

No. 750,705.

PATENTED JAN. 26, 1904.

A. RUSSELL.
ENGINE.

APPLICATION FILED SEPT. 30, 1903.

NO MODEL.

Fig. 1

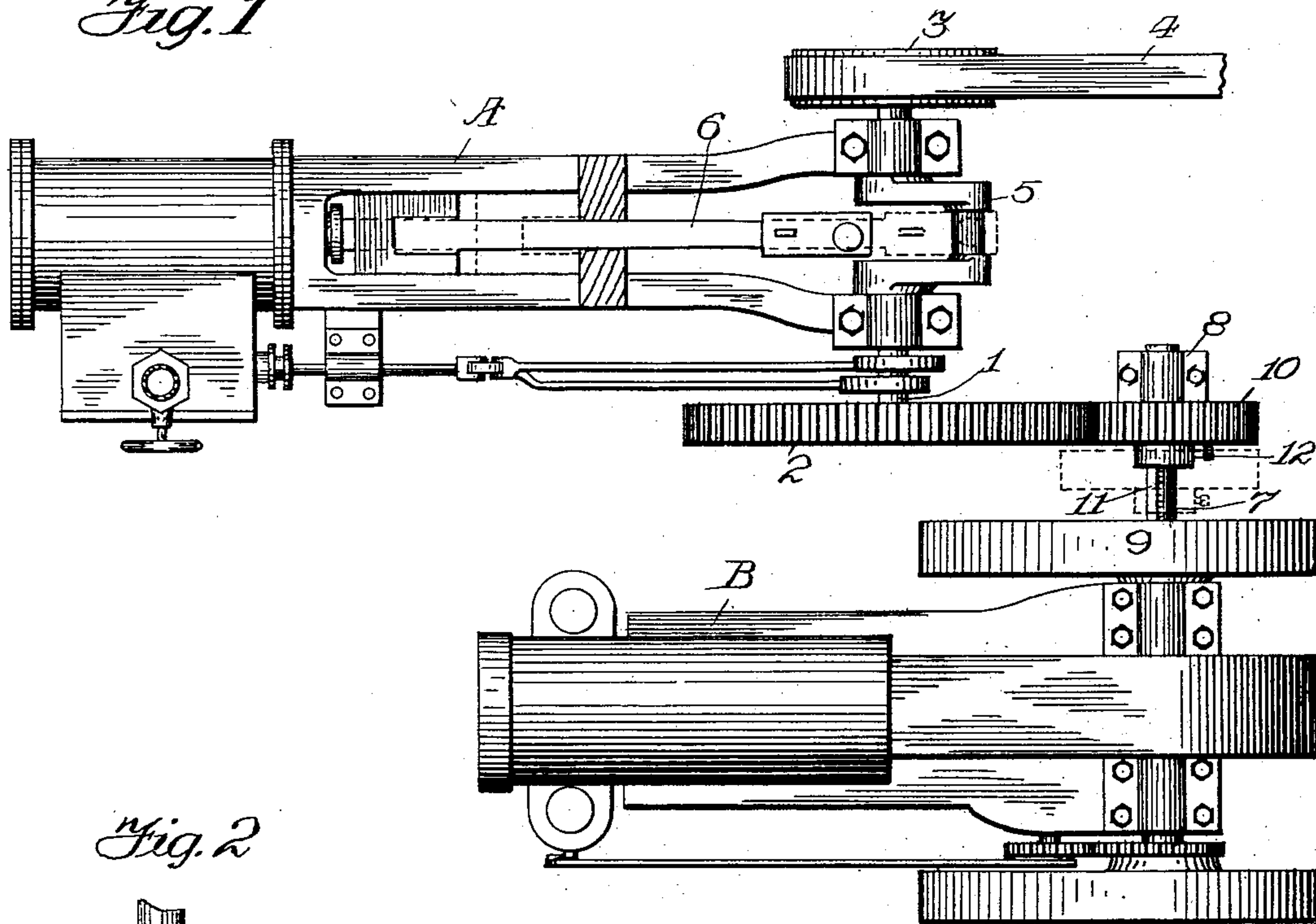
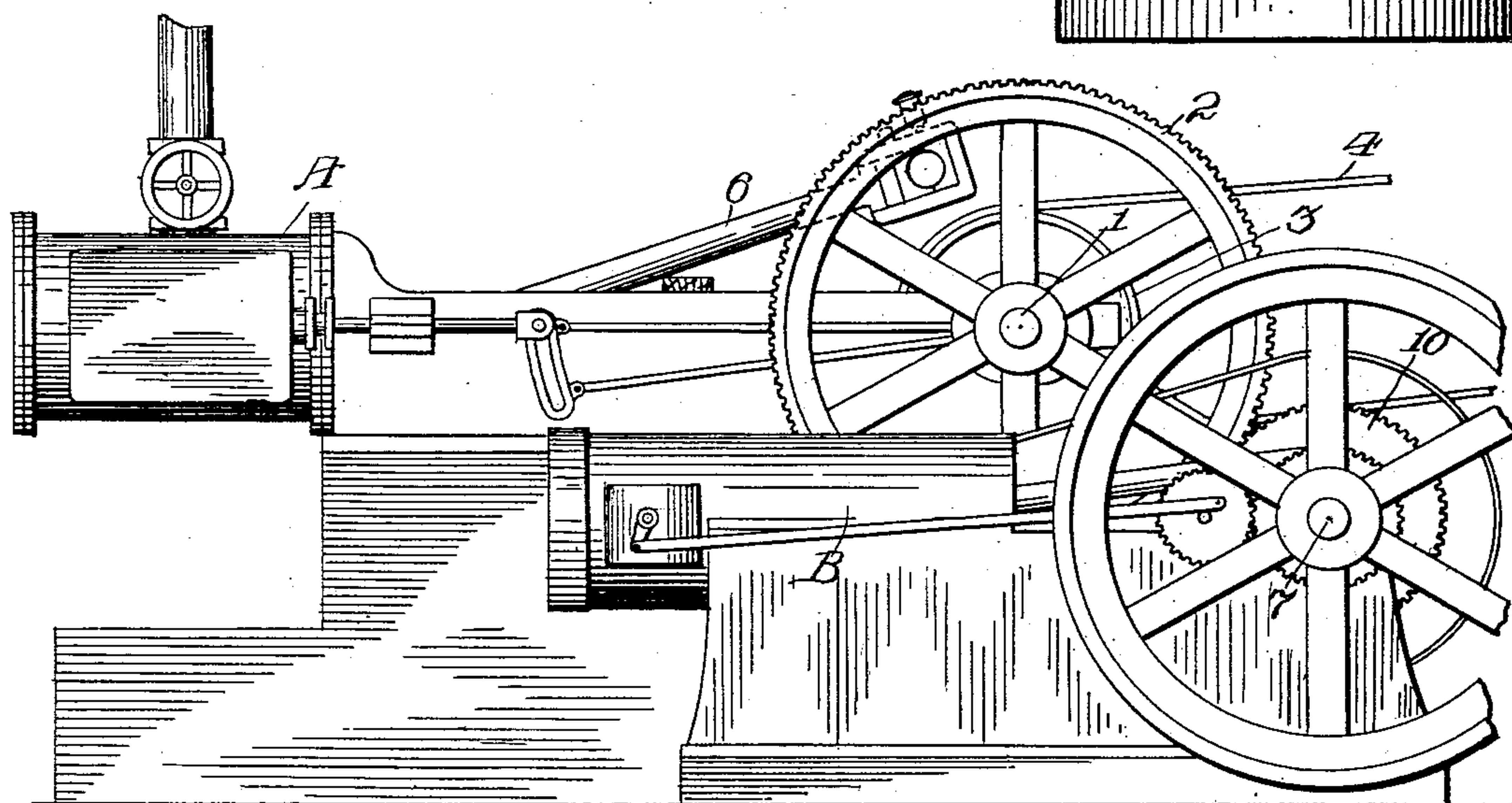


Fig. 2



Witnesses:
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UNITED STATES PATENT OFFICE.

ALEXANDER RUSSELL, OF NOBLESTOWN, PENNSYLVANIA.

ENGINE.

SPECIFICATION forming part of Letters Patent No. 750,705, dated January 26, 1904.

Application filed September 30, 1903. Serial No. 175,172. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER RUSSELL, a citizen of the United States of America, residing at Noblestown, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in driving means for engines; and the object of the invention is to provide novel means for the driving of the shaft of a steam-engine by the aid of a gas-
15 engine.

In the oil-fields, especially in the pumping of oil-wells, it is necessary to have both a steam-engine and a gas-engine, the gas-engine being used in pumping on account of its cheap-
20 ness to operate and also on account of its requiring but little attention in comparison with the steam-engine. However, the steam-engine is necessary, since the gas-engine cannot be reversed, and the said steam-engine is there-
25 fore employed for the withdrawing of the casing or tubing when desired or required and for other work which the gas-engine may not be of sufficient horse-power to perform. Generally the steam-engine is of considerably
30 greater horse-power than the gas-engine, since it does not require a large engine of the latter type to perform the pumping. As generally practiced the two engines are entirely independent of each other, thus requiring consid-
35 erable work when it is desired to change from operating by one engine to operating by the other engine. In my invention, however, I gear the drive-shaft of the gas-engine to the drive-shaft of the steam-engine, disconnecting
40 the driving-rod of the steam-engine from the crank-shaft, and when it is desired to operate the steam-engine all that is necessary is to shift one of the gears and connect driving-rod or pitman of the steam-engine up to its
45 crank-shaft, and the steam-engine is ready to operate independently of the gas-engine.

In describing the invention in detail reference will be had to the accompanying drawings, forming a part of this application, and
50 wherein like numerals of reference will be

employed for indicating like parts throughout the different views, in which—

Figure 1 is a top plan view showing the engines connected up to operate by the gas-engine, illustrating in dotted lines the manner
55 in which the pinion is shifted and driving-rod of the steam-engine is connected up to its crank-shaft whereby to operate as a steam-engine. Fig. 2 is a side elevation of the engines connected up to operate by the gas-en-
60 gine.

In the accompanying drawings, A represents the steam-engine, and B the gas-engine, the mechanism of which engines has not been shown in detail, as it does not enter into the
65 invention, and consequently these engines may be of any approved or desired type or pattern.

To put my invention into practice, I remove the fly-wheel from one end of the drive-shaft 1 of the steam-engine and place on said shaft
70 in lieu of said fly-wheel a gear 2, which is made of a size and weight sufficient to take the place of the said fly-wheel when the steam-engine is being operated by steam. On the other end of the shaft 1 the belt-pulley 3 is
75 mounted to receive the drive-belt 4, the shaft 1 being provided intermediate its ends with the crank-shaft 5, to which the driving-rod or pitman 6 of the steam-engine is detachably connected. The gas-engine B is placed along-
80 side of or parallel with the steam-engine A, and the extended end of the drive-shaft 7 is journaled in a suitably-positioned standard 8, and on this extended end of said shaft, between the standard 8 and the fly-wheel 9 of
85 the gas-engine, is mounted a pinion 10 to mesh with the gear 2. This pinion 10 is held on the shaft 7 by means of an ordinary spline-and-feather connection 11, and is held in position
90 to either mesh with the gear 2 or be free from mesh therewith by a set-screw 12 or other approved means.

In the construction of gas-engines, particularly those that are to be used in the oil or gas fields, it is the common practice to extend
95 one end of the drive-shaft beyond the fly-wheel on that side of the engine, so that it does not require a change in the drive-shaft of the ordinary gas-engine in order for me to adapt my improvement thereto. This drive-
100

shaft is made extended at one end in this manner in the general practice in order that a belt-pulley may readily be attached thereto. With the engines coupled up as shown 5 in the drawings the gas-engine is adapted to furnish the power, and when it is desired to use the steam-engine it is only necessary to unmesh pinion 10 from gear 2, moving pinion 10 over to the position shown in dotted 10 lines in Fig. 1, where it is held by set-screw 12, and then connect the driving-rod or pitman 6 up to the crank-shaft 5. The straps of the driving-rod are constructed as in the usual manner, so that said driving-rod may be readily 15 connected up or disconnected, as desired. When operating by the gas-engine, with the driving-rod or pitman disconnected from the crank-shaft, the said rod or pitman may be held elevated by a strip or block, as shown in 20 the drawings, in order to prevent the crank-shaft 5 in its revolution striking said driving-rod or pitman. This utilization of the driving-shaft of the steam-engine when operating the gas-engine materially simplifies the employment of the two engines. The change 25 from one to the other is easily and quickly made, and the cost of operation is materially reduced.

While I have herein shown and described a 30 practical embodiment of my invention as it has been practiced by me, yet it will be evident that various changes may be made in the details of construction without departing from the general spirit of my invention.

Having fully described my invention, what 35 I claim as new, and desire to secure by Letters Patent, is—

1. The combination with the drive-shaft of a steam-engine, and a gear on said shaft, of the drive-shaft of a gas-engine, and a pinion 40 splined on said gas-engine drive-shaft means whereby the said pinion may be moved into or out of mesh with the gear on the steam-engine drive-shaft, as and for the purpose described. 45

2. The combination with the drive-shaft of a steam-engine and the drive-shaft of a gas-engine, of a gear acting as the fly-wheel of a steam-engine and secured to the drive-shaft thereof, a pinion slidably mounted on the 50 drive-shaft of the gas-engine to be moved into and out of engagement with said gear of the steam-engine, and means for retaining said pinion in its predetermined position.

3. The combination with the drive-shaft of 55 a steam-engine, of the gear on said shaft, of the drive-shaft of the gas-engine, and a pinion mounted on said gas-engine drive-shaft, with means for mounting said pinion so that the same may be slid into and out of engagement 60 with said gear, and means for securing said pinion in predetermined position.

In testimony whereof I affix my signature in the presence of two witnesses.

ALEXANDER RUSSELL.

Witnesses:

J. L. CALLAHAN,
A. E. BALDWIN.