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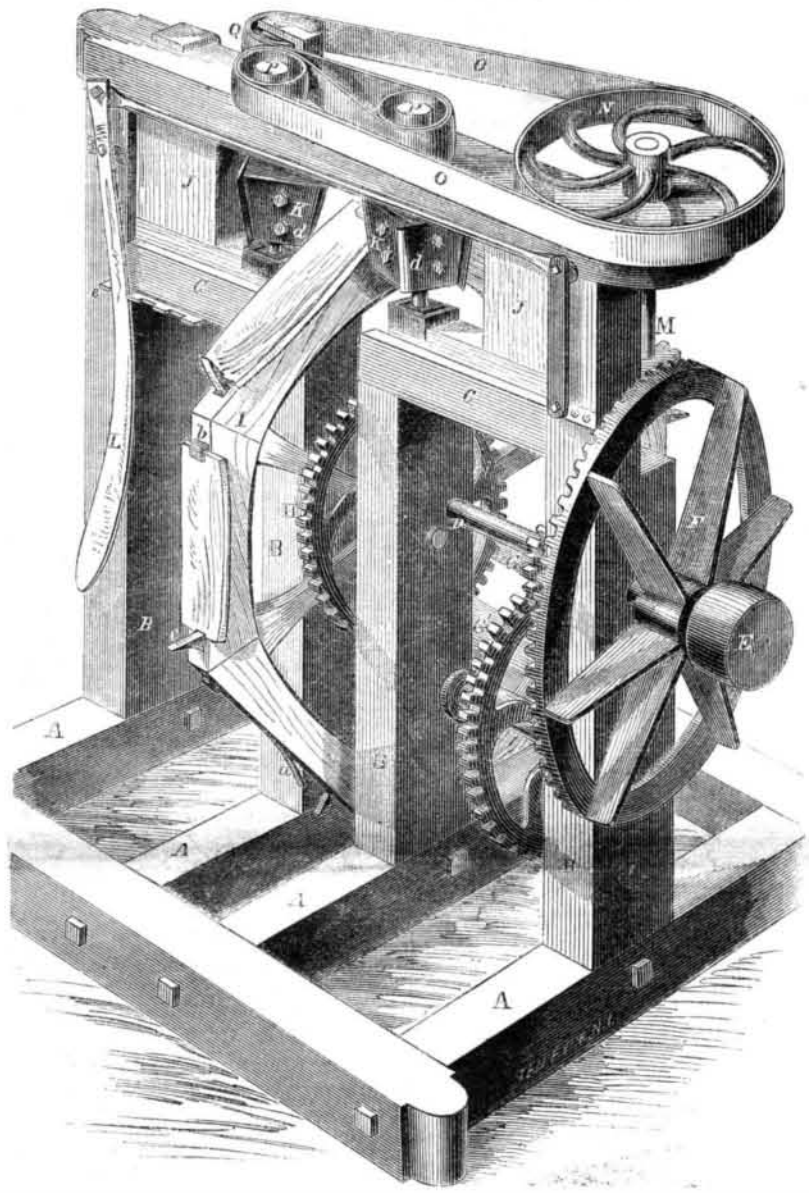
Ice Phenomena Explained.

We have received a letter from Mr. J. W. Norcross, of South Bay, Oneida Lake, N. Y., in reference to the ice phenomena described on page 177, present volume of the SCIENTIFIC AMERICAN, as having been witnessed on Rice Lake, C. W., by Mr. Dumble. We have not space for the entire communication of our correspondent, but will endeavor to present its substance. He has had excellent opportunities during this changeable winter for observing the effects of varying temperatures upon the ice. He anchored a small steamboat in Oneida Lake, and when the water had frozen to about four inches in thickness, a deep fissure appeared passing near and in direct line with the boat, extending for several miles. This fissure has been examined daily, and has formed a perfect indicator of the ice movements. Soon after the lake was frozen over, there came a thaw, and the ice moved two feet by expansion—about ten times more in amount than that of any contraction which has taken place. Contraction has always been sudden, almost instantaneously, and has usually taken place very soon after the surface water began freezing; whenever the whole surface of the water was frozen, contraction ceased. Expansion of the ice has always been slow, and has continued as long as the thermometer stood above the freezing point. Expansion never has taken place except when there was surface water exposed; none has taken place on Oneida Lake by the simple heat of the sun, when the atmosphere was below freezing temperature. Mr. Dumble, in his observations, appears to attribute such phenomena to wrong causes. The following are those which produce such effects, according to the observations of Captain Norcross:—

"The water in freezing leaves innumerable vertical seams in the ice. When it commences thawing, these open, the water enters them, and from their inclined shape it acts upon the entire ice like so many wedges to thrust the whole apart, thus causing the great and gradual expansion. The very reverse phenomena should take place in freezing, as these seams are widest at the top; hence as a consequence, when the water commences freezing, the contraction is sudden, and of less extent. When the ice grows very thick—to about two feet in depth—it becomes more compact; all the seams cement together, and the whole phenomena of the ice movements cease."

The permanganate of potash dissolved in water, at the rate of one drachm to the pint, is stated to be a wonderful soothing agent for burns and scalds.

HALDERMAN'S STAVE-JOINTER.



The want of a simple, cheap, and efficient stave-jointer has long been felt, especially for flour barrels, where a perfect joint is of great importance, as it not only protects the contents from injury, but adds to the strength of the barrel.

Our illustration shows a stave-jointing machine that, when run at the required speed, will make an excellent joint, suitable for "tight work" or "loose." It makes the bilge uniform, and the staves of equal width at both ends; and they are thrown off as quick as finished by a simple automatic arrangement.

A is a horizontal framing, having uprights, B, attached to it, and connected by cross-ties, C. D is a shaft, having its bearings in B, and carrying a driving pulley, E, bevel wheel, F, and spur wheel, G. This spur wheel, G, drives another, G′, which, in its turn, by gearing, H, gives motion to the polygonal wheel, I. This polygonal wheel is mounted between the uprights, B B, so that it is free to rotate between them. On each surface of I a spring, *a*, clamp, *b*, and spring clamp, *c*, are secured, to hold the stave while being jointed. On the top of the cross-ties, C, slides, J, are placed, carrying the cutters, K, according to the inclination of the bits, *d*, on which the "bilge" will be regulated. These cutters can be brought nearer together or moved further apart by the lever handle, L, and toggles, secured to the slides, the handle being secured in any position by a rack, *e*. The cutters are rotated from the bevel wheel, F, by a vertical shaft, M, carrying a band wheel, N, the band, O, of which, passes around pulleys, P P, on the shafts of the cutters, K, and round a compensating pulley, Q, to keep the band properly "taut" at whatever distance the cutters may be placed from each other.

The operation is as follows:—Power being applied to E, the cutter-heads are rotated by F, and the means just described. The wheel, G′, is also rotated comparatively slowly from D by G, and G′ again rotates H and I still more slowly by a small gear wheel (not seen in the illustration), the relative size of the pulleys being such as to insure a proper slow movement of I. The staves being placed on I, they are caused to pass between the cutters. The ends being the highest, have, of course, more cut away, and the centers being the lowest, have the least, on account of the inclination of the cutters and the difference of the distance between the center of each surface of I and its center and the ends of each surface. This forms the bilge. The action may be simply described thus:—When the stave first comes between the cutters it is cut away to form the end of the stave, and as it passes through them, it gradually descends until it arrives at the center; it then gradually ascends to the same point on the cutter as the other end, and so is cut equally. When cut, a spring on the side of the machine (not seen) catches and holds back *c*, releasing the stave, and the spring, *a*, throws it off. Staves can be jointed by this machine as fast as they can be put on the wheel, I, by an attendant. A foot lever may be substituted for L, if desired.

The inventor is W. Halderman, of Freeport, Ill., and he will be happy to correspond with any parties wishing further information. The patent is dated Oct. 19, 1858.

District Telegraphs.

A company has been formed in London for the purpose of providing the citizens with the means of telegraph communication as a substitute for post-carriers. The city is to be divided into eleven districts, each containing one hundred stations, so as to ensure the delivery of any dispatch in a very few minutes in any part of the metropolis. Messages of ten words are to be sent any distance within four miles for about eight cents. In our opinion the telegraph has not yet fulfilled its true mission, and it never will do so until it is rendered so perfect and economical in its operations as to be a substitute for the letter-carrier to an extent not yet dreamed of by its promotors. This London telegraph company is moving on the right track to secure this end, but we think New York once had some some such system at work, which dropped through.

Omnibus Cleanliness.

In Paris the doors have been removed from the omnibuses, to the great benefit of passengers, who thereby obtain an abundance of fresh air—something which they were unable to do before. This kind of vehicles are generally very close and confined, and doors are more of an incumbrance than a benefit. The floors of Paris omnibuses are never covered with straw or matting, but wooden slats or rails, with spaces of about half an inch between them. These act as a scraper for the passenger's feet, and the dirt falls on the floor below, which is inclined. The jolting of the omnibus makes this dirt run to the back end, where it falls out by gutters on the street, and thus the floor is always kept in a clean condition.

Concrete Floors.

The lower floors of all the cellars of houses should be composed of a bed of concrete about three inches thick. This would tend to render them dry, and more healthy, and at the same time prevent rats from burrowing under the walls from the outside, and coming up under the floors—the method pursued by these vermin where houses are erected on a sandy soil. This concrete should be made of washed gravel and hydraulic cement. Common mortar mixed with pounded brick and washed gravel, makes a concrete for floors nearly as good as that formed with hydraulic cement. Such floors become very hard, and are much cheaper than those of brick or flagstones.

New Electric Conductor.

The power of straw as a conductor of electricity has been utilized in the south of France, no less than eighteen communes in the neighborhood of Tarbes having been provided with conductors composed of straw. Experiments show that an electrical shock sufficiently powerful to kill an ox may be discharged by a single straw.