

somely, and seemed to be generally approved. The experiment of closing the ports was tried, and the engine kept in motion till all were satisfied and tired.

ENLARGED FIELDS FOR INVENTION.

Now, that the excitement of the presidential election is over, we presume the several industrial operations of the country will resume their usual steady character, less subject to interruptions than they have been for some months past; and, in harmony with this resumption of work, we look for renewed activity among the hosts of inventors. This most valuable class of the community is steadily becoming larger, from the constantly widening field for improvement. Railroad traveling, telegraphing, machine sewing, every new art that is introduced opens a broad field for the exercise of inventive genius. Again, as wealth and population increase, and labor becomes more subdivided, small improvements in the details of mechanism become of greater value, and they are consequently invented and patented in constantly increasing numbers. Thus we have a large number of patents for coupling belts, for stepping millstone spindles, for journal boxes, for shafting hangers, and for other small improvements in the arrangement of machinery.

But the most powerful agency in enlarging the field for invention is the increasing knowledge of the properties of matter. Every new substance that is discovered opens up the possibility of an indefinite series of combinations with other substances already known. For instance, who can foretell the number of inventions which will result from the discovery of aluminum? In the first place is the problem of reducing it from the clay of which it forms a part—one of the most inviting of all the fields which are now open for the exploration of the man of science. Every bank of clay is the ore of a precious metal, and the man who discovers the most economical process of separating the metal from the ore is sure of a very large reward. Then, the introduction of this new metal, with its peculiar properties, into the arts, renders possible a vast variety of new and improved combinations of mechanism by its means. Still farther: the new machines will probably require modified tools for their construction; and thus the consequences of the introduction of this one substance into the arts are ramified in so many ways that the mind is bewildered in the effort to follow them.

If we enter the laboratories of the chemists, we find that there are innumerable substances, possessed of almost every conceivable property, which now merely serve for the idle amusement of abstract students, but which are doubtless destined to be appropriated by practical men to useful purposes, and made to contribute their share to human comfort.

People, in looking about and seeing every department of art full of patent inventions, are apt to imagine that the field is all explored and the work all done; but as Newton, after all his studies, declared himself but as a child wandering on the sea shore and picking up a few grains of knowledge, while the great ocean of truth lay unexplored before him, so is it with the mechanic arts; even now they are but in their infancy. As long as human knowledge is limited, as long as man is imperfect, so long will the opportunities for improvement remain unexhausted.

NEW STEAM FIRE-ENGINE.

On the 6th inst., a new steam fire-engine, built by the Amoskeag Manufacturing Company, of Manchester, N. H., was tested in this city. Its boiler is a vertical tubular, having 243 1-inch tubes with 155 feet of heating surface. Its steam cylinder is 12 by 8 inches, placed vertically near the top of the boiler. The pump is $4\frac{3}{4}$ inches in diameter, situated directly under the steam cylinder. The piston rod of the engine is connected to a yoke placed midway between the stroke of the two cylinders, and this is connected to two cranks which rotate a shaft having a small balance wheel at each side of the engine. The piston rod of the pump and that of the steam cylinder being connected to the yoke, they almost directly reciprocate; the arrangement is simple, so as to connect the reciprocating motion of the piston, with the rotary motion of the balance wheel shaft, to equalize the action and overcome the dead points. The feed pump is a common locomotive one, worked from the yoke described. It is quite a light en-

gine, intended to be drawn to fires by hand, and its mountings are quite elaborate. It was tried at the famous test pole in West Broadway, and we paid particular attention to the time required to raise the steam to the working point—a most important consideration in all such engines. From the instant the fire was lighted with wood until the machine was working with steam at 20 lbs. pressure, the time was $5\frac{1}{2}$ minutes; in 10 minutes, it was up to 40 lbs., and in $15\frac{1}{2}$ minutes, it was 100 lbs. on the inch. The day was very windy and unfavorable for playing high, but it occasionally sent a stream 160 feet up the pole, out of a $1\frac{1}{4}$ inch nozzle. The pole is 187 feet to the very top, and we think that it would have played to this height had the day been more propitious. There appeared to be no difficulty experienced in working steadily and keeping up a steam pressure of 100 lbs., with cannel coal. Sometimes the pump made no less than 280 strokes per minute; on the whole, the working of this engine produced a favorable impression on the mechanics present. All the steam fire-engines which we have lately seen have vertical boilers; these are more favorable for raising steam, but a locomotive horizontal boiler would afford a superior arrangement for the framing, and would be more solid for running over rough streets; there is still room for several improvements in steam fire engines.

A fire broke out in the rear part of the Astor House, on the morning of the 8th inst., but did not do much damage, as two steam engines of the Lee & Larned class were soon on hand and performed admirably. One large hand engine (No. 14) was also in operation, but, though a first-class engine, it appeared very inefficient beside the conquering power of steam. The firemen manned the brakes, and, in their red shirts, tugged and sweat like heroes, but they could not compete with iron muscles and lungs of steel.

On the subsequent morning (9th), a fire broke out in the large drug store of Penfield, Parker & Mower, in Beekman-street, at which the above Amoskeag engine (*Champion*, by name) was brought out and did admirable volunteer duty, along with two of Lee & Larned's engines.

TYPOGRAPHICAL ERROR.—Perhaps some of our readers have noticed a paragraph that recently went the rounds of the press, which originated in a typographical error in the *Springfield Republican*. Two accounts got mixed up together, one of a runaway dog, and the other of the inauguration of a minister, which resulted in the publication of the statement that the respectable clergyman was last seen running down the street with a tin kettle tied to his tail! We have had our share of annoyance from these typographical errors, but we believe the most annoying one that we ever endured occurred in last week's issue, in Mr. Charles Seely's report on water gas. Two queries were asked which got transposed, and to make sense our readers will please understand that the former should be, "What is the effect when you shut off the steam?" and the latter, "What is the effect when you shut off the rosin?"

HEARING in large churches can be made comparatively easy by an arrangement of a sound reflector which has recently been applied in Trinity Church, this city. It consists of a paraboloidal reflector of sound placed at the back of the pulpit, of which the speaker's mouth is the focus. A beam of sound, about ten feet in diameter, is thus thrown to the most remote point of the church, and, by its side flow fills the whole body of the building.

ALL irons of commerce which have been examined contain sulphur; they also deposit silica and black matters when treated with diluted acids, and, consequently, are impure. Iron can be prepared in a pure state only by pharmacists, its preparation requiring the minutest care; industry can furnish iron only of a relative, not absolute, purity. It appears that chemically pure iron may be kept an indefinite time in distilled water without exhibiting the least trace of oxydation, and retaining all its metallic luster.

PIKE'S PEAK GOLD.—The average fineness of this gold is .832, valued at \$17 20 per ounce. The loss in melting, cleaning and refining varies from four to twelve per cent, according to the specimens.

RECENT AMERICAN INVENTIONS.

The following inventions are among the most useful improvements lately patented:—

CAPSTAN WINDLASSES.

This invention consists in combining the capstan with the barrel of the windlass by means of a worm wheel on the barrel of the windless and an endless screw on a central shaft, which is so fitted to and combined with the capstan, and so furnished with the pawl rim and stops, that the capstan may either be employed to work the windlass—in which operation it gives a very powerful purchase—or may be employed independently of the windlass in those operations in which capstans are commonly used on board ships. The patentee of this invention is Samuel P. Patten, of New York City.

CLOTHES' SPRINKLER.

This invention is a useful device for sprinkling or wetting clothes previously to ironing them. It consists in combining with a cylindrical bellows, small enough to be conveniently used with one hand, a siphon-shaped tube, and a small barrel with a hole in one end, which hole is stopped by a simple valve when a pressure is put upon the bellows, the end of which barrel is finely perforated around the central hole, for allowing the water to issue from the barrel in fine jets or sprays. The credit of this contrivance is due to Sarah N. Davies, of Muskegon, Mich.

A FAN FOR AN EMPRESS.—During the recent visit of the emperor and empress of France to Algeria, a number of Jewish ladies presented her majesty with a notable fan. This article is principally formed of white ostrich feathers fixed in a golden disk ornamented around the edge with pearls, rubies and emeralds, and in the center with arabesques in enamels on gold, of different colors, and with rubies, emeralds and diamonds. In the center is a Hebrew inscription mentioning the conquest of 1830—a date not agreeable to the Moors, since it was that at which their domination in Algeria ceased. The handle is in coral, fluted with gold and ornamented with fine pearls. The upper part is divided into two branches, ornamented with arabesques, and having the imperial crown in gold; the other end terminates in a golden ball studded with stars in diamonds, and bearing a ring ornamented with rubies and emeralds. On one side of the handle is a large emerald surrounded with a double triangle, forming a star with six points, ornamented with arabesques, rubies and brilliants.

It seems that the early French settlers and the Indians in Western Pennsylvania were acquainted with the natural oil or petroleum wells, which are now thought by many persons to be a new discovery. At Franklin, Pa., old oil vats have been discovered, with trees a century old growing in them. An old well, supposed to have been sunk for obtaining the oil, has also been discovered, with the remains of an Indian ladder in it. The early settlers used to place a dam on the creek, then take off the oil which floated on the surface by absorption with blankets. This they used to sell in vials as a medicine for curing rheumatism.

MR. MERRIAM ON THE LATE EARTHQUAKE.—The following are Mr. Merriam's remarks on the shock of earthquake which was lately felt in the North and East. He says:—"A time cycle of twelve years has run its round since October 17, 1848, when the Islands of New Zealand, at the antipodes, were visited by a company of terrific earthquakes, numbering more than a thousand strong, which vibrated through the earth's body, and were felt on the sea coast of England. Then the aurora australis and the aurora borealis united their labors, and a bright band encircled the whole earth."

FOREIGN IRON.—A correspondent of the *St. Louis Evening News* directs the attention of the citizens to the very bad quality of foreign iron which has been imported for the railroads of the Great West. He asserts that it is mere rubbish, and that far superior rails can be manufactured in St. Louis for \$60 per ton.

DEAFENING FLOORS.—A correspondent (L. A. D., of Dupre, La.) informs us that he has found dry sawdust a most convenient and excellent material for filling in between partitions in rooms and floors for the purpose of "deafening sound."