(No Model.) 2 Sheets—Sheet 1.

P. TOURNACHON.

REGISTERING DEVICE FOR PHOTOGRAPHIC CAMERAS.

No. 492,642. Patented Feb. 28, 1893.

fig.2.

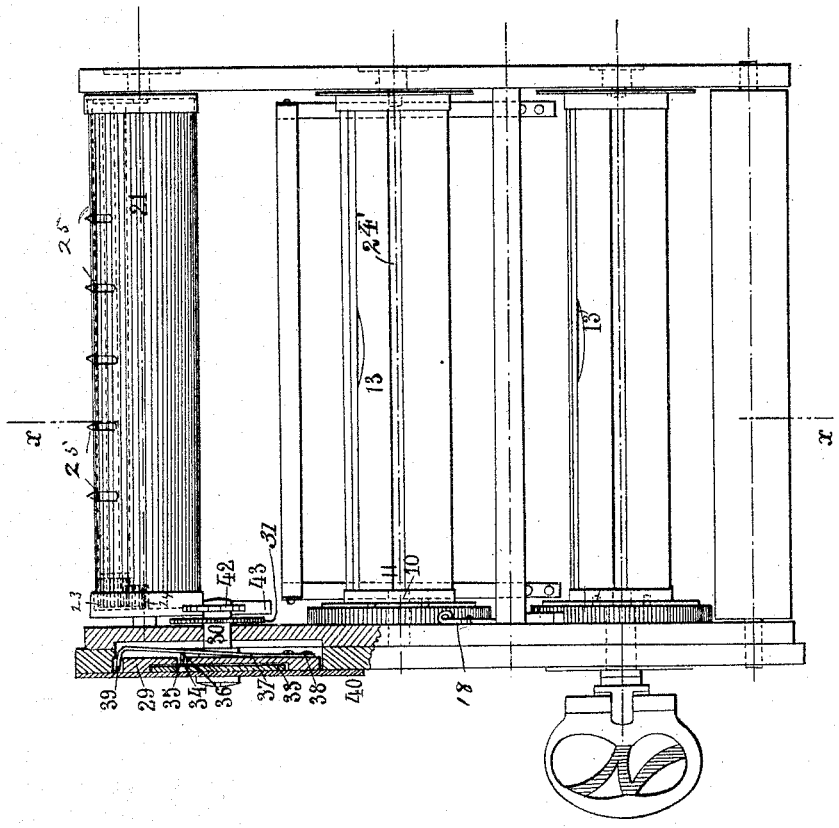
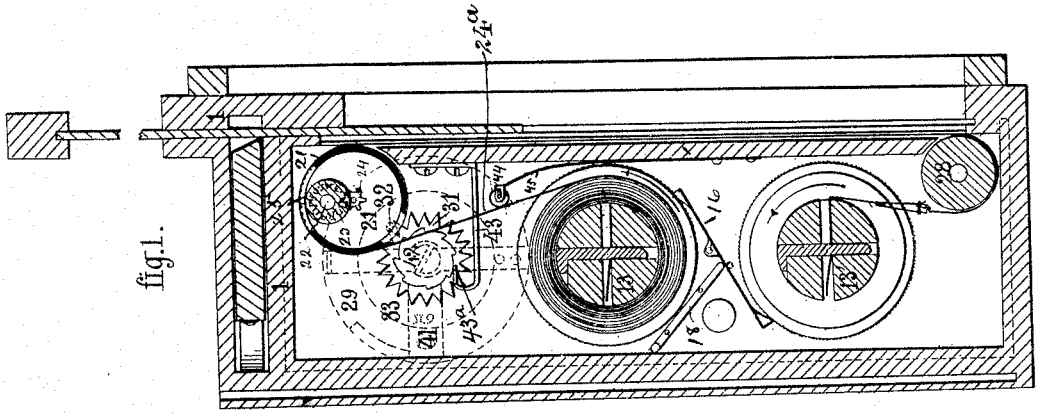


fig.1.



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(No Model.) 2 Sheets—Sheet 2.

P. TOURNACHON.

REGISTERING DEVICE FOR PHOTOGRAPHIC CAMERAS.

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Fig. 3.

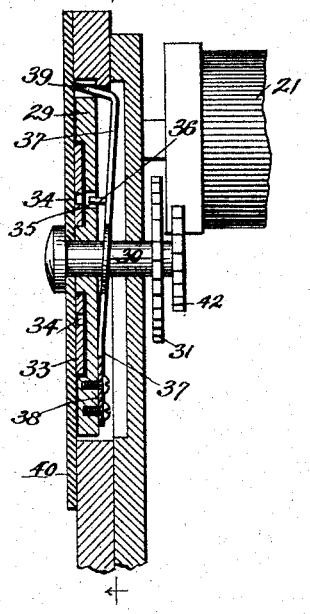


Fig. 4.

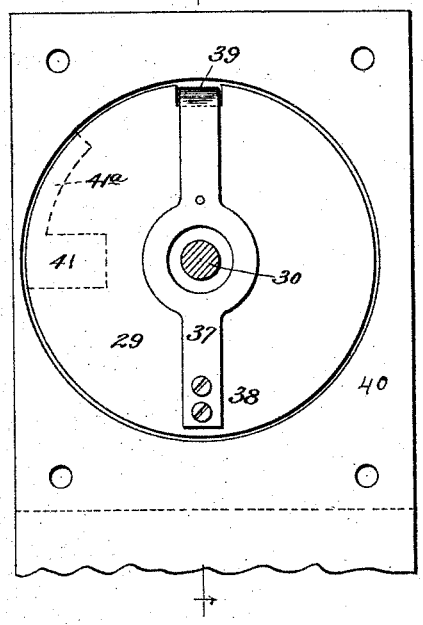


Fig. 5.

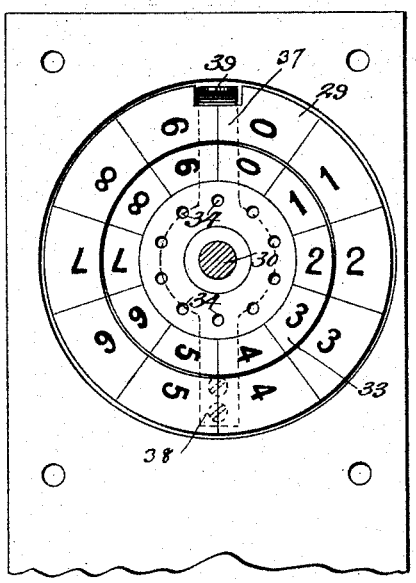
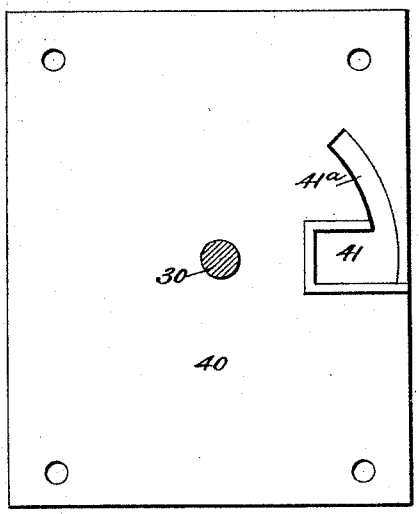


Fig. 6.



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UNITED STATES PATENT OFFICE.

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REGISTERING DEVICE FOR PHOTOGRAPHIC CAMERAS.

SPECIFICATION forming part of Letters Patent No. 492,642, dated February 28, 1893.

Application filed May 21, 1891. Serial No. 393,529. (No model.)

To all whom it may concern:

Be it known that I, PAUL TOURNACHON, a citizen of France, residing at Paris, in the Department of the Seine, France, have invented a new and useful Improvement in Registering Devices for Photographic Cameras, of which the following is a specification.

My invention relates to improvements in registering devices for photographic cameras, and it consists in the construction and combination of parts as hereinafter fully described and pointed out in the claims.

The same figures of reference indicate the same or corresponding parts in all the views.

Figure 1 is a vertical cross section of a photographic camera having my improvement applied. Fig. 2 is a front view of the same with parts broken away. Fig. 3 is a transverse section of the registering device. Fig. 4 is a rear face view of the units disk and its spring. Fig. 5 is a face view of the units and tens disks with the cover removed and Fig. 6 is a detail front view of the cover plate of the registering disks.

Referring to the drawings, 1 is the casing in which the bobbins 13 and 13′ are mounted, the bobbin 13 holding the unused film and the bobbin 13′ receiving the film upon which the impressions have been taken. A spring 16 held in engagement with the gear wheels of the bobbins by the lever 18 prevents the wheels from turning too freely and in the wrong direction. Mounted in the upper portion of the casing is the perforating cylinder 21, over which the film passes. The film is engaged by a roller 44 secured to a spring 45 to prevent it from becoming loose. The exterior surface of the cylinder is ribbed or otherwise roughened so that the film cannot slide on it without causing it to turn, and the diameter of the cylinder is such that when it has made two complete rotations it will have carried the film over it the right distance to form an impression sheet. For perforating the film as it passes over the cylinder, a roller 22 provided with blades 25 is arranged in the cylinder, and the roller is operated by the pinion 23 on its ends meshing with the pinion 24 on the pivot of the cylinder. To count the number of impressions taken, it is only necessary to count one for every two rotations of the perforating cylinder 21. To facilitate counting the number of rotations of the cylinder 21, I provide a registering device which consists essentially of a units disk 29 and a tens disk 33, and means for turning the disks by the revolution of the cylinder 21. These disks 29 and 33 (the disk 29 bearing the units figures and the disks 33 the tens figures) are arranged concentrically in a recess of the exterior casing, and each disk bears numerals reading from 0 to 9, which form by their relative arrangement the first ninety-nine numbers, as in all systems of registering devices. The tens disk 33 turns in a recess in the disk 29, as best shown in Figs. 2, 9, and 11. The units wheel 29 is carried by a shaft 30, which is mounted transversely in the case, and which has fixed to it near its inner end a star wheel 31, said star wheel having twenty teeth (see Fig. 1.) A little coupling pin 32 Fig. 1 projects from the end of the hollow perforating cylinder 21, and engages the teeth of the star wheel 31 each time that the cylinder makes a revolution, causing it to advance one tooth, that is, one-twentieth of a revolution. The units disk being on the same shaft with the star wheel is likewise moved, and the figures are arranged upon it so that it will be moved one unit for every two movements of the star wheel, and consequently when the cylinder 21 has made two complete rotations and has thus moved the distance of an impression sheet it will have moved the units disk far enough to count the impression sheet, that is to say, if the number 2 was displayed on the units disk and the cylinder 21 should make two complete rotations, the number 3 would then appear. The units disk operates to the number 9, and then the tens disk operates, and this operation is effected in the manner described hereinafter.

The tens disk 33 is provided with ten equidistant holes 34, which are arranged on the same circumference as the hole 35 in the units disk, so that the holes 34 will successively register with the hole 35, and this latter hole is formed on the radius of the figure zero (0) of the units disk. A pin 36, carried by a spring 37 and projecting into the hole 35 in the units disk is adapted to be projected into one of the holes 34, of the tens disk by the resiliency of the spring when any one of the holes 34 register with the hole 35, so that the

units and tens disks will move together for a space of one-tenth of a rotation. The spring 37 is secured to one side of the units disk near one edge at 38, and extends diametrically across the disk, the center of the spring being formed into an eye to embrace the shaft 30, and the free end of the spring is bent, as shown at 39, and formed with a rounded end, and this bent end rests in a recess or notch in one edge of the disk 29 as seen in Figs. 3, 4 and 5.

A metallic plate 40 covers the entire registering device, and is provided with a window 41 through which only two figures on the disks can be seen, and these figures will represent the number of impressions made. Into this window the bent part 39 of the spring 37 projects each time that the units disk passes the figure 0, so as to permit the pin 36 of the spring 37 to project through the aperture 35, of the units disk into one of the holes 34 of the tens disk and thereby cause the latter to advance one figure. The bent end of the spring normally presses against the plate 40, and thus holds the pin 36 out of engagement with the disk 33, so that the two disks will be independent of one another. It will thus be seen that the two disks are not locked together except during the time that the bent end 39 is opposite the window 41. After the spring 37 has pressed against the disk 29, so that the pin 36 will enter the holes 35 and 34 the bent rounded end 39 is carried up by the rotations of the disk 29 so that it will press against the plate 40, again withdrawing the pin 36 and releasing the disks. A circular recess 41^a is arranged on one side of the window 41, and the object of this is to free the spring 37 a little before the pin 36 disengages the tens disk, so that the operation is assured.

An alarm is sounded every time an impression is made, and the alarm consists of the ratchet wheel 42 Figs. 1 and 3 and the spring pawl 43. This ratchet wheel is secured to the inner end of the shaft 30, and is provided with ten teeth which are rounded up on one side and then end abruptly, and the pawl is made in the form of a spring, and is secured to the wall of the case 1, the inner end 43^a of the pawl being bent back approximately parallel with the body thereof so as to press the ratchet wheel.

It will be seen that every time the registering device is actuated, the ratchet wheel will turn the distance of one tooth, and the click of the pawl as it passes a tooth on the ratchet wheel will give notice that an impression has been made, and the pawl will also serve to prevent the registering device from turning back.

Having thus described my invention, what I claim is—

1. The combination with an apertured and notched units disk, and an apertured tens disk, said disks being independently mounted, of a plate covering the disks and provided with a window for viewing the figures on the disks, and a spring secured to one of the disks and provided with a pin adapted to enter the apertures of the said disks and with a projection to enter the notch of the units disk and the window of the plate, substantially as described.

2. The combination with an apertured notched and recessed units disk, and an apertured tens disk in the recess of the units disk, said disks being independently mounted, of a plate covering the disks and provided with a window for viewing the figures on the disk and with a recess at one side of the window, and a spring secured to the units disk and provided with a pin adapted to enter the apertures of the said disks and with a bent upper end to enter the notch of the units disk and the window of the covering plate, substantially as described.

3. In a registering device for photographic cameras, the combination with a rotatable cylinder over which a film is adapted to pass, of a shaft, means for operating the shaft from the cylinder, a units disk and tens disk mounted independently on the shaft, a plate covering the disks and provided with a window for viewing the figures on the said disk, and a spring secured to one of the disks and provided with a pin for entering registering apertures in the said disk and with a bent end for entering the window of the covering plate, substantially as and for the purpose set forth.

4. In a registering device for photographic cameras, the combination with a rotatable cylinder over which a film is adapted to pass provided with a pin projecting from one end thereof, of a shaft provided with a star wheel with which the pin of the cylinder engages, apertured units and tens disks mounted independently upon the said shaft, the units disk being notched, a plate covering the disks and provided with a window for viewing the figures on the disks and with a recess at one side of the window, and a spring secured to the units disk and provided with a pin adapted to enter the apertures of the disks and with a bent end adapted to enter the notch of the units disk and the window of the said plate, substantially as herein shown and described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

PAUL TOURNACHON.

Witnesses:
ROBT. M. HOOPER,
W. YOUNG.