

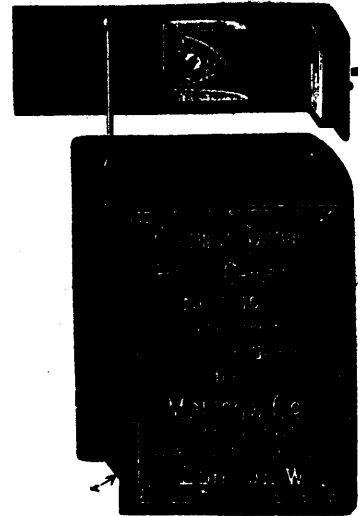
FIG. 1.

## DETECTIVE CAMERAS.

The *Photographic News* says that a German officer, who recently occupied a chalet near Paris, has been expelled from France as a photographing spy, and that a lady, who was supposed to have taken a part of the chalet from him, turns out to have been a German military cadet. They both used to go wandering about with a perambulator, containing what seemed to be a sleeping baby, but was, in reality, a large doll that hid a photographic apparatus for taking views of the new forts and the positions commanding them. A great deal of ingenuity seems to have been expended recently in devising what are called detective cameras, which will, no doubt, be used for natural history and other scientific purposes where it is desirable not to attract the attention of the person or the animal photographed. Dr. Krugener, of Bockenheim, near Frankfort, has patented a detective camera in the form of a leather-bound book that holds a supply of twenty-four dry plates, which may be exposed in rotation without opening the camera by means of the rod *r* in fig. 1, which is shown pulled out in fig. 2. The reservoir *a*, fig. 2, holds the supply of dry plates, which are pushed upward against the cover by a spring; *c*, fig. 2, is the place where the plate is exposed on pushing in the rod *r*. The plate which has been exposed is pushed to *v*, and another plate is brought into position to be exposed. It is intended that the camera should be held under the arm of the operator, and the exposure is made by touching a spring. The object photographed may be at the back or in front of the operator. A Voigtländer lens is employed and the pictures taken are sufficiently sharp to allow of an enlargement to six or seven diameters.

## AN IMPROVED DRAUGHTSMAN'S PROTRACTOR.

In plotting the courses of a deed or the meanders of a water-course, the surveyor is compelled either to draw a new meridian at the close of each course, from which to lay off the succeeding one, or else to calculate the angle made by the intersecting courses and then lay off this angle with an ordinary protractor. The latter method is not only laborious, but there is also the liability to error in such computation, and, as each course is dependent upon that which precedes it, an error in



one course will be carried forward throughout all the successive courses. Gen. Duffield's patent protractor, illustrated herewith, enables each course to be laid off independently of all others. It is made of horn, celluloid, or other transparent material, and the graduation upon the outer circumference in degrees, etc., like that of the surveyor's compass, begins at 0° on the vertical line, and extends both ways to the right and left to 90° on the horizontal line. Below or on this horizontal or 90° line, and parallel therewith, a scale of equal parts is drawn, the graduation commencing with 0, at the intersection of the vertical or 0° line and the horizontal line, and also extending each way both right and left.



DUFFIELD'S DRAUGHTSMAN'S PROTRACTOR.

A similar scale of equal parts is drawn parallel with the first, as far removed from the horizontal or 90° line as the graduation of the outer circumference will permit, the 0 of such scale being at the intersection of the vertical or 0° line with the horizontal line, upon which this scale is drawn, and the graduation also extending each way, both right and left. To use this protractor meridian lines are drawn in pencil upon the paper upon which the map is to be drawn, whose distance apart will not exceed 3 inches, or the length of the scale of equal parts, drawn on the protractor. To lay off any given course, the centre of the protractor is made to coincide with the beginning point of such course on the end of the preced-