

N^o 1740



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Complete Specification Left, 28th July, 1905—Accepted, 18th Jan., 1906

PROVISIONAL SPECIFICATION.

Improvements in or relating to Photographic Shutters.

I, WILHELM KENNGOTT, Engineer, of 64 rue de Saintonge, Paris, France, do hereby declare the nature of this invention to be as follows:—

This invention relates to a shutter applicable to all kinds of photographic apparatus.

5 The shutter is designed with a view of making the exposure without having to wind up or set any spring mechanism for that purpose, so that the apparatus is in this way always ready for exposure, which is effected gently and without jerks, in consequence of the small number of moving parts.

10 For snap-shots, the spring mechanism which is coupled to the shutter by means of a connecting rod, is wound up.

By disengaging the spring mechanism, always by means of the same operating part as for the exposure, the connecting rod drives the shutter so that it produces the closing and the opening within the given time.

15 This shutter can therefore be used for time exposure or snapshots, as desired, without it being necessary to move an index, hand or any other device.

Other characteristic features of this shutter are as follows:—

The arrangement of the sectors of the shutter and of the driving device for the sectors in a casing made in one piece.

20 The construction of the mount for the object glass in one piece, the said mount forming at the same time the cover for the shutter; the plates of the iris diaphragm and of the driving part for the said plates being arranged in the cover.

The arrangement of a central shutter with three sectors or blades.

Finally, the mechanical devices hereinafter more fully described.

25 The casing of the shutter, made in one piece, preferably of some light metal such as cast and turned aluminium, is provided inside with three lugs, cast together with the casing.

30 The casing is also provided with a central annular projection provided with an inner screw thread to receive one of the halves of the object glass, the other half being screwed into the annular projection cast in one with the cover made of the same metal as the casing. The cover is provided inside with concentric circular recesses enabling the plates of the iris diaphragm to be arranged in one recess, and the driving disc to be arranged in the other, without the working of the shutter sectors being interfered with.

35 The driving part of the shutter is arranged on the outer face of the cover and connected to the driving disc by screws which move in circular grooves in the cover.

40 On the front face of the casing are arranged: an operating lever for disengaging the shutter for time exposures and snapshots; the movable barrel or drum with the well known device for determining the duration of opening of the shutter, say from one second up to the quickest exposure, say, one-three hundredth of a second, this drum being wound up by means of a key or milled

[Price 8d.]



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head, and a tube for receiving a rubber ball for effecting the release of the shutter pneumatically.

A button is provided which by a slight movement can be used for opening the sectors in a simple manner for focussing purposes.

The mechanism of the shutter consists of a ring with lugs having slots with which engage pins on the sectors which are pivoted near the circumference of the casing, to the lugs thereof.

The ring can be moved round the inner annular projection on the casing, its travel in either direction being limited by stops arranged on one of the lugs. This partial rotation is effected by means of a pivoted lever and driven by the operating pivoted lever, and provided with a pin or lug engaging in a groove in the lever.

The pivoted lever which is preferably of semi-circular or U-shape, is provided at one end with a kind of pawl, adapted to force back the end of an arm pivoted about a screw. When moving, the arm drives a connecting part which connects it to the ring.

In these conditions, in order to open the sectors for a time exposure, it is sufficient to move the projecting finger lever and to hold it during the whole time of exposure; the parts mentioned returning to their position of rest under the action of suitably arranged springs.

The operating lever is, moreover directly connected by its end to a piston device; so that a rubber ball can be used for exposure.

The pivot of the connecting arm is on the nipple of the barrel. This nipple is made of the same material as the barrel itself. When the latter is being set by turning the key, this movement, by shifting the pivot point of the connecting arm, disengages a projection on the annular ring from a recess in the connecting arm, and then removes the end projection of the connecting arm, while the pawl advances and at once returns, without affecting the opening of the shutter sectors.

The nipple carrying the pivot point of the connecting arm limits the travel of the barrel and is also used for driving a cam ring round the nut which secures the spindle of the barrel.

After the barrel has been wound up for a snapshot the projection on the annular ring engages with one corner of the recess in the connecting arm in such manner, that the connecting arm, released by the release of the shutter, drives the annular ring. This driving takes place however, only during the time of the opening of the sectors.

For closing the sectors, the annular ring is acted upon by the other corner of the recess during the second half of the travel effected by the pivot point.

The cover or side of the barrel, carrying the nipple, is provided with recesses at three points, suitably selected, so that the tail of the disengaging lever, by engaging with the recesses in the positions "closed", "set", "open" will fix the barrel in each of the three positions.

During the winding of the barrel, owing to the travel of its nipple, the connecting arm is moved back, so that the bosses formed by the three recesses can therefore operate the disengaging lever without the pawl thereof coming in contact with the projection on the connecting arm.

The shutter sectors can be cut out according to any pattern, limited by straight or curved lines, as long as the three plates, opening and closing respectively from the centre outwards and *vice versa* provide, when closed, an absolutely light proof closure.

For the purpose of opening the shutter for focussing on the ground glass, the outside button is secured to a lever provided at the end with a pin which moves the connecting arm when the button is moved. This movement causes the sectors to open as if the finger lever had been operated, with the difference that the shutter remains open until the button is brought back or the barrel wound up.

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In the latter case, the cam ring on the barrel pushes back, during the last part of its movement, the end of the lever, and with it the button.

Dated this 28th day of January 1905.

BOULT, WADE & KILBURN,
Agents for the Applicant.

COMPLETE SPECIFICATION.

"Improvements in or relating to Photographic Shutters."

I, WILHELM KENNGOTT, Engineer, of 64 rue de Saintonge, Paris, France; do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to a shutter applicable to all kinds of photographic apparatus.

The shutter is designed with a view of making the exposure without having to wind up or set any spring mechanism for that purpose, so that the apparatus is in this way always ready for exposure, which is effected gently and without jerks, in consequence of the small number of moving parts.

For snap-shots, the spring mechanism, which is coupled to the shutter by means of a connecting rod, is wound up.

By disengaging the spring mechanism, always by means of the same operating part as for the exposure, the connecting rod drives the shutter so that it produces the closing and the opening within the given time.

Other characteristic features of this shutter are as follows:

The arrangement of the sectors of the shutter and of the driving device for the sectors in a casing made in one piece.

The construction of the mount for the object glass in one piece, the said mount forming at the same time the cover for the shutter: the plates of the iris diaphragm and of the driving part for the said plates being arranged in the cover.

The arrangement of a central shutter with three sectors or blades.

Finally, the mechanical devices hereinafter more fully described.

The shutter according to this invention is illustrated, by way of example, in the accompanying drawing, in which:

Figure 1 is a front elevation of the shutter;

Figures 2 and 3 are vertical sections through the casing and the cover of the shutter respectively;

Figure 4 is a view of the inner face of the cover, showing the iris diaphragm;

Figure 5 is a front elevation of the shutter with the cover removed, and the sectors of the shutter shown dotted, so as to show the operating and connecting parts;

Figure 6 shows only the parts which become operative when the spring barrel is wound up;

Figure 7 shows the spring barrel wound up, the connecting rod and the corresponding part of the device operating the sectors;

Figure 8 is a view of the whole showing the shutter in its closed position, and

Figure 9 shows the shutter open, for focussing.

The casing 1 (Figure 2) of the shutter, made in one piece, preferably of some light metal such as cast and turned aluminium, is provided inside with three lugs 2 (Figures 2, 5, 8 and 9) cast together with the casing.

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The casing 1 is also provided with a central annular projection 3 provided with an inner screw thread 4 to receive one of the halves of the object glass, the other half being screwed into the annular projection 5 cast in one with the cover 6 made of the same metal as the casing. The cover 6 is provided inside with concentric circular recesses 7 7¹ enabling the plates 8 of the iris diaphragm to be arranged in one recess 7 and the driving disc 9 to be arranged in the other 7¹ without the working of the shutter sectors being interfered with (Figure 4). 5

The driving part 19 (Figure 4) of the diaphragm is arranged on the outer face of the cover and connected to the driving disc 9 by screws 11 which move in arc shaped apertures in the cover 12 (Figure 3). 10

On the front face of the casing 1 are arranged at 13 an operating lever for disengaging the shutter for time exposures and snapshots; the movable barrel or drum 14 with the well known device for determining the duration of opening of the shutter say from one second up to the quickest exposure, say, one-thousandth of a second, this drum being wound up by means of a key or metal head 15; and a tube 16 for receiving a rubber ball for effecting the release of the shutter pneumatically. 15

A button 17 is provided which by a slight movement in the direction of the arrow 18 effects the opening of the sectors in a simple manner and can be used for focussing purposes. The mechanism of the shutter consists of a ring 19 (Figure 5) with lugs having slots 20 with which engage pins 21 on the sectors 22 which are pivoted at 23 near the circumference of the casing to the lugs 2 thereof. 20

The ring 19 can be moved round the inner annular projection 24 of the casing, its travel in either direction being limited by stops 25 26 arranged on one of the lugs 2. This partial rotation is effected by means of a lever 27 pivoted at 29 and driven by the operating lever 13 pivoted at 28 and provided with a pin or lug 30 engaging in a groove 31 in the lever. 25

The pivoted lever 27 which is preferably of semi-circular or U shape is provided at one end with a kind of pawl 32 adapted to force back the end of an arm 33 pivoted about a screw 34. When moving, the arm 33 operates a part 35 connecting it to the ring 19. 30

In these conditions, in order to open the sectors for a time exposure, it is sufficient to move the projecting finger lever 13 and to hold it during the whole time of exposure; the parts mentioned returning to their position of rest under the action of suitably arranged springs (36 for the part 27, 37 for the pawl 32, 38 for the connecting rod 33, and 39 for the ring 19). 35

The operating lever 27 is moreover directly connected by its end 40 to the piston device 16 so that if desired a rubber ball can be used for effecting the exposure. 40

The pivot 34 of the connecting arm 33 is on the nipple of the barrel 46. This nipple is integral with the barrel itself. When the latter is being set by turning the key 15 in the direction of the arrow 42 (Figure 6), this movement, by shifting the pivot point of the connecting arm 33, disengages a projection 43 on the annular ring from a recess 44 in the connecting arm 33, and then removes the end projection 45 of the connecting arm while the pawl 32 advances and at once returns, without affecting the opening of the shutter sectors. 45

The nipple carrying the pivot point of the connecting arm 33 limits the travel of the barrel and is also used for driving a stop ring 41 round the nut 53 which secures the spindle of the barrel. 50

After the barrel has been wound up for a snapshot (Figure 7) the projection 43 on the annular ring engages with one corner *a* of the recess 44 in the connecting arm in such manner that the connecting arm, released by the release of the shutter, drives the annular ring 19. This manner of driving only continues however during the opening of the sectors. 55

For closing the sectors, the annular ring 19 is acted upon by the other

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corner *b* of the recess 44 during the second half of the reciprocating motion of the end of the arm 33 effected by the rotation of the pivot point 34.

The cover or side of the barrel carrying the nipple, is provided with recesses at three points 47 suitably selected, so that the tail 48 of the disengaging lever 27, by engaging with the recesses in the positions "closed", "set", "open", will fix the barrel in each of the three positions.

During the winding of the barrel, owing to the travel of its nipple, the connecting arm 33 is moved back, so that the bosses formed by the three recesses 47 can therefore operate the disengaging lever 27 without the pawl 32 thereof coming in contact with the projection 45 on the connecting arm 33.

The shutter sectors 22 (Figure 8) are preferably so shaped as to open and close in the shape of a three armed star but they can be cut out according to any pattern, limited by straight or curved lines, as long as the three plates opening and closing respectively from the centre outwards and *vice versa*, provide when closed, an absolutely light-proof closure. It has previously been proposed to form shutter sectors so that in opening and closing a star is formed but in these cases the star has never had less than four arms.

For the purpose of opening the shutter for focussing on the ground glass, the outside button 17 is secured to a lever 50 (Figures 8 and 9) provided at the end with a pin 51 which moves the connecting arm 33 when the button is moved in the direction of the arrow 18 (Figure 1). This movement causes the sectors 22 to open as if the finger lever 13 had been operated, with the difference that the shutter remains open until the button is brought back or the barrel wound up.

In the latter case, the ring 41 on the barrel pushes back, during the last part of its movement, the end 52 of the lever 50 and with it the button 17.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In a photographic shutter of the kind described a connecting arm pivoted to a spring barrel and adapted to be operated either by said barrel when released or by other means when the barrel is not set to effect an instantaneous or a time exposure respectively.

2. In a photographic shutter of the kind described, a shutter-actuating device for time exposures comprising a pivoted lever, a spring pawl mounted on one end of said lever and adapted to engage with the end of a pivoted arm, said arm being connected with a shutter-operating ring substantially as described.

3. In a photographic shutter of the kind described, a shutter-actuating device for instantaneous exposures comprising a rotatable spring barrel, a connecting arm pivoted towards the periphery of said barrel, a recess such as 44 in said connecting arm engaging with a corresponding projection on the shutter blade moving device, a suitable barrel retaining means, preferably consisting of one end of the actuating lever for time exposures co-operating with a recessed disc or projections on the spring barrel and adapted to lock the barrel in either of its set positions and to release it when it is desired to actuate the shutter, substantially as described.

4. In a photographic shutter of the kind described, a device for opening the shutter for focussing and like purposes comprising a stud situated outside the casing, a lever connected thereto adapted to lift the connecting arm and thereby actuate the shutter blades operating ring substantially as described.

5. In a photographic shutter of the kind described the use of shutter blades of such shape as to form in opening and closing a star with three arms, substantially as described.

6. In a photographic shutter of the kind described a single piece casing comprising an outer flange and a central flanged lens receiving opening, the

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space between the two faces being adapted to receive the shutter mechanism and the central flange forming a support for the shutter operating ring substantially as described.

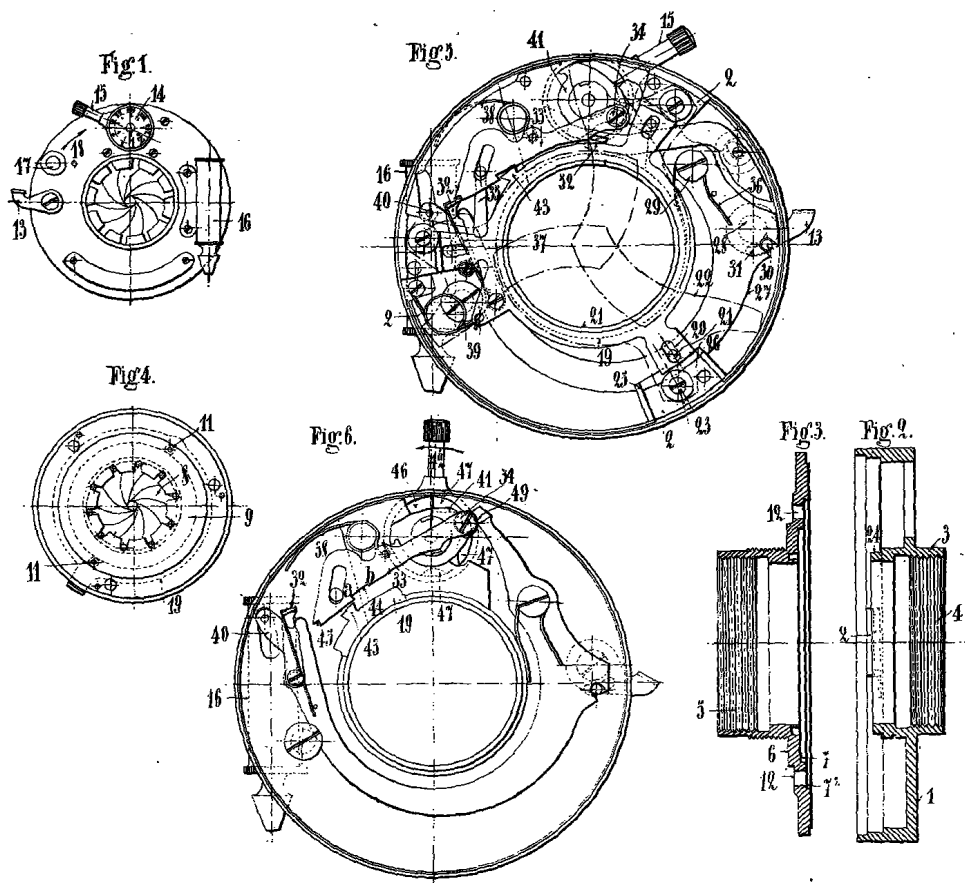
.7. In combination with a casing of the kind described in Claim 8 an inwardly recessed cover provided with an iris diaphragm mounted in said recess and actuating means therefor extending outside the cover. 5

.8. The complete photographic shutter substantially as described or illustrated in the accompanying drawings.

Dated this 28th day of July 1905.

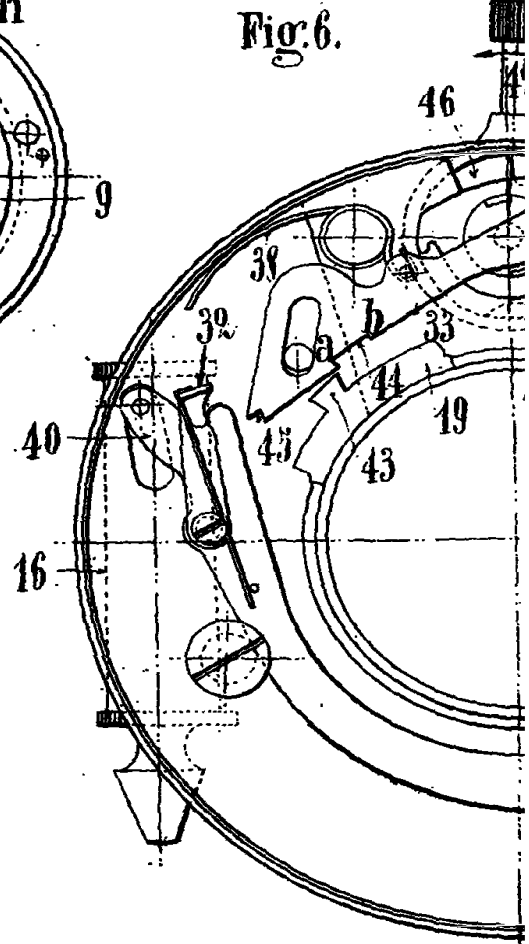
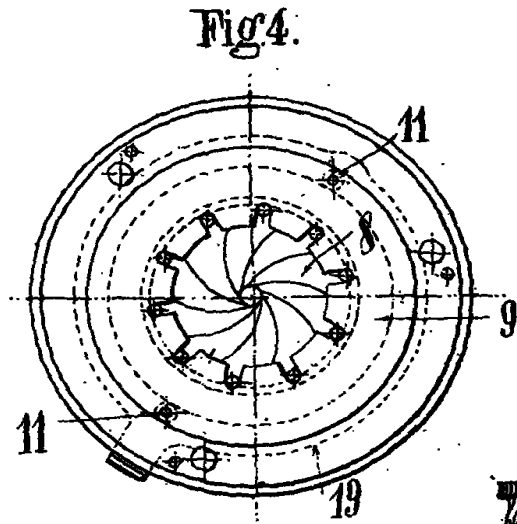
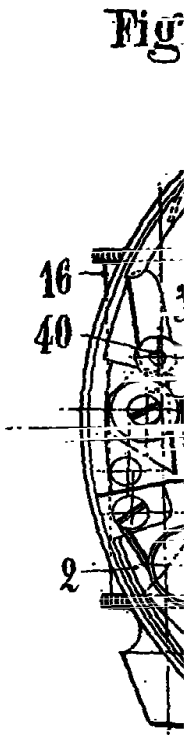
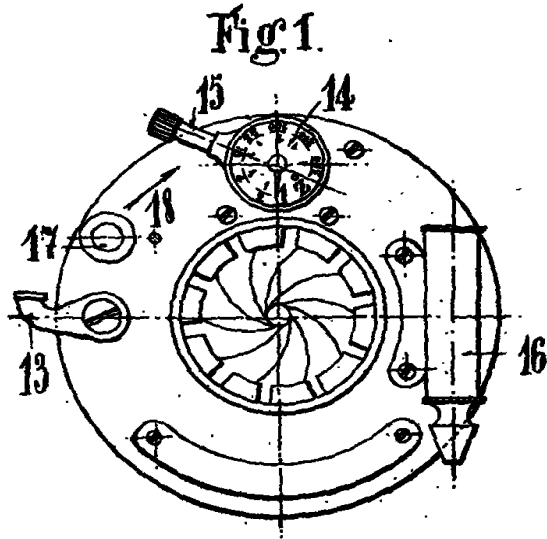
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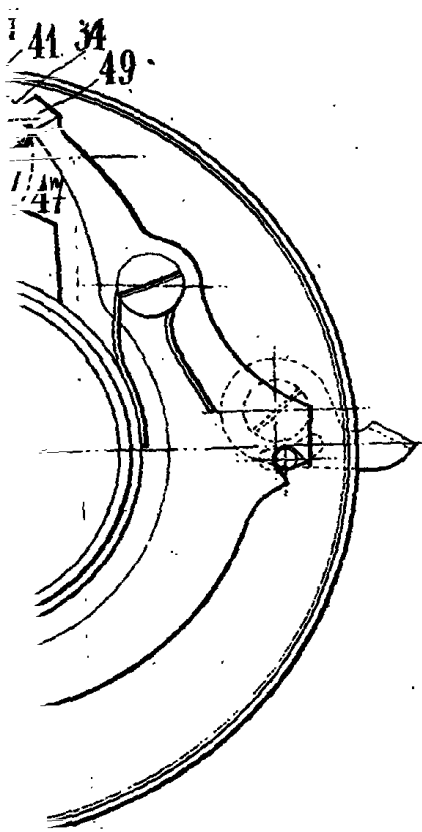
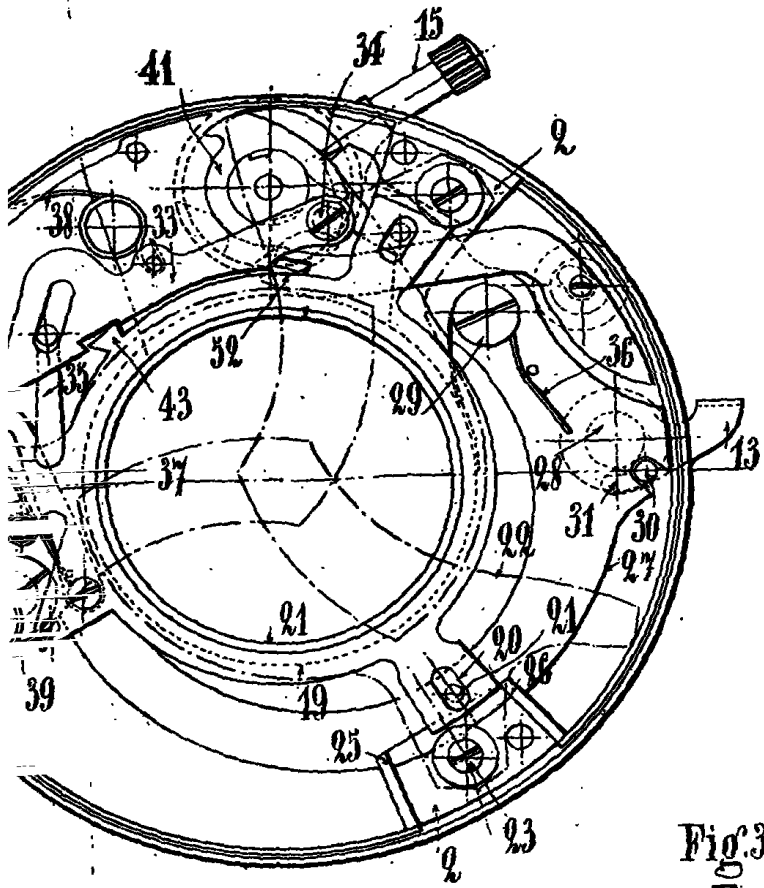
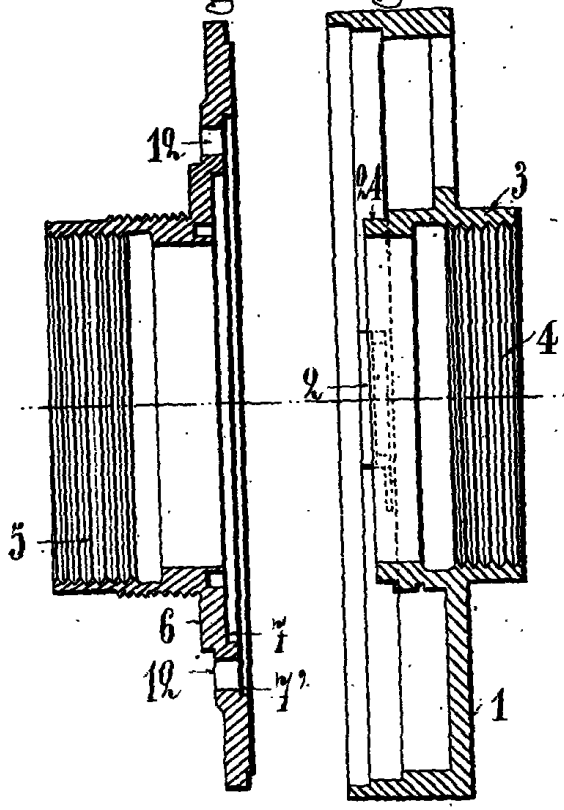


Fig. 3.

Fig. 4.



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Fig 8

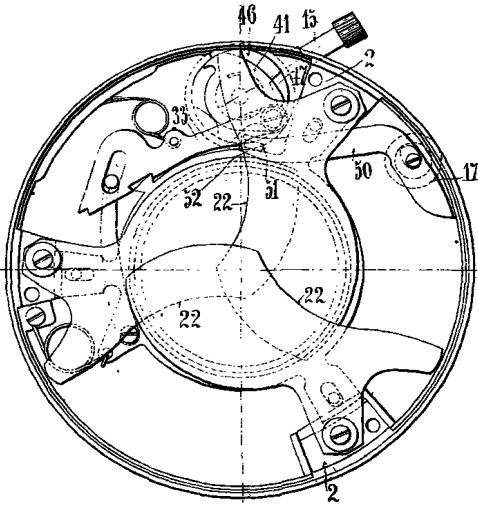


Fig 9

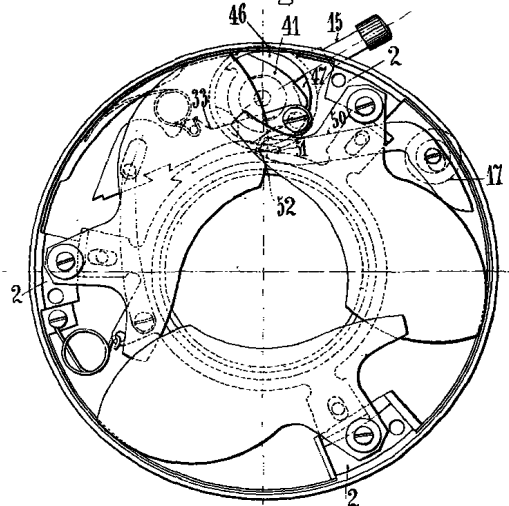
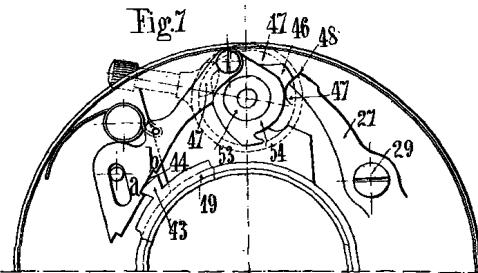


Fig 7



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Machinery & Tools

Fig. 8

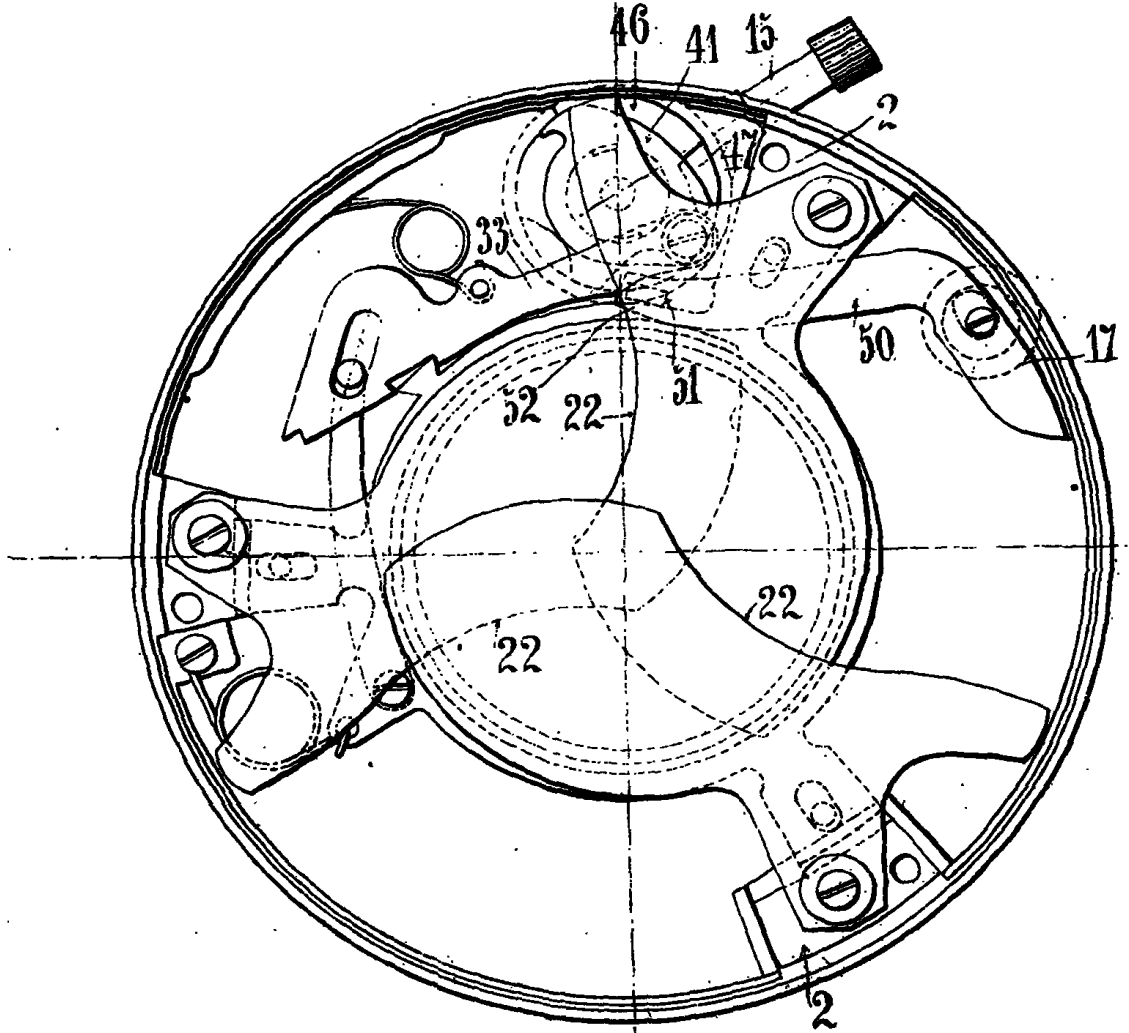
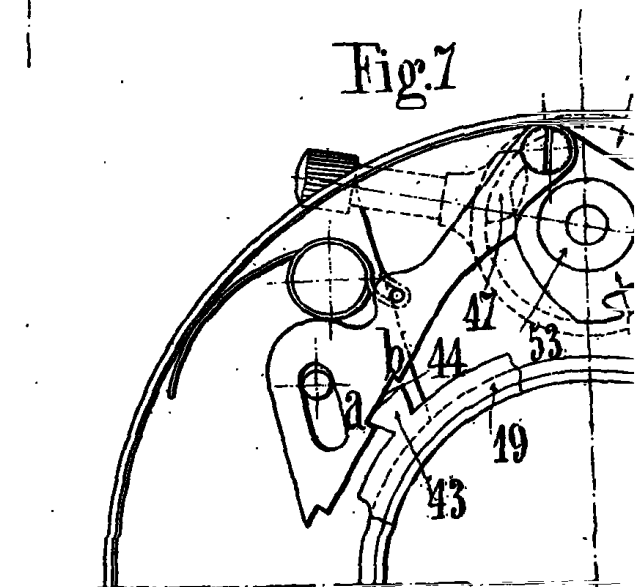
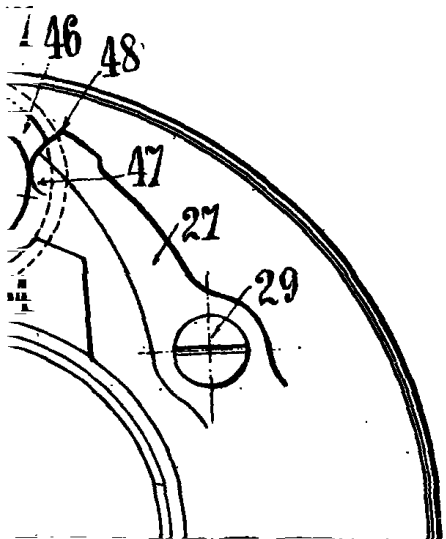
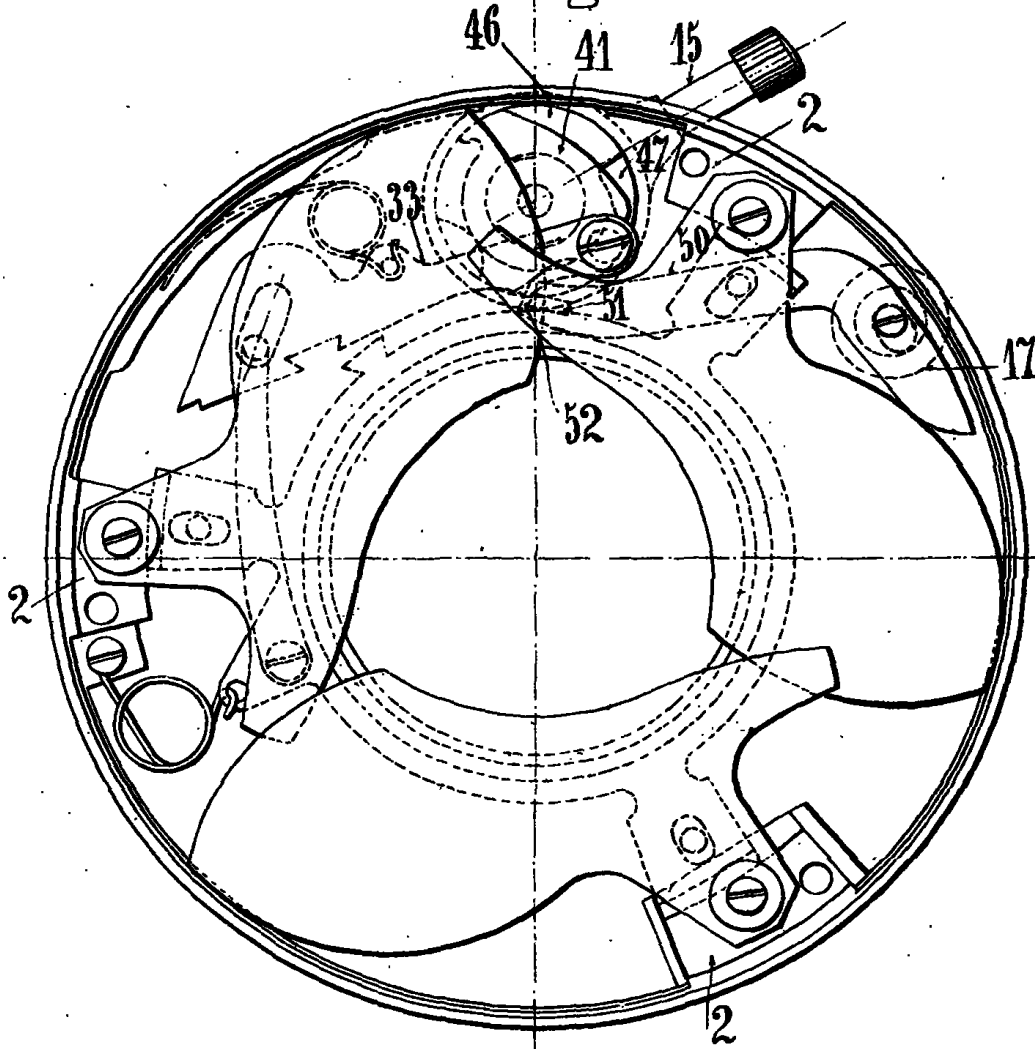


Fig. 7



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Fig. 9



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