

SCIENTIFIC DIVERSIONS.

Street venders are often seen selling, at night, a little mouse which they place upon the back of their hand, and which keeps running as if, having been tamed, it wished to take refuge upon them. In order to prevent it from attaining its object, they interpose the

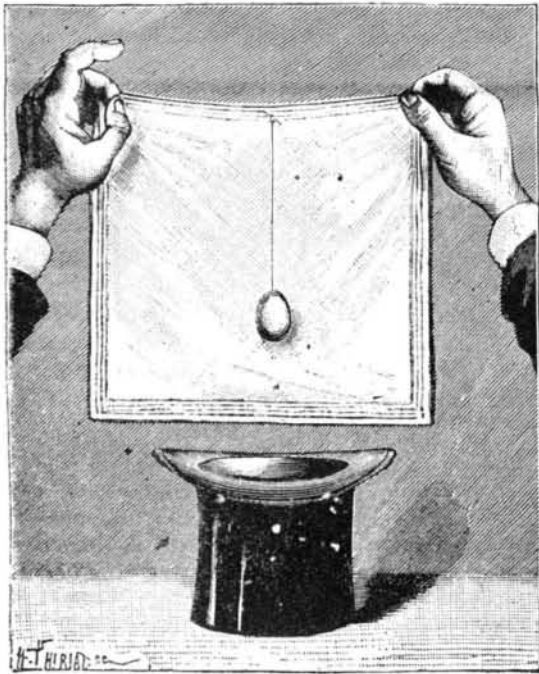


Fig. 2.—THE EGG AND HAT TRICK.

other hand, and then the first one, which is now free, and so on. The mouse keeps on running until the vender has found a purchaser for it at the moderate price of two cents, including the instructions for manipulating it, for, as may have been divined, it is not a question here of a live mouse, but of a toy. This little toy is based upon two effects—first, an effect of optics, and second, the effect due to an invisible thread.

The mouse, which is flat beneath, is provided near the head with a small hook, and the operator has fixed to a buttonhole a thread ten inches in length terminating in a loop. He fixes this loop in the hook above mentioned, and, tautening the thread, places the mouse upon the back of his left hand (near the little finger, for example).

On moving the hand away from the body, the mouse, which does not stir, seems to slide over the back of the hand, and, at the moment that it is about to fall on reaching the thumb, the right hand, passed beneath, arrives just in time to catch it near the little finger, whence, by the same movement as before, it seems to go toward the thumb (Fig. 1).

In order to perform the experiment off-hand, it suffices to take a cork and carve it into the form of a mouse, then cut away the under part of the animal thus rough-shaped, so that it may lie perfectly flat, then make two ears out of cardboard, and a tail out of a piece of twine, and finally blacken the whole in the flame of a candle. After this, the black thread, terminating in a ball of soft wax or a pin hook, having been fixed to a buttonhole, allow the spectators to examine the mouse, and, after it is returned to you, fix the thread, either by its ball of wax or its hook, to the front of the flat part of the rodent, which you may then cause to run as above described.

Another effect due to an invisible thread is the following:

Some months ago, in a Parisian public establish-

ment, a clown took a hat and a handkerchief and then, after showing, by spreading it out, that the handkerchief was empty, drew an egg from the folds of the crumpled fabric and allowed it to drop into the hat. Then he took up the handkerchief, shook it out again, crumpled it up, found another egg, and let it drop into the hat, and so on. When it might have been supposed that the hat contained a certain number of eggs, he turned it upside down, and, lo and behold, the hat was empty! All the eggs from the handkerchief were reduced to a single one attached by a thread to one of the sides of the handkerchief, and which the amusing operator maliciously exhibited, after seeming to look for the vanished eggs.

While the handkerchief was stretched out, the egg was behind it, and, although it was shaken, remained suspended by its thread. In crumpling the handkerchief it was easy to seem to find the egg in it, and to put it in the hat, where it did not remain, however, for, lifted by the thread, it resumed its place behind the handkerchief. Fig. 2 shows the handkerchief at the moment that the egg has been removed by the thread on the side opposite that of the spectators.

On attaching a black thread, 16 or 20 inches in length, to an empty egg, and selecting the egg thus prepared from a lot of ordinary eggs, as if by chance, we have a ready means of amusing and mystifying spectators for a long time. Having hooked the free extremity of the thread to a buttonhole of the waistcoat, let us lay the egg upon the table. After apparently ordering it to approach us, it suffices to recede from the table to make the docile egg obey the command. By the same means, it may be made to make its exit alone from a hat, or, again, by bearing upon the invisible thread, it may be made to dance upon a cane or upon the hand, in a word, to perform various operations that eggs are not accustomed to perform.—*La Nature*.

THE MAUSER MAGAZINE RIFLE.

In the Mannlicher rifle, the magazine is permanently attached to the weapon, and every cartridge used is first put into the magazine. To enable this to be done, and at the same time to raise the average rate of firing, as compared with a single loader, the cartridges

are issued in sets of five carried in steel clips or holders. The complete set or bundle is placed in the magazine with nearly as great ease and celerity as a single cartridge can be placed in the body or the chamber of the rifle. After every five shots there is a momentary intermission for reloading, but it is very short. If the magazine be empty, it is quite possible to use the rifle as a single loader. This principle of loading by means of a cartridge holder which goes bodily into the magazine has been adopted in Austria and Germany.

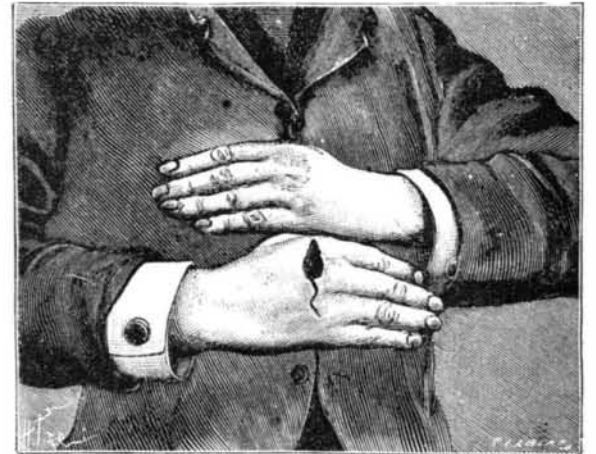
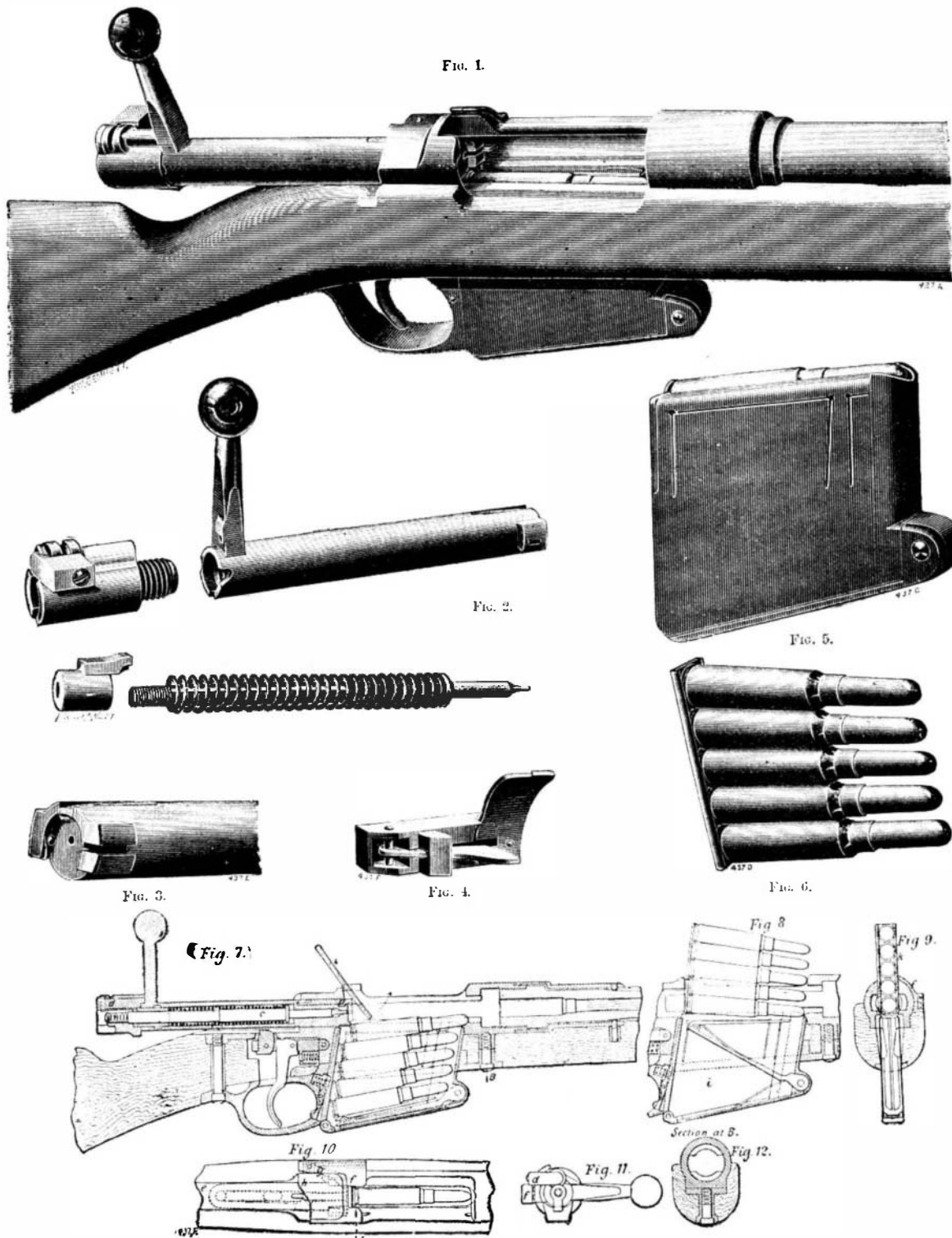


Fig. 1.—THE ANIMATED MOUSE.

A third type of magazine rifle is that invented by Mr. Mauser, and adopted by the Belgian, the Turkish and the Argentine governments. It has a magazine which, although not absolutely fixed, is not intended to be removed except at considerable intervals for purposes of cleaning. The cartridges are issued in sets of five held together by clips or holders, but these clips do not go into the magazine, and form no part of the equipment of the rifle. In other words, if the clips should become rusty, or be bent by blows or pressure in packing, the soldier would still be able to use his magazine, a condition of affairs which would not obtain if the cartridge holders had to be placed bodily

in the magazine. A concurrent advantage of this arrangement is that the bottom of the magazine does not need to be left open for the clip to fall out when emptied. If an open-bottom magazine be rested on damp ground, as would be the case with the marksman lying down, mud or wet is almost certain to enter the opening, with the likelihood of rusting the interior of the magazine. Should this occur the cartridge holders would not fall out, and possibly the feeding spring itself would be rendered useless. In the Mauser system the cartridges in their holder are placed directly over the mouth of the magazine, and by pressure of the thumb are fed out of the holder into the magazine, as will be better understood when we come to describe the mechanism in detail. The holder falls away and ceases to be an element in the affair. Further, the Mauser rifle does not need a cut-off to render it a good single loader. The soldier may keep his magazine full during the early part of a fight, reloading after every shot if he likes, and thus preserving his store intact against the supreme moment. This cannot be done with either the German or Austrian rifles; they are only available as single loaders when the magazine is empty. Neither can a half-empty magazine be replenished in them without sacrificing the cartridges which it contains.

The construction and mechanism of the Mauser magazine rifle are clearly shown by the illustrations. Fig. 1 shows the body of the weapon, with the bolt



THE MAUSER MAGAZINE RIFLE.