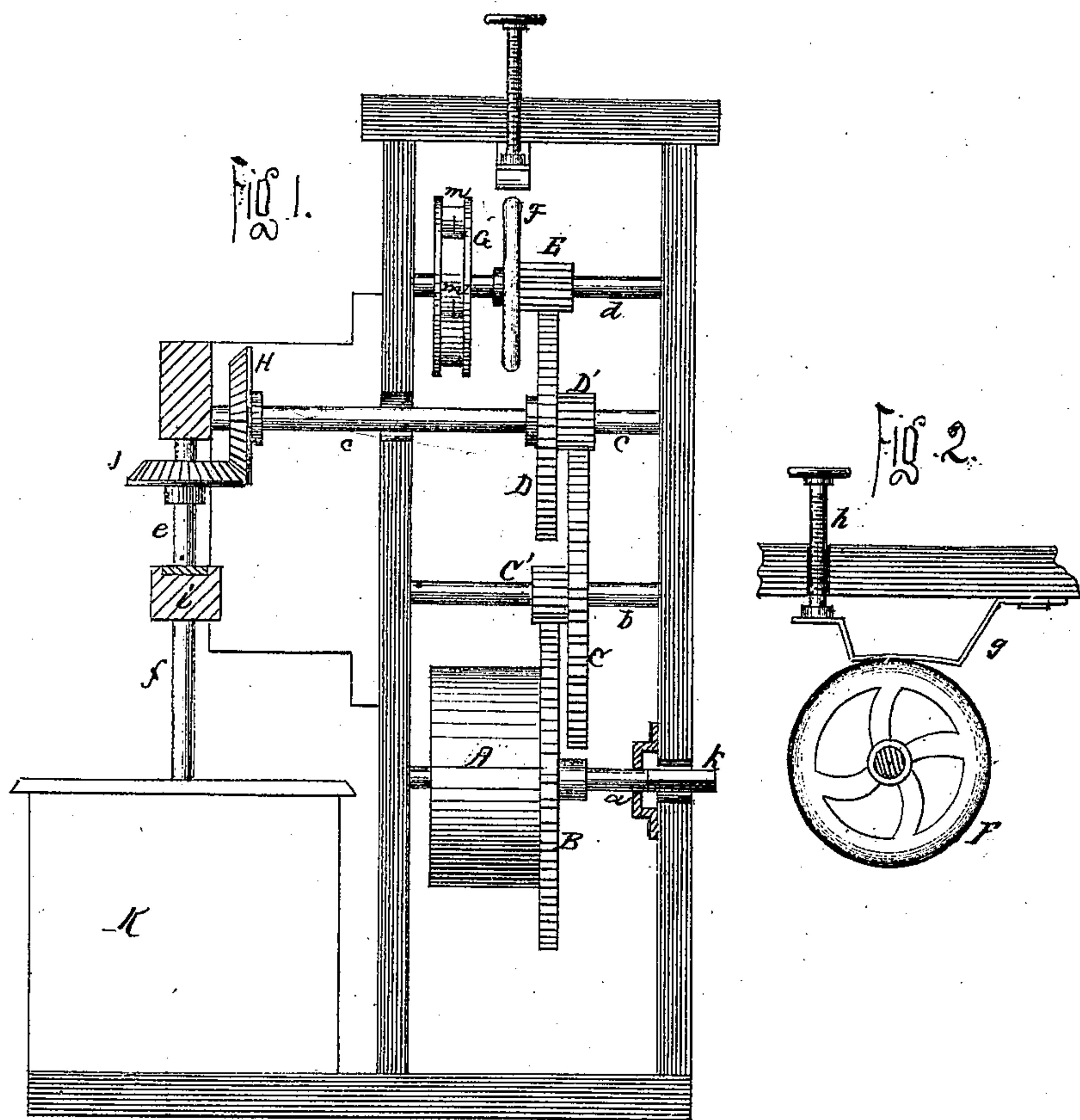


C. A. Sullivan, Air & Gas Engine.

No. 98,314.

Patented Dec. 28, 1869.

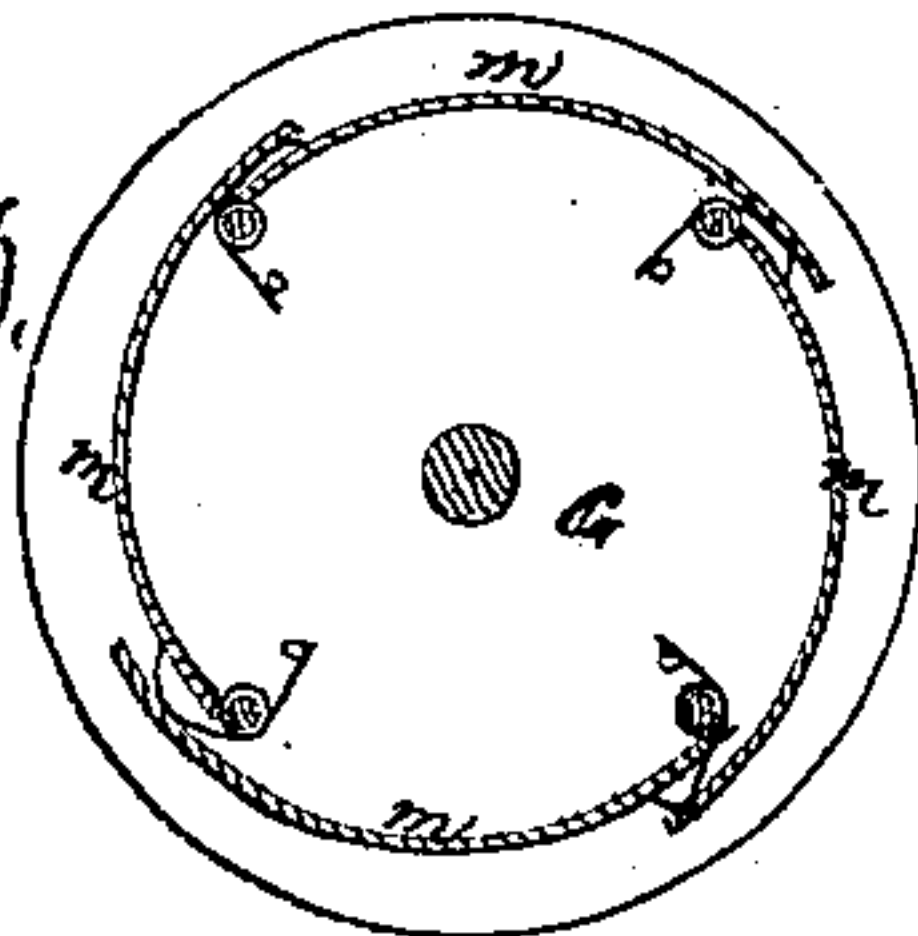


Witnesses:

Victor Hagmann

A. M. Parmer

Fig. 3.



Inventor:

C. A. Sullivan.
by *Heum & Co*
Attorneys

United States Patent Office.

CHARLES A. SULLIVAN, OF STARKVILLE, MISSISSIPPI.

Letters Patent No. 98,314, dated December 28, 1869.

IMPROVEMENT IN PNEUMATIC CENTRIFUGAL POWER-REGULATORS.

The Schedule referred to in these Letters Patent and making part of the same

Be it known that I, CHARLES A. SULLIVAN, of Starkville, Oktibbeha county, State of Mississippi, have invented a new and improved Pneumatic Centrifugal Power-Regulator; and I hereby declare that the following is a full and exact description thereof, reference being had to the drawings herewith presented, and the figures marked thereon as explanatory thereof.

The invention relates to means for regulating the evolutions of a spring-driver, and preventing a useless and too rapid expenditure of its power.

The invention consists in certain combinations and arrangements of auxiliary mechanism to restrain the actuating-power, which together constitute my pneumatic centrifugal power-regulator.

A represents a cylinder, within which (and on the shaft *a*) is a spring, which is wound up by means of a crank applied to its extremity, or in any other convenient manner.

Attached to the said spring-cylinder is a large spur-wheel, B, both of said parts being fast upon the said shaft A.

The spur-wheels C D, pinions C' D', bevel-gears H G, and their supporting-shafts *b c e*, serve as a means of transmitting power to the shaft *f*, by which the same is rotated.

E is a pinion, which receives motion from the gear D and drives the shaft *d*, having thereon the brake-wheel F and automatic regulator G.

The brake-wheel is acted upon by a spring-rubber, *g*, and adjusting-screw *h*, by which the actuating-power may at any time be arrested.

The fan-wheel or regulator G is provided with wings, which are forced by spring-pressure to its circumference, and retained there until a certain velocity is acquired by the machinery.

When this initial velocity is obtained, the centrifugal force causes these wings to overcome the spring-power, and to present, as they revolve, an expanded surface to the air.

This surface becomes greater as the power is increased and the velocity accelerated, and requires a very considerable portion of the said power to overcome it, but if the velocity is retarded by any other cause, then these wings close more or less, and thus serve to equalize the motion of the machinery and maintain a uniformity of resistance to the evolution of the spring.

I do not seek to claim any of the above mechanical parts specifically; but

What I do esteem to be my invention, and desire to protect by Letters Patent, is—

1. A centrifugal power-regulator, consisting of a fan-wheel with wings pressed by springs to its periphery, and rising therefrom automatically when a certain initial velocity is attained, but constantly presenting a more expanded surface and a greater resistance as the said velocity increases, all as shown and described.

2. The combination of a fan-wheel, G, constructed and operating as described, with a spring-propelling wheel, and suitable connecting-mechanism to automatically prevent a too rapid evolution of the spring, as set forth.

3. The combination of the automatic fan-wheel regulator, spring-driving wheel, and a rotating shaft, said instrumentalities being connected by suitable mechanism, and operating together substantially in the manner specified.

C. A. SULLIVAN.

Witnesses:

T. GELLESPIE,
J. W. WOODWARD.