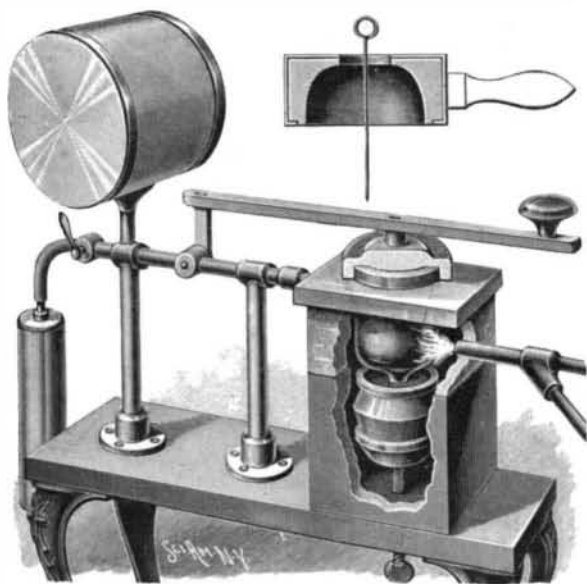


**A CONVENIENT SQUARE AND BEVEL.**

In this tool two blades are rigidly connected with each other at an angle of forty-five degrees, one of the blades having a graduation of degrees, sides of polygons, bevels, etc., while the other has tables for calculating rafters, braces, etc. The improvement has been patented by Mr. John McLean, of Miller's Ferry, Ala. Its stock, A, supports in its lower end a pivot, B, on which is fulcrumed a blade, C, having a segmental slot, C', engaged by a bolt, D, in the upper part of the stock. The blade, C, has an extension blade, E, adapted to form a try square with the stock, and on the blade, C, is a graduation, F, indicating degrees and subdivisions and also the sides for polygons, plumb levels for common rafters, hip and jack rafters, with seat and side bevels, and other desirable matter. This graduation is read on a fixed pointer, G, on the upper end of the stock. The blade, E, has on one face tables for calculating the length of rafters, its reverse face containing a brace scale, and there being in its lower edge apertures, E', an inch apart, to be engaged by a point, H, having at its middle an enlargement permitting it to abut for a rest against one face of the blade. A transverse aperture, A', in the stock, is adapted to receive a pencil or any pointed instrument. The inventor designs that instructions shall be sent with the square, explaining the various purposes for which it may be advantageously employed.

**OUTFIT FOR CASTING LIGHT METALS.**

The improved apparatus illustrated herewith is more especially designed for casting aluminum, or other metals so light as not to run freely from the crucible when melted, and which, from the same cause, are liable not to form so perfect a casting as desirable. To obviate this difficulty, the apparatus provides for injecting compressed air to the crucible above the molten metal, and also for maintaining the air pressure in the flask until the metal has cooled. The improvement has been patented by Dr. Edmond H. Casgrain, dentist, No. 51 Rue St. Jean, Quebec, Can. The crucible is supported in a furnace of firebrick or other suitable material, with an open space beneath for the flask, mounted on a block carried by a screw, whereby the flask may be raised to bring its mouth in close contact with the outlet nipple at the bottom of the crucible or lowered for removal. In melting aluminum, a plug is not usually needed, the metal not running from the vent on account of the exterior air pressure, and the slight ordinary incrustation; but in casting heavier metal the ordinary frangible plug may be employed, or a plug may be used which has a perforated diaphragm, extending around the mouth of the orifice within the crucible, and which has a handle extending up through the cover, as shown in the small view. The diaphragm



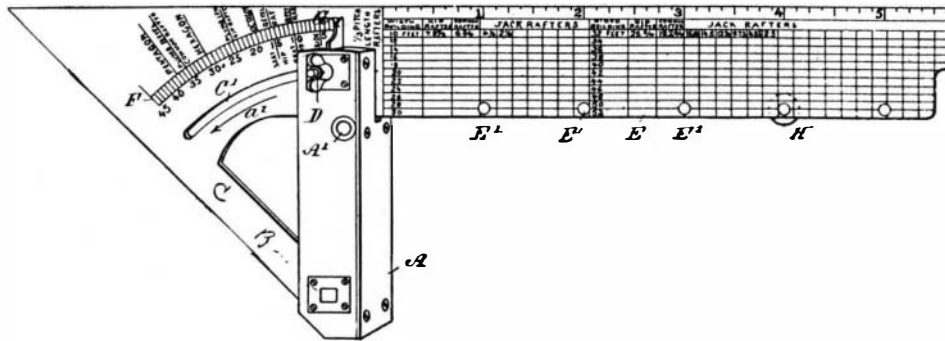
CASGRAIN'S METAL CASTING APPARATUS.

is employed to remove oxides from the metal in fusion before the crucible is closed. For melting metal ordinarily, the cover shown in the small view will be placed over the crucible, the other cover being then swung up to one side. In the front wall of the furnace is an opening to receive the end of a blowpipe, and near the top of the crucible is an inlet connected by an air pipe with a hand pump, or other means of supplying air under pressure. The air supply is controlled by a valve, and is delivered by a branch pipe into a reservoir and not directly to the crucible. Between the reservoir and the crucible is a valve, from the stem of which extends a lever, connected with which, by a link, is a cover adapted to be held down snugly upon the crucible to resist the air pressure within. The turning down of the lever carrying the cover to the position shown

in the illustration also opens the valve to permit compressed air to flow from the reservoir into the crucible. The air from the reservoir, rushing into the crucible on top of the melted metal, forces the latter through the outlet nipple and into the mould, the continuing pressure causing the metal to pack snugly and make a firm, smooth casting. The improvement is especially designed to facilitate the casting of aluminum and other metals, as well as for a wide range of other work. It has been practically tested by the inventor during a period of three years.

**The Breeding of Buffaloes.**

A famous Montana character is Charlie Allard, of Ravalli. Mr. Allard is famous mainly because he is



MCLEAN'S COMBINED SQUARE AND BEVEL.

one of the owners of the largest herd of buffaloes in the country, and no man living has given to these now rare animals more patient study and attention than he.

"The coldest storms of winter do not trouble them," he says, "for their thick, shaggy coats are windproof. During the heavy snows and blizzards they climb the hills and, turning their breasts to the wind, defy the storm. They feed where the snow is thinnest. Cattle are driven before a storm and will often go with a wind 60 or 100 miles from the accustomed range, unless they reach a sheltered spot. Horses turn their backs to a storm, but the buffaloes face it every time. They seem to keep in about the same condition of flesh the year round, and are as good eating in the spring as they are in the fall, and a buffalo steak is as fine a morsel as ever a man made a meal of. About two years ago I purchased the Jones herd of buffaloes, which was at Omaha. There were thirty-one of them in the herd and we paid (for I have a partner now) \$18,000 for the lot. Marchiel Pablo, a well known cattle man, has joined me in the business, and for the past year has had entire charge of them, so that I do not know just exactly how many we have—about 140 I should judge now, and by next fall there will be fully 200 of them.

"We experimented in crossing buffaloes with all breeds of cattle and the results are most satisfactory. The polled Angus stock, when crossed with the buffalo, produces a magnificent animal. The fur is finer and closer than that of the buffalo and the meat is sweet and wholesome. We are procuring as many of these animals as possible, but will not put any on the market for several years yet. We are not selling any buffaloes either, for the reason that we need them all at present. We receive letters every day from museums, parks, and shows, wanting them in all quantities, and though we might dispose of one or two singly, we have no pairs to sell.

"A good buffalo hide is worth \$100 now in the market, and heads bring from \$200 to \$500 when mounted, and the value of these is steadily increasing, so that buffalo breeding is as good an investment as real estate. Our herd is the only one I know about of any size. There is a small one in the Texas Panhandle, and these, with the few that roam in the National Park, are the sole remnants of the thousands which roamed the prairies but a few years ago."—Anaconda, Mon., Standard.

**The Brazilian Pottery Tree.**

Among the numerous vegetable products of Brazil, the Moquilea utilis, or pottery tree, is not the least noteworthy. This tree attains a height of 100 feet, and has a very slender trunk, which seldom much exceeds one foot in diameter at the base. The wood is exceedingly hard and contains a very large amount of silica, but not so much as does the bark, which is largely employed as a source of silica for the manufacture of pottery. In preparing the bark for the potter's use, it is first burned and the residue is then pulverized and mixed with clay in the proper proportion. With an equal quantity of the two ingredients, a superior quality of earthenware is produced. This is very durable, and is capable of withstanding any amount of heat. The natives employ it for all kinds of culinary purposes. When fresh, the bark cuts like soft sandstone, and the presence of the silex may be readily ascertained by grinding a piece of the bark between the teeth. When dry, it is generally brittle, though sometimes difficult to break. After being burned it cannot, if of good quality, be broken up between the fingers, a mortar and pestle being required to crush it,

**An Ironclad Canal Boat.**

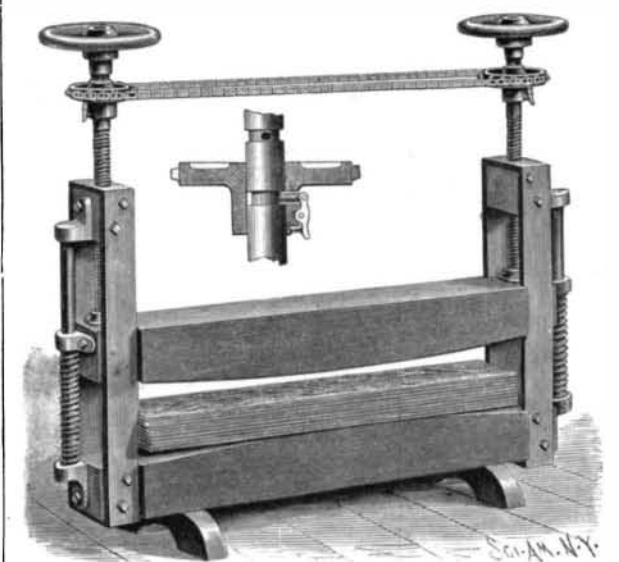
One of the oldest and most unique war vessels in the world is the ironclad canal boat belonging to Holland's navy. The canal boat is a completely equipped war ship in miniature, and is intended for service on Holland's extensive canal systems. The boat is about forty feet in length and fifteen feet in width, and her upper deck is between three and four feet above the water line. Her sides are armored and her deck is provided with two little turrets, one fore and one aft. There are two masts, about twelve feet in height, and the bulwarks are not much over a foot in height. The turrets are supplied with the heaviest guns which may be used to advantage in such close quarters, and her tops are provided with efficient machine guns.

The canal war boat is a valuable part of the defensive armament of Holland. The canals of Holland are in many sections several feet above the level of the surrounding country, and they afford an important vantage point for the war ship's guns. The canals, besides, penetrate every part of the country, in most cases passing through the cities and towns, and it is, therefore, of the greatest importance that a war ship of just this pattern should be at hand. Holland's navy includes, besides this unique feature, about one hundred and fifty men-of-war; of this number,

some twenty-five are ironclads, some comparing favorably with the best war ships of other navies.

**AN IMPROVED VENEER PRESS.**

For pressing together several layers of previously glued veneer, and holding them firmly until the glue has set, the press shown in the illustration has been patented by Mr. William Clayton, No. 125 Eighth Avenue, New York City. The lower fixed jaw is slightly convex on its upper side, the upper movable jaw, sliding vertically in guide frames, being also slightly convex on its lower face. Both jaws are preferably of wood, and first come to a bearing in the middle, afterward gradually springing sufficiently under pressure to bring the adjacent faces to a level, the layers of veneer being thus first squeezed together in the middle, but every part coming under pressure as the jaws are straightened out. At the upper end of each of the guide frames is a block through which extends a screw socketed at its lower end in one end of the upper jaw, while at its upper end is a hand wheel, there being on each screw a sprocket wheel, and these wheels being connected by a chain, that both wheels may be turned simultaneously to move both ends of the jaw at a uniform rate of speed. To make a tight or loose connection of the sprocket chain, so that one screw may be turned alone when desired, each sprocket wheel has in its hub a pivoted spring-pressed latch, the bolt of which may slide in a smooth groove in the shank of the screw, or in another groove in which is a



CLAYTON'S VENEER PRESS.

hole to receive the bolt, as shown in the small view, either adjustment being made by pressing on the latch and moving the wheel a slight distance up or down. Projecting from the ends of the upper jaw and sliding on vertical rods are guide lugs, normally pressed upward by spiral springs encircling the rods, the springs operating to lift the upper jaw when the downward pressure of the screws is withdrawn.

PROF. RUGE states that the purchasing power of money was much greater in 1492 than at present. He says the first expedition of Columbus cost only \$7,300, including the equipment of the three caravels. The salary of Columbus as admiral was \$320 a year. His captains received \$16 a month, and the seamen \$2 to \$2.50 per month.