April 1, 1952 M. A. BLOUIN 2,591,335

PROGRAM SIGNAL APPARATUS

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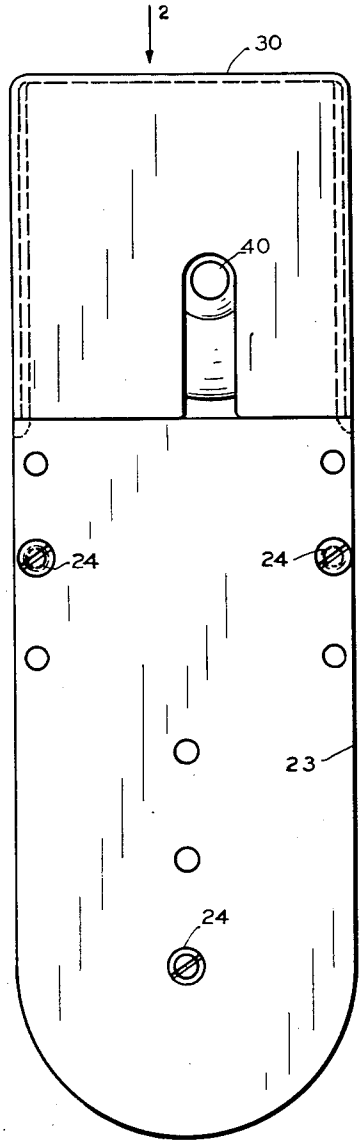


Fig. 1

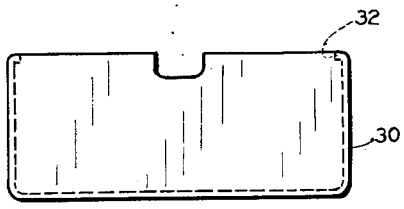


Fig. 2

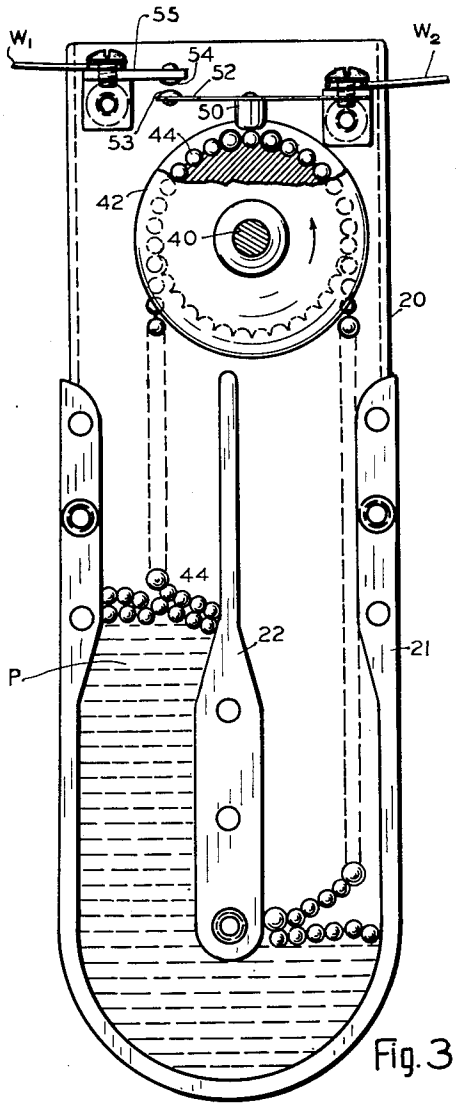


Fig. 3

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PROGRAM SIGNAL APPARATUS

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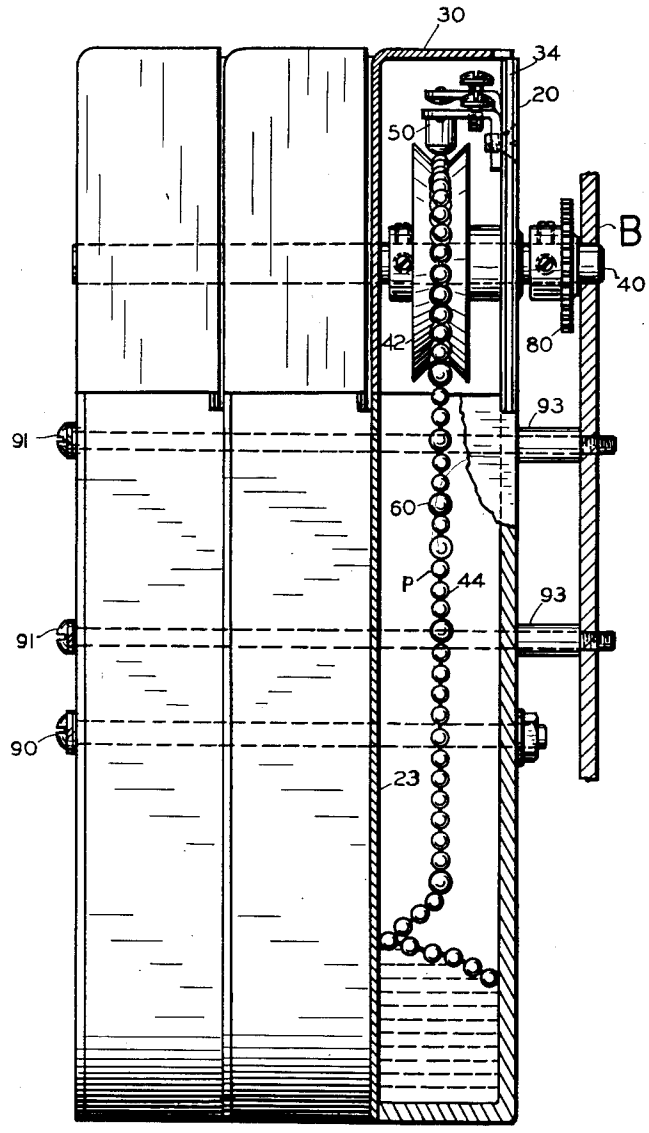


Fig. 4

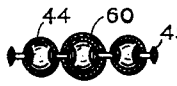


Fig. 5



Fig. 6

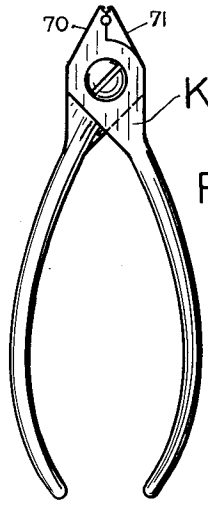


Fig. 7

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PROGRAM SIGNAL APPARATUS

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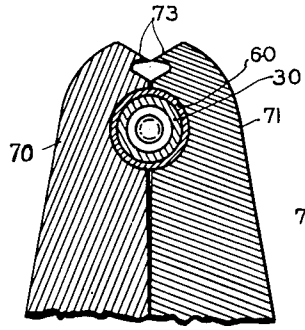


Fig. 8

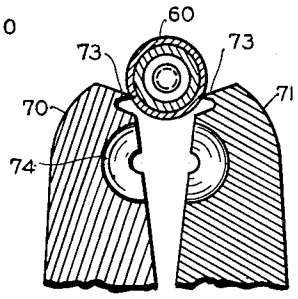


Fig. 9

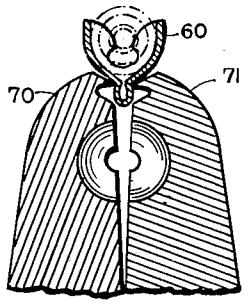


Fig. 10

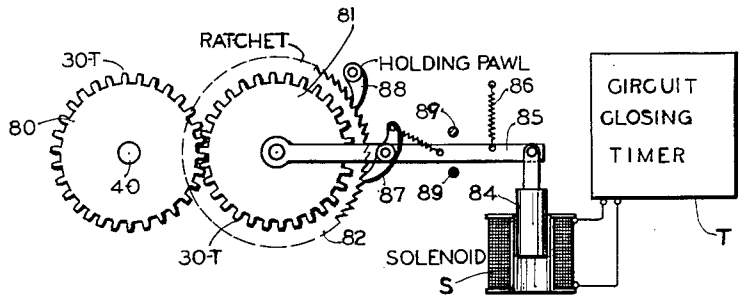


Fig. 11

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UNITED STATES PATENT OFFICE

2,591,335

PROGRAM SIGNAL APPARATUS

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Application June 3, 1950, Serial No. 165,935

3 Claims. (Cl. 200—38)

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This invention relates to apparatus for producing signals which indicate the passage of time and in accordance with a prearranged plan or program.

It is the general object of the invention to provide improved program signal apparatus in which a selected program may be quickly and easily set up and as easily changed or withdrawn.

With this general object in view, an important feature of the invention relates to the provision of an improved indicating unit which is easily applied to or removed from a program chain.

Another feature relates to the provision of improved storage facilities from which a long program chain can be drawn out against slight resistance.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawings, in which

Fig. 1 is a front elevation of my improved signal apparatus;

Fig. 2 is a plan view, looking in the direction of the arrow 2 in Fig. 1;

Fig. 3 is a front elevation of the apparatus, with the top and cover plate removed;

Fig. 4 is a side elevation of the apparatus in multiple unit form and with one unit in section;

Fig. 5 is a detail sectional view of a portion of chain;

Fig. 6 is a perspective view of an indicating shell or clip;

Fig. 7 is a front elevation of a pair of special clip-affixing pliers;

Fig. 8 is a partial sectional elevation, illustrating the application of a clip to a bead chain;

Figs. 9 and 10 are similar views, illustrating successive steps in the removal of a clip from a bead chain; and

Fig. 11 is a diagrammatic view of illustrative timing mechanism.

Referring to Figs. 1 to 3, each unit of my improved signal program apparatus comprises a base 20 having a U-shaped flange 21 of substantial height which surrounds its lower and middle portions, and also having a middle partition 22 of equal height.

A cover plate 23 (Fig. 1) is secured to the front of the unit by screws 24, and a top casing member 30 fits over the upper portion of the base 20 and is held in position by inwardly projecting side flanges 32 which are received in grooves 34 (Fig. 4) in the sides of the base 20.

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A shaft 40 (Figs. 3 and 4) is rotatably mounted in fixed bearings and is provided with a special grooved and recessed sprocket 42 to receive the program chain P, which is preferably composed of a series of hollow beads 44 (Fig. 5) loosely connected by double-headed links 45. The sprocket 42 is shown as having 30 bead recesses.

The recesses in the sprocket 42 are of approximately the same pitch as the beads in the chain P, and the sprocket passes the beads successively under a stud 50 mounted in a spring arm 52 and having a contact member 53 in its outer or free end.

When the contact member 53 is raised, it engages a contact member 54 in a fixed bracket 55 and thus completes a circuit between wires W and W2. The parts are so positioned that the beads 44 will normally clear the stud 50, but that when the stud is engaged by a shell or clip 60 (Figs. 5 and 6) applied to a selected bead, the stud 50 and contact 53 will be raised to complete the signal circuit. Completion of this circuit will cause a bell to be sounded, or any other desired indication to be given or mechanism to be operated.

One bead 44 is provided for each separate interval in a desired period. For instance, if signals at any selected minute intervals over a twenty-four hour period are desired, a chain of 1440 beads will be required.

This program chain falls freely from the sprocket 42 to the storage space in the lower part of the base 20, as indicated in Fig. 3, and the weight of the chain in the left-hand portion of the storage space, as viewed in Fig. 3, tends to push the beads upward in the right-hand portion, so that they may be withdrawn for further indication against a minimum resistance.

The shells or clips 60 each have an opening 62 (Fig. 6) just large enough to permit a shell to be slipped over a selected bead 44.

A pair of special pliers K (Fig. 7) are supplied, which pliers have jaws 70 and 71 (Fig. 7), and each of these jaws is provided with a nipping spur or point 73 (Fig. 9) and with a semi-spherical recess 74.

When the pliers are to be applied to a shell 60, the shell is received in the recesses 74. If pressure is then applied, the shell will be closed over the bead as indicated in Figs. 5 and 8. The applied shell is of sufficient thickness to close the contacts 53 and 54 when it is positioned under the stud 50.

If a change in the program is desired, an attached clip or shell 60 may be gripped between

the nipping spurs 73, as indicated in Fig. 9, and movement of the plier jaws toward each other will cause the shell 60 to be opened up for removal, as shown in Fig. 10.

Any desired program may thus be easily set up and any desired changes may be readily made without removing the program chain P from the unit.

Any convenient apparatus may be provided for advancing the sprocket 42 at minute intervals. In the drawings, I have shown the shaft 40 as provided with a thirty-toothed gear 80 (Fig. 4) engaging a thirty-toothed gear 81 (Fig. 11) associated with a sixty-toothed ratchet wheel 82. The ratchet wheel 82 may be advanced at minute intervals by a circuit-closing timer T, acting through a solenoid S and plunger 84.

The plunger 84 pulls a lever 85 downward against the tension of a spring 86 and thus operates a feed pawl 87 to advance the gear train and the sprocket wheel 42. The usual holding pawl 88 is provided, and stops 89 normally limit the oscillating movements of the lever 85 to feed two teeth at a time. If set for one tooth, the chain will be advanced to indicating position every second minute and to an intermediate position on the intervening minutes.

The circuit-closing timer T forms no part of the present invention and may be of any usual or commercial construction, and in fact the entire mechanism shown in Fig. 11 is to be taken as illustrative only.

If it is desired to operate two or more programs simultaneously, the shaft 40 may be made long enough to extend through two or three units, as indicated in Fig. 4. The units may be secured together by binding screws 90 and may be secured to a supporting member B by additional screws 91 extending through the units and through spacing collars 93.

The program chains in all of the multiple units will be advanced simultaneously and at the same rate but each chain will close program circuit contacts independently and at any desired time intervals.

My improved program signal apparatus is of wide application and a desired program may be quickly and easily set up therein or removed therefrom. Obviously, the mechanism shown in Fig. 11 may be arranged to advance the shaft 40 and sprocket 42 at half minute or any other desired intervals instead of at minute intervals, and the program chain P may be made of any desired length for longer or shorter program periods.

It will also be noted that upon completion of one program period, the apparatus is in position to immediately repeat the same program without further attention.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. In a program signal apparatus, in combination, an enclosing casing having a vertically extending partition in its middle and lower portion only and with the extreme lower end of said partition spaced from the lower end of said casing, chain-feeding mechanism located in the upper portion of said casing, a signal-indicating chain forming a closed unit and passing over said feeding mechanism and loosely around said partition, and contact members rendered operative by said chain at prearranged intervals, said chain being delivered from said feeding mechanism to the lower part of said casing for loose and uncontrolled storage in the lower part of said casing and at one side of said partition and being withdrawn from the lower part of said casing for further feeding from the opposite and supply side of said partition and the major part of the chain accumulating at the storage side of said partition and being shifted transversely and loosely under said partition by the weight of the chain in storage to progressively replace the chain withdrawn from said supply side.

2. The combination in a program signal apparatus as set forth in claim 1, in which the chain is formed of successive beads, and in which indicating shells concentrically mounted about selected beads are effective to render said contact members operative.

3. The combination in a program signal apparatus as set forth in claim 1, in which the chain is formed of successive beads, and in which indicating shells concentrically mounted about selected beads are effective to render said contact members operative, and in which lost-motion connections are provided between the beads, which connections render the chain adaptable to pitch when indicating shells are added.

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