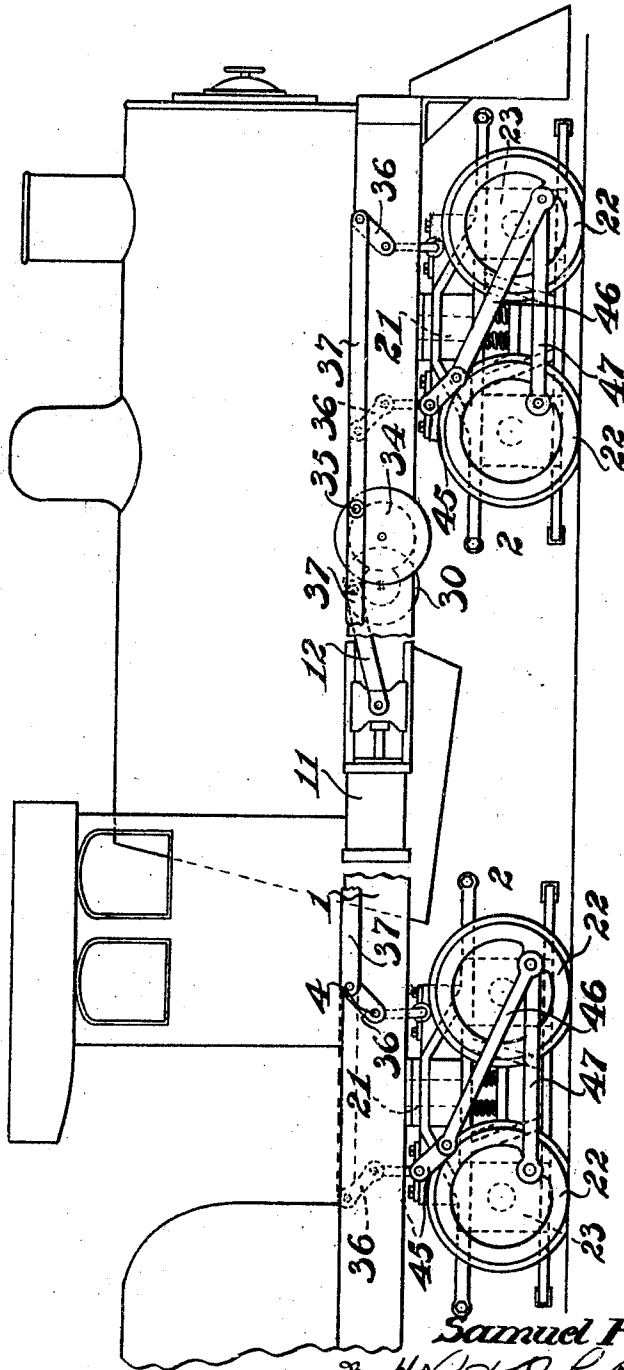


S. PICKERING,
LOCOMOTIVE DRIVE.
APPLICATION FILED SEPT. 27, 1920.

1,367,714.

Patented Feb. 8, 1921.
3 SHEETS—SHEET 1.

FIG. 1



Inventor

Samuel Pickering

By H. R. C. Reynolds

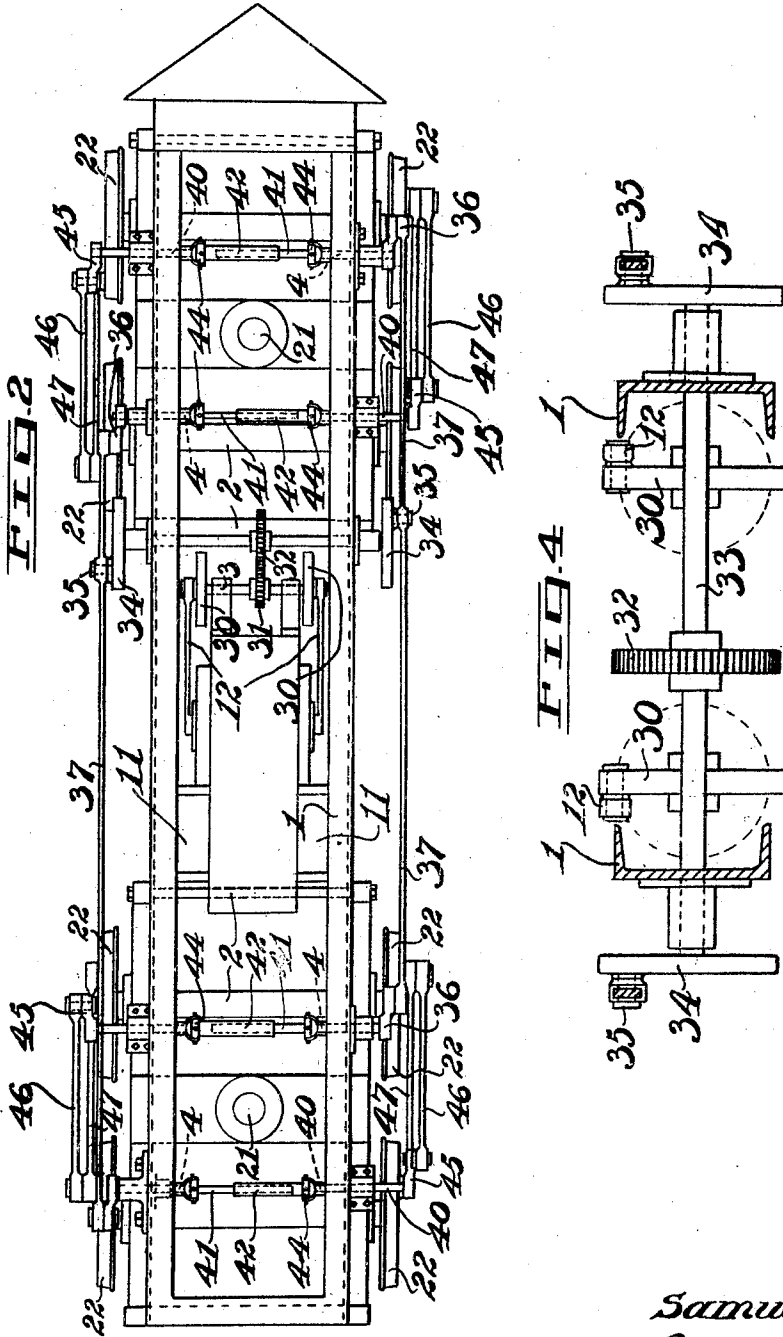
Attorney

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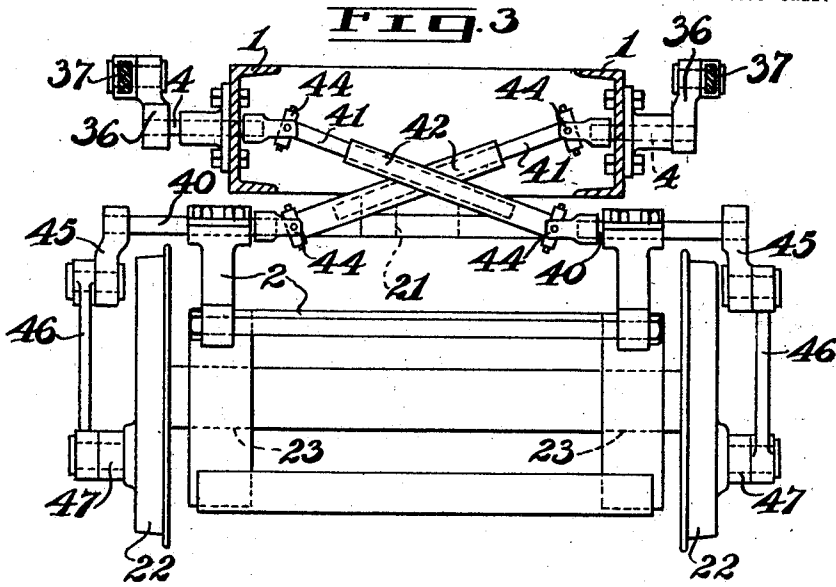
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UNITED STATES PATENT OFFICE.

SAMUEL PICKERING, OF BELLEVUE, WASHINGTON.

LOCOMOTIVE-DRIVE.

1,367,714.

Specification of Letters Patent.

Patented Feb. 8, 1921.

Application filed September 27, 1920. Serial No. 413,098.

To all whom it may concern:

Be it known that I, SAMUEL PICKERING, a citizen of the United States of America, and resident of the town of Bellevue, in the county of King and State of Washington, have invented certain new and useful Improvements in Locomotive-Drives, of which the following is a specification.

My invention relates to engines and driving means therefor and particularly to engines in which the driving wheels are journaled in pivoted or swinging trucks.

It is an object of my invention to provide means for transmitting power to the driving wheels of a locomotive, and particularly to one of the class described, whereby flexible means are interposed between the steam cylinder and the truck in which the driven wheel is journaled. With such a connection it is possible to journal the driving wheels fixedly in the swinging truck without making allowance for lateral motion in their journals.

It is another object of my invention to provide a driving means for locomotives which will permit them the greatest amount of flexibility in rounding curves and which will still secure for them a positive and powerful drive.

My invention comprises those novel parts and combinations thereof which are shown in the accompanying drawings, described in the specification, and particularly defined by the claims terminating the same.

In the accompanying drawings I have shown my invention in a form which is now preferred by me.

Figure 1 is an elevation of a locomotive, illustrating my invention in connection therewith.

Fig. 2 is a plan view of a locomotive frame with my invention installed thereon.

Fig. 3 is an end elevation of a locomotive truck, the engine frame being shown in section.

Fig. 4 is a section on line 4—4 of Fig. 2.

The locomotive frame 1 is supported upon two or more trucks 2. Preferably only two trucks are employed. These are pivoted in the locomotive frame at 21. The driving wheels 22 are journaled in the trucks 2. I have shown two driving wheels, one in each truck. More may be employed if desired, but for the smaller types of engines to which my invention is particularly applicable, four drivers on a side would be sufficient. Where only two drivers on a side to each truck are

employed, I prefer that these be fixedly journaled in the truck, that is, that they be so journaled that there is no relative motion between the wheels, or their axles, and the journals 23 in the truck.

The usual cylinder or cylinders 11 may be mounted upon the locomotive frame and power is transmitted therefrom through the connecting rod 12. I prefer to connect the rod 12 on each side of the locomotive to a suitable crank disk 30, fixed upon the shaft 3 which extends transversely of the locomotive frame and upon which is secured a gear 31. A second gear 32 meshes with the gear 31, and is secured upon a shaft 33 extending transversely of the locomotive frame and parallel with the shaft 3. The shaft 3 may be omitted if desired, in which case the connecting rod 12 would be directly connected to the shaft 33, through a suitable crank or crank disk.

Upon the outer ends of the shaft 33 I provide crank disks 34 having wrist pins 35. These are connected to crank arms 36 through connecting rods 37, through which wheels upon the trucks are driven. The cranks 36 are fixed upon stub shafts 4 which are journaled in the locomotive frame 1. A corresponding stub shaft 40 is journaled in the truck frame 2 at the side opposite its corresponding shaft 4. Some suitable flexible connection is provided between the inner ends of the shafts 4 and 40. The connection which I have shown and which I have found suitable for the purpose consists of a square or polygonal shaped bar 41 telescoping within a sleeve 42 having a hole therein adapted to receive the shaft 41. The shaft 41 and sleeve 42 are each connected by one end to the shaft 4 or 40 through a universal coupling 44. The shaft 40 may be operatively connected to the wheels 22 in any suitable manner, as through the crank 45, the main rod 46 to one of the wheels 22 and a side rod 47 connecting the drive wheels which are journaled upon that side of the truck.

It will be seen that through the connection described the driving wheels, while remaining fixedly journaled in their trucks, are yet connected to a driving means mounted upon the locomotive frame through a flexible, or rather a contractible and expandible device which provides for transmittal of the full amount of power and which yet permits the trucks to swing freely relative to the locomotive frame, while rounding

curves. The universal couplings 44 take up all variations in angular positions between the shafts 4 and 40, while the sleeve 42 and bar 41 take up all variations in distances between the ends of these shafts.

What I claim as my invention is:

1. In a locomotive having driving wheels journaled in swinging trucks, driving means for said wheels comprising an extensible and contractible member connecting one side of the main frame with the opposite side of the truck frame, and mounted to permit variation in its angular position relative to said frames, means for transmitting power to that end of said extensible and contractible member which is journaled in the main frame, and power-transmitting means connecting its opposite end and the driven wheel.

2. In a locomotive having driving wheels journaled in swinging trucks, driving means for said wheels comprising a telescoping shaft journaled by one end in the main frame and by its other end to the truck frame, and power-transmitting means connecting the latter end of the shaft to the wheel.

3. In a locomotive having driving wheels journaled in swinging trucks, driving means for said wheels comprising a telescoping shaft extending transversely of the locomotive, said shaft being journaled by one end in the main frame and by its other end to the truck frame, power-transmitting means connecting the latter end of the shaft to the wheel, and means permitting variations of the angular position of the shaft between its two journals.

4. In a locomotive having driving wheels journaled in swinging trucks, driving means for said wheels comprising a telescoping shaft extending transversely of the locomotive, said shaft being journaled by one end in the main frame and by its other end to the truck frame, power-transmitting means connecting the latter end of the shaft to the wheel, and universal joints at each end of said shaft between its two journals.

5. In a locomotive having driving wheels journaled in swinging trucks, driving means for said wheels comprising a stub shaft journaled in the main frame, means for transmitting power thereto, a second stub shaft journaled opposite said first stub shaft in the truck frame, power-transmitting means connecting said second stub shaft and the driven wheel, a telescoping shaft extending between said opposite stub shafts, and universal joints interposed between and connecting each stub shaft with its respectively adjacent end of the telescoping shaft.

6. In a locomotive, swinging trucks, driving wheels fixedly journaled therein, and means for transmitting power to said wheels including a flexible connection, ex-

tending transversely of the locomotive and connecting the main frame and the truck frame.

7. In a locomotive, swinging trucks, driving wheels fixedly journaled therein, and means for transmitting power to said wheels including an extensible and contractible member extending transversely of the locomotive and connecting the main frame and the truck frame.

8. In a locomotive having driving wheels journaled in swinging trucks, driving means for said wheels comprising a driven crank shaft journaled in and extending transversely of the main frame, a stub shaft also journaled in the main frame parallel to said crank shaft, a connecting rod forming a driving connection between said shafts, a stub shaft journaled in the truck frame, driving means connecting said latter stub shaft and the wheels, and a flexible member extending transversely of the locomotive and connecting said stub shafts on the main frame and the truck frame.

9. In a locomotive, swinging trucks, driving wheels journaled therein, means operatively connecting the wheels upon each side of a truck, a flexible and extensible member connected at one end to drive the wheels upon one side of a truck, and journaled at its other end in the main frame at the side opposite its connection to the truck, and means for transmitting power to that end of said flexible and extensible member which is journaled in the main frame.

10. In a locomotive having driving wheels journaled in swinging trucks, means operatively connecting the wheels on each side of a truck, the wheels on opposite sides having independent driving connections, and driving means for each of said series of wheels comprising a telescoping shaft journaled by one end in the main frame and by its other end to the opposite side of the truck frame, and power-transmitting means connecting the latter end of the shaft to the wheel.

11. In a locomotive having driving wheels journaled in swinging trucks, a firebox positioned along the central axis of the main frame, a main drive shaft receiving power from the engine and journaled in the main frame transversely thereof, driving connections extending longitudinally of the main frame from said main drive shaft outwardly of each side of the fire-box, stub shafts journaled in the main frame and driven by said driving connections, and further driving connections between said stub shafts and their respective drive wheels including a flexible member.

Signed at Seattle, King county, Washington, this 22nd day of September, 1920.

SAMUEL PICKERING.