

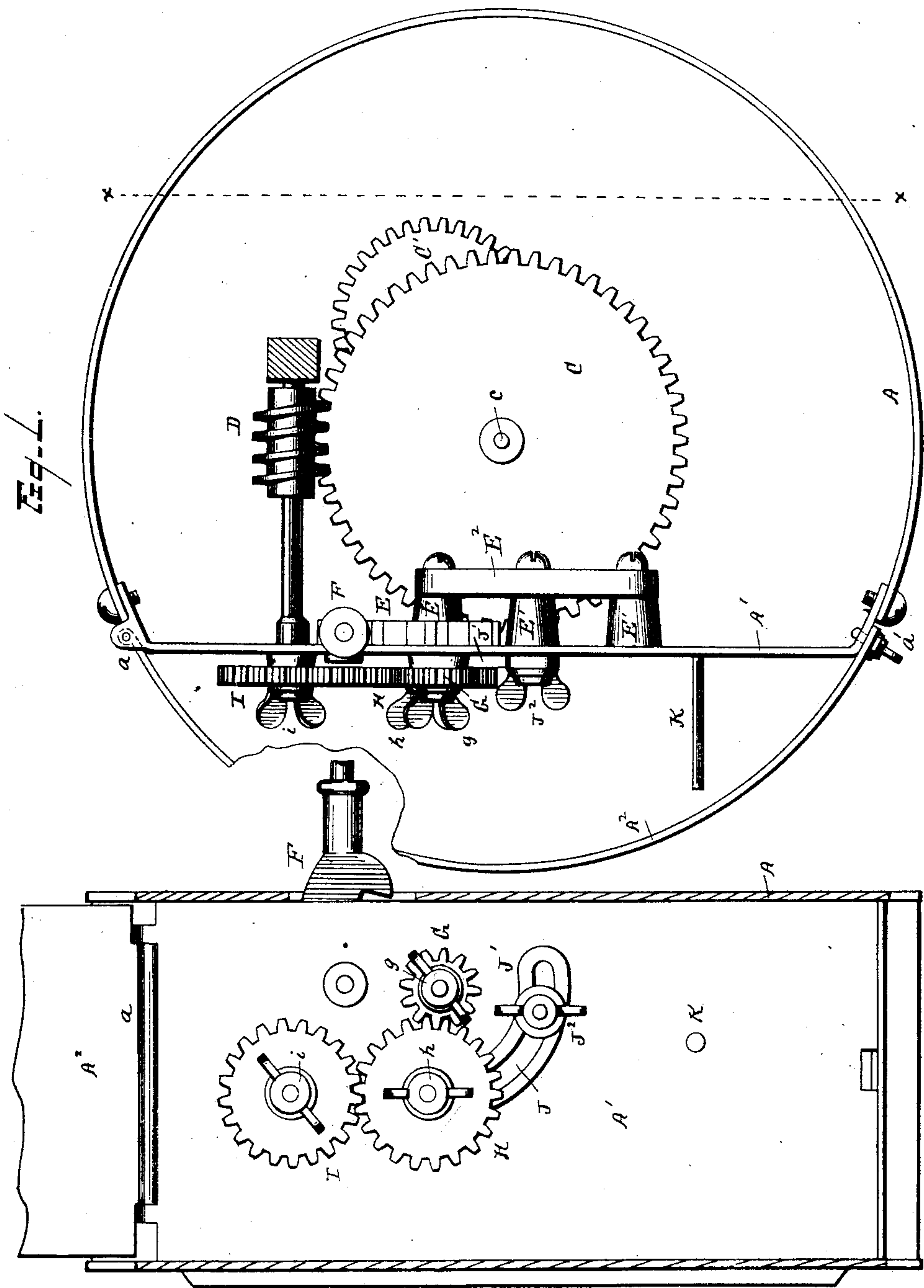
(No Model.)

2 Sheets—Sheet 1.

R. A. JONES.
SPEED INDICATOR.

No. 427,875.

Patented May 13, 1890.



WITNESSES
Charles F. Salow
Alfred M. Low

Fig. 2.

INVENTOR
Ralph A. Jones
By Maxwell D. Wright
His Attorney

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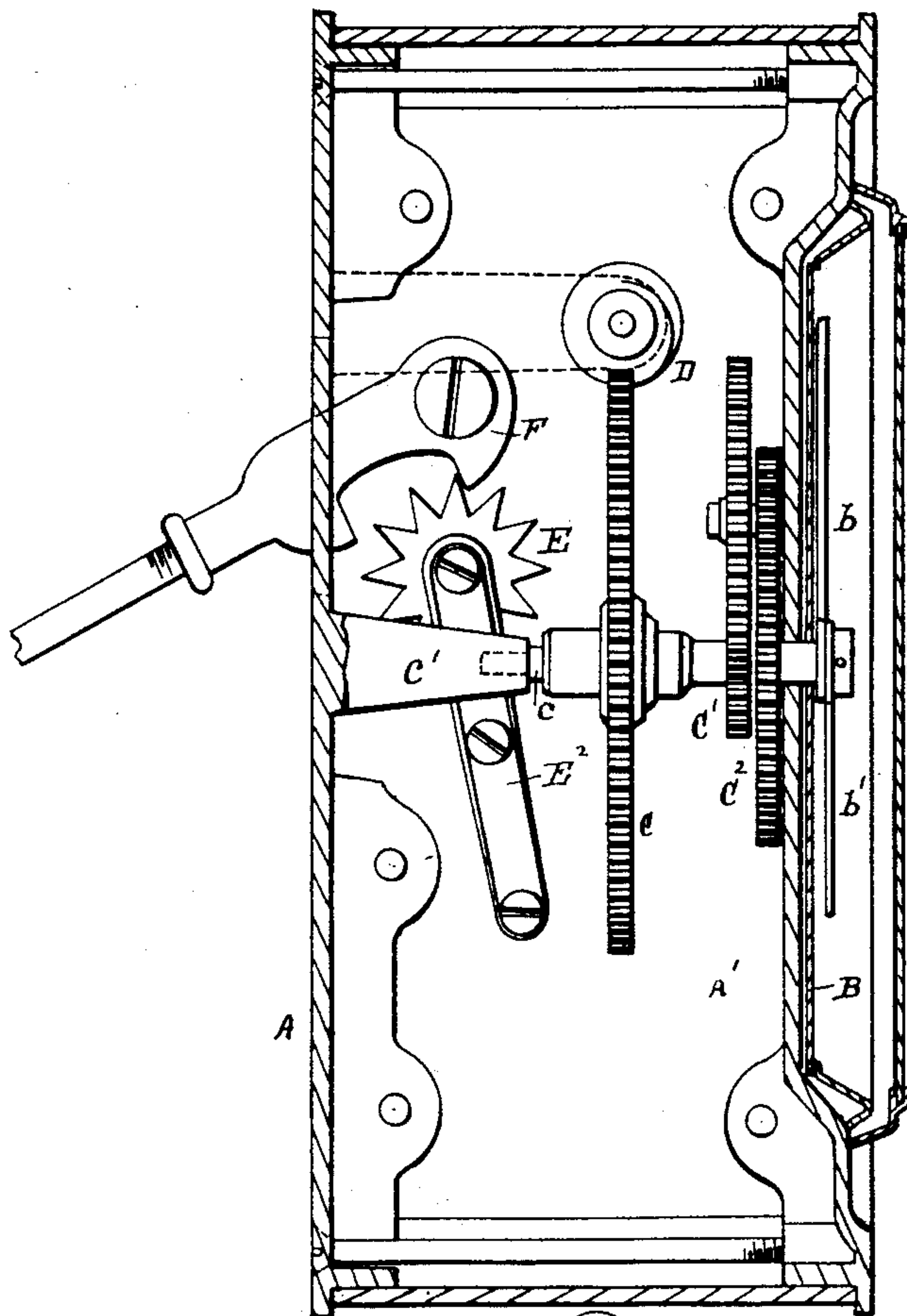
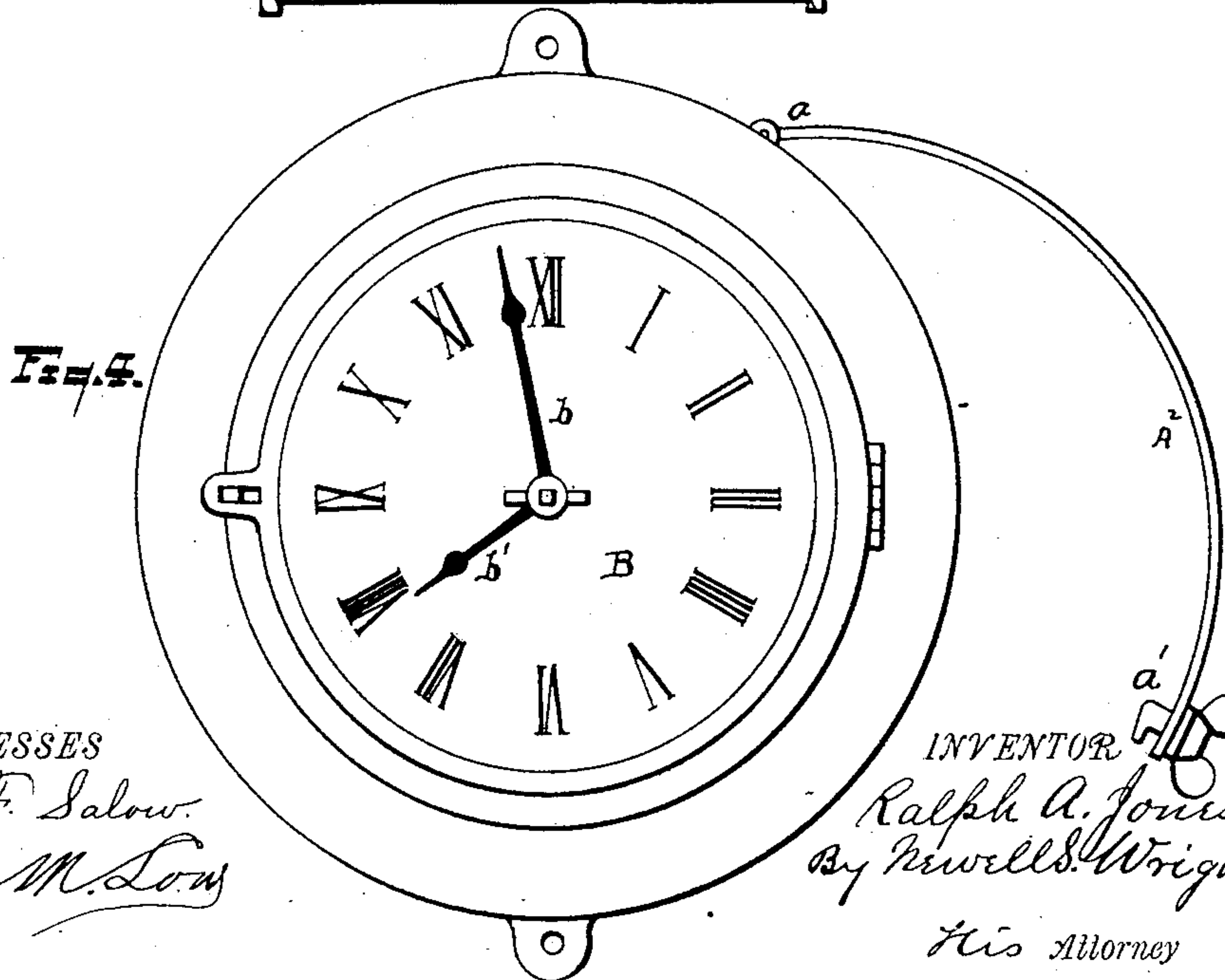


Fig. 3.



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UNITED STATES PATENT OFFICE.

RALPH A. JONES, OF DETROIT, MICHIGAN.

SPEED-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 427,875, dated May 13, 1890.

Application filed October 16, 1888. Renewed April 19, 1890. Serial No. 348,595. (No model.)

To all whom it may concern:

Be it known that I, RALPH A. JONES, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Speed-Indicators; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improved speed-indicator adapted for various uses—such, for instance, as upon a blowing-engine for blowing air into a furnace.

In blast-furnaces it is obviously necessary to have the engine work regularly, so as to force uniformly the required amount of air thereinto, and as the pressure is apt to vary it becomes of vital importance to have a suitable indicator and one which will readily show at all times whether the engine is running too fast or too slow or at the desired speed. As the speed of these engines is usually controlled by the throttle, the engineer should have some accurate mechanism to indicate at a glance, without stopping to count the revolutions, just how the engine is working, and which, also, will show to the superintendent or manager whether the engineer is attending to his duties. My invention is therefore designed to accomplish these ends in particular, although I do not limit myself to its use for blowing-engines alone; and it consists of the combinations of devices and appliances hereinafter specified, and more particularly pointed out in the claim.

In the accompanying drawings, Figure 1 is a rear elevation of a device embodying my invention, the rear portion of the inclosing-case being removed. Fig. 2 is a side elevation of the changeable gears, looking toward the division-wall of the case through the open door of the case. Fig. 3 is a cross-section along the line xx of Fig. 1. Fig. 4 is a front view of the device, showing the dial.

I carry out my invention as follows:

A represents an inclosing-case, preferably provided with a partition or division-wall A' and a door A^2 , to permit ready access to the

changeable gear, which door may be hinged to the case, as shown at a , and is provided with any fastening device a' . The front of the case is provided with a clock-dial B and indicator-hands $b b'$, adapted to move backward or forward upon said dial to denote the speed of the engine. When the engine is running at the desired speed, the indicator-hands should correspond with the position of the hands upon an adjacent clock, so that the engineer has simply to compare the position of the indicator-hands with the hands of the adjacent clock. If the indicator-hands fall behind the clock, the engine is of course running too slow. If the indicator-hands go ahead of the clock, then the engine is running too fast and must be checked.

C C' C^2 represents any suitable gear. The gear C is mounted upon a spindle c , journaled in any suitable manner at the rear end, as upon a journal-support c' . The gear, it is understood, of any suitable construction, is arranged to operate the indicator-hands $b b'$.

D is a worm or any other suitable gear, meshing with the gear C. I do not limit myself to any special gear for connection with the gear for the operation of the indicator-hands; but I find a worm-gear very convenient and desirable. A cog-gear might be substituted therefor.

E represents a ratchet-wheel journaled in a suitable manner, as upon a standard or standards E' . For strength I have shown three said standards connected with a bar E^2 , as a very considerable strain is likely to be communicated thereto.

F is a pawl arranged to engage said ratchet-wheel, said pawl having an oscillatory movement and constructed to newly engage the ratchet-wheel at every alternate vibration. The pawl is extended through the case and may be connected with any suitably-moving portion of the engine, as with the valve-gear in an upright engine. In this manner motion is communicated from the engine to the ratchet-wheel. The journal of said wheel is provided with a pinion G, preferably located on the outside of the partition A' , said pinion meshing with gear H, which in turn meshes with a gear I, mounted upon the worm-gear D, meshing with the gear above mentioned.

By this mechanism it will be perceived that the vibration of the pawl will move the indicator-hands on the dial B.

In order to control the speed with this mechanism, and yet enable the engineer to keep his indicator and clock together for any desired number of revolutions, my invention contemplates as an important feature to make the gears communicating the motion of the engine to the gear changeable—as, for instance, by making the gear I removable, so that another gear of required size may be substituted therefore. To this end the gear H is movably engaged in a segmental slot J in a bar J', which may be secured in place in any required position by a set-screw J². Each of the gears H I, together with the pinion G, are also provided with a set-screw *h*, *i*, and *g*. Now, if it is desired to exchange gears the set-screw *i* is removed, when the gear I may readily be taken off and another put in its place. The set-screw *h* is also loosened, allowing the gear H to be brought into mesh therewith by moving it to or fro in the segmental slot. At the same time the set-screw of the pinion G and of the bar J' are loosened, if required, for the new adjustment of the gears, after which they may be reset to hold the gears in place.

Gears of required sizes may be located in convenient reach, as upon a spindle K, ready for any change required. Additional gears for exchange are of course to be furnished, with directions for any change necessary for controlling the speed and making the indicator-hands conform to the hands of the clock. To change the speed and still make the indicator keep with the clock, the proper change of wheels may be quickly made. It will be seen that the indicator so operated, unless loss or gain is regulated by the engineer, will also register the amount of loss or gain in speed.

What I claim is—

In a speed-indicator, the combination, with an indicator and gear for operating the indicator, of gear operated by the engine, interchangeable gear connecting the indicator-gear and engine-operated gear, and a support for the interchangeable gear, consisting of a curved arm having both a longitudinal and swinging adjustment, substantially as set forth.

In testimony whereof I sign this specification in the presence of two witnesses.

RALPH A. JONES.

Witnesses:

N. S. WRIGHT,
CHAS. F. SALOW.