

difficulty to carry its own weight, it has done nothing. We sympathize with the inventor, Dr. Drake, and trust that he may hereafter have better luck. We have no faith whatever in his ability to make an economical gas engine; still, we are ready to believe when we see it actually realized. Unlike Ericsson and his hot air coadjutors, Dr. Drake has put forth no brag-gadocio statements in regard to his invention, but works on quietly and hopefully, and whether ultimately successful or not, deserves much credit for his untiring perseverance. Dr. Drake is confident that he can make a successful gas motor. He has been quietly working at his project for many years. He asks no favors, he expects no converts until he succeeds in practically demonstrating the correctness of his theories. His invention is certainly ingenious, and he has our best wishes for its success.

The Cloud Engine folks having taken steam from the main boiler at the Palace, and found the supply insufficient, went to work and put up a portable boiler of their own, and then used the steam from both. But somehow luck has been against them, and the engine went no better. Take the performances of the machine altogether, it has done but little better than the Gas Engine. Notices are stuck up that cloud engines will be built to order, and guaranteed to make a saving of fifty per cent. We think it doubtful whether any one has been sufficiently convinced of its advantages by the movements of the specimen at the Palace, to make extensive purchases. No test has been made of its power; it has not even been connected with the main shaft. It has run as a mere toy. Perhaps there is some explanation for the ridiculous show thus far made, with which we are not acquainted. If the owners can apologize for it, we shall be happy to acquaint our readers, for we have no wish to do any one the least injustice. We were much pleased with the first performances of the Cloud Engine; we hope yet to become acquainted with its good qualities, if it has any.

Knitting Machines.

Mr. Geo. Whipple, No. 23 William street, N. Y., exhibits some of Ellis' patent machines for knitting stockings. They are curious little automatons, and their operations attract a great deal of attention, from the fair sex particularly. The old ladies seem rather suspicious in their examination. They turn over the work, pull it, stretch it, and subject it to a variety of tests, in order to make sure that they can really believe their eyes. But all who examine seem to become satisfied that the stockings are knit firmly, the same as by hand, only better. These machines make stockings at the rate of two complete pairs per hour, taking one thousand stitches a minute. All that the operator does is to move a small treddle with the foot. Different kinds of material can be used with facility, such as woolen yarn, silk, cotton, &c. Price of machines \$100; an extra charge is made for the right to use it, but just how much the attendant could not inform us.

Pipe and Tube Making Machinery.

Webster's Patent is a new invention now exhibited for the first time. The rolling is done by means of a large open cylinder, within which, and geared to the cylinder, a couple of small rollers are placed. The inventor states that 10,000 feet of tin tubing may be formed in one day by a single man. 250 feet is an ordinary day's work. This improvement is applicable to the making of locomotive tubes, stove pipes, &c. It does the work well, and is very simple in construction. Webster & Miller, exhibitors, 67 Nassau street, New York.

Mann & Weeks, of Morrisania, Westchester County, N. Y., exhibit one of Ostrand & Webster's tube machines—an excellent invention, but not very recent. It makes all kinds of pipes and tubes with great facility, is compact, simple, and cheap.

Windmills.

The only one shown in the Fair is the Self-Regulating Windmill invented by Dr. T. G. Johnson, No. 196 Bridge st., Brooklyn, N. Y., illustrated in No. 3, present Volume Sci. Am. It is a very ingenious invention, and presents a handsome appearance.

The principle upon which the regulator operates is centrifugal force of weights acting against the tension of spiral springs, the tension of the springs taking the place of the force

of gravitation in ordinary regulators, such as are used on steam engines. The tension of the springs keeps the sails turned or set to receive the wind, and the centrifugal force of the weights, whenever the velocity becomes too great, turns the sails out or edgewise to the wind.

The regulator, in its construction and operation is exceedingly simple, and acts upon precisely the same principle of the one so thoroughly tested and universally used upon all kinds of machinery. This improvement is one of the latest and best of its class. Now first exhibited. Patented 1855.

Improved Vise.

No screw is employed in this vise, but the movable jaw is attached to a sliding beam which is furnished with a rack and pawl. In order to close the vise, you push the movable jaw up towards the other with the hand, and the pawl holds the same; the grip is tightened by turning the beam, the head part of which is cam-shaped for that purpose. Raise the pawl with the finger and the movable jaw opens, being self-acting; the two jaws are connected by cross levers. This vise is opened, closed, and adjusted, much quicker than the screw kind; its cost is also less. It is a good improvement. R. W. & D. Davis, inventors.—Exhibited for the first time by Wm. H. Schofield, agent, Yellow Springs, Green Co., Ohio. Price \$4.50 to \$17.50, according to size. Patented 1855.

Grate Bars.

The Salamander Grate Bar Co., exhibit samples of Van Syckel's patent bars for steam boiler furnaces and other fires. The improvement consists in locking the bars together by means of mortices and dowels cast on their sides, in such a way that if one bar gets heated more than another it cannot warp or spring out of place, and so burn. Bars thus made last longer than those of the ordinary construction. This improvement is in use on nearly all of our ocean steamships. Patented in Europe through the Scientific American Patent Agency. Office of the Company No. 30 Pearl street, N. Y.

Hand Corn Planter.

This implement is a little dry looking thing externally, but internally presents an exceedingly simple arrangement for forming the hole in the soil, dropping the desired number of grains of corn into the same, and then covering them up. In operating, an up-and-down movement of the tube is only necessary. The end of the tube is thrust down into the soil, and makes the hole, it also takes up dirt enough to cover the corn; by the act of raising the planter out of the soil, the corn is discharged and covered. This machine, in its construction and operation, is said by the inventors to be better than those in use from the fact of its employing a swinging or turning seed distributing plate instead of a horizontal sliding one. The covering device is also more simple, and the whole contrivance much cheaper of construction than any others in use. Coleman & Williamson, 6 Wall st., N. Y., agents. First exhibition. Patented 1855.

Barlow's Patent Circular Saw.

This improvement consists in grooving the faces of the saw teeth from their points inwardly, forming thereby acute cutting edges or double fleams at their sides. Thus constructed the teeth act upon the wood like so many gauges, cutting their way through, not tearing it, as do the common saws. The result is that the stuff comes from the saw with its surface planed off about as smooth as can be done with a smoothing plane. Saws thus made are adapted for all kinds of work, splitting, cross-cutting, &c., no change at all in the set being required. We saw it cut some veneers of hard wood thin as paper, and many other specimens, with perfect success. It is one of the best improvements in circular saws that we have ever seen. The inventor has a convenient little tool with which the grooves are cut and sharpened. Price of shop rights for the saw and the tool, \$25. Patented 1855. First exhibition. A Conger, agent, 345 Broadway, N. Y.

New Mode of Hanging Mill Saws.

The improvement consists in placing behind the saw a thin plate of metal, called a guide plate, against the edge of which the saw moves up and down. This guide plate looks like a second saw, only it has no teeth. It is of the same width, thickness, and length as

he saw, but remains stationary. The inventor states that his method has all the advantages of the mulley rig, besides other features which the latter does not possess. The fender posts and other appurtenances are dispensed with, and the expense of the mill cheapened by some \$200 or \$300. A substantial 4-horse power mill is furnished for \$750; larger sizes higher cost. Charles B. Hutchinson, inventor. Exhibited for the first time by Hutchinson & Co., Auburn, N. Y. Illustrated recently in the SCIENTIFIC AMERICAN. Patented 1855.

Improved Mill Stone Dress.

Mr. W. P. Coleman, of New Orleans, La., exhibits a small operating grist mill, the peculiarity of which consists in the dress of the stones. The grooves have a curve which is contrary to the direction in which the stone rotates; the inventor claims that in this manner the grain is longer detained upon the stones, and that the grinding surfaces are always kept well supplied; the result is a great increase in the quantity of grain that can be ground. The mill at the Palace certainly works well.

The awards of prizes we shall probably publish next week.

Railroad Bridges—Terrible Accident.

On the 1st inst. a large excursion train containing about 600 persons left the city of St. Louis, Mo., to celebrate the opening of the Pacific Railroad on a trip to Jefferson City. They all departed "merry as a marriage bell," but alas! the scene of joy was soon changed to one of sadness and mourning. When the train was crossing the bridge over the Gasconade river—about 35 miles from Jefferson City—its timbers gave way, crash upon crash, precipitating the engine and the cars into the river, instantly killing about 24 persons, and terribly wounding twice that number, among whom were some of the most distinguished citizens of St. Louis. The bridge was about 30 feet high, and was a substructure of scaffolding put up as a temporary affair. The timbers of it do not seem to have been tested; it was a fatal oversight. The directors of this railroad were in too great haste to have it opened, and they ought to be held responsible for their conduct. The chief engineer, T. O. Sullivan, was among the killed, and he it was who should best have known the danger. Two other bridges on this road have since been carried away with freshets, and from the accounts published of their construction, we judge that this road has been most unscientifically engineered. It is a most dangerous, cruel, and short-sighted policy to build cheap, frail, railroad bridges.

Patent Telegraph Case.

In the U. S. Circuit Court, Boston, on the 31st ult., Judge Curtis gave a decision in the case of Wm. B. Clum, vs. Chas. H. Brewer & Baldwin, F. O. J. Smith and John T. Smith, et al. This was a case of a bill of equity brought by the complainants, as assignees from Prof. Morse, of a right to use said Morse's telegraphic inventions on a line from Boston to Provincetown, and asking to enjoin the respondents, who were erecting and using a telegraph between the same places, under a license to use the same inventions, from F. O. J. Smith, Esq. The ground taken by the complainants was that said Smith had no interest in said inventions, and could give no licenses. After a full hearing of both parties and an investigation of Smith's title, the Court,—Justice Curtis, decided that Smith was and is the legal and equitable owner of an undivided one-fourth part of all said Morse's telegraphic inventions, and as such, entitled to grant valid licenses to defendants to use the same, and refused to enjoin the respondents.

This decision is an important one, and will be received with much interest by all who are interested in the telegraph business of the country.

A Light Metal.

Dr. Roscoe, of Heidelberg, read before the British Association a paper on the "Formation of the new metals, strontium, calcium, lithium, aluminum, &c., from the chlorides of those substances." The metal lithium, he said, was the subject of much interest, from the fact of its being lighter than water or rock oil, in which it is preserved. One great quality of aluminum was its sonorosity; exceeded in

sharpness of sound, when struck by a metal instrument, the finest bell-metal.

Curious Facts about a Book.

Subscriptions are now being received in London for the two forthcoming additional volumes of Macaulay's History of England, which were announced to issue December 4th. The Liverpool *Albion*, in noticing the fact, says that the subscription will undoubtedly reach 40,000, and that the day of publication will be postponed, and that the cost to the public of these 80,000 volumes (40,000 copies,) the price of the work being £1 16s., would be £70,100; and, if placed in a line, side by side, the thickness of each being two inches, they would extend more than two miles and a half, the exact length being 13,333 feet four inches. Piled one upon another, they would tower to an altitude which would be to the highest pyramid at Giza as "Ossa to a wart," and more than three times the height attained by the aeronaut Gairin when he made his parachute descent. It is difficult to convey an easily realized notion of what the height of such a pile would be, as if St. Paul's Cathedral, the Monument, Pompey's pillar, and the great Pyramid were all placed one upon another, their height would not amount to more than a tenth of that of the books. Their weight, estimating each at two pounds, would be 71 tons, 8 cwt., 64 lbs., about eight times that of the great bell of St. Paul's and Tom of Lincoln together, and considerably more than that of the great bell of St. Ivan's at Moscow, the largest in the world except that of the Kremlin, which has never been suspended, though many engaged in the attempted operation have been hung!

History of Wood Paper.

MESSRS. EDITORS—There has been much said and published during the past year on the subject of "wood paper," and I believe it has been treated by you, and in many other journals, as a novelty in the United States.

I readily admit that improvements of machinery, and a close study of chemistry, have aided in producing a better quality of wood paper, and those who have thus pursued the subject of a triumph are worthy of thanks, for every improvement which cheapens so important an article as paper confers a public benefit. In 1830, in company with Lewis Wooster, Esq., now of Wisconsin, I commenced the manufacture of wood paper, and we succeeded so far as to make a very decent printing paper, on which an edition of the *Crawford Messenger* was printed. We also made a beautiful and strong article of wrapping paper, and many tons of book board of superior quality. We used mainly the lime and aspen woods, and by a process exceedingly simple, I was enabled to make tons of shavings in a very few hours. We obtained a patent for our process, but Col. Magaw, the inventor of straw paper, contended that our use of alkalies was an infringement of his patent, as his specifications read, "straw, and other vegetable substances." He, therefore, threatened us with an injunction and suit, and as he was rich, and we without the staple means of contention, we concluded to seek other modes of a livelihood. I am glad other minds and hands have taken up the subject, and have no doubt that for many purposes it will afford a cheap and valuable material, whether it shall ever take a place among the finer papers or not.

JOSEPH E. HOLMES.

Newark, Ohio, November, 1855.

Another Medal to Prof. Morse.

The Emperor of Austria has sent a massive gold medal to Prof. Morse, as a testimony of esteem for his genius as displayed by the invention of the "electro-magnet telegraph." This is the fourth token of acknowledgment from European sovereigns accorded to and received by Prof. Morse.

Wheat Cultivation.

Prof. Mapes, in a recent address at the Indiana State Fair, stated that the wheat crops of Ohio had fallen from 35 to 15 bushels per acre. This statement is denied to be true by the editor of the *Ohio Farmer*. He asserts that the average amount of wheat raised per acre in Ohio is now greater than ever it was, and he gives statistics to prove his assertion.