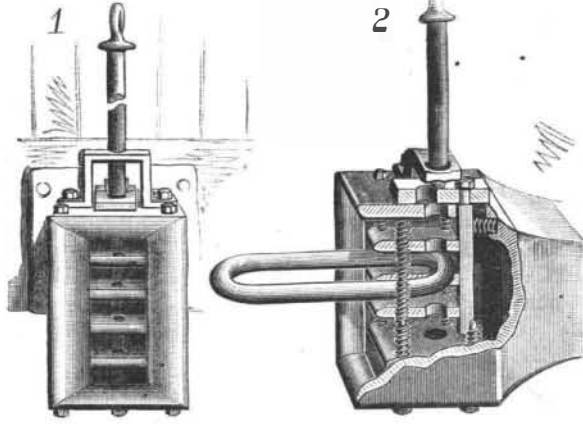


**CAR COUPLING.**

The front of the chamber of the drawhead is partially closed by a plate formed with an elongated opening for the passage of the link. Placed loosely upon rods within the chamber are division plates which are separated and held in position by coiled springs placed upon the rods, so that the plates have a yielding action, so as not to resist the entrance of the link. These plates support the link at various elevations, thereby adapting the coupler to cars of different heights. The plates are all correspondingly apertured,



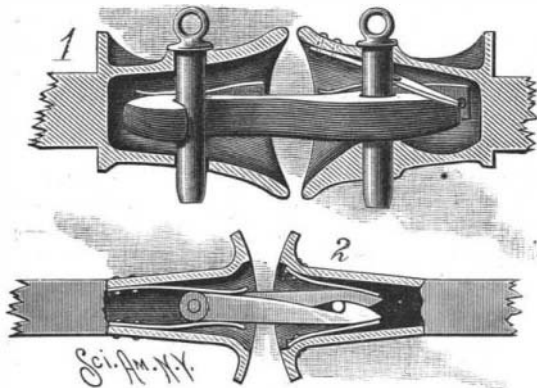
**KALTENBECK'S CAR COUPLING.**

to permit the coupling pin to drop into the drawhead and down through the link. The pin, when lifted out of the drawhead, is held in a raised position by a strap and sliding trip plate, the latter being forced forward under the pin by springs, which act against a bar bolted to the trip plate and passed through the drawhead, back of the division plates, as shown in Fig. 2. These springs are lodged in recesses made in the drawhead, and as they tend to constantly force the bar outward, the trip plate will be forced under the pin the instant the latter is raised, and the parts will be ready for coupling again. The entering link forces the trip plate back and allows the pin to drop and automatically couple the cars. The bar is held between guards formed in the back of the drawhead, which prevent the link entering too far; they also protect the bar from injury, so that there can be no failure in the proper action of the bar and trip plate at the time of coupling and uncoupling.

This invention has been patented by Mr. W. H. Kaltenbeck, of Roxbury, N. Y.

**CAR COUPLING.**

In this coupling the two drawheads are formed respectively with rounded faces and cavities. Upon a



**SEABURY'S CAR COUPLING.**

vertical pin in one drawhead are placed two connecting hooks, Fig. 2, whose hooked heads overlap each other to grasp the coupling pin of the opposite drawhead. The points of the hooks are oppositely beveled, so that when the cars are brought together for coupling, the pin will strike between the two bevels and force the hooks apart to permit the entrance of the pin between, and thus automatically effect the coupling of the cars. In each drawhead are arranged springs which hold the hooks in firm engagement with the coupling pin. To couple the cars, it is only necessary to place the pin in the drawhead and bring the cars together, when the hooks will enter the drawhead and engage with the pin. Uncoupling is effected by merely lifting out the pin. Fig. 1 shows plainly the construction when only one hook is used.

This invention has been patented by Mr. Charles E. Seabury, of Stony Brook, N. Y.

It may not be known to some what causes the different colors in bricks. The red color of bricks is due to the iron contained in the clay. In the process of burning, the iron compounds are changed from the ferrous to the ferric condition and rendered anhydrous, thus developing the color. Certain clays—like those in the vicinity of Milwaukee, for instance—contain little or no iron, and the bricks made from them are light or cream colored.

**CONVERTIBLE WIRE BASKET.**

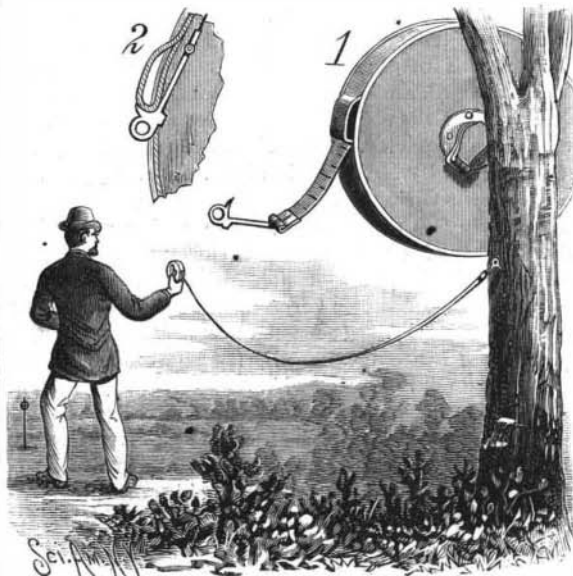
This wire basket may be used for a vast variety of purposes, some of which are illustrated in the accompanying engraving. The main ring or circle of wire is of any suitable diameter, braced by two or more cross bars, which form a bottom to the basket to stand a flower pot, etc., on. The side or main loops may be shaped as shown in the cut, and are hinged on the base ring separately, by having both of their ends bent around it, and clinched into an eye. These loops are arranged to overlap one another, so that one cannot be moved without moving all, thus always insuring the perfect circular form or curvature of the sides of the basket, no matter into what form it may be converted. The small base loops, consisting of two rows, one normally below and the other above the ring, are hinged and arranged on the ring in precisely the same manner. The side loops, moving on their hinged ends, may all be pressed upward, inward, outward, or downward, so as to be altered from a globe shape to a bell form, with all the intermediate forms and shapes.

The basket is strong and durable, being made of the best spring steel wire heavily plated, and is decidedly ornamental in all the various forms it may be made to assume. It is so simple in construction that it will be instantly understood, while it may be readily changed by any one from one form to another, according to the use to be made of it. The engraving shows it as a card basket, frame to support a lamp shade and a vessel over a lamp chimney, cake and egg baskets, hanging flower basket (in which case the supporting cords are attached to the ring), flower pot, and flatiron holder. It is evident that this list comprises but a very few of the many good uses the basket may be put to.

This invention has been patented by Mr. A. S. Greenwood; further particulars can be had from the Cass-green Mfg. Co., of Cleveland, O., and Toronto, Canada.

**TAPE MEASURE.**

When the common tape line is used by one person, it must be fastened at the end before it can be unrolled and employed in making measurements. In the tape measure herewith illustrated, which is the invention of Mr. Jerome Fountain, of La Grande, Oregon, a simple and efficient fastener is permanently connected with the end of the line, for holding it while making measurements. The casing is of the usual form and construction. To the outer end of the line is secured a metallic clip, to which is connected a hook, shaped as shown in Figs. 1 and 2. The head of the hook is provided with a sharp point, and in it is formed an eye. The point is preferably arranged one inch from the end of the line, and is inserted in any suitable fixed object, when the line may be unrolled and used in the usual way. The eye serves to receive an awl or blade of a knife, when it is impracticable to employ the hook. The metal band forming the edges of the casing is bowed outward and then bent under or returned upon itself at one side of the opening (Fig. 2) to form a rounded support for the hook when the line is wound up; and upon the opposite side of the opening there is a beveled lip under



**FOUNTAIN'S TAPE MEASURE.**

which a small lug formed on the back of the hook rests, when the line is coiled within the casing. The engagement of the lug with the lip is insured by the spring of the looped end of the band forming the edges of the casing. It is evident that the rounded support may be formed separately and attached by rivets to the casing when the latter is made of non-metallic material; the hook may also be varied in form and otherwise attached to the line.

**OUTLINING TOOL.**

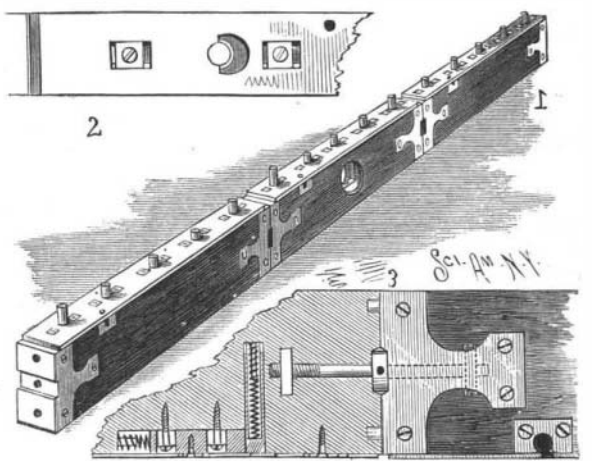
This device is designed particularly for carpenters' use in the work of dressing doors and similar pieces of stuff to their frames, whereby a perfect fit may be obtained without the necessity of frequently setting the door up in the frame to test it as the work proceeds. The tool is made in several sections, each complete in itself, adapted to be connected together end to end, by a suitably arranged right and left hand screw, as shown



**GREENWOOD'S CONVERTIBLE WIRE BASKET.**

in Fig. 3. Formed in one of the straight edges of each section are several chambers, in each of which is fitted a plunger, pressed outward by a coiled spring, Fig. 3. Secured upon the edge of the section is a metal plate, Fig. 2, having formed in it as many openings as there are plungers. The plate may be moved longitudinally to hold the plungers within their chambers, or to release them, so that the springs will force them outward through the openings. The plate may be moved by a small bar inserted in a hole made in the plate, a recess being formed in the side of the section for the insertion of the bar.

In use, the plungers are all forced within their



**MACKENZIE'S OUTLINING TOOL.**

chambers and held by the plates. The edge of the tool is then placed upon the surface of the frame or other object whose outline it is desired to obtain. By means of the small bar, the plates are then moved to release the plungers, whose springs will force them into contact with the surface against which the tool is held. The plates are then moved back as far as they will go, which will permit suitably arranged friction blocks to press upon the plungers and hold them firmly in the positions they occupy. The tool is then removed from contact with the surface, the exact outline of which will be given by the outer ends of the plungers. This outline can be easily transcribed to a door, panel, frame, or other object, which can be easily dressed to match.

This invention has been patented by Mr. Robert A. MacKenzie, of 170 East 51st Street, New York city.

In Pesth, Hungary, dynamite has been successfully used for driving piles. An iron plate 15 inches in diameter and 3/4 inches thick is placed in a perfectly horizontal position on the pile to be driven. A dynamite cartridge, in the form of a disk, containing 17 1/2 ounces of dynamite, is placed on the iron plate and exploded by electricity.

**A Remarkable Drainage Enterprise.**

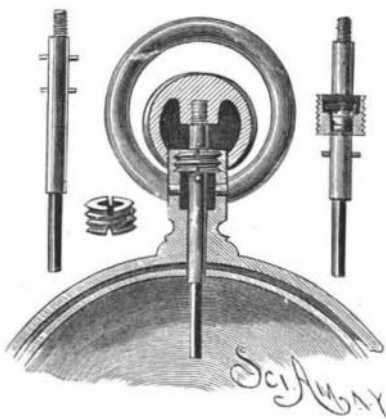
The Russian Government is engaged in one of the most extensive drainage enterprises ever undertaken in any portion of the world. The location is what is known as the Pinsk Marshes, in the southwest of Russia, near the borders of Galicia. This region is so extensive as to secure special designation in the ordinary map of Europe, and, in point of area, is very much larger than Ireland. The marshes have become famous in Russian history as a refuge of all manner of romantic characters, and have remained an irreclaimable wilderness up to within the last two or three years.

In 1870 the Russian Government first took in hand seriously the abolition of this wild expanse, owing to its being perpetually more or less submerged and covered with a jungle growth of forest, preventing not only communication between the Russian districts on either side, but also between Russia and Austro-Germany. A large staff of engineering officers and several thousand troops were draughted into the region, and these have been engaged upon the undertaking since. Up to the present time, about 4,000,000 acres have been reclaimed by means of the construction of several thousand miles of ditches and canals, so broad as to be navigable for barges of several hundred tons burden. Just now the engineers are drawing up the programme for next year, which comprises the drainage of 350,000 acres by means of the construction of 120 miles more of ditches and canals.

Of the 4,000,000 acres already reclaimed, 600,000 acres consisted of sheer bog, which has been converted into good meadow land; 900,000 acres of "forest tangle," which have been prepared for timber purposes by cutting down the underwood and thinning the trees; 600,000 acres of good forest land—forest oases in the middle of marshes—hitherto inaccessible, but which have been connected more or less by navigable canals, and thereby with the distant markets; and finally, 2,000,000 acres have been thrown open to cultivation, 120,000 acres of which have already been actually occupied. Besides making the canals and ditches, the engineers have built 179 bridges, bored 577 wells from 20 ft. to 80 ft. deep, and have made a survey of 20,000 square miles of country hitherto unmapped. When the task is finished, Russia will have effaced from the map of Europe one of the oldest and toughest bits of savage nature on the Continent. From an engineering, geological, and scientific point of view generally, the work is one of special interest.

**PENDANT STEM FOR WATCHES.**

The stems of self-winding and hunting-case watches are usually held in place in the pendant by a screw entering a circumferential groove in the stem, or a grooved collar placed on the stem. Both the screw and collar are apt to become worn, and the screw being small is weak and liable to be broken. In the construction shown by the three left-hand views of the annexed engraving, the pendant is internally threaded to receive a collar, into which fits the stem, which passes through the pendant to the winding and setting mechanism. The collar is provided with notches in its outer and inner surface, to receive pins passing through and projecting from the stem. The stem may be freely turned to wind or set the watch, as the pins are normally out of contact with the collar. The collar is carried to its place by bringing the upper pin into engagement with its notch, and may be removed by bringing the lower pin into contact with its own notch. In both cases the

**SCHIMMEL'S PENDANT STEM FOR WATCHES.**

stem and collar will turn together to screw or unscrew the collar.

In the construction shown in the right-hand view, the stem is formed with an enlarged part, beveled upon each side, and encircling which is a split steel ring which enters a recess formed in the threaded collar. Normally, the enlarged part of the stem is below the ring, so that the stem may be used for winding the watch. When the enlarged part has been pulled through the ring and rests above it, the device is arranged for setting the watch. It will be seen that this construction, while being strong and durable, prevents the entrance of dust or moisture to the interior of the watch.

This invention has been patented by Mr. F. W. Schimmel, of Murray, Idaho.

**FLEXIBLE SCRAPER.**

To the end of the handle is secured a concave board, having its opposite edges curved. To the back of the board are secured metallic sockets for receiving braces, which are held in sockets secured to the handle. This construction insures both strength and lightness. To the concave face of the board is attached an oblong sheet of rubber, whose edges project beyond the edges of the board, so that when the scraper is used only the rubber will be presented to the floor or surface being cleaned. By applying the scraper to the floor at the proper angle, the entire edge of the rubber sheet will be brought in contact with the floor, and as the scraper is moved forward its concave form will cause it to re-

**KAE LIN'S FLEXIBLE SCRAPER.**

tain most of the water it gathers up, and to carry it forward.

This invention has been patented by Mr. Albert J. Kaelin, whose address is Germania House, Houston, Texas.

**A New Submarine Boat.**

The question of submarine warfare would appear to be advanced an important stage by a new submarine torpedo boat which was lately tried in the West India Docks, London. The great problem for solution in this class of boat is a simple and ready means of effecting submersion quickly and of again rising to the surface as frequently as may be desired. Many attempts have been made to compass this object by means of screws, inclined planes, water compartments alternately filled and emptied, and other contrivances. The present invention, however, involves none of these principles. The principle upon which the immersion and emersion of the new boat depend is simply that of displacement.

While lying on the surface, the boat has a given amount of displacement. To effect immersion, this displacement is reduced; and when it is desired to raise her to the surface again, the displacement is increased. A fair analogy is that of a telescope dropped into the water when extended for use, in which condition it will float for a given time. If dropped into the water closed up, it will straightway sink to the bottom. The idea of utilizing this principle originated with Mr. Andrew Campbell, and was worked out in practice by him in conjunction with Mr. Edward Wolesley and Mr. C. E. Lyon, and the vessel in which the joint ideas of these gentlemen have been embodied has been built by Messrs. Fletcher, Son & Fearnall, of Limehouse.

This boat is cigar-shaped, and pointed at both ends, being 60 ft. long and 5 ft. in diameter amidships, exclusive of a slightly raised central deck. Her displacement when fully immersed is about 50 tons. She is built of  $\frac{3}{8}$  in. Siemens-Martin steel and is driven by twin screws, the motive power being electricity, which is supplied from a storage battery to motors of 45 horse power. Electricity also supplies light, when submerged, by means of glow lamps. Air under pressure is stored on board, and there is accommodation for a three days' supply; the electrical batteries also have a similar storage capacity. The electrical machinery has been designed by Mr. Graydon Poore, and supplied by Messrs. Lewis Orick & Co.

When lying on the surface of the water, a depth of only about ten inches of the central upper portion of the boat is visible above water line, and this is surmounted by a steel conning tower about 12 in. high and 15 in. diameter and pierced with four sight-holes. Entrance and exit are obtained by means of a manhole on the deck, which is secured with a watertight joint, and there is room for six persons in the central portion of the boat. Displacement is increased or reduced by means of cylindrical chambers which are projected or withdrawn telescopically from the sides of the vessel, and by this simple means she can be made to rise or fall in the water, slowly or quickly, at the will of those in command.

This was amply demonstrated recently, when Lord

Charles Beresford, with others, went down in her, Lord Charles expressing himself very strongly as to the value of this new vertical maneuvering power. The boat was many times submerged to the bottom of the dock, about 17 ft., and brought to the surface again on a perfectly even keel. She was also propelled a short distance, connection being made with the batteries by hand, but as the motors were coupled up with the current, nothing further was attempted. The area for a run, moreover, was too circumscribed, there being a number of vessels lying in the docks, which would have impeded progress.

The main application of the system would appear to lie in the direction of submarine warfare, although it is not intended that it shall subserve this purpose exclusively, as the inventors have designed arrangements for applying it to all classes of submarine operations in lieu of the diving bell. It is also to be observed that, although only applied to a 60 ft. boat, this size in no way indicates a limitation of the principle, which can be applied to any sized vessel. The present dimensions were only adopted because they correspond to those of a second-class torpedo boat. The invention appears to be one of much merit, and well worth the attention of the government, which it will doubtless receive.—*London Times.*

**A Pocket Camera.**

An English paper says Councilor W. J. Lancaster, of Colmore Row, London, has a very remarkable photographic apparatus, to be used for detective purposes or ordinary portrait photography. The apparatus is inclosed in a watch case, which opens in the ordinary manner by means of a spring. As the case opens, a miniature camera shoots out for a moment, shuts up again, and the thing is done. The sensitive plates to be used for the camera are miniature dry plates, and a store of these is to be carried by the operator in a specially prepared locket to hang on the watch chain. We understand that the miniature apparatus has been very eagerly welcomed by the detective police, and that the authorities at Scotland Yard have decided to make extensive use of it. A detective who wishes to secure the portrait of a suspected character will only have to get close to his subject, and pretend to pull out his watch and look at the time, and the features will be registered. We may mention that for the sake of experiment, accurate and "speaking" likenesses were taken of a large number of the persons who mixed in the crowd at the recent Socialists' meeting.

**IMPROVED CULTIVATOR.**

When grain is planted by the so-called "combined lister and drill," the listing forms a ditch or furrow several inches deep, in which the seed is deposited. The drawback to this listing is due to the fact that close to the edges of the furrow on each side, a row of weeds springs up, which, with ordinary cultivators, it is impossible to exterminate, and at the same time cultivate the soil at the bottom of the furrow. The object of the invention here shown, which has been patented by Mr. Daniel M. Bourne, of Cool, Kansas, is to provide a shovel that will cultivate the bottom of the furrow, and at the same time trim the edges of the furrow. The cultivator plow point, or shovel, is provided with a cutter extending obliquely upward and standing above the plow proper, so that while

**BOURNE'S IMPROVED CULTIVATOR.**

the point enters the furrow, the cutter trims the side of the furrow above the point. The point may be rounded or beveled to bring it to a sharp point, and the plow may be made with a shank or be bolted to a separate shank. The wing or cutter extends upward obliquely from the main shovel point, and is slightly twisted to clear itself of trash. Its upper end stands slightly in rear of the body of the shovel, so that the contact of the cutter with the side of the furrow will cause a slight draught and make the shovel penetrate the soil, and tend to steady the cultivator. The shovel can be attached to either a riding or walking cultivator, and has nothing to do with any outside shovels, as the operator can use any kind he desires or can take them entirely off.