No. 752,905. PATENTED FEB. 23, 1904.

J. F. KAY, DEC'D.

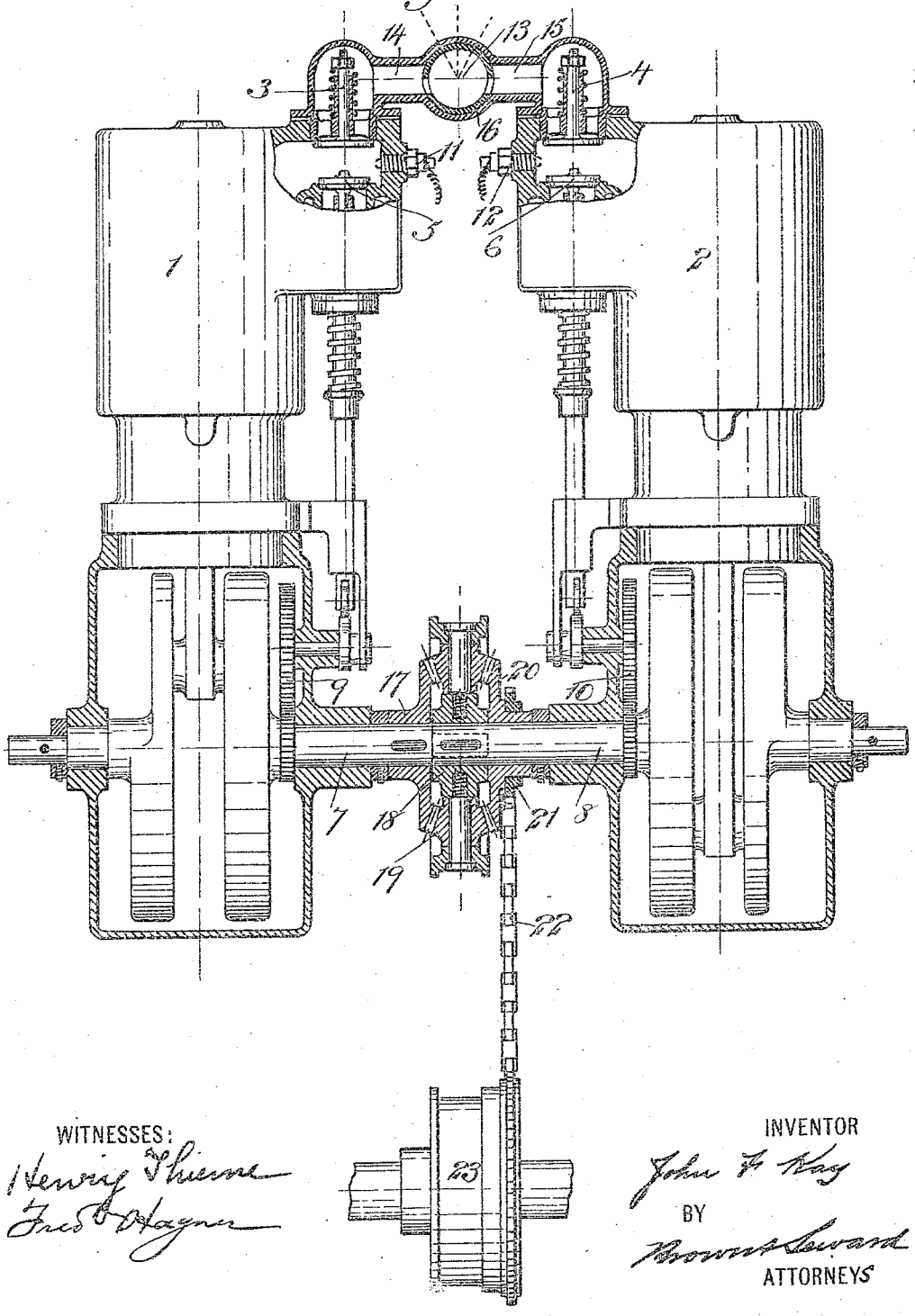
J. C. KAY, ADMINISTRATOR.

DRIVING MECHANISM.

APPLICATION FILED JULY 5, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.



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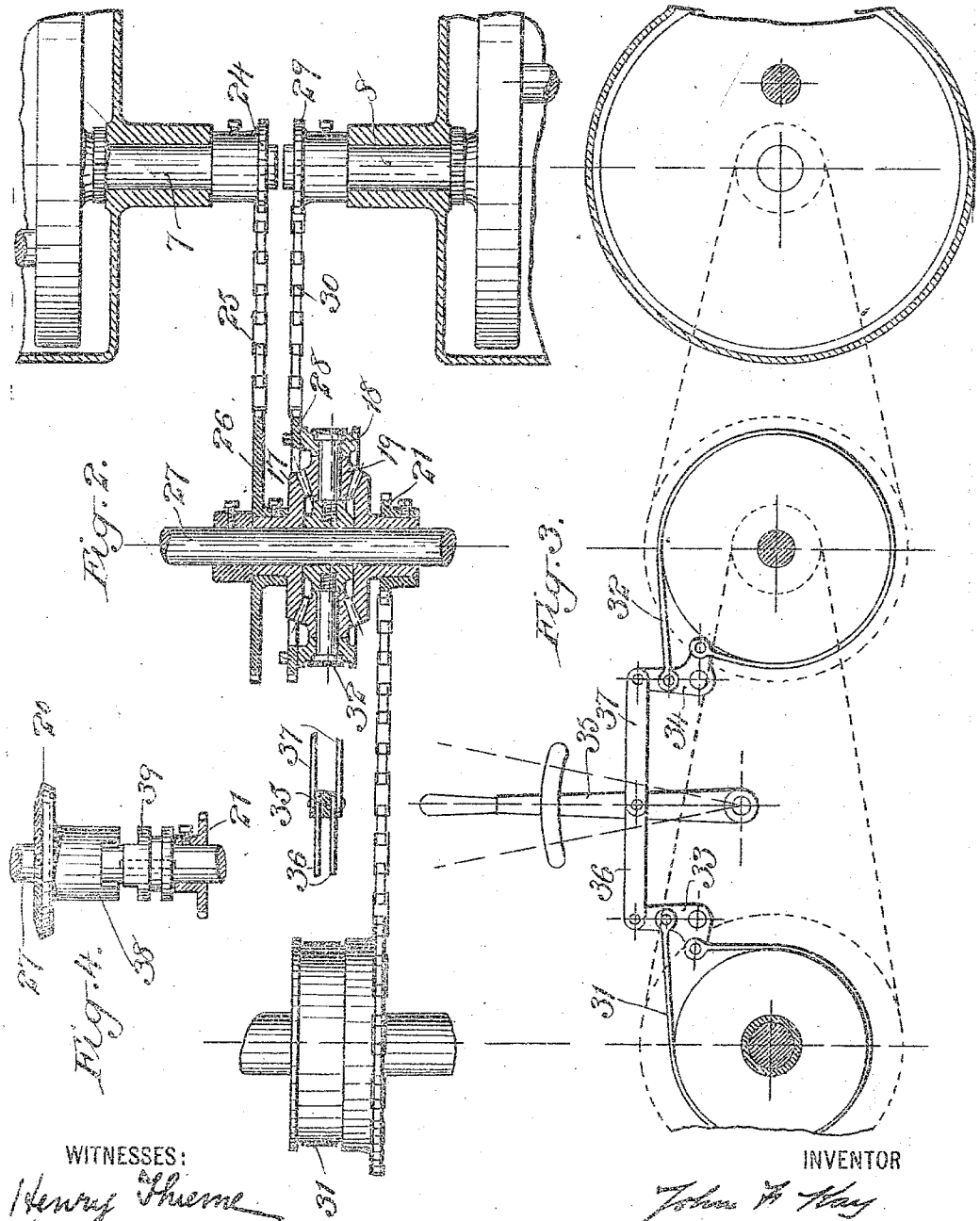
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DRIVING MECHANISM.

APPLICATION FILED JULY 5, 1902.

NO MODEL. 2 SHEETS—SHEET 2.



WITNESSES:

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No. 752,905. Patented February 23, 1904.

UNITED STATES PATENT OFFICE.

JOHN F. KAY, OF PASSAIC, NEW JERSEY; JOHN C. KAY ADMINISTRATOR OF SAID JOHN F. KAY, DECEASED.

DRIVING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 752,905, dated February 23, 1904.

Application filed July 5, 1902. Serial No. 114,380. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. KAY, a citizen of the United States, and a resident of Passaic, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Driving Mechanism, of which the following is a specification.

My invention relates to an improvement in driving mechanism, and has more particularly for its object to provide certain improvements in the driving mechanism connected to explosive hydrocarbon-engines whereby the speed of the driving mechanism may be accurately regulated throughout its forward and reverse movements.

A further object is to provide a driving mechanism comprising a compensating gear so connected to the shafts of two explosive hydrocarbon-engines that the varying speeds in the shafts of the two engines will produce varying speeds in the driving mechanism, either forward or backward.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 represents two engines of the explosive hydrocarbon type, a compensating gear mounted on the shafts of the engines and a transmission-gear connected to the compensating gear, certain of the parts being shown in section to more clearly illustrate the operation of the same. Fig. 2 is a view of a modified form of driving mechanism in which the compensating gear is connected by sprocket-chains to the two shafts of the engines instead of being mounted directly thereupon, as shown in Fig. 1, certain of the parts being shown in section to more clearly illustrate the operation. Fig. 3 is a side view of the mechanism shown in Fig. 2 with a common brake-lever for controlling the brakes upon the compensating gear and transmission-gear, the transmission sprocket chains and gears being shown in dotted lines; and Fig. 4 is a modified view representing a clutch for throwing the compensating gear into and out of its working position.

The cylinders of the two explosive hydrocarbon-engines shown herein are denoted by 1 and 2, respectively, their admission-valves by 3 and 4, and their exhaust-valves by 5 and 6. The crank-shafts 7 and 8 of the two engines are mounted in alinement with each other, with their adjacent ends telescoping to insure an even running of the two shafts with respect to each other. The shafts 7 and 8 are provided with the usual exhaust-valve-controlling mechanisms 9 and 10. The ignition devices 11 and 12 are also shown connected with the cylinders.

The parts hereinabove described may be made of any well-known or approved construction.

A common inlet 13 for the gas mixture is provided, having branches 14 and 15, leading to the admission-valves 3 and 4 of the two engines, controlled by a three-way cock 16, whereby the amount of gas mixture fed to the two engines may be accurately determined.

A compensating gear is connected to the shafts 7 and 8 of the two engines. In the form shown in Fig. 1 the bevel-gear 17 of the compensating gear is keyed to the shaft 7, while the shaft 8 of the other engine has keyed thereto the frame 18, which carries the intermediate pinions 19. The other bevel-gear, 20, of the compensating gear is loosely mounted on the engine-shaft 8, and it is provided with a driving-sprocket 21, from which a driving sprocket-chain 22 leads to any desired point—such, for instance, as a transmission-gear 23.

It will be seen that by the use of the compensating gear, as above described, as a driving mechanism the driving speed thereof may be accurately adjusted either in a forward or reverse direction by controlling the speeds of the shafts 7 and 8 of the two engines. The speeds of these shafts may be accurately controlled by the three-way cock 16, which admits the gas mixture to the cylinders. When the shafts 7 and 8 are driven at the same speed, it will be seen that the compensating gear will drive the driving-sprocket 21 at the same speed as the shafts. As the speed of the shaft 8 is diminished with respect to the speed of the shaft 7 or the speed of the shaft 7 is increased with respect to the speed of the shaft

8, as the case may be, the speed of the driving-sprocket 21 will be diminished. If the speed of the shaft 7 is decreased with respect to the speed of the shaft 8 or the speed of the shaft 8 increased with respect to the speed of the shaft 7, it will be seen that the speed of the driving-sprocket 21 will be accelerated. If the shaft 8 is stopped and the shaft 7 is rotated, the driving-sprocket 21 will be driven in a reverse direction at a certain speed, dependent upon the speed of rotation of the shaft 7. With the arrangement of gears shown in the accompanying drawings the driving-wheel 21 will be held stationary when the engine-shaft 8 is driven at one-half the speed of the engine-shaft 7.

In case the speeds of the engine-shafts are so great as to run the compensating gear at too high a speed the speed of the compensating gear may be reduced with respect to the speed of the said shafts by the mechanism shown in Fig. 2, in which the shaft 7 is provided with a small gear 24, connected by a chain 25 with a sprocket-wheel 26, fixed to the bevel-gear 17, loosely mounted on a shaft 27. The frame 18, which carries the intermediate pinions 19, may be provided with a large sprocket 28, connected to a small sprocket 29 on the shaft 8 of the other engine by means of a sprocket-chain 30. In this arrangement the effect of the speeds of the shafts 7 and 8 is exactly the same as in the form shown in Fig. 1, with the exception that the compensating gear is driven at lower speeds corresponding to the difference in sizes between the sprockets carried thereby and the sprockets carried by the engine-shafts.

Band-brakes 31 32 are engaged with the transmission-gear 23 and the frame 18 of the compensating gear, respectively. The angle-lever 33 of the brake 31 and the angle-lever 34 of the band-brake 32 are connected to a common operating-lever 35 by links 36 37, which operating-lever is shown in full lines in its intermediate position (see Fig. 3) and in dotted lines in the position into which it is thrown to apply the brake to the transmission-gear or to the reduction-gear, as may be desired.

In Fig. 4 I have shown bevel-gear 20 as loosely mounted on the shaft 27 and the driving-sprocket 21 as keyed to the said shaft. The shaft 27 and the bevel-gear 20 of the compensating gear are coupled and uncoupled by means of a clutch, one member 38 of which is carried by the bevel-gear 20, while the other member 39 of which has a feather-and-groove connection with the shaft 27.

What I claim is—

1. A driving mechanism comprising two engine-shafts, a driving-wheel and a compensating gear comprising a bevel-gear connected to one engine-shaft, a bevel-gear connected to the driving-wheel and an intermediate pinion connected to the other engine-shaft.

2. A driving mechanism comprising two engine-shafts, a bevel-gear keyed to one shaft, a second bevel-gear loosely mounted on the other shaft, a driving-wheel carried thereby and an intermediate pinion-frame keyed to said other shaft provided with a pinion intermeshing with the said bevel-gears whereby variations in the speeds of the two engine-shafts will drive the driving-wheel at variable speeds.

3. In combination, two engine-shafts, a driving-wheel, a compensating gear connecting the driving-wheel with the said shafts, a transmission-gear connected to said driving-wheel, brakes carried by the transmission-gear and compensating gear and a common brake-lever connected to the said brakes.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 1st day of July, 1902.

JOHN F. KAY.

Witnesses:
FREDK. HAYNES,
HENRY THIEME.