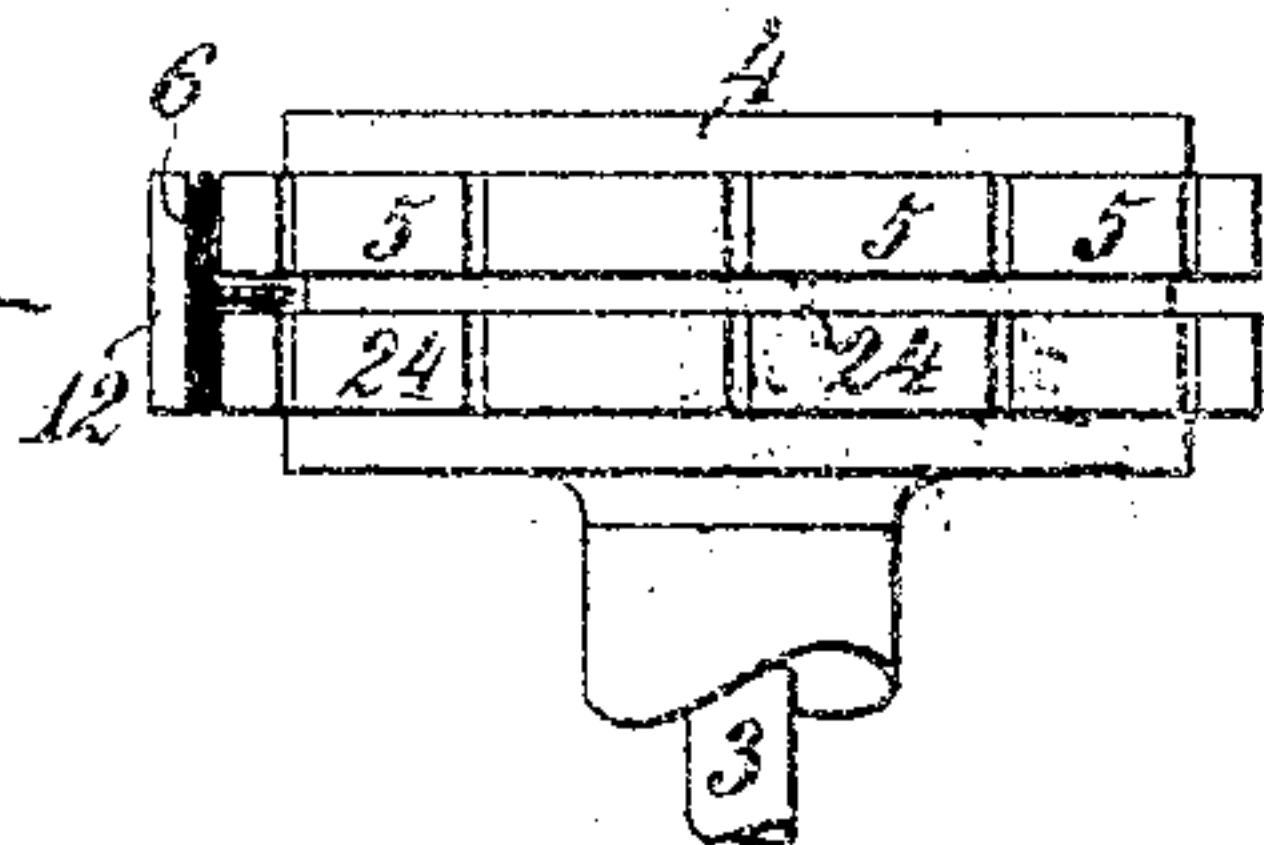
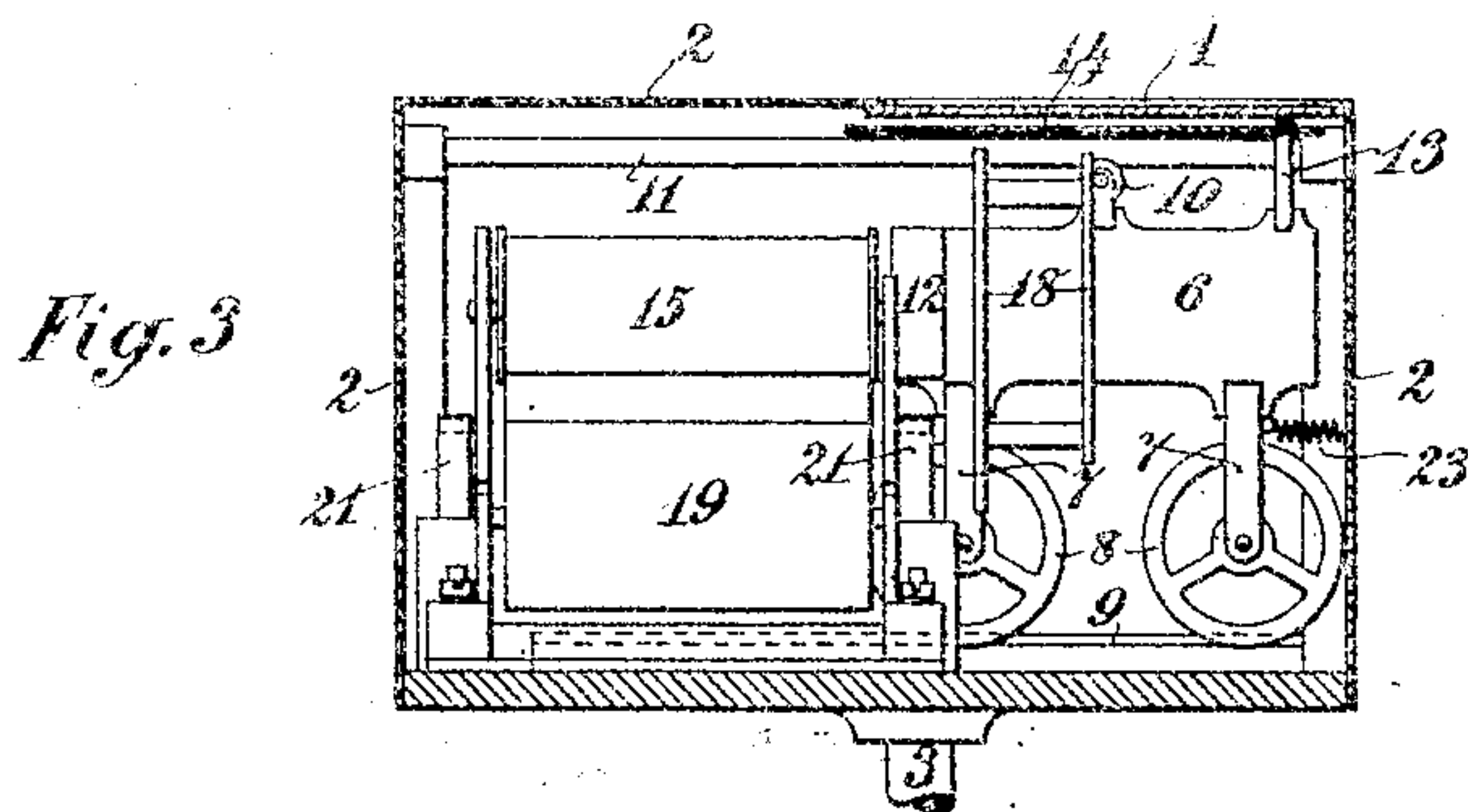
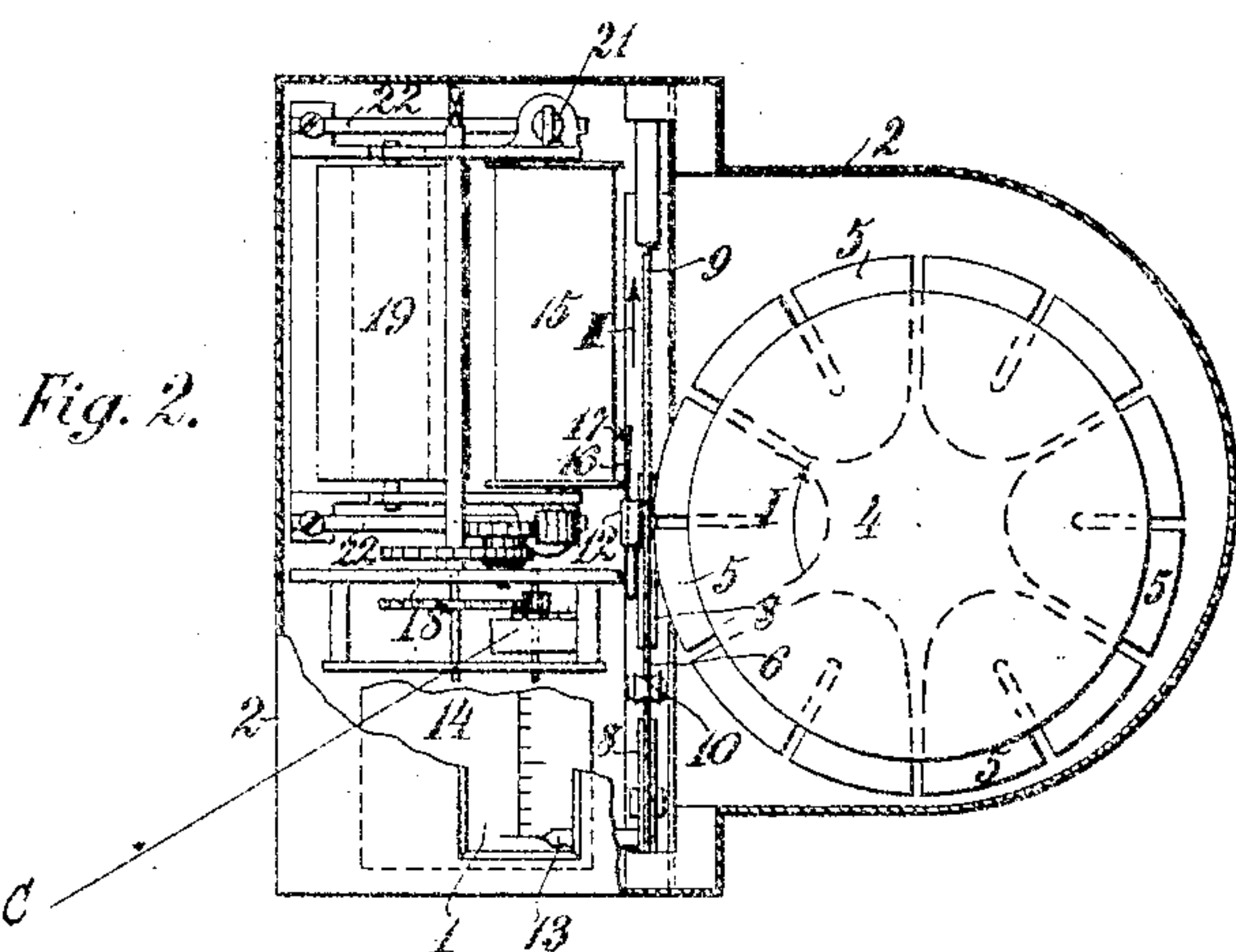
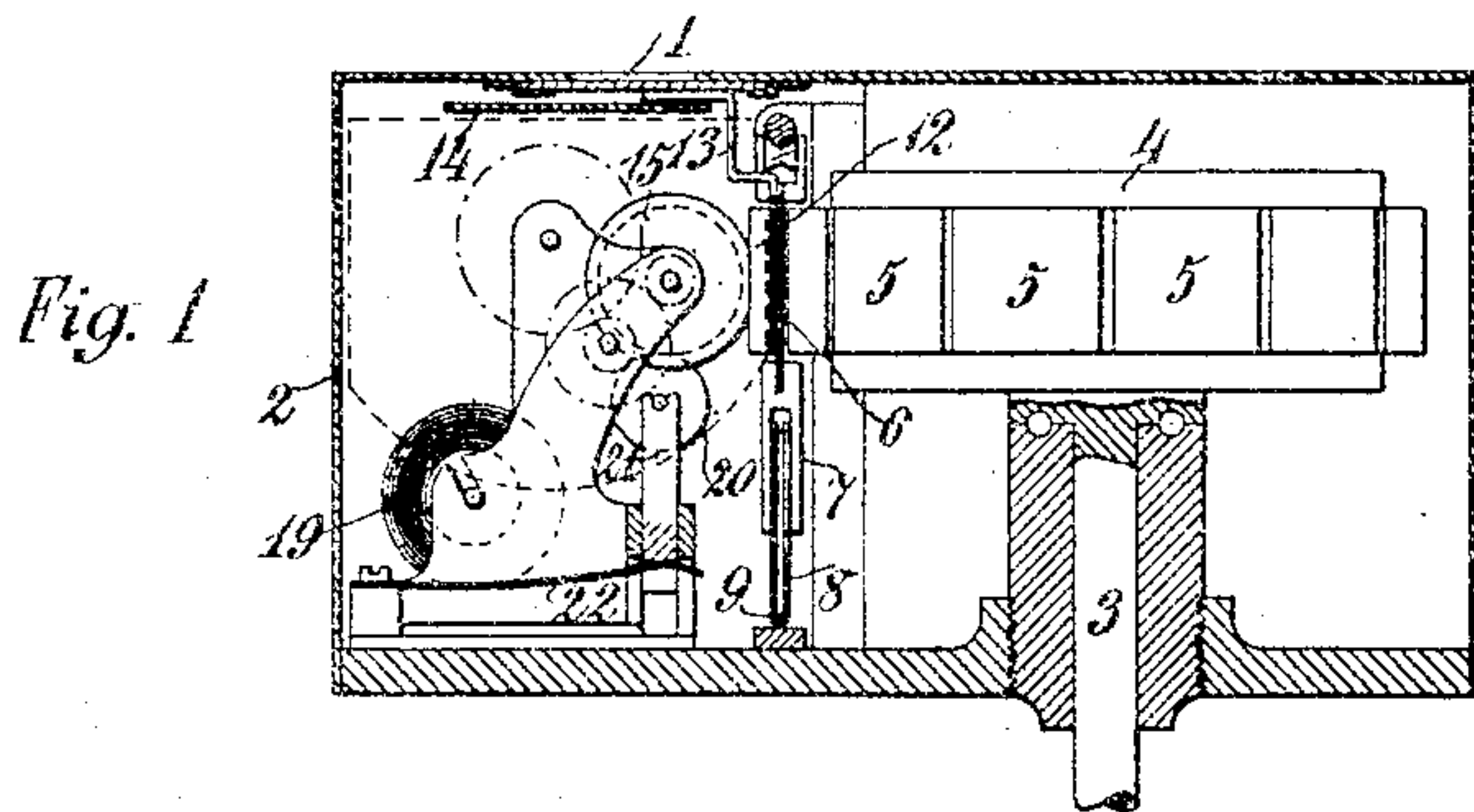


No. 890,949.

PATENTED JUNE 16, 1908.

H. WALDER.
SPEED RECORDER.

APPLICATION FILED JUNE 22, 1906.



Witnesses:
J. Spragg Pool
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UNITED STATES PATENT OFFICE.

HANS WALDER, OF MEILEN, SWITZERLAND.

SPEED-RECORDER.

No. 890,949.

Specification of Letters Patent.

Patented June 16, 1908.

Application filed June 22, 1906. Serial No. 322,842.

To all whom it may concern:

Be it known that I, HANS WALDER, residing at Meilen, Switzerland, have invented certain new and useful Improvements in Speed-Recorders; and I do hereby 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.

10 The present invention relates to a speed-recorder or speed-gage which is based on the well known principle that moved permanent magnets influence good conductors in consequence of the Foucault currents generated in them if the latter are brought into the magnetic field, and this invention has for its object a special device in which several magnets are jointed to a wheel, said wheel being rotated by the shaft the speed of which is to be measured, while the conductor to be influenced by the magnets consists of a flat plate which is movable tangentially to the circumference of said wheel.

25 The speed-recorder is illustrated in the accompanying drawings in which:

Figure 1 is a vertical section through the axis; Fig. 2 is a plan with the cover partly removed; Fig. 3 is an end elevation, the end of the case having been removed, and Fig. 4 shows another way of making the magnet-wheel.

30 The axle 3 is mounted in a case 2 closed on all sides, said case being provided with an inspection opening 1 only on the top, which opening is closed by a glass plate. A wheel-like body 4 is carried on the end of said axle 3 projecting inside the case, which body 4 consists of a number of magnets 5, with their poles turned towards the periphery. A flat plate 6 consisting of good conducting material is mounted close to the cylindrical outer circumference of these magnets, said plate being thereby under the influence of the magnets, and is moved in the direction of the arrow II by the rotation of the magnet-wheel 4 in the direction of the arrow I. For the purpose of guiding the same the plate 6 is provided with two arms 7, 7 pointing downwards and formed fork-like which engage wheels 8 running on a rail 9. At its upper edge the guiding is effected by a roller 10 connected with the plate and a rod 11 fixed to the frame of the speed-recorder, so that the plate can move easily but with certainty rectilineally, i. e. in the direction of the tan-

gent to the direction of rotation of wheel 4, between the rod 11 and the rail 9.

The displacement occasioned by the action of the magnets 5 is opposed by a spring. Said spring may either consist in an ordinary spiral spring 23 which engages any part of the carriage on the one hand and the case on the other hand, or the spring may be formed in any other approved manner.

A piece of iron 12 can be arranged opposite the place at which the plate 6 nearly touches the circumference of the magnet-wheel for increasing the effect. Further an arm 13 is joined to the plate 6 which arm runs out into a pointer which moves over a plate 14 provided with a scale under the inspection opening 1 and thereby makes known the displacement of the plate or carriage.

Now in order to give a permanent record of the velocity measured by the device or an indication of the velocity of rotation which a shaft has in the course of a given period, a recording-device is arranged consisting of a roller 15 covered with paper, the axle of which lies parallel to the direction of motion of the carriage or plate 6, and a style 17 joined with the carriage by a spring 16, said style contacting the surface of the roller when the carriage moves. The roller 15 is rotated at a uniformly slow speed by clockwork of any approved construction arranged between the frame-plates 18.

For continuous recording, i. e. for recording during long periods for which the periphery of the roller 15 would not suffice, a longer strip of paper is continuously led over the roller, said strip being wound on a roller 19 at the commencement of the recording, and then led over the recording roller 15 and wound up on the roller 20 resting in vertically guided bearings 21, said bearings being carried by springs 22 and pressed upwards, so that the periphery of the roller 20 continually contacts with the periphery of the recording roller 15 and can yield or give way with the increase of its diameter on account of its winding up the strip of paper. This arrangement renders it possible to drive the recording roller only, whereby the driving mechanism is simplified exceedingly. Therefore when at work the apparatus effects a permanent record of the velocities by drawing a curve, besides the visible indication through the glass of the speed attained, the abscissæ being the time and the ordinates the

velocity, which make it possible to know exactly the duration and the point of time of the different velocities.

Instead of the arrangement of the magnets 5 and the form of the movable conductor as shown in Fig. 1, such an arrangement as illustrated in Fig. 4 may also be used. In this latter the magnets are, as it were, made double, *i. e.* two poles always lie one over another 10 in the direction of the axis of the drum 4, preferably unlike poles, so that, for example, the pole 5 is a north-pointing and the pole 24 under it a south-pointing pole. Also it is advantageous under some circumstances 15 to alternate north and south poles round the magnet-wheel, so that like poles are never either beside one another nor one over the other. Then the conductor has a longitudinal rib 25 which enters between the poles, said 20 poles being arranged so that an annular groove is left free between the same. With this arrangement it is possible to form the magnets as horseshoe-magnets. By this arrangement a stronger action of the magnets 25 on the conductor is made possible.

What I claim is:

1. In a speed measurer, the combination,

with a revoluble wheel having magnets at its periphery, of two stationary guide rails arranged one above the other, a metallic plate 30 arranged at a tangent to the said wheel and provided with rollers which run on the said guides, a spring for moving the said plate in one direction, and means for measuring the displacement of the said plate when the said 35 wheel is revolved.

2. In a speed measurer, the combination, with a revoluble wheel having magnets at its periphery, of a slidable metallic plate arranged at a tangent to the said wheel, guides 40 for the said plate, a record roller provided with means for revolving it, a supply roller, a receiving roller, a spring for pressing the said receiving roller against the said record roller, a record strip wound on the said supply 45 and receiving rollers and passing over the said record roller, and a marker carried by the said plate and bearing on the said strip.

In testimony whereof I affix my signature, in presence of two witnesses.

HANS WALDER.

Witnesses:

A. LIEBERKNECHT,
EDW. KLEINER.