

**Linen Import and Manufacture.**

Our civil war, along with other results, has tended to stop the supply of cotton, to prove the inadequacy of other countries for a sufficient yield of the right staple, and, consequently, to substitute other fabrics. The effect is marked very clearly in English trade returns. Linen has been produced in an unparalleled quantity there, and exported to us more largely than ever before. In the first three months of 1862 the total value of linen piece goods exported from England was £982,013; in 1863 it was £1,327,895, and in the corresponding period of 1864, £1,869,785. This production and export includes white and plain piece-goods; checked, printed, and dyed ditto; cambrics and lawns; damasks and diapers; sail cloth, thread, and hosiery. The total value of exports of linen manufactures of all kinds in the first quarter of 1864 amounted to £1,998,452, against £1,454,777 in the corresponding quarter of 1863, and £1,088,363 in the corresponding period of 1862. The export nearly doubled in three years. This country, too, was the largest consumer and customer for this wonderful increase, which amounts to no less a sum than £,910,089 or \$4,550,445 for a single quarter, and \$18,201,780 per annum. We import to the value of £378,735 in 1862, £556,774 in 1863, and £914,917 in 1864. This is an increase in linen goods of £536,182, or about \$2,681,000, in one quarter, produced in two years. The increase in a year, at this ratio, would be \$10,723,640. The last returns show that the increase is still increasing; and that, although some suffering has been produced among British operatives by the cotton famine, and some mills rendered less valuable, the suffering is compensated in another quarter by an excessive and unparalleled consumption of linen.

These facts show that linen manufactures here are starting at the right time. The creation of so good and sudden a demand cannot but carry up prices. The duties will be added to that cost and render linen manufactures very valuable. We have some manufactures of this kind and evidently need more. Their erection will lead to the immigration of skilled operatives, and thus we shall be permanent gainers through a lesson and discipline of loss. It will also stimulate the production of flax and hemp, and thus we shall have another crop added to the vast variety that already vary our agriculture. Kentucky and Missouri cannot supply even their former yield now. Other States may therefore prepare to meet a profitable demand, and do it safely, since it has been shown that flax-growing does not injure the soil, as it was supposed to do.—*United States Gazette.*

**Horses and Mules.**

During the year ending June 30, 1863, there were purchased 173,832 horses and 86,254 mules, and there were captured 7,783 horses and 6,915 mules, which, added to those on hand at the commencement of the year, made the number 197,457 horses and 110,068 mules. There were condemned, sold, died or lost by capture, during the year, 57,676 horses and 17,170 mules. More than one horse out of every four was thus *hors du combat*, while nearly one mule in every seven was a used-up beast. Yet, \$16,631 58 was paid for veterinary surgeons, and \$39,292 39 for medicines for horses and mules. This unprecedented destruction of horses and mules will have somehow to be arrested, or it will become impossible to remount our cavalry or to provide animals for the artillery and wagon trains.

**Royal Patent to wear a Nightcap.**

Agnes Strickland, in her "Lives of the Queens of England," in giving an account of the rewards bestowed by Queen Mary upon her friends after her accession, says:

"The Queen's gratitude took a very odd form in the case of the Earl of Sussex; he was a valetudinarian, who had a great fear of uncovering his head; and, considering that the colds he dreaded respected no person, he petitioned Queen Mary for leave to wear his nightcap in her royal presence. The Queen, in her abundant grace, not only gave him leave to wear one, but two nightcaps, if he pleased. His patent for this privilege is, perhaps, unique in royal annals:—

Know ye, that we do give to our well-beloved and trusty cousin and councillor, Henry, Earl of Sussex, Viscount Fitzwater, and Lord of Egremont and Bur-

nell, license and pardon to wear his cap, coif or nightcap, or any two of them, at his pleasure, as well in our presence as in the presence of any other person or persons within this our realm, or any other place in our dominions wheresoever, during his life; and these our letters shall be his sufficient warrant in his behalf.

"The Queen's seal, with the Garter about it, is affixed to this singular grant."

**MISCELLANEOUS SUMMARY.**

**AN ENORMOUS SCALE.**—An enormous scale, the largest perhaps in the country, has just been finished at Cleveland for the Fort Pitt Works in this city. They are intended to weigh the monster twenty-inch gun, and are of the following dimensions: Length, 30 feet breadth, 7½ feet, and 4 feet in height. They will weigh from two pounds and a half up to one hundred tons, and are so nicely and accurately adjusted that the weight of half a pound will turn the beam. A half a pound weight on the beam weighs one ton on the scales. They are built entirely of wrought iron, with the exception of the lever heads, which are cast. The pivots are made of wrought-iron steel edges, for the purpose of securing greater strength and durability. The cost of these scales, when set up in Pittsburgh, will be \$2,000.—*Pittsburgh Chronicle.*

**LYON, SHARP & Co.**, of the Sligo Iron Works, contributed to the St. Louis (Mo.) Sanitary Fair a great variety of superb iron, among which are some rare specimens—one sheet, a boiler head, one hundred and two inches in diameter, half-inch thick, weighing one thousand one hundred and sixty pounds, the largest sheet ever made in the United States, and also several pieces of sheet-iron, rolled to the one nine-hundredth of an inch in thickness, with Russia iron polish on both sides—probably the thinnest sheets ever made—as considerable ado was made through Europe over some sheets rolled in Germany nearly one-half thicker than this. This has a Russia iron surface on both sides, and is as tough as bank-note paper.

**BOILED TELEGRAPH WIRE.**—Boiled wire is used by some telegraph companies, and the process of preparing it is thus described:—"The wire, in coils, is placed in a large iron cauldron, filled with linseed oil, and boiled about fifteen minutes, when it is presumed to be 'done.' By this process it receives a coat of glazing, which preserves it from rust. The wooden blocks, or braces, by which the insulators are placed, are also boiled, but in different material. They are made of sycamore wood, and are boiled—100 at a time—for a period of one hour, in ordinary coal tar. The effect of subjecting the sycamore to this process is to render it secure against warping or cracking from sun or rain."

**A MONSTER steam feed mill** designed for the United States Government for recruiting army horses in the public stables, near Washington, is now being constructed at the machine works of Messrs. C. & J. Cooper, Mount Vernon, Ohio. The engine is 100-horse power, and the mill capable of grinding 225,000 lbs. of grain or hay in ten hours. This feed is to be mixed and cooked by steam passing through six-inch horizontal iron cylinders, carried by an apparatus like a chain-pump; to be wetted, steamed and then dried as it is carried along.

**ANOTHER IRON-CLAD.**—The iron-clad *Tunxis*, of the third class, was to have been launched at Chester, Pa., on the 4th inst. She is put down in the register at 614 tons, and has one revolving turret, mounting two heavy guns. A great many improvements are said to have been made in her construction from the original vessel. She will be fitted for sea immediately. The whole iron fleet is in a prosperous state of forwardness, including the great *Puritan*, *Dictator*, and *Dunderberg*.

**ENTERPRISE IN CALIFORNIA.**—The *Washoe Weekly Star* states that in Humboldt District, a company is constructing a canal sixty-three miles in length, five feet deep and sixteen feet wide, to lead the waters of Humboldt river to the mining sections of the different districts. This canal will give water power for any number of quartz mills. A city has been located by a company on both sides of the canal, in the richest section of the country where mills are to be built, and it is claimed that this will be the center of business in Humboldt county.

**IMPROVEMENTS IN IRON-MAKING.**—It is well known that iron undergoes three processes before it is fit for the forge—smelting, refining, and puddling. The smelting-furnace only yields pig-iron, which is a combination of iron with as much carbon as it can take without becoming plumbago, and the subsequent operations tend to deprive it of its superabundant carbon in order to render it malleable. A new process has now been invented, by which malleable iron may be obtained direct from the smelting-furnace; it consists in driving oxide of iron into the furnace by means of the ventilator, whereby all the carbon is at once absorbed. In order to apply this method, the hearth of the smelting-furnace must be built somewhat higher than usual, and the air driven in by the ventilator is previously made to pass through three chambers, in which it becomes charged with oxide of iron at a high temperature, the atmospheric pressure being at the same time kept very high.

The dangers arising from the universal adoption of the common lucifer-match have induced chemists to seek a substitute for it. M. Peitzer has recently proposed a compound which is obtained in the shape of a violet powder, by mixing together equal volumes of solutions of sulphate of copper, one of which is supersaturated with ammonia, and the other with hyposulphite of soda. A mixture of chlorate of potash and the above powder will catch fire by percussion or rubbing; it burns like gunpowder, leaving a black residue. M. Viederhold proposes a mixture of hyposulphite of lead or baryta, or chlorate of potash, for matches without phosphorus. The only inconvenience of this compound is that it attracts moisture too easily.

**SOLID DRAWN STEEL TUBES.**—The London *Engineer* says:—"An influential company has been formed to purchase and work the patents of Messrs. Hawksworth & Harding for drawing steel tubes, hollow steel wire, or ordnance cylinders from solid steel, by hydraulic pressure. The machinery by which this is effected has been worked experimentally in Paris for the last two years, and it is stated that the French Government are negotiating for the supply of ordnance barrels thus drawn by hydraulic pressure. The machinery is now working (with a 600 ton press) in Willow Walk, Bermondsey."

**EGGS IN PHOTOGRAPHY.**—We are informed by Professor Seely, editor of the *American Journal of Photography*, that more than 1,200 dozen of eggs per week are used in New York and vicinity for albumenizing paper for photographs. A great deal more than this quantity of albumen is thrown away every week in the blood of the animals slaughtered for this market. Could some plan be devised for separating the albumen from the blood it would be a very valuable discovery.

**A PAIR OF REBEL SHOES.**—A resident of Wheeling, who has been to Cloyd's Mountain, the scene of the late fight between Crook and Jenkins, secured a pair of rebel shoes. The soles and heels are of wood, and appear to have been sawed out by machinery. The uppers, which are of very heavy, stiff and badly-tanned leather, are nailed upon the wooden soles with large tacks and welts. The shoes are exceedingly clumsy and heavy.

**THE SCIENTIFIC AMERICAN.**—We have been an attentive reader of this paper for years, and always have felt after its perusal that we have been doubly paid for the time spent in its reading. For our part, we cannot see how a mechanic who cares to perfect himself in his business and also to know what is going on in the mechanical world around him, can do without it. Its cuts and illustrations are rarely equalled—never excelled, and in fine it is a *live* paper for a *live* mechanic.—*Shoe and Leather Reporter, New York.*

**A CALIFORNIA HERDSMAN.**—A late California paper says that Abel Sterns of Los Angeles, California, lost about 7,000 head of cattle, through want of food, during the last winter. That gentleman is believed to be the largest stock and land owner in the United States. He owns this year 48,000 cattle besides 9,000 calves.

**THE FRANKLIN FILE Co.**, of Bridgeport, Conn., which manufactures files by a machine of American invention, furnishes the market with an article superior to those made by the French patent.

**Improved Governor Valve.**

A simple, efficient and economical governor valve is always in demand; no matter on what principle it is constructed, it is sure to find purchasers providing it does its work well and economically. The engraving published herewith illustrates an improved governor valve, which is said by the inventor to be a very superior one. The invention consists in fitting a disk, A, having a number of radial openings, B, on a shaft, C, in such a manner that the two faces of the valve shall be steam-tight and yet free from steam pressure except when open. This is accomplished by placing the valves in a chest, D, and furnishing set-screws, E, to the valves, so that they may be set out to their seats, as they wear. The shaft, C, the valves are on, runs through the stuffing boxes, and is divided in the middle by a sleeve joint, so that the valves may be shifted as occasion requires. One of the valves has a boss on it through which a pin passes into the shaft while the other is simply a brass plate.

In Fig. 2 a side view of the valves and openings is given, and there is a bonnet, G, on the front which may be taken off when the valves want setting out or require inspection from any cause; this obviates the necessity of breaking the joint on the steam pipe. In Fig. 2 a joint is shown connected to the arm, H; this joint has a boss on the end which strikes against the stop in the sleeve, J. When the engine is to be started this joint is slipped up until it meets the stop, and the speed increases until the governor balls rise to their proper position; the thumb-screw at the bottom is then slacked off until the boss, I, falls to the position shown in the engraving. The set-screw shown is then tightened and the regulation of the speed is effected in the usual manner by the rise and fall of the arms of the governor. The valve is now in use in several mills, workshops, etc.; in this State and at the West; it is highly spoken of. Patented through the Scientific American Patent Agency by Alexander White, of Geneseo, Illinois, on the 15th of September, 1863. For further information address A. White & Co., as above.

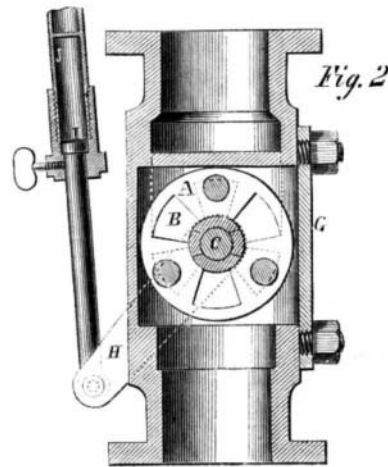
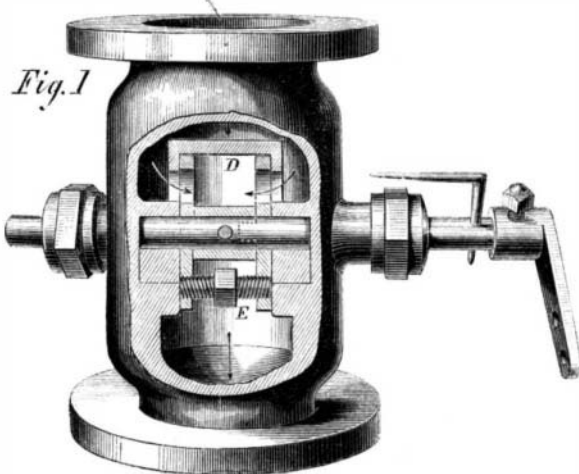
**Improved Grate Bar.**

Improvements in anything connected with burning fuel are of great importance and benefit to the manufacturing community. Boilers are daily undergoing changes in their plans and construction, and while the attention of some is directed exclusively to them, others feel that the furnace and its details is capable of great improvement. In the engraving published herewith a new grate bar is illustrated which is claimed to be a superior one. Some of the advantages it has over those generally used are thus set forth by the proprietor:—

"The peculiar form of construction—distributing the metal in such a manner that all strain caused by expansion from heat is obviated, consequently they will neither warp nor break. This bar has more air surface, uniformly distributed, so that it is kept perfectly cool, at the same time admitting a sufficient quantity of oxygen to give the fire a clear combustion, thereby saving from 15 to 20 per cent of fuel. It is economical as regards weight of metal; it also combines greater strength and durability, with less weight of iron than others in use—being at least one-third lighter. One of the greatest features of his bar is, that the fires are kept perfectly clean and bright with less labor than others, particularly in burning

soft coal, by simply slicing on the top or pricking underneath. The bar is manufactured to suit the convenience of parties purchasing, making the openings to suit all kinds of fuel used. They are now successfully in use in more than five hundred places, among these are the largest steamships, steamboats and manufactories in the United States. In the saving of fuel and durability the testimony of the superintendents and engineers using them is given in a large number of letters, which we cannot publish in this place.

This grate bar was patented by D. Lasher on the 11th of September, 1860. Orders will be punctually attended to by addressing L. B. Tupper, No. 120 West street, between Cortlandt and Dey streets, New

**WHITE'S GOVERNOR VALVE.**

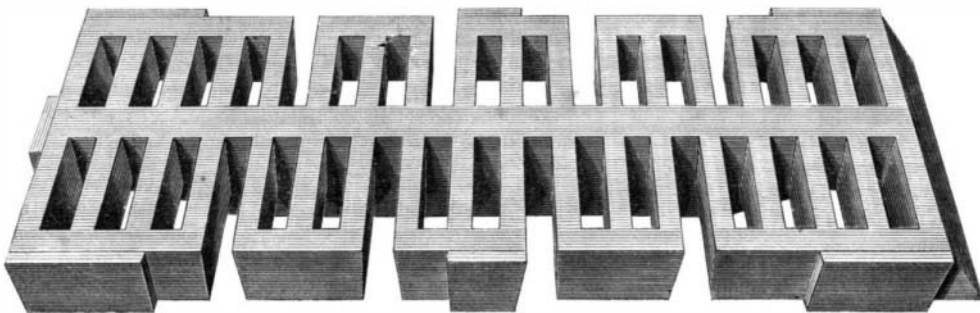
York; and at John Powers's machine-shop, 434 East 10th street, New York.

**New Method of reducing Poor Lead Ores.**

We translate the following by M. H. C. Lampadius, Engineer of the mines at Viseck, from *Le Moniteur Illustré des Inventions*:—

"The ores, according to their richness and the specific gravity of the acid, are treated with the proper quantity of hydrochloric acid to form chloride of lead. The transformation into chloride of lead operates completely when the minerals have been well prepared. This chloride is introduced into double-bottomed vats, and sprinkled with a sufficient quantity of boiling water.

"The solution of chloride of lead thus obtained is drawn off into reservoirs and left to settle. The mother waters, which contain only a very minute quantity of chloride, are reserved for a new solution. The chloride is then treated with a minute quantity of pure water by metallic zinc.

**LASHER'S GRATE BAR.**

"There is thus formed chloride of zinc, and metallic lead is separated in a dense and spongy mass, which after being washed may be melted in an ordinary furnace.

"The solution of the chloride of zinc is first freed from any iron that it may contain by a little chloride of lime, and the zinc is then precipitated in the form of oxide of zinc by means of calcined chalk. It may thus be utilized as zinc white, or it may be reduced and used again.

"As hydrochloric acid is of a moderate price, and as the expense of the zinc is covered by the sale of zinc white, this process ought to be advantageous in the treatment of ores too poor to be treated by fusion."

**CAR SPRINGS.**

The sensation of jogging along on a camel's back was compared, we think by Albert Smith, to riding in a wagon without springs, whilst sitting on a music stool screwed up to the top, and going across the furrows of a newly-plowed field. This sensation may be pleasing to those who are used to it, but civilized sensibilities require more delicate treatment, and we therefore use springs of a great number of strengths, shapes and sizes to obviate the effect of concussion, and prevent the inequalities of roads jolting our senses and nerves to pieces. Another reason, as potent, in favor of the use of springs, is the economy effected by them in preventing the jarring on bad

roads, shaking the car, carriage or vehicle to pieces so soon as otherwise would be; these springs best adapted to answer these purposes will of course be preferred over all others. In all places where they can be applied, elliptic, and semi-elliptic springs appear to answer every purpose; but their expense and the space they occupy have caused several descriptions of springs to be made that unite cheapness with durability, ease of application, and taking up little room. The most useful and effective we have seen for

passenger cars is the solid india-rubber circular spring, which has an ease of motion particularly suitable for that purpose. Where, however, very heavy dead weights have to be carried, as in freight cars, they are liable to burst, and in fact will not last long. By cutting the rubber however, into two or more pieces, and introducing metal between them, the rubber is made more durable but its elasticity is proportionately decreased. Another spring very extensively used and giving great satisfaction throughout the country for freight cars, made by the Metallic Car Spring Company of New York, is made of steel 1½ inches wide and ¾-inch thick, fluted, and turned into a spiral 5½ inches diameter, and of any necessary height, which of course regulates the motion required. Between the coils of steel, in the groove, is placed a band of round india-rubber. The steel forms the spring, and the rubber simply acts as a cushion, but to a certain extent assists the steel and insures the durability of the whole spring, and is therefore peculiarly adapted for carrying heavy weights, and for freight cars, as it will not burst out like india-rubber, and cannot be broken, whilst it is quite as compact as the gum spring. Some master mechanics still stick to the elliptic springs for buffers, but we see on many of our best roads that the volute springs are taking preference over all others as being economical in first cost, easy of application and at the same time durable.

DEPARTMENT OF AGRICULTURE.—Varnum D. Collins, Esq., appointed agent of the Department of Agriculture by Commissioner Newton, has left the city to proceed to China, charged with the selection of new varieties of sorghum seed, and other agricultural products capable of acclimatization, and the collection of general agricultural information.

THE Peruvian Government is at war with Spain, and a correspondent of the *New York Herald*, of the 15th inst., writing from Callao, says that shot, shell, torpedoes, infernal machines, etc., are in great demand. Our readers who are interested should take the hint and act upon it without delay.