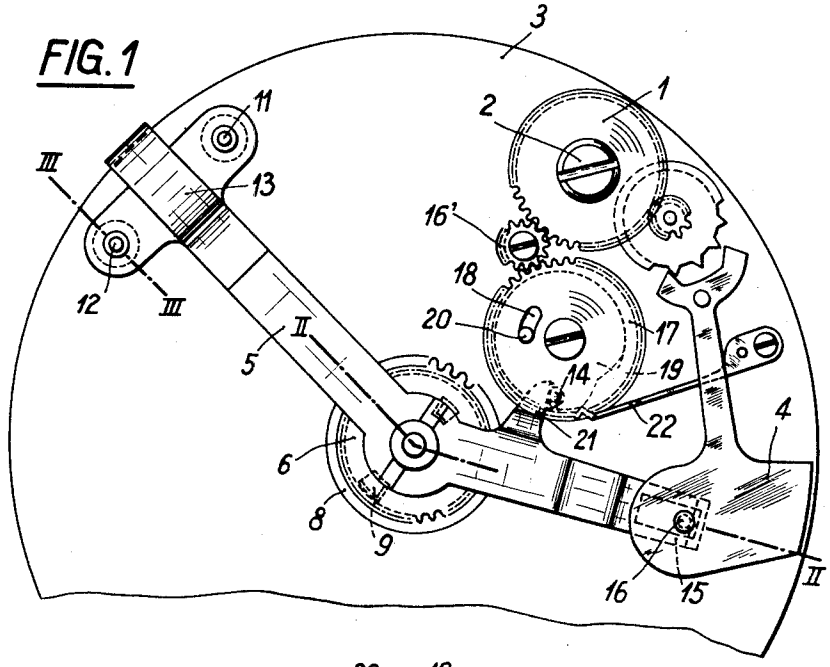
April 23, 1957 G. BRIDEVAUX 2,789,410

ALARM TIME-PIECE

Filed July 29, 1955

FIG. 1



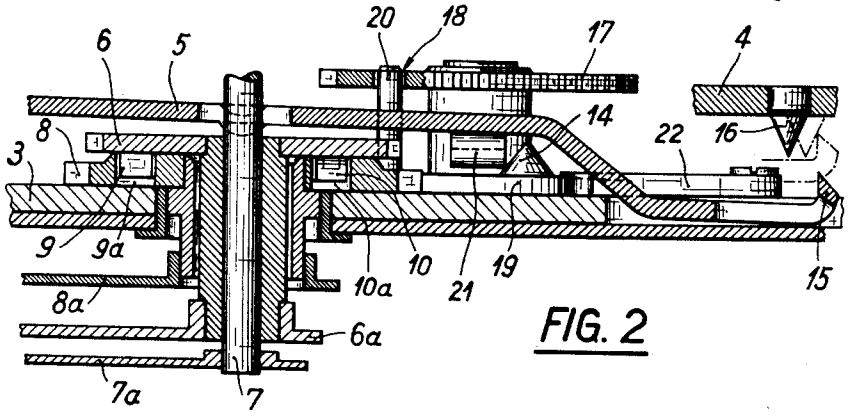


FIG. 2

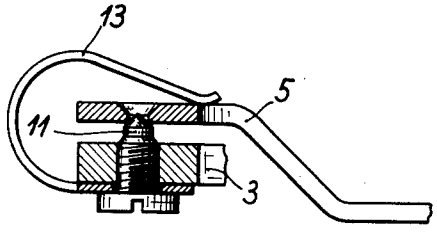


FIG. 3

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ALARM TIME-PIECE

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Application July 29, 1955, Serial No. 525,340

Claims priority, application Switzerland August 28, 1954

3 Claims. (Cl. 58—21.1)

My invention has for its object an alarm time-piece wherein the bell when released operates during a period limited to a fraction of the expansion of the barrel spring, said time-piece being of the type incorporating an hour wheel adapted to be shifted axially at a moment defined by the alarm wheel on which it rests.

According to my invention, said clock includes a rigid lever submitted to the action of a return spring and urging the hour wheel against the alarm wheel, said lever locking during normal operation the hammer of the alarm bell mechanism, so as to release said hammer when the hour wheel is shifted, said lever acting then through an intermediate device on a wheel forming part of the alarm gearing whereby said wheel is held against movement after a fraction of a revolution.

I have illustrated by way of example in accompanying drawings a portion of a time-piece incorporating one embodiment of my invention. In said drawings:

Fig. 1 is a plan view of said portion of a time-piece.

Fig. 2 is a cross-section through the broken line II—II of Fig. 1.

Fig. 3 is a cross-section through line III—III of a detail.

The alarm mechanism illustrated includes a barrel **1** the shaft of which is revolubly secured at **2** to the plate **3**, a striking hammer **4** and a releasing lever **5**.

As shown in Fig. 2, the hour wheel **6** on which is fitted the hour hand **6***a* slides over the spindle **7** of the centre wheel carrying the minute hand **7***a*. The alarm wheel **8** is revolubly carried by the same spindle **7** and controls the alarm hand **8***a*. The hour wheel **6** carries two projections **9** and **10** provided with sloping surfaces cooperating with recesses **9***a* and **10***a* formed in the alarm wheel **8** so as to allow the hour wheel to be shifted axially with reference to the alarm wheel.

The releasing lever **5** is pivotally secured to the plate **3** through the hinge constituted by two pivots **11** and **12** screwed into said plate and is subjected to the action of a return spring **13** (Fig. 3) which urges the lever down towards the plate and thereby the hour wheel against the alarm wheel. Said lever is provided with a lateral stop **21** and with a tail-piece **15** adapted to cooperate with a stud **16** on the striking hammer **4**.

Between the stop **21** on the releasing lever **5** and a transmitting wheel or intermediate rotary gear **16'** driven by the barrel is inserted an intermediate arrangement including a wheel **17** engaging said intermediate gear **16'** and provided with an arcuate groove **18**. A heart-shaped cam **19** is fitted on the same spindle as the wheel **17** and underneath the latter. Said cam is provided with a pin **20** engaging the groove **18** with some clearance and furthermore with a conical projection **14** cooperating with the stop **21** on the lever. Said cam is subjected to the action of a return spring **22**.

When the alarm mechanism is to be released through the progression of the watch hands, the projections **9** and **10** on the hour wheel drop suddenly into the recesses

9*a* and **10***a* formed in the alarm wheel. The lever **5** which follows the axial movement of the hour wheel sinks, whereby its tailpiece **15** releases the stud **16** on the striking hammer **4** so as to allow said hammer to operate. The barrel produces the angular movement of the wheel **17** which drives the cam **19** through the agency of the pin **20** until the projection **14** on the cam engages the stop **21** on the lever and stops the alarm. The hour wheel continuing its rotation, the projections **9** and **10** thereon provided with sloping surfaces are released with reference to the recesses **9***a* and **10***a* whereby the hour wheel is axially shifted and returns slowly the lever **5** into its original position against the spring **13**. The tail-piece **15** on said lever locks then the striking hammer and its stop **21** releases the projection **14** which allows the return spring **22** to make the cam progress and finish its rotary movement and thus return into its original position.

What I claim is:

1. In an alarm clock, the combination of a clock-work including an hour wheel, a spindle on which said hour wheel is axialy shiftable, an alarm mechanism including a spring barrel, an angularly adjustable alarm wheel mounted on the hour wheel spindle and longitudinally rigid therewith, the hour and alarm wheels being normally spaced from each other, a plate on which the spindle and spring barrel are revolubly mounted, a hammer controlled by the spring barrel, a lever pivotally secured to said plate round an axis parallel with said plate, normally raised and engaging the hammer to hold same against operation and extending over the surface of the hour wheel opposed to the alarm wheel, one of the alarm and hour wheels being recessed on the surface facing the second wheel, projections on said second wheel adapted to register with the recesses in the recessed wheel for a predetermined angular setting of the hour wheel with reference to the adjusted angular position given to the alarm wheel, a spring urging the lever into a depressed inoperative position in which it releases the hammer and shifts the hour and alarm wheels towards each other to make the projections on said second wheel enter the recesses in the recessed wheel whenever said wheels enter the above mentioned relative angular setting, an intermediate rotary gear driven into rotation by the spring barrel, a stop formed laterally on the pivoting lever and means engaged by said stop when the lever is in its depressed inoperative position to prevent the progression of the last mentioned gear and thereby the unwinding of the spring barrel and operation of the hammer after a predetermined angular movement of the said gear, the hour wheel when progressing beyond the above mentioned relative angular setting with reference to the alarm wheel returning into its original spaced location with reference to the alarm wheel through disengagement between the projections and recesses on the two wheels and thereby urging the lever back into its original raised hammer locking position.

2. In an alarm clock, the combination of a clock-work including an hour wheel, a spindle on which said hour wheel is axially shiftable, an alarm mechanism including a spring barrel, an angularly adjustable alarm wheel mounted on the hour wheel spindle and longitudinally rigid therewith, the hour and alarm wheels being normally spaced from each other, a plate on which the spindle and spring barrel are revolubly mounted, a hammer controlled by the spring barrel, a lever pivotally secured to said plate round an axis parallel with said plate, normally raised and engaging the hammer to hold same against operation and extending over the surface of the hour wheel opposed to the alarm wheel, one of the alarm and hour wheels being recessed on the surface

facing the second wheel, projections on said second wheel adapted to register with the recesses in the recessed wheel for a predetermined angular setting of the hour wheel with reference to the adjusted angular position given to the alarm wheel, a spring urging the lever into a depressed inoperative position in which it releases the hammer and shifts the hour and alarm wheels towards each other to make the projections on said second wheel enter the recesses in the recessed wheel whenever said wheels enter the above mentioned relative angular setting, an intermediate rotary gear driven into rotation by the spring barrel, a heart-shaped cam, means wherethrough the rotary gear drives said cam into rotation, at least one projection rigid with a point of the cam near its periphery, a lateral stop on the lever, adapted when the lever is in its depressed position, to enter the path of the projection on the cam after a predetermined angular movement of said cam under the action of the gear and to prevent the progression of the last mentioned gear and thereby the unwinding of the spring barrel and operation of the hammer after said predetermined angular movement of the said gear, the hour wheel when progressing beyond the above mentioned relative angular setting with references to the alarm wheel returning into its original spaced location with reference to the alarm wheel through disengagement between the projections and recesses on the two wheels and thereby urging the lever back into its original raised hammer locking position, and means urging the cam further in the direction of its previous rotation through a predetermined angle when the projection on said cam has been released by the lever upon return of the latter into its said original position.

3. In an alarm clock, the combination of a clockwork including an hour wheel, a spindle on which said hour wheel is axially shiftable, an alarm mechanism including a spring barrel, an angularly adjustable alarm wheel mounted on the hour wheel spindle and longitudinally rigid therewith, the hour and alarm wheels being normally spaced from each other, a plate on which the spindle and spring barrel are revolubly mounted, a hammer controlled by the spring barrel, a lever pivotally secured to said plate round an axis parallel with said

plate, normally raised and engaging the hammer to hold same against operation and extending over the surface of the hour wheel opposed to the alarm wheel, one of the alarm and hour wheels being recessed on the surface facing the second wheel, projections on said second wheel adapted to register with the recesses in the recessed wheel for a predetermined angular setting of the hour wheel with reference to the adjusted angular position given to the alarm wheel, a spring urging the lever into a depressed inoperative position in which it releases the hammer and shifts the hour and alarm wheels towards each other to make the projections on said second wheels enter the recesses in the recessed wheel whenever said wheels enter the above mentioned relative angular setting, an intermediate rotary gear driven into rotation by the spring barrel, a heart-shaped cam, coaxial with and revolubly mounted with reference to said gear, means wherethrough the gear drives said cam with an angular play therebetween, at least one projection rigid with a point of the cam near its periphery, a lateral stop on the lever adapted when the lever is in its depressed position, to enter the path of the projection on the cam after a predetermined angular movement of said cam under the action of the gear and to prevent the progression of the last mentioned gear and thereby the unwinding of the spring barrel and operation of the hammer after said predetermined angular movement of the said gear, the hour wheel when progressing beyond the above mentioned relative angular setting with reference to the alarm wheel returning into its original spaced location with reference to the alarm wheel through disengagement between the projections and recesses on the two wheels and thereby urging the lever back into its original raised hammer locking position, and a spring engaging the cam upon return of the lever into its normal hammer locking position to set said cam in a position allowing further operation.

References Cited in the file of this patent

UNITED STATES PATENTS

964,271 Kaiserman ---------- July 12, 1910