TUNGSTEN STEEL.

Franz Mayr has produced, at his cast steel works, at Kapfenburg, in Styria, cast steel of such dimensions, forms, and excellent quality, as could previously only be obtained from Krupp, of Essen. Oblique cog wheels for coining machines and locomotives, axles for railroad carriages, boiler plates, angle knees, and round, flat and quadrangular rods of various sections, have now been produced by Mayr, for more than a year.

What particularly deserves to be mentioned with regard to these articles is Mayr's unrivaled tungsten steel, distinguished by the fineness of its crystalline texture and its remarkable hardness—so much so, indeed, that the experiments made with it several months ago have shown that tools made from it for cutting toothed wheels, bores, chisels, punches, turning tools, planing blades, &c., retain their power of cutting four times as long as those made of Huntsman steel, previous regarded as the best. This steel may, therefore, be recommended for these purposes.

Tungsten has nearly the same specific gravity as gold, and this density is recognizable in the cast steel alloyed with it, by the alteration in the grain of the fractured surface, and by the hightened ring of the steel.

In hardness, metallic tungsten nearly approaches the hardest of natural bodies, and it communicates this property to cast steel, without injuring its tenacity and malleability when the addition is of 2-5 per cent.

The absolute solidity of tungsten steel exceeds that of all other known steels; for fifteen consecutive experiments with a machine, in the Polytechnic Institute or Vienna, showed the highest power of resistance to be 1,393 cwts., and the lowest 1,015 cwts., giving an average of 1,158 1-3 1-5 cwts., to the square inch; so that this steel exceeds all other kinds hitherto tried.

The ore of tungsten, from which the metal is obtained, usually occurs in company with tin stone; it has probably hitherto never obtained any technical application, the only value attached to it being as a specimen in mineralogical or geological cabinets.

More recent investigations have shown, however, that the arts may derive considerable benefit from it. One of the richest sources of this ore is possessed by the Austrian empire in the tin mines of Zinnwald, in Bohemia, where the tungsten ore has been thrown upon the heaps as worthless for nearly five hundred years.

Mayr has the great merit of having been the first to bring this new and hitherto unemployed metal into use in the manufacture of cast steel on the large scale, having introduced tungsten cast steel into commerce of the most various degrees of hardness, and of any dimensions.

The price of this steel, notwithstanding its remarkable goodness, is lower than that of the English cast steel, over which the uniformity of its crystalline texture gives it a peculiar advantage.

The above properties of density, hardness and strength are also communicated by tungsten to cast iron, and this alloy may probably be useful for crushing rollers, and may, perhaps, in time, attract the attention of the artillery.—*Mining Chronicle.*

THE PRINCE OF WALES AT THE PATENT OFFICE.

Perhaps our readers are generally aware that the Prince of Wales, the eldest son of the Queen of Great Britain and Ireland, is now making a short visit to this country. On the 4th inst. he visited the Patent Office at Washington, and. it is said, "listened patiently to long explanations of curious models." Would the inventors exchange the intellectual power of making these inventions for the political power one day to be wielded by the prince?

Marshal Vaillant has sent to the French Academy an account of an insect which amuses itself by boring holes in leaden balls.

DAYKIN'S IMPROVED WATER DRAWER.

To have pure soft water like the Croton brought into every room in one's house by means of pipes is certainly a very great convenience; but, like so many of the conveniences of modern civilization, it is sometimes very dearly purchased. The great variety in people's constitutions is shown in no one respect more strikingly than in the action of lead poison. While in some systems it is eliminated and passed off without producing any evil effect whatever, in others it slowly accumulates, till it at last makes its appearance in colic, neuralgia, paralysis and a frightful train of painful and incurable diseases. From somewhat extensive and very sad experience with various kinds of water pipes, we have come to the decision that if it was possible, we would have all our water for drinking and culinary purposes drawn from an open well with an old-fashioned bucket. Dr. Clark, the most eminent professor of medical science in the city, uses melted ice entirely for drinking, in order to avoid imbibing lead from the Croton pipes.

Fig. 1

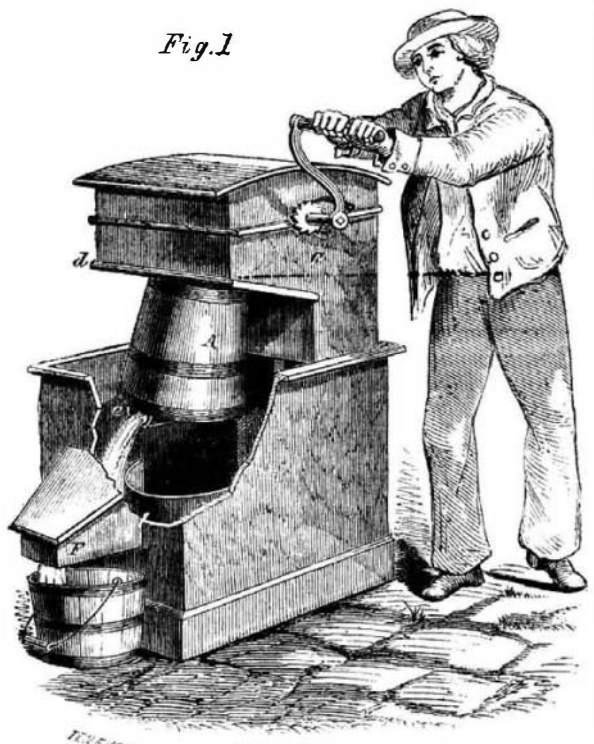


Fig. 2

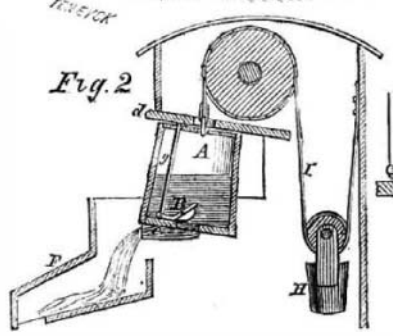
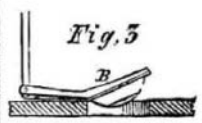


Fig. 3



DAYKIN'S IMPROVED WATER DRAWER.

With these views we naturally feel a strong interest in any improvement in buckets, and the one which we here illustrate is very manifestly calculated to make the drawing of water, by their means, more easy and convenient. It is very simple, and will be readily understood by a glance at the engraving, of which Fig. 1 is a perspective view, and Figs. 2 and 3 vertical sections of the several parts. The bucket, A, is made of the usual form with the valve, B, in the bottom. In the case or curb, C, is placed, directly over the bucket, the inclined board, *d*, so that, as the bucket rises against this board, its back edge may hit the inclined board first, when—the strain continuing to be applied to the rope—the bottom of the bucket is tipped forward in the position shown, so that the spout, *e*, may guide the water into the spout, F, of the curb. At the same time the upper end of the rod, *g*, comes in contact with the board, and opens the valve, B, in the bottom of the bucket, allowing the water to flow out. After the bucket is emptied, the weight, H, holds it suspended in contact with the the board, *d*, with the valve partly open, allowing the air to flow through and keep it dry and sweet, while the board, *d*, serves as a cover to keep out leaves, &c. The band, I, should be made of two or more ropes, with the twist running in opposite directions, forming a broad band not inclined to untwist. This band is joined to the bucket by a flat metallic plate which passes through a narrow slit in the board, *d*, thus causing the bottom of the bucket to swing always forward in just the right direction to discharge its water into the spout. F.

The patent for this invention was granted on August 21, 1860, and further information in relation to it may be obtained by addressing the inventor, James Daykin, Cleveland, Ohio.

PURIFICATION OF CASTOR OIL.—It is well known, says an English journal, that castor oil on being kept a long time, undergoes some changes. It gets thick, and rancid; at the same time acquiring an acid taste, which remains in the throat some time after the oil has been swallowed. M. Parvesi, of Turin, has found an easy means of purifying the rancid oil. He mixes 1,000 parts of oil with 25 of animal charcoal, and 10 of calcined magnesia, and leaves them together for three days at a temperature of 68° to 78° Fah., often stirring or shaking the mixture. The oil is then filtered off, and is found to be limpid, colorless, odorless, without taste, and easily soluble in alcohol. It congeals at a lower temperature than before, and is in that respect superior to the ordinary oil.

A VERY singular geological phenomenon has startled the inhabitants of Thonon. At Orcier, in the midst of the chain of mountains, the soil suddenly sunk, and a lake of considerable extent took its place. The high chestnut trees which covered the spot entirely disappeared, and, strange to say, the surface of the lake was covered with the trunks of trees which appeared to have been long under water, and of a species no longer known in those parts. A similar phenomenon we believe, occurred in California some years ago.

SPALDING & Co., of New York, the great "prepared glue" men, are said to have cleared $60,000 within a year past, on the sale of their glue, which they attribute, in the main, to the policy of extensive advertising.