Bleaching Ostrich Feathers.

1. Wash the feathers with Castile soap and rinse *them thoroughly with lukewarm water* in order to remove all the grease and soap which may stick to the flue.

2. Soak feathers in a bath composed of one gallon of ammonia, 20° Be., to every eight gallons of plain water, for about 8 to 10 hours.

3. Take feathers out of this bath, and squeeze out the excess of ammonia which is in the flue by passing feathers through a wringer.

4. Put feathers in a bath composed of 5 gallons peroxide of hydrogen, with addition of 12 to 16 ounces of ammonia, let it work slowly, stirring feathers from time to time for about 6 hours; after 6 hours' working, put feathers in one side of the bath and add 5 gallons peroxide of hydrogen and 3 to 4 ounces of ammonia. Stir the bath well so as to insure the mixture of the peroxide with the ammonia. Then let the bath work for 9 to 12 hours more, after that time add again 2 or 3 ounces of ammonia. The peroxide will work yet for 12 hours more until it gets exhausted, and you may ascertain the fact by the following process:

Take a small quantity of the bath in a tumbler and throw in a few crystals of permanganate of potash; should bubbles of gas appear, it is proof that the peroxide is working; yet if none appear, the peroxide is exhausted.

Then the feathers have to be rinsed 3 or 4 times in lukewarm water, and then to be put in a second bath of peroxide of hydrogen, which has to be prepared as follows:

To 2½ gallons peroxide of hydrogen add 2½ or 3 gallons plain water and 8 ounces of ammonia, and put in the feathers. Let the bath work so for 10 hours, and after add again 2 ounces of ammonia as before, and it will then work 12 hours more until it is exhausted.

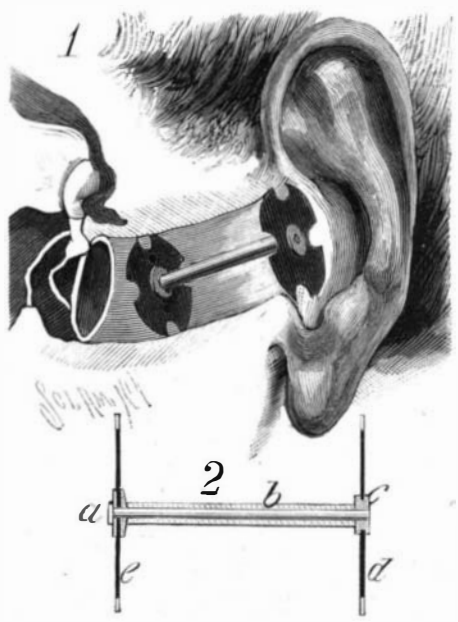
It is claimed that every one who will follow carefully the above directions will succeed to make white the darkest gray feathers, say 10 pounds of feathers by using about 7 to 7½ gallons of peroxide.

After the feathers have been taken out of the peroxide bath they must be rinsed thoroughly with lukewarm water 2 or 3 times, and after soaking them again in a soap solution for 6 to 8 hours, rinse them in lukewarm water, in order to remove all soap and dirt remaining in the flue.

ARTIFICIAL EAR DRUM.

The object of the invention herewith illustrated is to provide an artificial ear drum to be used by deaf persons. It is constructed of a magnetized steel rod, provided with a gold or silver covering, carrying a soft rubber disk on each end; the disks are held in place by gold washers, and are formed with ventilating apertures and notches. The magnetized steel rod, *b*, is surrounded by a closely fitting gold or silver tube, and at one end is the head or button, *a*, against which rests a rubber washer. Between this washer and a gold one the disk, *e*, is held. On the opposite end of the rod a thin soft rubber disk, *d*, is held by two gold washers, *c*. That end of the device carrying the soft rubber disk, *e*, is inserted in the auditory channel (Fig. 1) of the ear until the head, *a*, adjoins the delicate organs of the ear. The magnetized rod receives the impulses of the air wave, and carries them along and discharges them to the nerve of the ear with slight magnetic force, causing the organs to assume increased action. The disks hold the device in position, and protect the organs from coming in contact with the gold parts. The front washers, *c*, or disk receive the sound waves, and convey them to the rod. The outer disk is held on the outside part of the ear, just out of sight but within reach of the fingers, to permit inserting and withdrawing the instrument.

This invention has been patented by Mr. John H. Nicholson, of 93 Clinton Place, New York City.



NICHOLSON'S ARTIFICIAL EAR DRUM.

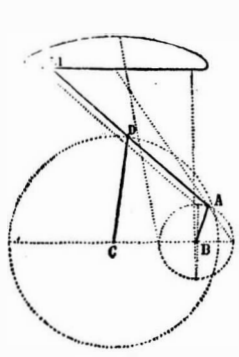


FIG. 1.

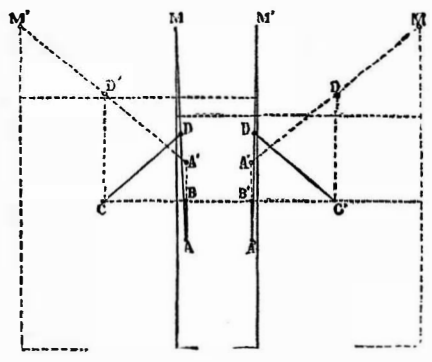


FIG. 2.

TCHEBICHEF'S WALKING MACHINE.

The idea of a walking machine is not entirely new, since as many as forty patents have been taken out in France for such a device, which is one that may be put to profitable use. In the season of snow and hoar frost, locomotives run with difficulty on the rails, and the idea has occurred that it would be well to add to them a temporary mechanism after the manner of feet as a substitute for wheels. Thus, we find in the galleries of the Conservatoire des Arts et Metiers three samples of locomotives with feet, devised by Mr. F. Hermann. One of these, with a single motive cylinder, is a small model that may be made to move forward by pressing a rubber bulb; another is provided with four cylinders, and the third is arranged for curves of short radius. It will be understood that this kind of a locomotive may be very usefully employed under other circumstances.

The principal mechanism of Hermann's walking machines consists either of eccentrics or of jointed parallelograms. The object of this article, however, is to make known a mechanism that has just been devised by Mr. Tchebichef. We ought to say that it is a question here principally of a theoretical solution. It is for professionals to study the results of the experiments from the data given by the illustrious professor of the University of St. Petersburg. What we usually call a jointed parallelogram in mechanics is a quadrilateral, or figure formed of four sides of invariable length, one of which remains fixed. The extremities of this latter (which is the base) are the centers of revolution of the two adjacent sides, and the side opposite the base is balanced in a more or less complicated manner, according to the respective sizes of the quadrilateral's sides. Watt's parallelogram is a well known example of such a mechanism. It is often applied in steam engines for directing the rod of a piston which must effect as rectilinear a motion as possible. Mr. Tchebichef long ago demonstrated that with the jointed parallelogram it was impossible to obtain a motion that was absolutely mathematically rectilinear. It is to Mr. Peaucellier that we owe the first accurate solution of the problem of constructing a straight line; but this, although published in 1864, has remained unnoticed.

In 1870, a student in the University of St. Petersburg, a Mr. Lipkine, presented to Mr. Tchebichef a jointed apparatus that permitted of tracing a straight line mathematically. But this in nowise affected the conclusions of Tchebichef, since the jointed apparatus was not a parallelogram, but contained seven rods or sides instead of three. The student received the encouragement of his professor, his university, and his government for this admirable discovery, which was but the Peaucellier apparatus revived. As for General Peaucellier, he was rewarded later on, the French Academy having given him a fine prize.

In order to draw a straight line, a ruler is made use of; but this in the first place must be verified. While we are purchasing it of the dealer, we place our eye at

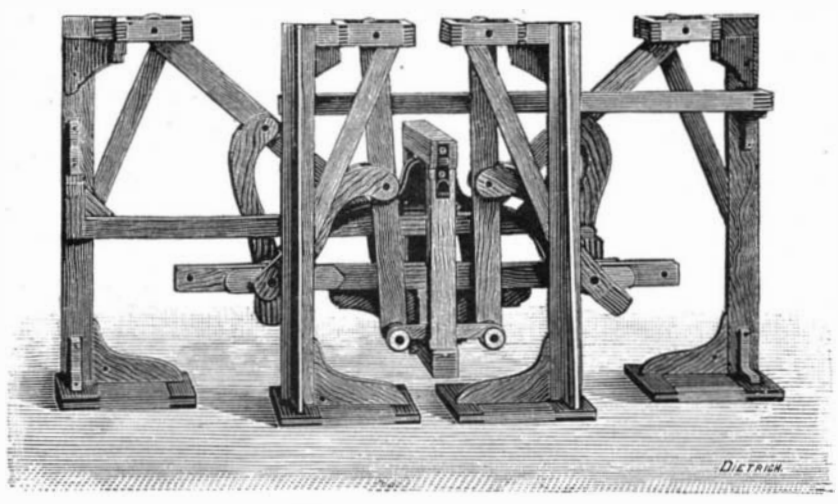


Fig. 3.—POSITION OF REST.

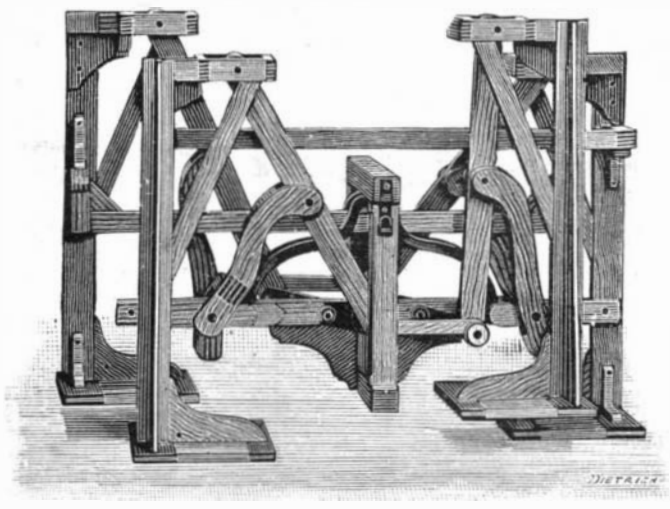


Fig. 4.—THE RIGHT FORE FOOT AND THE LEFT HIND FOOT RISING IN ORDER TO ADVANCE TO THE RIGHT.

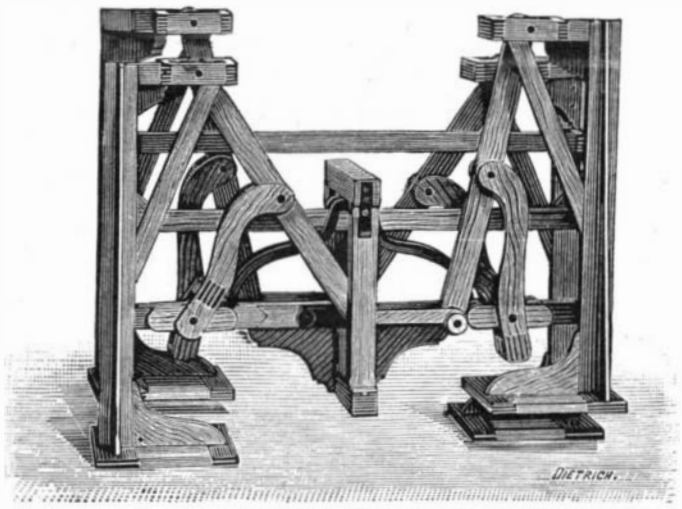


Fig. 5.—A FURTHER ADVANCE.

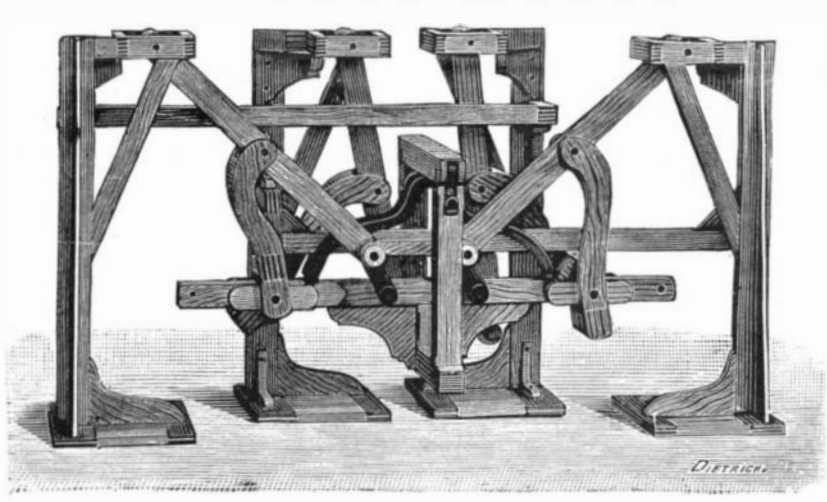


Fig. 6.—SECOND POSITION OF REST.