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Improved Lathe for Wood Turning.

Much ingenuity has been displayed in devices for working wood into fanciful forms by machinery, and in none more successfully than in lathes for turning. The one herewith represented employs rotary instead of fixed cutters, the required speed for work being given the cutter head rather than the material to be turned.

The power is applied to the pulley, A, and by means of an intermediate shaft and bevel gears, gives motion to a screw turning in the support, B. This screw rotates the worm gear, C, attached to the spindle of the head stock. The center which holds the piece to be turned can move independently of the arbor. If it is desired to secure it while the arbor turns so that the cutters may operate on one side only of the wood it can be done by means of a catch engaging with slots on the collar, D, of the center; or by the screw through the head, E, on the arbor, it may be fastened to the arbor to rotate with it. A train of gears connect the arbor and the feeding screw which by means of the triple beveled gears and a clutch, F, can be rotated in either direction as may be desired. This screw gives the lateral movement to the carriage, G. A transverse carriage slides on G, which by means of the screw as in ordinary lathes can be advanced to or receded from the work. This carriage has also an automatic movement governed in one direction by a guide, H, and in the other by a spiral spring not shown. The line of motion is regulated by a stop screw, I.

The guide, H, can be of any form desired so that its edge will present a sectional line corresponding with the form to be produced. The shaft, J, which bears the pulley, A, is slotted and carries the bevel gear, K, that has on the inside of its hub a spline corresponding to the slot on the shaft. It traverses with the carriage, G, and drives the cutter head inside the dished gear by the intervention of another gear and pinions, not seen perfectly in the engraving.

The clutch, F, can be operated automatically by the carriage acting on stops on the rod parallel with the main screw as seen in the illustration. Three varieties of spiral work done by this machine are seen in the lathe and on the floor. Specimens in our possession just as taken from the lathe, without sandpapering or polishing, are very smooth and speak well for the effectiveness of the device.

This lathe is capable of doing an almost infinite variety of ornamental work, round or polygonal, with curved, waved, spiral or irregular surfaces. It was patented Oct. 16th, 1866, by August Basse, of Quincy, Ill., whom address for additional particulars. Box 593.

A New Medium of Power.

We have seen in the Bridgeport *Farmer* a notice of a new motor invented by Mr. Henry B. Stiles of the former place. The notice not being really a description we are unable to give the details of the machine, but from what we can learn it is a wheel working by water pressure, capable of exerting great power, and occupying but a small space. One of them twelve inches diameter, under a pressure of forty pounds to the inch, is said to be capable of driving a double medium power printing press. One has just been placed in Trinity Church, New Haven, to drive the bellows of the new organ; the third in size in this country, being exceeded only by that of Trinity, New York, and H. W. Beecher's Church, Brooklyn.

Whenever there is a sufficient head of water it is said this is the best medium for utilizing power now known. It will not get out of order and can be governed and regulated with the utmost exactness. It was patented by Mr. Stiles in Feb., 1866.

New Process of Pickling.

The *Grocer* notes the application of a well known scientific principle in a new process for preparing pickles for the table, in large quantities; an invention lately patented by Mr. Manfield. The machinery employed in this process consists of a large air-tight receiver, capable of containing one hun-

dred gallons of the vegetables to be pickled, connected with an air-tight tank for holding vinegar. The receiver is also fitted with two sets of air pumps, for exhausting and condensing the air, worked by a Lenoir gas engine. All the metal parts of the machinery with which the vinegar comes in contact are made of platinum, rendering the contents entirely free from the dangerous presence of copper.

The pickling process is attained by exhausting the air from the receiver by the vacuum pump, thereby also expressing all superfluous moisture, without injuring the shape of the contained vegetables. Connection being now made with the

top and bottom is connected to disks or plates, *e*. From the center of the top disk a pipe, *f*, is carried, having a jet, *i*, furnished with a tap, *j*. In and above the case, *a*, are weights, *k*, which force down the top disk, *e*, and compress the liquid contained therein. This pressure compels the liquid to ascend through the tube, *f*, into the basin, *l*. A smaller basin, *n*, may be used to receive the liquid under a lighter pressure.

The action of the fountain is as follows: The tap, *j*, is unscrewed and the liquid is poured into the basin, *n*, the fountain being lifted up, which creates a partial vacuum, allowing the liquid to descend freely. The basin being filled, the tap is screwed on, and on turning it the liquid is thrown out in a jet which is continuous so long as the weights, *k*, and the springs, *m*, continue to act and until the liquid is exhausted. It seems as though this simple device might be adapted to use in gardens and dwellings wherever the force of a natural head of water is wanting. Fanciful devices in iron or bronze might be made cheaply with the working apparatus attached.

Safeguard against Fire.

Among the recent improvements having in view the safety of life and property from fires, now so alarmingly prevalent, is an ingenious device patented by Mr. Chas. Dion, of Montreal, Canada. It consists of a small dial, something like a clock face, which is to be hung up in the apartment, and from the dial wires extend through the various rooms of the building, all connecting with

one or more large alarm bells.

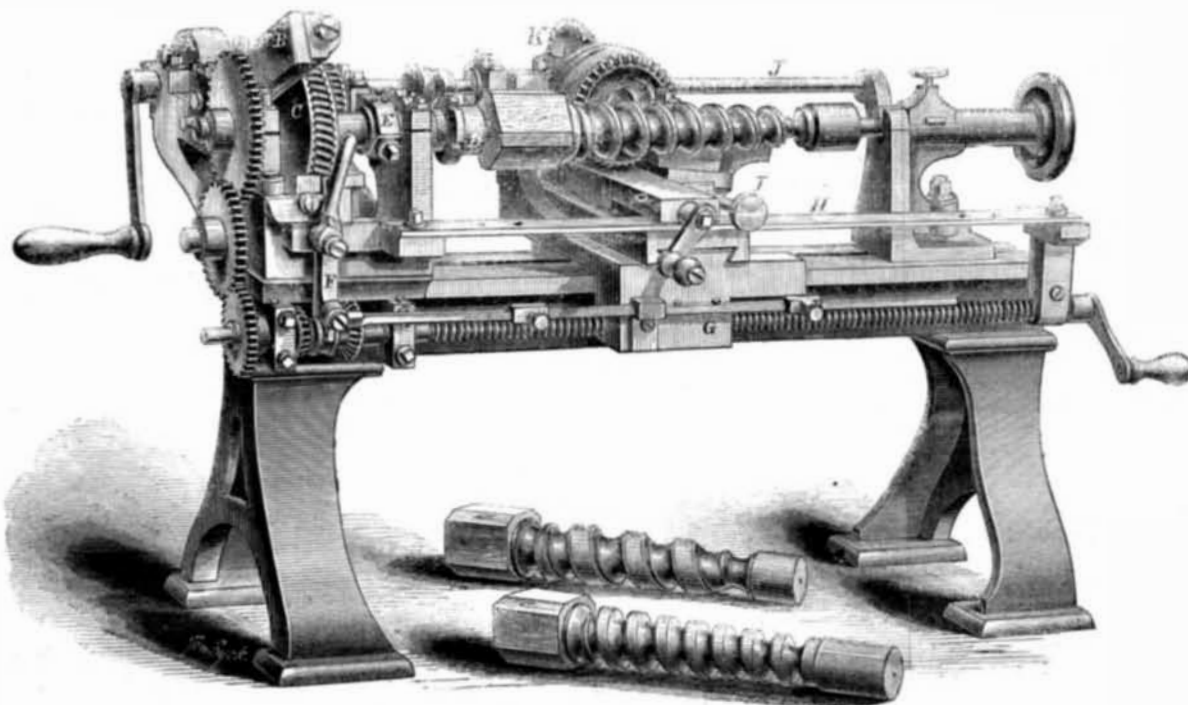
The construction is such that the instant any undue heat is occasioned in any of the apartments of the building where the wire passes, the alarm bell will be violently sounded, and a pointer will be thrown up indicating the number of the room where the heat or fire has begun. We believe the fire records conclusively show that the great majority of all fires could be easily extinguished, in many cases without water, if a prompt alarm could be given. Mr. Dion's invention seems admirably adapted for this purpose, while its cheapness and simplicity commend it for general adoption. The invention has been put into use throughout all the apartments of the Bishop's Palace and also the Chapel, at Montreal, where it gives the highest satisfaction. Over sixty of the dials are there used, and the Vicar General testifies to their remarkable importance and value. The Board of Fire Underwriters of this city have also officially certified to the striking merit of the invention, and strongly urge its general employment.

The Center Rail.

A correspondent reminds us that the center rail, successfully used for heavy grades on the Mont Cenis railway (see SCIENTIFIC AMERICAN, Vol. XV., No. 24) is an American invention, patented some fifteen years since by Mr. George E. Sellers, of Cincinnati, and practically applied by the Coal River Improvement and Coal Company, for overcoming a grade of 150 feet to the mile in crossing the eastern barrier of the Shamokin Coal Basin. Two heavy freight engines were built for that company on Mr. Sellers's plan; but they failed to complete their road, and the engines were eventually sold among other things to the Beaver Meadow Railroad Company, and are now in use as ordinary locomotives. The following extract from the report of John C. Trautwine, Chief Engineer to the former company, shows where the credit of first inventing and introducing this device belongs:—

In this engine adhesion is obtained, not by the weight of the engine alone, but by pressure produced by the load itself. The pressure is made to operate by means of two horizontal adhesion wheels or rollers, which act upon the opposite sides of a center rail. The force with which they press the rollers is, by means of a most ingenious device, made to adjust itself instantaneously to the varying resistance to be overcome, whether that resistance be modified by an increase or diminution of the load, or by change of grade. I have seen a small working engine, on Mr. Sellers' principle, ascend and descend a grade of 276 feet per mile, with the same loads that it could barely start on a level. On this grade the engine was under the most perfect control of the engine man. We shall have no difficulty in ascending our 150 feet grade with trains of the same weight as the ordinary engines will transport over the 35 feet grades of the roads with which we connect.

PRESERVING POLISHED STEEL FROM RUST.—A correspondent says that nothing is equal to pure paraffine for preserving the polished surface of iron and steel from oxidation. The paraffine should be warmed, rubbed on, and then wiped off with a woolen rag. It will not change the color, whether bright or blue, and will protect the surface better than any varnish,

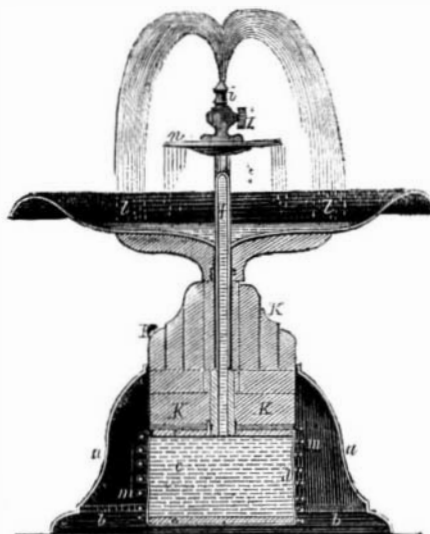


BASSE'S LATHE FOR WOOD TURNING.

tank, the spiced vinegar rushes in, and is forced with a pressure of forty-five pounds to the square inch into the very fibers of the vegetables. When this operation is completed, the pickles are ready for the table, having a good wholesome appearance, and retaining to a great extent their natural color. An important feature in pickles prepared in this way, is that being so completely saturated, they will keep sound for an indefinite period without being immersed in vinegar or brine.

SELF-ACTING FOUNTAINS.

We copy from the London *Mechanics Magazine* the design of a fountain for propelling common or scented water, which



can be used in any drawing room without the necessity of elaborate "pipe laying." It is a simple mechanical device operated by the compression of air by mechanical contrivances. It is the invention of Eugene Rimmel, the celebrated London perfumer, and is intended for perfuming the air of apartments by the injection of a jet of scented water.

The engraving shows a section of the fountain, *a* being the case or pediment, having a metal bottom, *b*, on which a reservoir, *c*, rests, and with which it is connected. This reservoir is made of a flexible material, *d*, as india-rubber, and at