

(No Model.)

M. WEISS, Dec'd.
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REVOLUTION COUNTER.

No. 540,604.

Patented June 4, 1895.

Fig. 1.

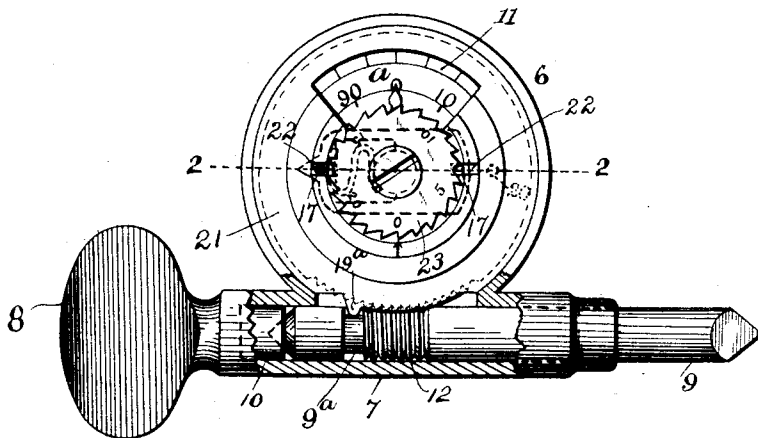


Fig. 4.

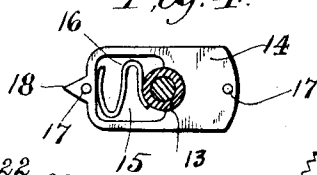


Fig. 5.

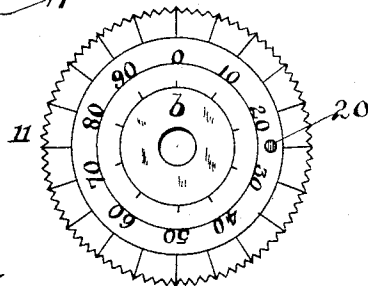


Fig. 2.

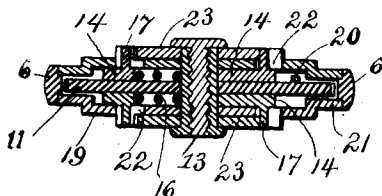
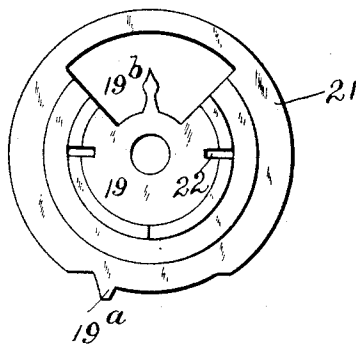


Fig. 3.



Witnesses:-

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Inventor:

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UNITED STATES PATENT OFFICE.

MORITZ WEISS, OF BROOKLYN, NEW YORK; HEINRICH R. WEISS ADMINISTRATOR OF SAID MORITZ WEISS, DECEASED.

REVOLUTION-COUNTER.

SPECIFICATION forming part of Letters Patent No. 540,604, dated June 4, 1895.

Application filed December 11, 1893. Serial No. 493,322. (No model.)

To all whom it may concern:

Be it known that I, MORITZ WEISS, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Revolution-Counters, of which the following is a specification.

This invention relates to devices for indicating the number of revolutions made by a shaft within a definite period of time and known as revolution counters.

The object that I have in view is to simplify the construction of such devices and to adapt them to indicate the revolutions of shafts, whether revolving in one direction or the other, without any adjustment of the parts.

In the accompanying specification I have described the peculiar features of the construction of my revolution counter, and in the claims at the end hereof I have pointed out the features and combinations for which I desire protection.

In the accompanying drawings, which form a part of this specification, and wherein like parts are indicated by like numerals of reference in the several views, Figure 1 is a view in elevation of a revolution-counter embodying my improvements and partly in section. Fig. 2 is a section on the line 2 2 of Fig. 1. Fig. 3 is a detached plan view of one of the face-plates of the dial-casing. Fig. 4 is a detached view of the plate co-operating with the ratchet-wheel whereby the hundreds of revolutions are registered, and Fig. 5 is a plan view of the dial whereby the single revolutions up to one hundred are registered.

The casing of the device and the support for the bearing of the spindle are made of any suitable metal and of any preferred and desirable form. The inner end of the spindle which is pointed is adapted to turn in a hard metal bearing which is driven into position after the spindle support including the dial casing is finished.

Referring to the drawings, 6 indicates the dial casing which is made of brass or any of the compositions and it may be formed integral with the spindle support, indicated at 7, or it may be made independent of the spindle support and suitably soldered or otherwise secured thereto. It is shown in the drawings

as formed integral with the spindle support. At one end the spindle support is provided with a handle 8 its other end being adapted to receive the spindle 9 which, as indicated, is in contact at its inner end with the hard metal bearing 10 which is driven into position at the back of the chamber of the spindle support.

The dial of the device which is indicated at 11 is provided on its edge with one hundred teeth which are adapted to mesh with the threads 12 on the spindle 9. Both faces of the dial are exactly alike being provided with the necessary figures which register one hundred revolutions of the spindle.

One face of the dial is indicated in Fig. 1 and marked *a* and the opposite face is indicated in the detached view Fig. 5 and marked *b*.

The position of the dial 11 in the device is indicated in the sectional view Fig. 2 and is arranged on the stud 13 to occupy a central position within the dial casing 6, so that the teeth on the edge of the dial will coact with the threads on the spindle 9 as indicated in dotted lines Fig. 1.

Resting on the dial 11, on both of its faces, are the plates 14 substantially of the conformation shown in Fig. 4 and provided with a cut out portion 15 which receives the stud 13 and a spring 16, preferably of the shape shown. At the ends of plate 14 there are upwardly projecting pins 17, and at one end an outwardly projecting portion 18 the purpose of which will be presently explained. The face plates, one on each side of the dial, are indicated by 19. These face plates have a slight central elevation within which is adapted to move transversely the plates 14 and which also provides a path of travel for the pin 20 in the face of the dial 11 and which pin, as said dial completes the registry of one hundred revolutions of the spindle 9, is brought in contact with the inclined surface of the projecting portion 18 on the plate 14 and thus forces said plate 14 backward against the tension of spring 16 and thereby advances the ratchet wheel, which is adapted to register the hundreds of revolutions, the distance of one half a tooth. After the pin 20 has passed by the projection 18 the spring 16 will cause plate 14 to move in the opposite direction thus caus-

ing the ratchet dial 23 to complete the full-tooth movement. In this position the ratchet wheel 23 is held stationary until the dial 11 has made another complete revolution when the pin 20 on said dial again comes in contact with the projection 18 of the plate 14 and the ratchet wheel is again moved the distance of one tooth thus registering another hundred revolutions.

The outer flanges 21 of the face plates 19 rest on shoulders in the dial casing 16 as indicated in the sectional view Fig. 2, and in the top of each of these plates there are provided oblong slots 22 which receive the pins 17 of plates 14 which plates, as explained, rest upon the respective faces of the dial 11 beneath the said face plates 19. The pins 17 projecting through the oblong slots 22 of the face plates 11 are adapted to co-operate with the ratchet wheels 23 on the stud 13, each of these ratchet wheels being provided with a tooth for every one hundred revolutions to be registered. In the example shown in the drawings the ratchet wheels 23 are provided with twenty-three teeth thus adapting the device to register two thousand three hundred revolutions of the spindle, but any other number of teeth may be used.

The teeth on ratchet wheel 23 do not have equal inclinations on both sides but are made of an approximately radial direction on one side, and accordingly have a considerable slope on the other side. Owing to this arrangement, as the left hand pin 17, which is nearest to projection 18 is forced against the outer end of the sloping side of that tooth on said ratchet wheel which is directly opposite it, on account of pin 20 at that time traveling outward along projection 18, it will be forced along such slope gradually but positively until it meets the approximately radially disposed side of the adjoining tooth and is thereby arrested and temporarily held in a locking position. The diameter of pins 17 being made equal to about one half the distance between the outer edges of adjoining teeth on the ratchet wheel, the relative positions of the two pins 17 and of the teeth of the ratchet wheel are so arranged, that as the left hand pin 17 assumes the aforesaid locking position the other pin 17 is placed out of contact with the ratchet wheel but opposite to the outer end of its sloping side. By that time pin 20 has traveled along one side of projection 18 and has reached a position where it is held in contact with the outer point of projection 18 and where it enters upon its movement along the other side of said projection. Such movement will be promoted by the action of spring 16 and, as it takes place, left hand pin 17 will slide outward along the radially disposed side of the tooth with which it is in contact still holding the same in a locked position until it reaches the outer end of such side and simultaneously the right hand pin 17 comes in contact with the outer

end of the sloping side of the tooth nearest to it and sliding along the same forces the ratchet wheel to complete a movement corresponding with its turning to the extent of one of its teeth. It will be seen that on account of making the teeth of the ratchet wheel of an approximately radial direction on one side, and sloping on the other side as described, such ratchet wheel will always be turned in the same direction no matter in what direction the main dial 11 carrying pin 20 be made to revolve.

The face of the ratchet wheel 23 is provided with figures as shown whereby the number of hundreds registered may be readily seen.

The edge of one of the face plates 19 is of the conformation shown in Figs. 1 and 3 having a projecting lug 19^a which is adapted to enter a circumferential groove 9^a in the spindle 9, and thus serve to prevent the displacement of the spindle while at the same time not interfering with its revolution. Except in the particular just indicated both of the face plates 19 are exactly alike, a section thereof being cut out as at 19^b for the purpose of displaying the face of the dial 11, the pointer 19^c being formed integral with the face plate.

It will be observed that the device as above described is adapted for registering by means of the dial 11 the revolutions up to one hundred, of the shaft whose speed is being taken, and as each one hundred revolutions is completed the ratchet dial 23 registers the same by moving the distance of one tooth. By increasing the number of teeth on the ratchet wheel 23 the capacity of the device for registering the hundreds of revolutions will likewise be increased.

The device is adapted without any change or adjustment of the parts to register the revolutions of a shaft turning in either direction. If the shaft be turning toward the person taking the speed the face of the dial displayed in Fig. 1 is observed and in this case the dial will turn to the left. As it completes a full circle, thus indicating one hundred revolutions of the spindle, the pin 20 on the dial is brought in contact with the projection 18 on plate 14 thus forcing said plate back, the pins 17 of the plate 14 being guided in the slots 22 of the face plate 19. When the shaft is turning from the person who is taking its speed the face of the dial displayed in Fig. 1 will partake of a reverse motion and thus fail to register the speed, but the opposite face (Fig. 5), which is readily brought into view by a slight movement of the instrument in the hand, will then register correctly the revolutions and register also the hundreds of revolutions each time that the dial completes a full circle, in the manner explained.

It will be noticed that while dial 11 is adapted to turn in either direction, the ratchet dial 23 turns only in one direction and thus registers the hundreds regardless of the di-

rection in which the dial 11 travels. It is therefore obvious that one ratchet dial 23 will register the right as well as the left hundreds.

My revolution counter is composed of but few parts and these are free from complication. The instrument is therefore inexpensive to make and is not liable to get out of order.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a revolution counter, the combination with a dial casing and a spindle suitably supported in proper relation to said casing, of a dial provided on its edge with teeth which cooperates with threads on the spindle, and having on its respective faces characters which adapt it to register on one face the revolution of the spindle turning in one direction and on the other face the revolutions of the spindle turning in the opposite direction, and two devices for registering the complete hundreds of revolutions of the spindle, one of said devices being placed opposite one face of the dial and the other placed opposite the other face thereof, substantially as set forth.

2. In a revolution counter, the combination with a dial casing, a spindle suitably supported in proper relation to said casing, and a dial having teeth on its edge which coact with threads on said spindle and also having on its respective faces characters for registering the revolutions of the spindle and also pins, as 20, of plates partly covering the respective faces of said dial, ratchet wheels for registering the complete hundreds of revolutions of the spindle arranged on said face plates, and spring-actuated devices arranged on the stud carrying the dial and adapted to be operated by the pins in the face of the dial to advance the ratchet wheels one tooth to record the hundreds of revolutions of the spindle, the springs actuating said devices being inserted within the same and resting against the shaft

of the dial coacting with the threaded spindle, substantially as set forth.

3. The combination with a dial casing and spindle support, a spindle, and a dial having teeth on its edge coacting with threads on the spindle, and a pin in its face, of an outer plate fitted in the dial casing and provided with slots in its face and with an elevated central portion, a plate arranged to slide laterally on the dial beneath said outer plate and provided with pins which pass through the slots of said outer plate and with a projection at one end with which the pin in the face of the dial coacts, a spring arranged within an opening of said sliding plate, and a ratchet wheel arranged on said outer plate and provided with registering characters and adapted to cooperate with the pins on the sliding plate, substantially as set forth.

4. The combination with a dial casing and a spindle support, of a spindle, a dial coacting with threads on said spindle and provided with a pin, as 20, a reciprocating device in engagement with such pin and provided with two pins, as 17, 17, and a second dial in engagement with pins 17, 17, substantially as set forth.

5. The combination with a dial casing and a spindle support, of a spindle, a dial coacting with threads on said spindle and provided with a pin, as 20, a reciprocating device in engagement with such pin and provided with two pins, as 17, 17, and a ratchet wheel provided with registering characters and having the sides of its teeth made of unequal slopes and adapted to engage with pins 17, 17, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 5th day of December, A. D. 1893.

MORITZ WEISS.

Witnesses:

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M. C. PINCKNEY.