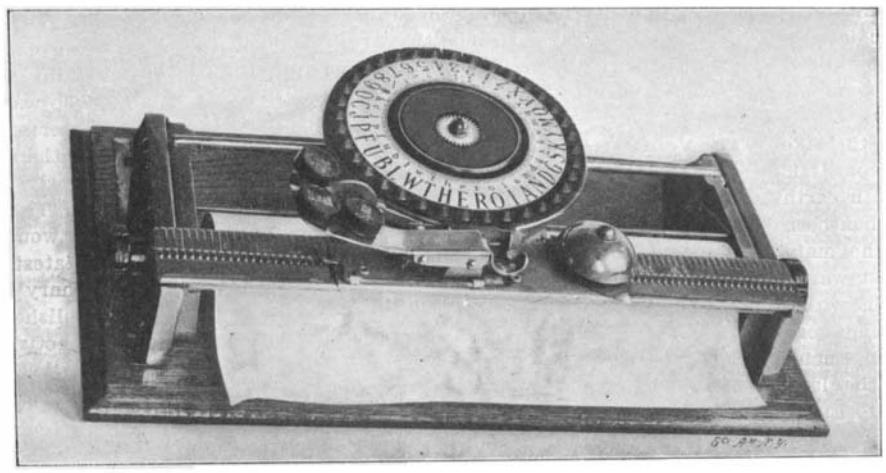
THE IMPROVED SIMPLEX TYPEWRITER.

In the SCIENTIFIC AMERICAN for March 31, 1900, we described a cheap form of writing-machine, which was designed to place within the means of the tradesman whose correspondence did not warrant the purchase of an expensive machine, a typewriter that would do all that could be reasonably expected. That thousands of these machines are in use shows how quickly their merits have been recognized. Since the appearance of the article in question the makers have improved the construction in important particulars.

The novel feature of the printing mechanism of the new machine is to be found in a shifting device of simple form, by means of which a speed can be obtained that overcomes the chief defect of the ordinary printing-wheel typewriter.

The capital and small letters, placed side by side, are formed on an elastic rubber disk, *A*, which is designed to be acted upon by superposed keys carried on radial arms, *B*, constituting a printing wheel. As in the old typewriter, the proper key is swung into printing position automatically, insuring a good alinement. In devising the new Simplex, the inventors have been concerned chiefly with producing a device, the equivalent of the shift key on the standard typewriters, whereby the printing-wheel, after the proper letter has been located, is automatically given a slight additional movement in order that the upper or lower case letter may be printed, without any supplementary manipulation of the printing wheel.



THE IMPROVED SIMPLEX TYPEWRITER.

The device in question includes a combined spacing and printing lever, which normally prints small letters by throwing a presser foot, *D*, down on the rubber disk, *A*, carrying the type, and which spaces, by means of a dog, engaging a rack. A shifting lever, *F*, connected with a slide, *C*, notched in its upper edge to receive a depressed key, brings the upper case letters

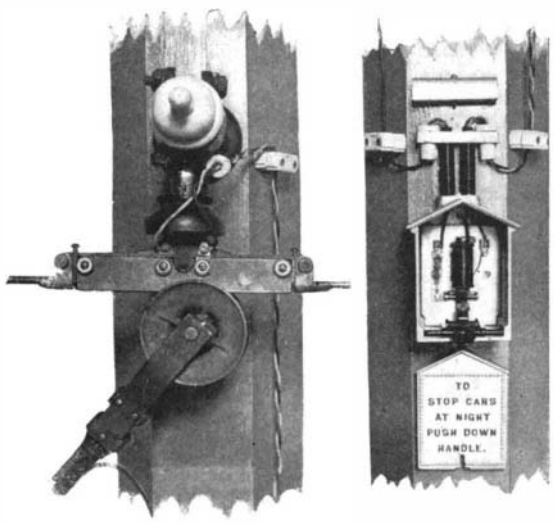


Fig. 2.—THE MECHANISM OF THE SWITCH.

into printing position, the lever, *F*, being designed to engage a projection on the spacing and printing lever in order that shifting to upper case and printing may occur simultaneously.

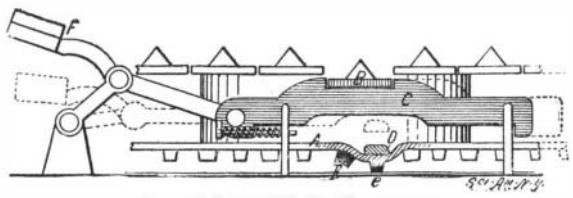
In printing a small letter, the finger is placed on the desired key, and with a lateral movement is swung into printing position, whereupon the spacing and printing lever is pressed down, and the small letter is printed by the presser foot, *D*. The act of depressing the lever causes the dog to engage a rack tooth and to push the carriage of the printing wheel forward one space. Hence printing and spacing are accomplished at one operation.

For a capital letter the depression of the shifting lever will push the slide, *C*, slightly to one side, causing the slide to carry with it the depressed key, thereby slightly rotating the entire printing-wheel so that the capital letter on the rubber disk is shifted around into printing position. The depression of the shifting lever also engages and operates the spacing and printing lever. Hence a single motion shifts, prints, and spaces. The slide, *C*, is returned by a coiled spring, thereby bringing the lower-case letters back into normal position.

The improvements described increase the speed and double the capacity of the simple finger disk typewriter, and impart to the machine all the characteristics of the large standard machines. Its construction gives capacity and strength in the most compact form, with a directness and ease of action that makes it serviceable and pleasing whether used in the business office, in the study, or when traveling. The manufacturers and patentees are the Simplex Typewriter Company, of 644 First Avenue, New York city.

NIGHT SIGNAL FOR TROLLEY LINES.

On suburban trolley lines, operating expediency makes it desirable that there should be some means of not only signaling the cars at night, but also of having a light at the stations while passengers are waiting.



THE SHIFTING MECHANISM.

Of course this can be and is done in many instances by having the conductor turn on the lights at dusk and permitting them to burn all night. This, however, is a matter of considerable expense for the mere item of the current consumed, and is a custom which can be followed only at the more frequently patronized stations, where the travel is great enough to pay for the outlay. To overcome these objections and to make it possible to have the most insignificant station lighted during its occupancy by prospective passengers, a device has been recently patented by Gwynne R. Painter, of Baltimore, Md., which he calls an electro-mechanical switch, that is a switch operated by the passenger and electrically reset by the passing car. These signals are already in use on the line of the United Railway and Electric Company, of Baltimore, and have been found to be eminently successful.

The process of giving the signal and lighting the station is such an easy one that the most simple-minded person can follow it out. All that is necessary is to follow the directions displayed, and these are "To stop the car at night, push down handle." This gives the signal to the motorman and sheds a grateful radiance around the waiting passenger. Once the signal is set, it cannot be extinguished except by the car itself. A little girl operating one of these signals is shown in Fig. 1. The switch, which is operated by the passenger, is incased in an iron box and is thoroughly insulated. It consists only of one magnet and an armature. The circuit of the device is shown in Fig. 3.

This magnet is 1 inch by 2 inches and wound with No. 26 wire. When it is in shunt with a 500-volt railway current passing through five 16 candle power lamps in series, as shown, there is only a difference of potential of 3 volts across its terminals. The short-circuiting device on the trolley which resets the switch after it has served its purpose is shown in Fig. 3. By reference to the wiring diagram (Fig. 3) it will be seen how the device operates. A wire from the trolley leads to one end of the magnet in the switch box. The other end is made fast to the frame and magnet core. It will now be seen that the circuit is broken until the armature is raised and touches the core, and when this takes place the current will then pass through the armature to the cluster of lamps and thence to the ground, completing the circuit. At the same time it causes the magnet to hold the armature to itself, causing the lights to stay lit. When the car arrives and the passenger has boarded it, the trolley wheel runs on this short-circuiting device, when the magnet will not hold the weight of the armature, and it drops back to its original position, thereby opening the circuit and putting out the lights.

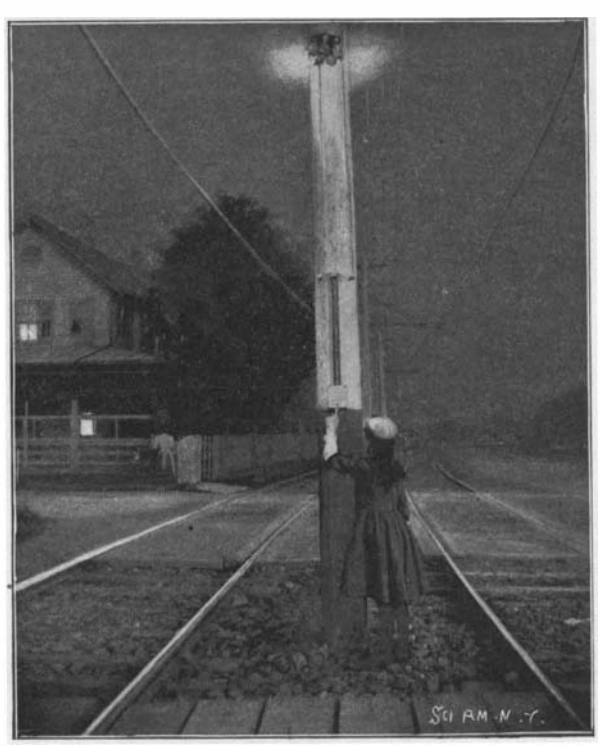


Fig. 1.—SETTING THE NIGHT SIGNAL FOR A TROLLEY CAR.

The drawing shows the contacts on the armature and magnet in the form of screws, so they can be renewed when they become injured from arcing, when the circuit is broken. In practice this was found unnecessary, as the magnet acts as a "magnetic blowout," and there is hardly a perceptible arc. The trolley wire is not cut in placing this resetting device, nor has it any moving parts to get out of order; and since, as before stated, there is never more than a difference of 3 volts between the two parts of the device, there is of course no danger from ice, rain, etc., depositing and causing any trouble or possible interruption. All the moving parts of the switch are reset by gravity, so that it is not likely to get out of order

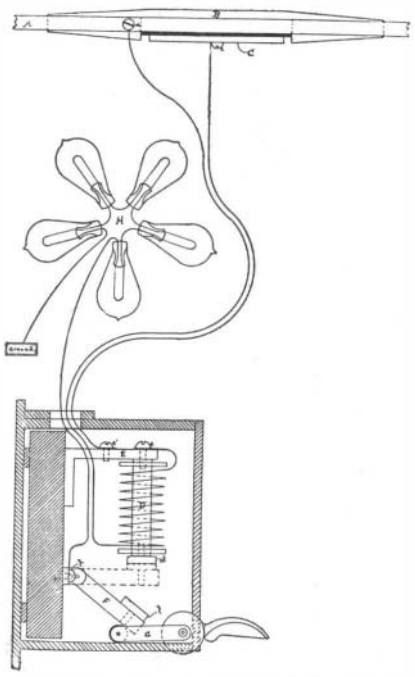


Fig. 3.—DIAGRAM SHOWING CIRCUITS OF SIGNAL.

Periodicals at the British Museum.

For some time past the question of providing accommodation for the ever-increasing numbers of newspapers which daily arrive at the Copyright Office of the British Museum, from all parts of the United Kingdom and the Colonies, has been under the serious consideration of the authorities. The room available at the Museum was practically exhausted four or five years ago, and the difficulty finally became so acute that last year it was decided to discover some remedy. An arrangement has now been completed by which the trustees of the British Museum have acquired a site at Hendon, a suburb about five miles distant from the Museum itself, some five and a half acres in extent, for the erection of a large building capable of storing newspapers for many years to come. The total estimated cost, including site, is approximately $90,000. An idea of the rate of increase of the collection of newspapers, for which storage room is at present so urgently wanted, may be gathered from the fact that the number of papers published in the United Kingdom alone received at the Museum in a year is 3,400, comprising 220,369 single numbers, while 226 sets containing 30,598 numbers of foreign and colonial newspapers are presented annually, and 75 sets containing 12 volumes and 15,140 numbers of current foreign and colonial newspapers represent the papers purchased in a year. By the new arrangement, upon giving two days' notice, any desired paper will be conveyed from Hendon to the reading room at the British Museum.

Some interesting experiments in connection with the existence and nature of the microbes inhabiting the upper strata of the atmosphere, have been conducted by Dr. W. F. Hutchinson, of Cambridge, England, by means of a balloon. He took with him eight samples of glycerinated gelatine, which had been specially prepared. With these he secured specimens of the bacilli in the atmosphere above London, and these are now in course of cultivation and examination at his laboratory at Cambridge.