(No Model.)

J. W. VON PITTLER.

DYNAMOMETER.

No. 592,442. Patented Oct. 26, 1897.

Fig. 1.

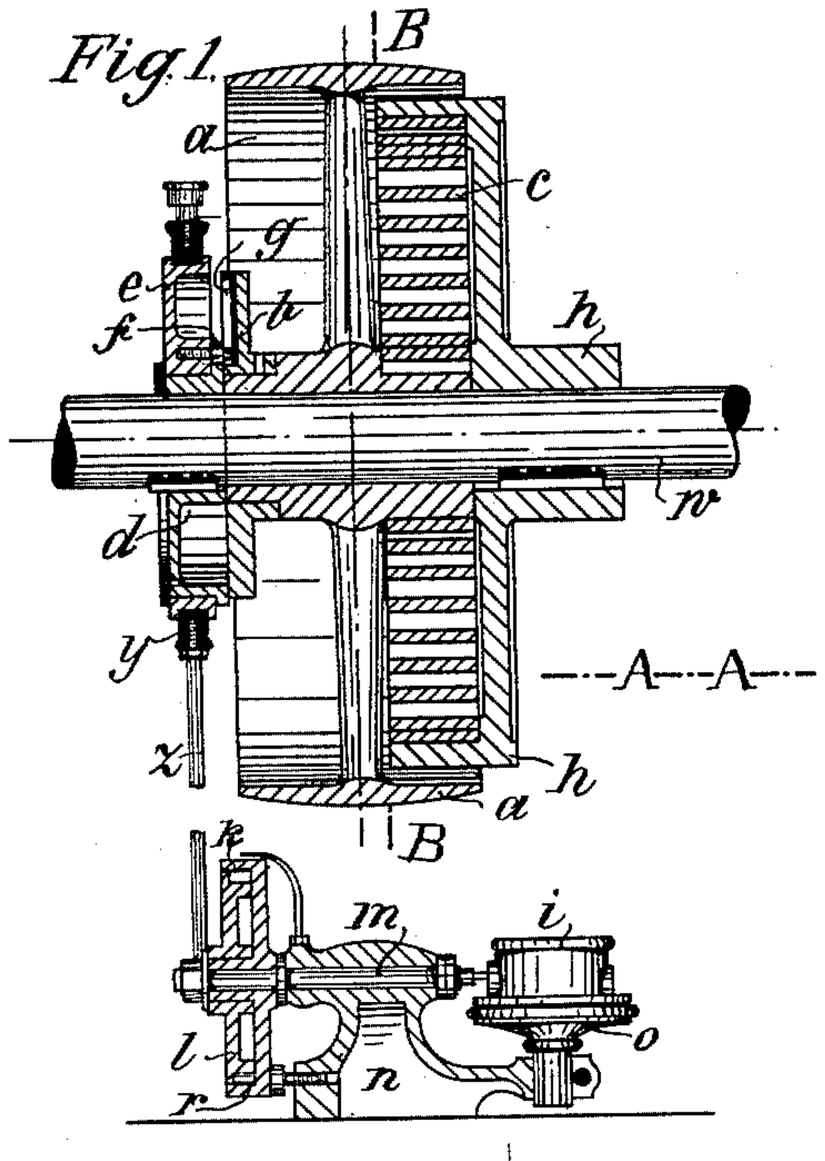


Fig. 2.

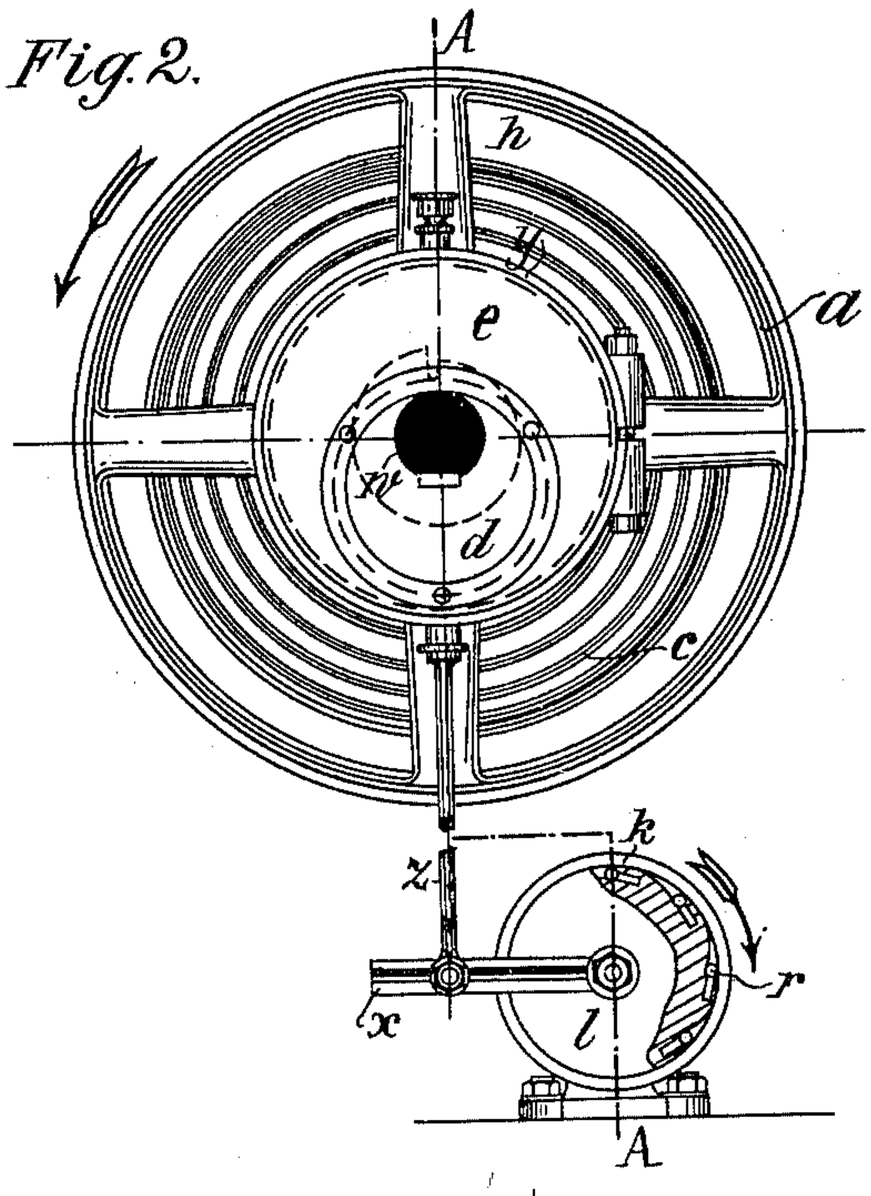


Fig. 3.

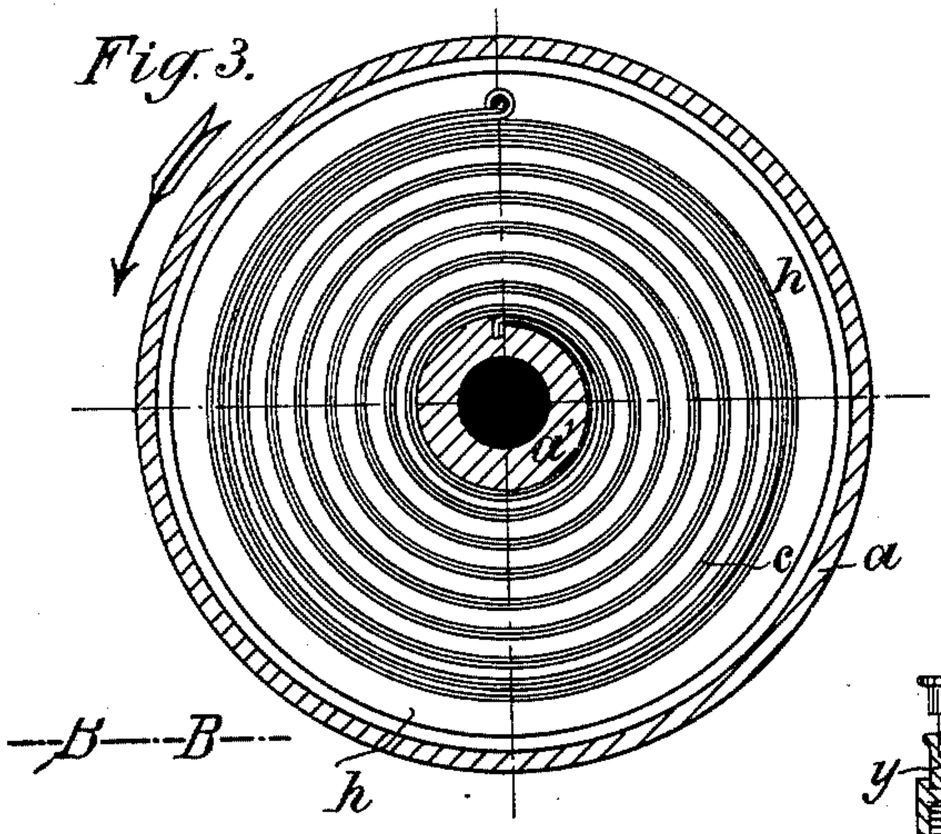


Fig. 4.

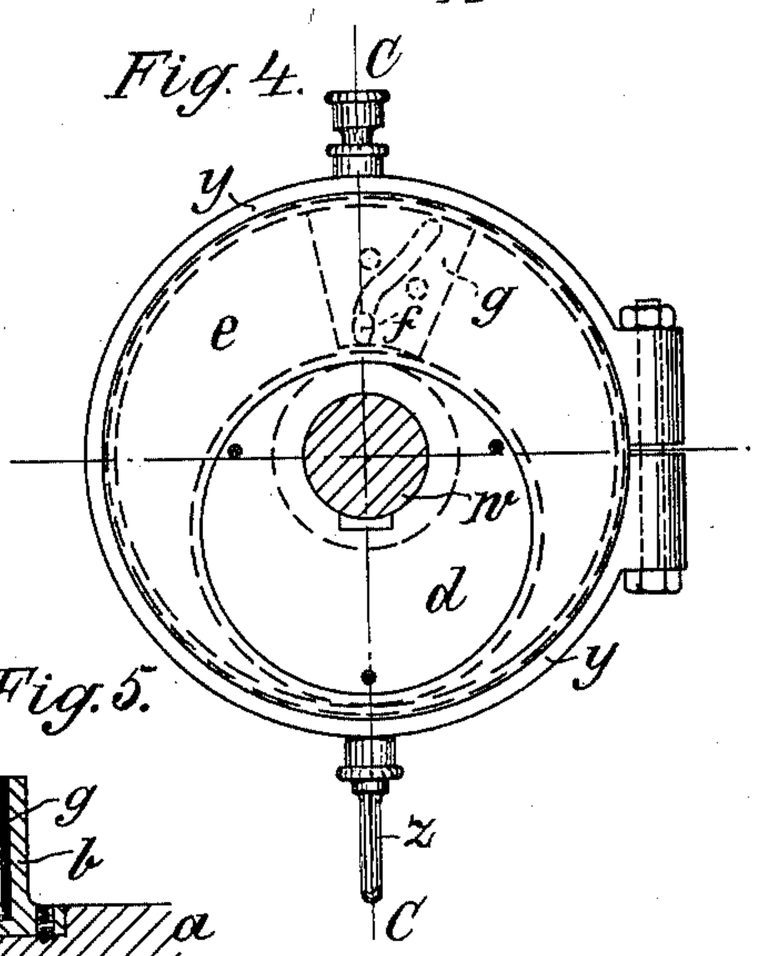
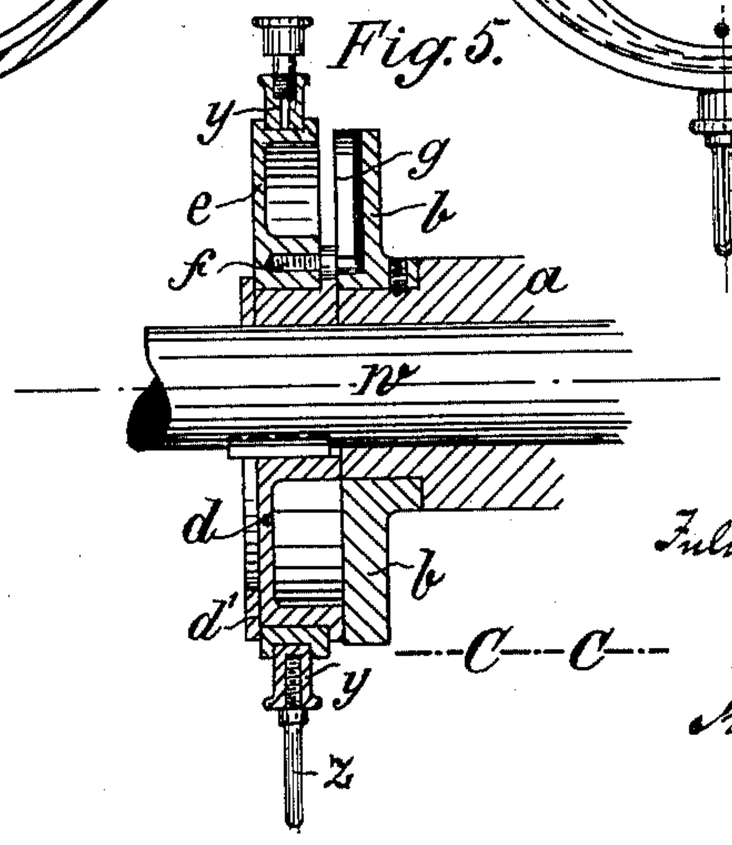


Fig. 5.



Witnesses
Emil Berger.
Paul Hundt.

Inventor
Julius Wilhelm von Pittler
per
Richard Neumann
Attorney

UNITED STATES PATENT OFFICE.

JULIUS WILHELM VON PITTLER, OF LEIPSIC, GERMANY, ASSIGNOR TO RICHARD VOIGTLÄNDER, OF SAME PLACE.

DYNAMOMETER.

SPECIFICATION forming part of Letters Patent No. 592,442, dated October 26, 1897.

Application filed August 24, 1895. Serial No. 560,440½. (No model.)

To all whom it may concern:

Be it known that I, JULIUS WILHELM VON PITTLER, a subject of the King of Prussia, German Emperor, residing at Leipsic, Kingdom of Saxony, Germany, have made a new and useful Improvement in Dynamometers, (Workmeters,) of which the following is a full and clear specification.

The present invention relates to a dynamometer which has for its object to measure the power consumed during a certain time by machinery, gearing plant, or engines.

The accompanying drawings represent this dynamometer in two different constructions.

Figure 1 is a section on line A A of Fig. 2. Fig. 2 is the front view. Fig. 3 is a section on line B B of Fig. 2. Figs. 4 and 5 are single parts of Figs. 1 and 2 on enlarged scale.

The meter consists of a loose pulley *a* and a fast-pulley frame *h*, both on the shaft *w*. In the pulley-frame *h* an elastic intermediate part *c* (in this case a spiral spring) is arranged, which on the one side is firmly connected with the nave of the loose pulley and on the other side fixed to the frame *h*. Fixed on the shaft *w* is an eccentrical nave *d*, and on this eccentrical part another eccentric *e* is placed, which is connected with the pulley by a screw-bolt *f* in such a way that the latter catches into a curve *g* of a part *b*, which is connected with pulley. The eccentric *e* is embraced by a frame *y*, which communicates by means of a connecting-rod *z* with a counter *i*.

The stroke of both eccentrics is of the same length, so that when both are on the shaft *w* in one line opposite each other, as shown by Fig. 1, the stroke of the eccentric *e* to the shaft *w* will be like naught, and when the shaft *w* turns the connecting-rod *z* will make no movement, whereas when the strokes of both eccentrics are lying together the movement of the connecting-rod *z* will correspond to the double stroke of one eccentric. Now if all parts are fitted in the way shown by Figs. 1 and 2, so that the spiral spring *c* will connect the loose pulley *a* on the one side with the fast pulley *h* on the other side, then as soon as the elastic intermediate part *c* is strained the pulley *h*, and therefore also the eccentrical nave *d*, will change their position to the pulley *a*, (or its supplement,) and as the bolt *f* and the differential curve *g* connect the eccentric *e* with the pulley *a* both eccentrics will change their position to each other, and therefore when the shaft *w* turns the eccentric *e* will change its stroke.

If the elastic intermediate part *c* is not strained—*i. e.*, when the pulley *a* has no power to transmit—the stroke of the eccentric *e* will be like naught; but if the elastic intermediate part *e* is strained the eccentric *e* will change its position on the eccentrical nave *d* and receive a stroke which, by the action of the curve *g* on the pulley *a*, will always be proportional to the change of position which strains the elastic intermediate part *c*.

If the connecting-rod *z* of the eccentric *e* is connected to the lever *x* of a division-plate *k*, which turns a counter *i*, and if the leverage is arranged so that at a certain strain on the intermediate part *c*, produced by the power acting on the pulley *a*, the stroke of the eccentric at the lever *x* pushes at each revolution of the shaft *w* one division forward to the division-plate, and if the way (distance) is known, which is described by the pulley at each revolution of the shaft *w*, then every division of the plate *k* or every digit on the counter *i* will represent the exact way or distance multiplied by the power exercised at the circumference of the pulley, so that at any time the total shown at the counter *i* will indicate the power utilized and the way made by the same. If of the power exercised at the circumference of the pulley, which at every revolution of the shaft *w* pushes the plate *k* one division forward, only one-half is used, then the stroke of the eccentric *e* will change, so that it will take two revolutions of the shaft *w* to advance one digit on the counter, and the product will then consist of half the power multiplied by the double way. A similar change of the stroke of the eccentric *e* takes place if the power of transmission is doubled. The stroke of the eccentric *e* will then be so large that at each revolution of the shaft *w* two digits are pushed forward at the counter *i*—*i. e.*, at one revolution the double power multiplied by the single way will give the double product, so that each digit will represent half of the double product, which

again will be equal to single work or power multiplied by single way. In order to express the product in horse-powers, it is only necessary to know the time in seconds in which the result indicated by the counter *i* has been obtained.

I claim—

In a dynamometer the combination with a shaft of a loose pulley thereon having a differentially-curved groove, a fixed casing having an interlocking spring, an eccentric-hub, an eccentric mounted on the hub having a guide-bolt working in said groove, and an eccentric-rod and a counting mechanism, substantially as described.

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

JULIUS WILHELM VON PITTLER.

Witnesses:

OTTO WOEDERLEIN,

RUDOLPH FRICKE.