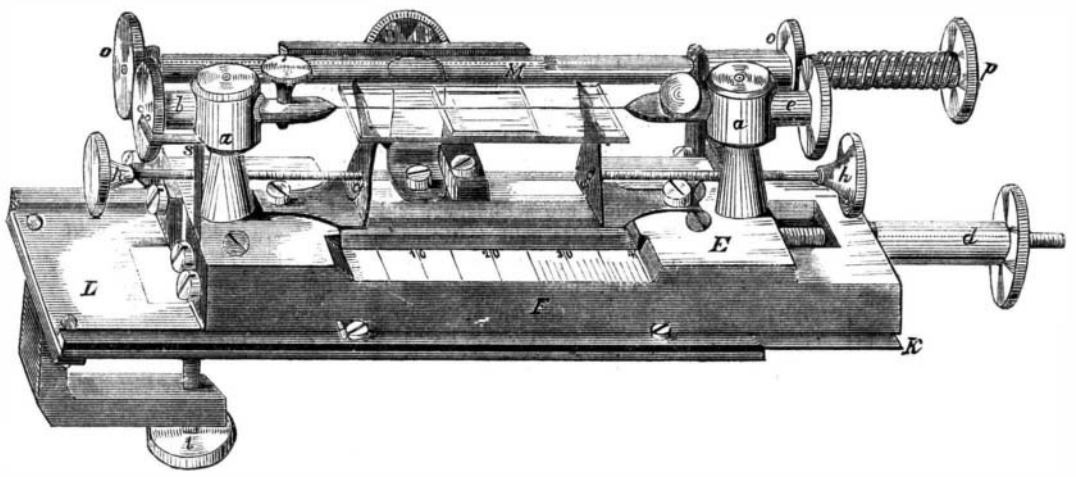
INSTRUMENT FOR MEASURING FIBERS.

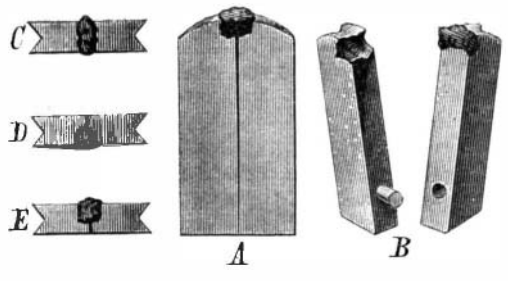
J. Bohm communicates to the *Industrie Blätter* particulars of an instrument invented by him for measuring the diameters of fibers of wool, silk, and substances of a similar nature. The method of cutting across the fiber cannot be relied on, as it is almost impossible to make the cut perfectly vertical, and the slightest deviation towards obliquity will give an erroneous result. A better mode is to stretch the fiber to get rid of the kinks, and to turn it on its axis, as it were, under a microscope, so that the variations in its diameter may be distinctly observed, and measured with the micrometer; its whole length, also, should be passed under the object glass. For this purpose, an ingenious little instrument has been constructed by Mr. Bohm, of which we give an illustration. The inventor states that it not only has answered all the purposes for which he designed it, but has been useful in ways that he did not expect. It was found, for instance, that a hair ordinarily appeared to be unequally thick in various parts of its length; this was owing to the long and short diameters of its oval section coming alternately under the vision, and the cause of the appearance was at once revealed by the instrument. And, again, the uniform decrease in the diameter of a hair towards its point, and the irregularity and inequality of fibers of wool from sick sheep, have been rendered visible. It has been found, too, that swellings and knots in otherwise straight fibers are produced by overstretching in the instrument, and the value of the arrangement for untwisting the fibers was here shown, for the knots began to uncurl the moment one end of the fiber was turned.



INSTRUMENT FOR MEASURING FIBERS.

In the engraving, *a a* are two columns, provided with the tweezers, *b* and *c*, which can be turned independently of each other. The object to be examined is fastened into these tweezers. It is evident that the hair must be attached exactly to the points, for otherwise, by turning both tweezers uniformly, an eccentric rotation of the fiber would be the result. The manipulation is facilitated by gumming each end of the object between two pieces of stiff paper, which can be easily adjusted between the two jaws, by sliding to and fro until the fiber is exactly in the center. This being the case, the hair is stretched by turning the screw, *d*. On the support, F, there is a scale, by which the degree of tension over the whole length is indicated. When stretched, a glass plate, carried by *g g*, is laid under it. It is necessary that the object to be examined lie flat on the glass, and that it is not strained over its ends, which would be the case if the points of the tweezers were lower than the upper surface of the object-supporting glass. To this end, the two adjusting screws, *h h*, are provided, which press the steel support, *g g*, downwards or upwards, as desired. The object being adjusted, it is immersed in glycerin, and covered from the air. The instrument is now placed under the microscope by fastening it on the table thereof. The screw, *i*, must previously be turned down, sufficiently to be conveniently slid under the

Fig. 3



stage of the microscope; and if the instrument is properly placed under the field of view, it is screwed on. The object is first examined with a low magnifying power (if not perfectly stretched, this may be done now); then the untwisting may be proceeded with by turning the tweezers in opposite directions. In order that the object may be viewed in its whole length, the instrument is made to slide to and fro; it rests with its sliding bed, K K, on bed, L. By turning the screw head, *d*, towards the left, the whole instrument follows in that direction, and *vice versâ*. If it is seen, on examining the object in its whole length, that the fiber is straight, rod, M, is engaged, by carefully turning the screw, *n*, until the two driving disks, *o o*, are in gear with the heads, *b c*, of the tweezers. This being the case, the latter may be turned uniformly around on their common axis, and the object may be thus examined on all sides. The head, *b*, of the left tweezer is divided on its outer surface into six equal parts; the pointer, *s*, works them.

The instrument described is adapted not only for wool, but for other animal or vegetable fibers; and in many manufacturing operations, such an implement will be found useful. The adjustability of all its parts in every direction will particularly recommend it to experts and investigators, and, as our engraving shows, it is a very neat and elegant tool, made with all the finish necessary to insure accurate working and to facilitate minute observation.

EMERSON'S DIAMOND STONE SAW.

The use of diamonds or carbons for the drilling and dressing of stone has suggested their employment for sawing the same material. It is for the latter purpose that the invention herewith illustrated is designed.

Our engravings afford a very clear idea of the device, rendering detailed explanation unnecessary. Fig. 1 gives an edge view of a saw in its full size. Fig. 2 is a section in perspective. Fig. 3 represents the diamond holder, of which A exhibits the appearance of a side, B a perspective view, and C D and E the different shapes of diamonds used. The solid steel holders are made adjustable and interchangeable in the saw. It is claimed that, in griping the diamond, they hold its jagged shape imbedded with such firmness that the cast steel will be torn asunder before the carbon will work loose. The mode of confining the holders, it is also asserted, does not in any way tend to chain or buckle the blade or affect its proper working.

The device is equally applicable to circular and reciprocating saws, and is, without doubt, an important and valuable improvement. It is now owned by Messrs. Emerson, Ford & Co., of Beaver Falls, Pa., from whom further information may be obtained, and was patented April 25, 1871, by Mr. J. E. Emerson, the inventor of inserted-tooth saws for lumber.

Fig. 1

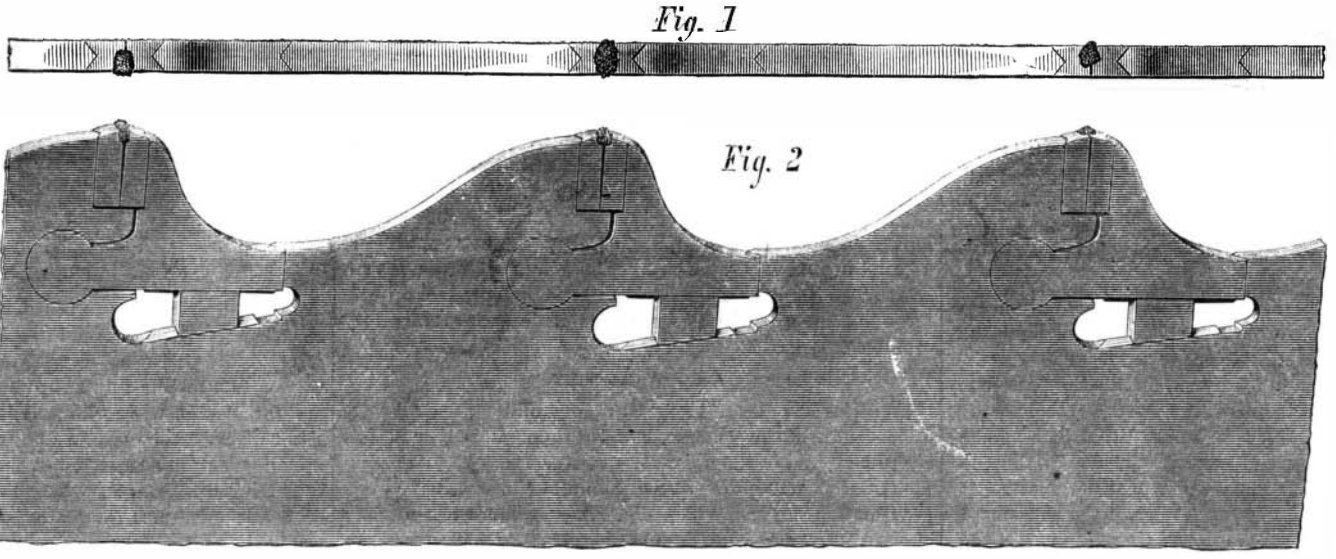


Fig. 2

EMERSON'S DIAMOND STONE SAW.

TOOTHACHE.—A new remedy consists in the employment of injections introduced into the gum near the diseased tooth. Dr. Dop has tried these injections in about one hundred cases. In twenty cases he made use of morphia, which succeeded very well, but only for a time. Chloroform was far more successful, and is now exclusively used by Dr. Dop. It was eminently successful in 62 cases out of eighty. The injection is made with the small syringe commonly used in France for subcutaneous injections. Only two drops are put in at a time. The needle is introduced gradually, and must remain *in situ* a few seconds. On withdrawing it, pressure must be exerted on the gum with the finger. In by far the greater number of cases, one injection is quite enough to stop the toothache.

Preparation of Light Drying Varnish.

Twenty-five pounds of pure linseed oil are poured into an enameled iron pot, which holds about forty pounds weight; the pot is then placed on a moderately strong charcoal fire, and the linseed oil heated for about half an hour to the boiling point. In the meantime four ounces of pure oxide of manganese are to be rubbed down in linseed oil. This mass is then put into a small vessel provided with a spout, and poured in drops into the boiling linseed oil, while being gently stirred with a wooden spatula.

During the rising and effervescence of the heated oil, the dropping in of the manganese preparation must stop.

As soon as the oil has settled the dropping in is continued to the last. The vessel is washed out with linseed oil, which is poured into the boiling oil. The varnish is now boiled slowly for an hour, but if a stronger or more quickly-drying varnish is desired, it should be boiled for half an hour or an hour longer.

The finished varnish is then removed from the fire, covered with a clean plate, and left to rest for about twenty-four hours, then carefully poured off into clean vessels. The sediment and other residue are generally used for ordinary ground colors.

The pure linseed oil varnish poured into glass bottles can be perfectly bleached by selecting a suitable spot where the sunlight and moonlight penetrate. According to Dr. Gromann, moonlight bleaches quicker than sunlight. The clear bleached linseed oil varnish is used only for the finest white oil and lac colors, and for dissolving the copal lacs, as well as a drying medium for all fine oil colors.

NEW METHOD OF ATTACHING HANDLES TO SAWS.

Mr. James E. Emerson, of Beaver Falls, Pa., has recently devised an ingenious means of attaching saws in their handles, an engraving of which we herewith present.

The invention consists in an irregularly shaped cam bolt, the body of which is a little longer from the shoulders than the combined thickness of the wings attached to the handle socket and the saw blade inserted between them, in order that the clamping cam may have a hold upon the outside of one of said wings. This projection increases in thickness from the end. As the bolt is turned in one direction, it forces that wing of the socket toward the shoulder of the thumb bolt and clamps the saw blade firmly between the wings. At the same time the enlarged diameter of the body, in turning, is hard against the side of the hole through the saw blade, forcing the latter endwise against the rivets. By this means a solid end bearing for the blade is obtained. The bolt can enter

Fig. 2

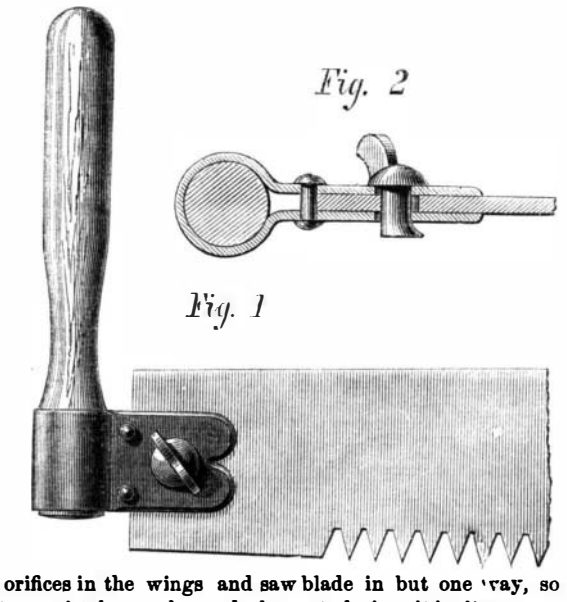


Fig. 1

the orifices in the wings and saw blade in but one way, so that no mistake can be made by not placing it in its proper position.

Mr. Emerson is also the inventor of the diamond stone saw illustrated and described on this page, as well as of many other improvements in saws and sawing machinery. For further particulars address Emerson, Ford & Co., Beaver Falls, Pa.