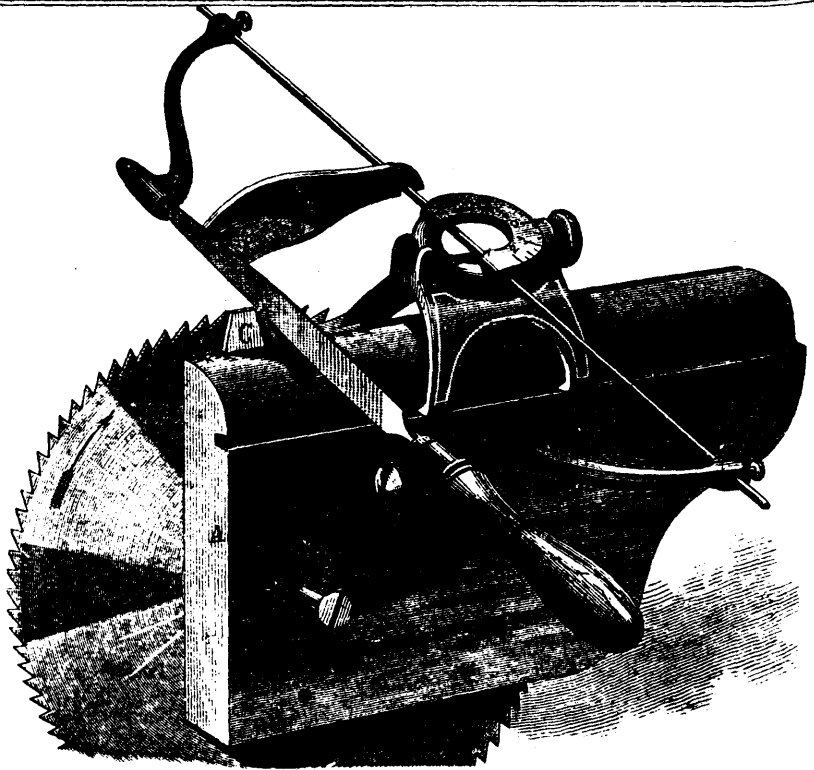


## CIRCULAR SAW FILING GUIDE.

It is important in filing and setting saws that all the teeth have the same size, bevel, rake and pitch, and that the points are on the same line—which line is a circular and cylinder saws a true circle, and in bands, and most blade-saws, a straight line. In cross-cut saws this line may be a moderately convex curve. Each saw should have a size and style of teeth suitable to its size and the work it has to perform.

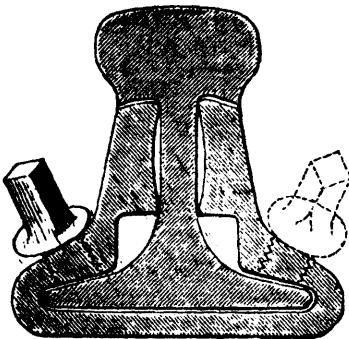
The cut illustrates an ingenious and practically valuable device\* for enabling the filer to work correctly without possibility of error and without straining his eyes—there is one modification for flat-blade saws, that shown in the cuts is for joining small circular saws. It will be seen that on the guide there is an index circle divided and numbered from zero each way to indicate the bevel. The file is held in a frame having a guide wire which passes through the index ring. An index piece passing from the guide wire to the file shows at what vertical angle it is cutting, thus showing the "pitch" of the teeth.

As each tooth is filed, the frame follows. Another modification of frame is for the use of large flat files and without removing large circular saws from the mandrel. *Polytechnic Review.*



## IMPROVED FISH-JOINT.

**A**N improved fish-joint has been patented by Mr. S. Aldred, which has several features recommending it to engineers. In the first place it dispenses with the necessity for punching the rails—an operation to be avoided where possible, as much on account of the attendant expense as on the liability to damage the rail.



The new fish-plate can be adapted to the double-headed or girder rail, as well as to the flat-bottomed rail shown in the engraving. The mode of applying the fish-plate is obvious: it is slipped over the end of a rail, and another rail being placed in position the plate is made to clasp the two ends. Several methods of securing the fish-joint in place may be employed; but that preferred by the inventor is shown in the diagram. A couple of inclined holes, five-eighths of an inch in diameter are tapped in the plate, and fitted with steel studs, which being forced home, effectually hold the plate, and clamp the rail down to its bearings, making a firm and elastic joint, the wings or upper portion of the fish-plate being forced against the under side of the head of rail by the action of the screw-studs on the bottom. We presume that some method of locking the studs in position will be adopted,

for if not they will be liable to work loose, and though any dangerous shifting of the plate is unlikely, any looseness will inevitably tend to an exaggeration of the hammering action of the wheels on the ends of the rails.

**ANTIDOTE TO SNAKE BITES.**—On the subject of snake bites, a very interesting communication has lately been received in India from an American gentleman, Mr. Kosciaky, recommending the gall of rattlesnakes as an antidote for snake bite. Mr. Kosciaky, who became acquainted with the antidote at Venezuela, states that it is not only cheap and infallible, but instantaneous and wonderful in its effects; crows and dogs in the last stages of the poison recovering as soon as the remedy was administered to them. The preparation of the antidote is simple: Three rattlesnakes' galls put into an ordinary wine bottle filled with 30° spirits, and allowed to stand for a week. In ordinary cases one or two tablespoonfuls are taken; in extreme cases, three to six. Mr. Kosciaky recommends experiments being made in this country with other snake galls. Dr. Fayer agrees with this recommendation, and refers Mr. Kosciaky's letter to the committee at Calcutta for investigating snake poison. The idea, however, he says, is not a new one, for in the 'Thanatophidia of India' the result of an experiment with the antidote is recorded; and he is of opinion that when brought to the test of scientific investigation, it will not prove more successful than the many other "antidotes" which have hitherto been tried and have failed.

**AMERICAN WOMEN.**—American women, says *Harper's Bazar*, take vastly better care of themselves than formerly. They have more acquaintance with hygienic laws, and hold them in far higher esteem. The days when they exposed themselves to dampness and wintry cold, in thin slippers and silk stockings; when they abstained from flannels next to the skin; when they pinched their waist to semi-suffocation; when they sacrificed comfort and health to what they conceived their appearance—these foolish and unhappy days have gone forever,

have barely been known to the rising generation. Our women have no mawkish and morbid notions as to themselves; they no longer think that to be unhealthy is to be attractive; that invalidism and interestingness are synonymous; that pale faces and compressed lungs are tokens of beauty. They dress seasonably; they wear thick boots and warm clothes in bad and cold weather; they allow themselves to breathe freely, and they find their looks improved, not injured by the wholesome change. There are exceptions—many of them doubtless—but the rule is as we have described, and the exceptions are constantly diminishing. It may be safely said that all sensible women are becoming, if they have not yet become, converts to nature, and that they heed her behests, recognizing the great principle that what is not natural cannot be beautiful.

**Calculations.**—In a paper recently communicated to the Académie des Sciences, on the division of the circumference into equal parts, Ed. Lucas introduces a process for accomplishing a calculation in 30 hours which would have required 3 000 years of constant labour under the old methods. It would, it is stated, take more than 208,000,000 centuries, at the rate of 10 figures per second, to simply write out the numerical value of a quantity for which the expression can be written, in his formula, in less than half a second.

**Effects of Sea-Water on Land.**—Mr. Reinders, from one of the German agricultural experimental stations, says:—"Land that has been submerged by sea-water generally proves sterile for some time, in some cases for ten to fifteen years. This can be traced to the co-operation of the three following chemical causes, in addition to the mechanical injuries produced by the inundation:—(1) To the introduction of too great a proportion of chlorine salts; (2) To the hygroscopic property communicated to it, preventing it from drying properly; (3) From the formation of green vitriol or sulphate of iron, which is known to exert a very prejudicial effect on plant growth. Land which has thus been damaged should be drained as quickly as possible, sown with grass and clover, and allowed to rest. Experience shows that it recovers its fertility sooner if treated in this way than if cultivated all the year round as arable land."