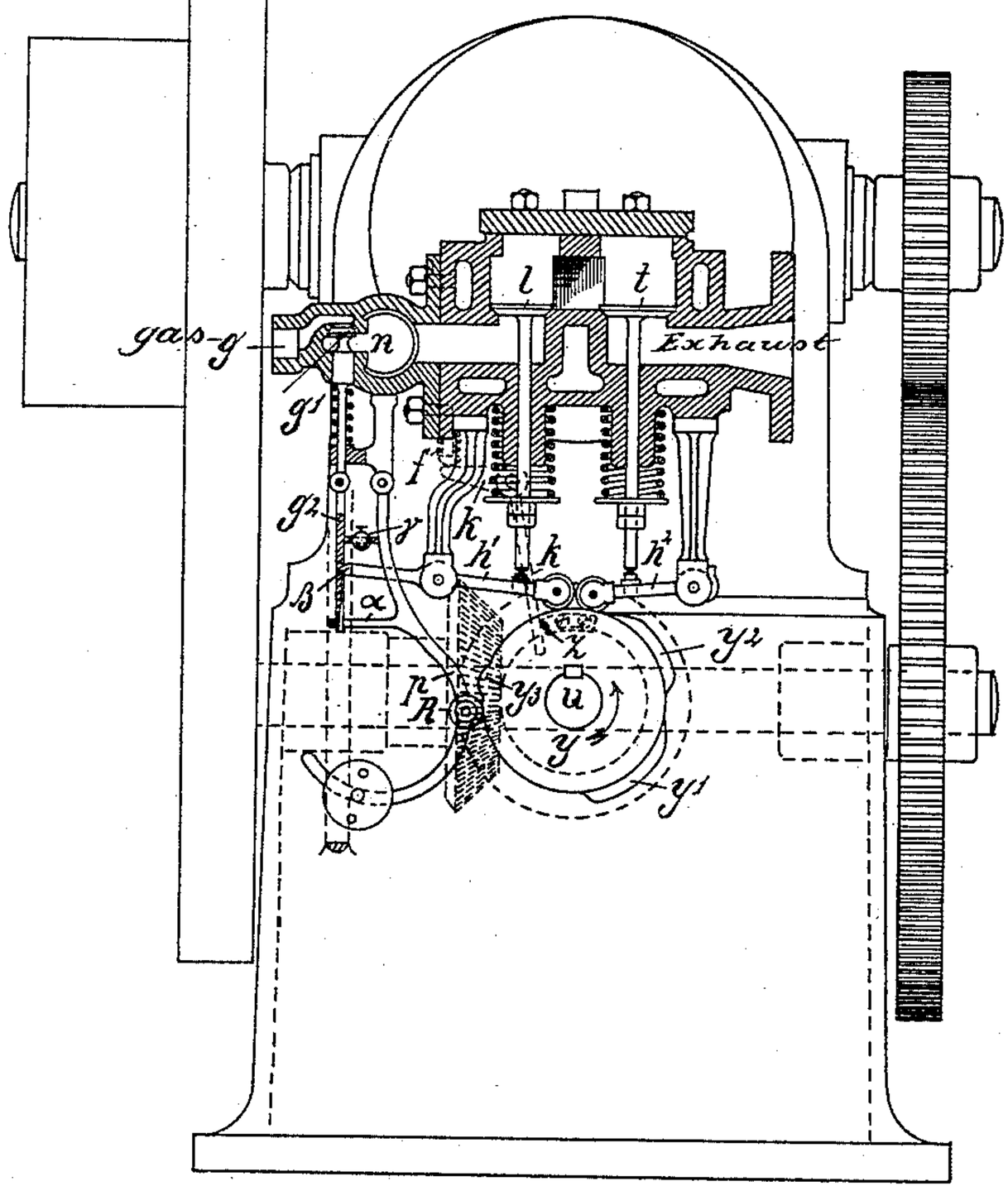
(No Model.) 2 Sheets—Sheet 1.

F. DÜRR.

GAS AND PETROLEUM MOTOR.

No. 442,248. Patented Dec. 9, 1890.

Fig. 1.



Witnesses:
A. Borghmans.
Wm. Wagner.

Inventor:
F. Dürr
by his attorneys
Roeder & Briesen

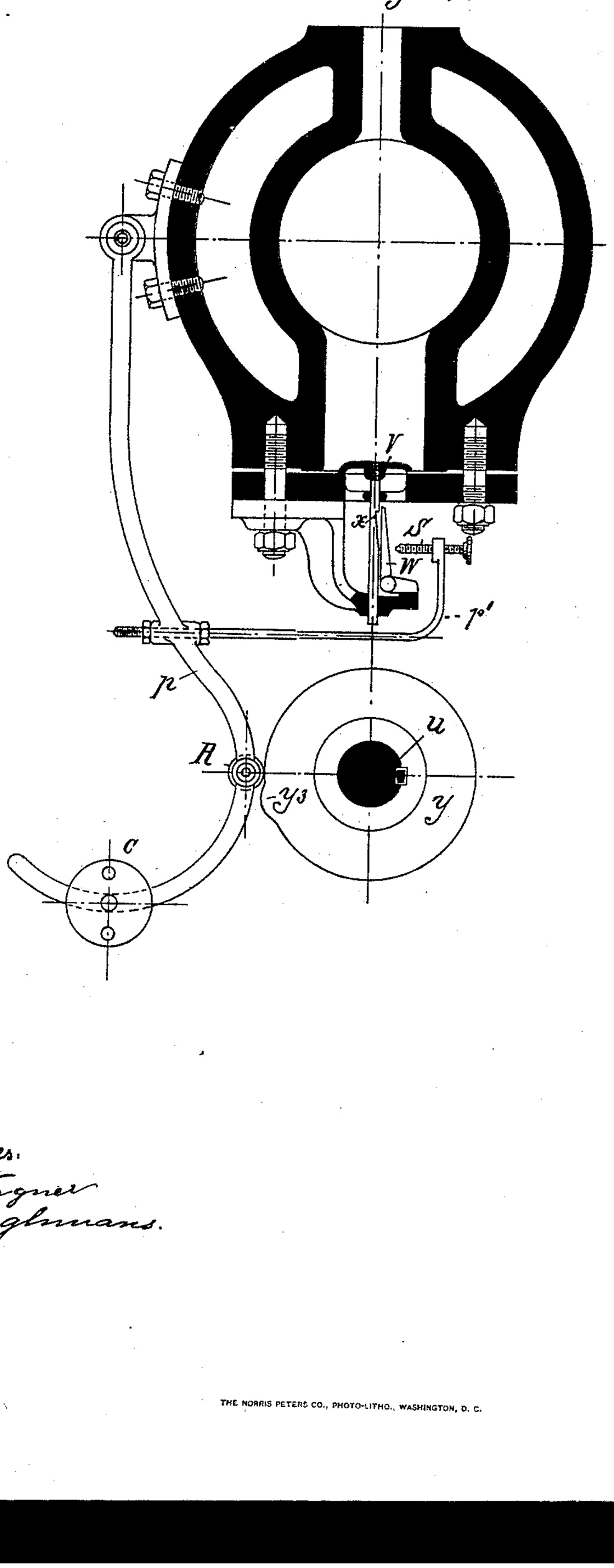
(No Model.) 2 Sheets—Sheet 2.

F. DÜRR.

GAS AND PETROLEUM MOTOR.

No. 442,248. Patented Dec. 9, 1890.

Fig. 2.



Witnesses:
W. Wagner
A. Jonghmans.

Inventor.
F. Dürr
by his attorneys
Roeder & Brisen

UNITED STATES PATENT OFFICE.

FRITZ DÜRR, OF MUNICH, GERMANY.

GAS AND PETROLEUM MOTOR.

SPECIFICATION forming part of Letters Patent No. 442,248, dated December 9, 1890.

Application filed April 15, 1890. Serial No. 348,058. (No model.) Patented in Germany September 24, 1889, No. 48,839, and in Belgium December 31, 1889, No. 88,839.

To all whom it may concern:

Be it known that I, FRITZ DÜRR, residing at Munich, Bavaria, German Empire, have invented a new and useful Improvement in Gas and Petroleum Motors, (for which I have obtained a patent in Germany, No. 48,839, dated September 24, 1889, and in Belgium, No. 88,839, dated December 31, 1889,) of which the following is a specification.

This invention relates to an improved gas and petroleum motor; and it consists in the various features of improvement more fully pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical central section of my improved motor. Fig. 2 is a section of a modification.

The letter g represents the gas-inlet, which is opened by the raising of the spring-valve g', to the lower end of which is pivoted a rod g^2.

n is the air-inlet; l, the inlet-valve; t, the exhaust; k, a bent lever for moving the fuse slide or valve, and p the regulating-pendulum.

y is a cam or disk mounted upon the power-shaft u and operating the air and gas inlet, the exhaust-valve, fuse-slide, and the regulating-pendulum, by means of three projections y' y^2 y^3 and a screw-bolt z, in the following manner: The projection y' oscillates a lever h', which controls the gas-valve g' and the inlet-valve l, in manner hereinafter described. The screw-bolt z strikes against the bent lever k and moves the fuse-slide by spring f. The projection y^2 (placed out of line with projection y') oscillates a lever h^2, that operates the exhaust-valve. The projection y^3 strikes against the roller R of a pendulum p, and throws the pendulum away from the cam, the amount of motion of the pendulum depending upon the velocity with which the cam revolves. The pendulum returns to the cam by its own gravity. To the pendulum there is secured an arm a, that engages in the state of rest the pivoted rod g^2 of the gas-valve g' and presses the same against the lever h'. This lever is provided with a reduced end β, that enters a socket in rod g^2, when the rod is pressed against the lever. When the rod g^2 is thus engaged by lever h' the rocking of the lever (by cam y) will cause a motion of valve g; but if the rod g^2 is out of engagement with the lever the motion of the latter will not be transmitted to the valve. When the pendulum p and the arm a are thrown outward to release rod g^2, a weight γ on the latter presses such rod outward also and disengages it from lever h'. The return motion of the pendulum causes a corresponding motion of rod g^2 and a re-engagement between such rod and lever h'. The apparatus should be so set that the pendulum returns a moment before the lever h' is oscillated to raise the valve. If the motion of the machine is such that the pendulum is thrown out too far, the lever h' will rock before the rod g^2 has been returned to it, and thus the valve will not be raised. In this way gas will not be admitted until the speed of the machine has been reduced to the normal state.

In Fig. 2 the velocity of the motor is regulated by temporarily keeping open an air-valve of the cylinder and thus reducing the air-pressure. The projection y^3 of cam-disk y strikes against the roller R of the pendulum p, weighted at C. This pendulum carries a bent arm p', provided with set-screw S. V is the air-valve at one end of the cylinder. The valve-stem x of valve V is notched, and may be engaged by an elbow-lever W, placed opposite screw S.

The regular oscillating motion of pendulum p will not disturb the lever W. If the motion of the pendulum unduly increases, the screw S will strike against lever W and throw the same into engagement with the notched valve-stem x a moment before the valve is to close. Thus the valve is held up and the air is discharged from the cylinder. At the return motion of the piston the valve is again raised and the elbow-lever W resumes it normal position by the weight of its lower arm.

What I claim is—

1. The combination of disk y, having projections y' y^2 y^3, and screw z, with lever h', operating gas-valve g', and inlet-valve l, bent lever k, operating the fuse-slide, lever h^2, op-

erating the exhaust-valve, and a pendulum p, controlling the gas-supply, substantially as specified.

2. The combination of disk y, having nose y^3, with pendulum p, engaged by said nose and adapted to cause a momentary engagement between the valve and a valve checking or operating mechanism, substantially as specified.

3. The combination of disk y, having projections y' y^3, with lever h', valve g', and pivoted rod g^2, engaged by lever h', and with pendulum p, having arm a, that also engages rod g^2, substantially as and for the purpose described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

FRITZ DÜRR.

Witnesses:
AUCIC RUETZ,
W. MEYER.