2 Sheets—Sheet 1.

LeR. MOORE & J. C. SCOTT.

Governor for Steam-Engines

No. 207,976. Patented Sept. 10, 1878.

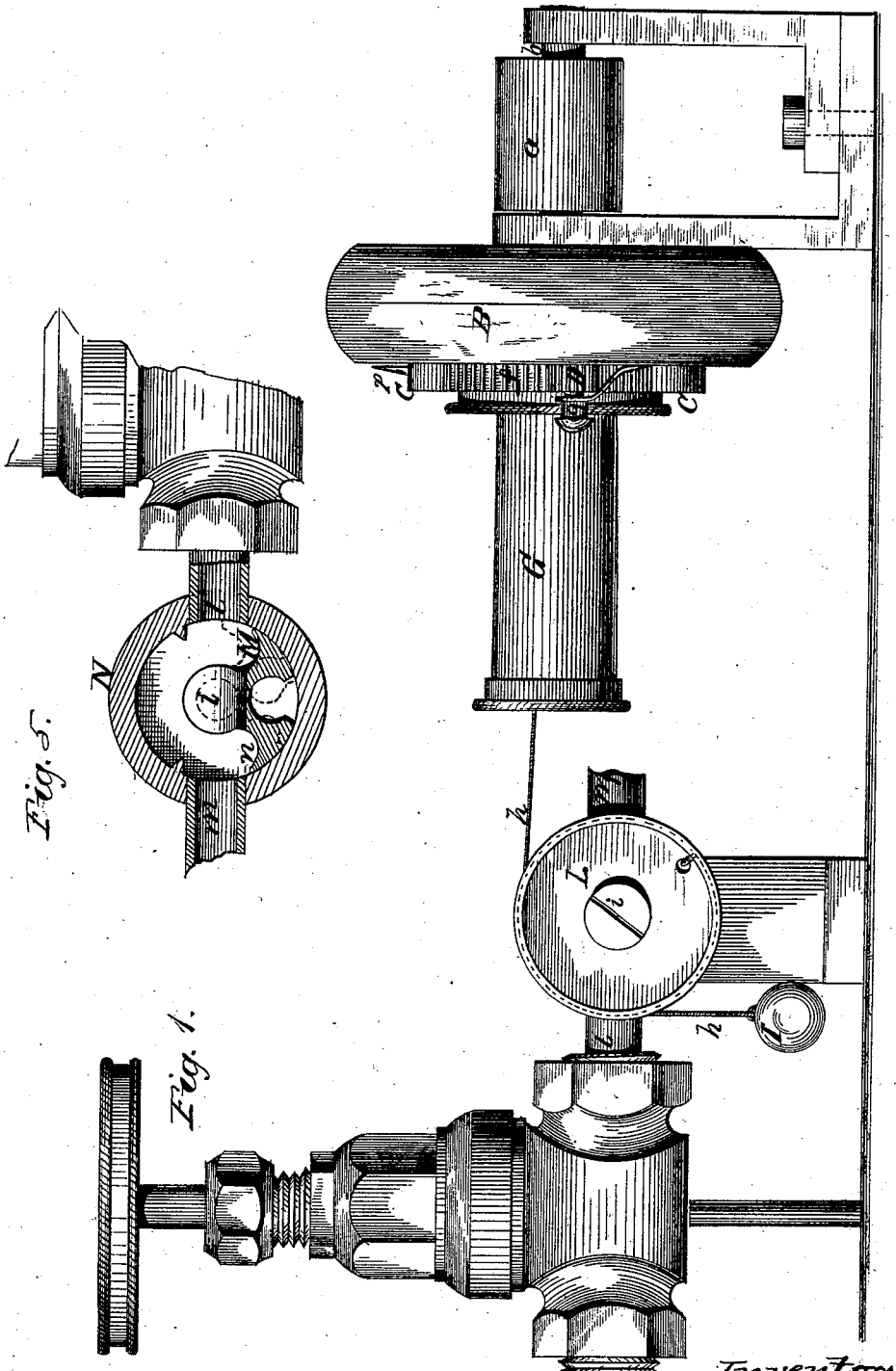

Fig. 5.

Fig. 1.

Witnesses.
Fred'k. Dieterich
John L. Coudron

Inventors.
LeRoy Moore,
John C. Scott,
by J. S. Brown Atty.

2 Sheets—Sheet 2.

LeR. MOORE & J. C. SCOTT.

Governor for Steam-Engines

No. 207,976. **Patented Sept. 10, 1878.**

Fig. 2.

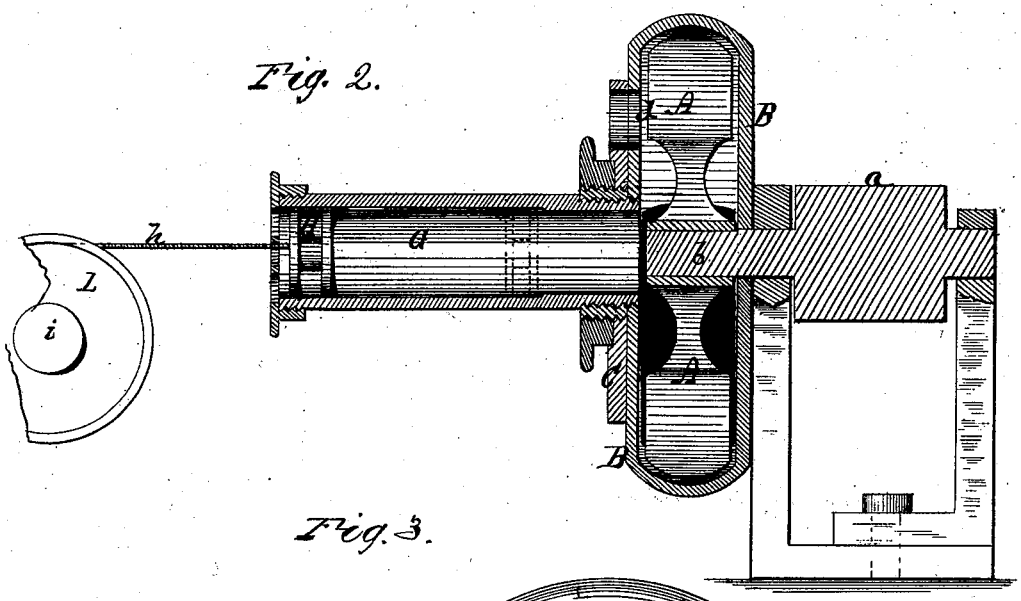

Fig. 3.

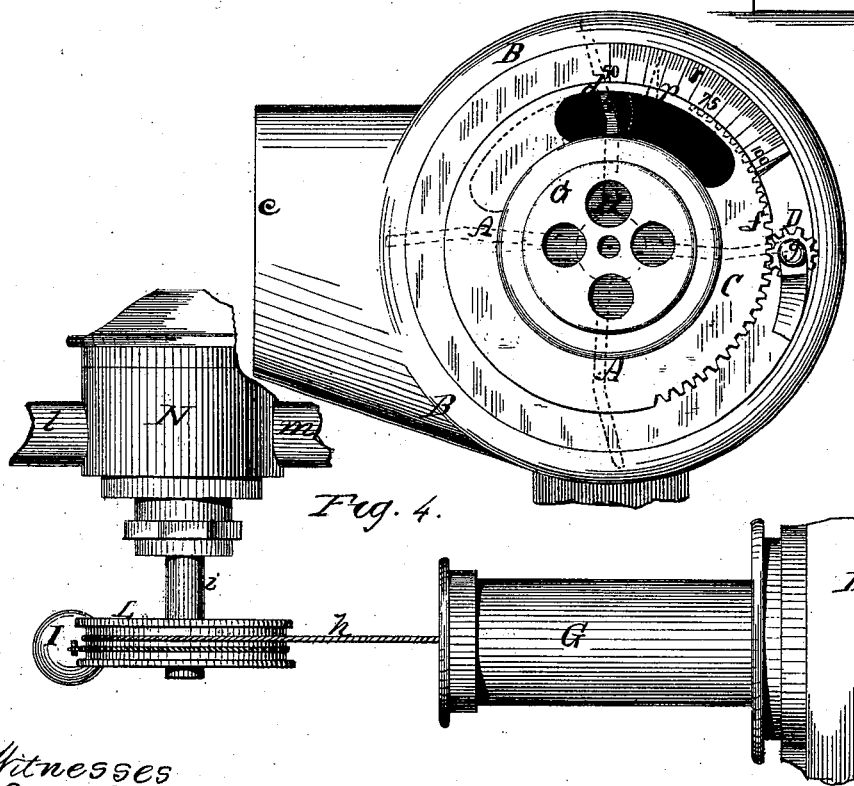

Fig. 4.

Witnesses
Fred L. Dieterich,
John L. Condron

Inventors,
LeRoy Moore,
by John C. Scott,
J. S. Brown, atty.

UNITED STATES PATENT OFFICE.

LE ROY MOORE AND JOHN C. SCOTT, OF PEMBERVILLE, OHIO.

IMPROVEMENT IN GOVERNORS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **207,976**, dated September 10, 1878; application filed December 31, 1877.

To all whom it may concern:

Be it known that we, LE ROY MOORE and JOHN C. SCOTT, of Pemberville, in the county of Wood and State of Ohio, have invented an Improved Governor for Steam and other Engines; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification—

Figure 1 being a side view of the governor and parts immediately connected therewith; Fig. 2, a central vertical section of the governor; Fig. 3, a front view of the governor; Fig. 4, a top view of a portion of the same; Fig. 5, a vertical section of the valve-chamber, showing the valve as regulated by the governor.

Like letters designate corresponding parts in all of the figures.

Our improved governor is based on the action of an air-fan revolving in a close case, and regulated by the amount of free air admitted into the case, thereby effecting an inward pressure or suction plate, and through it the induction-valve of the steam or other engine, substantially as hereinafter seth forth.

In the accompanying drawings, A represents the governor-fan, caused to revolve within a close case, B, by any suitable means from some part of the engine to be regulated, as a band passing around a pulley, *a*, on the fan-shaft *b*. The case has an open-air-discharge passage, *c*, and a free-air-inlet passage, *d*, to supply the fan with air. This air-inlet passage is conveniently formed in the arc of a circle concentric with the axis of the fan, as shown, and its open area is varied by means of a concentric covering-plate, C, turning around the axis of the fan and case as a center, and thereby covering more or less of the inlet. As represented, this plate has a set of cogs, *f*, on its edge, into which meshes a pinion, D, turning on a stationary pivot, *g*, and provided with a suitable knob or handle to turn it by, as required. On turning this pinion one way or the other the covering-plate C is caused to move on its axis, to cover more or less of the air-inlet, as shown in Fig. 3, which represents, in full lines, the inlet entirely opened by the knob, and in dotted lines the inlet partially closed; or any equivalent device for regulating the air-inlet may be employed. When this inlet is fully open it is calculated to admit air enough to feed the fan without producing any inward pressure on the fan-case; but when the said air-inlet is more or less closed by the covering-plate C not enough air is admitted through the said air-inlet to supply the fan, which consequently produces a suction or inward pressure on the case B. The variation of the area of the air-inlet and consequent variation of the suction or inward pressure are the means of regulating the induction-valve of the steam-engine.

The means by which we effect this is substantially as follows: From one face of the fan-case B, at or near the middle, a short tube or way, G, extends, opening at the inner end into the inside of the said fan-case, and closed at or near its outer end by a counter-pressure or suction plate, H, which has a movement outward and inward sufficient for the purpose herein designated. An outwardly-drawing or counter-suction weight, I, is applied to this suction-plate by means of a cord, chain, or its equivalent, *h*, which passes around and is secured to a wheel or pulley, L, on the shaft *i* of the valve M, that is controlled by the governor. This valve vibrates with the said rock-shaft in a cylindrical or concentric chamber, N, into which the inlet pipe or passage *l* opens at one side; and the outlet pipe or passage *m* leads out therefrom to the engine on the opposite side, or otherwise, as most suitable or convenient.

The arrangement of the valve M in relation to the inlet pipe or passage *l* is such that when the full force of the engine is required and the air-inlet *c* is completely uncovered, as shown by the full lines in Fig. 3, the said valve is in a position to entirely uncover the said pipe or passage, as shown by full lines in Fig. 5. In that position of parts, also, the suction-plate H is held outward by the counter-weight I, or its equivalent, such as a spring acting to turn the valve-shaft *i* in opposition to the suction of the fan. But when it is desired that the full power of the engine should not be employed, requiring a part of the flow of steam to be cut off in the supply-pipe, the covering-plate C is turned to partially close the air-inlet *c*, as shown for one position by dotted lines in

Fig. 3, and then the inward pressure or suction caused by the fan draws the suction-plate H inward, thereby drawing on the cord *h*, and therefore turning the valve-shaft *i* and causing the valve N to partially close the inlet pipe or passage *l*, as indicated by dotted lines in Fig. 5. This regulating movement is perfectly effective and very sensitive, and is effected in the easiest manner while the engine is in motion by simply turning the pinion D or otherwise moving the covering-plate C. The motion of the engine is also very steady with any extent of air-inlet given.

If the governor should become deranged, the construction allows an automatic stopping of the engine by cutting off the admission of steam into the pipe or passage *m* with a back wing, *n*, of the valve N, which in such case is brought to act by the counter-weight or spring I.

In connection with the covering-plate C of the air-inlet we employ, in most cases, an index, *p*, and a scale, *r*, to indicate the number of pounds pressure allowed to the engine with the covering-plate set to a given position, as shown in Fig. 3.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. A governor-fan having an adjustable air-inlet in its case, substantially as and for the purpose herein specified.

2. The combination of a governor-fan, A, fan-case B, having a variable air-inlet, and a counter-pressed suction-plate, H, having an operative connection with the induction-valve of an engine, substantially as and for the purpose herein specified.

3. In combination with the covering-plate C, for varying the area of the fan air-inlet, an index, *p*, and pressure-indicating scale *r*, substantially as and for the purpose herein specified.

LE ROY MOORE.
JOHN C. SCOTT.

Witnesses:
R. J. SIMON,
J. H. SCHRODER.