

IMPROVED BORING MACHINE.

One mechanical difficulty that has presented itself in the construction of boring machines with vertical spindles has been to change the driving motion from the horizontal shafts to the spindles. To this end rough wheels have been used, but these, in addition to that of the limited speed at which they can be driven, are open to the objections of wearing out the bearings and creating noise. The lateral strain upon shafts being as their distances from the center at which the power is applied, it is evident that the strain upon the bearings of boring or drilling spindles, when small wheels are employed, is almost as great as it is upon the teeth of gearing.

Although the operation of wood boring is a light one, so far as the mere cutting is concerned, yet the supporting and adjustment of the timber requires a strong machine. Boring, as a rule, is performed on the heavier class of lumber, such as is joined or framed by means of bolts, instead of tenon and mortices alone, and the appliances for handling the same are therefore necessarily of substantial construction.

We publish herewith engravings of a new machine by Richards, London, and Kelley, of Philadelphia, that combines several improvements, and is claimed to meet most of the objections that we have pointed out.

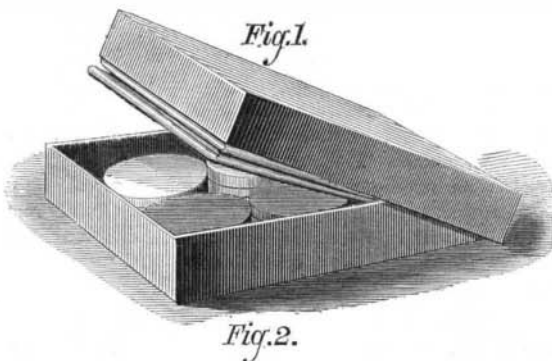
The spindles, three in number, are driven by one belt that is carried around the pulleys so as to give the greatest tractive power; and no gearing, except a single pair of spur wheels, is used. These wheels are engine

cut, and may run at any speed required. The spindles are moved across the lumber by means of the hand wheel seen in front, and have a boring range of 18 inches. The several spindles can be fitted with augers of various sizes, so that all the boring may be performed at one operation when there are not more than three sizes of holes to make in each piece. The table, or carriage, is very strong, arranged with a diagonal clamp and pivoted so that angular holes can be bored. All the movable joints are fitted by scraping, and the whole seems well adapted to the severe use that boring machines receive in our large railway carriage and other woodworking establishments.

We are informed that patents on these improvements will soon be applied for.

CHECKER LOZENGE PACKAGE.

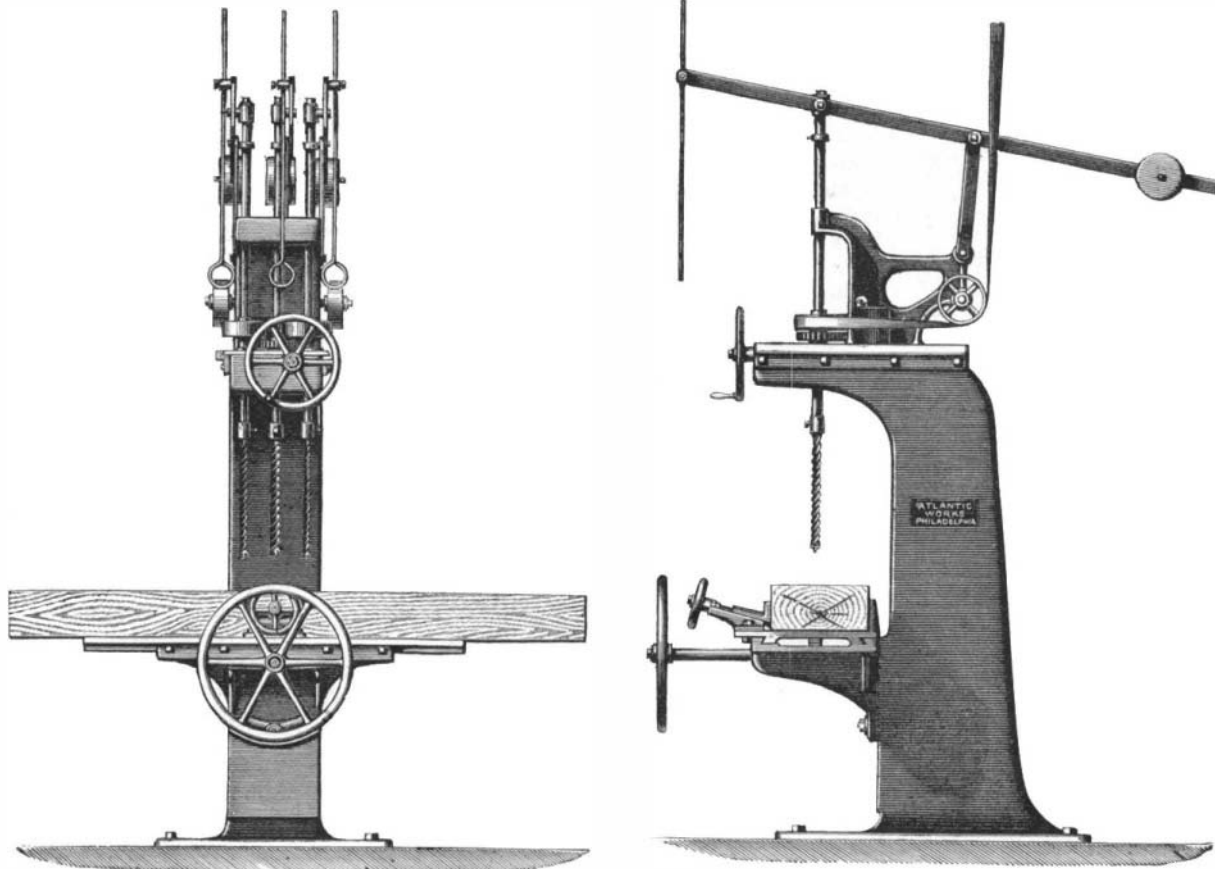
There is probably no one of our readers who, while traveling in a railroad car, has not had packages of gum drops or prize candy unceremoniously tossed into his lap and left in his charge during the peregrinations of their somewhat



<p>INTERNATIONAL ON APH</p>	<p>MUNN & CO SCIENTIFIC AMERICAN 37 PARK ROW N.Y.</p>
<p>H.W. BOOTH CHECKER LOZENGES</p>	

grimy vendor through the train. The advantages of this plan of selling sweetmeats need not here be pointed out; the disadvantages consist in that the purchaser, after he has absorbed the candy, is without further employment than that to be obtained from the perusal of the wrapper or from dismal forebodings of the probable effect of his repast on his teeth and digestive organs.

The merit of the novel idea which is represented in our engravings will therefore be fully appreciated, particularly as it combines in a single package not only a quantity of candy, but the necessary articles for playing a game of draughts or checkers, thus affording an agreeable means of whiling away the hours of a tedious journey. The box is about the size of the ordinary twenty-five cent packages. Its contents consist of twenty-four lozenges—twelve white and twelve red, of two different flavors—and also of a sheet of paper printed in squares. The divisions of the board, instead of



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being dead black and white, are formed by printing advertisements in alternate squares, so that the player, while meditating over his moves, has directly under his eyes the announcements of various business houses. The advertisements are either "set up solid" or "displayed," as shown in Fig. 2, and, besides occupying the squares, extend around the edges of the sheet.

The device seems quite novel and should prove a saleable article in confectionery stores as well as to travelers. The candy is, we are assured, pure and free from all deleterious ingredients, and is made by machinery at the rate of two tons weight per day. The advertising sheet will doubtless commend itself to enterprising firms as an ingenious mode of bringing their business to public attention.

Patented through the Scientific American Patent Agency, June 18, 1872, by Mr. H. W. Booth, corner of Don and River streets, Toronto, Ontario, Canada, by addressing whom further particulars regarding sale of patent may be obtained.

American Scientific Schools.

We of Young America, like other good children, feel a natural exultation in commendation which comes from father-land or mother-country; and thus we Scientific Americans may take pardonable pride in such praise of one of our American schools of science as is contained in the following extract, from the *Chemical News* of August 29, just received:

Programm der Königlichen Rheinisch-Westphälischen Polytechnischen Schule zu Aachen für den Cursus 1873-74.

Announcement of the Stevens Institute of Technology, a School of Mechanical Engineering founded by Edward A. Stevens. Hoboken, N. J., U. S. A. 1873.

We owe, to the courtesy of the directors of the establishments just alluded to, the opportunity of calling attention to two excellent schools established, the one by the care of the Prussian Government, the other by the munificence of a late eminent citizen of the great Transatlantic Republic.

In the programme of the Polytechnic school at Aachen (Aix-la-Chapelle) we meet with a very clear and succinct review of polytechnic science in all its bearings and its applications, as taught by a staff of some forty teachers, while the headings of the various subjects in which instruction is given amount to about one hundred. The school is now attended by about four hundred pupils, many of whom are natives of non-German countries.

Although an institution due to private munificence, the Stevens Institute of Technology can worthily vie with the now already celebrated School at Aachen. The Stevens Institute is just as much a high polytechnic school as the German one, and to the eminent President of the American school, Dr. H. Morton, high credit is due for the manner in which he has assisted the trustees of this foundation to carry out the will of the late Mr. E. A. Stevens.

Our space does not permit us to enter into a detailed review of the two volumes, the titles of which are recorded above. Both books have a permanent value, and the American contains, aided by woodcuts, a description of some of the

most prominent portions of the contents of the museums and collections of apparatus for illustrating lectures on physical, chemical, and engineering sciences. While calling attention to these institutions, we cannot but express our great regret that in this country nothing exists which even approaches either of the two establishments of which the programmes have been courteously sent to us.

SPRAGUE'S COMBINED SASH LOCK, SASH HOLDER, AND WEATHER STRIP.

The chilly evenings and mornings of the present month will be a reminder that cold weather is not far distant, and consequently that it is time to take the necessary precautions for keeping the warm air in as well as the chilly blasts out of our dwellings. With chinks open around the windows, a comfortable house is hardly a possibility, so that we presume there are few who will not avail themselves of some form of the well known "weather strip." The invention which we illustrate in our engraving may, therefore, perhaps prove a welcome device to many, particularly as it is especially adapted to windows which are minus cords, pulleys, or proper locks, a state of affairs frequently the case in country houses.

The arrangement consists of a strip, A, resting alongside the sash, B, Fig. 2, on springs, C, placed to receive it, and secured by screws, D, with their heads against shouldered sockets, so that the movement of the strip, A, is covered on its face with leather, so that it forms a tight weather strip, and by its elastic movement permits the sash to be held up at any desired point.

A section of this batten, E, forms the locking bolt, and is constantly pushed outward by a spiral spring, F. When opposite the recess in the window frame, as shown in Fig. 1, the action of the spring forces the pivoted section therein, thus firmly locking down the sash. When it is desired to raise the latter, it is only necessary to pull down the hook lever, G, which contracts the spring and withdraws the locking piece. The section, E, is faced and forms a continuation of the weather strip; and by jointing it to the lower end of the piece, A, the device is rendered suitable for the upper sash.

Patented by Mr. E. J. Sprague, July 22, 1873. For fur-



ther particulars concerning the sale of rights, etc., address the proprietors, Sprague & Miller, P. O. Box No. 17, Youngstown, Mahoning county, Ohio.

THE Brazilian cable expedition is at Madeira, and the line connecting that island with Portugal has been successfully laid.