

An improved mail bag catcher has been patented by Mr. Calvin I. Kimball, of Portland, Me. This improvement relates to apparatus used on mail cars for catching mail bags, and have for their object to allow adjustment of the crane to the direction in which the car may be moving without removing the crane from its supports.

An improved tire tightener has been patented by Mr. Russell Jennings, of Sedalia, Mo. This invention relates to the class of tire tighteners which consist in a threaded bar or screw having a vertically movable clamp and a nut, by which, with the assistance of a winch, the said clamp is brought to bear against the fellies, and thereby separates the fellies from each other and from the spokes, where they have shrunk, the spaces thus created being filled with wedges.

Mr. Benjamin O. Branch, of Friar's Point, Miss., has patented a novel construction and arrangement of devices, for displaying in the cars the names of stations on a railway.

Mr. Carl A. Türpisch, of New York City, has patented an improved brooch formed of a wire bent in the form of a ring or in a similar manner, so that the two ends will be pressed against each other by the spring of the wire. To one of the ends a cap is attached in such a manner that it overlaps the point of contact of the ends of the ring, upon which ring a short sleeve is loosely mounted, and has a pin attached to it, this pin being passed through the article to which the brooch is to be attached, upon which the end of the pin is forced through between the ends of the wire into the cap, in which it is retained as the ends of the ring snap together, thus locking the point of the pin between the cap and the ends of the ring.

An improved attachment for seed drills has been patented by Mr. Howard M. Fordham, of Great Bend, Kan. The attachment has a rotary shaft with spirally arranged rods attached to the shaft which pass between the drill feet and push off collected rubbish, and springs are placed upon the rods to keep them clear of rubbish.

An improved astronomical clock has been patented by John L. Blair, of Clear Spring, Md. This invention relates to certain improvements in what are known as "astronomical clocks," designed to show by object lesson the minutes and hours of the day, the day of the week and month, the daily revolution of the earth, the yearly revolution of the earth, the phases of the moon, the time for the different longitudes on the earth, the lunar revolution, the signs of the zodiac, the tides, and synodical as well as periodical time.

An improved sulky attachment for plows and harrows has been patented by Mr. Edwin M. Carroll, of Pittsford, Mich. This invention consists in the peculiar construction and arrangement of the parts, which cannot be described without engravings.

Mr. Clinton O. Rockwell, of Roaring Branch, Pa., has patented an improved machine for cutting or pruning the runners from strawberry vines. This machine is provided with revolving knives which act against a hooked blade and cut the runners which are drawn upward by revolving hooks.

JOINTED PITCH-BOARD FOR SQUARES.

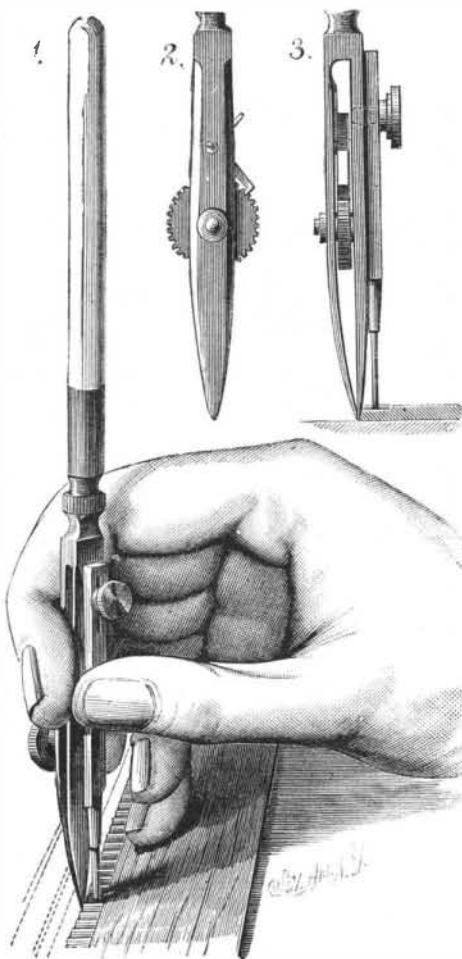
The engraving shows a carpenter's square provided with a middle jointed rule slotted in both sections, and connected by clamp bolts and wing nuts with the slotted arms of the square. The form of the instrument is clearly shown in Fig. 1. The square as well as the jointed rule are made of steel and have suitable scales engraved on them.

This instrument can be used for laying out miter boxes in the usual way, as shown in Fig. 2. It may be used for finding the length and bevel of rafters, as shown in Fig. 3, and it is found very convenient when used as a pitch board in laying out stairs, as shown in Fig. 4. It can be used for laying out dovetails on timber, as shown in Fig. 5; and it may have a straight-edge attached to it, so that it may be used as an extended square, and it will be found very convenient in solving many other problems in carpentry and joinery. The arms of the rule can be set respectively parallel with the blade and tongue of the square; then be used to size or box timbers. The arms of the rule can be adjusted to the blade of the square and used as a double bevel. The pitch board can be used to find the diagonal of a square; can be used to solve problems in proportion, such as finding the length of stair-string from the pitch-board; can be used to find the lengths and bevels of hip and jack rafters; can be used to find the sides and angles of hoppers and splayed work. It is the only instrument known to us that solves the right-angled triangle without calculation or drawing, that is, approximately. This useful invention was recently patented by Mr. Frederick N. Marvick, of Palatka, Fla.

CEMENT FOR REPAIRING GLASS.—Dissolve fine glue in strong acetic acid to form a thin paste,

IMPROVED DRAWING PEN.

The shading lines of a drawing must gradually increase in width toward the darker part of the drawing, and this is accomplished by increasing the distance between the points of the drawing pen a trifle after a line is drawn and before drawing the next line. This adjustment of the pen is not accurate, as the operator has no gauge to guide him, and relies entirely upon his judgment, and errors can hardly be avoided, except by using a drawing pen provided with some



NEW DRAWING PEN.

suitable gauge for adjustment, such, for instance, as is shown in the annexed cut.

Fig. 1 is a perspective view showing the method of making dotted lines. Figs. 2 and 3 are respectively front and side elevations.

The adjustment wheel is cogged, and its circumference is divided into a number of equal parts, which are numbered. An angular pawl is pivoted between the blades of the pen in such a manner that one end rests on the cogged adjusting wheel and the other end projects from between the blades, so that it can be depressed by the finger, raising the other end of the pawl from the surface of the wheel, which can

undulations of the rule. The pen has been patented by Wissmann & Wallegg, of Vienna, Austria.—*Wiener Technische Blätter.*

The Ruby Gravel Company's Tunnel.

There is no part of the world where so much tunnel work is carried on as in California. There is, of course, more or less tunnel work in quartz mining, but in drift mining operations very long tunnels are necessary in many cases for "bottoming" the gravel channels. Long tunnels have often to be run in hydraulic mining work also. As an instance of quick work in this line may be cited the tunnel being run by the Ruby Gravel Company, in Cariboo ravine, one mile south of Rock Creek, Sierra county. It is thus briefly described by the local paper, the *Mountain Messenger*:

Work was commenced last December, and since that time 2,050 feet of tunnel have been made. In round numbers the tunnel, all but a few hundred feet of the outer end, is 10 feet square, nearly all through hard rock that required blasting, and that stands without timbers. For 1,950 feet, the tunnel follows an air line, the course being a little north of east. The last 100 feet is turned to the south 17° from the former course. The grade of the tunnel is half an inch to 12 feet. At the mouth of the tunnel the company have a substantial engine house, and a powerful engine which drives the air compressor and a Struve two-plunger ventilating pump. From the compressor the air passes to a large upright reservoir of heavy boiler iron, about 10 feet in height and 4 feet in diameter. From this reservoir the air is taken, under a pressure of 50 lb. to the square inch, in 4-inch wrought iron pipe, to the drills, running along the bottom of the tunnel.

The air from the ventilating pumps is taken in a 12-inch air pipe and boxes to near the face. The last 150 feet of tunnel is in softer rock, a species of quartzite, so hard as to require blasting, but not hard enough to stand long without timbering and spiling. About 150 feet from the face a shaft has been started, and is now up about 40 feet in blasting rock. It is designed to test the question as to whether or not there is gravel overhead. Mr. H. Jennings is now superintendent of the works, Mr. H. Wallis acting in the capacity of consulting engineer. Mr. Edge is the engineer in charge of the machinery. For rapidity of construction and size of tunnel, there is probably nothing in California that exceeds this work. From its inception until within a few weeks H. Wallis has been superintendent in charge, Hamilton Smith, Jr., being superintendent-in-chief.

The First Electric Railway in Great Britain.

Ground was broken the last of September at Portrush, Ireland, for an electric railway to the Giant's Causeway. Dr. Siemens is said to be a large contributor to the new enterprise. It is estimated that the expenses for haulage on a tramway such as this with horses would be twenty-three cents per mile, and by steam about fifteen cents, while it is supposed that the working expenses by an electrical motor will not reach two cents per mile.

New Columbia.

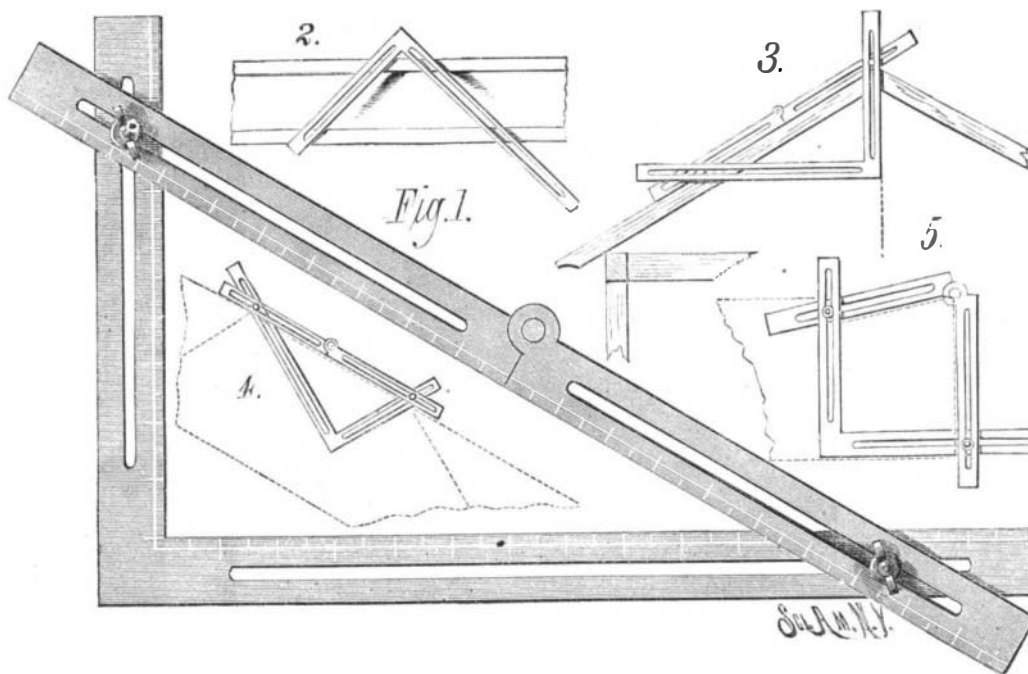
The hitherto inaccessible northern land known as Wrangell Land was "occupied" and claimed for the United States, August 13, by Capt. Hooper, of the U. S. Revenue steamer Corwin. In a letter to the Chief of the Revenue Marine Bureau, Capt. Hooper says:

"We took possession, planted the American flag, and now we want to give it a new name, as I believe we are entitled to do. I propose to call it 'New Columbia.' The land north of the continent, to the east, is all named for the English, and the islands further west are called New Siberia, so it seems to me that to call it New Columbia would be appropriate, and less likely to give offense to those who are interested in the old names on the different charts than to give a name of a less national character. Wrangell never saw the land, and after trying for three successive years to get a sight of it, refers to it as the 'problematical land of the north.' Neither was he the first to report the existence of it. The object of his cruise was to investigate the truth of the reports to that effect brought by previous travelers. Kellet, after whom it is called on the English charts, only dimly saw what he supposed was a small island, and which he

called Plover Island. That is where we landed, at the mouth of a good sized river on the east end, which now appears on our chart as Clark River."

The new land is crossed by the meridian of 180° from Greenwich, the shoresurveyed lying three or four degrees to the eastward of that meridian. Its southern point is about 71° north latitude.

TO REMOVE INK STAINS.—Take of muriate of tin, 2 parts; water, 4 parts. To be applied with a soft brush, after which the paper must be passed through cold water.



MARVICK'S JOINTED PITCH-BOARD FOR SQUARES.

be turned the distance of one or more subdivisions, as the desired increase in width of the line may require, upon which the pawl is released and locks the adjusting wheel.

If dotted or broken lines are desired a rule is used having undulations in its upper surface along the edge, and a pin or stylus is attached to that side of the pen toward the edge of the rule, the point of this pin resting on the undulated part of the rule. If the pen is drawn along the rule it will be raised and lowered alternately, and there will be corresponding breaks or interruptions in the line. The size of the blanks in the dotted line is governed by the size of the