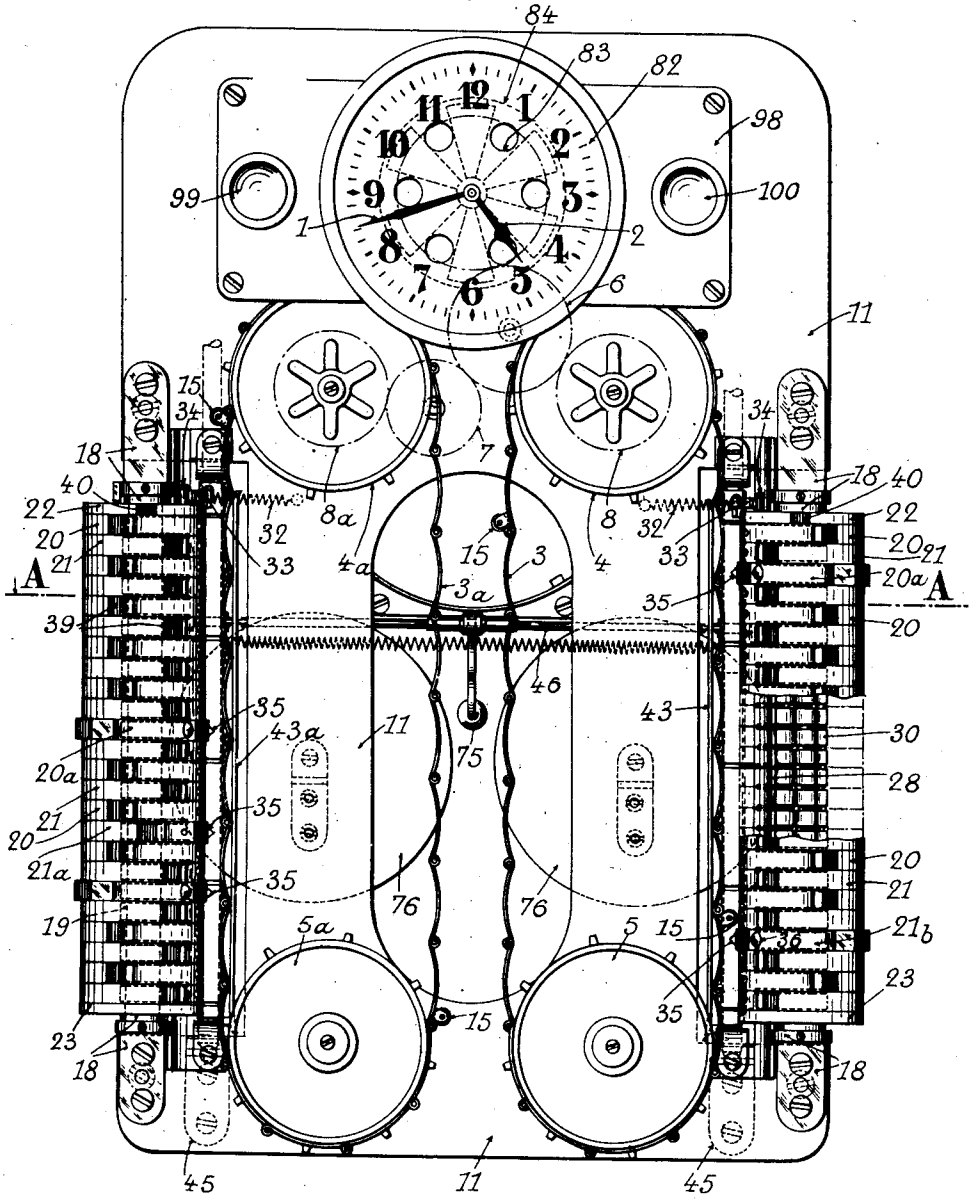
July 30, 1929. C. MAMET 1,722,333

MECHANICALLY OPERATED ALARM AND SIGNAL DEVICE

Filed Oct. 25, 1926 4 Sheets-Sheet 1

Fig.1



C. Mamet
inventor

By: Marks & Clark
Attys

July 30, 1929. C. MAMET 1,722,333

MECHANICALLY OPERATED ALARM AND SIGNAL DEVICE

Filed Oct. 25, 1926 4 Sheets-Sheet 2

Fig. 2

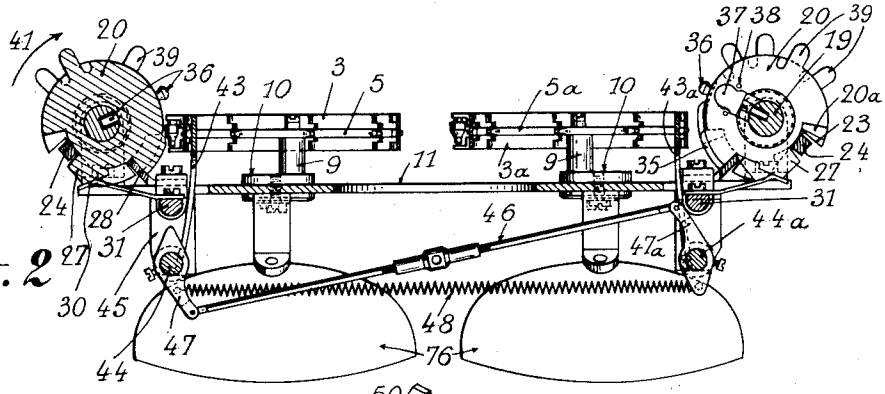


Fig. 3

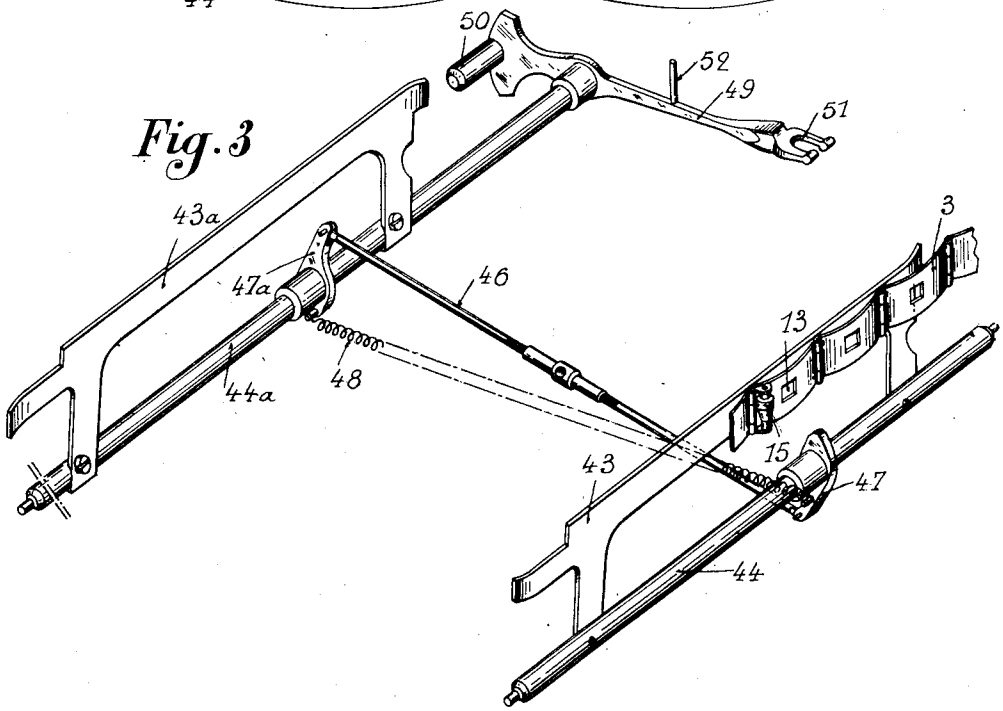
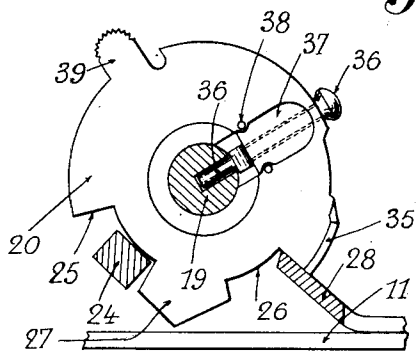


Fig. 9



C. Mamet
Inventor

By: Marks & Clerk
Attys.

July 30, 1929. C. MAMET 1,722,333

MECHANICALLY OPERATED ALARM AND SIGNAL DEVICE

Filed Oct. 25, 1926 4 Sheets-Sheet 3

Fig. 4

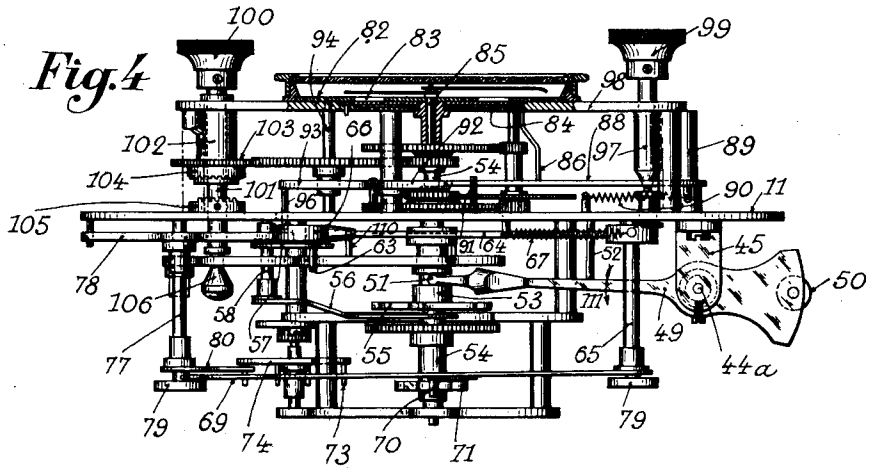
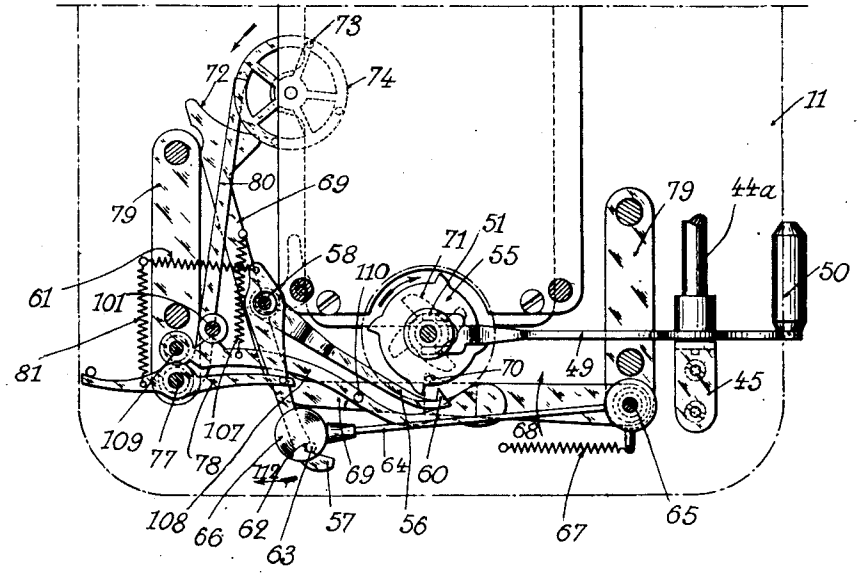


Fig. 5



C. Mamet
inventor

By: Marks & Clark
Attys.

July 30, 1929. C. MAMET 1,722,333

MECHANICALLY OPERATED ALARM AND SIGNAL DEVICE

Filed Oct. 25, 1926 4 Sheets-Sheet 4

Fig. 6

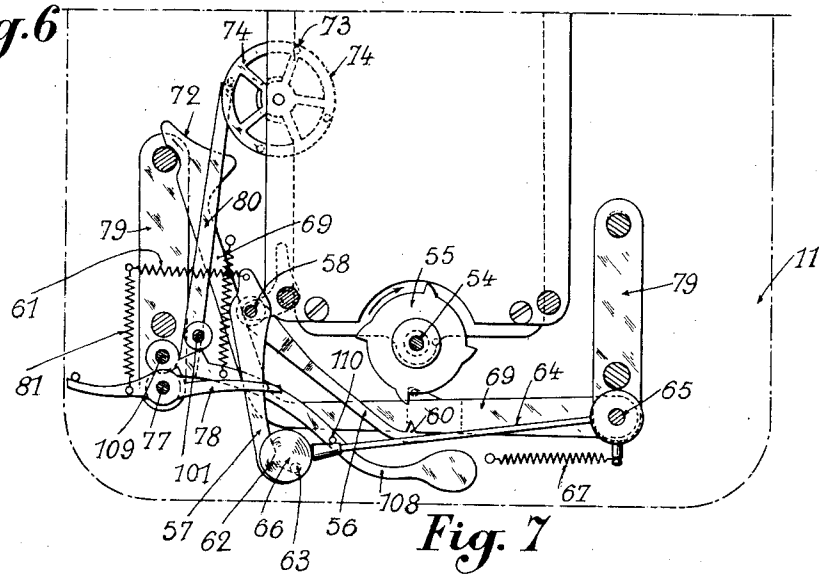


Fig. 7

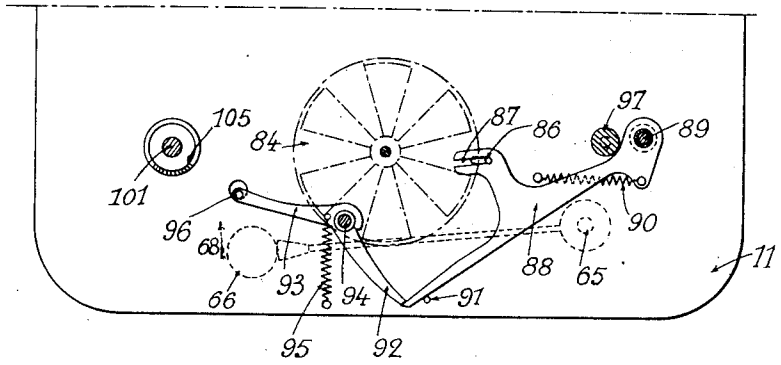
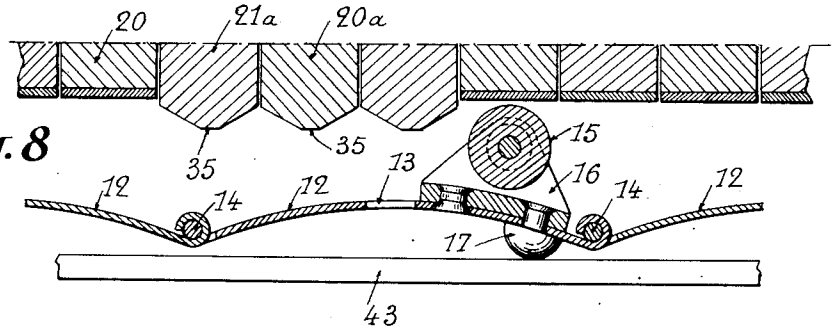


Fig. 8



C. Mamet
Inventor

By: Marks & Clark
Attys.

Patented July 30, 1929. 1,722,333

UNITED STATES PATENT OFFICE.

CLAUDE MAMET, OF PARIS, FRANCE.

MECHANICALLY-OPERATED ALARM AND SIGNAL DEVICE.

Application filed October 25, 1926, Serial No. 144,056, and in France May 12, 1926.

My invention relates to an alarm and signal device which is preferably adapted for use upon clocks, whereby the alarm device may be set off at suitably chosen intervals without interfering with the apparatus between any two consecutive indications thus produced.

The apparatus is of an exclusively mechanical construction, and is characterized by the following features:

1. The alarm device is set off under the control of suitable rollers mounted upon chains coacting with stationary cams and thus acting upon bars which are parallel with the said chain and which control the coupling of the alarm device through the medium of a pivoted arrangement.

2. A certain number of the said cams may be secured in a very simple manner to the shaft upon which they are mounted, so that they may be brought by automatic action, and without any special handling, into their operative position.

3. The said chains consist of a plurality of metallic strips, connected together by cross-pins, and thus the chain cannot be lengthened by the deformation or the wear of the links.

4. The shaft by which the clock hands are set to the proper time is also adapted for the control of the releasing devices for the alarm mechanism.

Further characteristics of the invention will be specified in the following description with reference to the appended drawings which show by way of example an embodiment of the said invention.

Fig. 1 is a general plan view of the apparatus.

Fig. 2 is a section on the line A—A of Fig. 1.

Fig. 3 is a perspective view of the control for the coupling of the alarm device.

Fig. 4 is an end view showing the clock dial and adjacent parts.

Fig. 5 is a plan view of the alarm device, with the upper plate removed, and

Fig. 6 is a like view during the functioning.

Fig. 7 is a plan view of the device comprising the indicating disc.

Fig. 8 is a detail view of the chain and its roller on a larger scale.

Fig. 9 is a detail view on a larger scale.

In the example herein represented, the apparatus as a whole is actuated by clockwork, known per se, which drives the clock hands 1 and 2 in the usual manner, and also drives the elements of the alarm device itself.

The alarm device comprises two endless chains 3, 3^a engaging the respective chain wheels 4, 4^a and 5, 5^a. The wheels 4 and 4^a are mounted upon their shafts by means of a friction washer whereby they may be set in position. The said shafts are driving shafts, and are actuated in contrary directions by the gear wheels 6, 7, 8, 8^a which are driven by the said clockwork. The shafts 9 of the wheels 5 and 5^a are each mounted upon an eccentric 10 so that the tension of the chain can be regulated. The aforesaid elements are all mounted upon the supporting plate 11.

The chains 3 and 3^a (Fig. 8) consist of a set of rigid links, formed of sheet steel, which are bent to the same curvature as the wheels 4 and 5 and have at the middle part an aperture for the insertion of the teeth of the said wheels. The links are hinged together by means of the pins 14.

Each chain carries two rollers 15 which divide the chain into two sections of equal length; said rollers are mounted in a small forked support 16 which is riveted to one of the links adjacent its hinged part, and one of the rivets 17 is provided with a head which coacts—as will be further stated—with a paddle which is disposed within the chain, whilst the said roller coacts with cams placed at each side of the device.

On either side of the apparatus, and in the part corresponding to the straight part of the chains, I disposed—by means of the small right-angled supports 18—two respective shafts 19 upon which are loosely mounted a set of disc-shaped members 20—21, the set being held between two cheeks 22—23 which are secured together on the shaft 19 and on the bar 24 (Fig. 2).

The said discs (Fig. 9) have a general circular outline, and comprise the notches 25 and 26, separated by a boss 27. In the notch 23 is engaged the bar 24, and in the notch 26 a bar 28 which is secured to the main plate 11 on the respective sides of the aperture formed in said plate for the mounting of the discs in position. The sides of the two notches thus act as stops for the said bars, and the point of each boss 27 acts upon the corresponding strip of a comb-shaped spring 30 (Figs. 1 and 2) mounted on a shaft pivot-

ing on the main plate below the bar 28 and laterally urged into contact therewith by the spiral spring 32. The shaft 31 carries a tappet 33 coacting with a stud 34 which is mounted on the cheek 22.

The discs 20 and 21 carry a boss 35 serving as a cam and coacting with the chain rollers 15 in suitable positions of these two elements. Said discs are further apertured radially for the insertion of a pin 36 which engages a longitudinal slot in the shaft 19, whereby each of the said discs may be optionally secured to the shaft. A small spring strip 37 which is held by two studs or pins 38 in a corresponding slot in each disc, acts by pressure upon the pin 36 when it is placed in position, so as to prevent it from escaping.

The discs 20 and 21 are provided with a milled projection or knob 39 whereby the disc can be properly turned upon its axis, as will be further stated. The said knobs, which are mounted on the alternately disposed discs 20 and 21, are placed in the staggered position in order that they may be more conveniently handled. The cheek 22 carries an analogous knob 40.

The apparatus comprises 24 discs upon each of the shafts 19, each corresponding to ¼ hour. The said discs effect the release of the alarm mechanism, in conditions which will be further stated, when they are brought into the position shown at 20^a and 21^a, and it will be noted that a disc can be moved from the position 20 to the position 20^a, by turning it from the interior to the exterior of the apparatus by means of the knob, the bar 24 having been preliminarily brought into the position shown in the drawings by means of the knob 40. Each of these positions corresponds to the contact of one side of the notch 26 with the bar 28; the discs are held in the steady position by a spring strip 30 acting upon either side of the boss 27.

Each disc may be brought into the inoperative position by the contrary action, but the discs may be brought simultaneously into this position by turning the knob 40 which draws the bar 24 in the direction of the arrow 41 (Fig. 2), said bar acting upon the side of the slot 25.

The effort which is required in this movement in order to overcome the resistance of the whole number of strips 30 corresponding to the discs to be rotated, is reduced by reason of the fact that at the start of the motion the stud 34 is separated from the tappet 33 so that all of the springs 30 will be maintained in contact with the cams—as the the motion continues—only by the tension of the spring 32 which is very weak.

When all of the discs have been thus brought into the inoperative position, it is necessary, in order to allow certain of the discs to be brought into the active position, that the bar 24 shall have been preliminarily brought into the position shown in the drawings. This movement will cause the rotation of the shaft 19 by means of a mortise in the cheek 22 in which is engaged a stud mounted on said shaft, so that all the desired discs which are secured to the shaft 19 by the pins 36 will be brought into the operative position. The advantage of this arrangement will be shown in the general description of the apparatus, as will further appear.

In the interior of each of the said chains is disposed a strip 43 (or 43^a), Figs. 1, 2 and 3, which is secured to a shaft 44 (or 44^a), rotatable in the right-angled supports 45. The said shafts are connected together by a rod 46 (carrying a turnbuckle) which is pivoted respectively below and above the discs 47—47^a mounted on the shafts 44—44^a, said discs being connected together by a spiral spring 48. To the end of the shaft 44^a is keyed the lever 49 which carries at one end a counterweight 50 and at the other end a fork 51; a stud 52 secured to said lever in its plane of oscillation will limit the motion of the lever by making contact with the lower face of the main plate 11. The fork 51 engages a sleeve 53 which is rotatable together with the shaft 54 along which it is also slidable. The said shaft is actuated by the clockwork through the medium of suitable gearing, at a speed such that it will make one revolution while the hands of the dial move forward by one hour. The sleeve 53 is secured to a pinion 55 having four unsymmetrical teeth, having a sloping ramp and also a straight wall in the radial direction.

The sum 56 of a double-armed rocking lever 56—57, pivoted at 58, has a pointed end 60 which is urged towards the shaft 54 by the spring 61, and makes contact with the teeth of the pinion 55 for a suitable position of the latter upon its shaft. At the end of the arm 57 is a hook 62 coacting with a stud 63 mounted on an arm 64 which is pivoted on a shaft 65 and carries at the end a striker 66. The said arm 64 which tends under the action of the spring 67 to pivot in the direction of the arrow 68 is secured to a bent lever 69. At the middle of the said lever 69 is mounted a stud 70, perpendicular to its plane, coacting with a wheel 71 mounted on the shaft 54 and carrying four unsymmetrical teeth and a ramp as well as a radially disposed edge. At the outer end of the lever 69 is mounted the ramp 72 coacting with the studs 73 secured to a wheel 74 which is connected by suitable gearing with an escapement wheel actuated by the clockwork and controlling the beats of the striker 75 (Fig. 1) coacting with the gongs 76.

The two lever arms or rods 78 and 80 are mounted on a shaft 77 which is pivoted to the plate 11 and to the stationary bar 79. The arm 78 is disposed in the plane of the striker

66, which, by striking it when it is released from the hook 57, will cause the pivoting of the device 78—80 which is urged into the position herein represented by the spring 81. The rod 80 will hold in this position the wheel 74 whereof one stud 73 makes contact with its end.

The mechanism hereinbefore described is adapted for the release of the vibrating alarm device, as will be further specified, and the apparatus is completed by a visible indicator which appears upon the dial when the alarm is in action.

The dial 82 of the clock (Figs. 4 and 7) comprises for this purpose a plurality of apertures 83 through which may be observed the disc 84 which is revoluble on the shaft 85 actuating the clock hands. The said disc is divided into a series of sectors which are alternately white and coloured; in the inoperative position, only the white sectors will appear through the apertures 83, whilst the other sectors will be seen when the disc is rotated by an amount equal to the angle of a sector. The rotation of the disc is obtained by the following means. The disc 84 has perpendicularly mounted thereon the pin 86 which is engaged in the fork 87 provided upon the lever 88 which is pivoted on the stationary axle 89 and is urged by the reaction spring 90. The said lever which is in contact at 91 with a stationary stop is normally held—in the position represented—against the arm 92 of a double-armed lever 92—93 which is pivoted at 94 and is drawn forward by the spring 95. At the end of the arm 93 is a stud 96 which traverses the main plate 11 and is situated below the end of the arm 78 at the point at which the impact of the striker 66 takes place. The lever 88 makes contact with the tapered end of a rod 97 which is maintained (in the position indicated) by a spring strip acting upon its lower part, which abuts by means of a shoulder against the plate 98 and which carries at the upper end a knob 99 by which it may be pressed down with facility.

The device is set to the proper time by means of a milled knob 100 which is keyed to the end of an axle 101 extending through a shaft 102 carrying a gear wheel 103 serving to control the clock hands through the usual power transmission means, as well as a ring 104 carrying clutch teeth. To the axle 101 is keyed the ring 105 provided with suitable teeth which, when the knob 100 is acted upon to raise the axle 101, cooperates with the teeth 104 in such manner as to set the clock hands. At the ends of the axle 101 is disposed a tapered portion 106 which is adapted to make contact—by means of the spring 107—with a lever 108 pivoted at 109. In this manner, when the axle 101 is raised, the said lever will be turned from the position shown in Fig. 5 to the position shown in Fig. 6, and a stud or stop piece 110 mounted upon the lever will hold the hammer 66 and the lever 67 in this position.

The utilization of the apparatus and the functioning of its mechanism are as follows:

The whole apparatus as above described is contained in a case, the clock dial and the sets of discs 20 and 21 being the only parts which appear. Upon the front part of the said case is provided a time scale corresponding to each disk. Such a scale may be carried by a suitable memorandum sheet which is attached to the said front part.

In order that the alarm shall be set off and the indicating disc appear at the time when the person is to be warned, the corresponding discs are moved so as to bring them from the position 20 or 21 to the position 20^a or 21^a.

Since the chains are actuated at a speed such that they will move forward in ¼ hour by a length corresponding to the distance between any two discs, the position of the chains being suitably regulated with reference to the position of the clock hands, a roller 15 will coincide with each disc or sector at the moment at which the clock shows the corresponding time. It should be noted that in accordance with the arrangement specified in my copending application No. 750,444 filed on November 17, 1924, the two chains supplement one another in such manner that one of the four rollers 15 (and only one) will constantly move in co-operation with one of the rows of discs 20 and 21.

Accordingly, when one of the said rollers coincides with a disc such as 21^b for which the cam 35 is situated in the plane of the said chain, the latter will be driven to the left, and during this movement it will push back the strip 43 by means of the rivet head 17. The shaft 44 will thus rotate, thus causing the shaft 44^a to pivot in the same direction, through the medium of the rod 46. This pivotation will cause the lever 49 to swing in the direction of the arrow 111 (Fig. 4), so that the pinion 55 will be brought into the plane of the lever 56. Since the said pinion is suitably keyed to its shaft, one of its teeth will act by means of its ramp in such manner that the hook 60 will swing about during the time in which it coacts with its ramp, and will then drop for a few moments before the clock comes to the point of time at which the alarm is to be set off. This movement corresponds to a pivotation of the lever 57 according to the arrow 112, thus releasing the stud 63 which is secured to the striker of the hook 62.

At this time, the said hammer is only retained by the arm 70 of the lever 69 which makes contact with the ramp of one of the teeth of the wheel 71. When the clock comes to the specified time, the tooth attains the end of the said ramp, so that the device 64—69 will pivot suddenly under the action of the spring 67, and the striker 66 will thus drop upon the lever 78 and the stud 96.

The impact upon the stud 96 will cause a slight movement of the lever 92—93, thus releasing the lever 88, and the latter which is actuated by the spring 90 will turn about the axis 89, thus actuating the disc 84 in such manner that the coloured sectors are substituted for the white sectors, in the rear of the apertures 83.

The impact upon the lever 78 will rotate the latter as well as the rod 80 attached thereto, thus releasing the stud 73 and thereby disengaging the wheel 74, so that the alarm will be set off. Since the rod 80 will then come at once into its former position under the action of the spring 81, the alarm device will come to a stop automatically at the end of ¼ revolution of the wheel 74, after which another stud 73 will come into contact with the rod 80.

The said alarm device is again set in the operative position by automatic action. In fact, at the same time that the said striker drops, the lever 69 secured thereto will turn in such manner that the ramp 72 will make contact with a stud 73 which has just been released, and during the quarter of an hour corresponding to the alarm, the said stud will coact with the said ramp and will thus turn the lever 69 in the other direction, thereby causing the stud 63 of the striker to cooperate with the hook 62 of the lever 57.

To bring the indicating disc into the position for showing the white colour, the knob 99 is operated. The tapered ramp of the shaft 97 will turn the lever 88 in the direction contrary to the preceding, and its end will again be engaged with the end of the lever 92.

It has already been observed (Fig. 5) that the operation of the knob 100, which sets the clock to the proper time by means of its stud or stop piece 110, will hold the striker and will release the stud 70 of the wheel 71, thus preventing the alarm device from acting.

To restore all the discs which served to control the functioning of the mechanism to their original position and to place in the operative or controlling position any other suitable discs, for example the discs which serve at the close of the day to show any appointments or the like for the succeeding day, the knobs 40 are turned in the direction of the arrow 41, and this will bring all of the said discs into the neutral position, as above stated. But in order to bring other suitable cams 35 into the plane of the said chain, the strips 30 must be first set in the active position, and for this purpose the stud 34 must be brought into contact with the tappet 33, so that the knob 40 is moved in the contrary direction to the arrow 41. This will draw forward the shaft 19 secured on the cheek 22, and the discs such as the discs 21^b, which are secured thereto by the pin 36, will be actuated at the same time; the cam 35 will now be ready for action to release the mechanism without requiring any hand operation of the same. In practice, the person utilizing the apparatus will thus employ the said pins to secure the discs corresponding to the various times at which the alarm is to be set off each day, for instance for the arrival of letters, for the time of closing the office, or the like.

Obviously, the said invention is not limited to the constructional forms herein specified, which are given solely by way of example, and these are susceptible of numerous modifications in detail.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a time alarm signal device, a movable chain carrying contact members projecting on each side of said chain, a number of cams mounted along the path of said contact members on one side of said chain and adapted to be moved into an operative position and into an inoperative position and to act, when in their operative position, upon said contact members, a movable strip provided on the other side of said chain opposite said cams and adapted to be acted upon by said contact members, an alarm device and means adapted to start said alarm device by means of said strip when said strip is moved by said contact members.

2. In a time alarm signal device, a movable chain carrying contact member projecting on each side of said chain, a number of cams mounted along the path of said contact members on one side of said chain and adapted to be moved into an operative position and into an inoperative position and to act, when in their operative position, upon said contact members, a pivoted strip provided on the other side of said chain opposite said cams and adapted to be acted upon by said contact members, an alarm device and means adapted to start said alarm device by means of said strip when said strip is moved by said contact members.

3. In a time alarm signal device, a movable chain carrying contact members projecting on each side of said chain, a number of cams mounted along the path of said contact members on one side of said chain and adapted to be moved into an operative position and into an inoperative position and to act, when in their operative position upon said contact members, a pivoted strip provided on the other side of said chain opposite said cams and adapted to be acted upon by said contact members, a shaft and means for continuously rotating said shaft at a regular speed, a sleeve mounted on said shaft and adapted to rotate with said shaft, means adapted to slide said sleeve along said shaft into an operative and into an inoperative position by means of said pivoted strip, a toothed pinion carried on said sleeve, a rocking lever provided along the path of said toothed pinion and adapted to

be acted upon by said pinion when said sleeve with said pinion are in operative position, an alarm device and a hook on said rocking lever adapted to keep said alarm device motionless when in inoperative position and to release said alarm device when in operative position.

4. In a time alarm signal device, a movable chain carrying contact members projecting on each side of said chain, a number of cams mounted along the path of said contact members on one side of said chain and adapted to be moved into an operative position and into an inoperative position and to act, when in their operative position, upon said contact members, a pivoted strip provided on the other side of said chain opposite said cams and adapted to be acted upon by said contact members, a shaft and means for continuously rotating said shaft at a regular speed, a sleeve mounted on said shaft and adapted to rotate with said shaft, means adapted to slide said sleeve along said shaft into an operative and into an inoperative position by means of said pivoted strip, a toothed pinion carried on said sleeve, a rocking lever provided along the path of said toothed pinion and adapted to be acted upon by said pinion when said sleeve with said pinion are in operative position, a hook on said rocking lever, a pivoted arm, means for urging said pivoted arm towards an operative position and normally held in an inoperative position by said hook, an alarm device and a rocking rod adapted to keep normally said alarm device motionless and to release said alarm device when said pivoted arm is moved into its operative position.

5. In a time alarm signal device, a movable chain carrying contact members projecting on each side of said chain, a number of cams mounted along the path of said contact members on one side of said chain and adapted to be moved into an operative position and into an inoperative position and to act, when in their operative position, upon said contact members, a pivoted strip provided on the other side of said chain opposite said cams and adapted to be acted upon by said contact members, a shaft and means for continuously rotating said shaft at a regular speed, a sleeve mounted on said shaft and adapted to rotate with said shaft, means adapted to slide said sleeve along said shaft into an operative and into an inoperative position by means of said pivoted strip, a toothed pinion carried on said sleeve, a rocking lever provided along the path of said toothed pinion and adapted to be acted upon by said pinion when said sleeve with said pinion are in operative position, a hook on said rocking lever, a pivoted arm, means for urging said pivoted arm towards an operative position and normally held in an inoperative position by said hook, an alarm device having a wheel provided with studs, a rocking rod adapted to bear normally against one of said studs for keeping said alarm device motionless and to release said stud and said alarm device when said pivoted arm is moved into its operative position, a guiding ramp provided on a member operatively connected with said pivoted arm and adapted to bear on one of said studs of said wheel in order to bring back said pivoted arm in its inoperative position.

6. In a time alarm signal device, rotatable toothed wheels, a chain engaging said toothed wheels and formed of rigid links of sheet steel linked on each other, bent to the same curvature as said toothed wheels and provided with a central hole adapted to engage the teeth of said wheels, contact members carried by said chain and projecting on each side of said chain, a number of cams mounted along the path of said contact members on one side of said chain and adapted to be moved into an operative position and into an inoperative position and to act, when in their operative position upon said contact members, a movable strip provided on the other side of said chain opposite said cams and adapted to be acted upon by said contact members, an alarm device and means adapted to start said alarm device by means of said strip when said strip is moved by said contact members.

In testimony whereof I have signed my name to this specification.

CLAUDE MAMET.