AGRICULTURAL INVENTIONS.

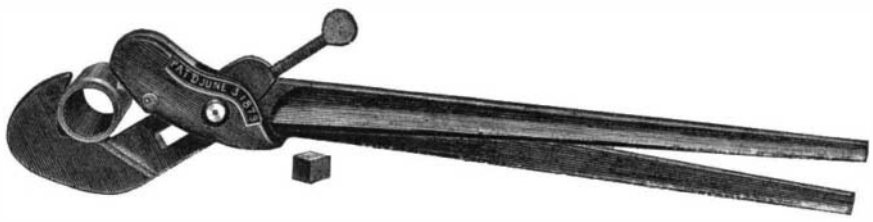
Mr. William B. Garoutte, of Republic, Mo., has invented a novel cotton and seed planting machine. This improvement relates to machines for forming a mould or ridge, dropping the seed along the ridge, and covering the seed.

Mr. William L. Dietz, of Schoharie, N. Y., has patented an improvement in scrapers and cultivators for broom corn, cotton, and other plants planted in rows and drills, so constructed that they may be readily guided to operate upon crooked rows and may be conveniently turned at the ends of the rows.

IMPROVED PIPE TONGS.

The annexed engraving represents an improved pipe tongs manufactured by Messrs. Noble, Hall & Co., of Erie, Pa. The handles are pivoted on the usual rivet, which extends also through cheek-pieces attached to one of the handles. This construction gives a firm bearing to the pivot, and avoids the twisting motion which is usually so destructive to the tongs. The cheek-piece has a rectangular recess formed in it for receiving a cube of hardened and tempered cast steel. This cube is always held with one of its corners toward the center of the tube, whether the pipe being turned or held is large or small. It will be noticed that the steel cube has twelve available corners, so that as one becomes dulled by use another may be put into position for work. The cube or bit is held in its socket by a tapering pin extending across the mouth of the socket.

After the cube becomes worn on all of the corners it may be sharpened by grinding and replaced with enough backing to compensate for the metal ground away; and after it is worn so that it is incapable of further use it may be replaced by a new one at a slight cost.



THE ACME CUBE PIPE TONGS.

One of the jaws is made adjustable by a thumbscrew to adapt the tongs to different sizes of pipe. This firm make also tongs of the same general character without the adjustable jaw. The manufacturers claim that for strength, durability, simplicity, and cheapness these tongs have no equal in the market.

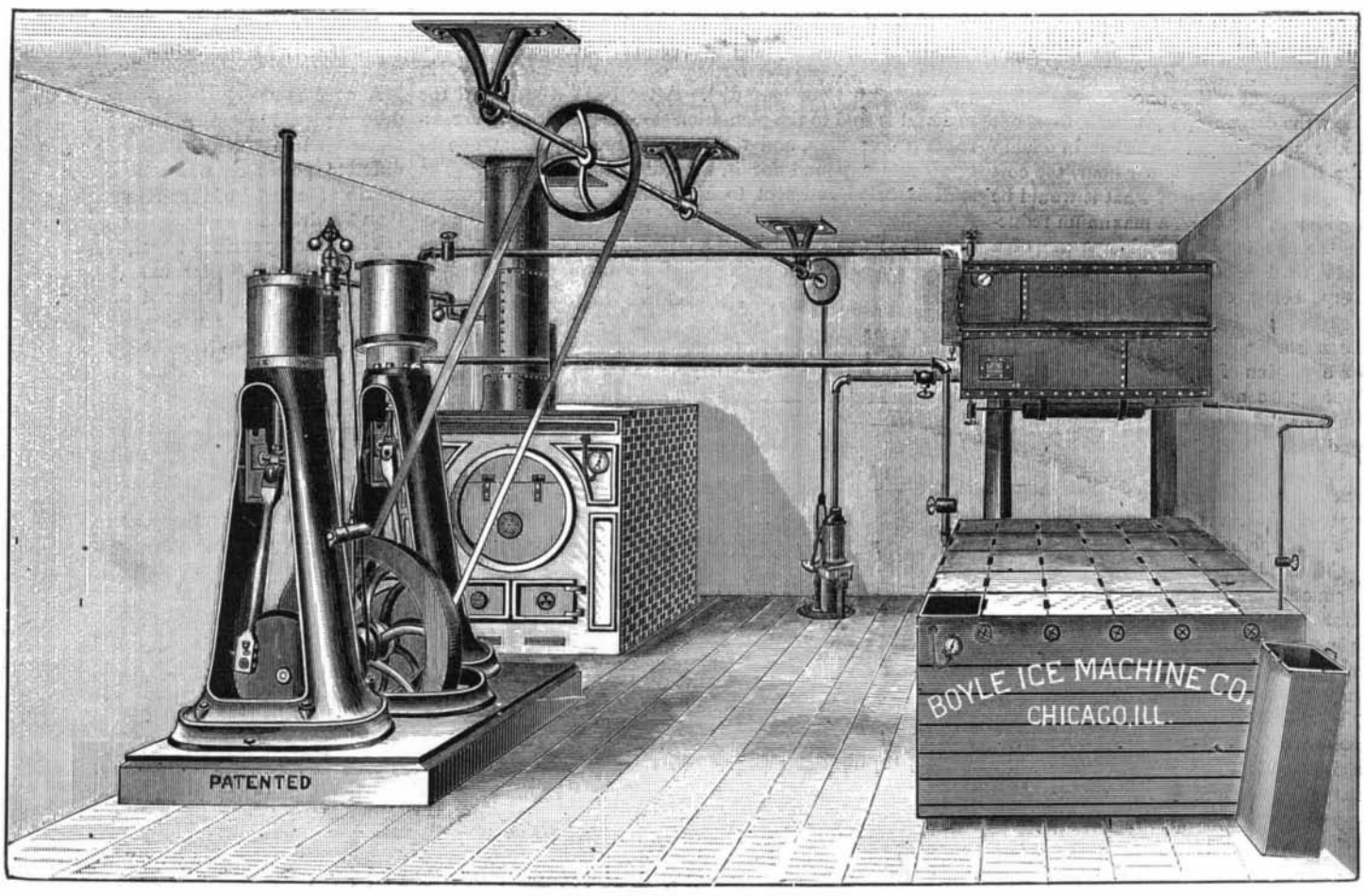
ICE-MAKING APPARATUS.

The accompanying engraving represents an ice-making apparatus designed and constructed by the Boyle Ice Machine Company, of Chicago, Ill., who are the patentees and manufacturers of ice machines and refrigerating apparatus.

The engraving shows a one-ton ice machine. On the left is seen a steam boiler and a combined engine and ammonia pump; in the center a pump for water supply for gas condenser, and on the right a freezing tank. The ammonia pump is used for compressing the ammonia gas which is liquefied in the condenser, and is expanded in a freezing tank seen at the right in which the cold is produced.

The freezing tank where the ice is produced is provided with coils of iron pipe, in these the gas evaporates, and they are placed at regular spaces apart, the spaces being regulated by the thickness of the ice required. Between the coils are placed moulds or cans containing the water to be frozen, and the space about both moulds and coils is filled with strong brine.

The operation of the machine is as follows: The pump being put in motion, a valve leading from the condenser to the evaporator coils is opened and the liquid gas flows into the evaporator coils. There, meeting with the heat in the salt water to be cooled down, it expands very rapidly, taking up the heat which is in the brine, which, in turn, extracts the heat from the water in the moulds. The expanded gas is aspirated by the pump and forced over into the condenser, where the heat is taken from it by a stream of water continually flowing over it, and under the pressure of the pump is reliquefied, and returns again to be expanded in the evaporator coils.



BOYLE ICE MACHINE.

This process is continued until such time as the water may be frozen, when the mould is lifted from its place in the freezing tank and immersed in warmer water, which loosens the ice from the mould, when it is readily removed; and the mould, being refilled with water, is again returned to the freezing tank.

The ammonia pump (patented by the Boyle Ice Machine Company) is single acting, and works with regularity and smoothness; no water is required in order to keep its piston rod cool, and the pressure on the stuffing box never exceeds fifteen pounds to the square inch, avoiding all trouble in keeping the stuffing box tight and leakage of ammonia.

In making a calculation of the entire expense of operating a machine of any size, there should be an allowance made for the oil used in lubricating the engine, and for the expense of ammonia. An allowance of fifty cents per day for the smaller sized machines, and of one dollar per day upon the larger sized machines, would be ample for this item.

It is claimed that repairs would not ordinarily amount to one per cent per annum upon the cost of the apparatus. Calculations by this company for the production of ice and for all expenses connected with the operating of a complete ice factory are upon the conditions incident to the hottest weather in the South; and in a more temperate climate, with cool condensing water, the expense for fuel would be decreased considerably, as well as the supply of water necessary for condensing the ammonia.

Machines with which ammonia is used as the necessary refrigerant have proved to be among the best and the most efficient machines for the purpose; they are not liable to explosion or causing fire.

The machines referred to are of a simple character, have few parts, and are easily managed by any mechanic of ordinary intelligence. Their efficiency and reliability, their durability and inexpensiveness of operation, the manufacturers state, are beyond all question, as certified to by several extensive manufacturers and professional experts.

Further information and circulars containing full details of construction and mode of operation, and testimonials from parties using these machines, may be obtained on application to the Boyle Ice Machine Company, No. 10 North Jefferson street, Chicago, Ill.

Straightening Hardened Steel.

In hardening and tempering tools they sometimes spring, to the great annoyance of the workmen, and not seldom the tool is reheated and rehardened. In most cases this may be avoided. To straighten a piece of steel already heated and tempered, heat it lightly, not enough to draw the temper, and it may be straightened by blows from a hammer, if the character of the tool will admit of such treatment, or, as in case of a tap, it may be straightened by a heavy mallet on a hard wood block. Although the steel when cold would break like glass with this treatment, when slightly warmed it will yield to moderately heavy blows uninjured.

ENGINEERING INVENTIONS.

Mr. Harry M. Sciple, of Selin's Grove, Pa., has patented a portable steam engine combining the features of lightness, durability, and cheapness. The invention consists in a vertical steam engine having the base, column, pedestal, cylinder, and steam chest cast in one piece and fitted with the cylinder head and crosshead guides, that are cast in one piece, whereby the required strength is obtained, and there is but a single joint to be fitted.

An improved signaling apparatus for railroads has been patented by Messrs. Richard B. Ireland, of Trenton, and William H. McDonald, of Newark, N. J. The object of this invention is to provide for operating a signal located at one point on a railroad from different places—say from two separate switches—in such manner that the signal shall be exhibited when either switch is open and until both are closed, or so long as the main line is not clear.

Mr. Hiram N. Wickes, of Grand Gorge, N. Y., has invented an improved car coupling that couples automatically without requiring any one to step in between the cars, the link being held in horizontal position, so as to secure its entrance into the opposite drawhead. The invention consists of a drawhead, with internal cavity having upwardly inclined rear portion and central guide rib, along which a centrally grooved roller is carried by the link.

Mr. Jean L. Nevers, of Pass Christian, Miss., has patented a water and wind mill, which the inventor calls a "wing motor." It is simple, automatic in the adjustment of its sails, and capable of utilizing a large percentage of the power of the wind and current of water.

Mr. Richard B. Ireland, of Trenton, N. J., has patented improvements which relate to signaling apparatus used in the "block" system of signals for the movement of trains, in which system the road is divided into sections or blocks, with a signal station between each block, and no train allowed to pass a station without a signal from the operator. Heretofore there has been great liability of the engineer mistaking the signals; and the object of this invention is to prevent such mistakes, which is accomplished by giving to the signals a definite form and position, either of which will indicate, in addition to the color, the exact character of the signals The inventor states that the apparatus may be worked in connection with two or more switches with one wire and one slide.

Mr. Stephen B. Segur, of Gold Hill., Nev., has patented an improved hoisting device, the object of which is to prevent hoisting cages in mines or elevators of any description from being raised so high as to endanger the lives of miners or others working in connection with hoisting apparatus or being carried up by elevators. The invention consists in a safety hook of novel construction and in means for detaching the same from the elevator car.

Mr. Henry Case, of Brooklyn, N. Y., has patented a composite pile for submarine foundations and other purposes that shall withstand decay or the attack of worms and insects better than a wooden or iron pile.

Mr. Albert Bonzon, of Santiago, Cuba, has patented a new attachment for the second-hand shaft of clock or watch works which will cause the second-hand to beat seconds, and which is so arranged that these beatings of the second-hand can be interrupted or started at any desired moment.