No. 720,470. PATENTED FEB. 10, 1903.

H. PAYSAN.

MOTIVE POWER ENGINE.

APPLICATION FILED JAN. 10, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

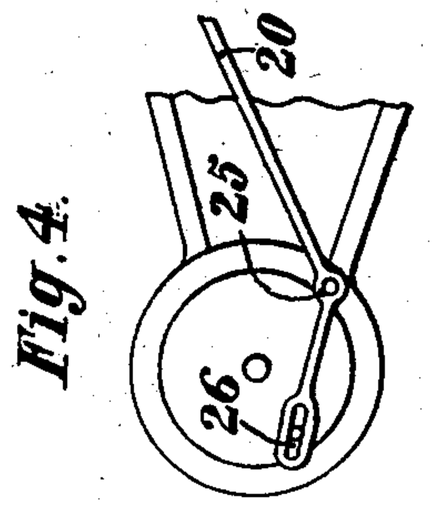

Fig. 4.

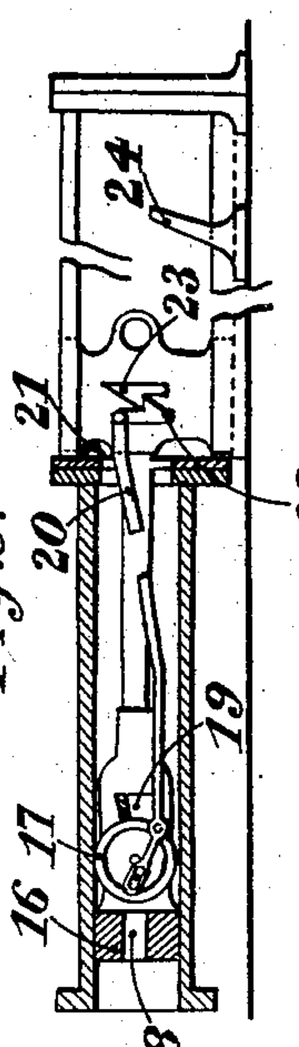

Fig. 3.

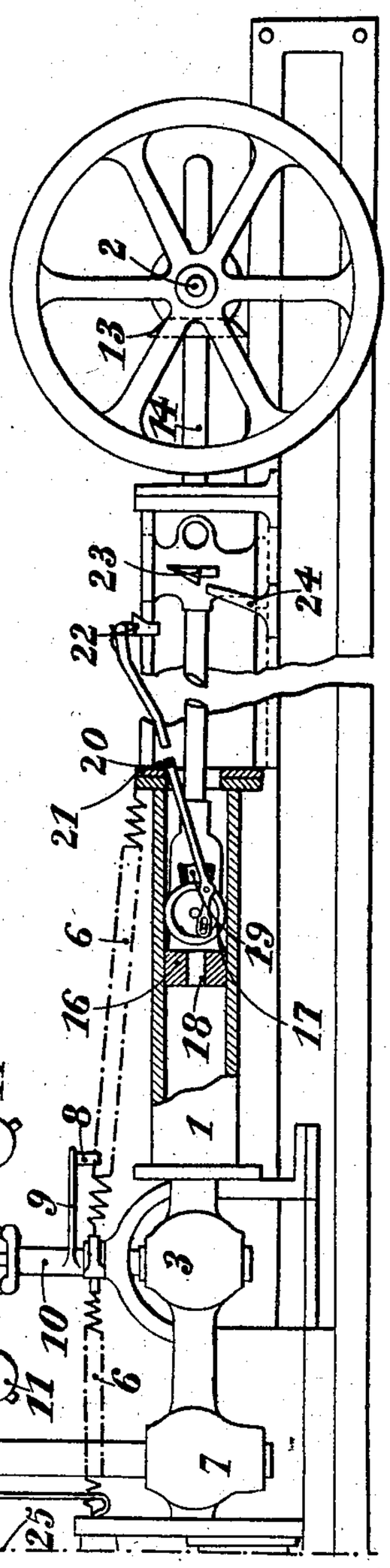

Fig. 1.

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N. L. Boyan

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NO MODEL. 2 SHEETS—SHEET 2.

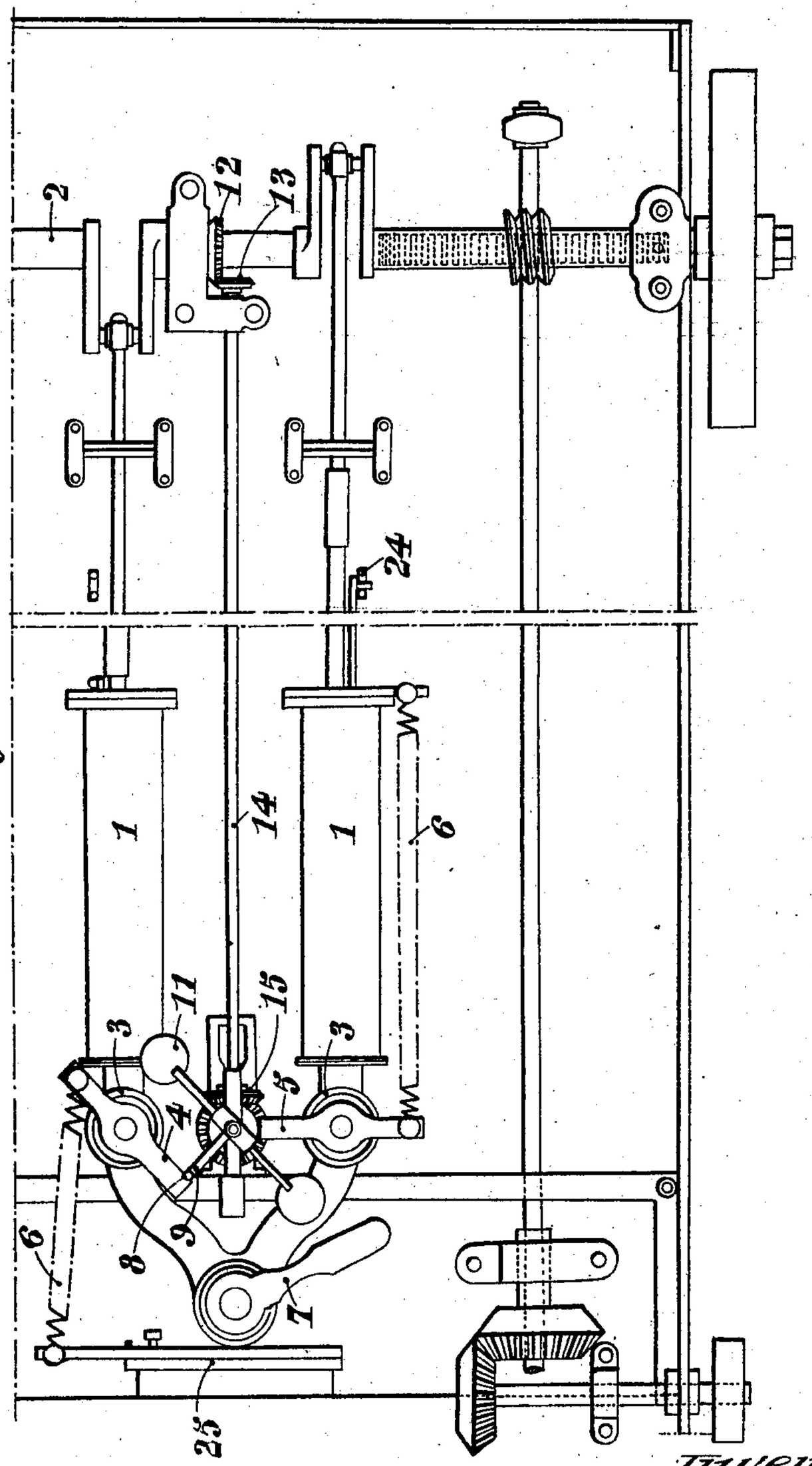

Fig. 2.

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UNITED STATES PATENT OFFICE.

HENRI PAYSAN, OF PARIS, FRANCE.

MOTIVE-POWER ENGINE.

SPECIFICATION forming part of Letters Patent No. 720,470, dated February 10, 1903.

Application filed January 10, 1902. Serial No. 89,206. (No model.)

To all whom it may concern:

Be it known that I, HENRI PAYSAN, engine-builder, a citizen of the French Republic, residing at Paris, France, (and having post-office address 10 Rue Castagnary, Paris,) have invented certain new and useful Improvements in or Connected with Motive-Power Engines, of which the following is a specification.

This invention has for its object improvements in air and other elastic-fluid motors, which consists in a method of distributing the motive power, according to which no valves are placed on the cylinder, the admission being directly effected by the governor and the exhaust mechanism being fitted in the piston of the motor and operated by a peculiar cut-off arrangement on the frame of the machine. By means of this arrangement the construction of the cylinder and motor is made very simple and economical.

In order that my invention may be clearly understood, I will describe the same with reference to the accompanying drawings, of which—

Figure 1 is a side view with partial sections of the motor. Fig. 2 is a top view of the same. Fig. 3 is a section of the cylinder and the piston, showing the position of the exhaust valve or cock and its piston. Fig. 4 shows the attachment of the rod operating the exhaust or cock.

The motor may have, for example, two cylinders 1, the pistons of which work in the ordinary way on a driving-shaft 2, carrying fly-wheels. The valves for the admission of the motive fluid (air) to the cylinders consist of butterfly-valves arranged in boxes 3 and having their operating-handles 4 5 connected to springs 6 6, which tend to keep the valves in their closed position. These springs 6 6 are attached to the framing of the engine. In front of the valves is the main admission-cock 7, placed between these valves and the compressed air or gas reservoir or the like. The opening and closing of these valves is effected by means of a pin 8 at the end of an arm 9, carried by the sleeve 10 of the governor 11. At each revolution of the governor this pin 8 successively meets the handles 4 and 5 and causes the butterfly-valves to open, the said valves closing again under the action of the springs 6 as soon as the handles 4 5 are released.

When the speed of the motor increases, the sleeve of the governor 11 is raised by the gear 12 13 14 15, and when the motor has exceeded a predetermined speed the pin 8 ceases to come in contact with the valve-handles 4 and 5, and the valves are kept closed for the time being.

The exhaust is arranged as follows: The piston 16 of the motor is provided with a head 17, forming a cock, and with a central opening 18, terminating beyond the head 17 in a conical nozzle 19. To the plug of the cock is secured an incurved rod 20, the shape of which is clearly shown in Figs. 1 and 3. This rod, as shown in detail in Fig. 4, is hinged at 25 to the piston and acts on the plug of the cock by the way of a stud 26 with sliding blocks. This arrangement thus allows to obtain with a very small angular movement of the rod 20 a sufficient opening of the cock. A suitable arrangement tends constantly to raise the said inclined rod 20 and to cause it to bear against a stationary roller 21. The other extremity of this rod has pivotally attached to it a nose 22, which can engage with a similar nose 23, which is attached to the cross-head and moves with the same. On the bed-plate is arranged a stationary stop 24. When the piston of the motor is at the beginning of its forward stroke, the inclined rod 20 is in its lower position and the catches 22 23 are in engagement together. In this position, Fig. 3, the exhaust-cock on the piston is closed. When the forward stroke of the piston is about to be completed, the catch 22 on the inclined rod strikes the stationary stop 24 and is disengaged from the catch 23 on the cross-head. The rod 20 being released rises and the exhaust-cock opens and the expanded motive fluid escapes from the cylinder. During the backward stroke of the piston the fluid will yet escape, while the cock is gradually closed. This arrangement is exceedingly simple and avoids the use of ordinary valves connected to the cylinders.

Having now particularly described and ascertained the nature of my invention and in what manner it may be carried into effect, I declare that what I claim is—

In a motive-power engine, the combination with a cylinder, and a suitably-operated admission-valve therefor, of a piston operating in said cylinder, a cock fitted in the piston, a rod connected with the said cock for operating it, a catch carried by the arm, operating means for the piston, and a catch carried by the operating means and adapted to operate the catch carried by the arm, said catches adapted to engage on the forward stroke of the piston and to be free of each other on the backward stroke of the piston.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

HENRI PAYSAN.

Witnesses:
EDWARD P. MACLEAN,
EMILE KLOTZ.