DEVICE FOR HOLDING AND GUIDING THE FINGERS IN WRITING.

A metallic rod, A, made about two inches longer than the width of the hand, and having each end rounded, is passed under the hand as shown in Fig. 1. To the lower portion of the rod is attached a ring, B, encircling the fourth finger. The ring, C, upon the first finger, is provided with a loop through which the rod is passed; this allows the device to be adjusted to hands of different sizes.

The use of this device does away with the habit of doubling under the third and fourth fingers and of allowing the hand to rest on its right side upon the desk; the penholder cannot fall below the knuckle joint. The thumb, fore and second fingers are free for any movement, and as the writer has complete command of his fingers he is not inclined to hold them too straight or the penholder too tightly. While a correct position is at once assumed, the writer is bound to keep his wrist off the desk.

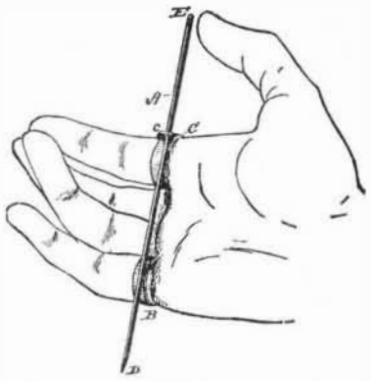


Fig. 1.

Fig. 2.

DEVICE FOR HOLDING AND GUIDING THE FINGERS IN WRITING.

This invention has been patented by Ignaz Bergman, of Fort Madison, Iowa.

An Antidote for Hydrophobia.

The celebrated French chemist, M. Louis Pasteur, claims to have discovered a complete antidote for hydrophobia. In an interview with a Paris *Figaro* correspondent he is reported as saying:

"Cauterization of the wound immediately after the bite, as is well known, has been more or less effective, but from to-day anybody bitten by a mad dog has only to present himself at the laboratory of the Ecole Normale, and by inoculation I will make him completely insusceptible to the effects of hydrophobia, even if bitten subsequently by any number of mad dogs.

"I have been devoting the last four years to this subject. I found out, in the first place, that the *virus rabique* loses its intensity by transmission to certain animals, and increases its intensity by transmission to other animals. With the rabbit, for instance, the *virus rabique* increases; with the monkey it decreases. My method was as follows: I took the virus direct from the brain of a dog that had died from acute hydrophobia. With this virus I inoculated a monkey. The monkey died.

"Then with the virus—already weakened in intensity—taken from this monkey I inoculated a second monkey. Then with the virus taken from the second monkey I inoculated a third monkey, and so on until I obtained a virus so weak as to be almost harmless. Then with this almost harmless virus I inoculated a rabbit, the virus being at once increased in intensity.

"Then with the virus from the first rabbit I inoculated a second rabbit, and there was another increase in the intensity of the virus. Then with the virus of the second rabbit I inoculated a third rabbit, then a fourth, until the virus had regained its maximum intensity. Thus I obtained virus of different degrees of power. I then took a dog and inoculated him, first with the weakest virus from the rabbit, then with the virus from the second rabbit, and finally with the rabbit virus of maximum intensity. After a few days more I inoculated the dog with virus taken directly from the brain of a dog that had just died of acute madness. The dog upon which I had experimented proved completely insusceptible to hydrophobia. The experiment was frequently repeated, always with the same successful result.

"But my discovery does not end here. I took two dogs, and inoculated them both with virus taken directly from a dog that had just died of acute hydrophobia. I let one of my two dogs thus inoculated alone, and he went mad and died of acute hydrophobia. I subjected the second dog to my treatment, giving him the three rabbit inoculations, beginning with the weakest and ending with the strongest. The second dog was completely cured, or rather became completely insusceptible to hydrophobia."

M. Pasteur then went to a kennel and caressed a dog that had undergone this latter operation. "*Voyez!*" said Mr. Pasteur, "*comme il est bien gentil.* Whoever gets bitten by a mad dog has only to submit to my three little inoculations, and he need not have the slightest fear of hydrophobia."

Manufacture of Pearl Buttons.

At Springfield, Mass., there is a manufactory of pearl buttons, and a reporter of the *Republican* stepped into the factory the other day, and he tells briefly what he saw:

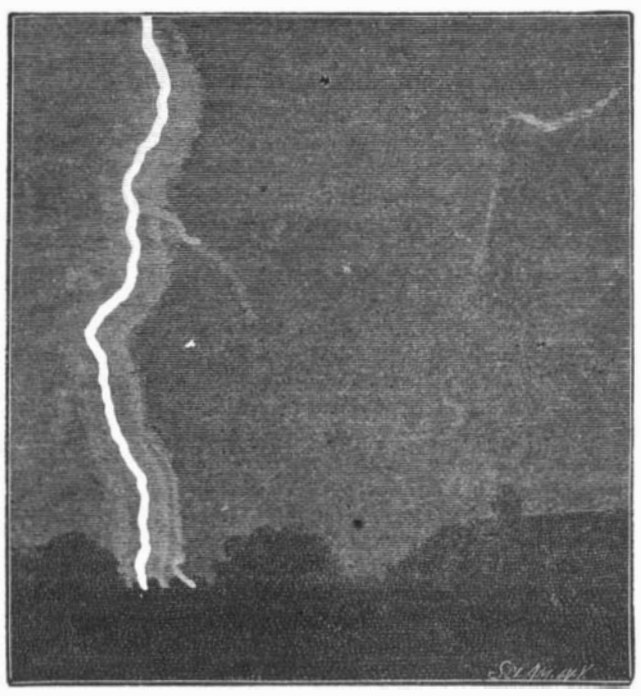
The Springfield Pearl Button Company has now had a year's life, and if increase of working force is any criterion, it is a vigorous infant. It is unique among New England button making industries in that it uses only simple machinery, depending mainly on the trained hands and eyes of its twenty-five or thirty workmen for the perfection of its products. The marine shells from which the mother of pearl is obtained—shells of the pintadina variety, coming from the East and West Indies, California, and, in fact, all quarters of the world—are taken as they come packed, are rinsed in water, and are then ready for turning. The shell is made up of the mother of pearl inside, this being of a creamy or varied coloring, and a thinner outer layer of a bony texture. The shell is pierced through a number of times by a hollow boring tool, fitted to a common lathe, some dozens of small disks being the result. Each disk then goes through three or four or sometimes a half dozen more operations at the hands of the men standing in a line at one work bench, each having a lathe and a three-cornered file, sharpened to suit his work. The bony part is cut from the disk and the button shape given it while revolved by the lathe against the sharp steel held in the workman's hand, no gauge being used. Some of the buttons are grooved with a few lines on the face, and a few holes are punched in each. Part of the buttons are subjected to a mysterious coloring operation in a revolving box, but the best grades are finished in the natural colors. The polishing is mainly done by hand.

The whole process is very quick, and the method has the great advantage of being immediately adapted to any style of button desired, no change in machinery being required, but merely a fresh adjustment of flesh and blood. All sizes of ordinary buttons are turned out, as well as some "collar buttons," though no fancy articles are made. The light-colored material is the most valuable. Fifty cents a pound is paid for the rough shells, but the buttons are worth from one to seven or eight cents each.

PHOTOGRAPHING A FLASH OF LIGHTNING.

The accompanying engraving was made directly from a photograph sent to us by Mr. W. C. Gurley, of Marietta Observatory, who writes as follows:

"The reproduction of a flash of lightning by photography would, a few years since, have been deemed quite an impossibility, but the introduction of the rapid bromo-gelatine process has rendered it not only possible but comparatively easy of accomplishment.



The accompanying photograph is from a negative taken by myself during a thunder storm which passed several miles south of the observatory on the evening of May 4.

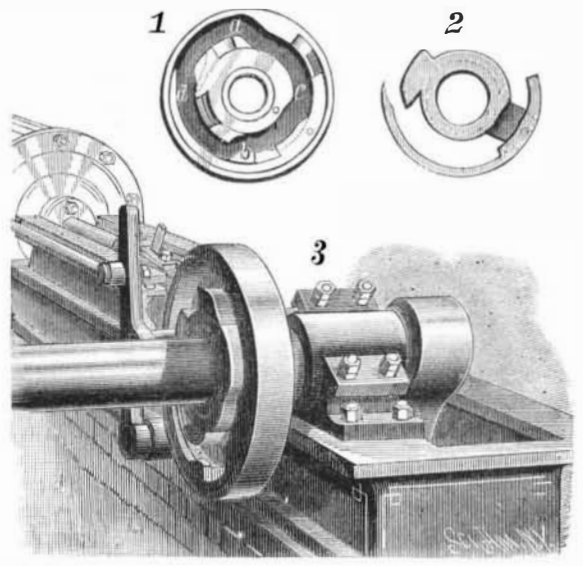
Wheatstone has demonstrated by direct experiment that the duration of a single flash of lightning cannot possibly exceed a millionth of a second. That a photograph showing the detail of the one mentioned could be taken in this inappreciably short time seems quite wonderful, not to say incredible. The plate employed was one of Cramer's extra rapid, and developed with strong pyrogallic developer.

It will be observed that the flash is not of the usually depicted zigzag form, and that it seems to be alternately contracted and expanded in its passage through the atmosphere.

Taking the interval between the flash and the report, I estimated its distance from the camera to have been about five miles."

CUT-OFF VALVE GEAR.

The valve is operated by a rod connected with a rocking lever provided with a pin which enters an irregular or eccentric adjustable groove in a disk mounted on the crank shaft. The disk is flanged and is provided with an eccentric track, half of which is formed by the inner surface of the flange, and the other half by a cam ring (shown in the lower part of Fig. 2) held to slide between the remaining half of the flange, and a ridge projecting from the surface of the disk, parallel with and close to the flange. One end of the ridge is united to the flange, but the other end is open to permit the cam ring to pass in and out. A segmental ridge of varying thickness projects from the inner surface of the disk, and also forms an eccentric track.



McCARTER'S CUT-OFF VALVE GEAR.

A neck projects from the disk around the central aperture, and between this neck and the first ridge is formed a segmental slot. Upon the outer side of the disk is a collar, around which fits an eccentric ring (shown in the upper part of Fig. 2) provided with a cam projection, diametrically opposite which is a hole for a screw. This ring is held in the space between the collar and the segmental ridge. Fitting loosely in the outer collar is a ring secured to a plate which extends to the periphery of the disk. A screw passes through a hole in the plate, through the slot in the disk, and into the eccentric ring. A roller, mounted on a pin in the rocking lever, passes into the irregular groove formed by these parts. The cam ring, the eccentric ring, and the plate projecting from the ring encircling the collar move together. Fig. 1 is a face view of the disk with the parts in position, the shaded portion showing the path of the roller.

When the piston is at that end of the cylinder farthest from the shaft, steam will be admitted to the rear of the cylinder, and the piston will be moved toward the shaft, the slide valve remaining motionless. The projection, *c*, then strikes the roller, the lever is shifted, and the steam is cut off. The slide valve does not move until the stroke has been completed, when the end, *a*, of the ridge strikes the roller, swings the lever and rod in a direction from the shaft, thereby shifting the valve so as to admit steam into the front end of the cylinder. The valve again remains stationary, until the end, *d*, of the cam ring strikes the roller, when the steam is cut off. During the stroke toward the shaft the valve is opened to admit steam by the projection, *b*. The points, *a* and *b*, which govern the admission of steam are fixed, but the points, *c* and *d*, which govern the cut-off are movable. The cut-off mechanism can be so adjusted that steam will be cut off at any desired part of the stroke. As will be readily seen, the device can be applied to stationary or marine engines or locomotives, and will work equally well with either a slide or other form of valve.

This invention has been patented by Mr. M. J. McCarter, of Norristown, Pa.

Toronto, Canada, 1834—1884.

Toronto is one of the few cities outside of the United States on our northern border which seem enough like ourselves in the go-aheadativeness, intelligence, and thrift of its inhabitants to really form an integral part of the Great Republic, instead of forming, as it does, a pleasant neighbor under a "foreign" flag. The city celebrates its semi-centennial from the 30th of June to the 5th of July next, and on one side of the card containing the elaborate programme are views of the "then" and "now"—one being a pleasantly located hamlet, with windmill and Indian canoe in the foreground, and the other a great and handsomely laid out city, with the evidences of a large lake commerce and prosperous industries. The jollification should be a hearty one.