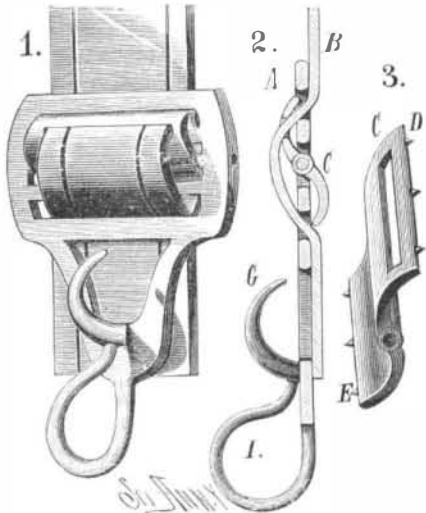


## BACK BAND BUCKLE.

The main frame of the buckle is formed with two parallel transverse slots, through which the back band, B, passes from the back, and between which is a third slot in which is pivoted a clasp plate, Fig. 3, that curves in reverse directions at each side of its pivot to form the opposite clasping edges. The back band is passed through the slot in the plate, as shown in Fig. 1. It is apparent that any downward pull upon the buckle will act by the pressure of the band upon the upper half of the plate, and above its pivots to force the clasping edges firmly upon the band at the reverse sides of the frame. The edges, D E, are formed with prongs to secure a firmer hold of the buckle on the band.



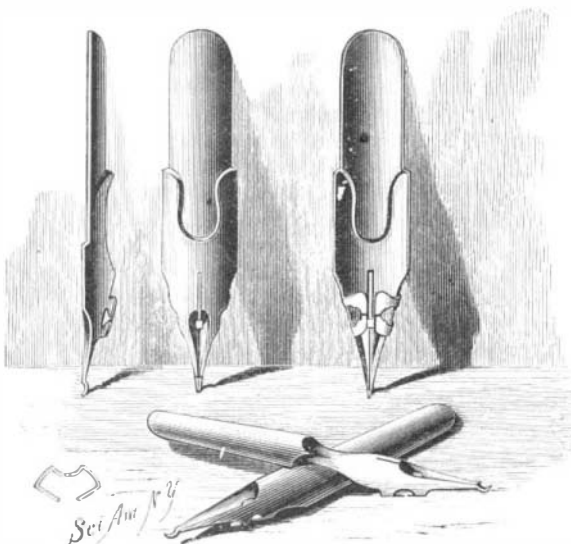
PENDER'S BACK BAND BUCKLE.

At the lower edge of the buckle frame is a downward extension, on the face of which is formed a hook, G, whose point reaches nearly to the plane of the face of the frame. By this means a space is secured between the main body of the hook and the frame in which the trace chain may be supported. In placing one of the trace links upon the hook, it may be pushed partly into the opening in the extension. A loop, I, formed on the extreme end of the extension serves to hold the rein up from the ground. The band passes over the animal's back, and carries a buckle with trace and rein hooks near each end and at each side of the animal. The double hold of the clasp plate upon opposite faces of the band affords greater security against tearing and slipping than a single toothed edge acting on one face of the band would.

This invention has been patented by Mr. P. S. Pender, and further information can be obtained from Messrs. S. S. Nash & Co., of Tarboro, N. C.

## SEMICIRCULAR POINTED PENS.

The accompanying illustration shows a new manner of making metallic pens, whereby their durability is increased, they will hold a greater quantity of ink than ordinary pens, and their points are so formed as to preclude scratching, no matter in what position the pen is held. The pen is made with slight projections or flaps attached to the edges of its body, and bent inward toward the concave portion to form an open reservoir. The small transverse section at the bottom indicates the manner in which these reservoir attachments are shaped to feed the ink to the point of the pen. The point is rounded or bulged to a half ball shape, allowing the pen to touch the paper with the same roundness whether held slantingly, flatly, or sideways, and write equally well



HEWITT'S SEMICIRCULAR POINTED PENS.

in any position, while the slit parts never form cutting edges, as is the case with ordinary pens, and the point of the pen is always supplied with ink, since it acts as a minute reservoir, which is constantly supplied with ink from the larger reservoir formed by the flaps at the side. This construction is very easily and cheaply made, as it can be done by striking up the metal after the pen blank is cut out.

This invention has been patented in all the principal European countries as well as in the United States.

For further information relative thereto, apply to Mr. H. Hewitt, 100 Charlotte Street, Birmingham, England.

## GEOGRAPHICAL PUZZLES AND GAMES.

The system consists in teaching geography by means of peculiarly constructed maps, in connection with small wooden blocks upon the sides of which are printed the names and concise descriptions of capitals, cities, States, Territories, countries, etc. These blocks are constructed separately from the maps, but are made of suitable form and size to fit into holes or cavities in the faces of the maps, which holes are always made, in case of territorial divisions, within their limits, and in case of cities, etc., adjacent to marks which indicate the location of the place whose name and description are printed on the sides of the block.

When in use the map is spread upon a table, and the blocks inserted one by one in the holes where they properly belong. The operation of properly placing them forms a puzzle highly interesting and at the same time very instructive. A comparatively few repetitions of the effort suffices to render a child familiar with the names, location, and characteristics of all the places represented by the blocks.

The apparatus is made in series or sets of three parts each, each part consisting of a map and its appropriate blocks. Part No. 1 of the first series consists of map No. 1 and ninety-seven blocks, each block relating to one city. The map is an outline one of the United States, with the names of the States and Territories, principal mountains, lakes, rivers, oceans, gulfs, and bays printed upon its face. The location of capitals and important commercial centers is indicated by appropriate circular marks, adjacent to which are the holes for the reception of the blocks which bear the name and description of the places. Map No. 2 of series No. 1 is wholly an outline map, having no names of any kind printed upon its surface. Names and descriptions of all States, Territories, principal cities, and towns, rivers, lakes, bays, gulfs, oceans, mountains, caves, national parks, oil, coal, gold, and silver mining districts, etc., are printed upon the little wooden blocks, which number over two hundred and fifty.

Map No. 3 of the 1st series has the same number of holes for blocks, but has all names printed on the map, while the blocks carry descriptive matter only, thus making it necessary to place the blocks with no guide to their proper places except the relation the descriptive matter bears to some name upon the map. Maps and appropriate blocks for each country in the world, and globes for the whole world, are issued on the same plan. The apparatus is constructed in special forms and sizes for use in kindergartens, in schools, and in the home circle.

Placing the little wooden blocks in their proper places in the maps forms a very interesting puzzle for a child working by itself. Two or more children may simultaneously work at it with the same map and blocks, and then they find themselves engaged in an interesting game wherein each is stimulated to excel the other in the number of blocks properly placed. When all blocks are in, and those placed by each are counted, the one having the larger number of correct locations is declared the winner of the game.

The puzzle or game plan may be pursued with equal advantage in school room and in the family circle.

Of the accompanying cuts, No. 1 represents the apparatus in use in a school room. Cut No. 2 shows the apparatus as made for use in the home circle. Cut No. 3 is a perspective view of the blocks.

Any one desiring further information may get it by addressing the author of the system and manufacturer of the apparatus, William R. Norris, at 894 Sixth Avenue, New York.

DR. CARLOS FAREMBA, of Mexico, has addressed a circular letter to all representatives of foreign governments now in Washington, advocating the celebration of the discovery of America on its 400th anniversary, October 12, 1892, and the erection of a monument on the spot where the first landing was made.

## A Solvent for Gums.

This invention relates to the production from petroleum of a substitute for bisulphide of carbon which can be used for extracting oils and anthracene, for dissolving gums, resins, and analogous substances, for waterproofing, and for vulcanizing India rubber in conjunction with chloride of sulphur or other vulcanizing agents. To obtain the improved substitute, which is called "Vulcoleine," take that distillate or fraction from petroleum which passes over be-



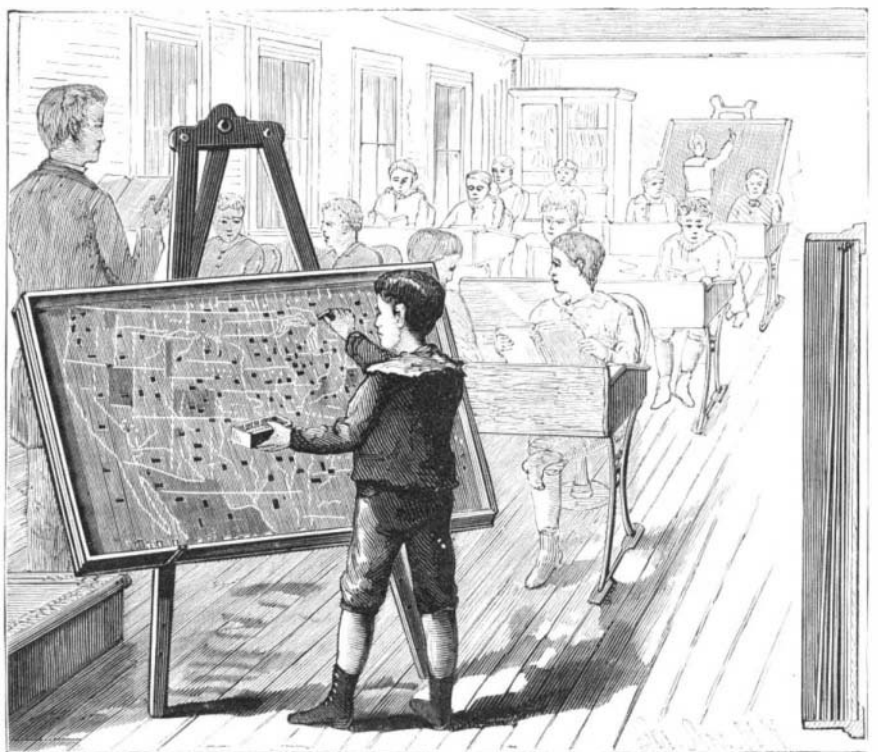
NORRIS'S GEOGRAPHICAL PUZZLE AND GAMES.—Fig. 2.

tween the temperatures of 100° and 212° Fahrenheit or thereabout (the fraction known as spirit or naphtha), and treat the same as follows: To every 100 gallons of petroleum add from two to three gallons of sulphuric acid with constant agitation, continued as long as may be necessary in a suitable vessel; it is then allowed to subside, and the liquor



Fig. 3.

decanted from the sediment is run into a still with from one to two per cent or its weight of lime or other dehydrating medium, calcium carbonate, or other alkaline carbonates, or oxides of metals capable of removing or destroying any sulpho-oils which may have been generated by the treatment



NORRIS'S GEOGRAPHICAL PUZZLE AND GAMES.—Fig. 1.

with sulphuric acid. The distillation is conducted without injecting steam or water into the contents of the still. Before distilling they sometimes submit the liquid to repeated treatment with fresh sulphuric acid until the acid ceases to be colored, or nearly so. As the distillate comes over, the receivers are exchanged as soon as the product which is coming over reaches a specific gravity from about 680 to 690, water being taken as 1,000. By these processes the portions of petroleum unsuited for a substitute for bisulphide of carbon are removed.