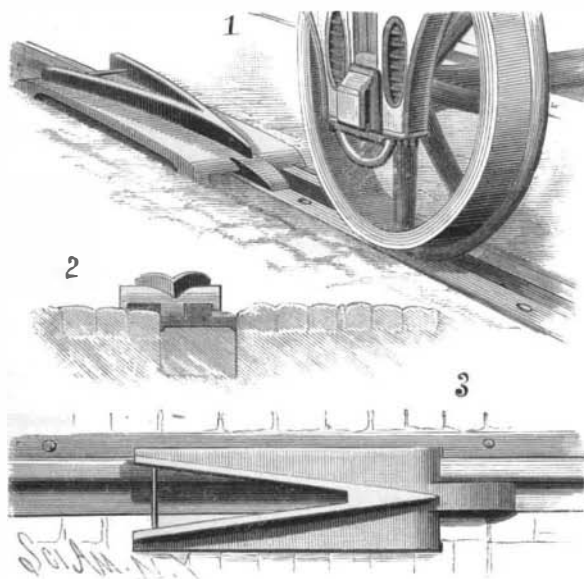


IMPROVED CAR REPLACER.

The car replacer herewith shown, patented by Mr. Isaac Snow, of 413 Washington Street, New York city, is simple in construction, convenient in use, effective, and being light may be easily transported. Fig. 1 is a perspective view showing the replacer in position, Fig. 2 is a front elevation, and Fig. 3 a plan view. The cast iron plate is of sufficient width to rest upon the head of the rail and upon the pavement. At the middle of the forward end is an inclined tongue to rest against the side of the rail head and form an inclined plane

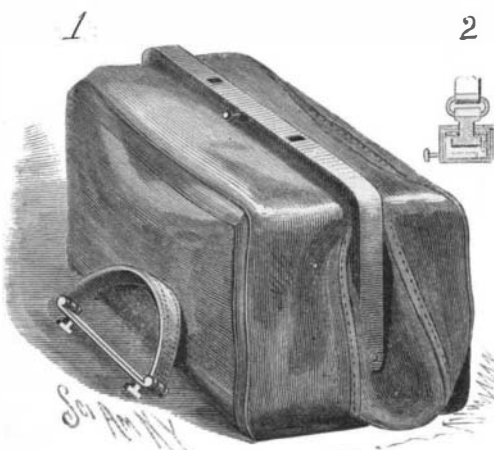


SNOW'S IMPROVED CAR REPLACER.

for the wheel flange to roll up upon. The plate is kept level by lugs projecting from each corner of the lower side. On the upper side of the plate is a V-shaped flange, the angle of which is at the forward end and in line with the center of the tongue. The rear ends of the flange are at such distance from the corners of the plate as to leave space for the wheel flanges between the ends and corners; the outer sides of the ends are at the line of the side of the head of the rail against which the lugs rest, so that when the wheel passes off the plate, the tread will come squarely upon the head of the rail. That part of the plate within the flange is cut away to make the replacer lighter, and the rear ends are strengthened by a cross rod. It will be seen that the replacer can be made so light and small as to be readily handled, and can be conveniently carried on a car, so as to be always at hand when needed. When the device is to be used for replacing steam cars, the supporting lugs are made of sufficient length to rest upon the ties when the plate rests upon the rail, so as to hold the replacer level.

DETACHABLE HANDLE FOR VALISES.

The engraving shows a detachable handle and safety lock attachment for valises, satchels, etc., which has been patented by Mr. Charles White, of Osceola, Nebraska. The angle plate forming the top of the lock casing is provided with two transverse slots in its top and with a longitudinal slot in the side. The handle is secured on the ends of a plate from the bottom of which a T-shaped lug projects at each end. A slide arranged on an inside angle plate is moved by a pin projecting through the side slot until it is stopped by a stud. The lugs on the handle plate are then passed through the top slots and the pin released, when the



WHITE'S DETACHABLE HANDLE FOR VALISES.

slide is pushed in the opposite direction by a spring. The side edges of openings in the top of the slide pass over the lower parts of the lugs, thereby holding them and the handle in place. At the same time bolts are passed through lugs, whereby the valise is locked. The key is inserted and turned so as to lock the slide in place. To remove the handle, the key is turned so as to release the slides which may be then moved back by the pin. The handle can be removed from the valise—placed inside if desired—and cannot be replaced without the use of the key, thus rendering it difficult or

impossible to carry away the valise. It will be understood that the valise can be locked with the handle in place or detached. The device is simple and strong, and affords travelers increased security, since it permits the leaving of baggage locked and yet without a handle.

Fire-resisting Properties of Cyanite.

Some interesting tests of the fire-resisting properties of cyanite were afforded by the manufacturers of the material (the Patent Liquid Fireproof Cyanite Company, Limited) on Wednesday last, on the site of the abandoned Opera House, Victoria Embankment. The material is a liquid solution, of which silica is the basis, and it is applied with a brush directly to the surface of the woodwork, serving either as a priming to be afterward covered with paint, or as a stain in lieu of the ordinary pale oak stain, which it much resembles in color when applied to deal or other white woods, though it is also made colorless. It is claimed by the manufacturers that this solution sinks into the pores of the wood, and renders the timber for a considerable period proof against the attacks of fire. That the application of the solution has the effect of retarding the attacks of the flames for a long time was conclusively shown by the tests of Wednesday last.

These tests were four in number. For the first one a small flight of stairs, constructed of 1½ inch common white pine, was primed with two coats of cyanite, and underneath it a large heap of chips and shavings, plentifully besprinkled with benzoline, was ignited and burned for half an hour before the soffits of the treads and the backs of the rises were perceptibly charred. After the lapse of another half hour, during which the under part of the woodwork of the stairs continued to smoulder, the stairs were proved to be strong enough to bear the weight of a man. Other tests, with packing cases, were equally successful. The cases (three in number) were each about 2 feet 6 inches deep, 3 feet 6 inches long, and 2 feet 6 inches broad. They were each stood up on end, and a large fire of shavings and chips sprinkled with benzoline was lighted in each. One of the cases was not coated with cyanite, and it speedily collapsed and became a mass of charred embers. The two other cases retained their form and position after the lapse of an hour, and it was only after the first half hour's exposure to the flames that the wood became perceptibly charred and began to burn to any appreciable extent. It is asserted that this solution is permanent in effect, and does not injuriously affect the woodwork to which it may be applied. If this be so, the solution has a wide field of usefulness open to it.—*The Builder*.

Changes in the Rings of Saturn.

Some interesting remarks on the planet Saturn have been communicated to the French Academy of Sciences by M. Trouvelot. They are the result of observations made on the planet at the observatory of Meudon by the refracting telescope there. The ring A of the planet has undergone some changes in position and variation of size. The division of Encke has approached the division of Cassini; and the straight zone between these two divisions has appeared less brilliant than during last year. Variations have also been observed in the rings B and C, the latter being pale, diffused, and badly defined on its interior edge. The shadow of the globe of Saturn on the ring B appears angular, as it was last year; but it has evidently shifted its position somewhat. With regard to the globe of the planet itself, M. Trouvelot has not remarked many changes in it. The intensity of the color of the south polar cap diminished toward the beginning of February, and the zone next it was enlarged in the early part of March. The observations tend to confirm the conclusions that the rings of Saturn are variable.

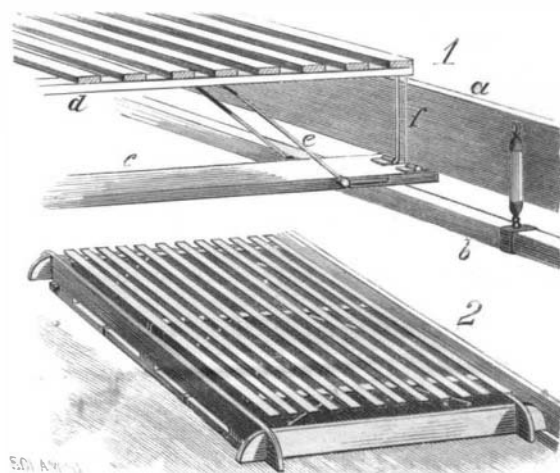
Mourning Ink.

The best shining black ink, used for mourning paper, and the manufacture of which has up to the present time been kept a secret by makers, may be prepared, according to the *Papier Zeitung*, of lampblack, borax, and shellac. The ink is made as follows: In 1 liter of hot water 60 grammes of borax are dissolved, and to this solution three times the quantity of shellac is added. After this mixture has been properly dissolved, the necessary quantity of lampblack is added, the whole being constantly stirred. Should the luster not be satisfactory, more shellac is added.

SPRING FRAME FOR BEDS.

The spring frame herewith illustrated can be used in beds, sofas, chairs, etc., and is very elastic and strong, and can be easily taken apart for transportation or storage. Rubber or spiral or other springs have their upper ends secured to the inner surfaces of the rails, *a*, and their lower ends secured by clips to the bars, *b*, which are thus held a short distance below the rails. On the bars rest three or more crosspieces, *c*, to each end of each of which is fastened a spring, *e*, consisting of a U-shaped wire having a coil formed in each shank,

and the free ends being bent inward and pointed. These points are driven into the side edges of the cross bars, and nails are driven into the bars through the coils or eyes. On the upper ends of the springs rest the bars, *d*, which carry the slats. Upright wire frames, *f*, on the bars, *e*, rest against the inner surfaces of the side rails, and are secured by screws to the ends of the bars, *d*; these frames guide the bars, *d*, and limit their movement, as the top of the spring frame works up and down. The pressure on the slats is transmitted to the bars, *d*, then by the springs, *e*, to the bars, *c*, suspended from the rubber springs; the strain on the springs is taken up by the side rails and end pieces, which are supported by the bed frame. The side rails



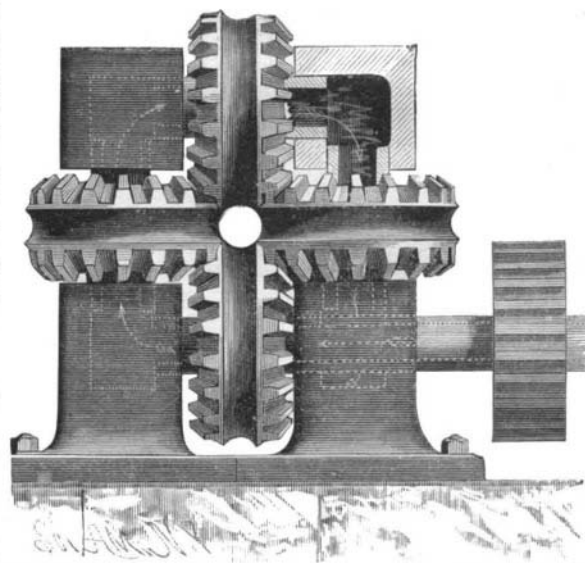
TAYLOR'S SPRING FRAME FOR BEDS.

and end pieces are notched for the purpose of locking them together.

This invention has been patented by Mr. Benjamin Taylor, of Morrilton, Ark.

ROLLING MILL.

The engraving represents an elevation of an improved rolling mill, one side of the housing for the rolls being removed. The object of the invention is to overcome that universal defect in round bars of iron produced by the ordinary process of rolling, which is by passing them successively between two rolls, each having a half-round groove of the size required for all sized bars. This defect consists in the splitting up of the central portion of the bar into thread-like fibers, so that, after the outer portion is turned off to true it, and then a screw is cut, sections of the thread of the screw will frequently come off while being cut. This is well known to all workers in commercial round bar iron, and is caused by being rolled with the pressure on but two sides at once, and then turned and the pressure brought on the two opposite sides. This causes a lateral motion of the interior particles and a consequent separation in that direction as the cooling advances. This defect is entirely overcome by using four rolls, as shown, instead of two, so that no lateral motion is possible, the pressure being constant toward a common center. In this way a perfectly solid bar can be produced from the same material, worth a great deal more than the ordinary round bars. In addition to this it can be produced much more rapidly and at much less



CRANDELL'S ROLLING MILL.

cost. Instead of two sets of hands to pass the bars back and forth until finished, two men to take the iron from the fire and start it in the first set of rolls is all that would be required, as the rolls are to be arranged in sizes, one set behind the other, so that as the metal bar emerges from one set it enters the next in size, and so continues until reduced to the size required, without being again touched by the operative.

This invention has been patented by Mr. A. Crandell; particulars can be obtained from Mr. Germond Crandell, 610 H Street, N. W. Washington, D. C.