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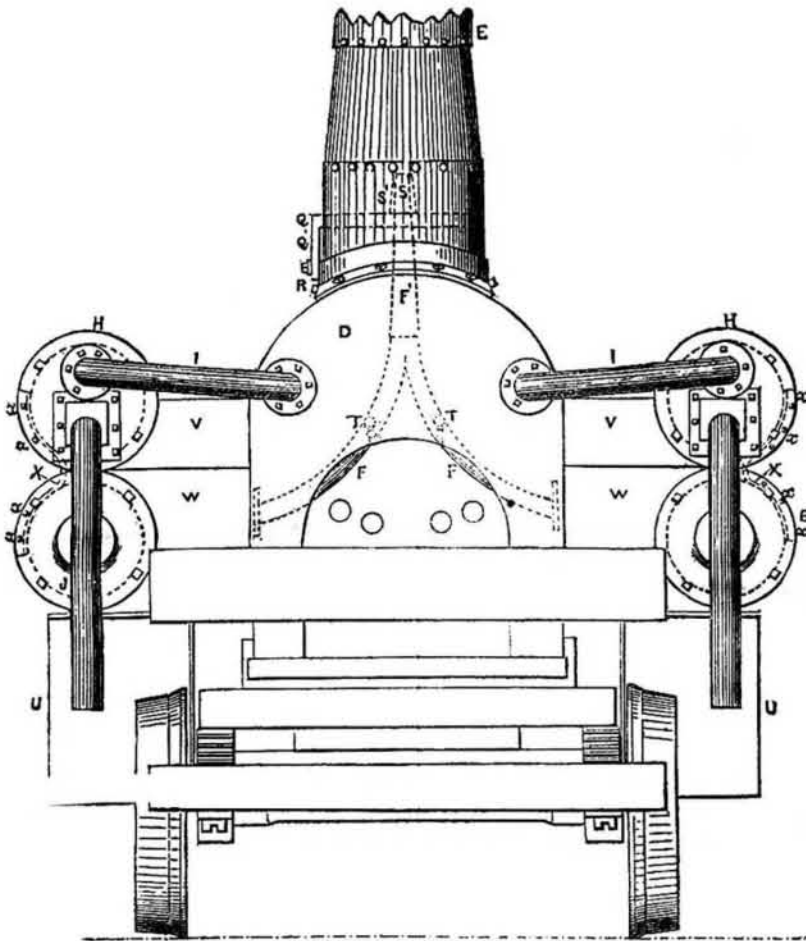
Rail-Road News.

Old Canals of Egypt.

At a recent meeting, May 20th, of the institution of civil engineers, Eng., a paper was read on the Isthmus of Suez and the ancient canals of Egypt, by Joseph Glynn, C. E. It was a very interesting paper. About 600 years before the Christian Era, Darius Hyastis, made a canal from the Nile to the Red Sea. It was in some places 150 feet wide and 30 feet deep. It passed through the valley to the Bitter Lakes, and was navigable for vessels of considerable size when the Nile was high. It also served for the supply of cities with water. The ancients assumed that there was a difference of level between the Red Sea and the Mediterranean, and precautions were taken to prevent the salt water of the Red Sea from mixing with the Nile. This canal fell to decay, but was restored about 644 A. D., by the Turkish Caliph Omar, who introduced many improvements and brought the canal to join the Nile near to Cairo. The general decay of Egypt brought about a decay of this canal again, and it became choked up 120 years afterwards, and for a thousand years it remained so, and was almost forgotten until Napoleon, that wonderful man, went to Egypt. He directed the eminent engineer Le Pere to survey it and report. The length was about 93 miles, through a low barren sandy plain and traversing many lagoons and lakes offering but few difficulties to engineering. Le Pere reported that the rise of high water in the Red Sea was 6 feet, in the Mediterranean 1 foot, and the surface of the former was stated to be very high at high water above low water in the latter. Mr. Robert Stephenson was present at the meeting, and as he had but recently returned from Egypt, he stated that the low water in the Red Sea and the Mediterranean were identical, and Le Pere made a great mistake, which he attributed to a hasty survey made in the time of war. The possibility of restoring this ancient canal was discussed. There is a ridge at the present moment at the end of the Red Sea, towards the Bitter Lakes, consisting of fossils identical with those of the London Basin, caused by a geological upheaval which had changed the features of the district. It has been considered that the Bitter Lakes were once the head waters of the Red Sea, and the ruins of cities and towns around, give evidence of the region being at one time very fertile—it was the land of Goshen, watered with a fresh stream from the canal of Sesostris, and from it Lake Temshah was supplied with pure water.

The Viceroy of Egypt has sanctioned the project of a railroad from Alexandria by way of Cairo, to the Isthmus of Suez, and the work will be commenced without delay.

WADE'S PATENT SPARK ARRESTER.—Fig. 1.



On the 24th of April, 1847, Mr. Robert M. Wade, of Wadesville, Clark County, Va., obtained a patent for improvements in machinery for conveying the sparks and smoke from the smoke stacks of the boilers of engines, and for extinguishing the sparks, which has, as it were, been hid in obscurity, but which, owing to so much attention having been given to the subject lately, the public should be better acquainted with. Fig. 1 is an end elevation of a locomotive, and fig. 2 is a plan view, showing the apparatus combined for drawing the smoke and sparks from the smoke box, and discharging them beneath the engine and pumps. Fig. 3 is an elevation of the combined escape steam pipes and cocks. Figure

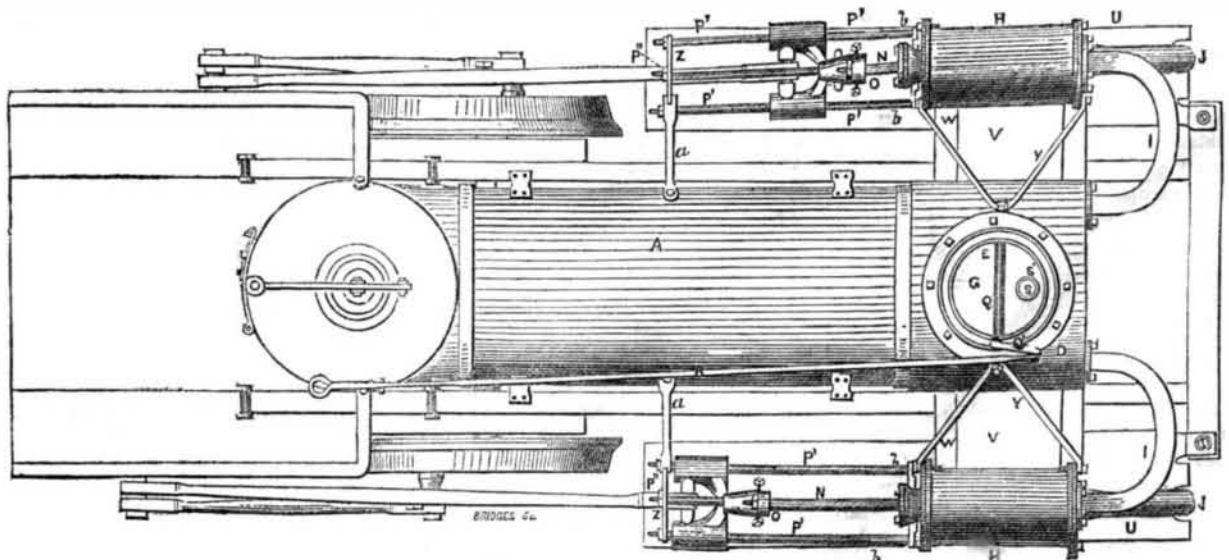
4 is a section of the pump, showing the valves and pistons. The two latter figures are on the next page. The same letters of reference indicate like parts on all the figures.

A is a common locomotive engine; B is the steam cylinder; D is the smoke box; E is the smoke stack; F are the pipes for conveying the escape steam into the smoke stack, the two upper ends being united into one pipe in the smoke stack, and containing two stop-cocks, T. G is a valve for closing the smoke stack attached to a horizontal axle, Q, having a crank, Q', operated by a rod, R, and having an opening in the same surrounded by a short pipe, S', which is open at both ends, and which closes over the connected ends of

the steam pipes, F, allowing the escape steam to pass through the said valve into the smoke pipe, E, when said valve is closed. H is a pump combined with the steam cylinder for drawing the sparks and smoke from the smoke box and discharging them wherever required.

I is the induction tube through which the sparks are drawn by suction from the smoke-box into the cylinder of the pump, one end of said tube being bolted to the end of the plate of the pump cylinder and the other end to the end plate of the smoke-box. J is the education tube, through which the sparks are driven by the piston of the pump—one end of said tube being bolted to the end plate of the pump, and the other end opening into the air, or into a receiver containing water, or other suitable place. K is a valve at the end of the induction tube hinged to the inside of the end plate of the pump, being open whilst the piston is moving toward the head of the pump, and closed when moving in a contrary direction, represented in figure 4. L is a valve in the education tube, arranged so as to close when the valve, K, opens, and to open when the valve, K, closes, being hinged to the outside of the end plate of the pump. M is the piston rod of the steam cylinder. N is the piston rod of the pump. O is the cross-head connecting the piston rods, M, N, together, causing them to work simultaneously in the same direction. P' P' are the parallel guides for the steam cylinder cross-head. P'' is the guide for the cross-head of the pump. Q is the crank axle of the valve, G. R is the rod for turning the crank axle. S is the opening in the valve, G, surrounded by the short pipe, S', attached to the valve and closing down over the united ends of the steam pipes, F, which conduct the escape steam through the same, whilst the valve, G, prevents the escape of the smoke and sparks through the stack. The valve, G, is brought to a horizontal position for closing the smoke stack when the pump is in operation, and is turned to a vertical position, or opened, when the engine is at rest. T T are the cocks for allowing a portion of the exhaust steam to escape into the smoke-box for the purpose of extinguishing the sparks and to prevent the pump becoming over-heated, the steam being partially condensed in the smoke-box. U is an inclined guard for giving the fire a downward direction to prevent the ascent of the same amongst the machinery. The pumps are combined with and secured to

Figure 2.



he smoke-box by means of the braces, Y, and steam-chests, V, adapted and fitted to the sides thereof, by making the undersides of the flanges of the pump concave and corresponding with the convex sides of the flanges

of the steam cylinders, and properly secured upon them in any permanent and durable manner, by means of double concave plates, X, secured to the sides of the pump and cylinder by the screws, x or in any convenient

manner. A similar pump and arrangement of parts are combined with the other steam cylinder for a like purpose, similar letters being used for similar parts.

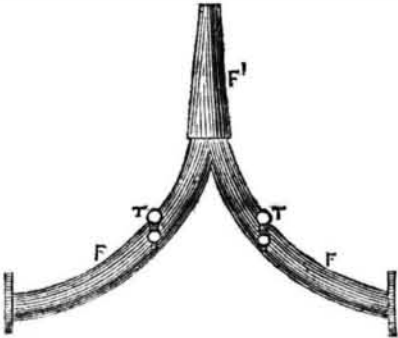
The several parts of the apparatus may be

constructed, arranged, and operated in any convenient way or manner for producing results similar to the above, by means substantially the same as those above described.

The head of the pump may be made concave on the inner side, or of an obtuse angle shape, or in two segments or semicircles—the upper segment being stationary and bolted to the cylinder and the lower segment hinged by its straight side to the straight side of the upper segment to answer as a valve for preventing clogging from an accumulation of sparks in the pump, the end of the eduction tube bolted to the outside of the head of the pump being made sufficiently large to embrace and cover the said lower segment of the head which is to serve the double purpose of a head and valve—which arrangement would require the eduction tube to be bolted to the circular flange of the pump instead of the head of the pump, as described.

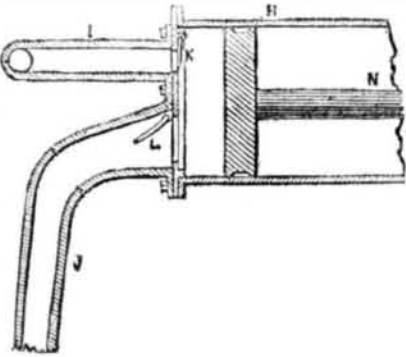
The parallel guides, P' P'', are sustained in their required position by the plate, b, fixed to the end of the cylinder, and the plate, z, secured to the frame of the engine by the brace or arm, a. On firing up the engine, the valve, G, must be turned to a vertical position by moving the rod, R, to which it is attached; the furnace and engine being in full operation, and it being required to prevent the sparks escaping from the smoke-stack, the engineer

FIG. 3.



must move the rod, R, longitudinally, which will turn the valve, G, to a horizontal position—the aperture in the same surrounded by the additional pipe, S', allowing it to drop over the upper end of the exhaust or escape steam-pipe, F', thus shutting off the communication between the smoke-box and the smoke-stack, E; the cocks, T T, are then partially opened, which allow a portion of the waste steam to enter the smoke-box in quantity sufficient to extinguish the sparks, and regulated by said cocks, the main body of the waste steam being

FIG. 4.



allowed to escape in the usual manner through the chimney or stack, it being unnecessary to allow all the waste steam to enter the smoke-box and pumps, as it would create an undue pressure on the several parts.

The following are the claims of this patent, and, with the full evidence of what they are, we would state that Mr. Wade is prepared to sell rights, and any communication addressed to him will be promptly attended to:—

"I claim pumping the sparks from the smoke-box of a locomotive engine, when the sparks are extinguished, or partly so, by the introduction of a portion of the escape steam through the cocks, T T, substantially in the manner and for the reasons stated. I also claim the arrangement of the valve, G, in the smoke stack, E, as constructed, with the short pipe, S', in combination with the united steam pipes, F, for preventing the escape of the smoke and sparks during the operation of the pump, and, at the same time allowing the waste steam to escape through the smoke pipe, E.

[Special Correspondence of the Scientific American. The Great Industrial Exhibition and Incidents Connected Therewith.

LONDON, May 31st, 1851.

Since the shilling admissions have commenced, although it was confidently anticipated that the great building would be inundated, the current of people, strange to record, has visibly fallen off, from a prevailing impression through the country that the crowds would be so great that there would be little comfort experienced in a visit. During the half-a-crown days, which occur once a week, the tide swells up to the old five shilling average; but in a week or so more, when the railways have commenced what they call "cheap trips to London," from the interior of the country, it will even surpass antecedent great return days. The bulk of stranger visitors now are French and Germans, and there are a goodly number of Americans, but not a circumstance of what were expected from the representations made by the American journals.

Queen Victoria and suite are daily visitors, and they take a lively interest in every proceeding connected with this great work of modern times. The Prince, especially, and the old Duke of Wellington, spend one third of the week, one way or another, in looking after the interests and arrangements. This is gratifying, as it sets a pattern to the nobility and gentry, who are slow to act unless they receive an impetus by royal example.

The list of prizers has at length been made known, much to the satisfaction of the numerous exhibitors, who were anxious to learn the class and character of the men who were to decide upon the intrinsic merits of their works. We think much judgment has been shown in the selection of the Council of Chairmen, among whom we find, for instance, in the department of machinery, the eminent Sir David Brewster, and the Earl of Jersey, a practical and a capable professor. In the metallic, vitreous, and ceramic manufactures, are the Duc De Snyes, a celebrated Prussian philosopher, and Horace Greeley, of New York City, of whom comment would be superfluous. In vegetable substances, used in manufactures, we find the name of Professor Richard Owen, F. R. S. In philosophical instruments, the name of Sir John Herschel stands pre-eminent, and in the sub-jury of musical matters come Sir George Smart, Sir Henry Bishop, and the great Thalberg. In sculpture, models, and the plastic art are the famous Panizzi, Wigon, of the Royal Academy, Lord Holland, and M. Quetelet. We also find Horace Greeley, Esq., (who is announced as an Honorable), elected as Chairman of the Iron and Hardware Department: his associates are stated to be capable gentlemen.

The United States division does not attract as much attention as we should like. The most striking features are the Greek Slave, (which is flocked by the *dillatanti*); the large display of Goodyear's india rubber garments; Pirsson's pianos (which Thalberg has pronounced the finest from the United States); an iron double salamander safe from the warehouse of Silas C. Herring; a huge mass of zinc ore; a collection of perfumery by Rousset, of Philadelphia, and a number of small and ingenious articles, which we do not now remember. We notice with pleasure that some thoughtful American has made a collection of all of the papers published in the State of New York, and bound them in volumes of each county. The City of New York collection excites considerable attention among the English visitors, who marvel at their cheapness and beauty of typography: a "Brother Jonathan" they deem a very mammoth, as in truth it is, and they cannot imagine how a New York "Sun" can be sold for a cent, when they have to pay eight and ten cents for the least morning paper.

There is now no room left to doubt the great good the Crystal Palace has brought about. Where are the dissenting Chartists? Why have the Red Republicans kept so quiet, when, according to the officious statements of the New York "Herald" and the London "Chronicle," they were preparing to wage death and destruction by their vicious co-operation with the rabble concentrated of all the civilized

world. The socialists are as quiet as mice, and never did harmony reign so supremely general as it has during the whole course of the Exhibition from its projection until the present time. We cannot but admire the various instances of liberality and kindness on the part of many distinguished gentlemen, all of which have been called forth by this monster, as some of the press sneeringly and satirically styled it. As an instance, we see it stated that Lord Leigh has invited all of his numerous tenants to visit the Palace at his expense, and W. Brown, Esq., Member of Parliament from South Lancashire, and head of the well-known firm of Brown, Shipley & Co, has given £20 to each of his forty or fifty clerks to enable them to visit, without trenching on their ordinary finances, the Exhibition during the season. Again, the Admiralty have granted their dock-yard workmen, for the same purpose, leave of absence for two days, and we learn they also have agreed to pay a certain portion of the expenses of the artificers who have availed themselves of the permission. A general leave to the army has also taken place to all regiments at home, from the 1st of June to the 30th: one field officer, half the captains, and half the subalterns to be allowed the indulgence each fortnight in the month. We suppose, also the numerous Charity Schools will come in for a general holiday, and if we mistake not, ere this, the Royal Commissioner has entertained the idea.

We believe, with the single exception of the Russian Department, the Exhibition may now be deemed complete. From some statements we have seen, the Russian collection will be one of the most wonderful and attractive in the Exhibition. The jewelry arrived is valued at \$200,000, and it is said will quite eclipse the brilliant display sent by the Queen of Spain. Among other matters is a pair of folding-doors, valued at \$40,000, of most valuable malachite, from Siberia, belonging to the Prince Demidoff. There are also chimney-pieces, arm-chairs, and cabinet furniture of the same precious stones. There is an enormous candelabrum, in ormolu in dead steel, upwards of 14 feet in height, and one in silver, representing a group of armed knights dismounting under a fir tree: the workmanship is exquisite, and it weighs upwards of 2 cwt. of silver.

The American Department is called "The Prane," and each country appears to receive some characteristic appellation by which it is known. The American visitors are requested to register their names in a book provided for the purpose, and on a hasty examination we find there have been about five hundred visitors from the United States, the bulk of whom hail from New-York and Virginia.

A writer in the London Expositor, a paper devoted to inventions, designs, art, and manufactures, calls attention to the vehicles from the United States, and argues that they surpass in elegance of design and beauty of workmanship anything of the sort manufactured in England. The same writer also praises the solar lamp by Cornelius & Co., of Philadelphia, and a bell telegraph from New York. He deems them very important inventions, and as he is a man of weight and judgment, perhaps his dictum will have some weight with the jurors. We fear that the Americans will gain but few, if any prizes, as the jurors, with very few exceptions, are Europeans of various countries, and it is but natural to suppose they will take cognizance of the improvements of their own nations before those of any other that may present themselves for inspection, no matter how strong their claims. H. H. P.

Soap a la Rose

This is made of the following ingredients:—30 pounds of olive oil soap; 20 of good tallow soap. Toilet soaps must be reduced to thin shavings, by means of a plane, with its under face turned up, so that the bars may be slipped along it. These shavings must be put into an untinned copper pan, which is surrounded by a water bath, or steam. If the soap be old and hard, 5 pounds of water must be added to them; but it is preferable to take fresh-made soaps, which may melt without addition, as soap some time kept does not readily form a

homogeneous paste. The fusion is commonly completed in an hour, or thereby, the heat being applied at 212° Fah., to accelerate the process, and prevent the dissolution of the constituent water of the soap. For this purpose the interior pan may be covered. Whenever the mass is sufficiently liquefied, 1½ ounces of finely ground vermilion are to be mixed, after which the heat may be taken off the pan; when the following perfumes may be added with due trituration:—3 ounces of essence of rose; 1 ditto cloves; 1 ditto cinnamon; 2½ ditto bergamot.

Transparent Soaps.

These soaps were for a long time manufactured only in England, where the process was kept a profound secret. They are now made every where. Equal parts of tallow soap, made perfectly dry, and spirit of wine are to be put into a copper still, which is plunged in a water-bath, and furnished with its capital and refrigeratory. The heat applied to effect the solution should be as slight as possible, to avoid evaporating too much of the alcohol. The solution being effected, must be suffered to settle; and after a few hours' repose, the clear supernatant liquid is drawn off into tin frames, of the form desired for the cakes of soap. These bars do not acquire their proper degree of transparency till after a few weeks' exposure to dry air. They are now planed, and subjected to the proper mechanical treatment for making cakes of any form. The soap is colored with strong alcoholic solution of archil for the rose tint, and of turmeric for the deep yellow. Transparent soaps, however pleasing to the eye, are always of indifferent quality; they are never so detergent as ordinary soaps, and they eventually acquire a disagreeable smell.

Windsor Soap.

Take common hard curd soap 56 lbs., oil of carraway 1½ lb., tincture of musk 12 ounces, English oil of lavender 1 ounce, and oil of marjoram 4 drachms.

Starkey's Soap.

Rub together in a mortar subcarbonate of potash with oil of turpentine.

Soap au Boquet.

30 pounds of good tallow soap; 4 ounces of bergamot; oil of cloves, sassafras, and thyme, 1 ounce each; neroli, ½ ounce. The color is given with 7 ounces of brown ochre.

Cinnamon Soap.

30 pounds of good tallow soap; 20 ditto of palm-oil soap. Perfumes:—7½ ounces of essence of cinnamon; 1½ ditto sassafras; 1½ ditto bergamot. Color:—1 pound of yellow ochre.

Orange Flower Soap.

30 pounds of good tallow soap; 20 pounds of palm oil soap. Perfumes:—7½ ounces essence of Portugal; 7½ ditto amber. Color:—9½ ounces, consisting of 8½ of a yellow-green pigment, and 1½ of red lead.

Musk Soap.

39 pounds of good tallow soap; 20 ditto palm-oil soap. Perfumes:—Powder of cloves, of pale roses, gilliflower, each 4½ ounces; essence of bergamot, and essence of musk, each 3½ ounces. Color:—4 ounces of brown ochre, or Spanish brown.

Bitter Almond Soap.

Is made by compounding, with 50 pounds of the best white soap, 10 ounces of the essence of bitter almonds.

Lowell Mechanics' Fair.

We would call attention to the Mechanics' Fair which is to be held in Lowell, as set forth in an advertisement on another page. We are positive that it will be a far better display of American inventions, in every department of art and manufacturing, than at the great Exhibition.

The Locust has no Sting.

Dr. Gideon B. Smith, the distinguished naturalist, has made enquiry into all the recent reported cases of death an sickness from the sting of the locust, and the result of his inquiry is, that no one has yet been injured by the sting or bite of a locust.