

Improved Music and Book Stand.

Many an invalid will welcome the improvement we here illustrate; but while it is a desideratum for feeble folk, it will be found a luxury which few, either sick or well, having once enjoyed, will be willing to resign. While as a music stand it combines all the advantages required in such a piece of furniture, it enables reading to be performed without fatigue, while the person is placed in an easy reclining position.

Our artist has so well delineated the comfort it supplies, that little remains for us but to point out the distinguishing features of the invention.

A tripod with hollow stem receives the standard which supports the desk, and a set-screw enables this standard to be adjusted to any height required. It may also be turned on its vertical axis and fixed by the set-screw as circumstances require, and this adjustment may be made without raising the person from a reclining position. A disk of wood or other suitable material supports the table of the stand, the latter being fastened to the disk by a central pivot with a thumb-nut on the under side. This gives another adjustment.

The disk which supports the table is hinged to the top of the standard at the rear portion and from the front descends an arc of a circle which passes through a slot in the standard where it is adjusted as desired by a set-screw.

These devices enable the desk to be set at any convenient angle to support a book for reading either while a person is sitting or reclining, so that the printed matter is placed directly in front of the eyes, and in such a position that no muscular effort is required to sustain the book or to keep the body in a position of constraint.

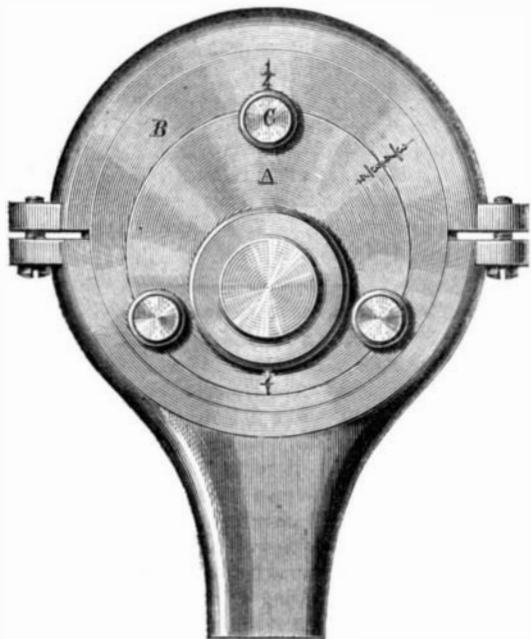
Still another great convenience is that the table may be adjusted in a level position and be used as an ordinary stand for medicines and other purposes desired.

It admits of any degree of ornament deemed desirable, is easily constructed, and durable, and hence has all the qualities calculated to secure popularity.

This invention was patented Nov. 30, 1869, through the Scientific American Patent Agency, by Edward Conley, of Cincinnati, Ohio. Address patentee at 121 Main St., as above, for further information.

WELLS' IMPROVED ECCENTRIC FOR STEAM ENGINES.

The object of this invention is to not only enable the ordinary adjustment for angular advance to be made, but also to permit a change at will of the length of the throw, and the travel of the valve by means of the eccentric, instead of effecting it through a link or any other device heretofore employed.



It may be considered as an eccentric within an eccentric the two eccentrics A and B in the engraving being locked together—except when unlocked for adjusting—by the bolts D C. These bolts are so placed that their heads, and the nuts opposite the heads, lap over the edges of both A and B, and when the nuts are screwed home the two parts are firmly locked together. These bolts also serve to keep the parts A and B parallel to each other.

The inner eccentric, A, being held to the shaft by a set screw, the greatest throw of the eccentric is obtained by turning the exterior eccentric or ring, B, until its widest part is in the position shown in the engraving, that is, upon the line of the greatest throw of the inner eccentric, A. The figures, $\frac{1}{2}$, marked upon both eccentrics, indicate by their coincidence when this adjustment is accurately made. When the narrowest part of B is brought into the line of the greatest throw of the inner eccentric, A, the minimum throw is obtained, and

accuracy of adjustment is indicated by the coincidence of the figures $\frac{1}{2}$ on both pieces.

The whole forms a compound adjustable eccentric, which supplies a complete variable cut-off, and is very much simpler in construction than other devices hitherto adopted to secure the same end. With simplicity, increased durability and diminished cost are also secured. The device is free from elongated slots in the center, the effect of which is to weaken the parts, and it is adapted to use on shafts of uniform size throughout instead of being operated by a crank pin, as has heretofore been done in other devices made to secure the same end.

The improvement will attract the attention of engineers

**CONLEY'S MUSIC AND READING STAND.**

from its simplicity, and the advantages secured by it are obvious. Patented through the Scientific American Patent Agency, Sept. 21, 1869, by J. C. Wells, whom address for further information at Warren, Pa.

The Value of Mathematics.

We do not recollect seeing an abler exposition of the value of mathematical study, and the use of mathematics as an instrument of investigation than the following extract from the tenth lecture of Mr. John Fiske, on the Positive Philosophy, delivered at Harvard:

"The logical utility of mathematics is not less obvious. The prevalent distaste for mathematics, coexisting, as it does, in many persons with excellent reasoning powers, proves that the faculty of imagining abstract relations is ordinarily quite feebly developed. Not reason, but imagination, is at fault. The passage from premise to conclusion could easily be made, if the abstract relations of position or quantity which are involved could be accurately conceived and firmly held in the mind. Now the ability to imagine abstract relations is one of the most indispensable conditions of all precise thinking. No subject can be named, in the scientific investigation of which it is not imperatively needed; but it can nowhere else be so thoroughly acquired as in the study of mathematics. But the excellence of mathematics as an instrument of mental discipline by no means ends here. It is, indeed, as Comte observes, a fallacy to suppose that greater certainty is attainable in geometry than elsewhere. Not greater certainty, but greater precision, is that which distinguishes the results obtained by mathematical deduction. Dealing always with definite or determinable magnitudes, its processes are characterized by quantitative exactness. It is not obliged to pare off and limit its conclusions, to make them tally with concrete facts; but can treat of length as if there were no such thing as breadth, and of plane surfaces just as if solidity were unknown. It is thus the most perfect type of deductive reasoning; and if logical training is to consist, not in repeating barbarous scholastic formulas, or mechanically tacking together empty majors and minors, but in acquiring dexterity in the use of trustworthy methods of advancing from the known to the unknown, then mathematical investigation must ever remain one of its most indispensable implements. Once inured to the habit of accurately imagining abstract relations, recognizing the true value of symbolic conceptions, and familiarized with the process of elimination as legitimately conducted, the mind is equipped for the study of quite other objects than lines and angles. The twin treatises of Adam Smith on social science, wherein, by deducing social phenomena first from the unchecked action of selfishness, and then from the unchecked action of sympathy, he arrives at mutually-limiting conclusions of transcendent practical importance, furnish a brilliant illustration of the value of mathematical methods and mathematical discipline.

"Bearing in mind these considerations, and recollecting also the extensive scope for inventive ingenuity afforded by the various devices by which algebraic expressions are utilized in the solution of physical problems, we may appreciate the emphatic statement of Sir John Herschel—a statement which he has thought sufficiently important to be printed in italics: 'Admission to the sanctuary of science, and to the privileges

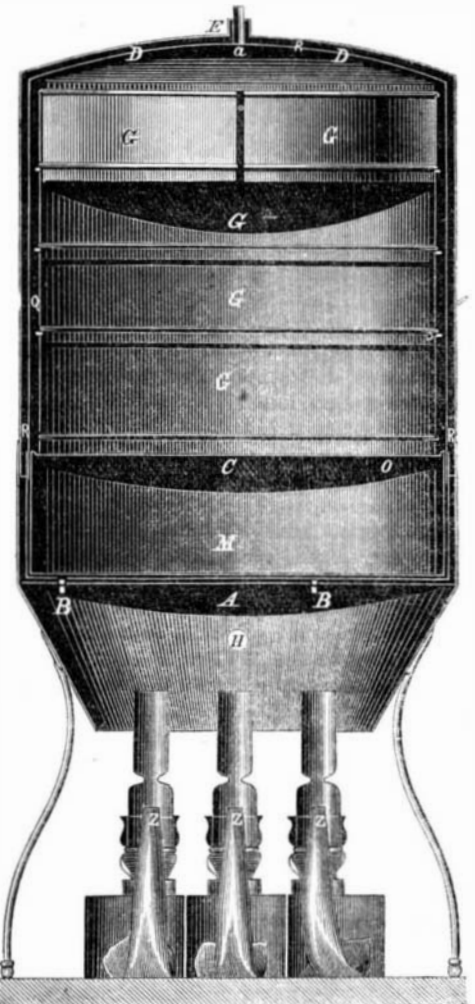
and feelings of a votary, is only to be gained by one means—sound and sufficient knowledge of mathematics, the great instrument of all exact inquiry, without which no man can ever make such advances in any of the higher departments of science as can entitle him to form an independent opinion on any subject of discussion within their range.'"

SWEDISH COOKING APPLIANCES.

We illustrate on this page, from *Engineering*, one of a series of cooking utensils, recently patented in Sweden, and now being introduced into England. As will be seen in the engraving, the cooking stove consists of a sheet-iron base in

the form of an inverted truncated cone, which supports an iron cylindrical vessel. Upon the top of this is placed a nest of circular porcelain dishes, the one resting upon the other, and small recesses being cut at intervals around the base of each dish in order that there may be a free circulation of heat and steam. The nest of dishes is covered with a cylindrical casing of sheet iron, the lower edge of which fits upon the top of the iron vessel at the bottom before spoken of, and the whole is inclosed in an outer casing to prevent any radiation of heat. The apparatus stands upon a tripod, and occupies a very small area, the height of the medium sizes not exceeding three feet, and the diameter being about ten inches. Either gas or oil may be employed for obtaining the necessary heat. If the former be found convenient a Bunsen burner is used, and the mixture of air and gas issues through a series of holes in the side of a circular burner, and is deflected so as to distribute the heat equally over the whole area of the vessel above. If, however, oil be employed, it is burnt in a lamp of peculiar construction with a flat wick bent in an annular form. In using the apparatus the circular iron vessel beneath the porcelain dishes is partially filled with water, and the material to be cooked being placed each in its compartment, the whole is inclosed in the inner and outer covers, and the

heat being applied, steam is generated from the water, and circulates through the whole of the stove, until the food is ready. Besides the process of steaming, however, a dry heat can be obtained for roasting, baking bread, etc., by placing no water within the iron vessel.



In addition to this apparatus in its different forms, the conical base of the stove is adapted for coffee-pots and other vessels required for ordinary operations on a small scale.

JET BLACK VARNISH FOR SHOES.—Dissolve 10 parts by weight of shellac and 5 of turpentine, in 40 of strong alcohol, in which fluid should be previously dissolved 1 part of extract of logwood, with some neutral chromate of potassa and sulphate of indigo. The varnish is to be kept in well-stoppered bottles.

JOHN CHINAMAN is a heavy purchaser of California produce. Thousands of barrels of flour were sent to Hong Kong during November, and the latest advices by mail say there are many orders in San Francisco yet to be filled.