

UNITED STATES PATENT OFFICE.

EDWARD A. NEUBAUER, OF IRON MOUNTAIN, MICHIGAN.

RECORDER.

SPECIFICATION forming part of Letters Patent No. 706,682, dated August 12, 1902.

Application filed May 24, 1902. Serial No. 61,689. (No model.)

To all whom it may concern:

Be it known that I, EDWARD A. NEUBAUER, residing at Iron Mountain, in the county of Dickinson and State of Michigan, have invented a new and useful Improvement in Recorders, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention has relation to improvements in recorders.

The object of the invention is to provide an improved construction of recorder whereby a merchant or other person engaged in business may readily determine the hour when his store or place of business is opened in the morning and also the hour when closed, as well as the number of persons who have entered the store during the day, and, furthermore, whether or not any of his employees or others have entered the place during the hours other than business hours.

With the above primary and other incidental objects in view the invention consists of the devices and parts or their equivalents, as hereinafter set forth and claimed.

In the accompanying drawings, Figure 1 is a front elevation of the complete invention, the front side of the casing being removed; and Fig. 2 is an end elevation, parts broken away and in section.

Referring to the drawings, the numeral 3 indicates a casing for containing the principal working parts of the invention. The front of said casing is preferably hinged and provided with a suitable lock, (not shown,) so that when locked the interior working parts cannot be tampered with. This front piece may be either solid or may have a glass or other transparent material set therein, so that the interior dial-plate may be seen at all times. Mounted within the casing is a shaft 4, and on this shaft is mounted fast a dial 5. Suitable means are provided for causing the shaft to rotate at such a speed that the dial will make one revolution in a stated period of time—as, for instance, one revolution in every twelve hours. Any suitable driving mechanism for this purpose may be employed; but I prefer to use a train of gearing constituting a clock mechanism, one gear only thereof (designated by the numeral 6) being

shown in the drawings. The outer face of the dial has detachably connected thereto a diagram 7, preferably of paper, and having therearound a series of concentric circular spaces 8. In Fig. 1 of the drawings every alternate circular space or those circular spaces which are in white are designated "Monday," "Tuesday," "Wednesday," "Thursday," "Friday," "Saturday," and "Sunday," the outer largest circular space being designated "Monday" and the alternate succeeding spaces designated consecutively with the names of the succeeding days of the week in regular sequence. In practice the intervening circular spaces, which I have distinguished in the drawings with shade-lines, are consecutively marked "Monday night," "Tuesday night," "Wednesday night," "Thursday night," "Friday night," "Saturday night," and "Sunday night." These latter designations, however, have been omitted in the drawings on account of lack of space. The diagram 7 has also thereon a series of radial lines. The heaviest or darkest of these lines are marked, respectively, "1," "2," "3," "4," "5," "6," "7," "8," "9," "10," "11," and "12" in a similar manner as a clock-dial, the spaces between said heavy radial lines indicating hours. The intervening radial lines between the dark lines subdivide each hour-space into spaces of fifteen minutes each. In practice there will be a sufficient number of these intervening radial lines to subdivide each hour-space into five-minute spaces. The diagram 7 is advisably provided with an opening 9, which is adapted to be engaged by a short stud 10, projecting from the outer face of the dial-plate. In adjusting the diagram to the dial the opening 9 is made to engage this stud 10, and the diagram is thereby properly positioned on the dial. The diagram is detachably held in place by means of a thumb-screw 11, engaging the outer threaded end of the shaft 4 and turned against the diagram.

The numeral 12 indicates a pivoted record-making lever, which at one end is provided with a pointed extension at right angles thereto, said extension projecting toward the face of the dial. Suitable mechanism must be provided for setting the record-making lever so that when it is turned on its pivot the pointed projection thereof will punch a hole

in the diagram on the proper day or night of the week, and this mechanism therefore must be such that at the expiration of each twelve hours the lever will move inwardly the slight distance necessary to bring the point from an outer circular space 8 to the next inner circular space. The mechanism for accomplishing this will now be described.

Projecting peripherally from the dial is a pin 13, which pin each time the dial makes one complete revolution is adapted to engage with one of the projecting pins of a lantern-wheel 14, and thereby impart to said lantern-wheel a slight rotation. The lantern-wheel referred to is mounted fast on a shaft 15, and this shaft has also mounted fast thereon a pinion 16. The pinion engages with rack-teeth 17, formed on a movable rod 18, said rod being slidably mounted in bearings 19 19. The lever 12 is pivoted on this rod and is held against movement lengthwise of the rod by means of collars 20 20, between which the pivot of said lever is disposed. A spring-pawl 21 is adapted to engage at its free end with the rack-teeth 17, and thereby hold the rod 18 in the position to which it may be adjusted.

Suitable means are necessary for turning the record-making lever 12 on its pivot so that the pointed projection thereof will engage and perforate the diagram each time the door of the establishment is opened or swung on its hinges. To accomplish this purpose, I prefer to employ the mechanism which will now be described. Referring to this mechanism, the numeral 22 indicates an electromagnet, which is supported in the bottom of the casing 3. The lever 12 is extended from the rod 18 at a rearward incline, and its lower end carries an armature 23, which when the magnet is electrically energized is adapted to be drawn to said magnet in the usual way. The electric battery is indicated by the numeral 24. One wire *a* leads from this battery to one coil of the electromagnet, and the other wire *b* leads from the battery to a binding-post 25. A short wire *c* leads from the other coil of the magnet to another binding-post 26. From the post 25 extends an electrical conductor *d*, said conductor connecting with a contact-strip 27. From the other binding-post 26 extends an electrical conductor *e*, which connects with another contact-strip 28. The strips 27 and 28 are insulated from each other and are normally out of contact. Pivoted medially to an arm 29 is a lever 30. The lower end of this lever is in position to be acted upon by the door 31, so that when said door is swung on its hinges the lever will be turned in a direction to cause its upper end to strike the contact-strip 28, and thereby cause said strip to be brought into engagement with the other strip 27, whereby the electrical circuit is completed. Back of the upper arm of the lever 12 is a flat spring 32.

If desired, the parts shown below the cas-

ing 3 may also be suitably incased in order to protect them from being tampered with.

In explanation of the operation of my invention it will be understood that the dial is rotated in the direction of the arrow, Fig. 1. In the position of the lever 12 shown in Fig. 1 the pointed projection thereof is over the "Wednesday" circular space 8 and in register with the radial line indicating nine o'clock. If now the door 31 is opened, it will make contact with the lever 30 and turn said lever on its pivot, and thereby bring the contact-strip 28 into engagement with the other contact-strip 27, thereby completing the circuit and energizing the electromagnet. The energizing of the magnet will cause the armature 23 to be drawn thereto, and hence the lever 12 will necessarily be turned on its pivot against the contrary force exerted by the spring 32 in a direction to cause the pointed projection thereof to come into contact with and perforate the diagram 7, and thereby indicate that the door was opened at nine o'clock. The dial 5 just back of the concentric circular space 8 of the diagram is provided with annular recesses 33 (see Fig. 2) in order to permit the pointed projection of the lever 12 to perforate the diagram. It will of course be obvious that instead of providing the lever 12 with a pointed projection a pencil or other marking device could be provided on the end of said lever, so as to cause a mark on the diagram instead of a perforation. As the dial is constantly rotating, if the door is again opened at any time the lever 12 will again act on the diagram and perforate or mark the same at the particular time said door was again opened, although of course the lever will remain in the position shown in Fig. 1—i. e., in register with the "Wednesday" circular space—until twelve hours of time have elapsed. When this time has expired, the pin 13 will have been brought around into a position to contact with one of the pins of the lantern-wheel 14, and thereby cause a slight rotation of said wheel. This rotation of the wheel will be communicated to the pinion 16, and by reason of the engagement of this pinion with the rack-teeth 17 the rod 18 will be given a slight movement and the lever 12 will necessarily be moved therewith, the distance moved by the rod being sufficient to bring the pointed projection of the lever 12 into registration with the "Wednesday-night" circular space. The spring-pawl 21, while not sufficient to prevent the movement of the rod 18 when said rod is actuated by the pinion 16, is yet sufficient to hold said rod in the position to which it may be adjusted. After the lever 12 has been finally shifted into registration with the "Saturday-night" circular space, which will occur after the device has been in use for one week's time, the casing 3 is opened and the diagram 7 removed and a new one substituted therefor. The rod 18 is then shifted back, so as to bring

the pointed projection of the lever 12 into registration with the "Monday" circular space, when of course the device is ready for a repetition of the operation explained.

5 It will be seen from the above that my invention will be particularly useful to an employer in keeping a record of the time when his place of business is opened in the morning and closed at night and will also furnish
10 him with a correct record of the number of times the door has been opened during the day or during the night. Especially is the device useful when an employer is called away from the city in which his place of business is located, inasmuch as upon his return
15 the device gives him a very fair idea of the condition of his business during his absence.

What I claim as my invention is—

20 In a recorder, the combination of a dial having a pin projecting from the periphery thereof, and also having a diagram on its face, said diagram divided circularly into time-spaces, and also provided with a series of concentric circular spaces, each circular
25 space indicating a certain period of time as twelve hours, means for rotating the dial so as to cause the same to make a complete revolution once in a stated period of time,

a record-making device adapted to act on the diagram, said device being originally set so
30 as to register with the initial concentric circular space of the diagram, a movable rod on which the record-making device is pivotally mounted, but held against longitudinal movement thereon, said rod provided with a
35 series of rack-teeth, a shaft having a toothed wheel mounted fast thereon, the teeth of said wheel being adapted to be successively acted upon by the projecting pin of the dial upon
40 each complete revolution of said dial, a pinion mounted fast on the toothed-wheel shaft, said pinion being in mesh with the rack-teeth of the rod, and adapted to move said
45 rod a limited distance when the toothed wheel is partially rotated, means for holding the rod in adjusted position, and means adapted to act on the record-making device
50 so as to cause said device to leave a visible record on the diagram in one of the circular spaces thereof.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD A. NEUBAUER.

Witnesses:

A. L. MORSELL,
ANNA V. FAUST.