## THE KUILENBURG BRIDGE.

The Utrecht Boxtel line of State railways in the Netherlands crosses three large rivers, the Lek, the Waal, and the Mas, within a distance of ten miles, the bridges and the points being known by the respective names of the Kuilenburg, the Bommel, and the Crèvecceur viaducts. The great lengths of these bridges, the nature of the streams that they cross, and the local circumstances necessitated engi neering skill of a high class. The conditions of the foundations were such as to require piling. The piles varied from twenty three to fifty-three feet in length, be ing driven in some cases by the ordinary pile-driving engine, and in oth-
es by a steam ram. After the piles were cut off to a All holes for riveting were drilled, no punching being al level below water, the space betiveen them was filled with lowed in the work. The bridge is built for double track, beton or concrete, projecting from three to five and a half there being only a single track placed on at present. Two feet beyond the footings of the masonry above, and varying footpaths are provided for the service of administration. from eleven to twenty-one feet in thickness. The tops of The total weight of material in the structure is as follows: the piles were completely fioored over, and masonry built up, well bonded on to the fioors to prevent sliding by longitudinal and cross walings of oak, and the faces of piers and ice-breakers were finished in Belgian ashlar. The footings of the piers were thoroughly protected by a close row of long piles to each, and heavy rip-rapping of rough stone


## STRANGE'S SAFETY HITCHING APPLIANCE

The superstructure of the Kuileniburg bridge (shown in the engraving) was built by the well known Dutch firm of Harcort \& Co., under the superintendence of Mr. N. T. Michaëlis, engineer-in-chief. It consists of nine spans, entirely of wrought iron construction, there being one span of 492 feet clear opening, one of of 187 feet each, making, with the widths of piers, a total length between the faces of abutments of 2,181 feet. The bridge consists of two open trusses, built of riveted plates and angles, the upper and lower fianges being formed in the shape of double Ts, side by side, the inclined ties of thin rectangular bars, except toward the centers of spans, where they require stiffening for compression under variable load, and the vertical struts of I-shape, some of the largest being strengthened by the introduction of two series of channel bars between the verticals. The trusses are placed so as to give a clear width of roadway of 27 feet, and height of 16 feet 5 inches, the structure being a tirrough bridge. Cross girders 2 feet $111 / 4$ inches deep connect the main trusses, and the whole is: well stiffened by a thorough system of


DENNIS' GONDOLA SLED.
affords a means of enjoyable winter exercise which may be participated in hy a party of persons, and no very great exertion is required to get up an astonishing speed on smooth hard ice. The douible character of the sled renders it perfectly safe even on thin ice, as it answers the purpose of a boat as well as of a sled. Further information may be obtained by addressing Mr. James H. Dennis, care of O. B. Wilson, 22 Cedar street, New York city.

CALENDAR INKSTAND.
The engraving represents an inkstand provided with a


PERPETUAL CALENDAR INKSTAND.
calendar that requires changing but once $a$ month to render it perpetual. It makes a handsome article of desk furni ture, and as a calendar it is always in the right place. To change the adjustment is but the work of a moment; it is done by unscrewing a nut at the bottom of the stand, and turning the ink fount around until the days of the week are directly over the spaces containing the figures represent ing the proper days of the month. Forexample, if Tues day is the last day of Sep tember, then Wednesday be ing the first day of October, the ink fount is turned until Wednesday is over the co lumn beginning with figure 1. This useful article may lie made either wholly of glas or partly of glass and partly of metal or wholly of metal.
For further information, address Mr. S. M. Howard, administrator, 1207 Main street, Wheeling, W. Va., and see advertisement in another column.

The result of the great Eng. lish Derby race was cabled from London to New York in just twenty-five seconds. Tolerably quick work even for lightning.

