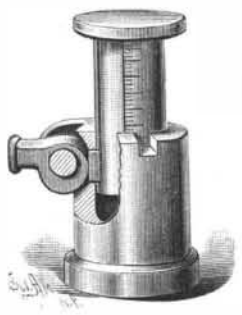
### AN IMPROVED EXTENSION GAUGE.

A gauge which is simple and durable in construction, and very easily adjustable for measurement, being especially adapted for machinists' use in planing and turning, is illustrated herewith, and has been patented by Messrs. Fredrick J. Brown and Daniel H. James, of Meadow Brook, Pa. In a base cylinder is held to slide a scale-graduated plunger column, having a groove running parallel with the graduations, and in this groove a loosely fitting block is held in a recess in the base cylinder between ears or lugs. Between these ears is a cam lever turning on trunnions having their bearing in the ears, the cam operating against the outer face of the block to press it into the groove, whereby the plunger column is held in place at the length or height desired, as indicated by the graduations, when a measurement is to be made.



EXTENSION GAUGE OF BROWN & JAMES.

### Progress of the Ingersoll Rock Drill Company.

The foreign trade of the Ingersoll Rock Drill Company, of this city, is increasing. Recent orders received were for a complete air compressor plant for driving the Ingersoll power drills at the mines of the Devala-Moyar Gold Mining Company, India, and for the Zancudo mines, United States of Colombia, Central America, a complete plant of duplex air compressor and Ingersoll drills, to be operated by water power, the Ingersoll company furnishing everything between the water power and the mines, has been ordered. This machinery is to be transported over 100 miles on rough roads on mule back, and is made in sections, no piece exceeding 300 pounds in weight. A complete plant, consisting of air compressors, power drills, etc., has been shipped to the Saint Raphael mines, in Zacatecas, Mexico. Under the present management, the business of the Ingersoll company has been largely increased in all directions, and complete equipments of all sorts of mining, tunneling, and quarrying machinery of the most improved patterns are furnished by the company.

### NEW SIXTEEN INCH SWING ENGINE LATHE.

We illustrate the new standard pattern, as made by the Putnam Machine Company, Fitchburg, Mass.

It is a modernized lathe of symmetrical and attractive outline, embracing in its construction advanced ideas and improvements.

Driving cone has five shifts for a wide belt. Headstock gears are powerful, speeds are proportioned to give velocities in uniform progression. Live spindle is made from a high grade of crucible steel, is massive. Journals are ground by a special process to secure rotundity and accuracy. Spindle boxes (patented) are interchangeable and easily duplicated, are made from one piece of anti-friction metal, are susceptible of accurate and easy adjustment, and preserve the original alignment of the live and dead centers.

Tail stock has large spindle, broad base, set-over device, tool shelf, and a patent cam screw binder which is not equaled for quickness and efficiency.

Carriage is elevated by back screw, with ball and socket joint, has an unusual area of wearing surface on the "ways," and is improved by its new construction, giving increased rigidity, and lessens the annoyance from chips, etc. Compound rest furnished when ordered.

Feed table is advocated for its versatility and endurance, is of ample power, and responds quickly to the operator, its action for either cross or lateral feeds being smooth, even, and without shock or jar; its range of feed is unequaled, the extra coarse surfacing feed being a new feature.

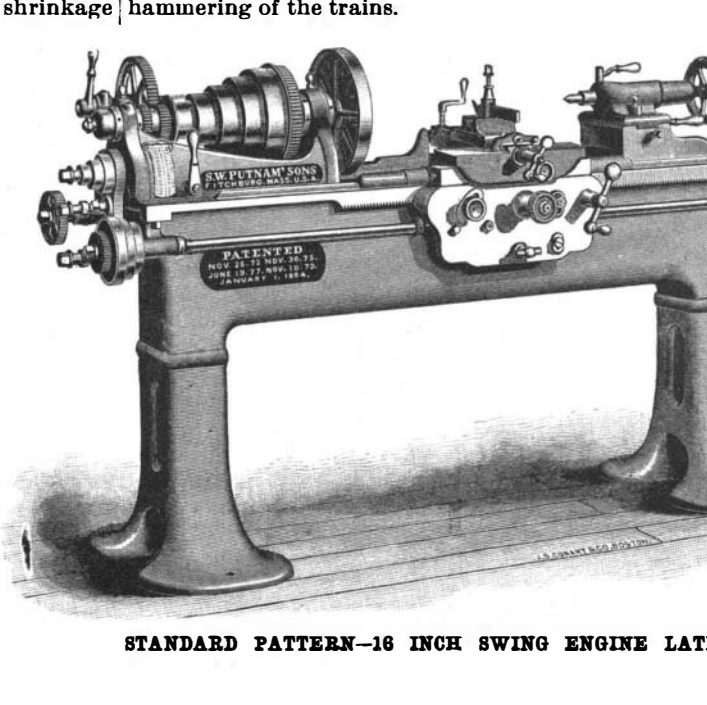
Bed is remarkably free from distortion by shrinkage incident to improper distribution of metal, and is designed to impart strength and resist vibration, deflection, and torsional strains; is braced by a central truss or "backbone," cast solid to the ends, and connected at intervals by cross ties. The "ways" are large, of desirable form, and essentially improved by having the one supporting the front of the carriage at a more obtuse angle than the rear one (patented).

Screw works are strong, constructed in the most approved manner, and by recent improvements the range is largely increased for cutting screws, worms, etc., of coarse pitch; are independent of the feed motions; leading screw (steel) is placed on back side of lathe bed, while the screw nut is operated from the front in connection with a safety stop which obviates breakage by engaging the screw works and feed motion at same time.

Lathe is furnished with countershaft, large and small face plates, open adjustable three-jawed back rest, with lever handle lock nut, traverse rest and wrenches. Abrasive surfaces are seated by hand scraping, and motive parts (including rack) subject to excessive wear or strain are made of steel.

Hollow spindle or taper attachment furnished when desired, at extra cost.

Lathe is made in 6, 8, 10, 12, 14, and 16 feet lengths of bed.



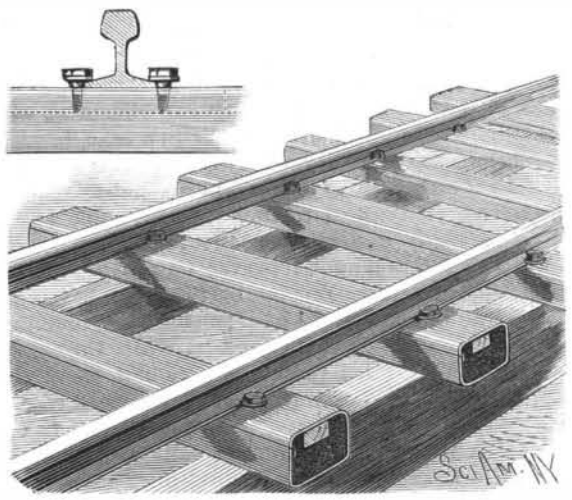

STANDARD PATTERN—16 INCH SWING ENGINE LATHE.

### Gelatine Plaster Casts.

Some time ago Mr. C. W. Cathcart, M.B. (Edinburgh Infirmary), proposed a new basis for making casts of anatomical specimens. The basis is made as follows: Take of "No. 1" gelatine, say 6 oz., soak it till quite soft and swelled, afterward dry it slowly until just pliable. As it has now the minimum of water necessary, melt it in a water bath, and add 6 oz. (measure) of clear glycerine. When the two are thoroughly mixed, the material is ready. To render it opaque, add while it is still hot, and therefore fluid, small quantities of a thick paint made by rubbing up oxide of zinc in glycerine. When a skin color is wanted, a little vermilion is required to give a warm, life-like hue. Should other things be cast, the prevailing color can be given with water color as required (tubes of moist water color sold at 2d. each will be found convenient). Several pounds of this mixture may be made at once, and portions used as required.

### AN IMPROVED METALLIC RAILWAY TIE.

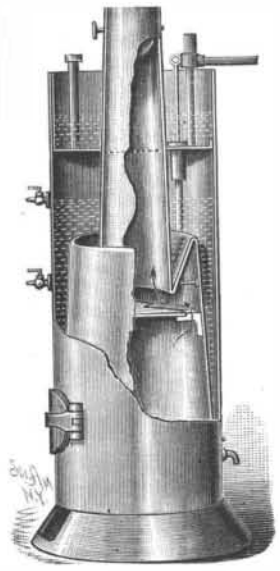
A metallic railway tie that is light in weight, while strong and elastic, is shown in the accompanying illustration, and has been patented by Mr. Samuel B. Jerome, of No. 16 Park Place, New York City. It is made of a sheet of metal, iron or steel, about one-sixteenth of an inch thick and of the proper length, bent or drawn by means of dies and tools to form a shell of the required shape, weighing about forty pounds, the edges being locked or riveted together. The interior of the shell is packed with shredded wood, commercially known as "excelsior," dried grass, sawdust, or other suitable material, closely packed, so as to be able to support the greatest weight and resist the utmost crushing force. On the under side of the upper surface of the shell is placed a strip of wood, opposite holes drilled through the metal to hold screw bolts or spikes, by which the rail is secured in position upon the tie, as shown in the small view. This tie will be slightly compressed under extreme load, but it is intended to be sufficiently elastic to return at once to its normal shape. It is especially designed for use on bridges, elevated railroads, and masonry structures, where it is calculated to relieve the road bed, so far as possible, from the ordinary jar and hammering of the trains.



JEROME'S METALLIC RAILWAY TIE.

### A BOILER FOR STEAMING AND COOKING FEED.

An inexpensive and efficient low pressure steam boiler for steaming and cooking feed is illustrated herewith, and has been patented by Mr. George W. Shealey, of Hiawatha, Kansas. In the lower part of the body of the boiler is fitted a firebox, in the form of a frustum of a hollow cone, its top having a funnel shaped crown sheet projecting downward into the firebox and connected with a tapering flue passing upward, a central deflecting plate, supported by brackets near the top of the firebox, throwing the heat laterally against the walls of the firebox. In the top of the boiler is a reservoir in which the feed water is heated, the reservoir being connected with the water space in the boiler by a pipe having a valve controlled by a rod extending above the boiler. Extending upward through this reservoir, from the steam space in the boiler on one side, is a pipe with a weighted cap, forming a safety valve, and on the other side is a pipe provided with a vacuum valve, with which is connected the pipe by which the steam is taken away for use. In the side of the boiler are try cocks for ascertaining the water level. It will be seen that this construction, from the thin body of water surrounding the firebox and its funnel shaped crown sheet, presents decided advantages for the rapid making of steam with great economy of fuel.



SHEALEY'S STEAM BOILER.

### Aprosexie.

The name that serves as a title to this note was formed by Dr. Guye, a distinguished aurist of Amsterdam, and signifies want of attention, or inattentiveness. Although the name is recent, the thing itself is old, and quite well known in its effects. So Dr. Guye has occupied himself, not with its effects, but with its causes. It is a curious thing that the nose is one of the causes of aprosexie. This organ is decidedly in favor at this moment. It is not long ago that we saw the great role that it was made to play (sometimes rightly, but sometimes also wrongly), by virtue of exaggerated and hasty generalizations, in the production of certain dyspnœas. Now it is a question of its psychological influence.

Aprosexie, in the cases cited by Guye, appears to be due to a greater or less obstruction of the nasal fossæ, which forces the patient to breathe through the nose, thus giving the face an expression of little intelligence, as we all know.

The following are the cases reported by the Amsterdam scientist: The first is that of a young boy, unable to breathe through the nose, or to learn anything whatever. Guye extirpated the adenoid tumors from his nasal fossæ, and the child, in eight days, knew his entire alphabet, while at the date of the operation he knew but the three first letters of it. The second case concerns a man of twenty, who, from the age of eight, was troubled with buzzing in his ears, and was attacked with vertigo whenever he worked. After the same operation, mental labor became easy and profitable. The third case is that of a medical student, which presented analogous symptoms. The cure was effected by the same method.

How is the influence of these nasal troubles upon the cerebral functions to be explained? Dr. Guye supposes that they prevent the cerebral lymph from circulating freely, whence the origin of conditions unfavorable for the brain. It is by analogous troubles that certain headaches are explained, and it is by the same operation that Dr. Guye treats them. He believes in partial aprosexies referable to different studies, and he has observed one that was limited to mathematics.—*Revue Scientifique.*

WORK now in progress at the naval gun shops in the Washington Navy Yard employs nearly 400 men. Four 10 in. steel breech-loading rifled guns for the monitor Miantonomoh and ten 6 in. steel breech loading rifled guns for general service are under construction. There is also a large amount of work going on in the fitting up of tubes, hoops, etc., for other guns. In addition to the gun work there are in progress four turret mounts for the Miantonomoh's 10 in. guns and four central pivot carriages for 6 in. guns. In the foundry there are 1,000 cast iron shells for 6 in. guns. Work on a secondary battery for the Chicago has been discontinued for the present.