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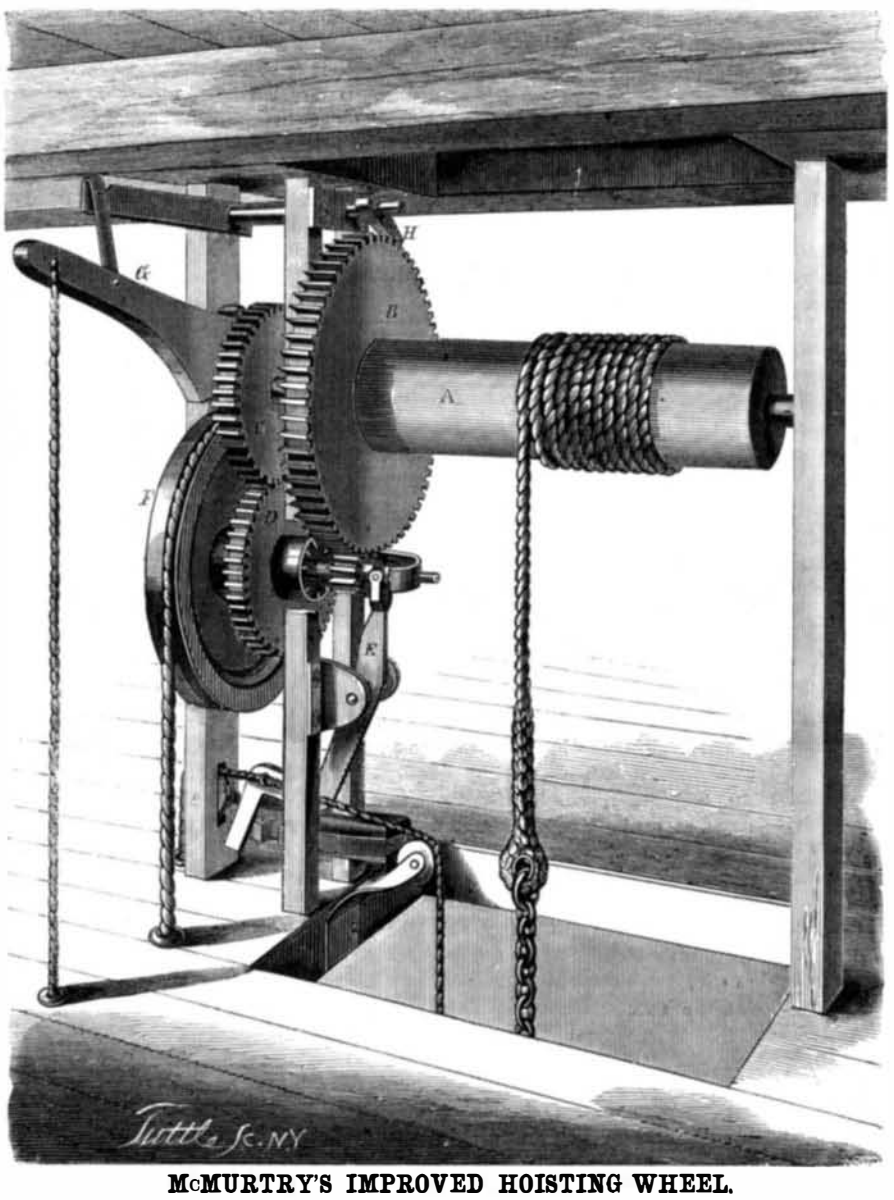
Hoisting Wheels for Warehouses, Etc.

The engraving represents the best hoisting wheel, we think, that has yet come under our observation. One of the annoyances of the ordinary hoist is that whatever the load to be raised, the speed is always the same, whereas a light load ought to be hoisted not only with less effort than a heavy weight but much more rapidly. This is what this hoisting apparatus does.

The beam, A, has secured to its shaft and moving with it, a large gear wheel, B, and a smaller gear wheel, C. This latter gears into the wheel, D, of the same number of teeth, which is loose on its shaft. Its hub is a gear with internal teeth, into which a pinion on the same shaft slides by means of the lever, E, working a clutch. The pinion is secured to the shaft by means of a feather and slot, as are ordinary clutches, so that while it can be slipped forward and back, in either position, its rotation secures the rotation of the shaft on which it works. It engages either with the large wheel, B, or with the smaller gear, D, according as the clutch is moved in one direction or another, or it may be held between the two, when the hoisting wheel, F, may be turned without moving any part of the machinery except the shaft on which it is fixed.

When, as in the engraving, the pinion gears with the large wheel, B, it is evident that by working the wheel, F, by the hoisting rope, an immense leverage is obtained and the speed of the barrel, A, will be slow. This is the position for raising heavy weights. But when the weight to be raised is light, the pinion is shipped into the hub of D and locks that wheel to the shaft. Now, if power is applied to the hoisting rope, the barrel, A, will turn as fast as the wheel, F, because the size of the gears on either shaft is the same. It will thus be seen that articles of light weight may be raised with great rapidity, while a shifting of the clutch will instantly throw the machinery into gear for heavy work. As will be seen. this shifting is readily managed from any floor by means of the lines attached to the lever, E. The edges of the teeth of the wheel, B, the pinion, and the internal gear of D are brought to a V-edge to insure locking whenever the pinion is shipped. G is a brake and unlocking lever, by means of which a load can be lowered. By pulling upon the line attached to it, the pawl, H, is lifted and the wheel, B, with the barrel, A, allowed to turn, while the velocity of their revolution may be regulated by the brake.



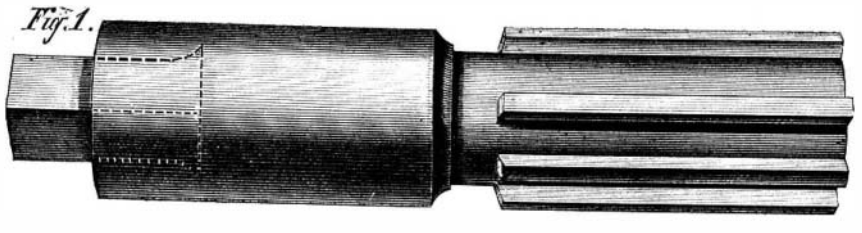
McMURTRY'S IMPROVED HOISTING WHEEL.

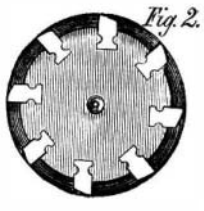
This hoisting apparatus has been in use for over seven years and has received the highest testimonials from those who have used it. It was patented by John McMurtry and is manufactured by S. H. Whitaker, 162 East Front street, Cincinnati, Ohio. For information relating to the invention, address John McMurtry, Lexington, Ky.

Improved Reamer.

The most expensive of the smaller tools used in machine shops is the reamer, and in a well managed shop no tools are so indispensable as a good set of standard sizes of reamers, enabling the workmen to keep a perfect uniformity of sizes of holes in the building of a number of machines of the same kind, and in various other uses where a similarity is required. Owing to this great expense, few shops are provided with them, above the smaller sizes, although just as much time might be saved by their use as in the smaller ones.

The engravings represent an article of manufacture which, at a trifling expense, will enable all shops to provide themselves with any sizes necessary for their work. It is a reamer made entirely of cast iron, excepting the cutters and shank, which are of steel. The manner of making them is simply this:—The steel for the cutters is cut off the required length and made dovetailing as represented in Fig. 2, or as the ordinary dovetail, which can be done in rolling the steel in bars, where a large number are made, placed in the mold, as is the shank, and the iron is allowed to flow through the mold uniting the steel and iron so firmly together that it is impossible to separate them. They are then turned off to nearly the size required, hardened, and again placed on centers and ground off to the size required. These reamers can be made any size, shape, or number of cutters desired, at a trifling expense over the price of common castings. They answer admirably for taper reamers for reaming large steam, gas, or water cocks, or for boring pullies by machinery, etc. The cast iron gives a firmness to the cutter which can not be obtained by simply using a cutter for the purpose of boring. They have been in use in a number of shops, made in a variety of shapes for different work, always giving good satisfaction.





BURLINGAME'S REAMER.

This reamer was patented by W. Burlingame, Choate Mfg. Co., Exeter, N. H., through the Scientific American Patent Agency, Jan. 1, 1867. The patentee wishes to dispose of the entire right to manufacture them, and will furnish companies with samples at a reasonable price. State or shop rights for sale. For further information address as above.

ARTIFICIAL STONE FOR BUILDINGS.

For a number of years a Mr. Ransome of England has been experimenting in the manufacture of artificial building stone. From time to time an account has been published in these columns of his progress. In their issue of the 28th of June the *Engineering* gives the annexed interesting statement of the mode of manufacture, test of processes, etc.:—

If Mr. Ransome has not found the philosopher's stone, he has at least produced a stone worthy a philosopher, and which promises to become the stone of the ages. For it appears to have the elements of great durability, and it certainly possesses every other quality desirable in building stone, whether for structure or ornament. Although five years are not five centuries, chemistry has analyzed even the tooth of time, and can produce, within the period of a comparatively brief experiment, results identical with those of ages of atmospheric corrosion and disintegration. Mr. Ransome's stone has been boiled, and roasted, and frozen, and pickled in acids, and fumigated with foul gases, with no more effect than if it had been a boulder of granite or a chip of the blarney stone. It has been boiled and then immediately placed on ice, so as to freeze whatever water might have been absorbed, and it has been also roasted to redness, and then plunged in ice water, but without any sign of cracking or softening, superficially or otherwise. Nor does its durability rest alone upon such evidence as this, for it is of the simplest chemical composition; and chemistry and geology alike testify to the durability, if not the indestructibility, of a stone which is nearly all silica, like flint, and onyx, and agate, and jasper. It has no oxydizable constituent; for silica, or silicic acid, is already oxydized, and thus it is unalterable in air; and as the new stone is almost impermeable, it will suffer little, if any, injury from moisture or frost. We may, then, as the lawyers say, "admit" the durability—and if we insist upon further evidence, only posterity, say in the twentieth and twenty first centuries—can have the benefit of it, and no doubt Mr. Ransome will bequeath plenty of test blocks for their satisfaction—and the stone is everything else that can be desired of a building stone, or of a stone for external ornament, excepting, of course, that it does not polish.

And how marvellous, for its simplicity and beauty, is the process by which this stone is made! Some toiling mason or other, hewing in the quarry or in the builder's yard, must have wished, before now, that stone, like iron, might be melted, and run in molds, even though his own occupation were thus at an end. Did he ever, when by the sea shore or by a sand pit, think of cementing indissolubly together the countless millions of grains into solid rock? Mr. Ransome, no mason, however, unless he be, as he may be for any thing we know, a member of the mystic brotherhood, did think of this. And he tried every cement he could lay his hands to, and did not succeed. The sand became little else than mortar by such sticking as he could effect. But he found out, at last—and we are speaking of a time more than twenty years ago—that the best sandstones were held together by silicate of lime. And so he set himself to work to produce this substance, indirectly, from flints, of which plenty could be found for the purpose. But the flints had to be liquefied first, and how could this be done? Not by heat, nor would caustic soda touch them, so the chemists said. Flints might be boiled in a caustic solution for a week together, so long as the boiler was an open one, and lose very little by the operation. But by-and-by, Frederick Ransome made one of the most unexpected discoveries in chemistry, viz., that when boiled in a caustic solution, under pressure, flints would melt almost like tallow before the fire. But we are not about to give the long history of the invention. With flint soup, or silicate of soda as a liquid, the question was what other liquid would, in mixing with it, turn both into an enduring solid? What other liquid would turn both into silicate of lime—the substance he was seeking? When he found that chloride of calcium (in solution) would, when mixed with silicate of soda, turn both into flint, or something very much like it, the road was clear, and the manufacture of stone from sand was as simple and as beautiful a process as the making of Bessemer steel from pig iron by blowing air through it when in the melted state. Chloride of calcium had been chemically considered a very respectable married couple, known as Ca and Cl. There was a little bigamy attaching to silicate of soda, but the principal parties to the marriage were silicium and natrium, or Si and Na. But, as has happened before now with organic bodies, these inorganic couples, on their introduction to each other, at once ran away with each other's husbands and wives. Si, although still keeping his wife O, took Ca and became silicate of lime, while Cl and Na were, like Lot's wife, turned into salt, or chloride of sodium, for their wickedness.