

not only the vault but the entire premises of the bank could have been so securely guarded that no well informed burglar would venture to attack it; and if some blunderer did enter the police would be instantly warned, and the invader captured in the act, as has occurred in several instances where the electric alarm has been used.

Yet these reputedly intelligent and careful directors did not realize that they were neglecting to take "all reasonable precaution" to insure the safety of the property in their care. It is, we say, but an additional evidence that men not scientifically educated are very apt to lack an adequate comprehension of the real conditions of modern life—what science has done and is daily doing to change the conditions to which life and property are subject. The incessant advances which science and invention are making to bring even the occult powers of nature into subservience to man are, it is true, so multitudinous and rapid that it is hard for the most studious to keep pace with them. It is true also that the best trained minds are apt to lose their alertness with age, and settle down into grooves out of which it is hard to get. But that only makes it all the more necessary for those in positions of great trust, like bank directors, to have in their employ some one who makes it his business to inform himself some one whose scientific bias leads him to look for scientific aids, and whose scientific training impels him to run counter to tradition and that easy-going confidence in what once sufficed, which, in the case of the Manhattan Bank, led to its easy plunder. Burglars are quick to avail themselves of scientific appliances. They must be met and vanquished in the same field.

It may be observed in this connection that the application of the telephone to the list of electrical safeguards presents a very promising field for experiment and invention. Warehouses, vaults, even the interior of safes, might be secretly and securely connected out of business hours with police headquarters, in such a manner as to insure the certain detection of any unwarranted entrance and the complete reporting of any burglar's movements.

**A GRAND WORLD'S FAIR IN NEW YORK.**

A numerously attended meeting was held in this city, October 31, for the purpose of initiating a movement for a world's fair to be held in New York in 1889. As expressed by the call, which was signed by many prominent manufacturing and commercial firms the object of the meeting was, in full, to consider the propriety of suggesting to the Mayor of New York that delegates from all the States be invited to assemble in this city on the 30th of April next, that being the ninetieth anniversary of the inauguration of Washington as the first President of the United States, and the establishment of constitutional government, in order that the proposition to hold a great exhibition of the industry of all nations in the city of New York, in the centennial year of that event (1889), or sooner, might be maturely considered.

At the meeting it was unanimously resolved, "That there be appointed an executive committee of ten, with power to add to their number, who shall take into consideration the subject for which this meeting was called, to determine when a National World's Fair shall be held in the city of New York, and authorizing such committee to take such action in the matter as shall be deemed advisable."

**A Mexican Exhibition**

The Mexican Minister of Public Works has just announced that the Government is about to nominate a commission to organize a special exhibition in that city at a conveniently early date. The exhibition is to be confined exclusively to American and Mexican productions, and to be under the direct auspices of the Mexican Government.

Mr. De Zamacona, who has the credit of suggesting this enterprise, is confident that it will be carried out. It certainly promises to furnish an admirable opportunity for our merchants and manufacturers to extend the export trade of the country. At any rate the friendly spirit shown by Mexico in thus limiting the exhibits to the productions of the United States and Mexico, ought at least to be met in a corresponding spirit; and the best way to show that would be by making a special effort to have our country, its resources and industries, adequately represented.

**Australia to have a World's Fair.**

The Department of State has been informed by the American Vice-Consul-General at Melbourne that it has been decided to hold an international exhibition in that city, commencing October, 1880. A public garden in the center of Melbourne has been secured for the exhibition, and Parliament has voted \$300,000 for the erection of the necessary buildings. This will be the greatest exhibition ever held in the Southern Hemisphere. The Vice-Consul-General suggests that American inventors, for their own protection, should take out patents in each of the Australian colonies, each colony having a different patent law.

**THE MOTION OF A WAGON WHEEL.**

The instantaneous photographs of trotting horses, taken by Muybridge, of San Francisco, furnish the first visible demonstration of the much disputed fact that the top of a wagon wheel, when running along the ground, moves faster than the bottom. It is obvious that an instantaneous photograph of a wheel, revolving upon its axle in the air, would show all parts of the wheel with equal distinctness. But if the wheel have a progressive motion, and any one portion has a greater motion than its corresponding part, above or

below, there must be a liability to blurring in that part of the picture.

These pictures are taken with so brief an exposure that the horse, though moving at a 2:24 gait, is sharply outlined. The wheels of the driver's sulky, however, have a different tale to tell. The lower third of each wheel is sharp and distinct as if absolutely at rest. Not so with the top, that part of the wheel showing a perceptible movement during the two-thousandth part of a second of the exposure of the plate. The upper ends of the spokes are blurred, and the rim likewise, thus giving a physical demonstration of the truth which mathematics establishes.

**THE PARIS INTERNATIONAL PATENT CONGRESS.**

The mails bring us part of the papers read at the International Congress on Industrial Property, held at Paris September 5th, and following days. The congress was authorized by a decision of the Minister of Agriculture and Commerce, under date of May 12, 1878, and the preparation was zealously undertaken by able men. An elaborate prospectus was prepared containing questions proposed for discussion, some of them rather metaphysical than practical, as will be seen by the resolutions which were adopted. The question of preliminary examinations has been discussed with great heat, but we are not yet informed as to the result. The tendency seems to be toward the adoption by all European countries of a preliminary examination modeled after our own, as a protection to the inventor himself. The committee of organizations consisted of M. Renouard, Senator, Member of the Institute, etc., President; M. Bozérian, Senator; M. Tranchant, Member of the Council of State, Vice-President; Count Maillard de Marafy, President of the Consulting Committee on Foreign Legislation of the Manufacturers' Union; MM. Pataille, Huard, Pouillet, Rendu, authors of works on industrial property; Tusca, Member of the Institute, President of the Society of Civil Engineers; and many manufacturers.

About 300 persons, including members from nearly every state in Europe, were represented at the first session of the congress. From the United States were present Messrs. A. Pollock, of Washington, and Francis Forbes, of New York city. Mr. Pollock was elected one of the Vice-Presidents. The congress met in both the morning and afternoon; in the morning, in three divisions, according to the subject, namely, patents, trade marks, or designs and models. In the afternoon the questions presented by the divisions were debated and passed on by the whole congress. The members were thus enabled to concentrate their attention on the division which particularly interested them.

The following resolutions had been voted on and agreed to up to the time of the close of our advices:

1. The right of inventors and authors in the domain of industry, over their works, or of manufacturers over their marks, is a property right; civil law does not create it; civil law only regulates it.
2. Foreigners ought to be assimilated to citizens.
3. The stipulations of reciprocal guarantee of industrial property ought to be made the subject of special treaties independent of commercial treaties, as well as treaties for the reciprocal protection of literary and artistic property.
4. A special department for industrial property should be established in each country. A central depot for patents, trade marks, designs, and models ought to be added to it for the instruction of the public. Independently of all other publications, the department of industrial property should publish a periodical official journal.
5. A provisional protection ought to be granted to patentable inventions, designs, models, and trade marks shown at official or officially authorized international exhibitions.
6. The time during which inventions, marks, models, and designs are shown at official international exhibitions ought to be deducted from the total duration of ordinary protection, and not be added to it.
7. The provisional protection granted to industrial inventors and authors who take part in official international exhibitions ought to be extended to all the countries which are represented at these exhibitions.
8. The fact that an object is shown in an international exposition ought not to be an obstacle to the right of seizure of the article if it is an infringement.
9. Each of the branches of industrial property ought to be the subject of a special and complete law.
10. It is desirable that in the matters of industrial property the same laws should govern a state and its colonies, as well as the different parts of a state. It is equally desirable that the treaties reciprocally guaranteeing industrial property concluded between two states should be applicable to their respective colonies.

**PATENT RIGHTS, AND WHO OPPOSE THEM.**

In a communication to the Industrial Property Congress, lately held in Paris, Mr. Henry Bessemer, the inventor of the process of steel making known by his name, remarks that our food, our clothing, our light, our homes, with all their thousand luxuries, owe their present character to that indomitable spirit of research and improvement which is characteristic of the present age—a spirit powerfully fostered and deservedly encouraged by those laws which proclaim a personal property in inventions. Without this protection, not merely in the bare idea of some new force or unknown object, but in the development and creation of practical means, based on the new idea, whereby results never before obtained are realized for the benefit and advancement of

mankind, Mr. Bessemer has no doubt that the rapid progress which the world has made, and is still making, in arts, sciences, and civilization, would receive a severe check, which would at once stop the avenues to wealth and fame, and would thus dam up the now overflowing stream of human intelligence, bar every road to improvement in the industrial arts, and send us back to those days of superstition and ignorance, from which the light of science has emancipated us.

Yet there are men who oppose all laws securing property in inventions, and whose "retrograde notions" are now being pressed upon the world with unwonted force. Who are they? Mr. Bessemer answers:

First. A class of manufacturers whose purely selfish view is to make the most of their present imperfect means of production. Such men, on principle, oppose all change, because it would personally inconvenience them.

Second. The unintelligent, in all positions of society, who have through life dragged their unimaginative existence along in the same rut, and believe in no other than the beaten path which only they are able to tread. Such people are opposed to all novel ideas.

Third. A too numerous class who, while able to appreciate an improvement in their trade, are not honest enough to pay an inventor for the benefit he has conferred on them, and who either openly set him at defiance, or try to escape his just claims by some miserable evasion of the law; but having been convicted in so doing, have had to pay heavy damages to the persons they have wronged. It is this class of opponents who cry out most loudly against the patent laws.

Doubtless, adds Mr. Bessemer, there are also some honest and honorable men who oppose patents conscientiously, and simply because they believe them to be injurious to the public interests; but this is a very small class, and is composed chiefly of persons having no real practical knowledge of the question, either in its scientific or commercial bearings.

It would be impossible to state more patly and compactly the composition of the anti-patent forces; and it would be well to test the motives of those who shall assail our patent system in Congress next winter by the fact noted under the third classification.

**A STEAM JURYMAN.**

The other day a summons, commanding Thatcher Magoin to present himself for service in the jury box, was returned to the Commissioner of Jurors with the information that it had been served upon the wrong party. The Commissioner said to the bearer:

"That settles it as far as you are concerned, but Magoin must come here and show cause why he should not be a juror."

"He can't," was the reply, "he's too busy. If he did come he would make things hot for you. Besides, you would have to send a derrick and a truck to bring him. He turns the scales at 5,000 lbs."

The Commissioner was incredulous; worse, he made remarks not complimentary to the speaker's condition with respect to sobriety. Then the summoned man explained.

"I am telling you facts, Mr. Commissioner," he said. "Thatcher Magoin is a steam engine, and is located at the foot of Fletcher street. I am Nicholas Morris, stevedore. Years ago I was employed by a man named Thatcher Magoin. I named my engine on pier 19, East River, after him. When the Directory man came to the dock to get names he saw the name of Thatcher Magoin on the engine, and thinking that he was the boss, put it in the book. You'll see it on page 949."

This, we believe, is the first time that a steam engine has been called to do political duty. There appears to be no reason, however, why a well conducted or well constructed piece of machinery, with a phonographic metric attachment, should not be able to hear and weigh evidence quite as efficiently as the average jury.

**Cleopatra's Needle.**

Northern climates are ill-adapted for the preservation of stone monuments, at the best; and when there is added to the inclemencies of the weather the action of a corrosive atmosphere, like that of London, the hardest stone stands small chance of preserving its integrity for any great length of years. The Egyptian column, Cleopatra's Needle, is scarcely in position on the banks of the Thames when the question of its preservation engages the attention of the Metropolitan Board of Works. At a recent meeting, the engineer and consulting chemist of the board reported that the surface of the Needle was in a condition that made it liable to be rapidly disintegrated by the action of the London atmosphere and by frost. It was recommended that a trial be made of a "stone solution," to harden the surface and make it impervious to the weather; but, on the assertion by members of the board that the same solution had been used without success on the Houses of Parliament, the matter was referred to a committee for further inquiry.

**Electrical Test for Oils.**

Professor Palmieri, of Naples, has recently constructed an apparatus which allows the purity of oils to be judged of by the resistance that they offer to the passage of electricity. Olive oil—a poorer conductor than any other—is taken as the standard of comparison. The apparatus may also serve to reveal the presence of cotton in silk fabrics; for a very small proportion of cotton in silk tissues greatly increases the conductivity of the latter.

**A NEW GAS REGULATOR.**

The unavoidable fluctuation of gas pressure is the main if not the only objection to the use of gas as an illuminating agent. The sudden flaring up of the flame under increased pressure not only impairs the light and indicates a waste of gas, but it permits a quantity of unconsumed carbon to escape and vitiate the atmosphere of the room and endanger the health of the occupants.

The importance of avoiding the escape of unburnt carbon has not been fully recognized in this country. In Europe this subject has received considerable attention, and in many of the cities gas regulators are in general use.

We illustrate one of the most successful of these instruments, which, after the most thorough tests, has been adopted in several different departments of the United States Government, and it has been in successful use in many of the public buildings in Washington for several years.

The regulator, which is shown in perspective in Fig. 1 and in section in Fig. 2, has the usual casing composed of two hemispheres, A B, joined together by screws that pass through the flanges, between which the edges of the diaphragm, C, are tightly clamped. The lower hemisphere has an inlet, D, and an outlet, E. The diaphragm is composed of two thicknesses of pliable leather, having their adjacent faces coated with plumbago or other gas resisting medium. The coating being thus placed out of direct contact with the gas remains unaffected.

A valve stem, F, is suspended from the center of the diaphragm, and carries at its lower end a conical valve, G, which is capable of closing against the valve seat so as to entirely shut the inlet. The stem, F, rises above the diaphragm and passes through a hole in the top of the casing into a supplemental case, J. A lever arm, K, is pivoted in a standard at the top of the supplemental case, and is connected with a vertically sliding rod, L, which carries at its lower end a forked foot that embraces the valve stem, F, below the adjusting nut. The sliding rod, L, moves in a tube, and is pressed downward by a spiral spring. The lever arm, K, is connected by a wire with the knob, shown in Fig. 3, either directly or through a system of bell cranks or pulleys. By turning this knob, the regulator may be adjusted so that any desired pressure may be had in the distributing pipes; this pressure will thereafter be maintained with certainty and uniformity. Any increase in the gas pressure in the regulator raises the diaphragm, and by closing the valve diminishes the supply; a diminution of pressure produces the contrary effect.

This regulator was recently patented by Mr. Joseph Adams, through the Scientific American Patent Agency, who may be addressed for further particulars at Room 40, Corcoran Building, Washington, D. C.

**COMBINED TRACTION ENGINE AND STEAM FIRE ENGINE.**

A combined traction engine and steam fire engine, constructed by M. A. Schmid, of Zurich, and exhibited at the Paris Exhibition, has as a test of its liability to travel, made the journey from Zurich to Paris, a distance of about 450 miles, in eight days. The engine itself, in service, weighs six tons, and brought with it a wagon weighing about five tons, containing coals sufficient for forty and water for fifteen miles. As there were in the road over which it passed gradients of one in seven, there can be no doubt of its ability to surmount any ordinary difficulties. As will be seen from the illustration, for which we are indebted to the *Engineer*, the engine is supported on three wheels, the leading wheel being worked by a crosshead and

lever bars from the foot plate. The distribution of weight is very happily chosen, and the consequent tendency to upset on uneven ground, with only three wheels, is entirely obviated by the way in which almost the entire load is thrown on the driving wheels. The cylinders have a diameter of seven inches and a stroke of ten inches, and the motion is communicated to the driving wheels by toothed gear and an endless chain. The latter can be instantly disconnected, and the engine used either as a steam fire engine capable of throwing 300 to 400 gallons per minute under a pressure of 100 lbs. to the square inch, or as a portable en-

would undoubtedly necessitate a considerable dismantling of many members which, in an ordinary engine of this class, would neither interfere nor be interfered with. We cannot speak too highly of the workmanship, and from its performances as witnessed in the limited space within which its gyrations are confined, the favorable impression derived from its finish, compactness, and general appearance has been fully confirmed.

**New Mechanical Inventions.**

An improvement in Vibrating Churns has been patented by Mr. Samuel Mellon, of Cameron, West Va. The object of this invention is to furnish a mechanism by which a churn may be easily operated, and to construct the operative parts in such a manner that they may be readily attached to and taken off the churn.

An improvement in Vehicle Springs has been patented by Mr. David G. Wyeth, of New Way, Ohio. This is an improvement upon the spring covered by letters patent No. 187,694, issued to the same inventor. The improved gearing has a less number of parts and also a greater compactness as a whole, so that it is lighter and cheaper than the other.

A Vehicle Wheel Hub has been patented by Mr. Daniel May, of Lumberton, N. C., which consists in a hub having mortises in the axle box for the spokes, which mortises are open at alternate sides, and collars having projections on their inner faces to enter the mortises in the axle box, so that the mortises are closed after the spokes are inserted. The collar on one side closes the openings on that side, and the openings at the opposite side are closed by the other collar.

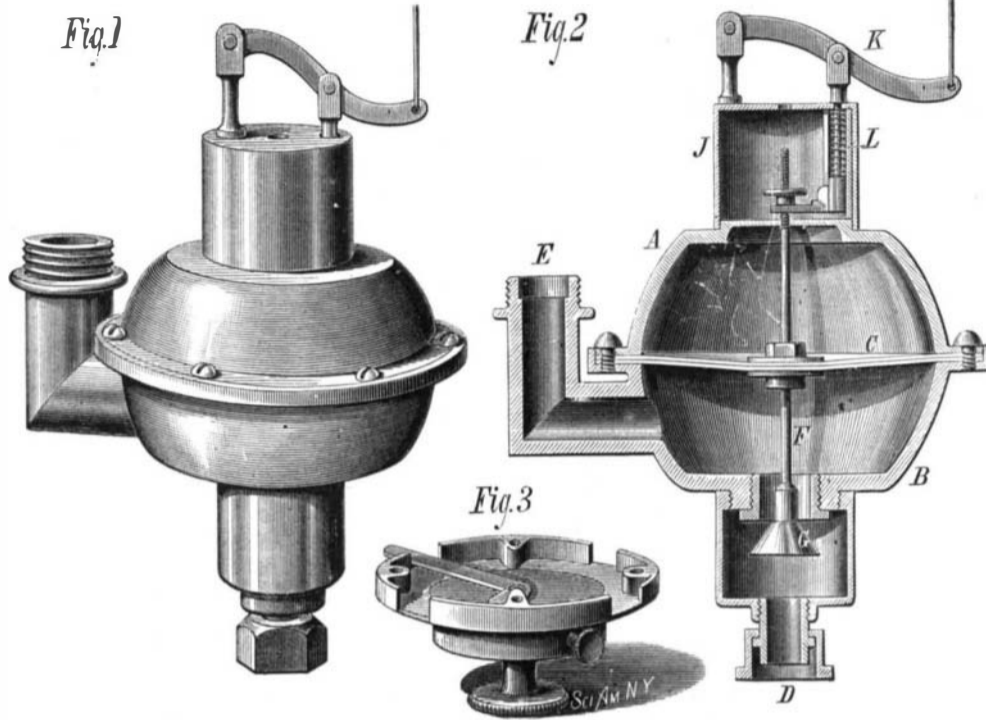
An improvement in Trimmers for Wax-thread Sewing Machines has been patented by Messrs. Joseph I. Pellerin and Hector Pellerin, of Montreal, Quebec, Canada. The object of this invention is to provide means for applying the principle of cutting the leather simultaneously with the seaming thereof to the class of shoemakers' sewing machines which use a waxed thread.

An improved Waxing Device for Sewing Machines has been patented by Mr. Wm. S. Hadaway, of Chiltonville, Mass. This invention is intended to furnish for power-operated sewing machines an improved thread-waxing device that can be easily adjusted for differently sized threads, and that may be easily regulated for the quantity of wax to be used, so as to save a great portion of the wax hitherto wasted.

An improved Machine for Straightening Car Axles has recently been patented by Mr. Joseph A. Hodel, of Cumberland, Md. By a system of adjustable jacks and yoke with counter screw, the straightening strain is confined to the part that is already bent without affecting the other parts of the axle.

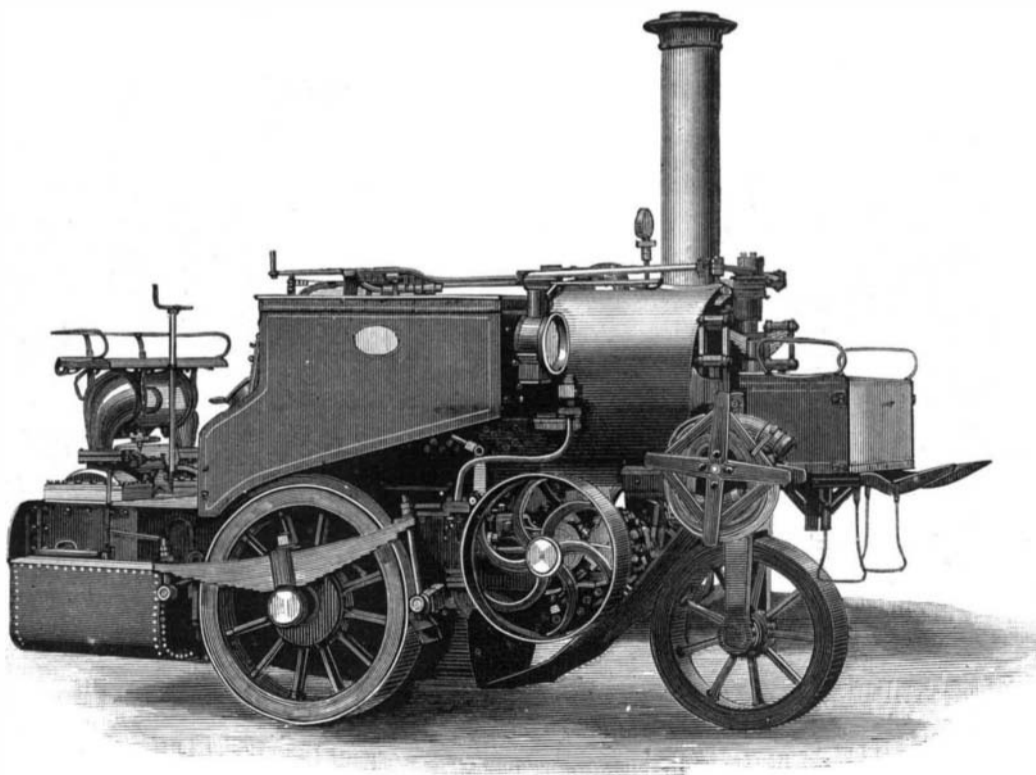
Mr. Eben Brown, of Milford, Mass., has patented an improvement in Machines for Turning Needle Blanks. This invention is to automatically regulate the action of the cutting tool upon the blank in turning machines, so that the blank will be cut to the standard gauge, and the tendency of the machine to enlarge the needle or other article produced from the blank is corrected by the act of forming such blank.

An improved Stock Car has been patented by Mr. Henry S. Moody, of Omaha, Neb. The object of this improvement is to protect cattle from bodily injuries, to allay fever, and to counteract the effects of heat, thirst, and exhaustion, from which the animals so severely suffer as the result of the present mode of transit in railway cars. This improvement secures to the consignor the full normal weight, and the consumer the benefit of meat in a prime and healthy state.

**ADAMS' NEW GAS REGULATOR.**

gine for agricultural purposes. The diameter of the driving wheels is forty inches, and of the steering wheel thirty inches; the grate surface is five square feet, and the heating surface one hundred square feet; the usual pressure of steam is 150 lbs. to the square inch.

According to the statement of those who accompanied the engine from Zurich, the journey was effected without any mishap or breakdown of any kind. The highest speed attained was fifteen miles per hour. The tires of the wheels give evidence of the nature of the road over which it passed; otherwise there was nothing about it to denote the test it

**NEW TRACTION ENGINE.**

had withstood. With regard to the general disposition of the moving parts, certainly no space has been lost, but the difficulty of making repairs has been proportionately increased; and although the state it is now in shows no sign of an early probability of any repair being required—excepting, of course, the renewal of packing, etc., which it has already undergone without any extraordinary removal of parts—the replacement of any damaged or worn member