(No Model.)

# A. M. KONIAKOWSKY.

## AIR MOTOR.

No. 322,616. Patented July 21, 1885.

Fig. 1.

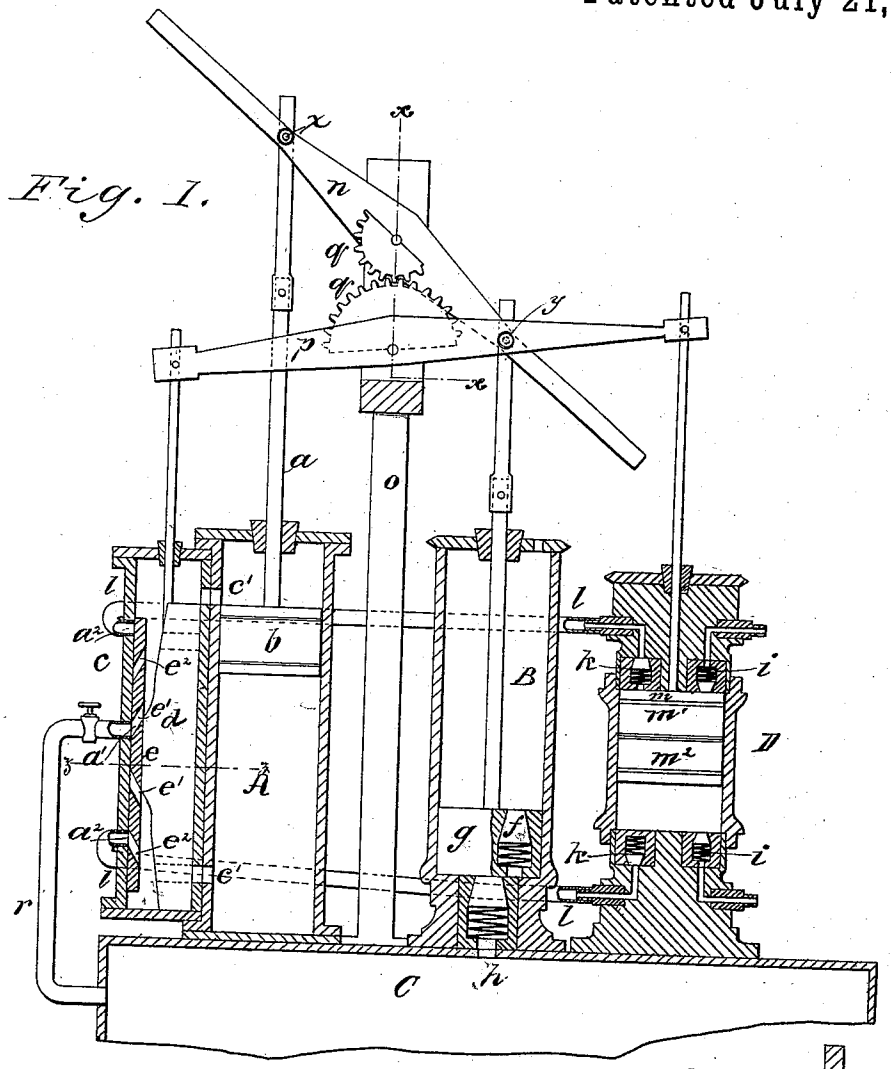



Fig. 2.

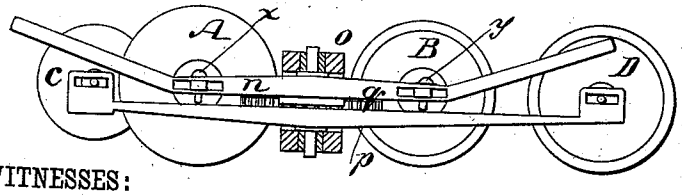
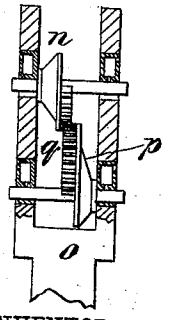



Fig. 3.

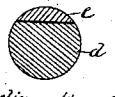



WITNESSES:

John Wedderburn

C. Sedgwick

Fig. 4.




Section on line z-z, fig. 1.

INVENTOR:

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# UNITED STATES PATENT OFFICE.

ALOIS M. KONIAKOWSKY, OF ELLINGEN, TEXAS.

## AIR-MOTOR.

SPECIFICATION forming part of Letters Patent No. 322,616, dated July 21, 1885.

Application filed November 10, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, ALOIS M. KONIAKOWSKY, of Ellingen, in the county of Fayette and State of Texas, have invented a new and Improved Air-Motor, of which the following is a full, clear, and exact description.

My invention consists in an air-motor of novel construction and arrangement operated by compressed air, as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional elevation of the engine. Fig. 2 is a sectional plan view of the same, and Fig. 3 is a detail section on line *x x* of Fig. 1. Fig. 4 is a central cross-section of the valve.

A is the cylinder of the engine; *a*, the piston-rod, and *b* the head thereon.

*c* is the valve-chamber, connecting to the cylinder by ports *c'*.

*d* is the valve.

*e* is a plate rigidly and permanently connected to the valve, and having ports $e'$ and $e^2$ that in the movement of the valve are brought opposite the air-inlet port $a'$ and outlet-ports $a^2$ in the side of the valve-chamber.

B is a single-acting air-pump having a valve, *f*, in its piston-head *g*, and a valve, *h*, at one end fitted in an inlet to a receiver, C, for compressed air.

D is a double-acting exhaust-pump provided with eduction-valves *i i* and induction-valves *k k*, closing passages to which are connected pipes *l l* that pass to the outlet-ports $a^2$ of the valve-chamber *c*.

The piston of pump D consists of three disks, *m* $m'$ $m^2$, on the rod. The latter is fixed on the rod; but the others may be made removable, in order to provide more space in both ends of the cylinder, if required. When made removable, screw-nuts or any other suitable means may be employed to secure them to the rod.

The piston-rod *a* of the engine and the rod of pump B are connected to opposite arms of a lever, *n*, which is hung on a standard, *o*, and the ends of the lever are extended out to serve as handles for use in operating the air-pump.

The connection between piston-rod *a* and lever *n* is a detachable one, in order that the pump B may be used alone for charging the receiver C. The means of connection is in this instance a detachable pin, *x*.

*p* is a beam or lever, also hung on standard *o* and geared to the lever *n* by segment-racks *q q*. The stem of valve *d* and the piston-rod of the pump D are connected to the opposite ends of the lever *p*.

To charge the receiver C, the pin *x* is withdrawn, thus releasing lever *n* from connection with rod *a* of piston *b*. The lever *n* is then worked by hand until the desired quantity of air has been forced into receiver C, when the pin *x* is replaced and pin *y* removed to disconnect lever *n* from rod of piston *g*.

In the operation of the engine the compressed air from the receiver C passes to the valve-chamber by a pipe, *r*, and by movement of valve-plate *e* is directed to the opposite ends of the cylinder alternately. The expanded air at each stroke is drawn out by the exhaust-pump D through pipes *l*, alternately.

This motor is well adapted for use for driving machinery of various kinds—for example, churns, forge-blowers, lathes, and drills.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The air-motor, consisting of engine A, single-acting air-pump B, air-receiver C, and the double-acting exhaust-pump D, with the valves and connections, as specified, all combined for operation as set forth.

2. The combination of the levers *n p* and segments *q*, and with the air-engine A, air-pump B, and exhaust-pump D, for operation as specified.

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Witnesses:
C. J. ROSENBERG,
JOHN M. HALAMICEK.