

**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.

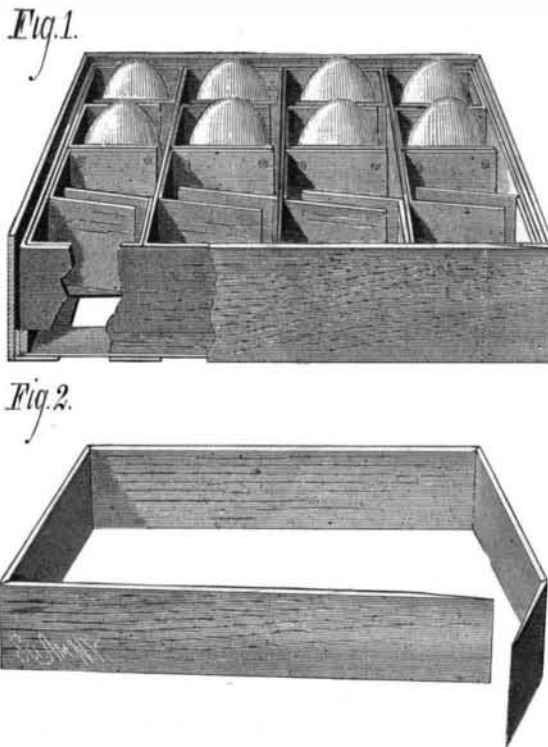
The machines are strongly built, and turn out the blanks very rapidly. They are made in various sizes; the largest made up to this date are 56 inches in width, but they may be made much larger. The only limit to the size is the length of the knife. A 56-inch machine will cut

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

**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.

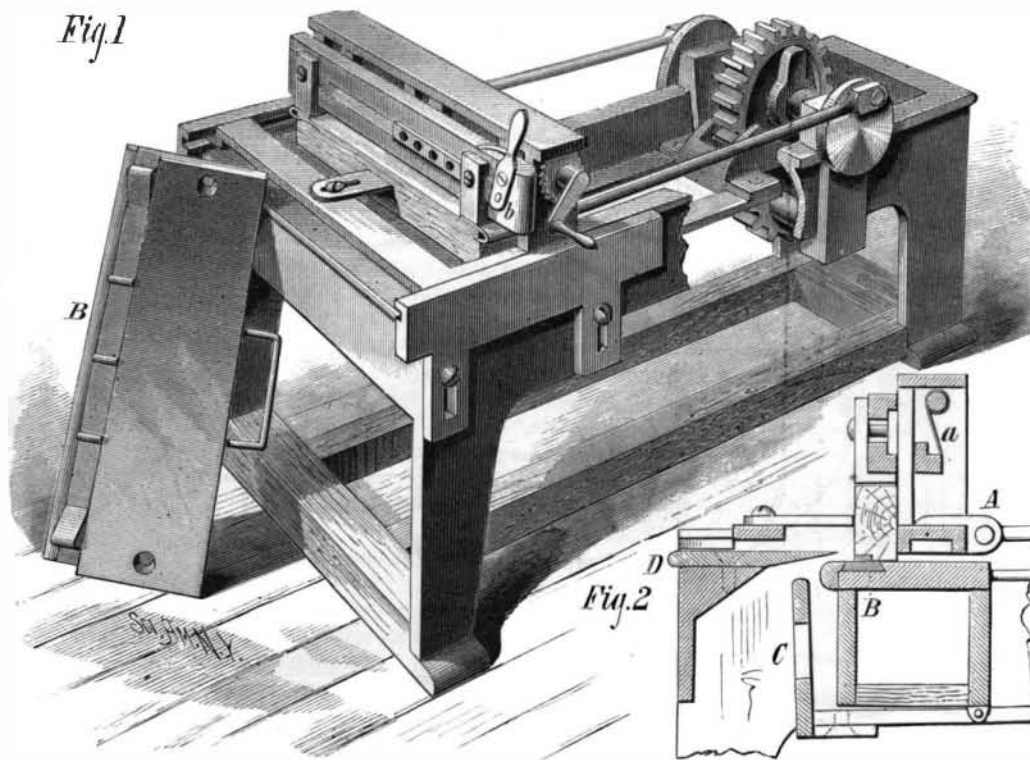
Mr. George E. Bigelow, of Geneva, Neb., has patented an improved water elevator which consists of a conical axle carrying a chain or rope to one end of which a weight is fastened, said axle supporting also a wheel or pulley which carries a chain or rope, one end of which is attached to the wheel and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