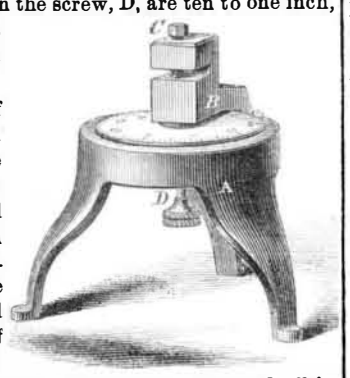
BROWN & SHARPE'S IMPROVED SHEET METAL GAGE.

The gages commonly used in measuring the thickness of sheet metal are not always accurate. Even if the fixed slots which determine the sizes were not subject to wear, the proper gage could be only approximately determined, as the edges of sheet metal are often imperfect—thinner or thicker than the body—and as their depth is very slight it is difficult to ascertain the actual thickness of the metal. The gage shown in the engraving is intended to give the thickness of metal up to one quarter of an inch, in thousandths of an inch, at some distance from the edge.

The stand, A, supported upon three feet, with an upright, B, is a single casting. In this upright is a space or slot. Above this space, in the upright, is an adjusting screw, C. Fitted into the lower part of the upright is a screw, D, with a milled head on the lower end. Attached to this screw and revolving with it is a German silver dial. The graduations on the edge of this dial are read off from an index point. The upper and lower screws are exactly in line with each other, and their points, which are hardened, meet in the space between the two. The threads upon the screw, D, are ten to one inch, and the edge of the dial is divided into one hundred parts.



With this explanation of the position and relation of the several parts of the gage, it will readily be perceived that when the metal to be measured is placed in the opening in the standard, and the screw, D, made to revolve until the metal is held between the ends of the screws, D, and the adjusting screw, then the exact thickness can be read off in thousandths of an inch at the index point. Should any wear of the points of the screws take place the point, "O" on the dial can always be kept exactly opposite the index point by means of the adjusting screw. A small binding screw with a piece of brass under its point serves to hold the adjusting screw firmly in its place when it is set correctly. The accuracy and simplicity of this gage will commend it to those who desire to obtain uniformity in the thickness of sheet metals or in thin material of any kind. It will be particularly useful to machinists, silversmiths, sheet brass and iron rollers and workers, and for many other purposes. J. R. Brown & Sharpe, of Providence, are the manufacturers.

A Naval Vessel Disinfected by Steam.

The Navy Department has received dispatches from Commander Chandler of the United steamer *Don*, dated Vera Cruz, Dec. 16. He states that the yellow fever broke out on board of his vessel on the 25th of November. It proved to be of a most malignant type. He was ordered to the above port, and on arriving there the ship was anchored with a "spring," and was always broadside to the wind. The sick were at once landed and their clothing and bedding aired. The ship was thoroughly impregnated with yellow fever. Commander Chandler caused the hatches of the berth-deck and ward-room to be securely closed. One joint of the steam-heater on the berth-deck was disconnected, and the same operation performed in the ward-room. A thermometer was lowered through a small slip in the tarpaulin, and, after two hours' steaming in the ward-room, it indicated 205 degrees, and on the berth-deck 170 degrees. The hatches were then opened, decks dried down, joints of steam heaters replaced, and in two hours more there was no indication of the extreme heat to which those places had been exposed. No cases of fever occurred afterward. We had 23 cases on board, and seven men died. Commander Chandler informs the Department that he is fully persuaded that heat eradicated the disease as effectually as a severe frost could have done.

Hardening Files.

A correspondent asks how to temper files without cracking. We cannot do better, unless some practical file maker comes to our aid, than to quote from Tomlinson's Cyclopedia:

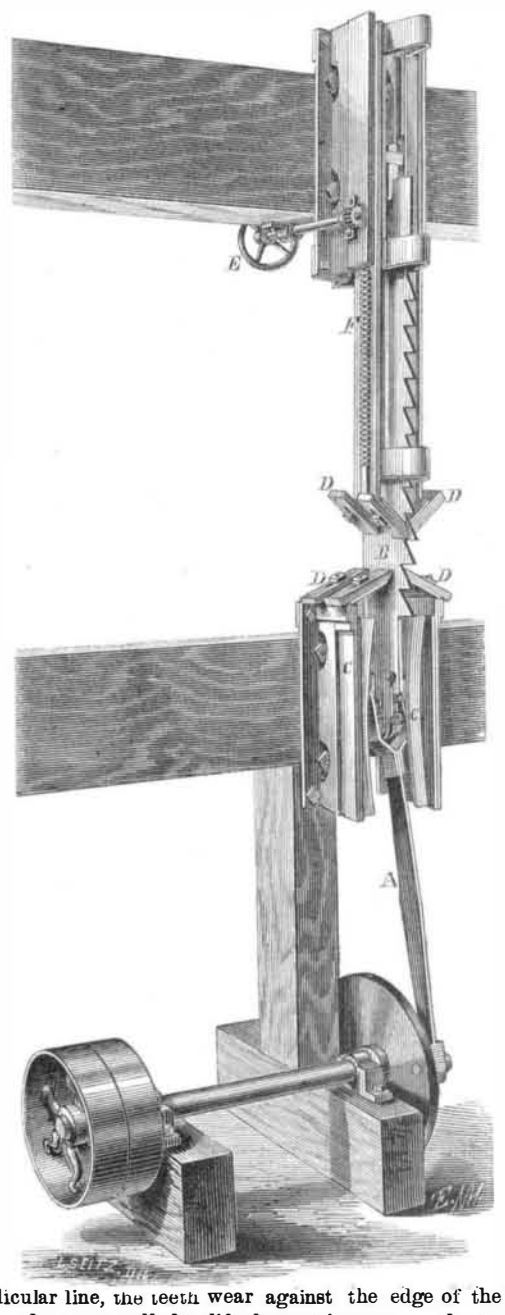
"Before being hardened the files are drawn through beer-grounds, yeast, or other adhesive fluid, and then through common salt mixed with roasted and pounded cow's hoof; the objects of which are to protect the teeth from the direct action of the fire and the oxidizing influence of the air; to afford an index of temperature, the fusion of the salt showing when the hardening heat is attained; and to lessen the tendency of the files to crack on being immersed in water.

"The files in the process of cutting become slightly curved, and it is necessary to straighten them before the hardening is completed. Some forms of file are apt to become curved in the act of hardening; such, for example as the the half-round file, which sometimes becomes hollow or bowed on the convex side; hence to produce a straight file it is purposely bowed, while soft, in the reverse direction. Most of the other forms of file are gradually heated to a dull red, and then straightened by striking them with a leaden hammer upon an anvil of the same material. A warped file is also in some cases straightened by being inserted between a couple of iron bars, fixed parallel a short distance apart, and then pressed in an opposite direction to the bend intended to be corrected. After the straightening, the file is placed in the fire again and heated until the salt fuses upon its surface; it is then immediately removed from the fire and plunged into a cistern of cold water. The method of plunging it into the water is of importance; it is held by the tang with a pair of tongs, and immersed quickly or slowly, vertically or obliquely, according to its form; that method being adopted which has been found by experience best calculated to keep the file straight. It is, however, very difficult to prevent some degree of set or curvature in quenching the files. Each file is therefore narrowly watched, and after being plunged once into the water, if any bending is observed, it can be remedied before the file is cold, by inserting it between the bars before mentioned, pressing upon it with considerable force, and lading the water upon it with the hand: considerable curves may be corrected in this way. It is, however, in some cases necessary to reheat the files, for which purpose they must not be placed in the forge fire, or the teeth would be injured now that the smearing has been washed off; they are therefore held over a clear fire, or placed on a heated iron bar or over a hooded gas flame, and when straightened are quenched in oil to prevent the teeth from becoming rusty. After the hardening, the tang is tempered by immersing it in molten lead, for if the tang were left as the file, it would be liable to snap off during use.

"The files are next scoured with scrubbing brushes dipped into sand and water or coke dust and water; they are next put into lime water, and left for some hours in order to get rid of every particle of salt. They are then thoroughly dried at the fire, rubbed over with olive oil containing a little turpentine, and are now considered as finished."

ANDERSON'S IMPROVED METHOD OF HANGING SAWS.

A large portion of the power employed in driving muley saws is absorbed by the friction of the blade in the log during its upward or non-cutting stroke. Where the saw, as is usual, traverses, in upward as well as downward stroke, a perpendicular line, the teeth wear against the edge of the saw kerf and are compelled to lift the cuttings or sawdust to the top of the log. When the feed is continuous and constant the friction and wear are greatly increased. A remedy for these difficulties is intended by the device seen in perspective in the engraving. The pitman, A, is not connected as in the ordinary method directly to the saw, B, but the fork extends above the buckle which connects the saw, B, and pitman, A, to pivots on the blocks that traverse the slides, thus making the pitman a lever having a long and short arm. This arrangement compels the lower end of the saw to be vibrated back and forth as the lower end of the pitman describes a circle. But the proper action of the saw requires that in making the downward cut or stroke it should descend in nearly a right line, while its movement in this respect in the returning stroke is immaterial. It is evident, however, that if the lever action of the pitman, as connected in this engraving, was allowed its natural play, the motion of the saw in both strokes would partake of the form of a parabola or curve. This would compel the saw, when arrived at its half stroke, to do a largely increased amount of work to that performed in any other part of the stroke. The inventor of this device exhibits his ingenuity just here. It will be noticed in the engraving that the slides, C, for the lower boxes are curved. The design of this beautiful mechanical arrangement is at once apparent. The convexity of this curve agrees exactly with the difference between the long and short arm of the lever, (pitman) A. In sawing, the downward stroke is performed by the movement of the crank from the upper center forward, and when the fulcrum, (upper) of the pitman in its descent passes the center of the curved slide it begins—following the sweep of the slide—to be carried forward, and with it the lower end of the saw; but just as it arrives at the center the lower end of the pitman is turning the forward quarter of the crank and is being carried backward. The curve of the slides and the difference of leverage in the pitman being the same—as before noted—the result is a nearly direct vertical motion. Thus the saw makes a direct downward movement in cutting (except just sufficient lead to insure each tooth a portion of the work) and as direct an upward movement on the return stroke. But after making the cut the saw is carried back from the kerf edge and rises in a part of the kerf unclogged by sawdust. When it begins to cut it is carried forward and cuts another stroke, carrying down all the sawdust made by the previous cut. The advantages of this arrangement are too palpable to require further elucidation. The saw has comparatively no friction in its upward strike and all the dust is sent under the log. With the old method a large log cannot be sawed without clogging, because a large proportion of the saw's length is continually in the log and the feed must be stopped occasionally to allow the saw to clear out the dust. With this, however, the saw makes the cut and then as it begins to rise recedes from the cut and rises where all is clear. The forward or increasing cut of the saw is another advantage compelling each tooth and every working part of the saw to perform its share of the labor. The adjustable guides, D, on the lower slides and the upper frame are to prevent the saw from "buckling." The upper set can be lowered by the rack, pinion, and hand wheel, E, to suit the diameter of the log to be sawed. The slide in which the frame and feed rack, F, traverses, as it is raised or lowered, overhangs toward the tooth edge of the saw, so that at whatever height the upper frame and guide may be fixed, the overhang of the saw will be always adapted to the diameter of the log to be sawed.



These combinations make a very perfect arrangement for saw hanging. This device has been very thoroughly tested within six years past. Over five hundred are in operation in the Middle and Western States. The inventor claims that they will cut—according to size of timber—from 10 to 100 per cent more than the ordinary muley saw and with less power.

Patented January 17, 1867. Further information may be obtained by addressing Leonard Anderson, or Coe & Wilkes, Painesville, Ohio, or F. Muzzy & Co., Agent, Bangor, Maine.

Speculation not Necessarily Invention.

We frequently receive letters, ostensibly on scientific or mechanical subjects, that do not contain a single statement, fact, or even suggestion which can be made of the slightest use. The writers seem to suppose that words without ideas possess some intrinsic value. Speculation on future improbabilities—if such a term may be allowed—is the form many of these communications assume. Such writing is the easiest of all possible styles, and the most nonsensical and unprofitable. Suggestions of mechanical improvements may be valuable. If the writer does not see their possible tendency some wide awake mind may seize upon them, and make them practical, living realities. But speculations on what could be possible only if man were almighty, and the laws of nature could be defied or abrogated at will, are a useless waste of mental power, or rather of words.

Such we regard the communication of a correspondent, who says:

"You complain of steam, and not without cause. I have an ideal future, in which steam has but little to do; would you like a peep at it? There you would see the Niagara, and other falls, improved water powers, driving armatures which generate currents of electro magnetism; these currents conducted all over the country by insulated wires, each workshop, factory, and even private dwelling, thus supplied with motive power. The magnetic engine is everywhere, steam has fled! Another peep; further still; changed again! Niagara rolls in its ancient grandeur, and turns no noisy wheel. The network of wires is gone, but the busy hum of the factory is as loud as ever. There must be a motor, certainly; don't you admire its beauty? Gravitation, and one or two of nature's simplest laws, are working in concert, and produce, inexpensively, all the power required. There is no troublesome shafting—little wires to each bench prove themselves equal to the work; and fully as effective at the furthest point as at the nearest.

"How do you like it? Is it impossible? If any one thinks so, let him study, carefully, the points to him most improbable; and if still incredulous, state his reasons fully to me, and I will demonstrate to him not only its possibility, but the probability of my ideal soon becoming the actual real."

[Our correspondent queerly unites the "busy hum of the factory" with the absence of shafting. His "demonstration" of its possibility would not be less surprising than his bare statement.—EDS.

THE CANADIAN MONSTER CHEESE, having survived a course of exhibitions at agricultural fairs in the United States, we find from a notice in a Liverpool paper, has safely crossed the waters and is now being gazed upon by the curious in that city. The cheese is of factory make, is about eighteen months old, and weighs 7,000 pounds.