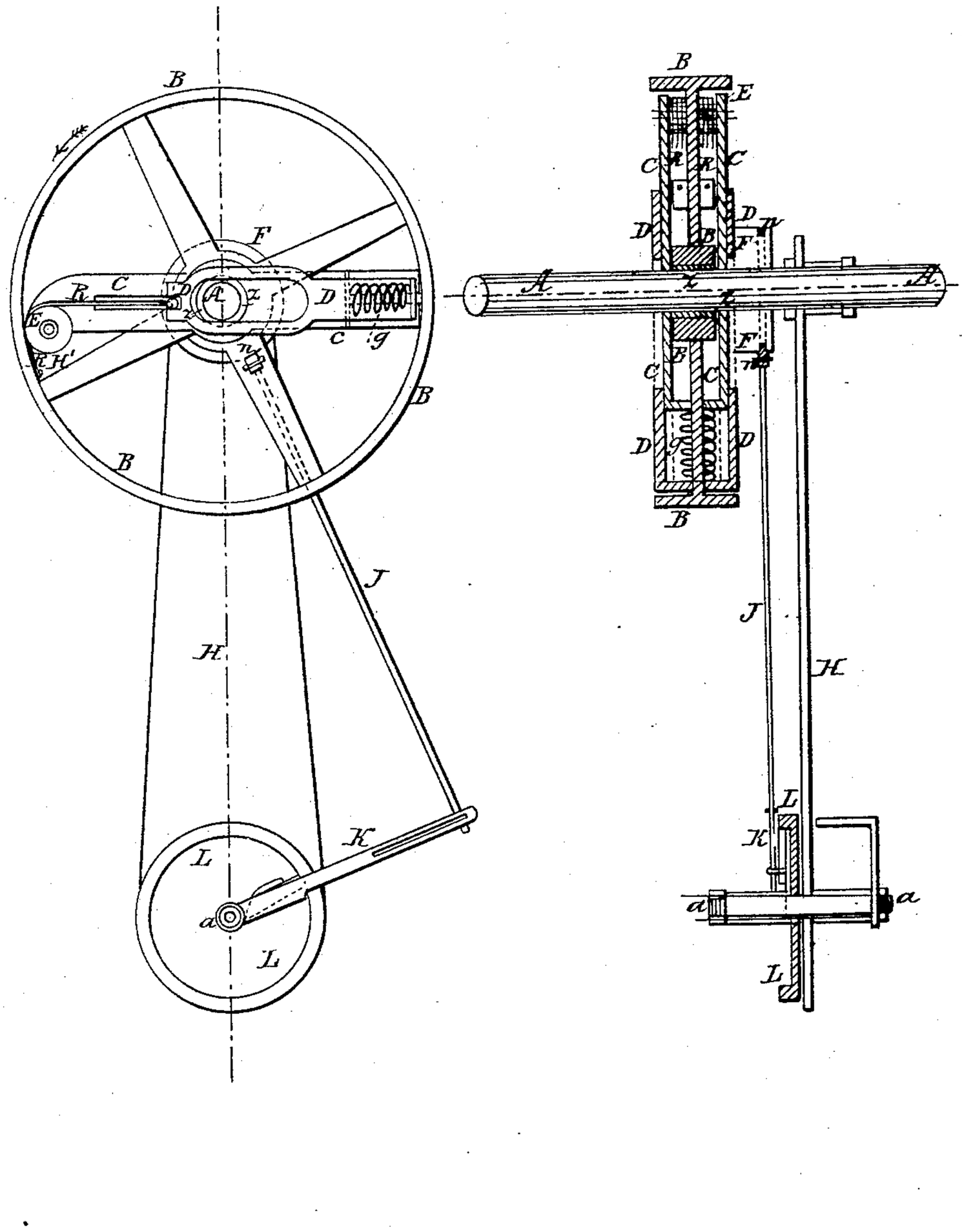
G. JUENGST.

Dynamometer.

No. 18,908. Patented Dec. 22, 1857.



Inventor,
George Juengst.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

GEORGE JUENGST, OF NEW YORK, N. Y.

DYNAMOMETER.

Specification of Letters Patent No. 18,908, dated December 22, 1857.

To all whom it may concern:

Be it known that I, GEORGE JUENGST, of the city, county, and State of New York, have invented a new and improved self-acting dynamometer (power-meter) by which the power exerted by a belt and pulley on a shaft or by the shaft on the pulley may be measured and registered; and I hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, Figure 1 representing a longitudinal; Fig. 2 a lateral section through the central lines of the apparatus.

B is the pulley with its spokes; its hub rests loosely on the tube Z, which is fastened to the shaft A, and bears the support C. This support consists of two parallel, slotted plates and has at one end one or more spiral springs *g*, at the other a roller E. The slots of the support serve as guides for the sliding frame D which consists of two parallel plates sliding along the sides of the support without touching the shaft and connected by crosspieces *d* and *p;* the latter *p* presses against the spring or springs of the support; to the other crosspiece *d* the end of the belt R is attached so as to run between the sides of the support C and over the roller E. This belt R is fastened at a point H′ to the inside of the pulley B so that if the pulley is turned in the direction of the arrow in Fig. 1, it will pull on the belt and on the springs, till the pressure on the roller E is sufficient to turn the support and with it the shaft A. To the sliding frame D is a ring F attached on which another ring *n* (Fig. 2) turns freely; *n* is connected by the rod I with the adjustable lever K and nipping pawl *m*, by which the disk L with its shaft *a* may be turned; the shaft *a* has an arm, which may be connected with a counting apparatus or register of common construction (not shown in the drawings). The disk L and the counting apparatus are arranged on a hanger H which is suspended from the shaft A. The ring F is so arranged that it is concentric with the shaft A if the apparatus is at rest, but will become eccentric more or less, if the sliding frame is set in motion by a power pulling on the belt R.

The operation of this contrivance is the following. Suppose a belt to be arranged over the pulley B so as to turn it with power in the direction of the arrow in Fig. 1. The pulley, which turns with its hub loosely on the tube Z, next pulls on the belt R which drawing the sliding frame D compresses the spring or springs *g*, till the force applied is sufficient to overcome the resistance of the shaft by the corresponding pressure on the support roller E. The more power the pulley has to give out for this purpose, the farther the belt R will be drawn from the support, the springs, the more compressed, and the sliding frame with its ring F will be removed from its original position, so that the ring F will stand more or less eccentric to the shaft A, in exact proportion to the power working on the pulley. According to the degree of eccentricity the rod *f* and lever with the disk L will be moved more or less and with it the attached registering apparatus. On lessening the power the spring *g* will move the sliding frame with its appurtenances more toward the original position, make the movements of the lever smaller and work accordingly on the registering apparatus.

In order to find the amount of power which has been exerted by the pulley, it is necessary to know the number of strokes, each of one inch, which the rod *f* has to make for revolving the disk L once; further the weight in pounds which is required on pulley B to span or compress the spring *g* for half an inch (the distance corresponding to a one inch stroke of rod *f*); lastly the circumference of the pulley in inches; these three data multiplied give as product the measure of the power working in inch-pounds. For instance it takes 50 strokes of rod *f*, each of one inch, to revolve the disk L once; 100 pounds have to work on the periphery of B to compress the spring for $\frac{1}{2}$ inch; the periphery of B is 75 inches. Say: $75 \times 100 \times 50 = 375000$ inch pounds or 31240 foot pounds, the measure of the power absorbed or given out from the pulley during the time of one revolution of the disk.

The registering apparatus has of course to be constructed accordingly.

What I claim as my invention and desire to have secured by Letters Patent is—

The connection of the loose pulley B with belt R, the support C with the spring *g*, sliding frame D with ring F and the connection of F with disk L by lever and nipping pawl and with a counting apparatus, or their several equivalents, by which arrangement the amount of working power is registered for the whole time of its action, substantially in the manner as herein set forth.

GEORGE JUENGST.

Witnesses:

C. HARTMANN,

JUL. E. SCHWABE.