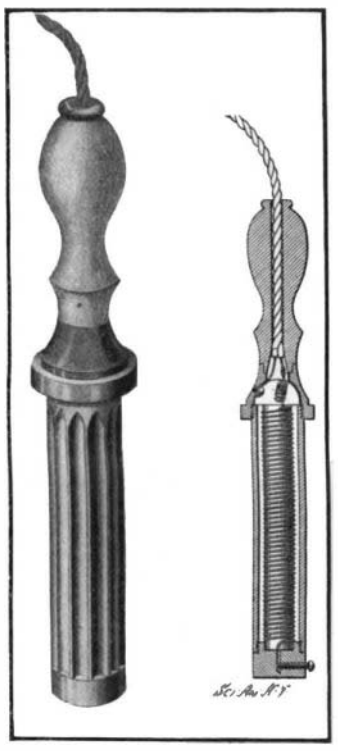
ELECTRIC HEATER.

It is often desirable to heat a small amount of water or other liquid in a hurry, and in buildings where electricity is used for lighting purposes this can be readily done by means of the device which is illustrated herewith. This device is the invention of Mr. Fernan O. Conill, of Havana, Cuba, Box 123.



ELECTRIC HEATER.

The inventor claims that with his little electric heater half a pint of water can be raised from freezing point to the boiling point in only four or five minutes. The heater may be cheaply made, as will be readily seen from the following description of its construction. The handle of the device, which is made of insulating material, is secured to a tube or cylinder of metal which surrounds a core of porcelain formed with a spiral groove to receive the resistance wire. The spiral coil of the core may be cut on an engine lathe by means of a diamond or quartz point. The resistance wire is a small platinum wire which, at its lower end, is secured by means of a set screw to the metal plug which closes the bottom of the cylinder. The other end of the heating wire is connected to one of the main wires or lamp cords which pass out through the handle. The other lamp cord is electrically connected to the cylinder. The latter may be fluted to increase its radiating surface. In use, the lower portion of the device is submerged beneath the surface of the liquid to be heated. The conducting cords are connected with the lamp socket or with the terminals of a source of electricity, whereupon the current in passing through the small platinum wire causes it to become intensely hot. The heat is then radiated to the cylinder, which in turn communicates it to the liquid. Practically no danger attends the use of the device, and it can be manipulated by any person of ordinary intelligence.

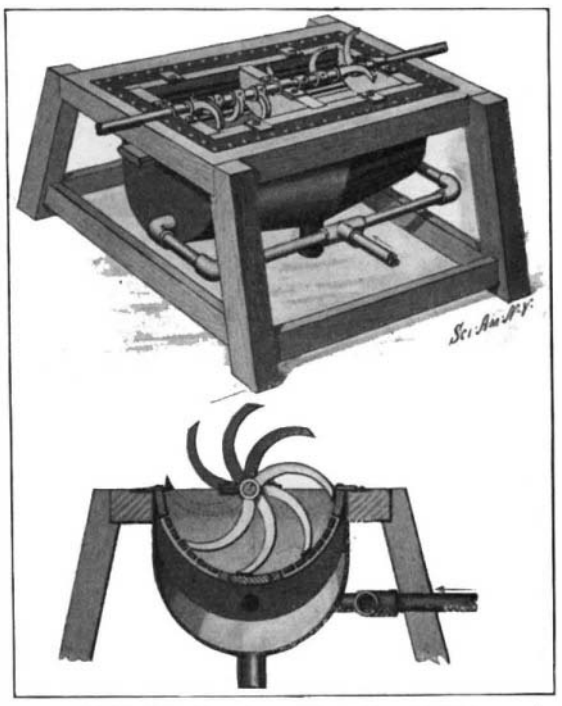
The Dynamic Flying Machine.

At a recent meeting of the Aeronautical Institute and Club, Herr Wilhelm Kress, of Vienna, read a paper on "The Dynamic Flying Machine." He stated that it would be necessary to overcome constructional difficulties before the dynamic flying machine was entirely successful. The greatest difficulties would be in the initial trials, and the man had yet to be born who could create a flying machine that would sail in the air at the first trial. He went on to say that much depended on material and conscientious workmanship, and expressed the conviction that the dynamic principle would overcome all difficulties, and that such a machine would sail through the air at a greater speed and with greater security than the motor-car of the day ran along the roads. The paper was illustrated by working models.

At a meeting of the Vienna Photographic Society, Eder exhibited a new light filter. The dye used is nitroso-dimethylaniline, which is of a yellow color and absorbs all the visible rays, but transmits the whole of the ultra-violet. By combining this dye with cobalt glass, a filter is produced that transmits the ultra-violet only. Some remarkable photographs of landscapes taken with these filters were also shown.

MACHINE FOR DRYING COCOA BEANS.

In the preparation of cocoa beans special conditions are met with which are not encountered in any similar process. Cocoa beans should never come into contact with metal while they are fresh, because they are very acid and such contact would turn them black at once. Furthermore, the beans must be kept in motion while fresh, otherwise they will stick together and form a solid mass. On the other hand, any stirring device that may be employed for agitating the beans during the drying process should be very carefully arranged, because the skins of the beans are very tender and easily injured. With these limiting conditions in mind, Mr. Leon G. Laprade, of San Jose, Costa Rica, has invented a drying machine which is calculated to dry the cocoa beans in a most efficient manner. It comprises a non-metallic receptacle in the form of a half-cylinder below which is a tank of similar form. The upper receptacle or basket is formed of longitudinally extending slats and is divided by a partition into two compartments. The bottom of each compartment is provided with a panel which may be withdrawn at will to empty the contents of the basket into the tank, whence they find an exit through a bottom outlet. The stirring device consists of a shaft mounted centrally over the baskets and provided with curved fingers in spiral arrangement thereon, so that, on rotating the shaft, when one finger is entering the basket, another will be leaving it, and more or less of the fingers will be in the baskets at all times, acting on the beans therein. The blades pass in close proximity to the bottom of the basket, and are triangular in cross section, the point of the triangle being on the inner side, so that they act as wedges to gently force the beans sidewise. A hot air supply is fed into the tank at each end, and this on rising through the slotted bottom of the basket takes up and carries off the moisture of the beans.



MACHINE FOR DRYING COCOA BEANS.

THE KAMM TYPEWRITER FOR USE WITH WIRELESS TELEGRAPHY.

BY THE ENGLISH CORRESPONDENT OF THE SCIENTIFIC AMERICAN.

An ingenious new office printing typewriter for utilization with wireless telegraphy, or if necessary with wires, has been devised by Mr. Leo Kamm, a well-known electrical engineer of London, England. The apparatus consists in the main of a typewriter, which can be used for transmitting or receiving messages, and the general instruments associated for the dispatch or receipt of ether waves. The most important part of the installation, however, is the typewriter, or zerograph as it is called. This apparatus in general appearance is not widely dissimilar from the ordinary typewriting machine. It consists of a row of keys, which when depressed cause the typewriter so actuated to record the imprint upon paper in the usual way, and to transmit through the air two ether waves, which cause the distant receiving typewriter to record the same letters upon paper tape in much the same way as the Morse tape instrument.

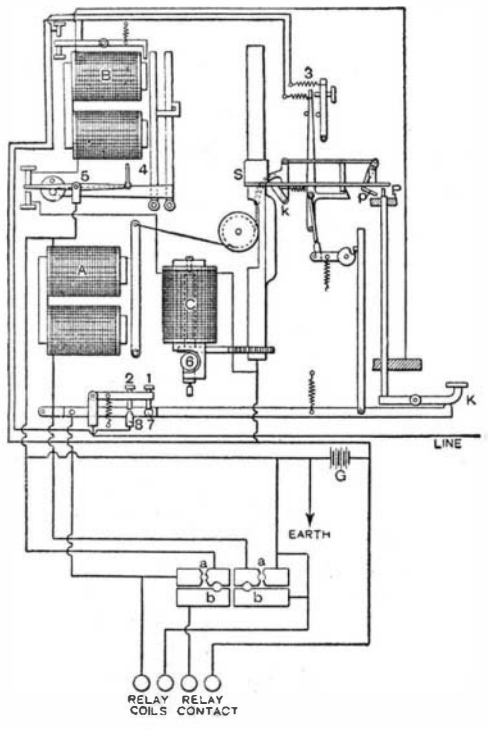


Fig. 1.—Diagram of the Working Parts of the Typewriter.

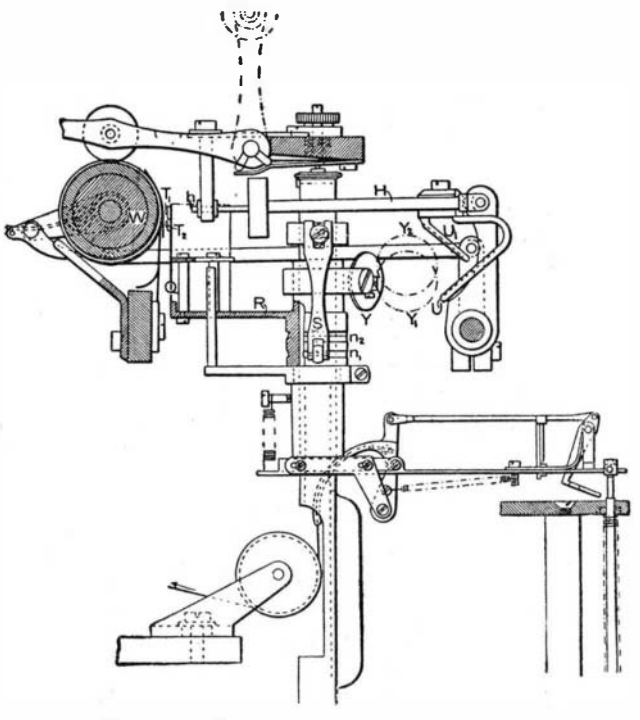
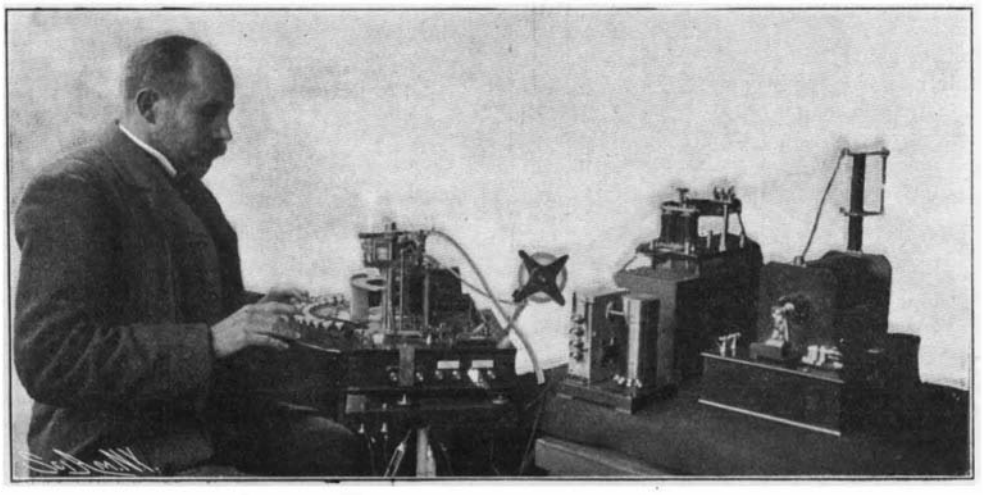


Fig. 2.—Part Elevation Illustrating in Detail the Synchronizing Arm, Type Quadrant Attachment, Printing Hammer, and Upper End of a Contact Pin.

Although similar in working to the ordinary typewriter, the principle and mechanism are widely different. The type keys are ranged in a quadrant in the orthodox style. In order to obtain the maximum number of signs with the minimum number of levers, only twenty-eight type keys are provided, twenty-six of which correspond to the letters of the alphabet. In addition there are two shift keys to change from letters to figures and signs or *vice versa*, these keys also serving for spacing purposes. The quadrant on which the types are placed moves up and down according to which shift key is depressed. Each key is connected with a lever, and at the opposite ends of these levers are fixed vertical rods, the upper ends of which are ranged in another quadrant. When a letter type key is pressed down, the vertical rod is forced upward, and at the same time the synchronizing arm is set in motion, and the first impulse is sent to line. This arm, which is the most vital part of the apparatus, and travels in a horizontal plane, is operated from the axis of the circle, corresponding to the quadrant, and travels round the circular path until its progress is arrested by impact with the projecting vertical rod of the depressed type key. The corresponding letter is then printed, a second impulse is sent to line, and the synchronizing arm is then returned to its original or zero position by an electromagnet.

In order to comprehend the *modus operandi* of the apparatus, which is somewhat intricate, it is necessary to refer to the diagrams, of which Fig. 1 is a diagrammatic view of the working parts of the zerograph, and Fig. 2 is a part elevation illustrating in detail the synchronizing arm the attachment of the type quadrant, the printing hammer, and the upper end of a contact pin. The figures on the diagram, it may be explained, are applicable to either the transmitting or receiving zerograph, as each machine fulfills either function as required.

When the type key *K* is depressed, the vertical rod at its opposite end,



A WIRELESS TELEGRAPHIC TYPEWRITER.