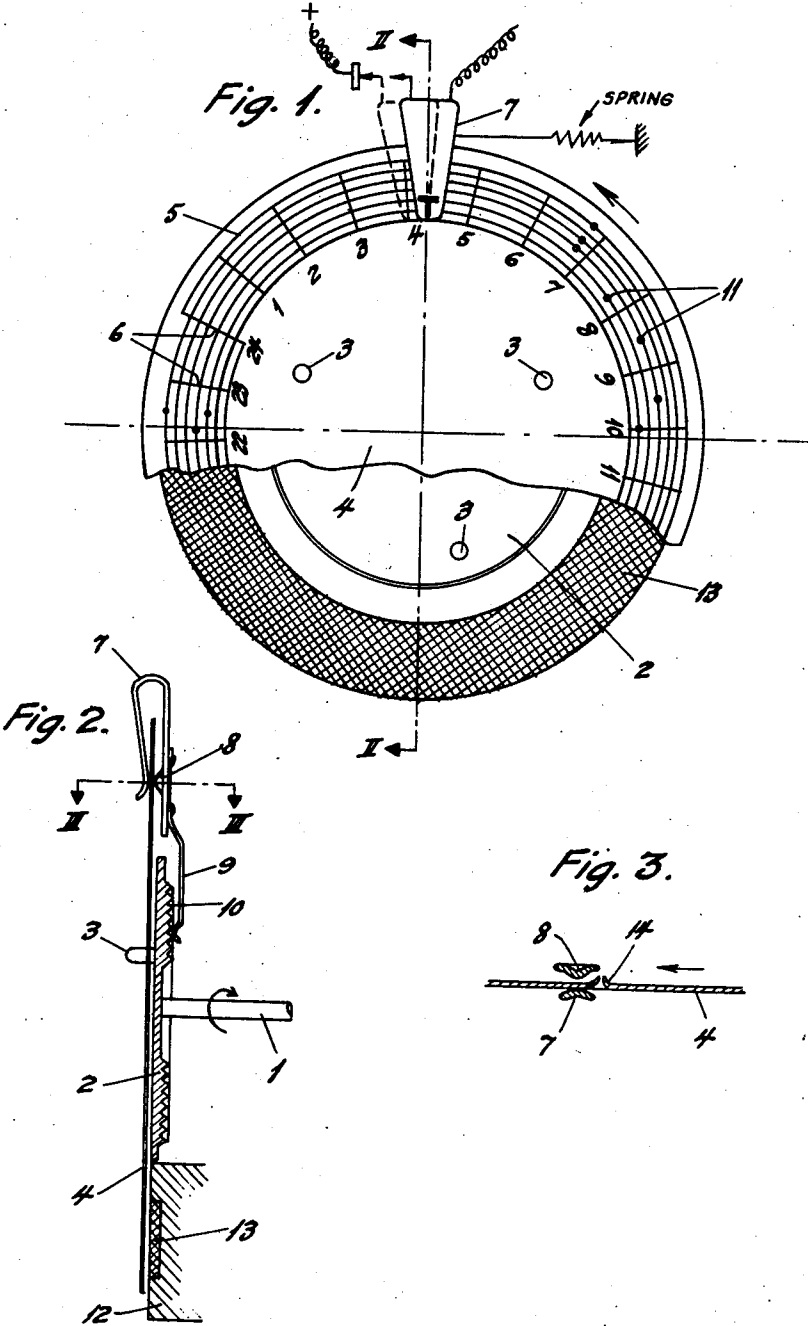


Oct. 3, 1950

K. J. YLINEN
TIME SWITCH

2,524,338

Filed May 4, 1948



INVENTOR
KLAUS J. YLINEN
BY *Young, Emery & Thompson*
ATTY.

UNITED STATES PATENT OFFICE

2,524,338

TIME SWITCH

Klaus Johannes Ylinen, Stockholm, Sweden

Application May 4, 1948, Serial No. 24,929
In Sweden July 28, 1947

4 Claims. (Cl. 200—46)

1

The present invention relates to time switches for the sounding of alarms, the closing and breaking of electrical circuits etc.

The object of the invention is to provide a time switch which may be adjusted to sound a warning or to perform a switching operation or the like in a very simple and convenient manner, the device being moreover extremely simple and cheap.

The main characteristic feature of the invention is that a driving mechanism is adapted to move a sheet or strip-like time-mark carrier in which marks are intended to be made by the aid of a needle or the like pointed instrument in the form of small point-shaped projections or bulges on one side of the carrier, a yoke or the like being adapted to cooperate with said carrier which moves between the legs of said yoke, and either the yoke or the carrier being capable of a certain limited movement in such a manner that, when a point-shaped projection or bulge on the carrier enters between the legs of the yoke, either the yoke is taken along by the carrier in the direction of movement of the latter, or the carrier is checked by the yoke in its movement, in both cases with the actuation of an alarm device, an electric contact or the like as a result.

An embodiment of the device is shown as an example in the accompanying drawing. Fig. 1 is a plan view. Fig. 2 shows a section along line II—II of Fig. 1. Fig. 3 shows a section along line III—III of Fig. 2.

To the end of a shaft 1 which is turned one revolution in 24 hours by a suitable movement, a plate 2 is secured. This plate is provided with three projecting pins 3 upon which a circular thin sheet 4 of a suitable material, such as paper, cardboard, thin sheet metal or the like, may be slipped, the sheet to this end being provided with punched holes corresponding to the pins 3.

On the front side of the sheet 4 near its periphery a spiral line 5 comprising seven full revolutions is drawn, each revolution corresponding to twenty-four hours. Through radial lines 6 this spiral is divided into 24 equal parts each of which thus corresponds to an hour. Further radial lines, not shown, may be drawn which correspond for instance to quarters of an hour or to ten minutes.

A member in the form of yoke-shaped spring 7 is adapted to cooperate with the sheet. This yoke-shaped spring grips over the edge of the sheet 4. One leg thereof is provided with a projection 8 located behind the sheet, the distance between this projection and the other leg of the

2

spring corresponding to the thickness of the sheet 4. The spring is secured to one end of an arm 9 whose other end is bent and adapted to cooperate with a spiral groove 10 in the rear side of the plate 2. This groove 10 has a pitch which exactly corresponds to the pitch of the spiral 5, so that the projection 8 on the yoke-shaped spring 7 will follow this spiral at the rotation of the shaft 1. The arm 9 is movably supported in a suitable manner, not illustrated in the drawing, so that it can move radially and also be carried along some distance in the direction of rotation of the sheet 4 for instance against the action of a spring.

When using the above described device holes 11 are pricked in the sheet 4 by means of a pin or the like on the spiral 5 at points corresponding to the desired times. For the facilitating of such hole pricking a ring 13 of felt or other suitable soft material into which a pin point easily penetrates may be arranged on the panel 12 of the timepiece, or clock, with which the device is combined.

When the pin is stuck in, the material of the sheet 4 surrounding the hole is pressed out in the shape of a bulge 14 on the back of the sheet, as shown in Fig. 3. If desired, this bulge may be stiffened by lacquering or the like.

When the sheet 4 is rotated by the shaft 1 and a bulge 14 enters between the two legs of the resilient member 7, the sheet takes the member 7 along in the direction of rotation for instance to the position shown in dotted lines in Fig. 1 which is an end position at which the spring-yoke 7 is prevented to move further by a stop or the like. During this movement of the spring-yoke 7 the latter by suitable means may actuate an electric contact for closing the current through a buzzer or the like. It may also in a purely mechanical way release a clapper cooperating with a bell so that a signal is furnished. When the spring-yoke has reached the stop position shown in dotted lines, further rotation of the shaft 1 causes the bulge 14 to force the legs of the spring somewhat apart and to pass through these, whereupon the yoke 7 is returned to the position shown in full lines by another spring cooperating with it. This return movement may be utilized to break the contact of the buzzer or the like or to cause the impact of a clapper against a bell.

Instead of being movable in the direction of rotation of the sheet 4 the spring-yoke may also be fixed in this direction and the sheet 4 with its supporting plate 2 may be mounted for turning movement on the shaft 1 for instance against

3

the action of a spring or the like. When a bulge 14 reaches the legs of the spring-yoke 7, the sheet with its plate 2 will be checked, i. e. these will move relatively to the shaft and this movement may be utilized to give alarms etc.

The yoke 7 does not necessarily have to be resilient but can also be rigid, the distance between its legs then corresponding to the thickness of the sheet 4 so that the sheet easily passes through the legs while such is not the case with a projecting bulge 14. If the yoke is not resilient, the bulge will be flattened out corresponding to the distance between the legs when the portion of the sheet provided with the bulge subsequently passes through the legs.

As appears, the device is very simple and may easily be combined with electrical and mechanical clocks and be used for many different purposes, such as to give a signal at the beginning of a certain program in a broadcast.

In the embodiment shown desired programs may be marked for a week in advance, for instance. After this period the spring-yoke 7 is moved back to its starting position, i. e. to the beginning of the spiral 5, by hand or automatically, and a new sheet 4 is placed on the pins 3.

The principle as outlined above may of course be used also in such cases where the time-mark carrier is in the form of strip of paper moving in a straight path over rollers or the like.

Since it is only a question of relative motion between the yoke 7 and the time-mark carrier 4 a modification is naturally also conceivable in which the clockwork moves the yoke whereas the time-mark carrier is stationary and is carried along a certain distance only when the yoke reaches a bulge on it, the parts supporting the time-mark carrier being adapted to release the alarm device etc.

What I claim is:

1. A time switch for the closing and breaking of electric circuits, comprising a disc mounted to

4

be rotated and having sheet receiving means on one side thereof and a spiral guide means on the other side thereof, a sheet mounted by said sheet receiving means on the one side of the disc to be carried thereby upon rotation of the disc and having bulge portions and a yoke embracing the edge of the sheet and having a resilient clamping action on the sheet and the disc, said disc and yoke being arranged for relative rotational movement and the yoke being adapted to cooperate with the spiral guide means so as to be moved radially during the said relative rotational movement and to describe a spiral line on the sheet, the said relative rotational movement being temporarily stopped and the sheet and yoke being moved together when a bulge portion on the sheet enters between the legs of the yoke to actuate a switch.

2. A time switch according to claim 1, in which means are provided to rotate the disc and the yoke is relatively stationary.

3. A time switch according to claim 1, in which a guide means is provided on the yoke in the form of a resilient arm secured at one end on the yoke and the other end contacting the spiral guide means on the disc.

4. A time switch according to claim 1, in which a panel is provided mounted adjacent the disc and sheet and having a felt ring mounted therein so that the sheet may be pin pierced where desired.

KLAUS JOHANNES YLINEN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
514,297	Wilder	Feb. 6, 1894
2,301,394	Geissler	Nov. 10, 1942
2,331,639	Tigerstedt	Oct. 12, 1943