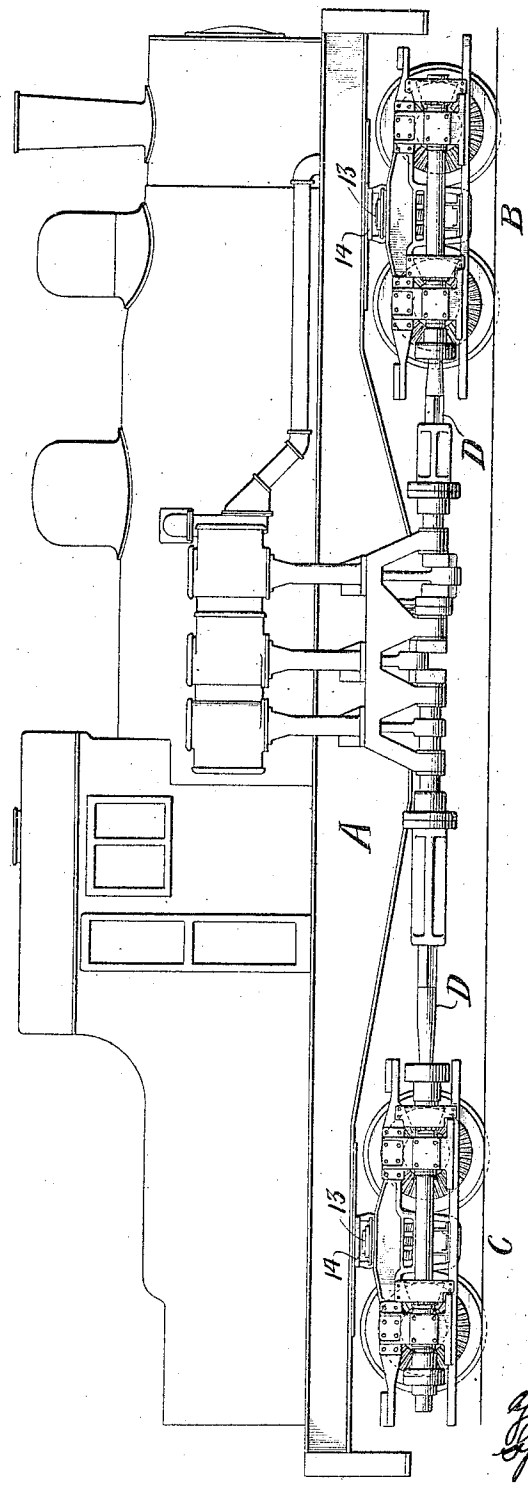


W. E. WOODARD.
GEARED LOCOMOTIVE.
APPLICATION FILED FEB. 2, 1920.

1,376,061.

Patented Apr. 26, 1921.
3 SHEETS—SHEET 1.

Fig. 1.



WITNESS

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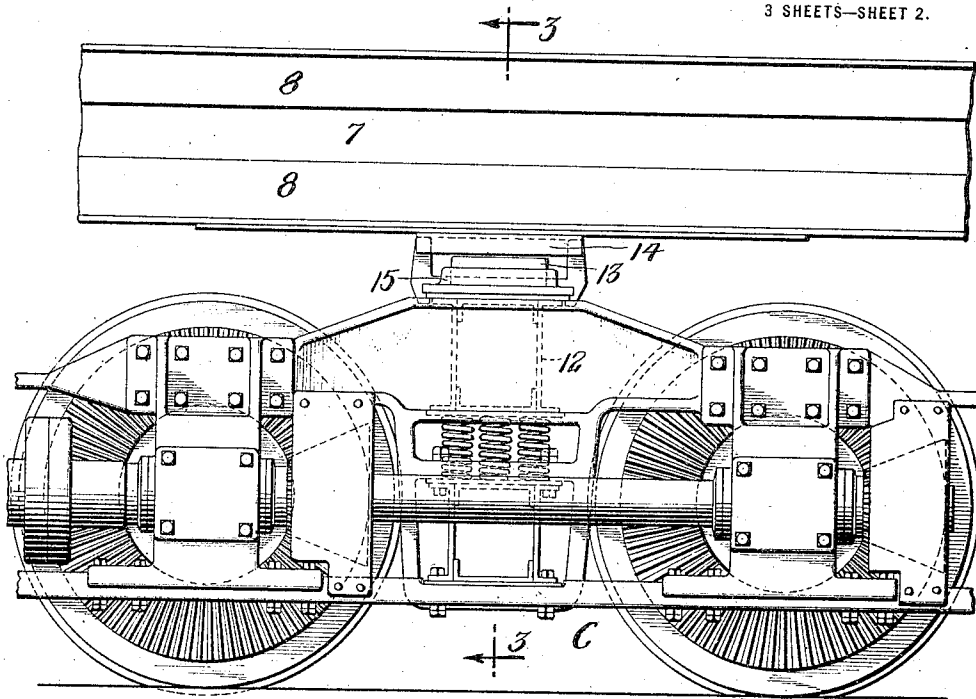


Fig. 2.

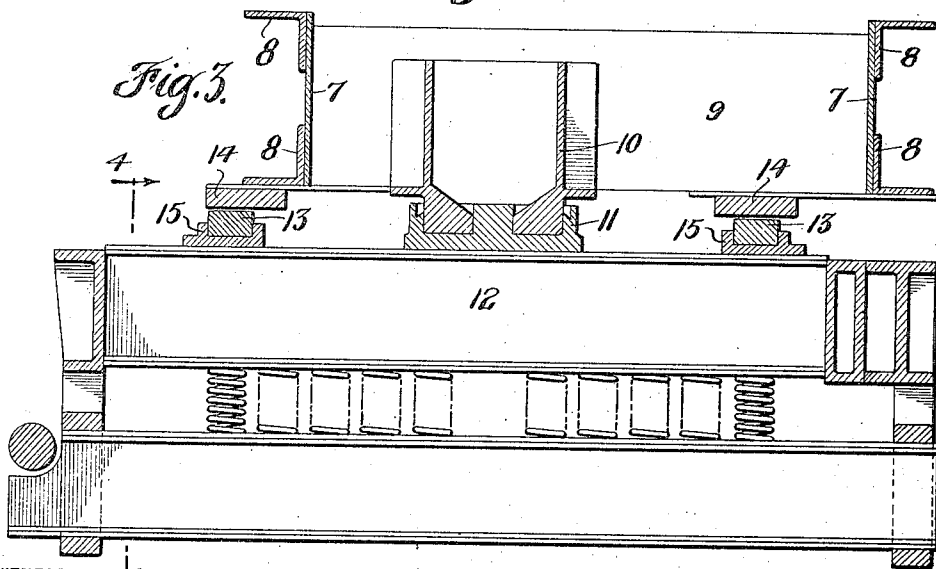


Fig. 3.

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3 SHEETS—SHEET 3.

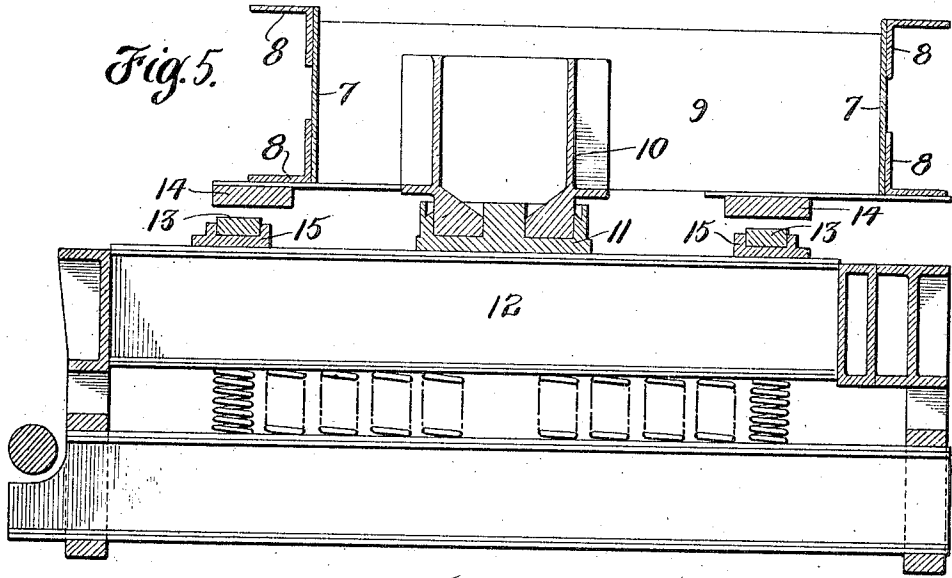
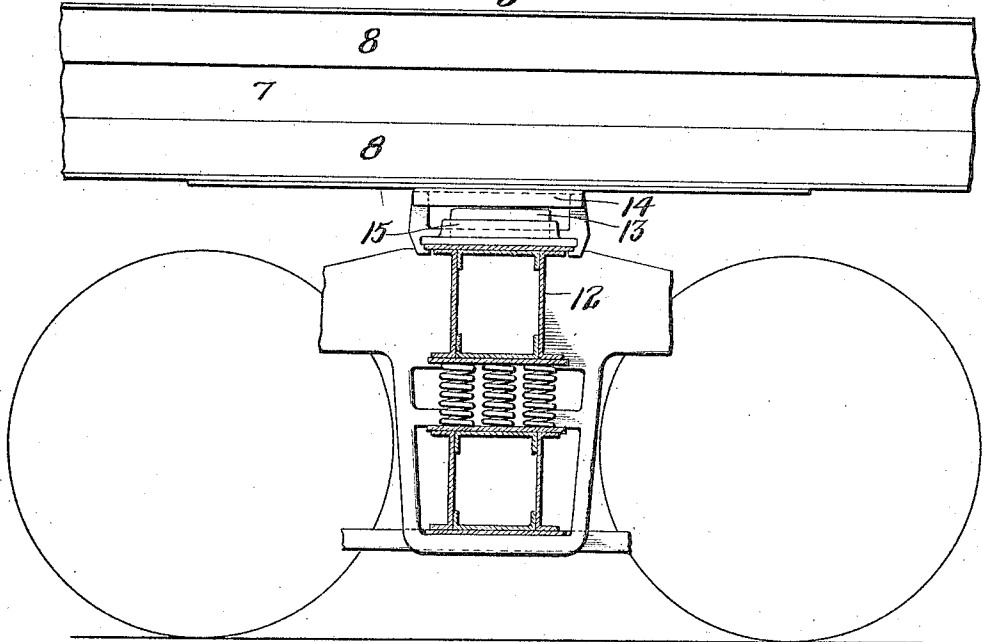


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM E. WOODARD, OF LIMA, OHIO.

GEARED LOCOMOTIVE.

1,376,061.

Specification of Letters Patent. Patented Apr. 26, 1921.

Application filed February 2, 1920. Serial No. 355,741.

To all whom it may concern:

Be it known that I, WILLIAM E. WOODARD, a citizen of the United States, residing at Lima, in the county of Allen and State of Ohio, have invented certain new and useful Improvements in Geared Locomotives, of which the following is a specification.

This invention relates to geared locomotives, such as Shay engines, and particularly to the means for supporting the frames of such locomotives.

Geared locomotives have been usually built with a frame which carries the boiler, engine, tank, cab, etc., the frame being supported upon center pins which are carried upon the truck bolsters and being stabilized by side bearings placed either side of the frame center pins. The trucks have a motion of rotation on the center pins so as to permit of curving and the clearance allowed between the side bearings on both trucks has been nominal and approximately equal on the leading and rear trucks.

In order to prevent derailment, the frames customarily used have been constructed of channel irons or I beams reinforced by truss rods for the reason that such a construction lends flexibility to the frame, so that even though side bearings touch on each of the two trucks when the locomotive passes over uneven track, the frame weaves and accommodates itself to the position taken by the trucks on the track.

The construction thus briefly outlined has been in use for years and has been regarded and accepted as standard practice but it is disadvantageous due to the fact that the frame, in weaving or accommodating itself to the position of the trucks on uneven track, breaks after a few years of service.

Stated in other words, with this type of construction, it is practically impossible to make a frame which is flexible enough to accommodate itself to the roughness of the track and strong enough not to develop cracks and break.

The primary object of my invention is to provide an improved means for supporting the frame whereby I may either use the flexible type of frame just described without any danger of breakage or cracking or use a rigid type of frame without liability of derailment.

I accomplish the foregoing, together with such other objects as may hereinafter appear by means of a construction which I

have illustrated in preferred form in the accompanying drawings, wherein—

Figure 1 is a side elevation of a Shay locomotive embodying my improvements; 60 Fig. 2 is an enlarged view of the rear truck; Fig. 3 is a section taken on the line 3—3 of Fig. 2; Fig. 4 is a section taken on the line 4—4 of Fig. 3; and Fig. 5 is a cross section, similar to Fig. 3, but taken through the forward truck. 65

In the geared locomotive shown in diagrammatic form in Fig. 1, the frame A is of the built up type, being composed of pieces of steel boiler plate 7 with heavy angles 8 riveted to the top and bottom, the girders being connected by cross pieces or members 9. This provides a very rigid frame. B is the leading power driven truck and C the rear power driven truck, such trucks being driven in the usual manner through the drive shafting D. The frame A is supported on the trucks by means of the center pins 10, each of which engages a center plate 11 carried on the bolster 12 of the respective truck. 80

The trucks, in general, may be of any standard construction, but I provide one of the trucks, preferably the rear truck, with side bearings 13 on either side of its center pin, the clearance between the side bearings and the bearing shoes 14 on the frame being very slight, *i. e.*, a nominal working clearance. I also provide side bearings 15 for the other trucks but they are spaced so far from the shoes 14 of the frame that, properly speaking, they are not side bearings but stops serving to limit excessive movement of the superstructure, the frame coming into engagement with the stops only under the most extreme conditions and then only to prevent the locomotive from overturning. 90 As a result of this arrangement, the locomotive is in effect supported at three points, namely the center pin and one side bearing at the rear truck and the center pin only of the forward truck. A locomotive supported in this way will pass over very rough and uneven track without any danger of derailment and it is possible to use either the very rigid frame, such as the one described or an integral cast frame, or a flexible frame. 105 Such a flexible frame may be preferred by some as accommodating itself more readily to slight changes in the structures carried by the frame and by my improvements I am enabled to use such a frame without subject- 110

ing it to the detrimental weaving action incident to the ordinary types of geared locomotives. While I have shown my invention as applied to a two-truck engine, it will be
5 obvious that it has a wider application.

I claim:

1. A locomotive with power driven trucks and having a frame, said frame being supported by a center pin and side bearings on
10 one truck and a center pin only on another truck.

2. The combination in a locomotive having power driven trucks, of a frame, a center pin and side bearing means for supporting the frame on one of the trucks, a center pin
15 supporting means for supporting the frame on another of the trucks, and stop means on said last truck for limiting the movement of the locomotive superstructure.

In testimony whereof I have hereunto
20 signed my name.

WILLIAM E. WOODARD.