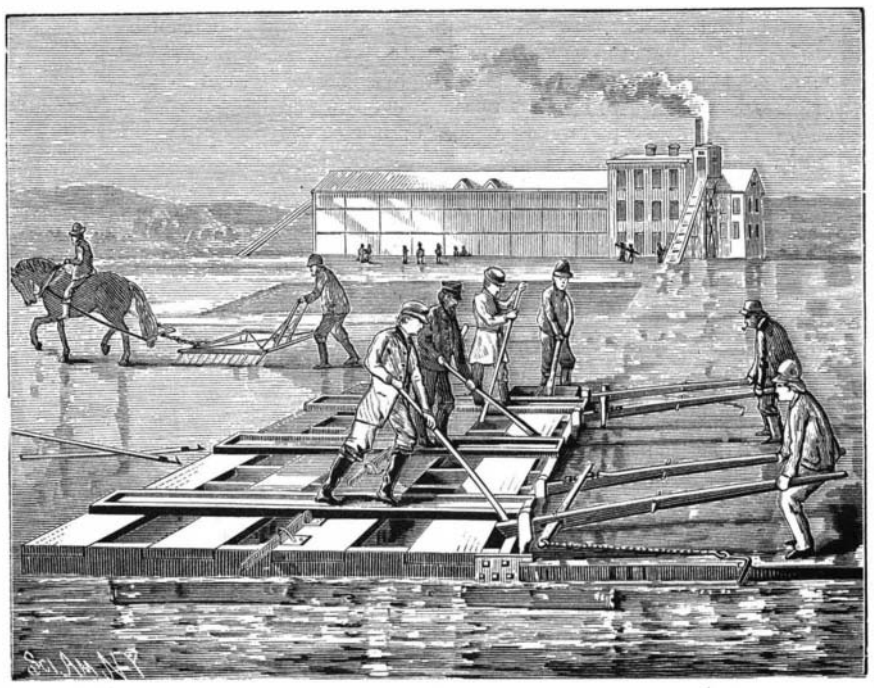
PROCESS OF AND APPARATUS FOR BLOCKING ICE.

The accompanying engraving represents inventions relating to a process of blocking ice when it is thin by putting one or more cakes together and allowing them to freeze, thereby forming blocks sufficiently thick to house; and also to an apparatus for thus blocking. A cake of ice of convenient size (say 11 by 33 feet) is cut from the main field, and pushed down and sidewise beneath the field, being kept from moving inward too far by pins placed in holes bored in the main field the width of the cake, or 11 feet, back from the edge of the field. One or more holes are then bored through the field above the cake, and pins inserted to hold the cake in place, after which the first pins are removed. Another cake is then cut from the field and treated in the same way, the ends of the two fitting close together. Any number of cakes may be treated in this way, cut from the main field, and floated out of the way, being made fast by ropes or other means. When the tier of ice thus formed has become frozen into a solid mass, it is cut into blocks of the desired size for housing. Grooves or recesses may be formed in the cakes which are forced beneath the main field, for the purpose of allowing water to run in, which, by freezing, more perfectly cements the pieces together, so that there will be no possibility of their coming apart.

The apparatus for blocking the cakes consists of a number of longitudinally placed runners, fastened together by suitable cross pieces, and having handles upon one of the long sides, as shown. The apparatus is backed on to the cake of ice, one or more persons get on it, and with suitable instruments, assisted by their weight, force down the forward edge of the cake. The apparatus is then drawn forward until projections or blocks secured to the outer runners rest upon or over the field of ice, and spikes, fastened in the blocks below the projections, engage with the vertical edge of the field ice. The projections prevent any danger of the apparatus sinking under the weight of parties on it, after the cake of ice has been moved from beneath it, and the spikes prevent any end movement of the apparatus as the parties move about. The apparatus is held in its forward position by ropes secured to the ice by suitable hooks entering holes bored to receive them. The other ends of the ropes are attached to the outer ends of levers fulcrumed to the outer handles of the apparatus, the free ends of the levers engaging with notches in the inner handles, as shown in the engraving.

When the apparatus has been thus secured the cake of ice is worked from beneath it to its place against the pins, as already described. The apparatus is then disengaged from the ice by removing the free ends of the levers from the notches, and unfastening the ropes, when it is pulled on to the field of ice and backed upon another cake. In order that the apparatus can be moved lengthwise it is provided with supplemental runners at right angles to the main runners. These runners are hung beneath and to the cross pieces by rock shafts journaled in suitable boxes and secured to the runners by rigid arms. The shafts are operated by handles held in adjustment by suitable means. The runners can be drawn up out of contact with the ice, or lowered so as to raise the main runners from the ice.

These inventions have been recently patented by Mr. George W. Goodell, of Beardstown, Ill.



GOODELL'S APPARATUS FOR BLOCKING ICE.

Ancient Roadways.

Whether in ancient times better roads and pavements were built than at present, or whether only the best ones remain, is uncertain, but it is certain that some of the remains of such structures found in Rome, for instance, evince engineering skill and perfection of work in a high degree. These were laid out carefully, excavated to solid ground, or in swampy places made solid by piles. Then the lowest course was of small sized, broken stones, none less than three or four inches in diameter; over these was a course, nine inches thick, of rubble or broken stones cemented with lime, well rammed; over this a course, six inches thick, of broken bricks and pottery, also cemented with lime; upon this was laid the *pavimentum*, or pavement, composed of slabs of the hardest stone, joined and fitted together as closely as possible. This was costly—the Appian Way, about one hundred and thirty miles in length, having almost exhausted the Roman treasury—but it was as enduring as Nature's own work. In Peru and Central America similar remains, 1,500 to 2,000 miles long, were found by the Spaniards, which, as Prescott says, were built of heavy flags of freestone, and in some parts, at least, covered with a bituminous cement which time has made harder than the stone itself. The roads of modern times lack most of the elements of durability which these possessed, and consequently wear out in a very few years. —*Kansas City Review.*

Cost of the Great Suspension Bridge between New York and Brooklyn.

The total expenditures for this work, including interest, up to the close of the year 1883, are stated to be over twenty-one millions of dollars. Probably there is no bridge structure in the world of the same small length that has cost so enormous a sum. This is doubtless due to the peculiar ways the politicians have in New York and Brooklyn of squandering time in the execution of public works and thereby swelling the costs. The river span of the bridge is only 1,600 feet, and the two approaches combined about 3,600 feet more—approximate cost of the structure, four thousand dollars per running foot, or three hundred and thirty-three dollars per running inch.

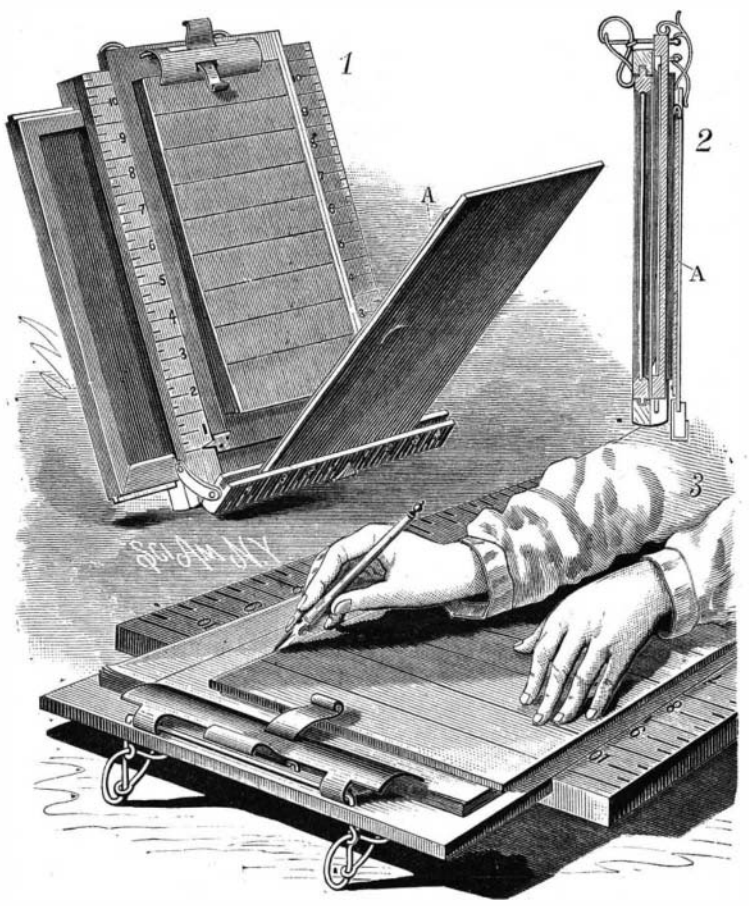
BLOTTER.

An invention recently patented by Messrs. L. H. Binkley and T. H. Wright consists of a device for holding writing paper, a blotting pad, and slates, the device being so arranged that it can be used for ruling the paper held in it. The board is provided at one end with a spring clip for holding the sheets of paper. A slate is held on the under side of the board. The end of the board opposite that on which is the clip is provided on each side with pintles, which pass into longitudinal grooves in the inner edges of the sides of a frame, thus adapting it to slide in and out of the frame, which is open at the upper end. Pointers, loosely mounted on the pintles, rest on the upper surfaces of the side bars of the frame, which are graduated, as shown in Figs. 1 and 3. The bottom cross piece of the frame is graduated on its upper surface, and is pivoted at its ends to links which are pivoted to the outer surfaces of the side bars at their lower ends. In the inner edge of the cross piece slides a board having a clip passing under the cross piece and forming a pointer on its upper surface. This clip prevents the removal of the board, but permits of its being moved and adjusted on the cross piece. A piece of blotting paper is held on the board by springs. A spring finger is pivoted on the upper end of the first mentioned board, and passes through a slot in the clip, so as to hold the covering board on the paper.

The construction is clearly shown in Fig. 2. A slate is held in a frame provided in its end pieces with tongues which slide in grooves in the end pieces, thus permitting the slate to slide laterally. The paper holding frame is provided at its upper end with two downwardly projecting spring legs furnished with prongs, that pass into notches in the under side of the slate frame, and hold it in place. The legs also form a support for the upper end of the board. The sheets of paper on the board can be ruled transversely by drawing a pencil along the upper edge of the blotter board, the paper board being moved out as the lines are ruled. The pointers sliding over the graduated side pieces of the frame permit of easily adjusting the board, so that the lines will be a regular distance apart.

If the sheet is to be ruled longitudinally, the blotter board is moved laterally, the pointer on the cross piece serving as a guide. If it is desired to write on the sheets the blotter board is swung down, and when the writing is to be blotted it can be swung back. If calculations are to be made while writing, the slate can be drawn out laterally. If it is not desired to write on the paper but on the slate, which is on the under side of the paper board, the blotter is swung down, the paper board is swung over it, and moved toward the upper end of the frame, when the slate is exposed. Both slates may be exposed by swinging the paper board down over the blotter. One of the sides of the frame is provided with a groove for receiving pencils, etc. In the engraving, Fig. 1 is a perspective view, showing the slate laterally extended, and the blotter board swung back from the paper. Fig. 2 is a longitudinal section, and Fig. 3 shows the device in use.

Further information concerning this useful device may be obtained by addressing the Rev. L. H. Binkley, of Bloomingburg, Ohio.



BINKLEY & WRIGHT'S BLOTTER.

Slovenly Reading.

The *Journal of Progress* warns all men, old and young, against an evil thing which has been described as the "prevailing pestilence of slovenly reading." This pestilence has laid low many a one who began life with excellent prospects. It is ruinous both to mind and morals. It is apt even to injure a man's business habits and prevent him from winning success in practical affairs. In time it will confound all his faculties; it will destroy his capacity for clear perception, for precise thought, and for proper reasoning. It will throw into confusion his judgment and his memory. If he does not get rid of it he can never become a good writer, or do any literary work of any kind worth looking at. How many slovenly readers are to be found in these times! They will, in their slovenly fashion, read a newspaper article, perhaps a very excellent one, and when they have got to the end of it, or, as they say, when they have "looked through it" or "glanced over it," you will find that they are unable to give any accurate account of its argument, or that they do not apprehend its fundamental points, or that they have lost one of its links, or that they have overlooked an important illustration, or that they have failed to seize a word which is the very hinge of the writer's thought, or that they have wholly misunderstood the drift and purpose of the article which they have wasted their time in glancing over. These slovenly readers are an affliction to careful and correct writers. When such a writer sees how his reasoning and his language are distorted by them, his mind is apt to become ruffled, and every one knows how a ruffled mind unfits a man for the work of perspicacious composition. We are of the opinion that the prevailing pestilence of slovenly reading is largely due to the slovenly way in which children are taught to read at school. Teachers must be very careful about this thing; they must teach their scholars to read with precision and understanding, thinking of every word, getting the sense of each sentence, and grasping the full meaning of any piece that may be before them.

MASONRY IMPERMEABLE TO ACIDS.—Construct with bricks which have been previously dipped into very thick boiling tar, then lay in a mortar made of resin and a refractory sand applied hot, and rub the joints with a hot iron.

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