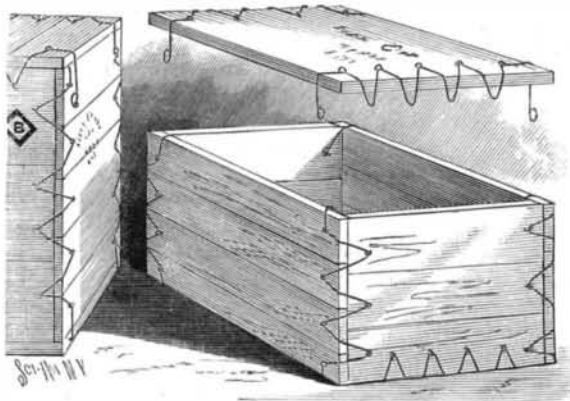


**IMPROVED PACKING BOX.**

Dry goods and packing boxes are weak at the corners, where the sides are nailed to the end boards, and to overcome this defect it is common to bind them with wood or sheet metal hoops. The invention here-with illustrated consists principally in substituting for these hoops a lacing of wire passed back and forth across the corners of the box, and having its bends se-cured to the outside of the box, and its ends passed over the edge of the box and secured to the inside, there-by rendering the box much stronger than the use of hoops would, and without adding much to the cost. The ends of the wire and the angles at each bend are held by staples. The cover has a wire at each end se-cured by staples, and bent to form loops that reach over the ends of the cover and fall below its lower sur-face; the ends of the wire are turned to form eyes. In applying the cover to the box, it is only necessary to



**BEACH'S IMPROVED PACKING BOX.**

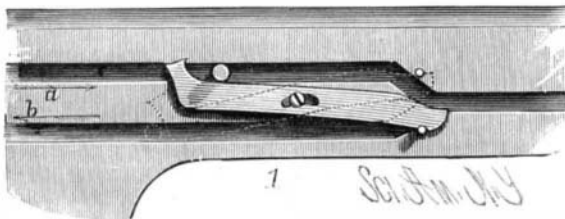
place it thereon and secure the ends and loops to the sides and ends of the box by staples. The box is thus stayed all about its corners in a very secure manner. The wires may be so bent as to bind each board, so that all the boards will be equally well adapted to sustain the contents of the box.

This invention has been patented by Mr. Wm. H. Beach, whose address for the Eastern and Middle States is 333 West 43d St., New York city, and for the Western States, 422 Wabash Ave., Chicago, Ill.

**AUTOMATIC SWITCH FOR DOVETAILING MACHINES.**

The device illustrated herewith is for automatically tilting the table on the reciprocating carriage of a dove-tailing machine. Fig. 1 is a view of the grooved side rail of a dovetailing machine with the automatic switch applied, and Fig. 2 is a sectional view, representing portions of the reciprocating carriage and tilting table. The grooves, *a b*, branch off from the other to form the upper and lower tracks for the pin of the tilting table of the carriage. The switch consists of a flat bar formed with a central longitudinal slot, through which passes a set screw, which serves as the pivotal connection with the side rail, the switch being so placed that its right-hand point projects slightly beyond the end of the single groove. The shape of the bar is plainly shown in the cut.

When the carriage is moving in the direction of the arrow, *b*, and the switch is in the position shown in the full lines, the pin will be guided into the groove, *a*. As the pin advances, it will slightly depress the heel of the



switch to break the connection between the notch in the switch and the lower limit pin; as it further advances, it will strike the curved projection and carry the switch with it until the set screw strikes the opposite end of the slot. This movement overbalances the switch and causes

**GARFF'S AUTOMATIC SWITCH FOR DOVETAILING MACHINES.**

it to drop to the position shown by the dotted lines, where it is held by the upper limit pin. Upon the return of the carriage, its pin depresses the point of the switch, which returns to the dotted position after the pin has entered the central groove.

When the carriage again moves forward, the pin will be guided into the groove, *b*, simply lifting the heel of the switch in its passage. When the carriage returns in the direction of the arrow, *a*, it will move the switch until the other end of the slot strikes the screw, when the switch will assume the position shown by the full lines. At the next movement the pin enters the groove,

*a*. The pin thus moves alternately in the grooves, *a b*. The use of this device gives the operator the free use of both hands, thereby enabling him to do more work, and saves time and material, as he cannot possibly make mistakes by forgetting which way he has switched.

This invention has been patented by Mr. Christian Garff, of Logan, Utah Territory.

**Blasting without Powder.—The Lime Cartridge.**

Sir Frederick Abel, in his recent address before the Society of Arts, London, gave the following information:

The considerable and very rapid increase in volume which freshly burned quick lime sustains when slaked led, many years ago, to attempts to apply it to the bringing down of coal; but the idea did not assume a really practical form until Messrs. Sebastian Smith and Moore worked out a simple method of applying the lime so as to insure the effective operation of the disruptive force which it is capable of exerting, and to utilize the considerable heat developed by the energetic chemical union of the lime with water in the rapid generation and superheating of steam in some-what considerable quantity, thus supplementing, in an important manner, the force exerted by the expansion of the lime. The public has been made familiar, in last year's and this year's exhibitions, with the general nature of Messrs. Smith and Moore's lime cartridges, and of the system of using them; briefly, the freshly burned and finely ground lime is compressed into the form of very compact cylinders, and the introduction into a bore hole of a simple appliance, together with these lime cartridges (the hole being charged with them, and tamped in the ordinary manner), enables the operator to accomplish expeditiously the simultaneous application of water throughout the entire length of the charge.

Several holes, at suitable distances from each other in the face of the coal, are charged before the watering is taken in hand; they are then set into operation in rapid succession, and after the lapse of several minutes their combined action brings down the coal in large masses. The Commissioners witnessed the performances of these lime cartridges at Shipley Collieries, in Derbyshire, soon after their successful elaboration; and the results of subsequent inquiries and experiments connected with this subject have convinced them that, for coal getting, the lime process can be, to a large extent, substituted for powder, and that its employment secures comparative immunity from danger, and is unattended by any important practical difficulties.

In spite of the obstacles which have always to be surmounted by any complete departure from old practices and traditions, the lime system has gradually received more or less extensive trial in many of our mining districts, and also on the Continent, and has already taken firm root in some parts of Staffordshire, Yorkshire, and Derbyshire, having proved itself capable of competing, and even advantageously in point of economy, with powder in many descriptions of coal, which are so worked as to allow of several charges being applied at one time.

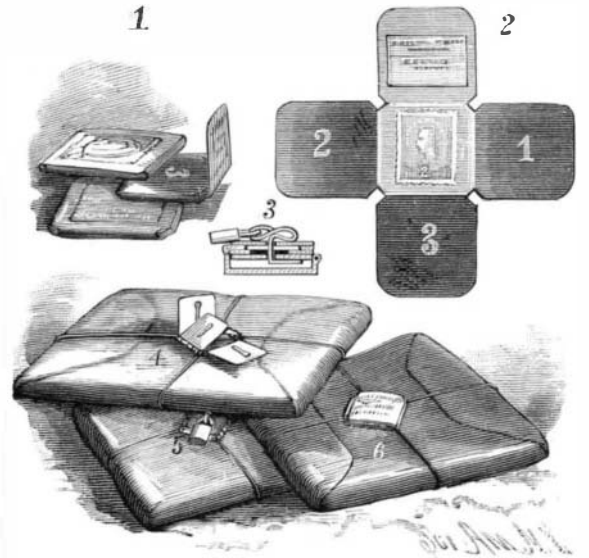
It is not contended by the elaborators of the lime-cartridge system that it affords the means of dispensing with the use of explosives or of specially powerful mechanical appliances in the removal of stone, or even in some hard coal or in connection with certain methods of working underground; but it is now beyond doubt that in many of the collieries where the prevalence of fire damp renders the use of the safety lamp imperative, the replacement of shot firing by the use of lime cartridges, while unattended by any increase in the cost of getting the coal, would reduce the risk of explosions to those arising from carelessness on the part of the men, or from what should now become the very remote contingency of the use of unsafe or defective lamps.

**Spirits of Turpentine.**

This is one of the most valuable articles in a family, and when it has once obtained a foothold in a house, it is really a necessity, and could ill be dispensed with. Its medicinal qualities are very numerous; for burns it is a quick application and gives immediate relief; for blisters on the hands it is of priceless value, searing down the skin and preventing soreness; for corns on the toes it is useful, and good for rheumatism and sore throats, and it is the quickest remedy for convulsions or fits. Then it is a sure preventive against moths; by just dropping a trifle in the bottom of drawers, chests, and cupboards, it will render the garments secure from injury during the summer. It will keep ants and bugs from closets and storerooms, by putting a few drops in the corners and upon the shelves; it is sure destruction to bedbugs, and will effectually drive them away from their haunts, if thoroughly applied to the joints of the bedstead in the spring cleaning time, and injures neither furniture nor clothing. Its pungent odor is retained for a long time, and no family ought to be entirely out of a supply at any time of the year.

**FASTENING FOR TIED PACKAGES.**

This fastening, made of paper or any other suitable material, is shaped as shown in Fig. 2; it is shown folded in Fig. 1, and attached to the cords of the pack-age in Fig. 6. The fastening incloses and secures the tied ends of the strings, so that the package cannot be untied or opened and tied up again without destroy-ing the seal thus formed. The several flaps are so shaped as to admit of the crossing of the cord between them without interfering with the edges of the flaps when folded or turned over one upon the other, as shown in Fig. 1. The flaps are provided with mucilage,



**MCCARTY'S FASTENING FOR TIED PACKAGES.**

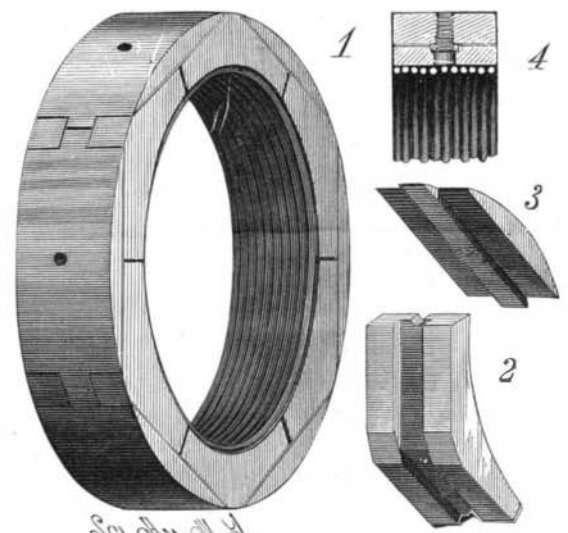
so that when turned down upon each other they inclose and securely hold the knotted ends of the string.

The fastening shown in Figs. 3, 4, and 5 is made of paper, metal, or other suitable material. Instead of being made of flexible material to permit the folding of the flaps, the latter may be hinged to the body part, which would then be made dish-shaped to receive the knot of the binder. On one flap is a turning staple, which passes through slots in the other flaps and re-ceive a lock. The package so secured can only be opened by destroying the fastening, cutting the binder, or bursting the package itself, or picking the lock. The wide applications of these devices and the security they afford are apparent.

These inventions have been patented by Mr. Michael McCarty, of Newport, R. I.

**METALLIC PISTON PACKING.**

The exterior faces of the inner blocks, Fig. 2, are angular, and have their apices rounded off upon the arc of the circle of the inside of the cylinder in which the packing is to be placed, as shown in Fig. 1. Grooves are formed in the central parts of the outer faces of the blocks, whose interior faces are concave on the arc of a circle. Plane convex segments, Fig. 3, are formed with tongues to fit the grooves of the blocks, and are curved to fit the cylinder. The packing is held against the cylinder by open-ring springs, shown in Figs. 1 and 4. The packing is secured between the piston head



**PFLAUM'S METALLIC PISTON PACKING.**

and follower in the usual way, and which close up the opposite sides of the packing and form a chamber. The interior of the packing is designed to be filled with tallow, which gradually escapes through perforations in the centers of the segments and ends of the blocks, so that the inner surface of the cylinder will be kept lubricated. With this construction the outer surface of the packing, as it wears, will always retain its circular form, and will thus always remain in close contact with the cylinder.

This invention has been patented by Mr. N. Pflaum, 27 Front Street, Port Jervis, N. Y.