# PATENT SPECIFICATION

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COMPLETE SPECIFICATION.

## An Improved Escapement for Clockwork Mechanism.

I, ALBERT WIRZ, of 6, Alban Anlage, Basel, Switzerland, a Swiss citizen, 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 an improved escapement for clockwork mechanism of the type wherein a weighted beam, which is lifted periodically by the pendulum, controls an escapement lever actuated by a ratchet escape wheel and checked by the weighted beam by means of a stud on same when the ratchet escape wheel is in the released position. In accordance with the present invention the weighted beam is provided with an escapement catch for the escapement lever situated in front of the said stud and the escapement lever has a head which rubs against the escapement catch when moving towards the stud. Moreover in order to diminish friction the contact surfaces of the escapement catch and of the escapement lever head are formed of jewels of varying degrees of hardness.

One form of carrying the invention into effect is shown diagrammatically in the accompanying drawing.

Close to its point of suspension the pendulum rod 1 carries a laterally projecting arm 2 fitted at its free end with a jewelled plate 3. Above the point of suspension of the pendulum is arranged a horizontal beam 4 connected at one end by means of a flat link 5 to the column 6 of the frame which is not shown in the drawing. On the end of the screw 7 that passes through the beam 4, is a flexible steel wire 8 projecting downwardly. Against the lower end of this wire the small plate 3 strikes at each swing of the pendulum thus forcing the beam 4, the weight of which rests on the vertically adjustable pin 9, to move upwards.

At its free end the beam 4 carries a conical stud 10 the height of which can be adjusted and beyond this stud 10 is an escapement catch 11 for the escapement lever 13 pivoted at 12. The escapement lever 13 under the influence of a weight 14 always tends to assume the position indicated by the dotted lines, from which it is moved back again by the ratchet escape wheel 15 into the position shown by the full lines. A star-wheel 16, fixed firmly on the axis of the ratchet escape wheel, is checked in its movement by the lever 17, which is controlled by a disc 19 provided with a crank pin 18 that oscillates with the escapement lever 13 for the purpose of releasing and checking the star-wheel 16. The star-wheel 16 and ratchet escape wheel 15 when released by the escapement lever 13 and the lever 17 are rotated by a main spring and actuate the ordinary clockwork mechanism to the hands. The upper end of the escapement lever 13 is fitted with a head 20 which consists at least at its upper portion, of a jewel, for example an agate. At every movement to the right the head 20 rubs against the stud 10 after having first struck against the escapement catch 11, the beam 4 being moved upwards at the same time. Thus the shock of impact of the escapement lever against the stud 10 is diminished. The beam 4 drops again at once and holds the escapement lever momentarily in the inward position which releases the ratchet wheel until the beam 4 is again moved upwards by the pendulum whereupon the top of the escapement lever 13 swings outwards again but its head does not come into contact with the escapement catch. In order to minimise the friction between

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the latter and the head that rubs against it during its movement inwards, the rubbing surface of the escapement catch 11 consists of a jewel $11^1$ which however must not be as hard as that on the head 20. This ensures that the jewels do not grind against one another and cause roughness in course of time, but rather that one polishes the other i.e. makes it smoother, so that the certainty of the action of the escapement device described is assured.

The working of the escapement mechanism during a complete double-swing of the pendulum is as follows:—As soon as the arm 2 of the pendulum swinging to the left, slightly raises the beam 4 by means of the wire 8, the escapement lever 13, under the action of the weight 14 and through the intermediary of the spindle 12, will be moved to the left at the top, the lower curved end of the escapement lever 13 swinging upwards during that time past the right hand bottom tooth of the wheel 15. When the spindle 12 rotates counter clockwise, the pin 18 allows the lever 17 controlled by the action of a weight, to swing to the left, so that it releases the star-wheel 16 before the curved end of the lever 13 reaches the next higher tooth of the wheel 15. The star-wheel 16 will at once rotate clockwise under the action of the main spring and the tooth of the wheel 15 rotating with the star-wheel, which is situated above the curved end of the lever 13, will strike this end of the lever 13 and turn the latter from the position shown in dotted lines back to the position shown in full lines. Before the lever 13 reaches the dotted position, the beam 4 will descend and swing the pendulum in the opposite direction. During the return of the lever 13 to the position shown in full lines, the head 20 will slide under the escapement catch 11 and strike the stud 10; with which it will be held in engagement until the pendulum again raises the beam.

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. Escapement for clockwork mechanism of the type wherein a weighted beam which is periodically raised by the pendulum controls an escapement lever actuated by a ratchet escape wheel and checked by the weighted beam by means of a stud on the same when the ratchet escape wheel is in the released position, the feature of which is that in front of the said stud on the weighted beam there is an escapement catch which retains the escapement lever in the position for releasing the ratchet escape wheel, the escapement lever being provided with a head that rubs against the escapement catch when moving in the direction of the said stud and the rubbing surfaces of the escapement catch and of the escapement lever head in order to minimise friction being formed of jewels of different degrees of hardness.

2. The improved escapement for clockwork mechanism constructed arranged and operating substantially as described with reference to the accompanying drawing.

Dated this 31st day of August, 1926.

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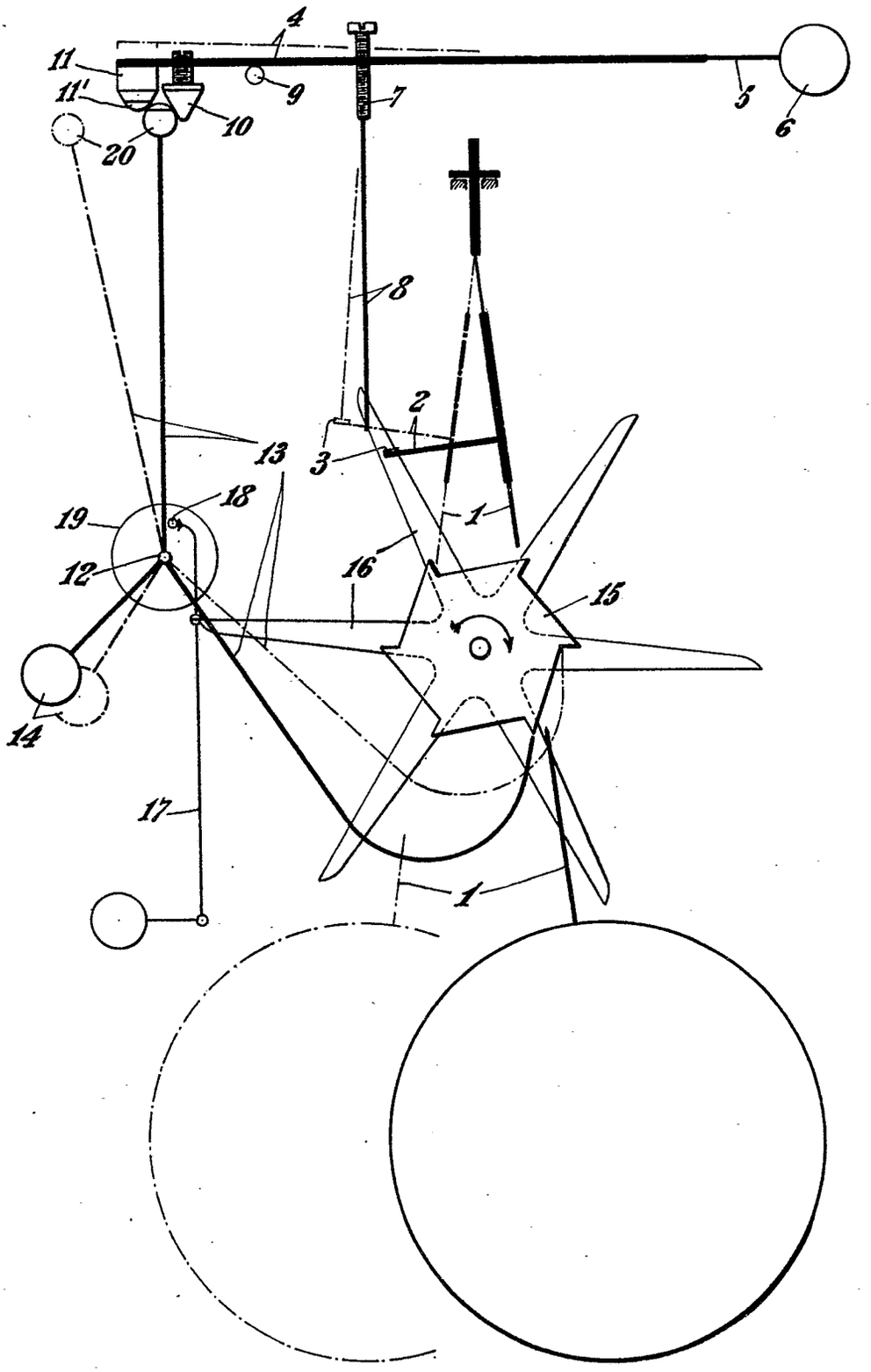


[This Drawing is a reproduction of the Original on a reduced scale]

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