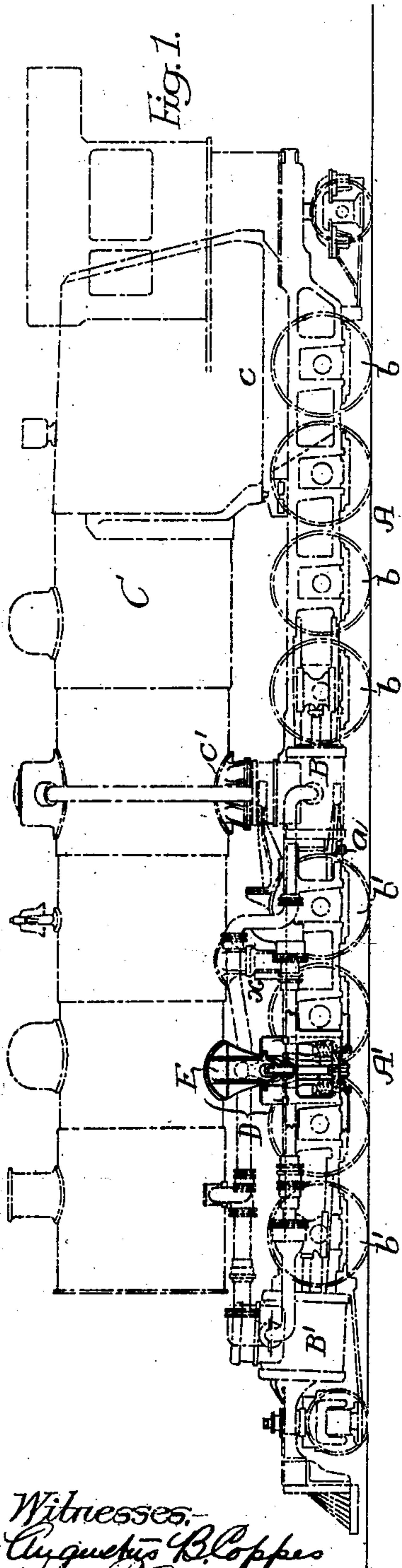


G. W. HENRY, JR.
ARTICULATED LOCOMOTIVE.
APPLICATION FILED SEPT. 5, 1908.

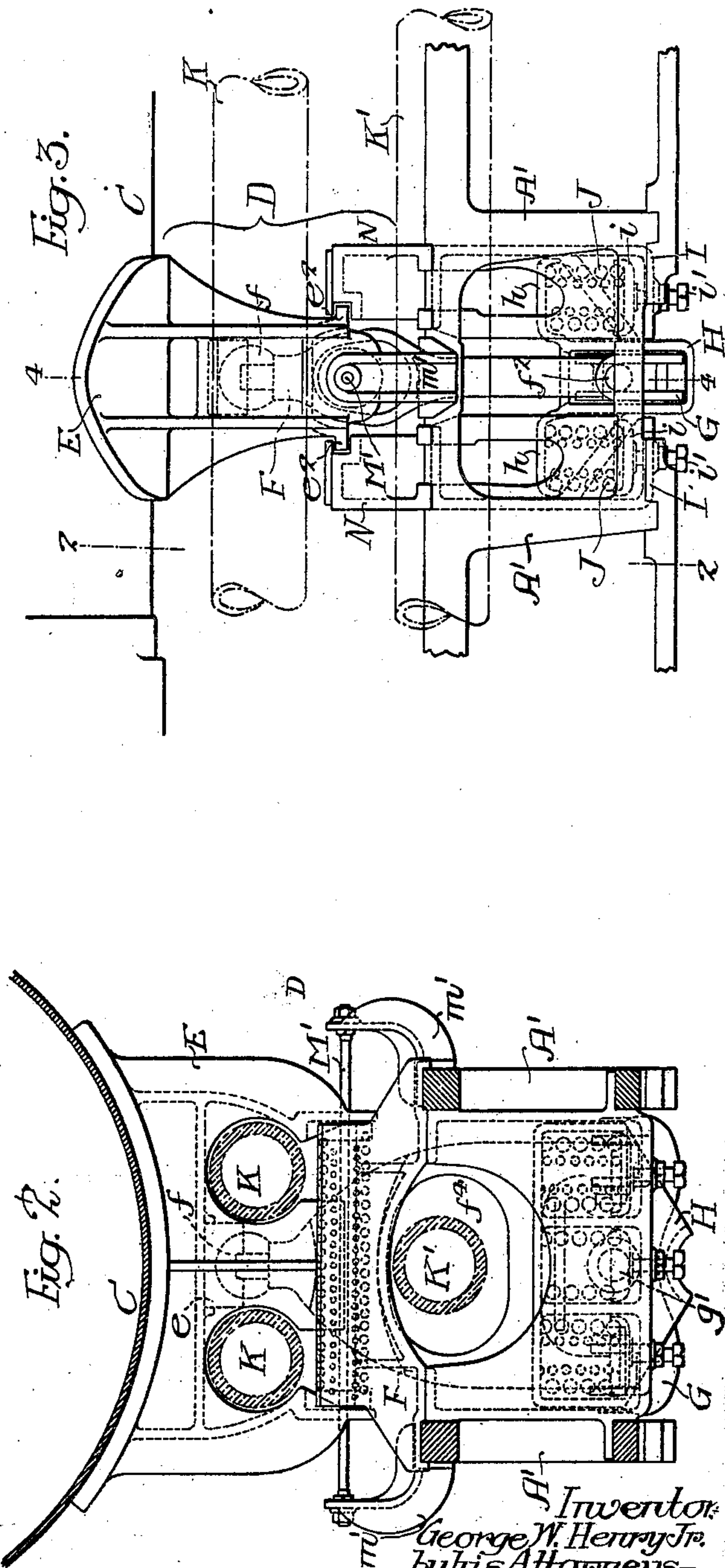
922,426.

Patented May 18, 1909.

2 SHEETS—SHEET 1.



Witnesses:
Augustus B. Oppen
Walter C. Pullinger



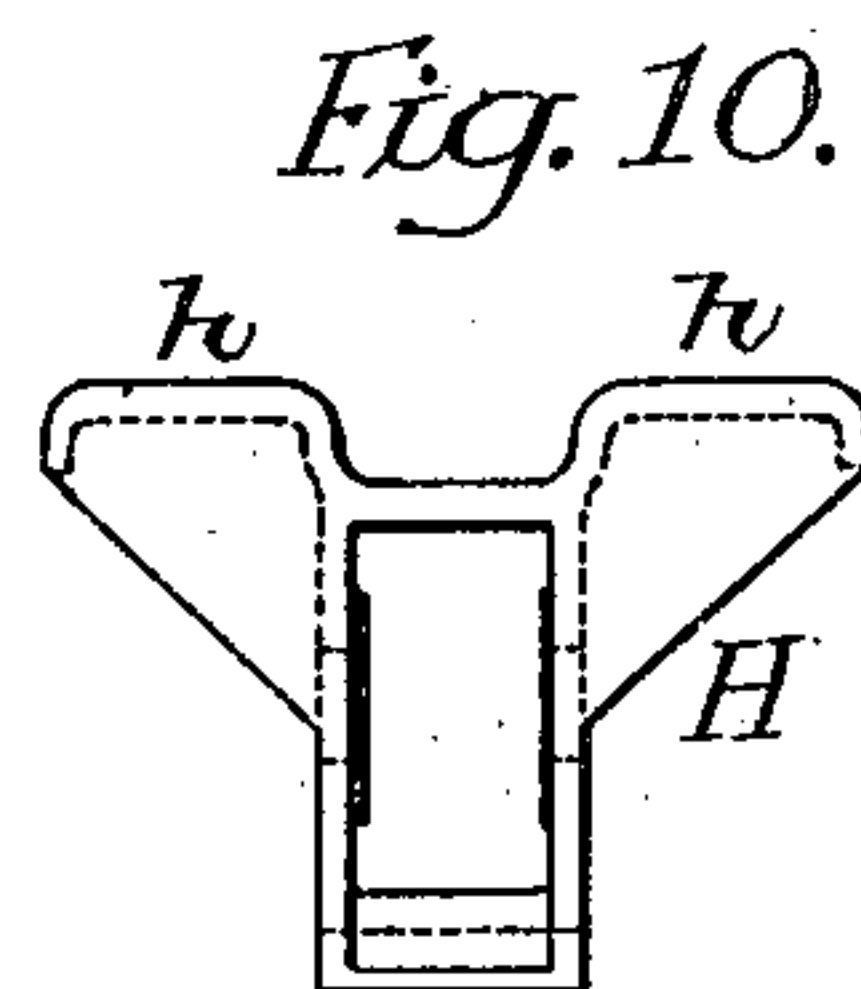
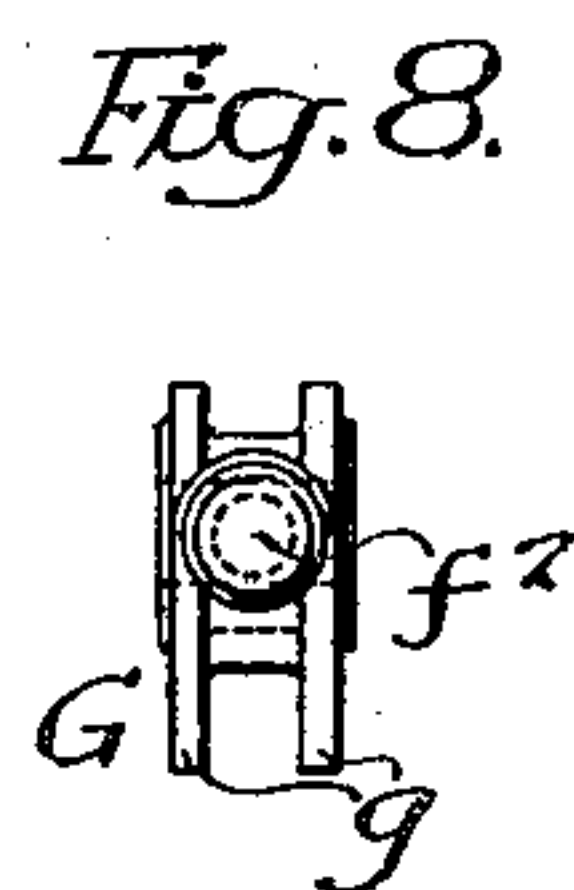
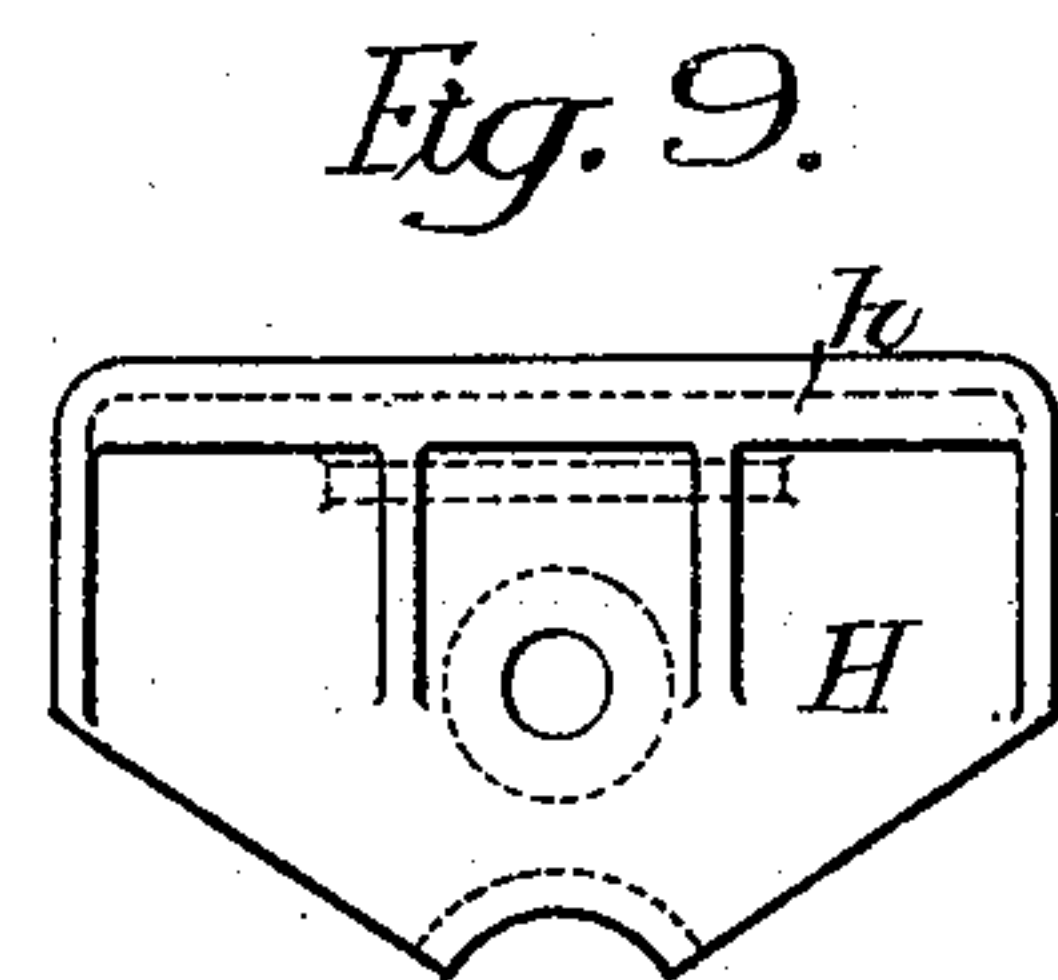
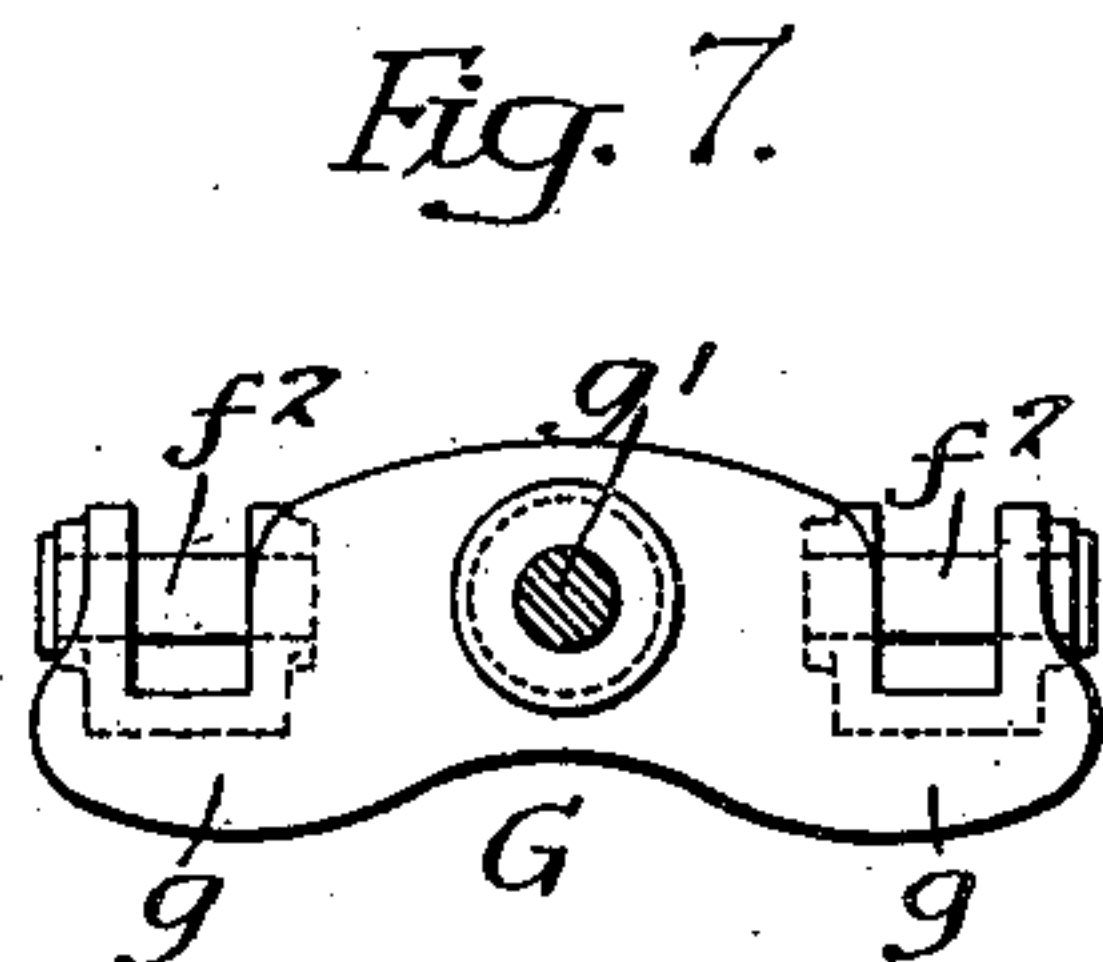
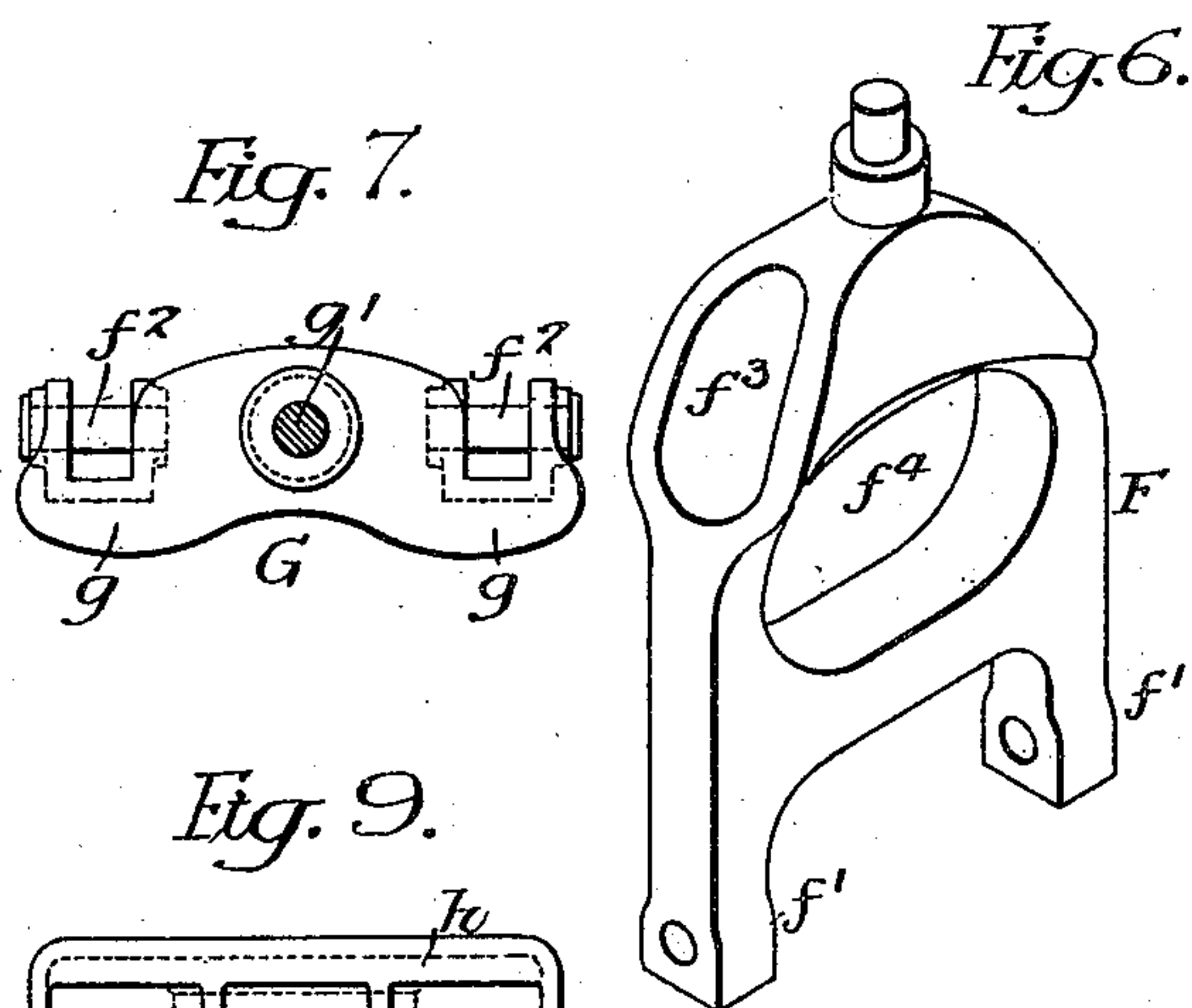
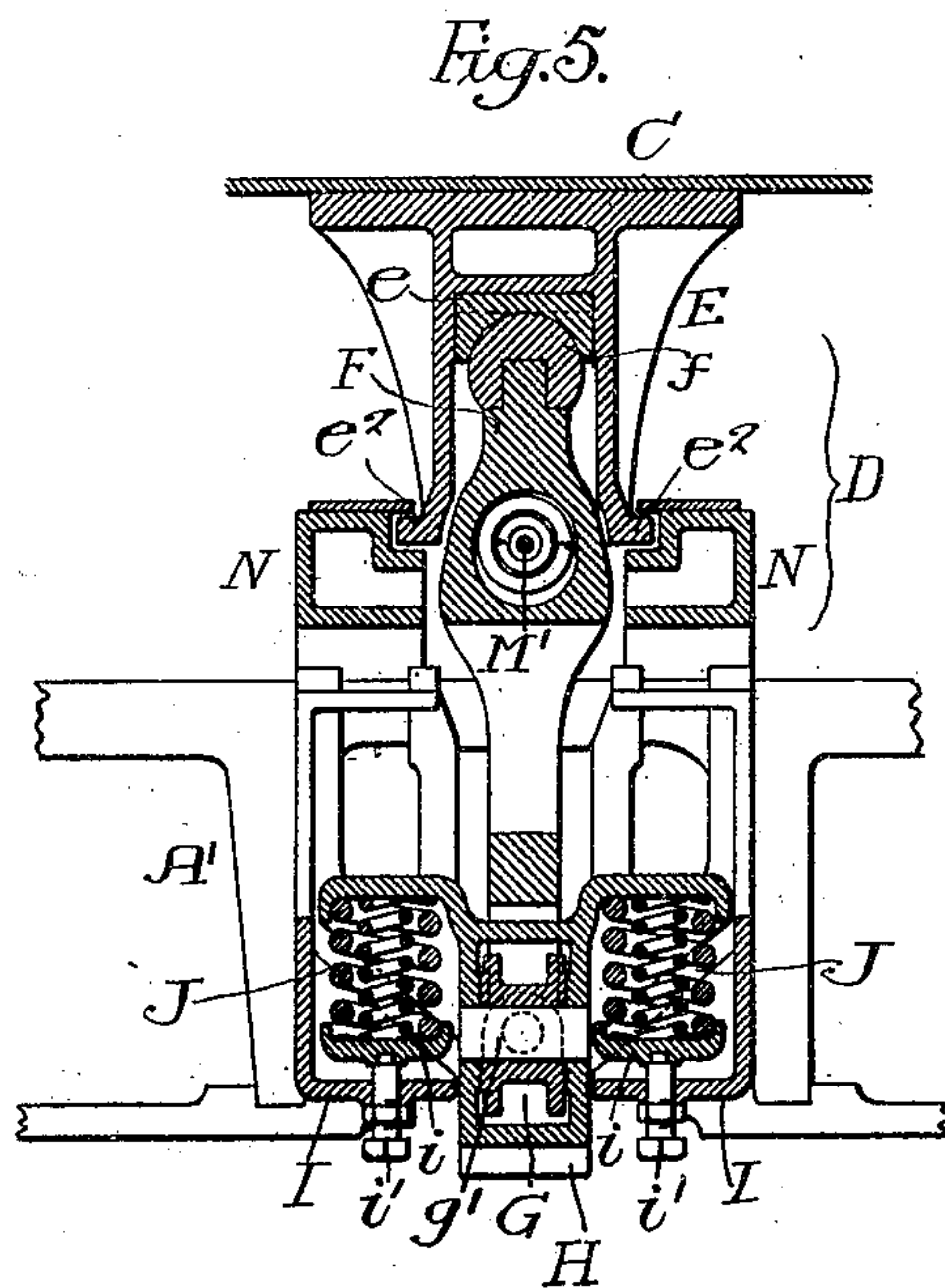
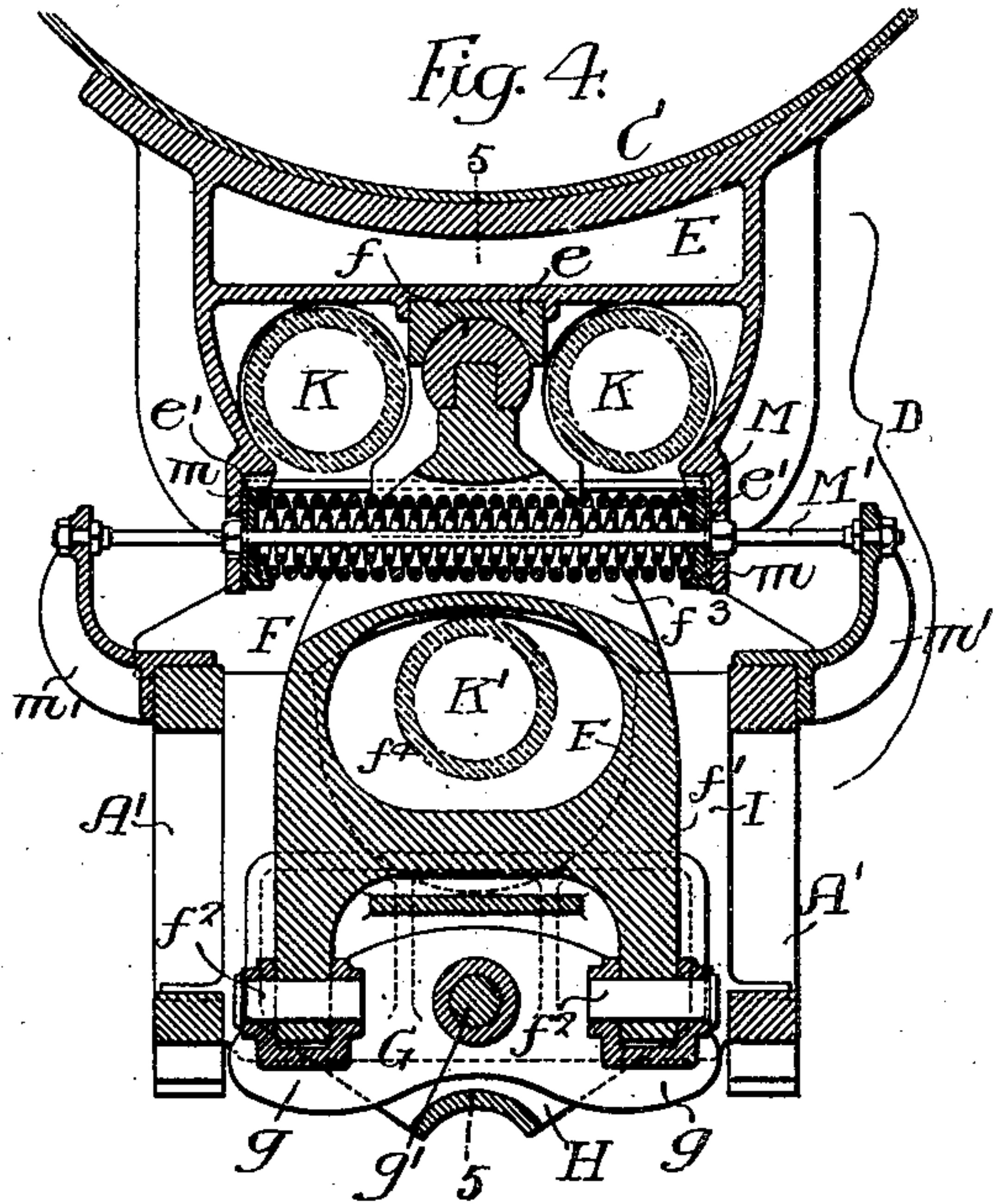
Inventor:
George W. Henry Jr.
by his Attorneys:
Krohn & Hunsen

G. W. HENRY, JR.
ARTICULATED LOCOMOTIVE.
APPLICATION FILED SEPT. 5, 1908.

922,426.

Patented May 18, 1909.

2 SHEETS—SHEET 2.



Witnesses:
Augustus B. Cooper
Valter C. Cullinger

Inventor:
George W. Henry Jr.
by his Attorneys:
Brown & Brown

UNITED STATES PATENT OFFICE.

GEORGE W. HENRY, JR., OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO BURNHAM, WILLIAMS & COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A FIRM.

ARTICULATED LOCOMOTIVE.

No. 922,426.

Specification of Letters Patent.

Patented May 18, 1909.

Application filed September 5, 1908. Serial No. 451,876.

To all whom it may concern:

Be it known that I, GEORGE W. HENRY, Jr., a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Articulated Locomotives, of which the following is a specification.

My invention relates to certain improvements in articulated locomotives of the type in which the boiler is rigidly attached to one frame and overhangs the other frame.

The object of my invention is to provide means for properly supporting the overhanging portion of the boiler and distributing the load to the frame. This object I attain in the following manner, reference being had to the accompanying drawings, in which:—

Figure 1, illustrates in dotted lines an articulated compound locomotive showing my invention in full lines; Fig. 2, is a transverse sectional view on the line 2—2, Fig. 3; Fig. 3, is an enlarged side view of that part of the locomotive illustrating my invention; Fig. 4, is a transverse sectional view on the line 4—4, Fig. 3; Fig. 5, is a sectional elevation on the line 5—5, Fig. 4; Fig. 6, is a perspective view of the carrier; Figs. 7 and 8, are detached views of the yoke to which the carrier is pivoted; and Figs. 9 and 10, are detached views of the saddle which supports the yoke.

Referring in the first instance to Fig. 1, A is the rear frame and A' is the forward frame of an articulated compound locomotive. These frames are pivotally connected at *a* and in the present instance the high pressure cylinders B are mounted at the front end of the rear frame and the low pressure cylinders B' are mounted at the front end of the forward frame, and mounted in bearings on the rear frame are driving wheels *b* and mounted in bearings on the forward frame are driving wheels *b'*; each set of wheels being independently driven. In the present instance there are four drivers on each side of each frame, but the number of driving wheels may be varied without departing from my invention.

C is the boiler, firmly secured to the rear frame A and overhanging the forward frame. The boiler, in the present instance being supported at the fire box end *c* and at the point

c' by the saddle of the high pressure cylinder. The front portion of the boiler is supported in the usual manner at *x* by a sliding bearing, but overhangs the forward truck to such an extent that some suitable support must be provided for carrying the forward end of the boiler and the support should allow the forward frame to turn independently of the rear frame and also allow for any unevenness in the track and at the same time support the forward end of the boiler, so that the load will be properly transmitted to the frame.

My improved support is made in the following manner, reference being had particularly to Figs. 4 and 5:—D illustrates my improved support for the forward end of the boiler and rigidly secured to the underside of the boiler is a frame E having a central socket *e* for the reception of the rounded head or ball *f* loosely supported on the carrier F, the shape of which is clearly shown in the perspective view, Fig. 6. The carrier has two downwardly extending arms *f'*, which are coupled to each end *g, g* of a yoke G, (which is clearly shown in Figs. 7 and 8), by pins *f²* and this yoke in turn is coupled to a saddle H by a longitudinally arranged pivot pin *g'*.

The saddle is shaped as clearly shown in Figs. 9 and 10, and has two flanges *h, h* which rest upon springs J supported by seats *i* carried by the frames I, I. In the present instance these supports or seats *i* are carried by set screws *i'*, so as to be vertically adjustable on the frames I, I, as clearly illustrated in Fig. 5. By this construction the forward end of the boiler C is supported by springs, being so regulated that while they will give under the unevenness due to the running of the locomotive the boiler will be supported without strains and the longitudinal movement of the truck independent of the boiler will be accommodated by the carrier F swinging on its pivot *f²*, and the lateral movement is accommodated by the yoke rocking on the pivot *g'*.

I provide a transversely arranged spring M confined by washers *m, m* at each end mounted on a rod M', which is held by brackets *m'* attached to each side member of the frame A'. By adjusting the nuts on the frame A' the spring can be regulated as desired.

The washers m are mounted in pockets e upon the frame E so that while the ball and socket joint f and e will allow one part to rock independently of the other, the spring M will
 5 tend to return the parts to their normal position. The frame E is so shaped as to allow for the passage of the tubes K to and from the superheater which, in the present in-
 10 stance, is located in the smoke box of the boiler. I lay no claim to this arrangement of pipes.

In the carrier F is a transverse opening f^3 for the free passage of the spring M and below this passage is an opening f^4 through
 15 which passes the pipe K' leading to the low pressure cylinder. The openings are of such size as to allow for the free movement of the carrier.

In the present instance I mount two trans-
 20 verse guide members N, N on the frame A' and on the frame E are flanges e^2 which extend into recesses in the frame N to prevent the boiler and frame from separating in case of derailment or like cause; the flanges being
 25 normally free.

In Fig. 1, of the drawings, where four driving wheels are used on each side of the forward frame I mount the supporting structure in respect to these drivers, so that they will
 30 properly support the load. The location of the supporting structure will vary according to the number of drivers and the type of the articulated locomotive to which the invention is applied.

By the above construction, it will be seen that I properly support the forward or over-
 35 hanging portion of the boiler directly above the carrier which in turn is supported by the forward frame; the carrier being so mounted as to accommodate itself to any movement
 40 of one element in respect to the other and yet carry the weight of the forward end of the boiler.

I claim:—

45 1. The combination in an articulated locomotive, of two frames pivoted together, a boiler mounted on one frame and overhanging the other, a carrier spring supported on the frame which the boiler overhangs, and a
 50 central ball and socket connection between the carrier and the boiler.

2. The combination in an articulated compound locomotive, of a forward and a rear frame pivoted together, a boiler carried by
 55 and rigidly secured to the one frame and overhanging the other frame, a frame secured to the underside of the boiler and having a socket therein, a carrier having a ball at its upper end adapted to the said socket, a
 60 yoke to which the carrier is pivoted, a saddle carrying the yoke, and springs supporting the saddle.

3. The combination in an articulated locomotive, of forward and rear frames, a boiler

mounted on one frame and overhanging the 65 other frame, a support for the boiler consisting of a carrier, a yoke and a saddle whereby the boiler is flexibly supported on the frame which it overhangs.

4. The combination in an articulated loco- 70 motive, of a front and a rear frame pivoted together, a boiler rigidly mounted on the rear frame and overhanging the forward frame, a frame mounted between the side members of the forward frame, springs mounted on the 75 said frame, a saddle carried by the springs, a yoke longitudinally pivoted to the saddle, and a carrier transversely adapted to the yoke and resting under and supporting the overhanging portion of the boiler. 80

5. The combination in an articulated locomotive, of a forward and a rear frame pivoted together, a boiler mounted rigidly on the rear frame and overhanging the forward frame, arms fixed to the side members of 85 the forward frame, spring seats adjustably mounted on the frames, two sets of springs mounted on said seats, one on each side of the center of the truck, a saddle supported by the springs, a yoke mounted in the saddle, 90 a longitudinal pivot pin coupling the yoke to the saddle, a carrier having downwardly extending arms pivoted to the outer ends of the yoke by transverse pivot pins, a ball mounted on the upper end of the carrier, and 95 a frame attached to the underside of the overhanging portion of the boiler and having a socket to receive the ball.

6. The combination in an articulated locomotive, of forward and rear frames, a boiler 100 rigidly mounted on the rear frame and overhanging the forward frame, a carrier yieldingly supported on the forward frame and resting under the overhanging portion of the boiler, said carrier having a transverse open- 105 ing, a laterally arranged spring, a bar carried by the frame and extending through the spring, the boiler having depending arms bearing against each end of the spring so as to bring the parts to their central position. 110

7. The combination in an articulated locomotive, of two frames pivoted together, a boiler mounted on one frame and overhanging the other frame, a frame depending from the overhanging portion of the boiler, longi- 115 tudinal pipes extending under the overhanging portion of the boiler, a depending frame secured to the underside of the overhanging portion of the boiler, passages in the frame for two of said pipes, a carrier flexibly 120 mounted on the forward frame and having a ball adapted to the socket in the depending frame, and a passageway in the carrier for one of the longitudinal pipes.

8. The combination in an articulated loco- 125 motive, of two frames pivoted together, a boiler rigidly mounted on one frame and overhanging the other frame, a frame on the

underside of the boiler, a carrier pivoted to the frame, springs mounted on the frame of the locomotive and supporting the carrier, flanges on the frame carried by the boiler,
5 and transverse guide members on the locomotive frame in which said flanges freely slide.

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

GEO. W. HENRY, JR.

Witnesses:

JAS. H. M. HAYES,

W. N. TUTTLE.