G. E. E. BOZERIAN.

MOTOR.

No. 191,508. Patented May 29, 1877.

Fig. 5.

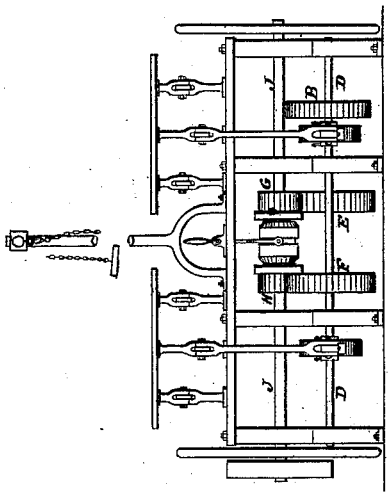


Fig. 6.

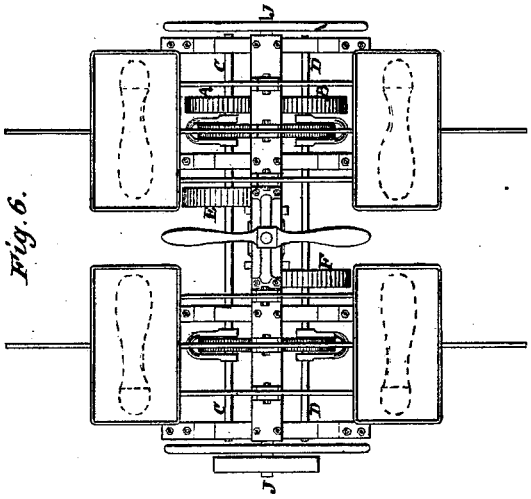


Fig. 3.

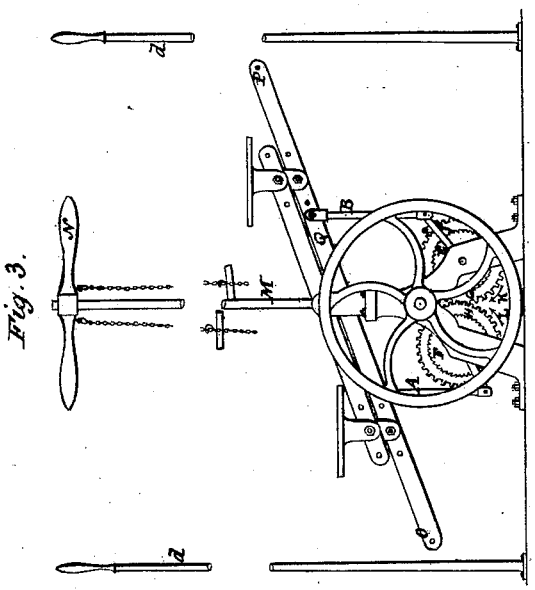


Fig. 4

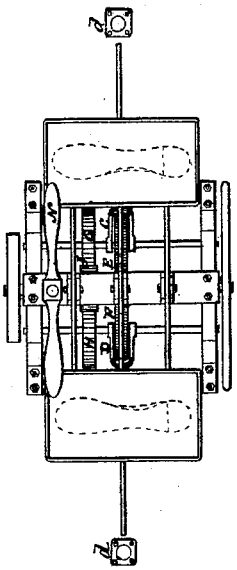


Fig. 1.

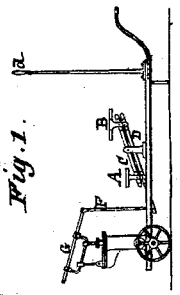
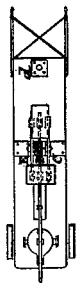


Fig. 2.



Attest:

Chas. Barnard

Aug. Finch

Inventor:

G. Bozerian

UNITED STATES PATENT OFFICE.

GASTON E. E. BOZÉRIAN, OF PARIS, FRANCE.

IMPROVEMENT IN MOTORS.

Specification forming part of Letters Patent No. **191,508**, dated May 29, 1877; application filed May 18, 1877.

To all whom it may concern:

Be it known that I, GASTON E. E. BOZÉRIAN, of Paris, France, have invented a new and useful mode of utilizing the weight of man as a motor by means of mechanical devices, called by me "Baromotor;" and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings.

The object of the said invention is to utilize the weight of man as a motor by displacing his center of gravity. The apparatus is composed of two treadles or pedals resting upon three levers pivoted at their center. The central lever should be either higher or lower than the two others. This arrangement is preferred, so as to always keep the pedals in a horizontal position.

The operator stands with one foot upon each pedal, and sways or swings himself forward and backward, or from right to left, and reciprocally, so as to bring the whole weight of his body successively upon each treadle. In this manner a motion is produced that can be utilized directly or transferred in a circular motion.

The Figures 1 and 2 represent the baromotor as applied to a lift and force pump.

A B are the pedals resting upon the levers C D E. The operator places his feet upon these pedals—the left foot upon the treadle A and the right foot upon the treadle B, so that one foot will be at right angles with the other. To keep his balance while thus swaying to and fro, he may take hold with his right hand of the upper end of the vertical rod *d*, the lower end of which is fastened to the floor that supports the baromotor and the pump. When the operator is tired working in that position he turns around, shifts his feet from one treadle to the other, and keeps his balance with his left hand upon the vertical rod *d*. The central lever D acts upon a connecting-rod, F, that operates upon the piston of the pump. The length of the lever G can be regulated according to the height to which it is intended to force the water. The whole apparatus is placed upon a wheelbarrow, so as to be easily moved about.

It is clear that this system of treadles can be applied to various kinds of pumps by placing it either at the side or above them.

The Figs. 3 and 4 represent a baromotor in which the motion of the treadles is converted into a continuous rotary motion. To the central lever are pivoted two connecting-rods, A B, which, operating two forked levers, C D, rotate, by means of spring-pawls, the two ratchet-wheels E F. The lower ends of the two connecting-rods A B strike, on their descent, cushions of india-rubber placed upon the bottom of the frame to diminish the shocks and to facilitate the rise of the two connecting-rods when they should ascend. Upon the axle of the ratchet-wheels are mounted the two cog-wheels G H, which are geared together. A pinion, J, gears with one of the cog-wheels. Upon the axle of the pinion is mounted at one end a fly-wheel, and at the other a pulley, through which motion is transmitted to any machine.

In the Figs. 3 and 4 the pedals are placed parallel one to the other, to show that the operator can just as well place his feet upon them in the position shown in Fig. 4, and operate the motor while swaying from right to left, and vice versa.

A support, M, having a handle at its upper end, can be used by the operator to keep his balance. When it is desired to increase the force, the chains are taken off the handle N, and are attached to ends O P of the lever Q. The operator then takes hold of the handles that are hooked at the ends of the chains. These chains could as well, for the same purpose, be secured by one of their ends to the ground or to the frame of the apparatus. In place of one support, two may be used, having a vertical handle secured to the ground, as at *d d'*, so that if the operator places his feet, one at right angle to the other, upon the treadles, he can also work the machine while swaying forward and backward, as it has been explained in relation to the pump shown in Figs. 1 and 2.

When the operator carries the weight of his body to the right, he rotates the ratchet-wheel E in the direction of the arrow *k*. The wheel G will turn in the same direction and rotate the wheel H, and, consequently, the ratchet-wheel F will rotate in the direction of the arrow L. At the same time the forked lever D will be raised. The operator afterward transferring his weight to the left, this same forked

lever D will continue to rotate the ratchet-wheel F in the direction of the arrow L, and the motion will proceed always in the same direction.

The Figs. 5 and 6 represent a baromotor for two men placing their feet upon the pedals, in either of the two ways already described, and transform the motion thus given to the pedals into rotary motion. The men operate upon the ratchet-wheels as explained previously. It can be seen that they are independent one from the other, and that the power of one is added to the power of the other, whether their motions be in concert or not.

The wheels A and B, gearing together, turn always the axles C and D in opposite directions. Upon the axle C is secured a cog-wheel, E, gearing with a wheel, G, loose upon the axle J, as well as the movable part of the clutch to which it is attached. The wheel F secured upon the axle D gears with a wheel, H, which is also loose upon the axle J. The wheels A and B turning always in opposite directions, the wheels E F will likewise move in opposite directions, and, consequently, also the wheels H G. The conical clutch slides upon a feather attached to the axle J, and transmits its motion to said axle. Thus the pulley will turn either to the right or to the left, according to the clutch being in contact with one side or the other.

I have explained how mechanical movements can be obtained with the machine called "baromotor." These movements can be utilized and applied to different machines. This machine can be used in nearly every case where man's weight and muscular power are available. It is, therefore, impossible to name all instances in which it may be applied. I would only say that it may be used with a belt to transmit its power, or, as above described, by direct application to the machine intended to be operated.

It has been found, by applying this system of motor to different machines, that, with the same amount of labor and fatigue, a man operating with my baromotor upon a pump, as shown in Figs. 1 and 2, produces power or useful effect equal to that of three men working with their arms; and it has also been found that one man operating with this baromotor, and transforming the motion of the pedals into a continuous or alternating circular motion, produces a better result than two men working with their arms.

Having thus described my said invention, and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

1. A motive-power consisting of balanced levers, in combination with pedals arranged for operation, substantially as herein shown and set forth.

2. In combination with pedals mounted upon balanced levers, of standards or supports, substantially as and for the purposes set forth.

3. Pedals mounted in pairs upon three parallel levers, in the manner shown, or otherwise in equivalently the same manner, whereby the substantial parallelism of the pedals is maintained during the operation, as herein set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

G. BOZÉRIAN.

Witnesses:
EMILE BARRAULT,
AUG. VINCK.