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The Sun's Offer.

Since we noticed the offer made by the "Sun" for a feeding apparatus to its presses, we have been literally flooded with letters from inventors describing plans of their own, soliciting further information, &c. As our time is sufficiently occupied with attending to letters pertaining more especially to our own business, we have handed these over to Mr. Beach, who tells us that he has likewise been overwhelmed with similar communications. To explain the whole matter in a few words, we will say that the offer is not for a plan but a machine, which must be put in actual operation in connection with the "Sun's" presses, and that nothing short of this will receive any attention from the proprietor. Any one intending to compete forthis prize should visit the establishment of the "Sun," in order to make the necessary examination of its presses, their mode of operation, &c.

New Wheelbarrow.

An Englishman has invented a new wheelbarrow. The wheel is placed under, and sunk into the bottom, so that the weight rests on the wheel and not on the hand, and there is less oscillation. By means of this barrow it is stated that twice the usual weight can be wheeled.

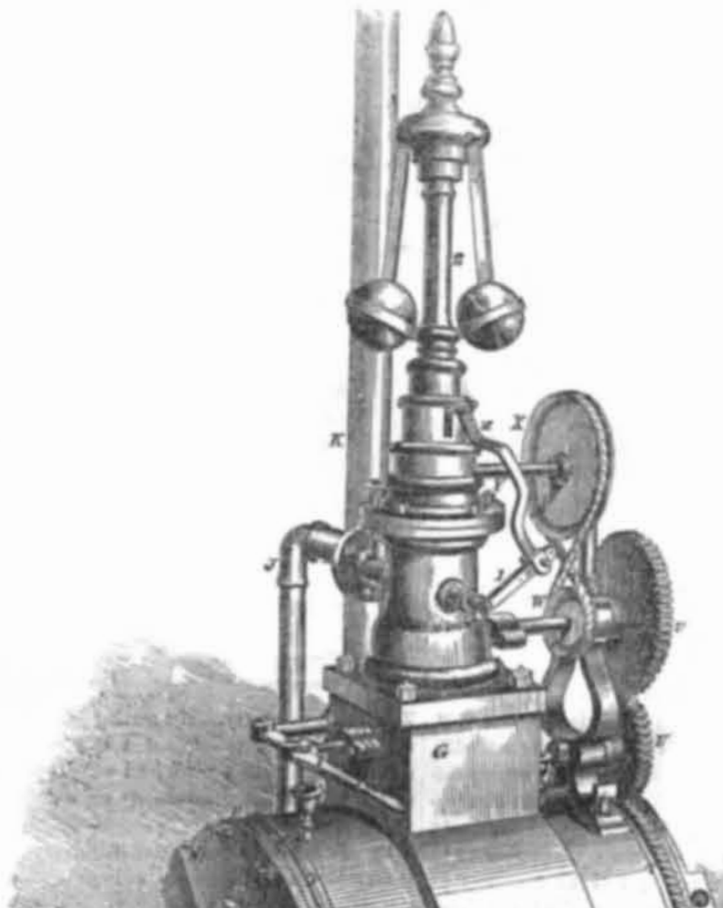
[We have seen the above in more than one of our exchanges, some, like the above, saying "the inventor was an Englishman," and others that "he was a Yankee." However new the arrangement may be, it is no improvement, and is inferior to the common barrow, which throws the weight upon the wheel, and not upon the arms. Its oscillation must also be far greater, instead of being less, because the present barrow places the person who wheels it at the long end of the levers, where he has the greatest command of the weight, and will do more work in the course of a day than with the wheel in the center, but will not perhaps be able to lift so much nor wheel it so easy for a short distance on a straight and level road.

Plasters versus the Knife.

We were present a few days since to witness the removal of a large cancer from the breast of a female, without the use of the knife, by Dr. Gilbert, of this city, recently of New Orleans, to whom we have previously referred. The female had been under treatment about three weeks, and by means of the Doctor's plasters, the cancer had been wholly killed and was now almost ready to drop from her breast which in a day or two more it would have done. It was, however, removed with but little pain to the patient. We saw some other cases which the Dr. has under treatment, which are truly wonderful. We have no doubt of his ability to remove the most malignant cancers, provided application be made in season.

Two pieces of the Gobelin Tapestry have been sent for from France; they are to be used in decorating one of the Imperial residences. It was reported (who raised it?) when the tapestries came here, that they were to be presented to adorn the Presidential Mansion, at Washington, after the Exhibition was over.

BRISTOL'S ROTARY STEAM ENGINE.---Fig. 1.



The annexed engravings are views of the Rotary Engine of R. C. Bristol, of Chicago, Illinois, for which a patent was granted on the 26th of last July; patents have also been obtained in France and England, and the patentee has the utmost confidence in its merits. Figure 1 is a perspective view; figure 2 is a vertical longitudinal section, and figure 3 is a transverse vertical section. The same letters of reference indicate like parts.

A is the frame of the engine; B B are the journal boxes for receiving the main shaft, S, to which the revolving part of the engine is secured; C is a cylinder; it is bored true, faced at the ends, and is surrounded by a steam case, E, which is furnished with two lugs, F F; the lower faces of these lugs are slightly convex and rest on suitable bearing plates, which are adjustable by set screws to adapt it to the bearing surfaces of the shaft, S. The double steam case, E, has passages, *b b*, (figure 2) both encircling the cylinder, but independent of each other, the former communicating with the interior of the cylinder, through openings, *c c*, and *d d*, (fig. 2) and the latter communicating with the same by openings, *c' c'*, and *d' d'*, (same figure). On the top is the steam chest, G, which is supplied by steam from the boiler by pipe, J. K is the exhaust pipe, to receive the whole steam through the exhaust port, *f*, (figs. 2 and 3). N N' N" N''' are four sliding pistons. They are set in the slots, *i i i i*, of the steam wheel, which is composed of cylinder, D, having a hub, *g*, secured on shaft, S. The cylinder, C, being stationary, by the steam acting inside of it on the sliders, N N' N" N''', it moves the wheel composed of D, *g*, S, with its ends, arms, and sliders, forming the rotating parts of the engine. When the engine is running in one direction, it takes its steam by only one of the slide valve ports, and is shown in figure 2, to be taking it by the passage, *e*. When moving in a contrary direction it takes

[*Continued on Second Page.*]

Economy of Baker's Furnace.

In the last number of the "Scientific American" we published an illustrated description of Baker's Patent Furnace, and stated that it was employed under the boilers at the Crystal Palace. Since that time, in the absence of Superintendent Holmes, who is out of the city, we have been furnished with a memoranda of its performance by his associate, Henry S. Babbitt.

The coal consumed by this furnace for the six days ending on the 29th ult., amounted to 33,863 lbs., the water evaporated by this quantity amounted to 388,000 (33,863÷388,000=11·457) or 11·457 pounds. of water evaporated by 1 lb. of coal. This is the greatest amount of water evaporated by one pound of coal in a boiler, ever recorded. The best Cornish boilers with the best quality of coal evaporate 9 lbs. of water, nearly 2½ lbs. less. It comes within three pounds of the theoretical evaporation of water by the best quality of coal, in the laboratory.

The following memoranda, furnished by Mr Amory, presents the results of a number of experiments, feeding with warm water without Baker's furnace :—

Navy yard at Washington, evaporation 7·538 lbs. of water to 1 lb. of coal.

Navy yard at Boston 6·712 to 1 lb. of coal.

Trial by Engineers in Boston, at East Boston, 7·705.

Otis Tuft's boilers, 8·768.

Flour mill at East Boston, 7.

Ocean Mills, Newport, 7.

Portsmouth Mills, 6·260.

Atlantic Mills, 6·637.

East London Water Works, supposed to be the best in England, 8·217·1000.

All these establishments have many boilers supposed to be doing the best duty, we might give many inferior resultst. The trials of these have been made with the greatest care and so acknowledged."

The very best of these results, (Otis Tuft's boilers) amount to nearly three pounds less of water evaporation to the pound of coal, than the experiments at the Crystal Palace.

Electrical Conductor—A Disputed Point.

In the "Scientific American" of the 29th ult., we stated that Robert Stephenson had made the remark that "an electric current could be sent with a double-wire to any distance without any sensible diminution of force." We also stated that "so far as our knowledge extended this was destitute of any foundation in fact."

We have received a letter from James P. Duffey, of Philadelphia, who asserts that R. Stephenson is right, and the fact has been known to him for the past nine months, and was discovered by him while experimenting upon a new galvanic machine for medical purposes."

Our telegraph engineers are better qualified to decide this question than any other person or persons. It simply consists in this, "can an electric current be conducted to any dstance without any sensible diminution of force by a double wire?" This also involves the question of using a single wire, whether it is as good as a double one. This question has nothing to do with multiplying the plates of the battery; we are well aware of the effect that would thus be produced; it merely relates to the double wire.

The Present to Joseph E. Holmes.

We have received a note from L. H. Gibbs, stating that the present of the gold watch made to Mr. Holmes, was not by some exhibitors, as stated, but those who were employed under him, 'honor to whom honor is due."

The Society of Industry in France has offered a prize of 1,000 francs for the best treatise on the potato.

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[*Continued from First Page.*]

its steam by the passage, *e'*, where it is now shown exhausting the steam through the cavity of the slide valve, H, and through the exhaust port, *f*, into pipe, K. The slide valve is for reversing the motion of the engine; I is its lever; it is like those in common use; R R are two fixed abutments attached to the fixed cylinder, C; these have concave flanges between them, branching from their apexes, and have packing bars, *m m*, which are adjusted by screws, *p p*, to press steam tight against the rotary cylinder.

The steam is now shown as being let in through the ports *c' c'* on both sides of the engine, the one at the right hand side, figure 3, on the upper side of the abutment, and at the other side beneath the abutment, making the engine rotate in the direction of the arrow. Of course the steam exhausts at the right hand side through the ports below the abutment, and on the left hand side above the abutments.—When the engine is moving in a contrary direction, the present steam passages become the exhaust passages.

The sliders, N N' N'' N''', by this arrangement of the steam and exhaust ports, are relieved of all steam pressure when passing the abutments, so that there is very little friction on them. Sliding pistons and abutments like these have been used in rotary engines, but the arrangement of the exhaust ports is to relieve the sliders from pressure in passing the abutments—a good arrangement and entirely new. In other rotary engines with abutments, the sliders are forced out by a heart or similar cam, but these sliders are forced out by steam pressure acting on small pistons in the chambers, *u u u u* in both ends of the engine. The ends of the

Figure 2.

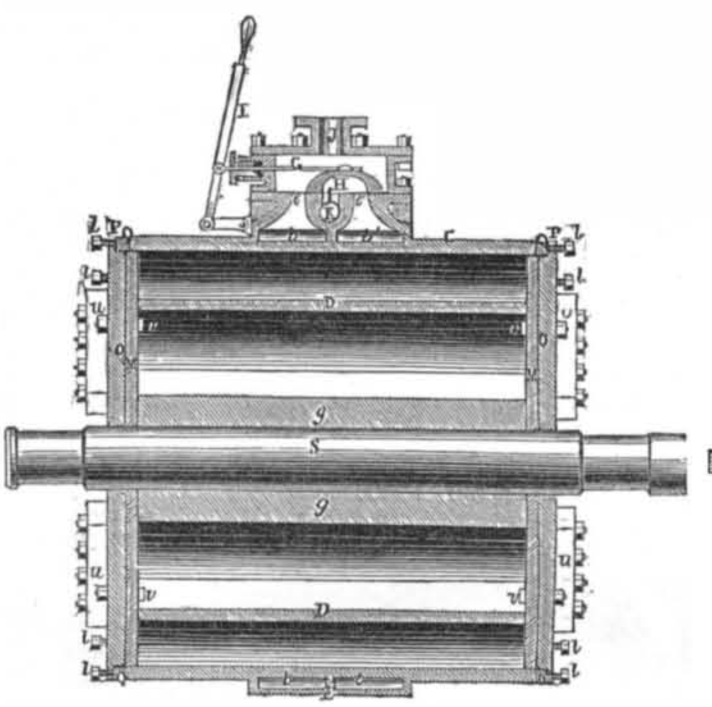
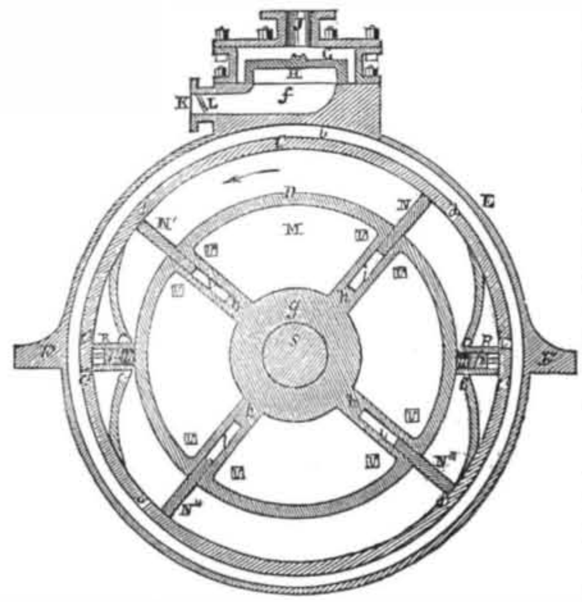


Figure 3.



sliders have projections outside of the ends of D, these are connected to small pistons in the chamber, *u u*, which small pistons are actuated by steam in the chambers at the ends of the cylinder. The steam from the small pistons is exhausted before a slider comes to an abutment, but commences to act to press out the slider when it passes an abutment. These sliders work free in their recesses, *i i* in the arms, *h h*, but are always pressed steam tight and allow no steam to pass them. This method of working the sliders by steam to press them out, is also new.

M M are the inside cylinder heads, in which there are slots for the projections of the sliders, to be actuated by the small steam pistons mentioned before. O O are other cylinder heads, secured by bolts, *v v*, and fitting close to M M, but have flanges, P P, all around the outer side, Q Q are stiff metal packing rings, corresponding with the size of the interior of the outer cylinder, and fitting closely over the inner heads, M M. These packing rings are pressed up by the screws, *l l*, passing into the flanges, P P. There is a rotary expansion valve in the chamber above G, which may be made to cut off the steam at any desired point, it is rotated by wheels, U V, which are operated by the revolving cylinder, one of the heads being formed with teeth on its periphery. The governor is operated by a cord passing from the small pulley, W, over X, which rotates its spindle and that of the governor; the sliding sleeve, 2, of the balls, operates the throttle valve through the angle arm Z Y, in the usual way. The moving joints are all made upon the principle that two smooth metal surfaces make a steam joint without pressure or weight, and consequently without friction.

By this description and these illustrations, a proper idea of the principle and operation of this rotary engine will be obtained. Its advantages, as pointed out, when compared with others, will show how free it is from lateral friction. It is on exhibition at the Crystal Palace. For further particulars address R. C. Bristol, China, Mich.

Mr. Bristol will be in attendance at the Crystal Palace until the 20th inst., where he will be happy to exhibit his engine to all interested in such matters.

Recent Foreign Inventions.

IMPROVEMENTS IN OBTAINING TIN.—Mr. F. W. Emerson, of the Trereiffe Chemical Works, Penzance, England, has patented an invention, which consists in a means of purifying and separating the ore of tin, from other metallic oxydes, sulphurets, arseniates, tungstates, or other compounds, previously to its introduction into the smelting furnace, by digesting the ore (either with or without the aid of heat) in a mixture of common salt, sulphuric acid, and nitrate of soda or potash; the last of these not being absolutely necessary to the success of the operation, though it helps to shorten the time in which the process is performed. The inventor first makes a correct analysis of a fair sample drawn from the bulk of the ore to be operated upon, in order to ascertain the exact nature and amount of the impurities. In the event of its being found to contain any compound of sulphur or arsenic, he first roasts or calcines the ore by any of the ordinary known methods. This process is not necessary, unless such compounds are present. If it is found to contain oxyde of tin—the ores of tin mostly occur as a peroxyde—it will be necessary, in order to avoid loss, either first to peroxydize it, or afterwards to precipitate from solution by the insertion of metallic zinc, or any other precipitating agent. To peroxydize the oxyde of tin, he saturates the bulk of the ore to be operated upon with nitric or nitrous acid, and after allowing it to stand for two or three hours, to permit a full re-action to take place, he puts it into an iron, fire-clay, or other convenient retort, and distils or evaporates it to dryness, receiving the nitric or nitrous acid gases into stoneware or other convenient condensers, to be used over again. He then mixes the ore with such a quantity of common salt, as by decomposition with sulphuric acid shall yield a sufficient amount of muriatic acid to combine with the contained impurities of metallic oxydes, or bring the oxydes of iron or manganese in wolfram, or the lime in tungstate of lime into a soluble state. He then puts the ore thus mixed with salt into a cistern formed of granite, slate stoneware, or other material that is not seriously acted upon by acid (a wooden trough has been found to answer the purpose), and pours upon it such a quantity of either brown acid or oil of vitriol as will effect the decomposition of the salt. The inventor prefers to use an excess of sulphuric acid. He then turns into the mixture a jet of steam from a steam boiler, so as to keep the mixture at about 200° Fah., stirring it about from time to time with a wooden rake or shovel, so as to expose fresh surfaces to the action of re-agents, adding a small quantity, say 6 or 7 lbs. to the ton of nitrate of soda or potash, for the purpose of enlivening and quickening the operation. If the material should contain micaceous or magnetic iron ores, it would be advisable to increase the amount of nitrate of soda or potash, to assist their oxydation and conversion. The invention also describes analogous methods of treating the ores when copper or tungstate is contained. Claim. Purifying and separating the ores of tin by acting upon the contained impurities with a mixture of sulphuric acid and chloride of sodium, either with or without the addition of nitrate of potash or soda, with or without the application of heat by any known means.

MANUFACTURE OF IRON AND STEEL.—Mr. T. W. Dodds, of Holmes Engine and Railway Works, Rotherham, York, England, has patented some improvements in the treatment and manufacture of iron and steel. The inventor thus specifies his claims—1. A general arrangement of machinery. 2. The conversion of iron into steel, wholly or partially, by the use of a carbonaceous fuel or a mixture of soda-ash, soda, potash, pearlash, or other alkaline matter, and carbonate or bi-carbonate of lime and charcoal. 3. The mode of converting iron, wholly or partially, into steel by the use of a compound of soda ash, lime, and charcoal, or any mixture of alkaline matter with carbonate or bi-carbonate of lime and charcoal. 4. The mode of treating iron, partially or wholly converted metal, by plunging it when red hot, or thereabouts, into a wet or dry bath—that is, either into water, water impregnated with carbonaceous matter, liquid ammonia, or ammoniacal liquor, a solution of potash, or hydrate of potash, or into a mass of dry carbonaceous material, as highly carbonized sand, charcoal, and soda ash, or other carbonaceous matter. 5. The mode of arranging and working the furnaces of conversion, wherein the retorts or converting chambers may be charged and discharged whilst they are in working condition, without being permitted to cool. 6. The mode of adjusting the anvil level of steam-hammers by means of a hydrostatic cylinder or chamber.—7. The mode of working hammers or tilt levers so as to strike in both directions by the use of a rotary crank shaft connected therewith. 8. The use of an atmospheric buffer for increasing the rapidity of the hammer strokes. The use of coke or other partially elastic material at the points of metallic connection of hammer details for the purposes described.

(For the Scientific American.)

Preparing Indigo.

The following is a new mode of preparing the indigo plant for home and foreign consumption.

Before the discovery of South America, all the blues made in Europe, were obtained from the woad plant (*isiatio tinctoria*), but since the introduction of indigo the blue vats for woolens have been made with woad and indigo. My object in sending you this article, is to show that the indigo plant, worked up in the same way as woad, would be far more valuable. I am led to this suggestion by experiments made with the wild indigo plant during the last English war, when no European woad could be obtained in our market.

The following is the process of preparing the woad plant for the use of the dyer:—

The seed is planted in rows as early in the spring as the season will allow. When the leaves are ripe, which can be known by a blue ring near the top of the leaves with a spot in the centre, they are gathered and ground in a trough mill, the trough being made water-tight to prevent a leakage of the juice. Knives follow the roller to cut the plant, and thereby facilitate the grinding. When well ground it is made into balls of about three inches diameter, and then placed on boards to be dried. Should there be any appearance of fly-blows on the balls, a little dry slacked lime must be sprinkled over them; without such precaution the balls will breed innumerable maggots, and be spoiled. Some dyers use the balls, but the greater number use them after being couched. The woad plant affords three pickings in one season, and when the whole have been balled and dried, the balls are beaten pretty fine with mallets, or passed through a pair of rollers, then moistened with water, and laid in a heap to ferment. When the heap becomes quite warm, it is turned over to prevent the fermentation from progressing too fast. This operation is repeated several times, until the heap becomes perfectly and uniformly cool; it is then packed in hogsheads, and no further fermentation will ensue. The French and Germans sell their woad in balls, and they are couched by the dyer, or by some one he employs for that operation. I have bought many hogsheads of their balls sent to New York for a market.

The woad vats used in England are 7 feet 6 in. diameter at the bottom, 6 feet at the top, and 7 feet in depth. To set one of these, 560 lbs. of woad is used with 24 lbs. of indigo. This vat can be kept at work for six months when skillfully managed, by adding more woad and indigo when required. The quantity of woad used for the six months is 1120 lbs., or one ton for each per annum. My consumption, when so employed in England, was twenty-four tons yearly, and my younger brother, who now occupies the same premises much enlarged, has consumed from sixty to seventy tons in one year.

Indigo used in the woad and other vats, has to be deoxydixed by fermentation, or by some suboxydized metal, and brought back to the same state as the liquor in making indigo when drawn from the steep, before it is oxydized in the beater; and if the fermentation of this liquor were regulated by the same means as is the woad vat, it would make an excellent and permanent blue dye. As the indigofera plant contains vastly more indigo than the isatis, why, if prepared after the same manner, would it not answer for both woad and indigo; at least with much smaller additions of indigo? The consumption of woad in Europe amounts, annually to many thousands of tons, and if the dyers there could be supplied with the indigo plant prepared in the same way, there can be no doubt but the consumption would soon be quadrupled.

WM. PARTRIDGE.

Binghamton, N. Y.

There is now a speck of war between Switzerland and Austria.

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