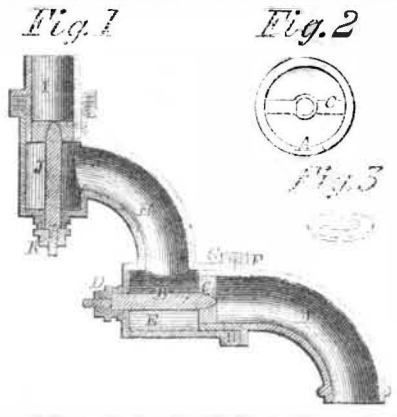
New Inventions.

Kahnweiler's Pipe Joint.

In the usual method of forming joints for tubes for the conveyance of gas, water, or steam, great difficulty is experienced in first making them perfectly tight, and subsequently keeping them so, and enabling them to be easily turned to the positions desired. The object of the plan of joint, which we illustrate below, is to remedy the defects of the old mode of connecting swivel elbow joints, and figure 1 of the engraving represents a section through a gas or other pipe, to which the improvement is attached; figure 2 is a detached view of the open end of ditto, and figure 3 is a perspective view of the metal washer surrounding the bolt for securing the elbow to the pipe.

Upon the end of a male section, A, of a joint, is cast an axial stem or rod, B, said stem projecting from a cross bar, C, which is cast with, and just within, the open end of the said section. This rod passes through the axis of the female section, E, of the joint, and through an aperture on the covered end of section E, beyond which it projects sufficiently to admit the washers and tightening nut, D, which is screwed on its end, one of the washers being of vulcanized india rubber, and the other of metal, of the shape indicated in figure 3, to fit the axial stem, which is squared on one side at this point, to prevent the washer from turning round when the joint is turned or swivelled. The face of the flange, G, is left rough, as it comes from the mould, and the faces of the female section are turned, so that very little work is required to make a joint of this kind air or water tight. A segmental pipe, H, extends from the female section, E, and communicates with another female section, arranged at right angles to the first mentioned one, and having a male section, I, attached to its open end by a rod or stem, J, and washers and nut, K, in the precise manner that the corresponding parts below are formed and fastened.



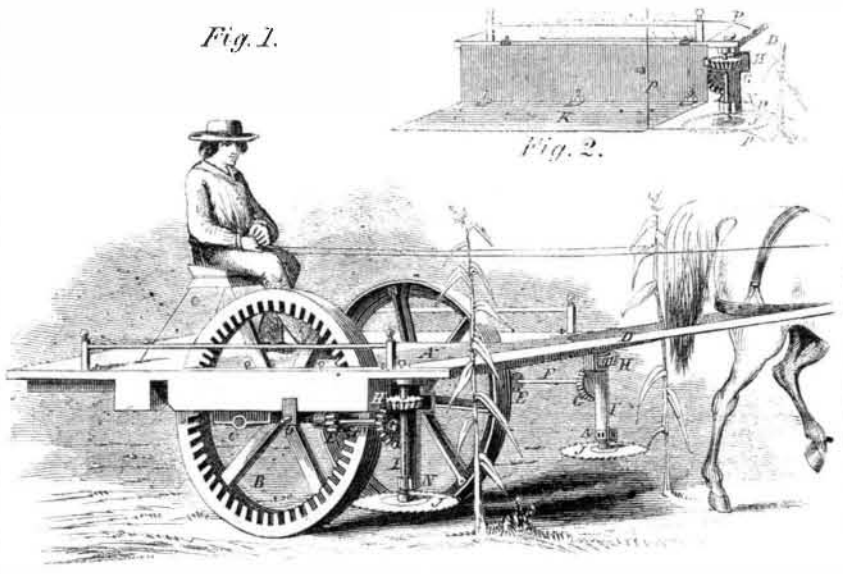
Two washers, one of rubber and the other of leather, are placed between the flanges of the male and female sections of the joints, and the requisite degree of pressure to perfect the joints is given them by the tightening nuts, D, K. In this simple manner—a correct, reliable and efficacious universal joint is formed, capable of being easily moved in any direction, and without the expensive and difficult process in forming the usual conical joints heretofore employed.

The patent was issued on the 29th of June, 1858, and any further information can be obtained by addressing the patentee, David Kahnweiler, 55 North 6th st., Philadelphia.

New Corn and Cane Cutter.

This harvester is remarkably simple, and having been practically tried for some time, it has been found to answer remarkably well. The circular saws cannot fail to cut, and every stalk must fall except where the corn is flat upon the ground, but in such a case the rods which are mentioned in the following description raise it sufficiently high to be cut off. Its motion and work are rapid, there is very little gearing, and it will do its work with one horse and driver. The inventor states that it will cut from 50,000 to 55,000 hills per diem, four feet apart, taking two rows at a time. In drilled corn or cane, it will be thrown upon the ground in one continued unbroken line, and is, in this state, just as easily taken up and put in bunches or stacks, as if it were thrown in gavels, the cutting being the greatest and most laborious job. The machine can be put up and arranged to cut any distance from the ground, as circumstances may require.

BONWILL'S CORN AND CANE HARVESTER.

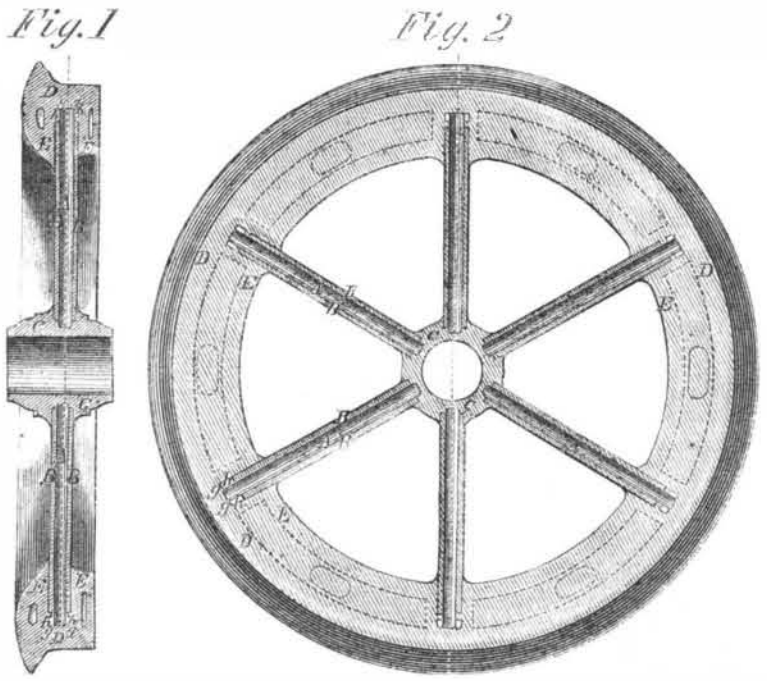


In the perspective view, Fig. 1, A is the platform, supported by the two driving wheels, B B. The axle, C, of driving wheels, and clamp box, being the supports. E are pinion wheels upon shafts, F F, working into main drivers. Upon the outer ends of shafts, F F, are beveled wheels, G G, giving motion to the beveled wheels, H H, attached to the upper end of shafts, I, upon which the saws, J J, are hung, supported by the iron brace, N, fastened firmly to the under side of framework. D are the shafts.

In Fig. 2, which is a detached view of the cutting apparatus and receiving platform, K represents a horizontal plate or bed, hung by three hinges, 1, 2, 3, allowing it to rise and fall. Upon this the stalks fall, and there is one upon each side of the machine. The stalks are deposited on the ground by a lever (not seen in engra vi ng), placed under the platform. P P are rods for guiding the cut corn on to the plate or bed, K, and also for raising the fallen corn.

Being unable to go into the manufacture of them, the inventor offers the right for sale, whether it is for States, or *entire*. For further particulars address the inventor, Wm. M. Bonwill, M. D., Camden, Del., who obtained a patent March 4th, 1856.

PUGH'S CAR WHEEL.



The manufacture of car wheels when cast from one kind of metal and then chilled on the periphery, is attended with some difficulty, from the unequal contraction of the chilled portion and the unchilled part. To compensate for this, or rather to avoid these effects, John Pugh, of Nashville, Tenn., has produced the wheel which is the subject of our illustrations.

Fig. 1 is a vertical transverse section of one of these wheels, and Fig. 2 is a vertical longitudinal section of the same.

A are spokes of wrought iron, surrounded by corresponding hollow spokes, B, of the same material, the spokes, A, projecting beyond B at both ends. This unequal length brings the termination of A on a line with the inner portion of the segments forming the tread of the wheel, while the ends of the outer spokes, B, are brought within the circle of the segments forming the inner portion of the rim. This characteristic causes the extremities of the inner spokes to receive the shrinkage of the outer portion of the rim, D,. and the ends of the outer ones to receive the shrinkage from the inner portions, D, of the same, and thereby enables the contraction of the two parts in cooling to be independent of each other. In pouring the melted metal during the casting of the wheel, it is made to flow around the rounded ends of the spokes, A, in such a manner as to form a ridge or fillet, *g*, at this portion, which shall serve as a support, but at the same time leave a space *h*, around the ends, between said ridge or fillet and the solid metal connected with the inner portion of the rim, or segment next the ends of the hollow spokes, B, so as to allow the full and complete contraction of one portion without interfering with that of the other.

After the rim of the wheel has cooled, the hub, C, is cast within and around the inner ends of the spokes, A B, and by thus making this operation subsequent to the first, and after the outer extremeties have been permanently fixed, the pouring or cooling of the metal of the hub portion is prevented from affecting the rim.

The employment of the wrought iron spokes, A B, in the manner we have described, not only relieves the inner and outer cast portions of the rim of the wheel from all strain caused by the unequal contraction in cooling of the two masses of metal of different volumes, of which said inner and outer sections are respectively composed, but also enables the wheel to be made stronger and more durable than by the methods of manufacture now in use.

This method—patented by the inventor June 15, 1858,—is spoken very highly of by railway men. Any further information can be had by addressing John Pugh, (care of A. Anderson), Tennessee and Alabama Railroad Office, Nashville, Tenn.

Loss of Fuel in Furnaces.

In a paper read before the British Society of Arts, by Charles Sanderson, upon the subject of Iron, he remarked that although the blast-furnace is the most effective and also the most economical for reducing iron ore, yet we find that there is an actual loss equal to 80 per cent of the effectual usefulness of the fuel. This fact is arrived at from the theory which he laid before them of the formation of gases in the furnace, taking the melting point of pig-iron at 2,192 Fah. The fuel used, together with the blast injected into the furnace, will give the quantity of carbonic oxyd, light hydrogen, &c., which, when burned with heated air, would be sufficient to reduce or melt a given weight of iron from its ore, which in theory is estimated at between 16 and 17 per cent of the value of the fuel consumed. These gases, so largely produced, are now collected in many works by means of pipes variously arranged, and inserted a few feet below the mouth of the furnace. They are used mixed with a certain portion of atmospheric air, as a fuel for raising steam, heating the blast for the furnace, and (on the Continent) or the purpose of puddling; also for drying and carbonizing the ore prior to its being charged into the furnace. If these gases are taken as they arise from the furnace, he sees no objection to their being applied to useful purposes, but he does not object to even the least forcible means being used to draw them from it. No current ought to be created in any apparatus which may be formed for conveying these gases, since it would cause them to pass too rapidly through the furnace, and thus prevent them from producing their full effect upon the materials through which they are made to pass. This utilization of the waste gases is highly interesting, and presents a wide field for application, besides which there is an evident economy to be obtained from their use, provided they are properly withdrawn from the furnace.

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Death of an Eminent Man.

Count de Laradel, the proprietor of the lakes containing boracic acid, for which Tuscany is so celebrated, has died at Florence. The immense fortune he has left behind is the result of the profits realized from the extraction of the substance, for which he invented most ingenious and economical contrivances.