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1,671,012

H. E. COLLINS

TACHOMETER DRIVE

Filed Dec. 6, 1926

FIG. 2.

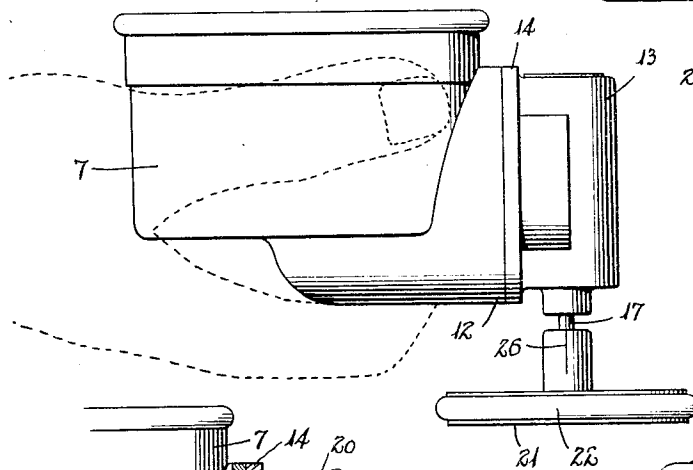
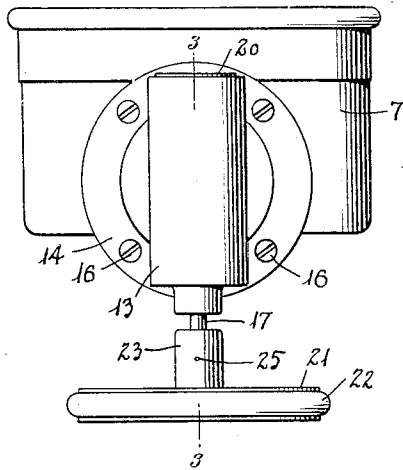


FIG. 1.

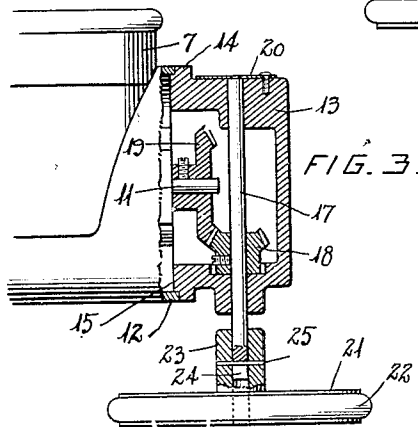


FIG. 3.

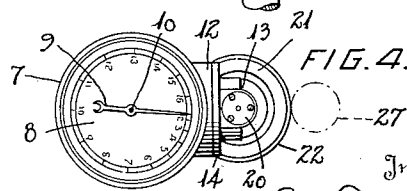


FIG. 4.

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TACHOMETER DRIVE.

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The present invention relates generally to tachometers, and aims to provide a novel and improved drive for a tachometer to enable the tachometer to be conveniently employed for determining the speed of rotation of each individual spindle of a thread spinning machine.

The modern spinning machine embodies a large number of spindles, and each spindle is subject to certain influences which may change its individual speed without in any way affecting the speed of the other spindles on the same machine, and it is of decided advantage to the mill owner to be able to make a quick and accurate test very frequently to determine the exact speed of every spindle on the machine. The spindles revolve at various speeds according to the type of thread that it is desired to produce, and the general range of speeds run between two thousand and fourteen thousand revolutions per minute. Heretofore, it has been necessary in order to test the speed of individual spindles to remove the flyer and break the thread in order that the drive stem of the tachometer might be applied to the tip of the spindle, and the mill nut must be removed to take off the flyer. This method of determining the speed of a spindle is rather cumbersome and requires time as well as stopping the functioning of the spindle which is being tested.

It is the object of the present invention to incorporate in a tachometer novel driving means which will enable the tachometer to be conveniently applied to the whirl of the spindle, without removing the flyer or mill nut and without breaking the thread or in any other way interfering with the normal functioning of the spinner spindle, which enables the speeds of all of the spindles of a spinning machine to be quickly and conveniently noted while the machine is in operation.

It is also an object of the invention to operably connect a drive wheel with the tachometer in a novel and efficient manner whereby the tachometer may be conveniently employed for the purpose intended.

With the foregoing and other objects in view, which will be apparent as the description proceeds, the invention resides in the construction and arrangement of parts, as hereinafter described and claimed, it being understood that changes can be made within the scope of what is claimed, with-

out departing from the spirit of the invention.

The invention is illustrated in the accompanying drawing, wherein—

Figure 1 is a side elevation of the tachometer embodying the improved drive showing same applied to the whirl of the spindle.

Fig. 2 is a rear view of the tachometer.

Fig. 3 is a fragmentary side elevation partly in section on the line 3—3 of Fig. 2.

Fig. 4 is a plan or face view of the tachometer on a reduced scale.

The tachometer comprises a case 7 having the dial or face 8 at the top thereof over which a pointer 9 is movable to indicate the speed, and said pointer is secured on the upper end of a vertical shaft 10 which is operably connected within the case by the usual speed responsive mechanism with a shaft 11 that is disposed horizontally and which projects from the rear portion of the case, the case having an annular rearwardly extending neck or flange 12 surrounding the shaft 11. The tachometer as described up to this point is of well known construction, and a tip member is usually applied to the shaft 11 to contact with the end of the spindle or other rotating member in the axis thereof, in order to drive the tachometer.

In carrying out the present invention a cap 13 is disposed across the opening or mouth of the flange or neck 12 and has an outstanding annular flange 14 seating against the neck 12, with a boss 15 fitted within said neck. Screws 16 pass through the flange 14 and are threaded into the case 7 for attaching the cap 13 to the case as a permanent part of the tachometer. A vertical shaft 17 is journaled for rotation in the cap 13 beyond the rear end of the shaft 11. The shaft 17 is disposed diametrically of and at right angles with the axis of the shaft 11, in the same vertical plane therewith, and the shaft 17 is located rearwardly of and parallel with the pointer shaft 10, thus disposing the drive at the rear of the tachometer. A bevel pinion 18 secured on the shaft 17 meshes with a bevel gear wheel 19 secured on the protruding terminal of the shaft 11, whereby the shaft 17 drives the shaft 11. The pinion 18 seats on the bottom portion of the cap 13, and a step bearing plate 20 is secured on the top of the cap 13 for the abutment of the upper end of the shaft 17, to retain said shaft in place.

A drive wheel 21 having a rubber tire 22 thereon is applied to the lower protruding terminal of the shaft 17, said wheel having a hub 23 to slip over the terminal of said shaft. The lower end of the shaft has a slot or notch 24 to receive a pin 25 extending through the hub 23, to drive the shaft 17 with the wheel 21, and the hub 23 is preferably slit, as at 26, so as to fit tightly on the shaft 17. The drive wheel 21 is thus located in a horizontal plane below the case 7, and the case 7 may be conveniently held in the hand, as indicated in dotted lines in Fig. 1, for manipulating the tachometer. The axis of the shaft 17 and wheel 21 is located in the same vertical plane with the shafts 10 and 11, which is the median plane of the tachometer, whereby the tachometer may be applied directly to the whirl 27 of the spinner spindle 28 with the tachometer arranged centrally of the spindle, as seen in Fig. 4. The wheel 21 is therefore rotated by the whirl 27, which is rotated by the usual belt 29 of the spinning machine, so that the pointer 9 will immediately indicate on the dial or scale 8 the speed of rotation of the spindle. Thus, in using the tachometer it is only necessary to hold same in the hand and press the tachometer rearwardly to bring the wheel 21 into contact with the whirl, and the tachometer may be conveniently applied to all of the spindle whirls of a spinning machine for noting the speeds of rotation thereof.

The screws 16 are arranged at quadrature relatively to one another, in order that the cap 13 may be positioned with the shaft 17 either vertical or horizontal and with the wheel 21 in a horizontal plane above or below

the neck 12 or in a vertical position at either side of said neck. Such adjustments may be desirable in using the tachometer for other purposes.

Having thus described the invention, what is claimed as new is:—

1. A tachometer including a case having an upwardly facing dial and a rearwardly extending neck, a rearwardly extending operating shaft within said neck, a cap fitting and attached to said neck, a vertical drive shaft mounted in the cap in rear of the case, gears connecting said shafts within the cap, and a drive wheel on said drive shaft.

2. A tachometer including a case having an upwardly facing dial and a rearwardly extending neck, a rearwardly extending operating shaft within said neck, a cap attached to said neck, a drive shaft mounted in said cap in rear of the case in the same plane and at right angles with the aforesaid shaft, bevel gears secured on said shafts within said cap and meshing with one another, said drive shaft having a terminal projecting from the cap, and a drive wheel on said projecting terminal of the drive shaft.

3. A tachometer including a case having an upwardly facing dial, a vertical shaft, a pointer on said shaft movable over the dial, a rearwardly extending horizontal operating shaft, a vertical shaft in rear of the case geared to the second named shaft, and a drive wheel on the third named shaft, all three shafts being in the same vertical plane.

In testimony whereof I hereunto affix my signature.

HENRY E. COLLINS.