Oct. 20, 1953 B. VOGLER 2,656,107

COUNTING DEVICE

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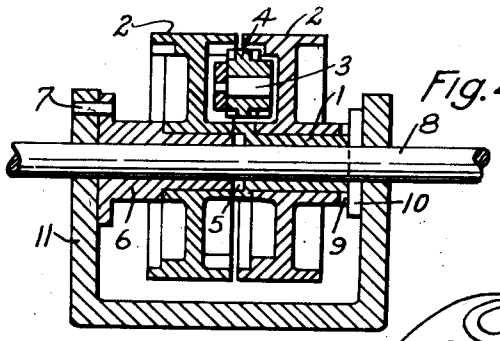


Fig. 4

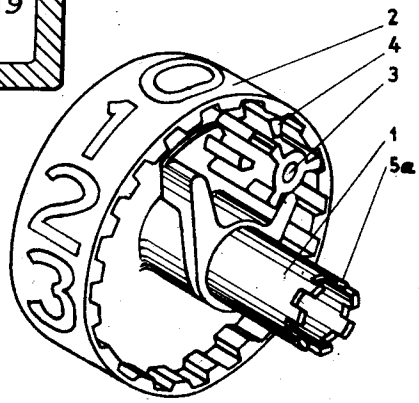


Fig. 1

Fig. 3a

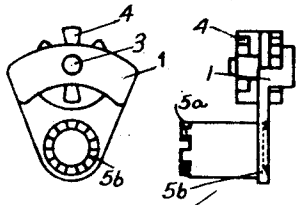


Fig. 3

Fig. 2a

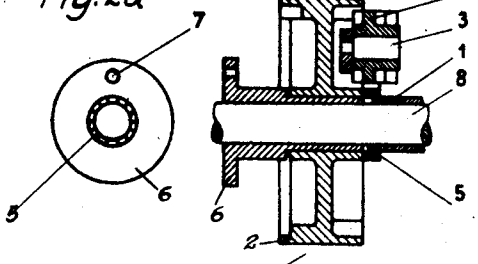


Fig. 2

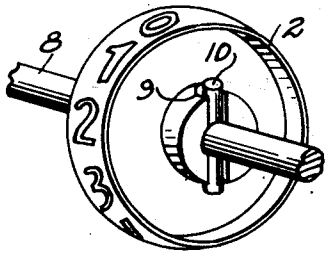


Fig. 5

Inventor:
Bruno Vogler

By Watson, Cole, Grindle & Watson

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COUNTING DEVICE

Bruno Vogler, Berlin-Charlottenburg, Germany, assignor to Loewe & Co. A. G., Berlin, Germany, a German company

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6 Claims. (Cl. 235—96)

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My invention relates to counting devices with internal gearing of the figure wheels—such for example as odometer-operated mileage period indicating devices, and specifically to the construction of the inside elements.

Various types of counting devices are already known with internal gearing of the figure wheels and corresponding pinions. In one construction the holders of the pinions are fixed on a grooved shaft with which they are connected by means of groove and key. Distance sleeves on which the figure wheels rotate, are placed between the holders on the shaft.

In another design both the sleeves for the figure wheels and the holders for the pinions consist of one piece. They are, however, connected with the shaft by means of groove and key.

The disadvantage of these constructions is that the shaft does not rotate and that they can only be driven from one side. In another construction the holders for the pinions are arrested outside the figure wheels. For this purpose the holders are disk-like shaped so as to completely cover the wheels and they are provided with lengthening pieces projecting over the diameter of the figure wheels and are kept by means of a separate arresting bar in a predetermined position. Thereby it is not necessary to fasten the bearing parts on the shaft, but a gap whose width corresponds to the thickness of the bearing disk results between the figure wheels. Moreover, attachments for supporting another axis parallel to the bearing shaft must be provided serving to commonly arrest the single bearing disks.

Such construction has the disadvantage that it does not form a closed unit.

The present invention combines the advantages of the former construction and eliminates its disadvantages.

According to one feature of the invention the center parts of the pinion holders are loosely arranged on a middle shaft and may be coupled by means of teeth provided on their ends and engaging each other so as to prevent rotating relatively to one another within the counter body.

According to another feature of the invention an end disk is provided also coupled with the pinion holders by teeth allowing to adjust the series of the figures of the counter relatively to the reading window and to attach the counter to any wall of the housing or framing.

According to still another feature of the invention the said center parts of the pinion holders are so constructed as to form bearing bushes on which the figure wheels may loosely rotate.

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The drawing shows by way of example one embodiment of the invention.

Fig. 1 shows a perspective view of a figure wheel with its pinion and holder.

Fig. 2 is a vertical section through Fig. 1,

Fig. 2*a* is a partial side view of Fig. 2,

Fig. 3 shows the holder with the pinion in a side view,

Fig. 3*a* is a side view of Fig. 3,

Figure 4 is a view similar to Fig. 2 but showing a complete device having two figure wheels, mounted in a frame, and

Figure 5 is a perspective view illustrating the driving connection shown in Fig. 4.

The pinion holder 1 consists of a sleeve or tube shaped center part on which the figure wheel 2 loosely rotates and a bracket carrying a pin 3, on which the pinion 4 is supported. The two ends of the sleeve or tube shaped center part of the pinion holder 1 are provided with cogs or teeth 5*a* and 5*b* respectively (Fig. 3). By these teeth the single pinion holders may be coupled with one another in any desired angular position.

An end disk 6 is provided having a tube-like extension at the front side of which also cogs or teeth 5 are arranged adapted to mesh with the teeth 5*b* of the first pinion holder 1.

The extension of the end disk 6 as well as the central parts of the pinion holders 1 are supported by a passing shaft 8 serving for guiding the pinion holders and keeping them correctly aligned relatively to the axis.

The counting device is built up by starting from the end piece 6 suitable to be fastened to the frame wall by means of its flange or secured against rotation merely by setting a pin into the hole 7.

The first figure wheel 2 rotates freely on the sleeve or tube shaped extension of the end disk 6. The first pinion holder 1 engages with its cogs 5*b* the teeth on the front side of the extension of the end disk 6 forming thus a non-rotating unit with the end disk but being adapted to be adjusted in any angular position for the purpose to correctly adjust the figures relatively to the reading window not shown in the drawing. The pinion 4 supported by a shaft 3 fastened on the pinion holder meshes with the wheel 2.

The next figure wheel also meshing with the pinion 4, rotates on the sleeve shaped center part of the pinion holder 1. A second pinion holder with a second wheel follows. The second pinion holder is coupled with the first pinion holder by the end teeth and is connected thus with the end disk 6 in a non-rotating manner. Corresponding to the desired number of figure wheels

further pinion holders with appertaining figure wheels must be provided.

The whole system of the pinion holders is suported for rotation on a shaft 8, which can be used for driving the counter-mechanism from either side, by operatively connecting it to the "units" wheel, since it extends entirely through the assemblage but is not otherwise connected to it.

The shaft 8 passing through the center holes of the extension of the end disk and of the pinion holders is simultaneously adapted to correctly align said holders with respect to the axis of the counter.

For holding the figure wheels and the end disk in the axial direction and to avoid an axial displacement adjusting rings may be provided on the shaft 8 or the total axial length of the figure wheels and end disk must correspond to the width of the housing or framing. Thus, one branch of the frame 11 (Fig. 4) closely abuts the disk 6, while another branch of the frame 11 closely abuts an end of the hub portion of the units wheel. Driving connection between the shaft 8 and the units wheel consists in the slots 9 and pin 10, which latter slidably engages the adjacent end of the first pinion holder 1, which is of course stationary as described above. Obviously, the shaft 8 may be driven from either end, and will in turn drive the counter device through its connection with the units wheel.

Having thus particularly described the nature of my said invention and the manner in which the same is to be performed what I wish to have covered by Letters Patent is:

1. A counting device with internal gearing of the figure wheels comprising in combination, a driving shaft, pinion holders rotatably supported on said shaft and each comprising a bearing for a figure wheel, figure wheels rotatably supported on said bearing portions of said pinion holders, pinions carried by said pinion holders and operatively engaging said figure wheels and means adapted to couple said pinion holders so as to prevent an angular displacement relatively to each other but allowing—if disengaged—an angular adjustment.

2. A counting device with internal gearing of the figure wheels comprising, in combination, a driving shaft, pinion holders rotatably supported on said shaft and each comprising a bearing for a figure wheel, figure wheels rotatably supported on said bearing portions of said pinion holders, pinions carried by said pinion holders and operatively engaging said figure wheels and teeth provided in the opposite ends of said pinion holders and adapted to couple them so as to prevent an angular displacement relatively to each other but allowing—if disengaged—an angular adjustment.

3. A counting device with internal gearing of the figure wheels comprising, in combination, an end disk adapted to be fastened on the counting device and provided with a tubular extension, a driving shaft passing through said tubular extension and projecting therefrom, pinion holders rotatably arranged on the projecting portion of said shaft, figure wheels arranged rotatably around said pinion holders and said tubular extension, pinions carried by said pinion holders and operatively engaging said figure wheels and means adapted to couple said pinion holders with each other and with said tubular extension so as to prevent an angular displacement relatively to each other but allowing—if disengaged—an angular adjustment.

4. A counting device as claimed in claim 1, said driving shaft being adapted to align the pinion holders with respect to the axis of the counting device.

5. A counting device as claimed in claim 1, said driving shaft being adapted to drive the counting device from the right hand side.

6. A counting device as claimed in claim 1, said driving shaft being adapted to drive the counting device from the left hand side.

BRUNO VOGLER.

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