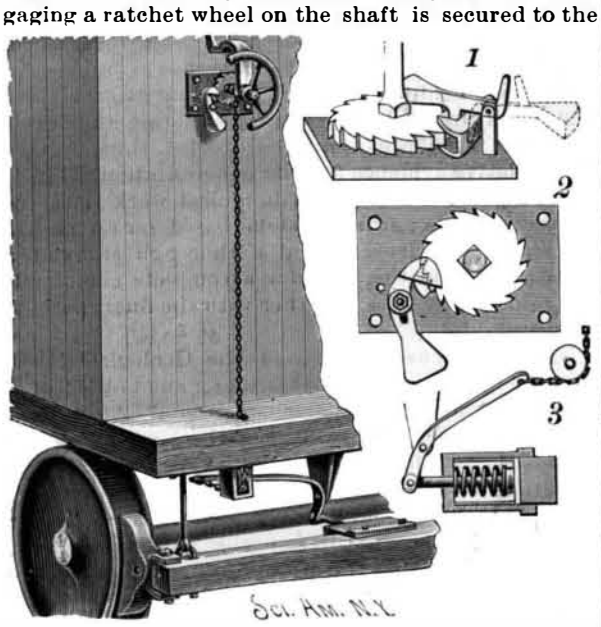
Mixed Material for Glass.

A new use has been found for waste glass by Messrs. Rostaing, Garchey and Geille, of Paris. Any fragments of broken glass of various colors are mixed together, after having been broken to a suitable size; they are then placed in moulds lined with silica, talc, or some other resisting material and fired. A coherent mass is produced which can be dressed and cut into blocks, which are, of course, irregularly colored. Such blocks may be used as artificial marble. The blocks are usually rough on one side, owing perhaps to incomplete fusion; this gives a surface which is admirably adapted for causing them, especially if they are slab-like in form, to adhere to walls with the addition of a little mortar. Fine decorative effects can thus be produced. Designs in relief can be obtained by pressure while the block or slab is still plastic. If a suitable mould be prepared with movable partitions, then pieces of glass can be arranged in such a way that, upon firing, a very effective "stained glass" window is produced, the necessity of using "leading," as in the ordinary way, being thus obviated.

A SAFETY ATTACHMENT FOR CAR BRAKES.

The illustration represents a convenient means of setting brakes by hand, with a safety attachment therefor, together with a spring attachment for the brake beams, so that the brakes shall not be set so hard as to prevent the wheels from turning. The improvement forms the subject of a patent issued to Mr. Lincoln H. Raub, of South Easton, Pa. The perspective view represents the attachments applied to the brake of a freight car, although they may be used in connection with any of the brakes in common use. Secured to the brake beam is a casing, through which extends a rod having next the brake beam a collar, while its outer end is pivoted to a bent lever, as shown in detail in Fig. 3, there being a spiral spring around the rod, so that when the brake is applied, the spring will prevent it from being pressed so hard against the wheels as to stop them from turning. The other end of the bent lever is connected to a chain extending overa guide pulley supported in a depending bracket on the bottom of the car, the upper end of the chain being attached to a shaft in a bracket on the end of the car. The outer end of this shaft has a hand wheel, and its inner end is pivoted in a plate secured to the car. There is a ratchet wheel on the shaft, and pivoted to the plate is a pawl, as shown in Fig. 2, the lower end of the pawl being enlarged to serve as a weight and hold its upper end in engagement with the wheel. The pawl is pivoted on a pin, which rides in a slot of the pawl, permitting vertical movement of the latter, and at its toe end the pawl is flanged to overlap the sides of the ratchet wheel, thus guiding the pawl to a sure engagement. The plate also has a projecting pin in the rear of the pawl, to prevent the latter from being tipped out of place, and between the pawl and the wheel is a fixed block, adapted to engage a flange of the pawl, should the pin break on which the latter is pivoted, and hold the pawl in engagement with the wheel, so that the brakes would be held in place. In applying the improvement to a passenger or platform car, the brake shaft is mounted in the railing in the usual way, and a plate carrying a pawl engaging a ratchet wheel on the shaft is secured to the

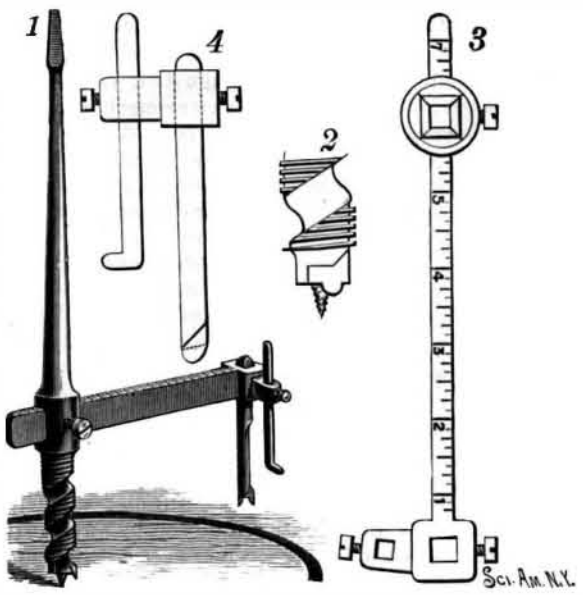


RAUB'S CAR BRAKE ATTACHMENT.

platform. Fixed to the plate behind the pawl is a post in which is pivoted a bent lever, its outer end weighted and its inner end bent to form a finger adapted to press against the outer side of the pawl, while on the other side of the lever is an oppositely projecting finger, so that when the lever is tipped in one direction, the finger will press the pawl into engagement with the ratchet, and when tipped the other way, the other finger will hold the pawl away from the ratchet. In Fig. 1 this lever is shown in full and in dotted lines in both positions, its weighted end in each case holding it securely in place.

A BIT FOR BORING LARGE HOLES.

In the expansion bit shown in the illustration, Fig. 1 represents the device in perspective, Fig. 2 showing the point of its central portion, and Fig. 3 being a plan view, while Fig. 4 is an end view of the extension arm. The shank is squared and tapered to adapt it to a bit stock, and its spirally grooved lower end has a gimlet point and cutting lips, a screw thread being formed on the body of the spirally grooved portion. In a mortise in the shank an arm is clamped by a set screw, the outer end of the arm having two mortises, in one of which is clamped a cutting tool, while the



BEAUCHENE'S EXPANSION BIT.

other carries a guide bar. The tool has at its lower edge a pair of spurs, between which is formed a cutting edge, the spurs being arranged divergently to enable them to cut without pinching the wood, while the shank of the tool is cut away above its cutting edge so that the ascending chips will ride up and off the edge of the tool. The upper surface of the arm has a graduated scale to facilitate setting it for boring a hole of the desired size, which is effected by placing the gimlet point on the center from which the hole is to be struck and turning the bit, when its threaded portion screws into the wood, as the cutting tool on the extension arm forms a channel by which a circular piece is separated from the main body of the wood.

Further particulars relative to this invention may be obtained of the patentee, Mr. Charles Beauchéne, Lake Linden, Mich.

Fossil Flour.

Since the time of the invention of sulphur vulcanization, almost everything in the way of the cheaper metallic oxides, sulphides, or earths have been tried as fillers for rubber. So careful has the experimentation been in these lines that any practical rubber man can tell exactly what results are attained by these different materials.

A curious earth that has not as yet received much attention from the rubber men, partly because the supply has not been regular, and partly because when it could be secured it was found in connection with other substances that made it of little use, is what is known as "fossil flour." Quite recently a vast deposit of this has been discovered in the State of Maine, and that too of such purity as to arouse the wonder of the best analysts. In investigating the properties of this new earth, one is impressed at once by its wonderful faculty for resisting the action of acids, alkalies, oils, and especially by its remarkable quality as a non-conductor of heat. A simple test of this latter quality made by one interested in the company was to take an inch cube of the material and place it on a bar of iron. The iron bar was then put in a blacksmith's forge and heated until it was melted away from the cube of earth. So little did the heat penetrate this cube that one could easily place the fingers upon the upper part of it without inconvenience from the heat.

Exactly what value this non-conducting property might have in rubber is not, perhaps, at first apparent, until one reflects upon the clammy, repulsive feeling of ordinary rubber clothing, and indeed of rubber goods in general. To use a common illustration, we might cite the case of the old-fashioned oilcloth, which has much that feeling, and which is being practically driven out of the market by the later invention of linoleum, the latter being entirely free from the inconvenience described. If rubber garments could be made of a compound of India rubber and a first-class non-conductor, there is no doubt but a surface much more agreeable to the touch would be produced; and that one objection to rubber clothing would be done away with.

It is not in clothing, however, that the strongest points of the new adulterant would be developed. For valve work it is said to be far ahead of anything made in rubber; valves made of it have been subjected to the severest tests, and are said to be almost indestructible.

Fossil flour is almost as white as oxide of zinc. It is so light in weight that a flour barrel of it in its natural condition will weigh not over 50 lb. It is, as we have already stated, absolutely unaffected or unchanged by any sort of mechanical manipulation, by acids, alkalies, or heat. As it is mined, it comes out of the ground a pure white powder, so fine that it cannot be ground any finer. A careful analysis of it shows about 95 per cent pure silica.

In speaking of this as silica, one would perhaps at first get an idea of particles that have sharp edges, and a feeling similar to that of corundum or emery. That, however, is not true in this case, as the earth is what is known as a diatomaceous earth, made up of a vast number of infinitesimally small shells, each individual shell having been the home of a diatom, built for it from silica, held in suspension in water.

This kind of earth has been used in Europe very largely for a variety of purposes; one of the most curious of which was in Sweden, where the poorer classes mined it and mixed it with wheat flour, in order to make bulky loaves of bread, not for sale, but for their own eating. In belting, packing, hose, and boots and shoes, this adulterant has many advantages which, no doubt, the rubber trade will readily discover.—*India Rubber World.*

Alloy for Hermetically Closing Glass Tubes.

It is claimed by F. Walter that an alloy consisting substantially of 95 per cent of tin and 5 per cent of copper may be used for connecting metals with glass, for electrical and other purposes, hermetically sealing glass tubes, etc.

The alloy is prepared by pouring the proper proportion of melted copper into the molten tin, stirring round with a wooden stirrer, casting or granulating, and remelting. It adheres strongly to clean glass surfaces, and has nearly the same coefficient of expansion as glass; it melts at about 360° C. By alloying it with 0·5 to 1 per cent of lead or zinc it may be rendered softer or harder or more or less easily fusible as required. The alloy may also be used for coating metals or wires, as it imparts to them a silvery appearance.

A SIMPLE CLIP FOR PAPERS, DOCUMENTS, ETC.

The illustration represents an extremely simple form of spring binding-clip, having no attached handles for opening it, but provided with apertures to receive independent handles or levers, as shown, by means of which the clip may be readily opened for placing files, etc., within its grip, or releasing them therefrom. This device has been patented by Mr. Harlan H. Ballard, Librarian of the Public Library, Berkshire Athenæum, Pittsfield, Mass., its invention having naturally followed his appreciation of the need of such a clip for the binding of pamphlets, papers, etc., and the holding of covers on magazines and periodicals in reading rooms. The clip is made of spring steel or brass, and a number of them may be made in series of a single strip of spring metal, when desired, to hold an accumulation of magazines, etc., each then requiring to be opened or have its sides

BALLARD'S BINDING-CLIP FOR PAPERS, ETC.

sprung apart in applying it, as with the individual clips. The detachable handles or levers are readily brought into engagement with the aperture in each side of the clip, the aperture having a loop-like seat in one side approximately fitting the bent end of the lever, and only one pair of handles is required by an individual for any number of clips. With suitable wooden rods these clips are adapted to form excellent newspaper files, and they may also be employed to hold bed clothes on children by clipping the clothes to the edges of the crib. Their simplicity, durability and cheapness recommend them for a great variety of uses.