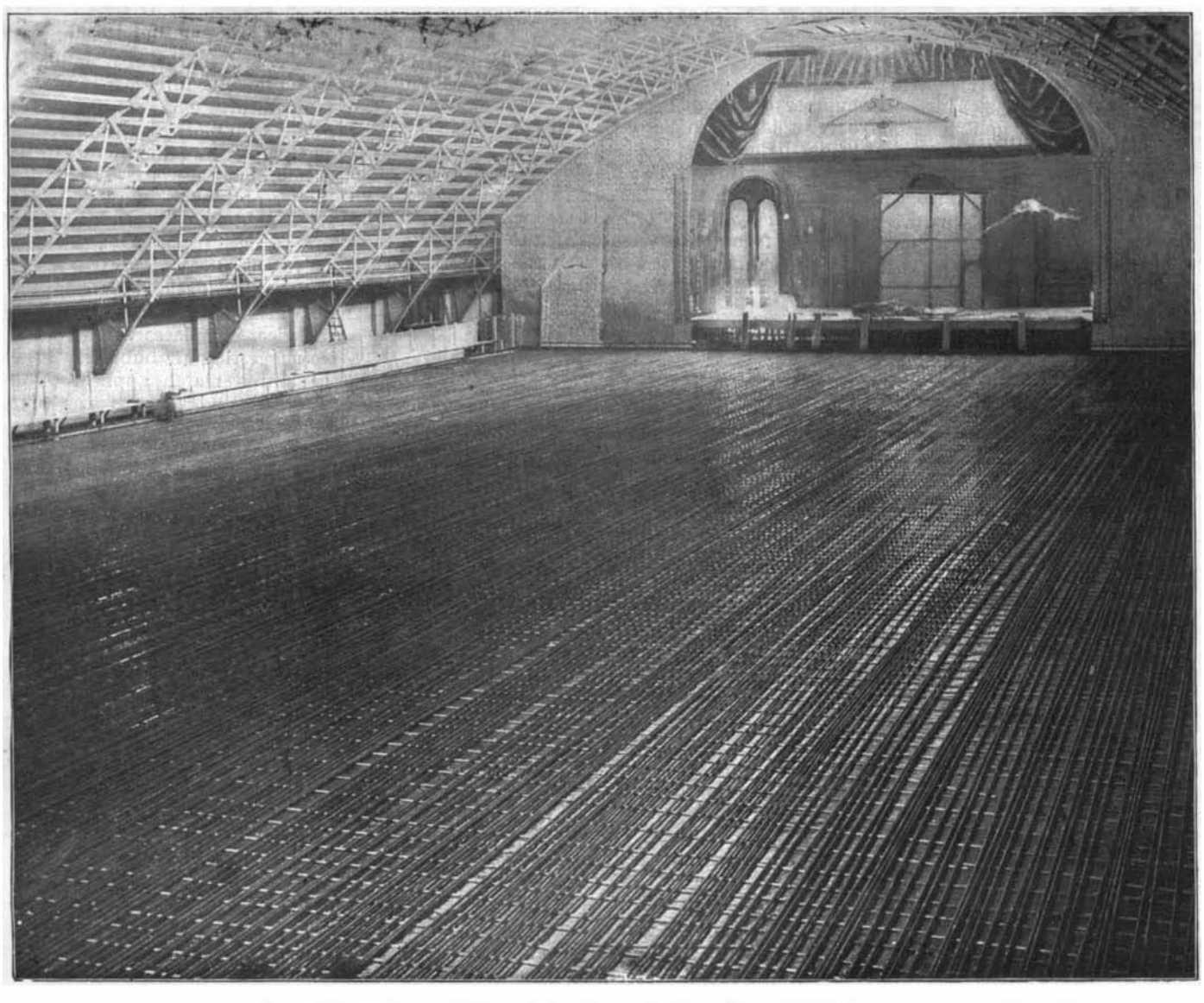
A GREAT ICE SKATING RINK, WASHINGTON, D. C.

On January 6, an ice skating rink of great size and exceptionally complete in its equipment was opened at the national capital, the skating floor being 205 feet long by 115 feet wide, and it being stated that although there were over 9,000 people present, the freezing arrangements were so perfect that not even the shavings from the ice became soft. The rink is in a building of which the first floor is used as a market house, on the second floor of which is a great hall with high iron arched roof and a floor space of 358 by 156 feet, leaving ample room, besides the space taken up by the skating surface, for a promenade floor and reception rooms, cafe, music stand and orchestra chairs for 1,000 spectators. Our illustration, for which, with the accompanying particulars, we are indebted to Ice and Refrigeration, shows the arrangement of expansion piping before freezing the ice floor. The work of fitting up the hall as a skating rink was accomplished in the marvelously short time of twenty days. The floor being above the market, extra care had to be taken to insulate it properly and at the same time make it water tight, and the following was the method of laying or putting down this tank floor: First, there was put down a 2 inch thickness of asphaltum, then 1 inch boards, two thicknesses of paper, then a 1 inch air space was made, then 1 inch boards, two thicknesses of paper, then 2 inches of Georgia yellow pine plank, calked same as on board of a ship. Upon this floor were placed the expansion coils, being extra heavy 1¼ inch pipe, aggregating in all about 96,000 feet. Upon this floor 3½ inches of water were frozen to make the skating surface.

Directly opposite the hall is the power plant in a one story engine and boiler house 80 × 45 feet, in which are two 66 inch by 16 foot return tubular boilers, with pumps, filters, etc., and a deep well pump, as water is supplied by an artesian well. The compressor of the ice machine is double acting, being 15 × 30 inches, and is driven by a Corliss engine 20 × 42 inches, the fly wheel of which is a band wheel, which also drives a 600 light incandescent and a 50 light arc dynamo. The entire light for the hall is supplied by this machine, which presents the novel sight of one engine running simultaneously an ice machine and two dynamos. On the roof of this building has been erected the ammonia condenser. This building being about 85 feet from the hall, the distance the ammonia has to travel will be appreciated by the reader. Freezing is by direct expansion.



GREAT ICE SKATING RINK AT WASHINGTON, D. C.—EXPANSION PIPING LAID BEFORE FREEZING.

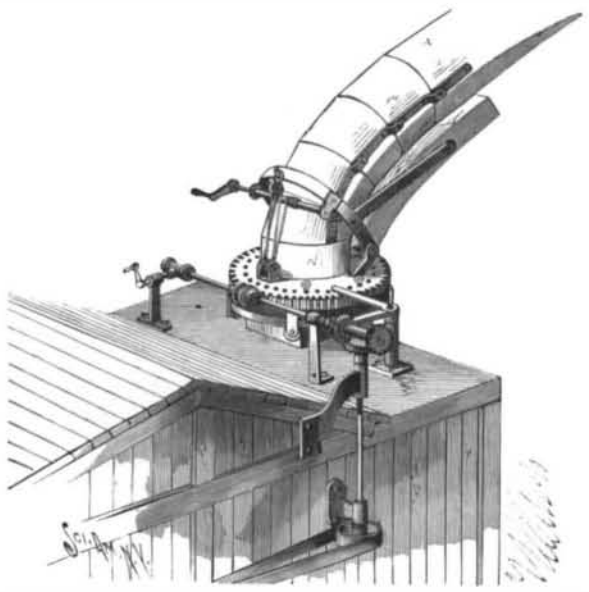
A Glass Plate of Different Colors.

This invention pertains to a new product and its manufacture. This product is formed by two or more layers of transparent or opaque glass cast upon each other so as to constitute a single plate upon which, by moulding or pressing, letters or designs of any shape or dimensions can be represented.

The method of manufacturing this new product is as follows: Upon a table provided with several rolls a certain quantity of glass is poured, which is leveled to the desired thickness either by moving the table or the lowest roll. Upon this plate, but before it has cooled off, another quantity of glass is poured, which, leveled with its respective roll, forms a second layer adhering perfectly to the first. If the two glass substances are of different colors, the plate obtained consists of glass of two colors, one upon the other. A plate of more colors can be produced in the same way. Then the plate is subjected to a moulding process in order to form the various designs or specially large letters. The impression can be accomplished either by the flattening roll or another one running behind it, or still better, by the vertical pressure of an engraved plate, or with cast designs and inscription.—Moniteur de la Ceramique et de la Verreries.

A PNEUMATIC STRAW STACKER.

The illustration represents a construction for stacking hay or straw by means of a pneumatic tube which may be attached to a thrashing machine, or placed in position to be easily regulated and used to advantage in barns and other buildings. The improvement has



KNAPP'S STRAW STACKER.

been patented by Peter Knapp, of St. Wendell, Ind., and is being introduced by John Ten Barge, of St. James, Ind. The tube is made in sections, connected and controlled by pivotally attached straps, the lower end of the tube being held to turn in a table on the rear of the thrashing machine or other support. Above the fixed table is a turntable secured to the lower joint of the tube and provided with peripheral teeth, downwardly extending bracket arms of the turntable having friction rollers engaging the underside of the fixed table. Projected from the bottom section of the tube are arms pivotally connected with a bow frame extending around the elbow section of the tube, and at the center of the frame is supported a pulley and a winding shaft having a crank arm, the long forward section of the pneumatic tube resting on a beam connected by side bars with the bow frame. A cable secured to the winding shaft is passed over a double pulley carried by the turntable and over the upper pulley, whereby, on operating the crank arm of the winding shaft, the tube may be raised or lowered to any desired extent. Journaled at one side of the thrasher or other support is a driving shaft having at its upper end a bevel gear, extending over which is a horizontal shaft on which is splined a sleeve fitted with two opposing beveled gears, either of which may be carried into mesh with the beveled gear of the drive shaft. The adjustable gears are brought into or carried out of action by a shifting lever of the elbow type, one of the members of which is connected with the sleeve, while the other extends over the top of the turntable, where it engages pins placed nearer or farther apart, according to the distance the tube is to travel to the right or left, the engagement of the shifting lever by a pin causing the lever to shift the sleeve, and thus reverse the direction of revolution of the horizontal shaft. The latter shaft carries a gear which meshes with the teeth of the turntable, and the inner end of the shaft is journaled in an adjustable box controlled by a screw shaft with a crank arm, whereby the driving gear may be carried entirely out of engagement with the turntable. It will thus be seen that the back and forth lateral movement of the pneumatic tube is automatically controlled, while vertical adjustment may be quickly and conveniently effected.

Condensed Food not a Success for Soldiers.

Some time ago the War Department conducted experiments with a view to reducing the weight and bulk of the soldier's rations without impairing their nutritive value. The report is in part as follows, as stated in the Medical and Surgical Reporter: "A company of the seventh infantry was detailed and furnished with condensed rations, consisting of coffee, soup, bread, and bacon. The coffee and soup were in small tablets, which, when placed in boiling water, were ready for consumption in two minutes. The bread was in small, flat cakes, the weight and hardness of a brick, but when moistened swelled out like a sponge. The bacon was compressed and needed only to be warmed in a frying pan. The soldiers started out with ten days' rations, but the campaign was brought to an abrupt end after four days of 15-mile marches. The food not only did not satisfy the hunger or give strength, but seemed to irritate the stomach." The Medical Record remarks: "Thus far the human laboratory, with its multiple, interdependent, and complementary methods, has a monopoly of its own in fixing the proper standards for digestion, assimilation, and subsequent growth. Each of the varied and subtile processes of digestion must necessarily adapt themselves to the construction and functions of an organ that has a purely vital as well as a merely chemical duty to perform."

Ocean Depth of 29,400 Feet.

The British surveying ship Penguin recently found an ocean depth of 4,900 fathoms, or 29,400 feet, in latitude 23° 40′ S., longitude 175° 10′ W., southeast of the Friendly Islands. The bottom was not reached, however, even at this depth, as a fault in the wire caused it to break before the greatest depth of the ocean at this point had been determined. It is said that the deepest cast hitherto obtained was one of 4,655 fathoms, or 27,930 feet, near Japan.

DURING 1894, 3,315 patents relating to electricity were granted in Great Britain, the United States, and Germany. Of these, 1,130 were British, being one-twentieth of all British patents, 1,704 were American, and 481 were German.