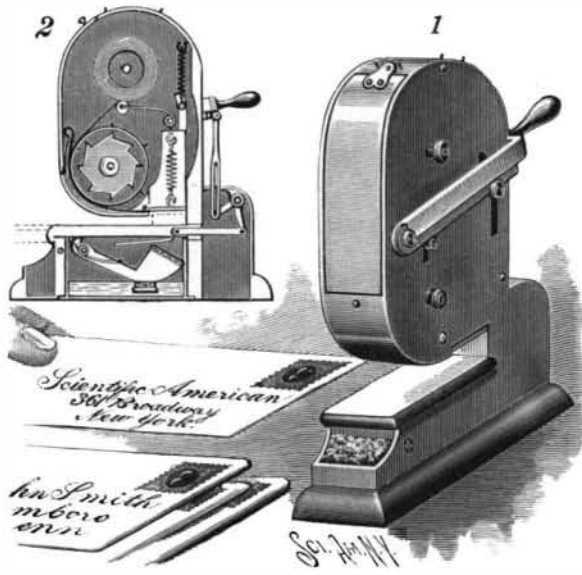


A MACHINE FOR STAMPING ENVELOPES, ETC.

The illustration represents a machine from which stamps may be fed out one by one, moistened, and applied to a letter or package, Fig. 1 showing the machine in perspective, and Fig. 2 being a vertical section. The improvement has been patented by Winfield L. Dinsmoor, of Portland, Oregon. The top portion of the base of the machine is cushioned and adapted to slide a limited distance, as indicated by the dotted lines, this movement being effected by pressing inward a handle, which, while making an opening to the chamber below, also actuates a sponge-holding or moistening pad lever to move the sponge or pad up-



DINSMOOR'S STAMP AFFIXING MACHINE.

ward through the opening. The construction is such that the sponge or pad does not come in contact with the body of the water below, and is thus prevented from carrying an access of moisture. In the upper part of the casing is a drum, on which is wound a tape made up of stamps, engaged by a friction roller as it is unwound and passed around a lower wheel, on which are teeth adapted to enter the perforations between the stamps, the stamps being held in position on the wheel by a spring guard, and the lowermost stamp being passed through a spring throat plate in the bottom of the casing, and beneath a vertically moving plunger. The stamp drum may be turned by a thumb wheel from the exterior of the casing, on one edge of which is a door through which the stamps are introduced. The plunger is normally held in raised position by a spring, but is adapted to be forced downward by a yoke lever, a cross bar of which extends through curved slots in the sides of the casing, an arm from this lever actuating the stamp-carrying wheel. When the handle at the base is pushed inward, the lever carrying the moistening pad moves the latter up through the opening to moisten the stamp, a spring returning the table to its normal position as the pad drops down, and, on pushing down the yoke lever handle, the plunger presses the moistened stamp upon the envelope or package placed in position beneath it.

A NEW FIELD GLASS.

The telescopes employed for effecting the magnification of terrestrial objects or, what amounts to the same thing, for bringing them apparently nearer to us, are of two kinds—the spy glass and the Galileo telescope. Each of these has its advantages and its inconveniences. The spy glass, in consequence of its optical system, which employs long foci, and in which the image given upside down near the objective must be righted by means of supplementary lenses, is always quite cumbersome, even for relatively feeble magnifications. Consequently, it would be impossible to mount it in the form of a field glass; and this is to be regretted, because we thus lose the benefit of binocular vision, which permits us to perceive relief. The Galileo telescope is much shorter, and the image is righted by the ocular, which is divergent. Consequently, it is more luminous. So for field glasses it is always this that is employed. But it embraces too limited a field, and, moreover, for high magnifications it rapidly loses the advantage of being shorter, since,

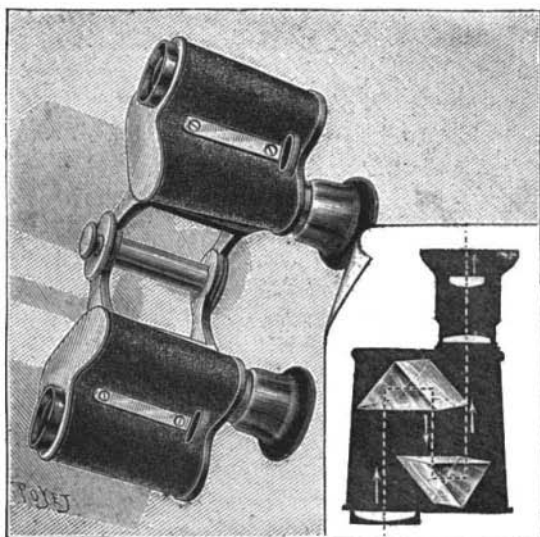


Fig. 2.

although for a magnification of two diameters it is two-thirds shorter than the spy glass, for a magnification of ten times the difference it is no longer, but a fifth shorter.

In order to have a manageable telescope capable of being mounted as a field glass having quite a wide field, a strong magnification, and luminosity, it would be necessary to find some means of modifying the spy glass in shortening its focus and suppressing the system of lenses that rights the image. It was Porro, a French physicist, who first pointed out the course to pursue in order to obtain such a result. He employed two total reflection prisms, which forced the luminous ray to return twice upon itself, and, at the same time, righted the image. But the tentatives made by him and a few others (Hoffmann especially) to attain a practical result were unsuccessful.

It was but a short time ago that Zeiss, the well known optician of Jena, succeeded in applying this method with entire success to a new system of field glass, which we have seen experimented with at the establishment of Mr. Krauss, the grantee of the Zeiss patents for France.

As may be seen in Fig. 1, which gives a section of the optical system, the luminous ray entering through the objective falls upon a total reflection prism that sends it to a second and similar prism, where it is broken anew in order to go to the ocular. It might be supposed that the use of two prisms would suppress much light and cause the loss of the benefit resulting from the doing away with the righting of the image by a system of lenses. But such is not the case, since the prism allows of the passage of much more light than does a lens in which the central part is almost solely utilized in consequence of the use of the diaphragm. Besides, these prisms are of glass of such purity that when placed upon a sheet of white paper, we distinguish no difference in tint between the portion of the paper that they cover and that which is not covered. There is another great advantage that results from the mode of construction of these field glasses, and that is the increase of the sensation of relief due to the spacing of the objectives. It will be remarked, in fact (Fig. 2), that although the oculars are necessarily at a distance of six or seven centimeters (which is that of the mean distance between the eyes), the objectives, as a consequence of the use of the prism, are separated from each other by eleven centimeters. Now we know that the stereoscopic effect is so much the more marked in proportion as the points of view whence the rays reach the observer's eye are farther apart. This principle, moreover, was studied by Helmholtz, who, under the name of the telestereoscope, proposed an apparatus in which

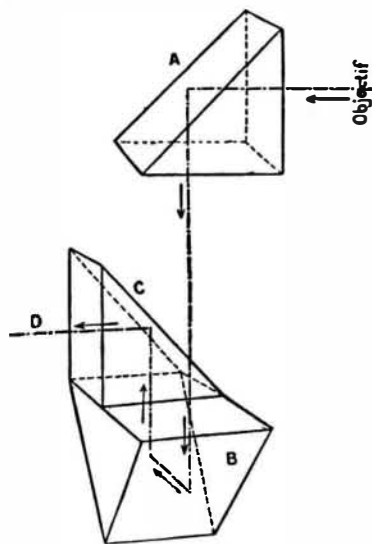


Fig. 1.—PASSAGE OF THE RAYS IN THE STEREOSCOPIC FIELD GLASS.

the rays were reflected from mirrors. It was in following up this idea that Zeiss constructed a second model of field glass in which it is possible to increase the distance between the objectives indefinitely, so to speak. The diagram in Fig. 1 will show how this result is reached. Opposite the objective there is a total reflection prism, A, which sends the ray to a second prism, B, capable of being

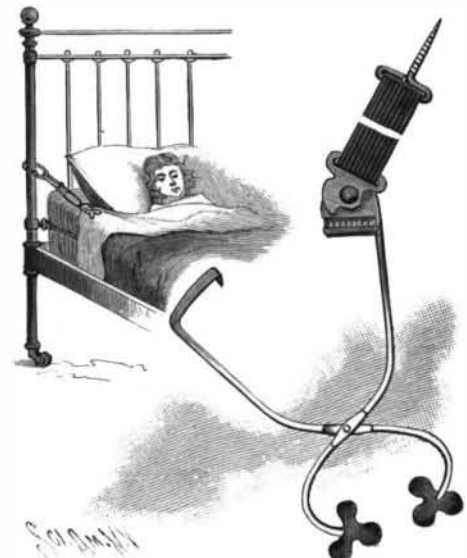
placed as far from the first as may be desired, the spacing being determined by the focal length of the field glass.

After being twice reflected in the prism, B, the ray meets a second prism, C, which sends it to the ocular. In the instrument constructed upon this principle (Fig. 3), and which is called a stereoscopic field glass, a joint permits of placing the two tubes of the glass in the prolongation of one another (No. 1) or parallel (No. 2), for the sake of ease of carriage. These two positions may be utilized in two special cases: In the first, for example, one can stand behind a tree (No. 3) and in the second behind a wall (No. 4) for making his observations more at ease.

When a landscape is examined with this new type of field glass, the observer is surprised at the relief that the image assumes. The objects place themselves in their respective planes, and it is possible to ascertain their exact position. From a military standpoint, such instruments are destined to render genuine services by permitting of better estimating distances for the regulation of firing, of more distinctly seeing the work done by an enemy, and of estimating the depth of a body of troops located at a distance. They will prove the indispensable complement of every officer's equipment.—La Nature.

A BEDCLOTHES FASTENER.

The illustration represents a simple and inexpensive device for keeping clothes in place on a bed, its construction being such that the gripping jaws will not



JOY'S BEDCLOTHES FASTENER.

injure the most delicate quilt or other bed covering, while the jaws are also adapted to be locked at various distances apart to accommodate the different thicknesses of bedclothes, from the lightest to the heaviest. The improvement has been patented by Russell T. Joy, of No. 29 Murray Street, New York City. The gripping jaws at the outer extremities of the two pivoted arms of the holder consist of a series of leaves, preferably trefoil, their edges being smooth and rounded, and one of the arms has at its other end a lateral extension with recess, at the bottom of which are ratchet teeth, a latch pivoted on the extension having a finger adapted to extend across the teeth when the latch is straightened. An elastic band connects the eye of the latch with the head of a screw, with which the device may be connected to a wooden headboard, or, when the bedstead is of metal, a cord with a ring and snap hook are substituted for the screw eye. A pawl on the end of the other arm is adapted to engage the ratchet, when the device is adjusted to hold the clothes, the ratchet and pawl being locked together by straightening the latch, carrying its finger over the pawl.

THE New York Aquarium at Castle Garden is visited daily by 7,000 people, says Science. This large attendance demonstrates the usefulness of such institutions for purposes of instruction and healthful amusement. It is understood that Mayor Strong is in favor of setting aside the land at Bronx Park for the Zoological Park, and it is much to be hoped that arrangements may be carried out without too great delay.

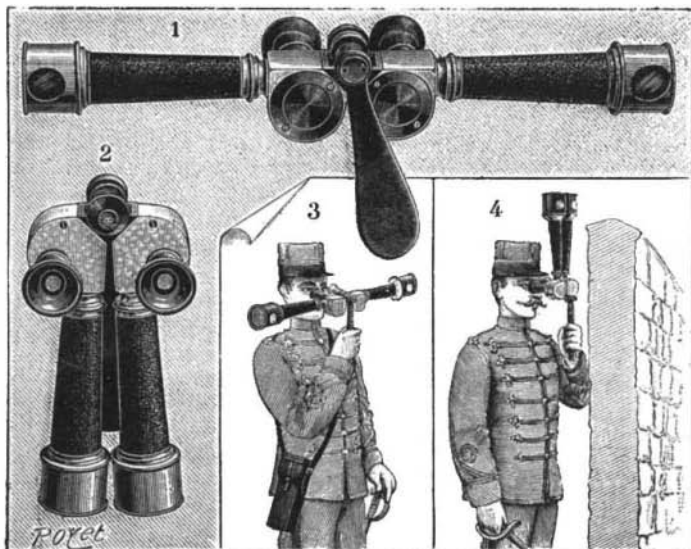


Fig. 3.—1. The field glass open. 2. The field glass closed. 3. Observation from behind a tree. 4. Observation from behind a wall.

THE ZEISS STEREOSCOPIC FIELD GLASS.