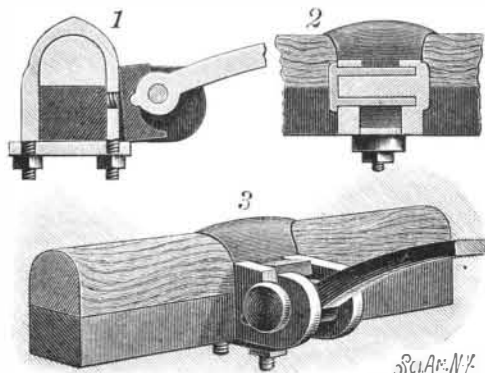


AN IMPROVED THILL COUPLING.

An invention providing for the ready adjustment of the thill eye or head to the socket of the axle clip, and for the holding of the thill head in yielding contact with its supporting attachment, is illustrated herewith, and has been patented by Mr. Frank Gandy, of Freeport, Ohio. Figs. 1 and 2 are sectional views, and Fig.

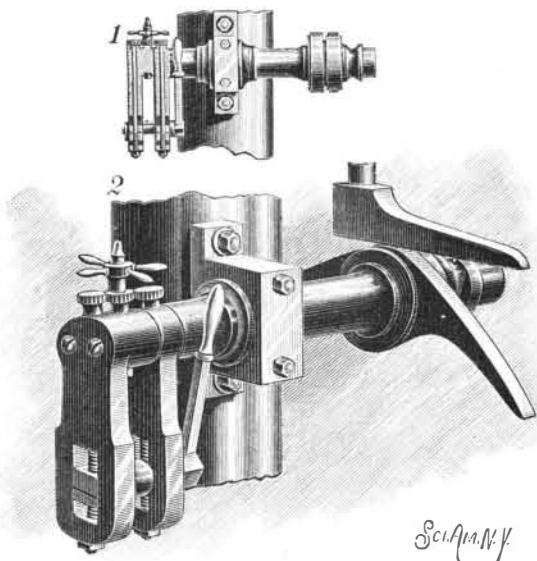


GANDY'S THILL COUPLING.

3 represents the device in perspective. The clip is made with two forwardly extending arms, one arm having a laterally extending stud and an annular recess, while the other arm has an aperture through its upper edge and a side recess, there being a rubber block supported by a pin between the arms. The body of the clip is recessed just to the rear of the rubber block, and in the recess is arranged a spiral spring bearing against the axle and normally forcing the rubber block forward, holding it against the thill head, and thus preventing all rattling. The thill iron can only be removed from the clip by elevating the thills and bringing the irons in register with the opening in the top of one of the clip arms.

AN IMPROVED CUT-OFF VALVE GEAR.

The cut-off valve represented herewith is specially adapted for marine engines, having a variable cut-off designed to work steam expansively at all points from the dead center to the full stroke, and being an improvement upon what is known as the "Stevens" cut-off. It has been patented by Mr. Andrew L. Harrison, Chief Engineer U. S. Revenue Cutter Colfax, Wilmington, N. C. The invention provides a me-



HARRISON'S CUT-OFF VALVE GEAR.

chanical device adapted for attachment to the end of the rock shaft, whereby the adjusting of the lead of the steam valves, and taking off the lead and putting it on, may be accomplished at will with the engine in motion, the engine not having to be stopped to roll the eccentric on the main shaft, as according to the present practice. As the slots in the arms are not cut on a radius from the center of the main shaft, when the pin is moved up or down in them the lead of the valves is changed, also their lift or throw, and the steam may be cut off shorter or longer to change the speed of the engine slow or fast, as desired, leaving the throttle valve wide open at all times, and at the same time permitting the steam to be worked expansively at all times.

Compressed Gas as a Caustic.

Dr. Benjamin W. Richardson, ever foremost in practical scientific medicine, has made a suggestion in the last number of his quarterly periodical, the *Asclepiad*, which is as interesting as it is novel. It is to use a jet of highly compressed gas as a caustic. It is known that accidents occur to workmen sometimes in factories where compressed gases are prepared or employed from such a jet impinging on any part of the body, and causing an injury of the same nature as a burn. Dr. Richardson turns this property to account, and suggests its employment for the removal of warts or small pendulous growths. It does not appear that he has carried out the idea in practice, but there is little

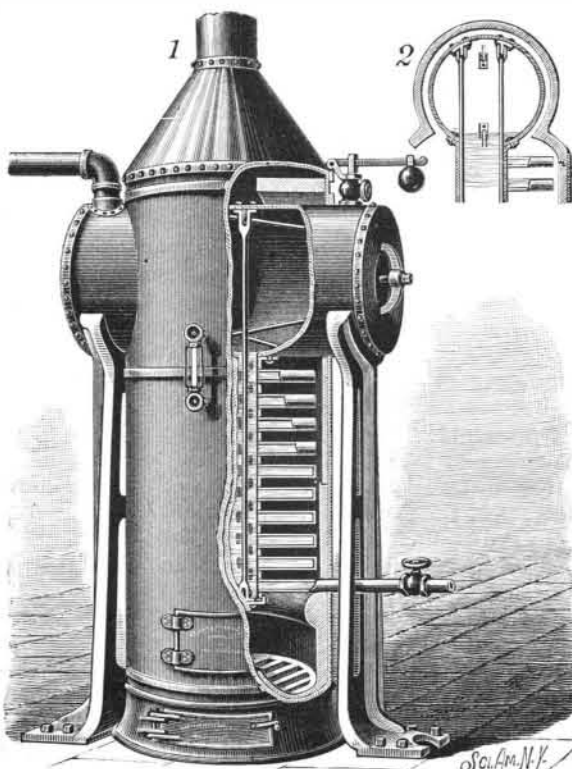
doubt we shall shortly hear of his doing so. He points out its advantages over the cautery, heated wire, or knife, in that it is less alarming and for the moment painless, as cold is an anæsthetic. He enumerates the gases which might be used, and specifies chlorine as no doubt most effective. He, however, gives the palm to carbonic anhydride (CO_2), as most manageable, cheap, almost inodorous, not unwholesome, and not inflammable, so that it can be used with artificial light. It is now a little over twenty years since Dr. Richardson introduced ether spray as a means of producing local anæsthesia. It remains to be seen whether the present suggestion may not lead to an equally important weapon in the armory of the surgeon.

Mr. Stanley on Arrow Poison.

Mr. H. M. Stanley, the African explorer, in a letter which was read at a recent meeting of the Royal Geographical Society, gave an extremely interesting reference to the arrow poison employed by the natives of the Lower Congo district, and it afforded a curious insight into the strange perversions of knowledge by which the advances of civilization are retarded. Mr. Stanley says they were much exercised as to what might be the poison on the heads of the arrows by which Lieut. Stairs and several others were wounded, and from the effects of which four persons died almost directly. The mystery was solved by finding at Arisibba several packets of dried red ants. The bodies of these insects were dried, ground into powder, cooked in palm oil, and smeared on the points of arrows. It is well known that formic acid exists in the free state in red ants, as well as in stinging nettles, and in several species of caterpillars. This acid is, in the pure state, so corrosive that it produces blisters on the skin, and hence there is little ground for doubting that it was the "deadly irritant" by which so many men have been lost with such terrible suffering. The multitude of curious insects encountered, which rendered their lives "as miserable as they could well be," bears out Mr. Stanley's idea that many similar poisons could be prepared from insects.

AN IMPROVED RADIAL TUBE BOILER.

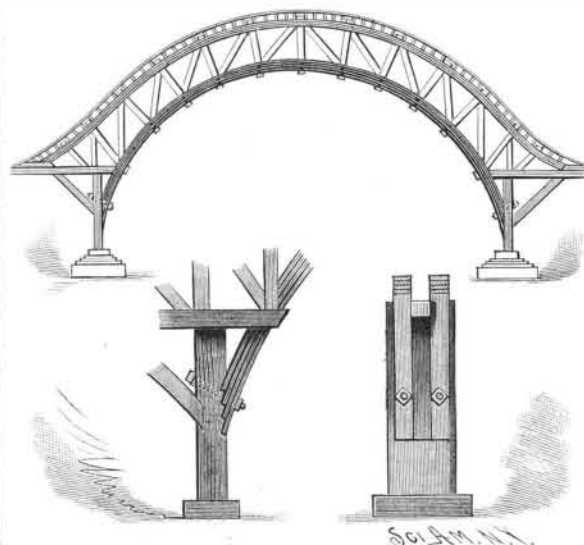
The boiler shown in the accompanying illustration is designed to make more steam and drier steam than has heretofore been possible in boilers of this class, while the tubes are not liable to become obstructed with mud and scale. It has been patented by Messrs. John Clarke and Robert W. Savage, of Tyler, Texas. The boiler is constructed with a horizontal steam reservoir at its top, supported by standards firmly secured to the foundation, while suspended from this steam reservoir above the fire box is a vertical steam-generating chamber, with radial tubes extending therefrom. A fire brick casing surrounds the fire box and the radial tube steam-generating cylinder, while a fire brick arch partly surrounds the horizontal steam cylinder, a metal covering surrounding the fire brick, and extending above it to the smoke pipe or flue. Fig. 2 is a sectional view of the steam reservoir, showing tie rods which extend to the lower end of the vertical chamber. As deposits from water used in boilers are generally found at the points where there is least commotion, it is the design of this invention that such place shall be in the ends of the horizontal reservoir, from which the deposits may be readily removed by blow-off cocks on the man hole. The inventors claim that, in practical work, they have demonstrated that their boiler can thus be readily operated without deposits of scale, etc., being made in the tubes.



CLARKE & SAVAGE'S RADIAL TUBE BOILER.

IMPROVED TRUSS FOR BUILDINGS OR BRIDGES.

A truss combining simplicity with great strength, and at the same time dispensing with metallic braces, forms the subject of a patent issued to Mr. John T. Wells, of Scottsville, N. Y., and is illustrated herewith, the small figures showing a section and an end elevation. The invention consists of two parallel arches,

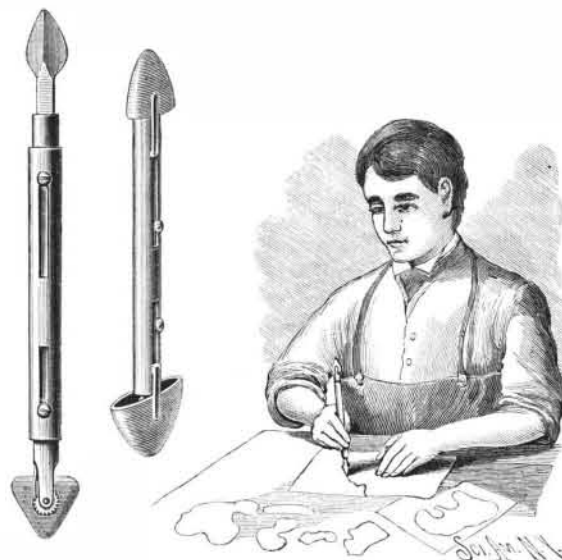


WELLS' TRUSS FOR BUILDINGS OR BRIDGES.

formed of bent boards and connected with each other by posts and braces. The side posts which rest upon the piers are stepped on their inner sides to fit the lower ends of the inner arch, the ends of the arch being secured in place by bolts, and the second arch is connected with the inner one by posts placed radially between them, and fastened by spikes or other means. Suitable braces are placed between the posts and the arches, the last posts not extending to the inner arch, but resting on top of horizontal beams, each of which is supported near its outer end by a brace. Each truss thus constructed is designed to form one section of a building or a bridge, which may thus be made very strong without using metallic rods or braces.

IMPROVED KNIFE FOR PRINTERS' USE.

A knife especially designed for the use of pressmen in cutting out "overlays" or "underlays" in making a



DUS' KNIFE FOR PRINTERS' USE.

form ready is shown in the accompanying illustration. The handle is a piece of tubing with longitudinal slots for sliding studs, by means of which the blades in either end are moved in or out. One of the blades is sharpened on its opposite edges in form much to resemble an ordinary ink eraser, while the other blade holder has pivoted therein a blade sharpened on three sides and edges, whereby the blade may be turned and adjusted to cut at any desired point and from any of its edges. This blade is retained in position when adjusted by a spring pawl made to engage with a ratchet fast on the blade or its pivot. The rotatable blade is designed to do the general work of the pressman in making forms ready, while the other blade may be used exclusively for cutting sharp angles or corners. Movable caps are provided for covering the ends of the knife, so that it may be carried in the pocket, these caps having spring catches for engagement with the slotted portions of the handle.

For further information relative to this invention address the patentee, Mr. Louis J. Dus, No. 819 Eighth Street, Milwaukee, Wis.

A PHOTOGRAPHIC exhibition is now in progress at the Crystal Palace, London, in which, according to the London papers, a preponderance of the actual or comparative novelties consists of American inventions on sale by English firms.