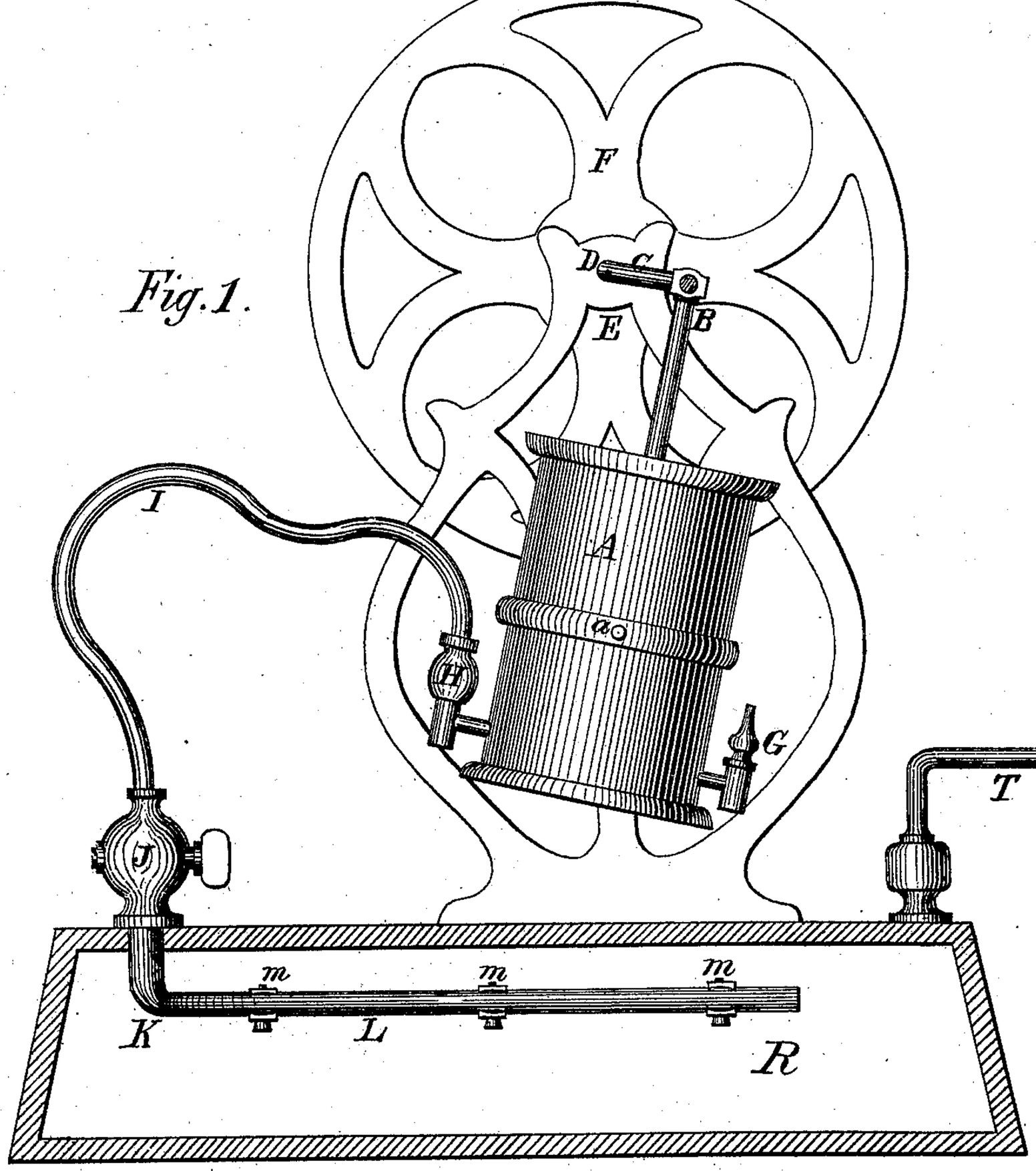
F. MANZ.

AIR-COMPRESSOR.

No. 176,795. Patented May 2, 1876.

Fig. 1.



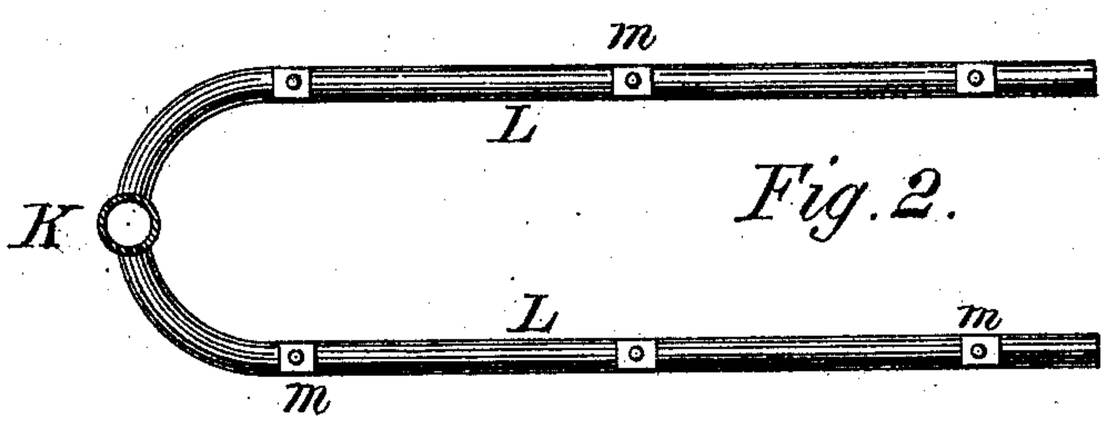


Fig. 2.

Witnesses.
Ruth K. Abbott.
Andrew Schoffen

Frederick Manz, Inventor
by Jos. Abbott, Attorney.

UNITED STATES PATENT OFFICE.

FREDERICK MANZ, OF CANTON, OHIO, ASSIGNOR TO HIMSELF AND CHARLES A. BIECHELE, OF SAME PLACE.

IMPROVEMENT IN AIR-COMPRESSORS.

Specification forming part of Letters Patent No. **176,795**, dated May 2, 1876; application filed March 4, 1876.

To all whom it may concern:

Be it known that I, FREDERICK MANZ, of Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Air-Compressors; and that the following is a full, clear, and exact specification thereof, which will enable others skilled in the art to make and use the said invention.

My invention consists in an improved arrangement of pressure-pipe and check-valves for conducting the air from the pump into the receiver, where it is to be compressed, by means of which a considerable pressure can be obtained without the aid of powerful means for operating the pump; also, in the combination of oscillating pump, flexible tube, pressure-pipe with check-valves, and air-receiver, the whole forming a simple and effective air-compressing apparatus, as is hereinafter more fully shown.

In the accompanying drawing, Figure 1 is a partial side and sectional view of apparatus embodying my improvements. Fig. 2 is a plan view of pressure-pipe for the air-receiver.

R is the air-receiver, which may be made in any convenient form, and which, in the apparatus shown, forms the base of the apparatus. E E are standards, between which is swung the pump A, which is mounted on trunnions *a a* journaled in said standards. The piston-rod B is attached to the crank C of the shaft D, which is mounted in the standards E, and has the fly-wheel F at its ends, the driving-power being applied to said shaft by a crank, pulley, and belt, or other suitable means. The inlet-valve G is secured on the pump A, and also the outlet-chamber H, from which a flexible pipe, I, leads to a valve-cock, J, on the receiver. The pipe K leads down from the cock J into the receiver R, and terminates in the pressure-pipe L L, which is here shown as being made in two branches, in each of which are placed one or more check-valves, *m*.

On working the pump A, by revolving the shaft D the air is drawn in through the valve G, and forced through the pipe I (which, being flexible, allows the oscillations of the pump A) into the pressure-pipe L L, and when the stroke of the pump has gone far enough to make the air-pressure in said pressure-pipe equal to that of the air in the receiver R, the valves *m* open, and the remainder of the pump-stroke forces air into the receiver. From this it will be seen that the complete revolution of the driving-shaft first causes the pump to fill with air at the normal atmospheric pressure, then compresses said air in the pressure-pipe up to a pressure equal to that in the receiver, and finally forces a portion of said air into the receiver, and as the final work of forcing the compressed air into the receiver takes but a small part of the stroke, it will be evident that the remainder of the stroke can be used to accumulate power and speed in the fly-wheels, thus distributing the work through the stroke, and making it much easier to work the pump under heavy pressure.

The object of the pressure-pipe L L with its valves *m* is to form an intermediate chamber between the reservoir and pump in which to begin compressing the air at each stroke, to avoid pumping directly against the full reservoir-pressure, as would be the case were the pipe L with its valves *m* omitted, and the receiver-pressure allowed to extend back to a check-valve in the chamber H, and the size and extent of this pressure-pipe L, and the number of valves required, will vary with the size of pump A, and is a matter of judgment for the constructor.

What I claim as new, and desire to secure by Letters Patent, is—

1. The pressure-pipe L L, provided with check-valves *m*, in combination with the inlet-pipe K and air-receiver R, substantially as and for the purpose specified.

2. The combination of the oscillating air-pump A B C D, flexible tube I, inlet-pipe K, pressure-pipe L provided with check-valves *m*, and air-receiver R, the several parts being arranged substantially as and for the purpose specified.

As evidence of the foregoing, witness my hand this 11th day of February, A. D. 1876.

FREDERICK MANZ.

Witnesses:

JOB ABBOTT,

RUTH K. ABBOTT.