

Hardening Small Tools.

It is said that the engravers and watchmakers of Germany harden their tools in sealing wax. The tool is heated to whiteness, and plunged into the wax, withdrawn after an instant and plunged in again, the process being repeated until the steel is too cold to enter the wax. The steel is said to become, after this process, almost as hard as the diamond, and when touched with a little oil or turpentine the tools are excellent for engraving, and also for piercing the hardest metals.

NEW TICKET OR CANCELING PUNCH.

The superiority of this punch over others consists in the manner in which the dies are inserted in the punch and the interchangeability of the various parts, as illustrated in the accompanying engraving. Canceling punches are usually made with one or both dies cut out of the jaw of the punch itself, thereby necessitating the purchase of a new punch when the dies become worn, or a change in the die is required. In the punch illustrated the dies can be easily and cheaply repaired, or changed to a different design.

The uses to which the canceling punch can be applied are already very large and daily increasing. There are over three thousand railways in the United States, all using some sort of a canceling punch. Banks, counting-houses, grocers, eating houses, and all branches of trade in which canceling punches can be used to advantage, are adopting them.

All the detachable parts of the "Aiken ticket punch" are made of the finest cast steel and carefully tempered, thereby guaranteeing the longest wear that is possible to be obtained. The punches are highly finished and nickel plated. Many of the first railroads in the country have adopted them, and we are informed that all without exception pronounce them to be the best punch in use. Further information may be obtained from the patentee, Mr. J. B. Aiken, Franklin, N. H.

Consolation for the Bald.

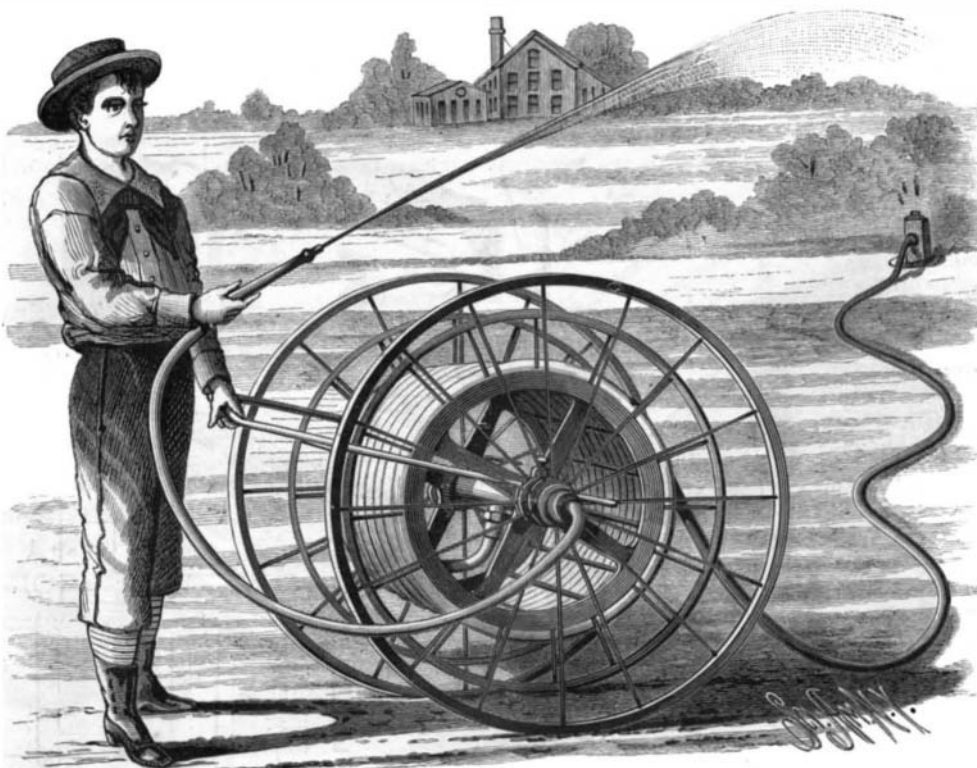
Professor Fournier, in a lecture on alopecia, says of baldness: "There is nothing ridiculous or malformed about it, and it confers upon the physiognomy an expression of wisdom, experience, and venerability. It adapts itself marvelously to certain heads which would be deformed by a wig, and is the severe beauty represented in sculpture by the classic head of *Æschylus*."

NEW HOSE CARRIAGE.

Any one fortunate enough to possess extensive grounds knows only too well the difficulties of keeping the lawns and gardens in prime condition; one of the principal troubles experienced is that of properly irrigating the grounds. The device shown in the annexed engraving fills a need that has been long felt, and supplies a means of watering grounds thoroughly and conveniently.

The novel feature of this carriage is the arrangement by which water is conveyed through the hose connected with the hydrant to the hollow axle of the carriage, and the manner in which it is distributed by means of the short service pipe held in the hand.

The reel on which the hose is wound is secured to the hollow axle of the hose carriage, and when the reel is revolved in winding up or unwinding the hose, the hollow axle turns in the hubs of the hose carriage wheels. The inner end of the hose is connected with a nipple projecting from the hollow axle. The outer end of the hose is provided with a union or coupling for connecting it with a hydrant from which the water is taken. The water passes through the hose as it is wound upon the reel, thence to the hollow axle, and out through the service pipe. The latter is connected with the axle by a swivel joint, so that the turning of the axle does not affect the service pipe. By taking the handle of the hose carriage in one hand and the service pipe in the other, one may walk along watering flowers, plants, or grass, on either side, as far as the force of the water will carry the spray. In this way one section after another may be watered without difficulty. The inventor informs us that a child ten years old is capable of using one of these carriages and taking the entire charge of it. The hose carriage has been thoroughly and practically tested, and has proved itself a complete success. A carriage of the size illustrated will hold 400 feet of three-quarter inch hose, or 300 feet of one inch hose; with these lengths a plot from 600 to 800 feet in diameter may be irrigated without disconnecting the hose from the hydrant.



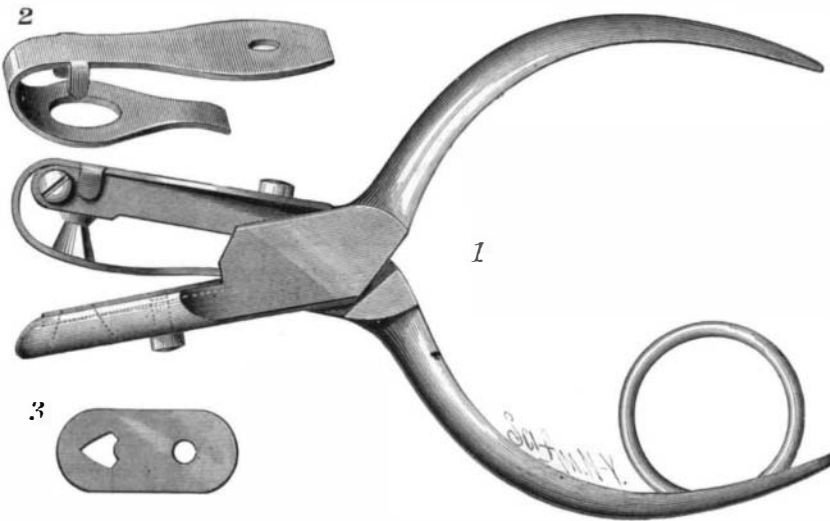
AIKEN'S NEW HOSE CARRIAGE.

Where this hose carriage is adopted dragging the hose is entirely avoided, and the hose never kinks, but is always laid smoothly, and may be taken up very easily without the usual wear and tear of the usual methods of handling.

The wheels of the hose carriage are 36 inches in diameter. The reel wheels are made somewhat smaller, so that they will not touch the ground. The entire carriage is made of steel, iron, and brass, and is practically indestructible. They are made in various sizes to suit the requirements of different users. Further information may be obtained by addressing the inventor and patentee, Mr. J. B. Aiken, Franklin, N. H.

A New Compound.

A new metallic compound, applicable to many artistic and industrial purposes, has been recently announced in



AIKEN'S TICKET PUNCH.

England. The substance belongs to the class known as the thiates or sulphur sulphides. Nearly a year ago Mr. J. Berger Spence discovered that sulphides of metals combined with molten sulphur formed a liquid. This liquid on cooling became a solid homogeneous mass, possessing great tenacity, and having a peculiarly dark gray, almost black color. It has a comparatively low melting point, namely, 320° Fahr., or rather more than 100° above the temperature of boiling water. It would thus require only a small amount of fuel to reduce or to melt it. The new compound also expands on cooling—a property not shared by the majority of other metals or metallic compounds. For such purposes as joining gas or water pipes this expansion is of great importance. It is also claimed that the new compound resists favorably atmospheric or climatic influences, as compared with bronze or marble, and that its resistance to acids

A New Way of Heating Railway Carriages.

French railway cars are warmed by means of hot water bottles; that is to say, cases made of iron, about three feet long, six inches wide, and four inches thick, which are filled with hot water and put on the bottom of the car for passengers to place their feet upon.

It is reported from Lyons that the Compagnie Paris-Lyon-Méditerranée is now trying a new method of heating in express trains. The method was proposed by M. Ancelin, an engineer, and consists simply in the use of acetate of soda in the foot warmers. The substance has considerable latent heat; dissolving at a certain temperature, it thus absorbs a large quantity of heat, which becomes sensible during crystallization in cooling. All that is required is to fill the ordinary cases with a sufficient quantity of the acetate, close them, and place them in a stove at about 100°. The cooling of a case thus charged and heated takes twelve to fifteen hours. The warmers are thereafter taken from the compartments and placed in a stove (where the crystals of soda acetate are re-dissolved); they are then ready for fresh use. The advantages of such a system are obvious—no necessity of changing warmers every two or three hours, or of maintaining a numerous body of men at stations to attend to them; economy in cost of heating, etc. Moreover, most of the existing foot warmers can be utilized. Acetate of soda is not very expensive, and it could easily be manufactured in much larger quantities than at present if the demand required it. The new system has been tried on the express train No. 5, leaving Paris at 7:15 and reaching Perrache at 4:31. The compartments were each supplied at starting with two warmers containing acetate of soda. At Perrache most of the warmers were still so hot that one could not apply the back of the hand to them. From Lyons to Marseilles the train was heated on the ordinary system.

Charles T. Chester.

Charles T. Chester, inventor and electrician, died recently at his residence in Englewood, New Jersey, at the age of fifty-four. Mr. Chester was for a number of years engaged in the manufacture of electrical apparatus in this city. He is best known as the inventor of the fire-alarm telegraph and originator of the law-telegraph system. At the time of his death he was electrician to the National Electric Light Company.

Mycenæ.

With respect to Dr. Schliemann's discoveries at Mycenæ, the Russian *savant*, M. Stephani, has expressed opinions which have attracted considerable attention in Germany. The learned academician by no means disputes the great antiquity of many of the individual objects unearthed by Dr. Schliemann, but he holds that the remains include objects belonging to very different eras of history. He contends that the date of the tombs must be determined by the latest products of art or industry which have been discovered in them. The seal ring is especially important in this respect, as, according to his view, it is executed entirely in the style of the New Persian art. He is of opinion that the tombs originated with the barbarians who invaded Greece in the third century B. C., and made the citadel of Agamemnon one of the chief centers of their dominion. Here he believes they buried their chiefs, and decorated the tombs partly with such ancient relics of an earlier date as had fallen into their hands and partly with ornamental objects produced in their own times.

A Town Lighted by Electricity.

Wabash, Ind., boasts of being the first town to adopt the electric light for general illumination. A beginning was made March 31, with four Brush lamps of 3,000 candle power each suspended on the flagstaff of the court house. A seven horse-power generator supplied the electricity. The contract called for a light equal to a gas burner at a distance of 2,640 feet from the lamps. The tests were said to be satisfactory. Many visitors from adjoining towns were present to witness the first trial of the new method.

The following is the way the newspapers in the mining regions talk to their readers:

"A man at Dutch Flat picked up a rock, the other day, to throw at a cow. The weight of it attracted his attention, and on examination it was found to contain over a hundred dollars in gold."

A California Tunnel.

The longest of the series of tunnels on the South Pacific Coast Railway, in the Santa Cruz mountains, California, has just been completely pierced. The tunnel, which is over a mile in length, was begun a little over two years ago. The presence of petroleum in the formation has resulted in several disastrous explosions, involving many delays and considerable loss of life.

The Exodus from Europe.

The prophecy of the Commissioners of Emigration that the current year would see a marked increase in the number of immigrants arriving from Europe is being fulfilled with a liberality quite unexpected.

The total number of immigrants who came to this port in 1879 was 175,589, which was very largely in excess of preceding years, being 59,723 more than in 1878, which exceeded 1877 by 20,811. During January and February of 1879 the arrivals numbered 5,143, while for the first two months of this year the aggregate was 13,765, an increase of 8,622. These are invariably the two lightest months in the year. During March, 1879, the record shows 6,085, while for the month just closed this year the official figures are 21,090, an enormous increase of over 15,000. During the first quarter of the present year there was landed 34,855, against 11,052 in 1879. A heavier immigration is expected this summer than ever before. The new arrivals are chiefly Germans. Since the Commission was organized in May, 1847, Germany and Ireland have sent in about equal numbers, the total figures to the close of 1879 being, for Germany, 2,195,398, and for Ireland, 2,042,046. This year, during January and February, the proportions were—Germany, 3,577; Ireland, 2,597. A large immigration will undoubtedly come from Ireland on account of the famine, but it has not yet set in.

The applications for newly arrived laborers are largely in excess of the supply; and, curiously, the number of immigrants registered as seeking employment is smaller than it has ever been in recent years. With the exception of the Hungarian arrivals, nearly all have definite plans for the future. They have money and friends, and usually go West to situations procured in advance by their countrymen resident here. The demands for immigrant labor are mostly for Germans, Swedes, and Scotch; but Superintendent Jackson says that, among these nationalities, scarcely one in a hundred stops at New York to seek employment.

NEW BOX MACHINE.

We give herewith an engraving of an improved machine for cutting box blanks from a block of wood, and at the same time grooving them preparatory to bending them into forms for making the rectangular sides of a crate or box, as shown in the engraving.

Fig. 1 is a perspective view of the complete machine, showing also the bed plate and knife detached. Fig. 2 is a vertical section taken through the block-holding and cutting mechanism.

In the wide end of the main frame of the machine is arranged a knife, D, with its edge inward. This knife is firmly secured to the solid bed frame, so that it will not be liable to bend under a heavy strain. In front of the knife there is a gauge plate, which is movable lengthwise, being adjusted in this direction by a screw.

This gauge plate supports the plate, D, which carries a series of cutters for forming transverse grooves in the box blanks. The gauge plate has a series of wedge-shaped projections on its upper surface, which correspond to a series of cavities in the under surface of the cutter plate, so that when the gauge plate is moved lengthwise by means of its adjusting screw, the cutter plate will be raised or lowered, as may be required, thus governing the thickness of the blank. The cutter plate is clamped firmly to the bed of the machine by two screws passing through slots in the gauge plate.

The cutter plate, B, is provided with the convex cutters for forming the transverse grooves in the box blanks, and also with inclined cutters for chamfering the ends of the blanks.

A traveling block-holder, A, moves over the bed of the machine and carries the block from which the box blanks are cut, back and forth over the knives in the bed, cutting at each forward movement a blank suitable for making a box like that above described. The block is held in place by a clamp, b, attached to a weighted follower that continually presses the block downward and feeds it automatically to the knives.

Whenever it is desirable to raise the weighted follower, it is done by turning a small windlass, a, journaled in the block-holder, and provided with a ratchet for holding it when required. The proper reciprocating motion is given the block-holder, A, by means of cranks and connecting rods connected with opposite ends. A check or holder, C, pivoted in the lower portion of the bed, is made, by an ingenious cam arrangement, to rise at each cut and support the blank. The machine is entirely automatic after the block is put in.

The machines are strongly built, and turn out the blanks very rapidly. They are made in various sizes; the largest made up to this date are 56 inches in width, but they may be made much larger. The only limit to the size is the length of the knife. A 56-inch machine will cut

blanks for boxes from 9 by 18 inches by 10½ wide down to the size of a match box.

This machine was recently patented by Mr. William Huey, of Cambridge, Md. Further information will be furnished by Mr. J. D. Richards, Box 43, Cambridge, Md.

NEW EGG CARRIER AND CRATE.

The engraving represents a novel egg crate and carrier recently patented by Mr. William Huey, of Cambridge, Md. The blanks for the crate and for the carrier are both made on the machine shown on the lower part of this page. These

Fig. 1.

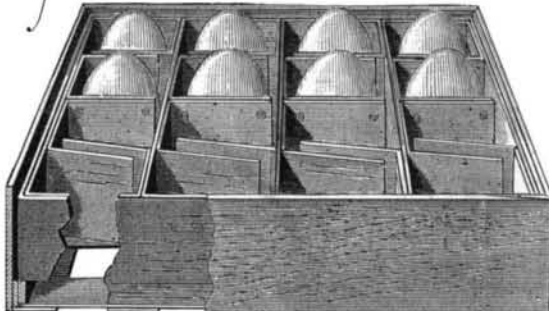
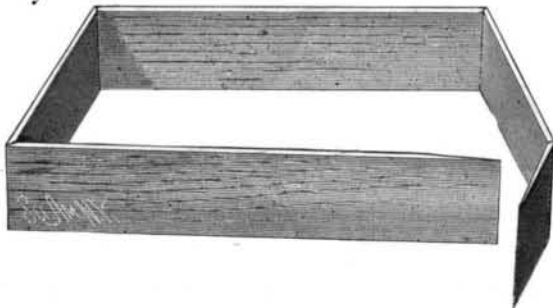


Fig. 2.

**HUEY'S EGG CARRIER AND CRATE.**

blanks are sliced from a block of wood, and the transverse grooves which admit of making the boxes with bent joints at the corners, and with the adjoining ends lapped so as to form a strong yet perfectly smooth joint. Fig. 1 shows the egg crate and box with portions removed to show their construction, and Fig. 2 shows a box blank bent at the corners and about to be joined at the ends. In forming the box the inventor bends the shorter of the beveled ends inward until its outer side inclines to the angle of the cut on the other end. By this arrangement, if the parts are to be glued, the glue is not applied to the ends of the grain on both sides of the joint, and a strong joint is secured.

The arrangement of cells shown in Fig. 1 is designed for transporting eggs and other fragile or perishable articles,

may be obtained by addressing Mr. J. D. Richards, P. O. Box 43 Cambridge, Md.

The Manufacture of Dynamite.

The industrial production of nitro-glycerine, the base of dynamite, has been attended with no little danger, as many terrible accidents bear witness. Among the prizes recently awarded by the French Academy of Sciences is one of 2,500 francs to MM. Boutmy and Foucher, who, by introducing new modes of producing nitro-glycerine in large quantity, and by various precautions, have rendered the manufacture of dynamite much safer, so that in their works at Vonges no life has been lost during the last six years, and the general health has been excellent. In the old method, in which fuming nitric acid, or a mixture of this and sulphuric acid, is made to act on glycerine, and the mass is suddenly immersed in water, the reaction often produced heat sufficient to decompose a part of the nitro-glycerine, occasioning violent explosions (in spite of the refrigerating processes adopted). The principle of the new process consists in obviating the greater part of the heat by first engaging the glycerine in a combination with sulphuric acid, forming sulphoglyceric acid, and then destroying slowly, by means of nitric acid, the sulphoglyceric compound. Two liquors are prepared in advance—a sulphoglyceric and a sulpho-nitric (the latter with equal weights of sulphuric and nitric acid). These disengage a considerable amount of heat; they are allowed to cool, and are then combined in such proportions that the reaction takes place slowly. In the old method the nitro-glycerine is separated almost instantaneously and rises in part to the surface, rendering washing difficult. In the new it forms in about 20 hours, and with a regularity which prevents danger. It also goes to the bottom of the vessel, and can be washed rapidly.

MECHANICAL INVENTIONS.

Mr. John H. Parkinson, of Virginia City, Nev., has patented improvements in air compressors especially adapted for use at mines. The object of the invention is to construct a simple and durable apparatus, which will occupy but small space and require but little power to drive it.

An improved axle box, patented by Mr. George W. Thomas, of Bear River, Nova Scotia, is applicable to carriage, wagon, car, and all other axles, and to all shafting. The invention consists in the combination with friction rolls of an axle box journaled in rings connected by diamond-shaped bars extending the whole length of box.

A novel and simple apparatus to be used in the process of making ice by the absorption or pumping of ammonia gas, has been patented by Mr. Andrew J. Zilker, of Austin, Texas. The invention consists of two or more sheets of galvanized iron or other metal set in a tank of fresh water, one on either side of the evaporation pipes, and held in a position parallel to each other by anchors or yokes that connect them.

An improved vise for holding circular saws while filing and upsetting their teeth has been patented by Mr. James L. Glover, of Windsor Locks, Conn. It is so constructed as to hold the saws firmly while being operated upon.

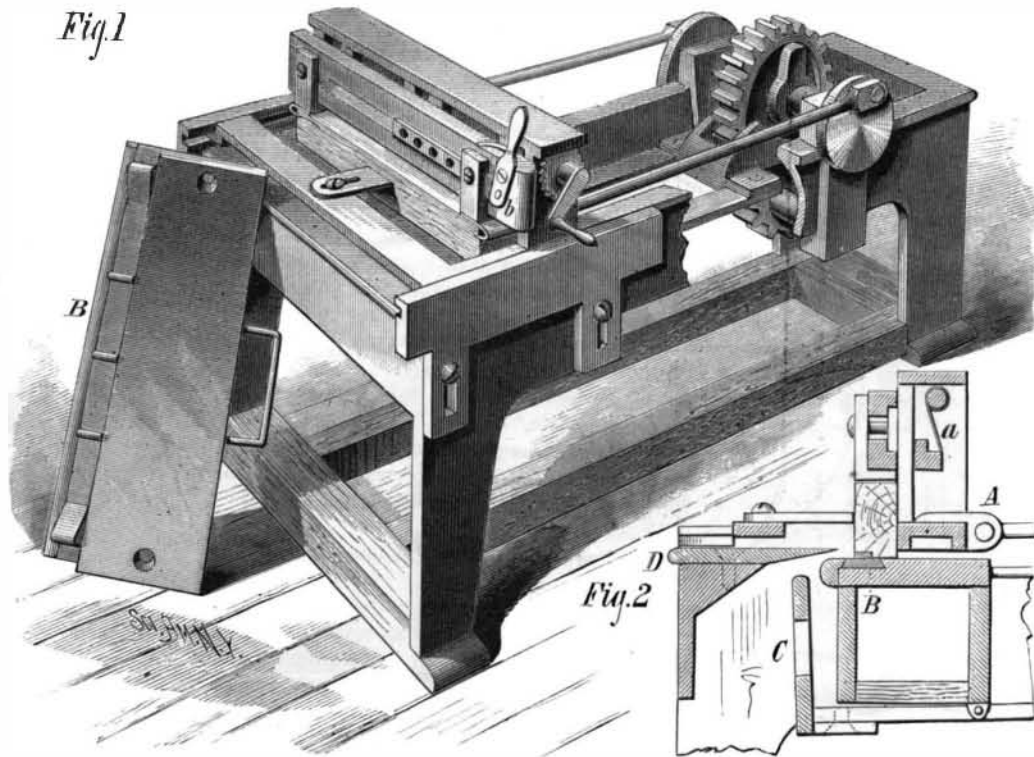
Mr. George E. Bigelow, of Geneva, Neb., has patented an improved water elevator which consists of a conical axle carrying a chain or rope to one end of which a weight is fastened, said axle supporting also a wheel or pulley which carries a chain or rope, one end of which is attached to the wheel and the other end to a bucket.

A metal bending tool for use of blacksmiths and others having occasion to form angular bends in metal bars or plates, a tool which will enable the work to be done much more easily, quickly, and economically than by the ordinary means, has been patented by Mr. Samuel Patterson, of Altoona, Pa.

Mr. William H. Hottel, of Woodstock, Va., has patented an improved alarm attachment for grist mills, designed to give a distinct alarm for indicating the irregularity of speed, whether in a mill or other class of machinery, which may be heard at any part of the mill, or which, by the aid of a telephone, may be heard at an office, residence, or other point remote from the machinery.

Messrs. Monroe Frank and Alfred Dickson, of Bowlingville, O., have invented an improved drag sawing machine, intended to be used by hand in sawing firewood. It is simple and well designed.

A stationary steam boiler, composed of hot water, steam, feed water, and air tubes laid horizontally, in coils or sections, one above another, in the order named, in a brick fire chamber, and having all the tube couplings and connections outside of the brick work, so that they may be readily got at for examination or repairs, and having also the steam and mud drums outside of the brick work, has been patented by Mr. Milton W. Hazelton, of Chicago, Ill.

**HUEY'S BOX MACHINE.**

and the device consists in a case formed with parallel partitions subdivided so as to form cells, by elastic wings secured on one side to the parallel partitions and overlapping their free ends to form expansible cells or pockets, for receiving and protecting the eggs.

The wings are formed of thin strips of wood made on the machine described below. The transverse groove formed in the blank renders the wood thin and springy at the joint.

The advantage of a crate of this character will be seen by shippers and producers of articles requiring carriers of this kind. It is inexpensive, durable, and effective.

Further information in regard to this useful invention