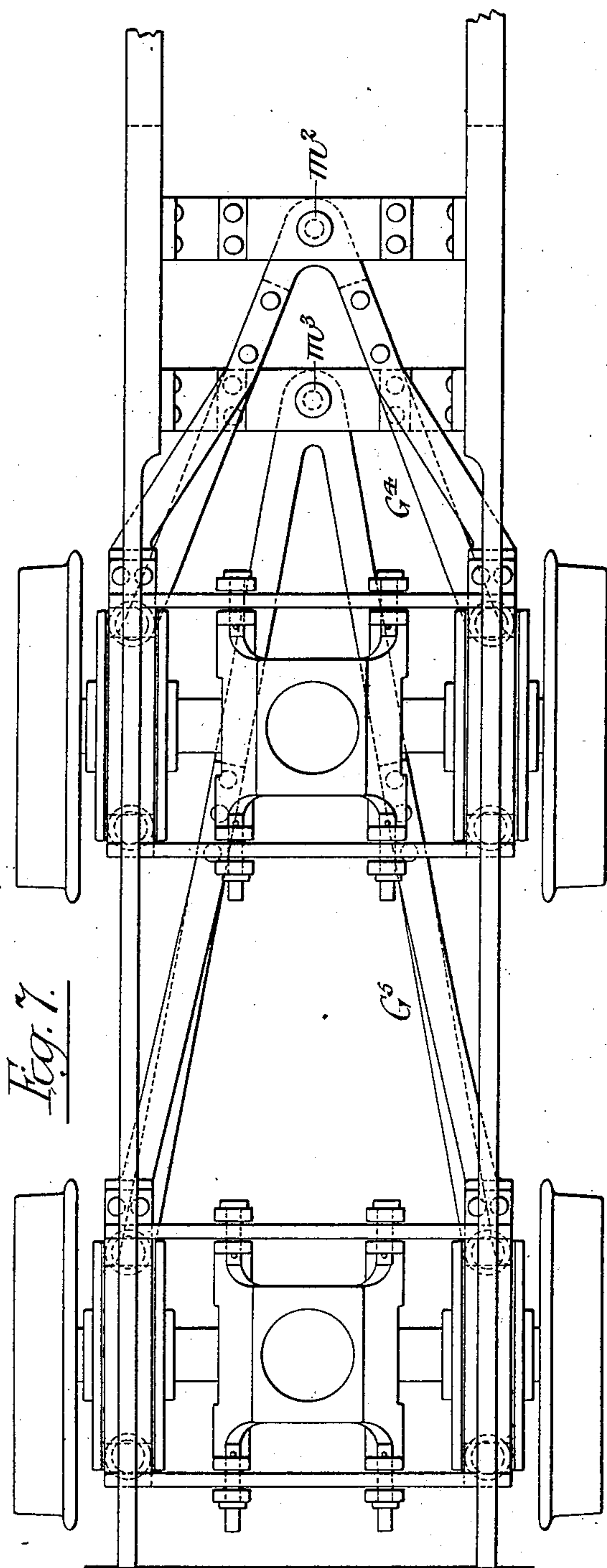
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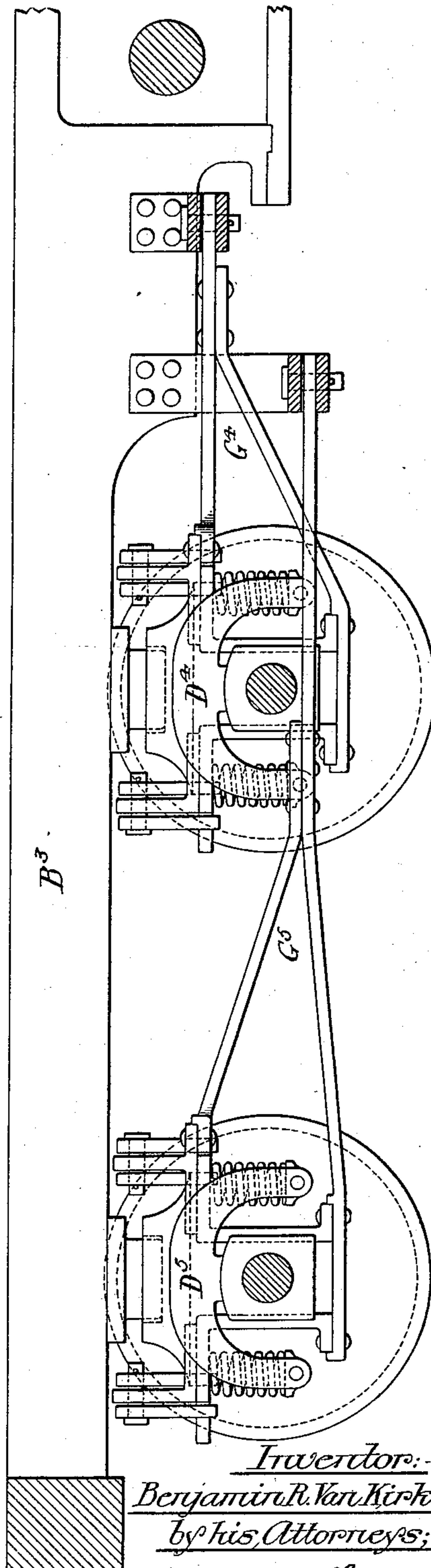
NO MODEL.

4 SHEETS—SHEET 4.



Witnesses:
Frank L. Graham
Herman E. Watkins

Fig. 8.



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UNITED STATES PATENT OFFICE.

BENJAMIN RUSSELL VAN KIRK, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO BURNHAM, WILLIAMS & COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A FIRM.

LOCOMOTIVE.

SPECIFICATION forming part of Letters Patent No. 730,722, dated June 9, 1903.

Application filed March 21, 1903. Serial No. 148,906. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN RUSSELL VAN KIRK, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Locomotives, of which the following is a specification.

My invention relates to certain improvements in locomotives having an extended overhang either at the rear or in front of the driving-wheels.

The object of my invention is to properly support the overhanging portion of the locomotive by trucks which will assume a radial position in passing around curves.

In the accompanying drawings, Figure 1 is a side view of a locomotive-engine, illustrating my invention. The unnecessary detail parts of the locomotive have been omitted to avoid confusion. Fig. 2 is a sectional plan view of the rear portion of the locomotive, showing the swing-trucks. Fig. 3 is a section on the line 3 3, Fig. 2. Fig. 4 is a transverse section on the line 4 4, Fig. 3. Fig. 5 is a plan view of a modification of my invention. Fig. 6 is a longitudinal sectional view of the modification shown in Fig. 5; and Figs. 7 and 8 are plan and sectional views, respectively, showing two independent two-wheel radial trucks at the forward end of the locomotive.

The type of locomotive shown is what is termed "a fourteen-wheel double-end locomotive," in which the fuel-chamber is mounted on the main frame of the locomotive instead of on an independent tender; but it will be understood at the outset that my invention may be applied to any type of locomotive. By extending the frame forward two independent radial swing-trucks may be mounted forward of the cylinders, if desired. This would be necessary if the engine was provided with an extended boiler.

Referring in the first instance to Fig. 1, A is the boiler of the locomotive. A' is the cab. A² is the fuel-compartment at the rear of the cab. α is the cylinder-casting. B is the frame, extending from a point forward of the smoke-chamber to the rear end of the fuel-compartment. This frame, therefore, not only supports the boiler, cab, and cylinder-

castings, but also supports the fuel-compartment, which may be of any capacity desired. The driving-wheels C are shown in the present instance by dotted lines. There are four wheels on each side of the locomotive. The axles of these driving-wheels are mounted in suitable boxes c , held in place in the frames B. F is a forward truck of the two-wheel type, in the present instance having a single axle with wheels f . D D' are two radial swing-trucks, one mounted directly back of the other and supporting that part of the frame of the locomotive on which the fire-box and the fuel-compartment are mounted. The equalizing-gear on each side of the locomotive is divided into two sections. The rear section consists of springs i , mounted above each of the boxes c of the two rear drivers C C, and links i' i^2 , connecting lever i^3 , link i^4 and lever i^5 connecting the equalizing-gear of the driving-wheels with the equalizing-gear of the two rear radial swing-trucks. The lever i^5 is connected by a link e' with a bar e , which rests under the box d of the axle D and is connected to the bar e^2 , which rests under the box d' , by means of a spring e^3 , and a spring e^4 is connected to the opposite end of this bar and to a fixed point on the frame. The front equalizing-gear is of somewhat the same type as the rear, with the exception that a long equalizing-beam pivoted to the frame of the locomotive is connected to the single forward truck F in the manner shown.

The details of the swing-trucks D D' are clearly shown in Figs. 2, 3, and 4. The truck D is connected to a cross-beam b of the frame B by radius-bars G G in the present instance. The points at which the radius-bars are connected to the truck D are nearer together than the points of connection of the radius-bars with the main frame, as shown in Fig. 2. The openings in the frame through which the truck D passes are of sufficient width to allow the free movement of the said truck. The truck D' is connected to the cross-bar b of the main frame by radius-bars G', and in the present instance the points where the radius-bars are connected to the truck are farther apart than the points of connection with the cross-beam of the frame. By this

arrangement the trucks D D' are entirely independent of each other and each assume the proper radial position as it passes around a curve, and the two trucks properly support the rear of the engine-frame. It will be understood, as remarked above, that this same construction may be used forward of the driving-wheels where it is desired to have additional support for the forward end of the engine-frame or when the locomotive is provided with an extended boiler.

In Figs. 5 and 6 I have shown a different type of radial swing-truck in which the two trucks are independently pivoted to the main frame, one truck D^2 being connected by a V-shaped radius-bar G^2 to a pivot m on the cross-frame B' of the main frame of the locomotive and the other having a long V-shaped bar G^3 , connected by a pivot-pin m' to a cross-frame B^2 . In this instance the two trucks swing on different pivots, and the radius-bars are much longer than those shown in Figs. 2 and 3.

In Figs. 7 and 8 I have shown slightly-different forms of trucks arranged for the forward end of a locomotive. The type of radius-bar is somewhat similar to the radius-bar shown in Figs. 5 and 6. B^3 is the extended frame of the locomotive, and under this frame are the independent radial swing-trucks D^4 and D^5 . The truck D^4 is connected to the frame by a V-shaped radius-bar G^4 at m^2 , and the truck D^5 is connected to the frame by a V-shaped radius-bar G^5 at m^3 .

In an application filed April 13, 1903, Serial No. 152,395, I have illustrated and claimed a single two-wheel truck connected to the fixed frame by radius-bars, and in another application, filed March 21, 1903, Serial No. 148,907, I have illustrated and claimed a four-wheel truck made up of two independent two-wheel trucks connected to a main frame by radius-bars.

I claim as my invention—

1. The combination in a locomotive having a main frame, driving-wheels, and two independently-mounted radial swing-trucks at one end of the locomotive, substantially as described.

2. The combination in a locomotive, of the main frame, the driving-wheels, the frame of the locomotive being extended at the rear, and two independently-mounted radial swing-trucks pivoted to the main frame and mounted under the rear of the locomotive back of the driving-wheels, substantially as described.

3. The combination in a locomotive, of a main frame supporting the boiler, fire-box, cab and fuel-chamber and having a series of driving-axes, wheels mounted thereon, with two independently-mounted radial swing-trucks back of the driving-wheels and supporting the rear of the locomotive, substantially as described.

4. The combination in a locomotive, of the main frame, the boiler, fire-chamber, cab and fuel-compartment mounted on said frame, a series of driving-axes, wheels thereon, a single truck mounted under the forward end of the frame, two independently-mounted radial swing-trucks at the rear of the driving-wheels and supporting the rear of the truck, and equalizing-gear for the driving-axes and the rear axles, the equalizing-gear of the rear axles being connected with the equalizing-gear of the driving-axes, substantially as described.

5. The combination of the main frame of a locomotive, driving-axes, wheels thereon, two independent trucks at the rear of the driving-wheels, one mounted back of the other and supporting the rear portion of the locomotive, an axle mounted in each truck, a pair of radius-bars connecting one truck to the frame of the locomotive, and another pair of radius-bars connecting the other truck to the frame of the locomotive and so arranged that the axle of each truck will assume a radial position in passing around curves, substantially as described.

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

BENJAMIN RUSSELL VAN KIRK.

Witnesses:

WILL. A. BARR,
JOS. H. KLEIN.