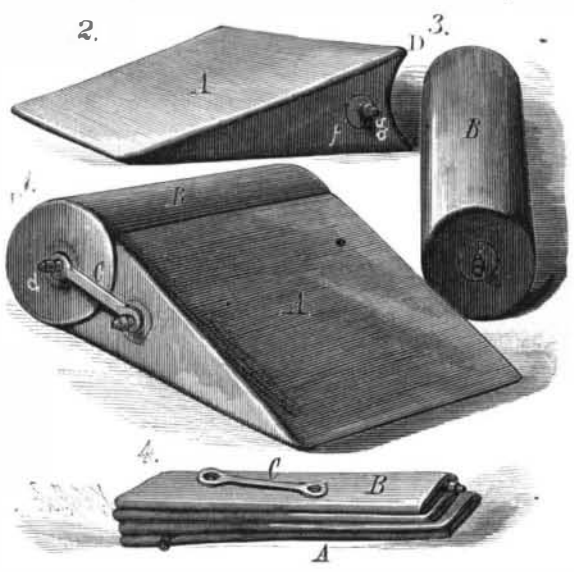
NOVEL PASSENGER HEAD REST.

We give an engraving of an improved passenger head rest lately patented by Mr. Ernest Scharpe, of New Orleans, La. The cylindrical tube or pillow, B, has closed ends, B B, each having a central projection, one of which is made hollow and provided with an air-tight cap, *d*. The lower section, A, is made wedge-shaped, with top portion, D, concaved throughout its whole length to fit snugly against the upper section. The length of the two sections are about equal, and the lower, like the upper one, is provided with end projections or pipes, *f*, for the introduction of air, which is prevented from escaping by air-tight caps, *g*. The two sections are connected together by means of links, as shown in Fig. 1; the links being so constructed as to permit the free rotation of the cylindrical pillow on its end projections or axes. The two sections connected in this way are arranged in a vertical or inclined position against the back of a car seat in such a way that the cylindrical tube or pillow, B, receives the head in its resting position, while the wedge-shaped section will conform to the back. The concaved portion of the section, A, will prevent the cylindrical pillow, B, from descending, and at the same time retain its position.



SCHARPE'S PASSENGER HEAD REST.

This rest, because of its elasticity, adjusts itself to the curves of the head, neck, and trunk, affording a means of rest in a partially upright position, and the peculiar connection between the two sections admits of revolving the cylindrical pillow to present a cool surface to the head of the user when desired.

When not in use the sections are disconnected and the air is expelled from each, thus forming a small package which can be carried in the pocket or made to occupy but a small space in a valise or other receptacle.

THE FORCE OF A CROCODILE'S JAW.

Some unique experiments have lately been made in France, on the strength of the masseter muscles of the crocodile (a muscle passing from the cheek bone to the lower jaw). M. Paul Bert received ten gigantic crocodiles (*Crocodilus galeatus*) from Saigon, which were transported alive to France in enormous cages weighing over 3,000 kilogrammes. Some of these crocodiles measured ten feet, and weighed about 154 lb.

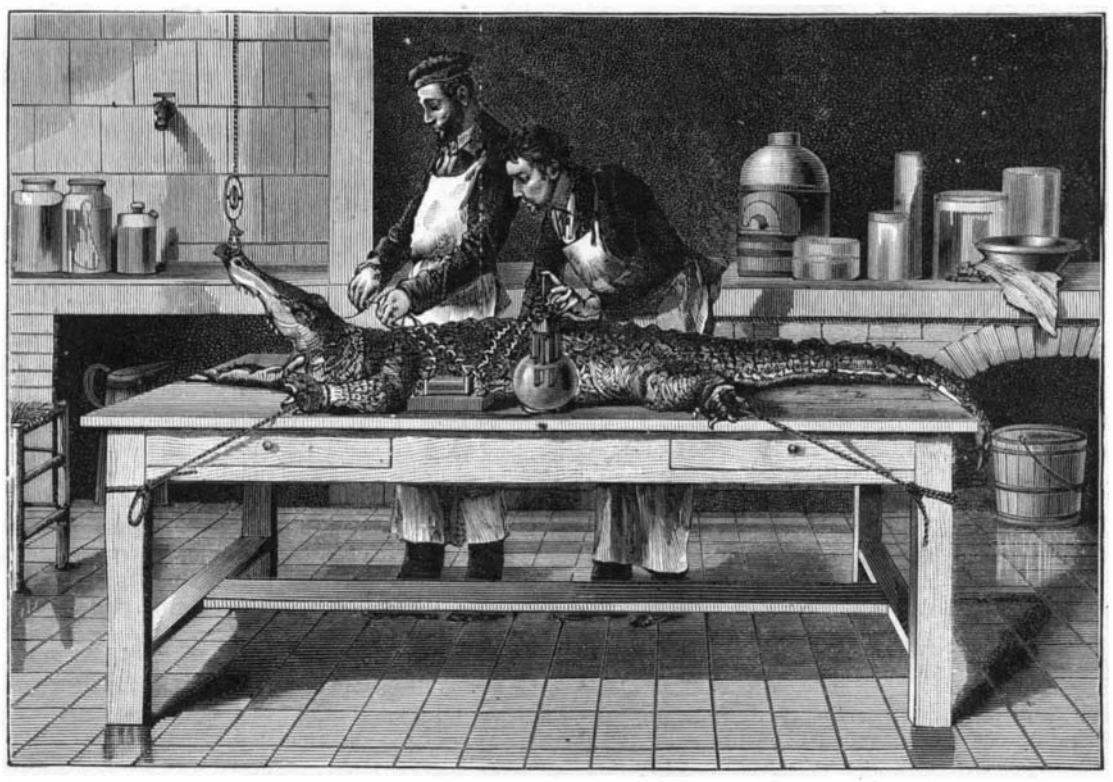
The reader can easily understand how difficult it must be to manage such ferocious animals in a laboratory; and it was only by the assistance of the managers of the Zoological Gardens that this dangerous task was accomplished.

In order to measure the strength of the masseter muscle of the crocodile's jaw the animal was firmly fastened to a table attached to the floor; the lower jaw was fixed immovably by cords to the table; the upper jaw was then attached to a cord, fastened by a screw ring to a beam in the roof. There was a dynamometer placed on this cord, so that when the animal was irritated or given an electric shock, the upper jaw pulled on the cord, and registered the force of its movement on the dynamometer.

With a crocodile weighing 120 lb. the force obtained was about 308 lb. avoirdupois. This does not equal the actual strength, for as the dynamometer is necessarily placed at the end of the snout, it is really at the end of a long lever, and must be measured by finding the distance between the jaw muscle and the end of the jaw, to show the real force of the jaw muscles, which equals 1,540 lb. As this experiment was performed on a crocodile already weakened by cold and fatigue, its force when in its natural conditions of life must be enormous.

This power of 308 lb. represents a power applied over the whole surface of the crocodile's mouth. In reality it is first used by the enormous teeth that overlap the others in the front of the jaw, and by a simple calculation the pressure of these teeth is estimated to be equal to the pressure of 400 atmospheres. The power of the crocodile's jaw was compared with that of an ordinary dog weighing about 44 lb., whose jaw was measured in the same way. A force of 72 lb. was obtained, which, when multiplied like the crocodile's, was found to equal the pressure of 100 atmospheres.

In comparing the weight to the jaw force of these two animals it is found that a crocodile is one-third stronger, weight for weight, than a dog.—*La Nature.*



EXPERIMENT TO DETERMINE THE POWER OF A CROCODILE'S JAW.

Pole Roads.

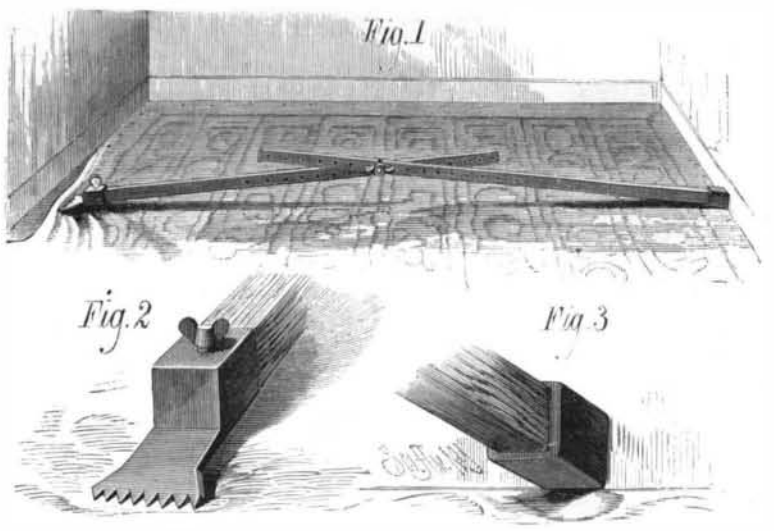
Pole roads for logging purposes are, says the *Northwestern Lumberman*, the simplest among the many forms of road which lumbermen find convenient and necessary in the prosecution of logging operations, when snow and ice roads are not available. They can be constructed in any locality where the ground is reasonably level, and are particularly adapted to such locations as present a sandy or fairly firm soil. They consist of long, small peeled poles, the longer the better, from four to five inches in diameter at the top, to eight or ten inches at the butt end. The more evenly they carry their size from butt to top, the better the road. The ends of the butts, and as well of the tops, are long scarfed, and pinned together with suitable hard wood or strong pins, of one and a half or two inches in diameter, according to the size of the timber through which they are to be driven. Tops should be scarfed to tops, and butts to butts, in order to provide a perfect bedding of all parts in the ground. If the scarfing is done so as to cause the poles to lie naturally on the ground when in place, the pins should be long enough to penetrate the earth to some distance. This is all the fastening or anchoring usually provided.

The wheels of the car are concave or V-shaped, and as they pass over the rails naturally force them to maintain their proper distances from each other, while preventing them from spreading apart. It will take but a few trips of a loaded car over these poles to bed them in the earth, when spreading is practically out of the question. The wheels must, in their concave surface, be adapted to the general size of the poles to be used, and if larger poles are employed, or large butts are used, the ax must be used in hewing off enough of the surplus wood to give the wheels a sure bearing. Any kind of timber which carries its size well may be employed, and if a pole gives out it is easily replaced. But comparatively little grading is requisite, although it is obvious that the more level the top of the track is kept, the less friction is encountered; for this reason it is well to bed the butts enough to bring them level with the bedded tops. No cross-tying is employed, and so solid are these roads that, in many sections, light locomotives are run upon them. With these general points stated, any man who comprehends the conditions under which concave wheels may be kept from running off through mounting the poles should have no difficulty in building a pole road. If the soil is not sufficiently firm to prevent the poles from becoming too deeply embedded, cross-ties of poles may be used, but as a rule they are more harm than advantage, as they tend to prevent the self-adjustment of the track for which the concave wheels would naturally provide.

IMPROVED CARPET STRETCHER.

The engraving represents a simple and effective carpet stretcher recently patented by Mr. Michael Winter, Sr., of Union City, Ind. It consists of two bars of wood pierced with holes at short intervals throughout one-half their length, and pivoted upon a bolt having a wing nut by which the two bars may be clamped together.

One of the bars is provided with a toothed plate at its free end to be inserted into the fabric of the carpet, the other bar has a cushion upon its free end, to be placed against the base board on the side of the room opposite that toward which the carpet is stretched. The holes are near enough to each other to admit of adapting the stretcher to a room of any size by changing the bolt from one set of holes to another.



WINTER'S CARPET STRETCHER.

The operation of the stretcher is very simple; the cushioned end of the device is placed against the base-board, and while the two bars are at an angle with each other the toothed plate is inserted in the carpet near the edge to be carried toward the wall; the angle formed by the bars is now flattened until the carpet is sufficiently stretched. If the bars are depressed so that they are parallel to each other they will remain in position without locking; but if the bars remain at an angle it will be necessary to clamp them together by means of the bolt.

The advantage of this stretcher over those in common use will be apparent to any one having had experience in putting down carpets. It stretches the carpet throughout its entire width, and requires very little exertion to put any desired amount of strain on the carpet.

MECHANICAL INVENTIONS.

A machine for sawing lumber or boards into certain standard lengths known in the trade as, for example, "twelve-foot" lengths, "fourteen-foot" lengths, or lengths denominated by the number of feet, has been patented by Mr. Willard B. Swartwout, of Three Rivers, Mich. The invention consists in a novel combination of certain devices, whereby provision is made for automatically feeding the lumber to the saws and adjusting the saws so as to cause them to cut the lumber in the desired lengths.

Mr. Henry H. Norrington, of West Bay City, Mich., has patented an improvement in the class of punches or perforating stamps designed for use in banking and other similar establishments for the purpose of puncturing or cutting out portions of a check or other written instrument, and thereby preventing fraud by alteration of such instrument to cause it to express a higher value than was originally intended.

Mr. Martin W. Speulda, of Springfield, Ill., has patented an improvement in fare registers of that class which are to be carried by the conductor, and operated as each fare is received to register the number of fares taken. This register has a pull bar which gives a step-by-step movement to a train of wheels bearing numbered dials, and simultaneously rings a bell at each movement.

Mr. Samuel C. Robinson, of Pemberton, O., has patented a ditching machine which is an improvement on a ditching machine for which Letters Patent were granted to the same