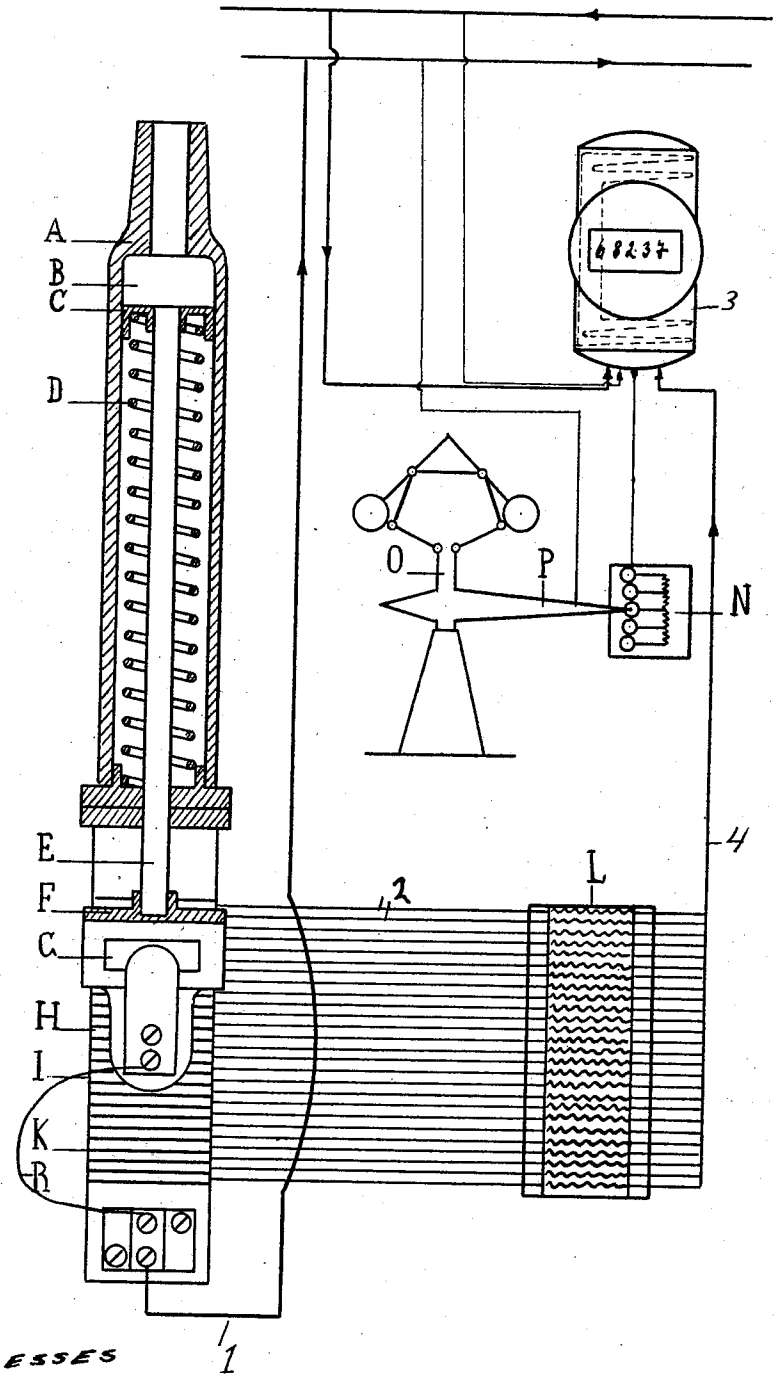
No. 896,755. PATENTED AUG. 25, 1908.

J. PICHT.

HORSE POWER HOUR METER.

APPLICATION FILED OCT. 23, 1906.



WITNESSES

W. P. Burke

H. V. Bierchs

INVENTOR

Johannes Picht

By Richards & Co

ATTYS.

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHANNES PICHT, OF HALLE-ON-THE-SAALE, GERMANY.

HORSE-POWER-HOUR METER.

No. 896,755. Specification of Letters Patent. Patented Aug. 25, 1908.

Application filed October 23, 1906. Serial No. 340,167.

To all whom it may concern:

Be it known that I, JOHANNES PICHT, subject of Emperor of Germany, residing at Halle-on-the-Saale, Germany, have invented new and useful Improvements in Horse-Power-Hour Meters, of which the following is a specification.

The present invention has for its object an apparatus for the continuous counting of the horse-power hours performed in steam-engines, pumps, gas explosion motors and the like.

This invention is based on the fact that the work performed, for instance, in the cylinder of a steam engine depends apart from the piston surface and the stroke, for which the quantities remain constant—in a determined engine solely upon the mean pressure and the number of revolutions per minute.

The influence exerted by the mean pressure on the extent of the indicated effect (output) has been considered in this invention in such a manner that more or less consumption-resistance is switched-in into a circuit causing thus the one coil of a watt-hour meter to be influenced in a way corresponding to the effective pressure in the cylinder.

The influence exerted by the number of revolutions per minute on the extent of the indicated effect (output) of a steam engine has been considered in this invention in such a manner that, more or less, resistance is switched-in into the circuit by means of a centrifugal governor, a tachometer or the like, causing thus the other coil of the electricity-meter to become influenced.

In the present invention, the indications of the electricity-meter are therefore influenced, in the first place, by the mean motive fluid pressure and, in the second place, by the number of revolutions per minute. The electricity-meter indicates an electric effect (output) which bears a determined proportion to the indicated horse-power hours. By means of suitably selected gear-wheels or by means of adjusting to the watt-consumption, the meter is made to indicate the horse-power hour directly.

The accompanying drawing shows a diagrammatic view of the subject-matter of this invention.

In this drawing: "A" is an indicator chamber designed to be screwed on one cylinder-end. In the indicator chamber "B" is located an indicator piston "C" which is placed under the tension of a spring D. The piston rod "E" is connected with a slide insulated by an insulating sleeve. This slide moves on a switching device and is made to describe a reciprocating motion corresponding to the effective pressure in the cylinder. The slide is connected by a conductor 1 with any preferred source of current.

The switching device consists of conductor-bars "I" insulated by air or by insulating-substance "K" from each other and from their support. The conductor-bars are connected by wires 2 with a resistance "L" and the latter is again connected with the one coil of an electricity-meter 3 by conductors 4. In each position of the slide, a certain resistance "L" is switched-in. The current flowing through resistance "L" acts, therefore, on the current-coil of the electricity-meter in such a manner that the indications of said electricity-meter are influenced by the pressure existing in the cylinder. Moreover, a resistance "N" is switched-in in the circuit. Said resistance is connected in its turn, by conductors 5, with the tension coil of the electricity-meter 3 and it is shifted by means of a centrifugal governor "O" with the aid of a switch lever "P", in such a manner that, in the same proportion as the number of revolutions per minute decreases or increases, more or less resistance is switched-in, the indications of the electricity-meter being thus influenced also by the number of revolutions of the motor per minute. The meter indicates, therefore, the product resulting from two intensities of current which are proportional, one to the pressure in the cylinder and the other one to the number of revolutions of the motor. Consequently, the electricity-meter indicates the product resulting from the pressure and the number of revolutions, that is, it indicates the effect (output) of the engine.

Having thus described my invention, what I claim, is:—

1. In a system for measuring the horse power of engines, a source of current, an electric meter having coils connected with the source of current and operating upon one another and means for varying the current through one coil in proportion to the pressure in the engine cylinder and means for varying the current through the other in proportion to the speed of the engine.

2. In a system for measuring the horse power of engines, a source of current, an electric meter having coils connected with the source of current and operating upon one another and means for varying the current through one coil in proportion to the pressure in the engine cylinder and means for varying the current through the other in proportion to the speed of the engine, said means comprising a rheostat controlled by the pressure in the cylinder and a second rheostat controlled by the speed of the engine.

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

JOHANNES PICHT.

Witnesses:
RUDOLPH FRICKE,
PAUL M. AVEN.