

SCIENTIFIC AMERICAN

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A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY, AND MANUFACTURES.

Vol. LXVI.—No. 11.
ESTABLISHED 1845.

NEW YORK, MARCH 12, 1892.

\$3.00 A YEAR.
WEEKLY.

AN OLD TIME FAST LOCOMOTIVE.

The illustration given herewith is a reproduction of an early Talbot type, which was, we are informed, taken in 1848, and which represents a locomotive built at the Norris Works for the Camden & Amboy Railroad. The following particulars are from the *Railroad and Engineering Journal*. "We have not the exact dimensions of this remarkable engine, nor the date when it was built, but believe that the cylinders were 13 in. $\times$ 38 in. and the driving wheels 8 ft. in diameter. The general design is shown by the engraving; the forward end of the engine was carried on a six-wheeled truck, and the single pair of drivers was placed back of the fire box. This arrangement required a peculiar position of the cab, which was placed very high, and was apparently built without much regard for symmetry or appearance. In fact, it looks somewhat like a switchman's or watchman's house transferred from the side of the track to the top of the boiler. The same lack of symmetry may be seen in the smoke stack, which was of singularly clumsy pattern. The engine probably burned wood, which was the general fuel for locomotives at that time. The valve motion was all outside, and was the old V-hook motion; apparently there was

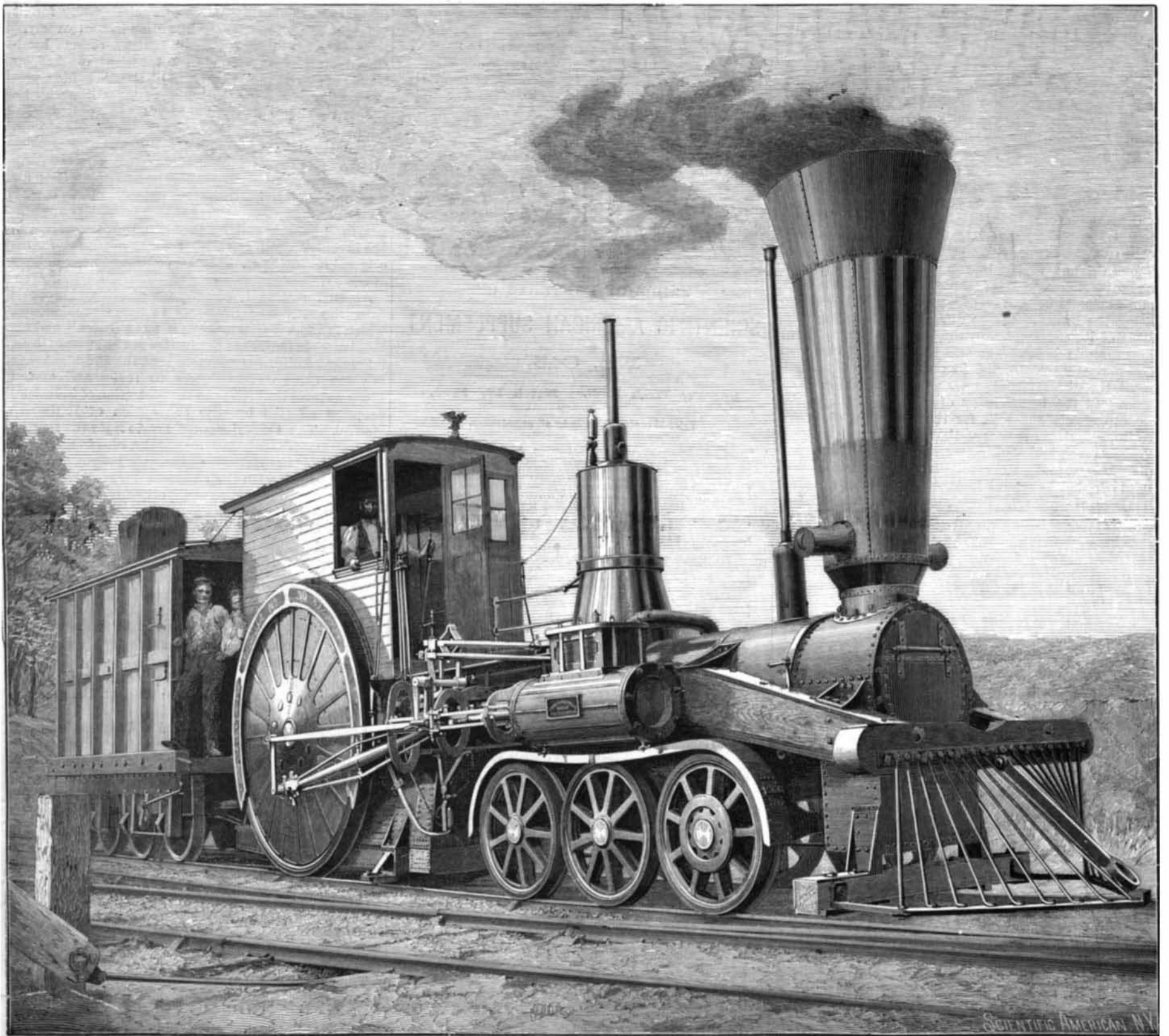
an independent cut-off valve, working on the back of the main valve, a not uncommon arrangement.

"Some of the peculiar features shown did not belong to this engine alone. The spaces between the spokes of the driving wheels were filled with wood, an arrangement which was in use on many of the locomotives of the Camden & Amboy Railroad for a number of years. The trussing of the connecting rod was also practised on that road for a long time, and there were locomotives running with side rods trussed in the same way as late as 1873. The high dome could also be found in quite a number of engines on the same road. The covered tender, somewhat resembling a small box car, was the pattern in general use on the road, and survived up to 1865 or thereabout; it was provided with a sort of hood or buggy top on the back end, in which sat a man whose duties were to watch over the train and signal the engineer when anything was wrong, the bell cord passing through his seat.

"We do not know what became of this particular engine, nor do we know whether there are surviving records of any fast runs made by it. Some other engines of the same kind were built a little later, either at the Trenton Locomotive Works or at the Borden-

town shops. These were of a little better appearance, and a more modern type; some of them had 13 $\times$ 38 in. and some 14 $\times$ 38 in. cylinders and 7 ft. or 7 ft. 6 in. drivers. The writer has been told by old engineers on the road that they did some fast running, but had so little weight on the drivers that they could not handle a heavy train; moreover they had an unpleasant tendency to jump the track on the sharp curves which abounded on the old line, which followed the canal bank between Trenton and New Brunswick, and which was abandoned when the present line from Dean's Pond to Trenton was built, about 1863. These later engines were afterward rebuilt with four drivers of smaller diameter, about 5 ft., one pair placed in front and one behind the fire box, according to the usual pattern. The long stroke cylinders were retained, however, and four or five of these engines with 38 in. stroke were in service for some time after the New Jersey lines were leased to the Pennsylvania Railroad Company. These engines had larger boilers than the one shown in the engraving, and had iron frames instead of the wooden frames which appear in the original Norris type.

"It would be interesting to know whether any drawings of this old engine survive, or whether they have



A FAST LOCOMOTIVE OF FORTY YEARS AGO.

disappeared with the records of its performance. The managers of the Camden & Amboy were rather given to experiments in locomotives, and the old shops at Bordentown would have furnished material for an interesting study had full records of the work done there been preserved."

The photograph from which our engraving was made was taken by Schreiber & Sons, of Philadelphia, from the original Talbotype. This original has been well preserved during the 43 years since it was taken, the only defect being the blur on the lower right hand corner of the plate, which has wiped out a part of the pilot.

The Balsam-bog.

A correspondent of the *Commercial Bulletin*, writing from the Falkland Islands, which are situated in the South Atlantic, near the extreme end of South America, says: Approaching the low grounds in many of the islands, you think they are scattered all over with huge gray boulders, from five to ten feet across. To heighten the illusion, the blocks are covered with lichens, and grass is seen growing in their crevices where dust has collected, precisely as it would in rifts of rock. Each boulder-like mass is a single umbelliferous plant—*bolax-glebaria*—which has been so slow in growing, and the condensation in constant branching so great, that it has become almost as hard as the rock it resembles—so hard that it is difficult to cut a shaving from its surface with a sharp knife. Examine closely a lump of balsam-bog, and you will find it covered with tiny hexagonal markings, like the calices of a weathered piece of coral. These are the circlets of leaves and leaf buds, terminating a multitude of stems, which for centuries have gone on growing with extreme slowness—ever since the now enormous plant started out—a single shoot from a tiny seed. When the sun shines warm, it gives forth a pleasant aromatic odor, and the yellowish, astringent gum that exudes from the top is prized by the shepherds as a vulnerary.

On most of the islands a shrub abounds which the people use for tea, though it bears no resemblance to the Chinese plant or to the famous mate of Paraguay and Brazil. It is a species of *Adiantum*, bearing a fragrant white berry, and the leaves, infused in boiling water, make an agreeable beverage. In the Falklands, as in all Antarctic America, celery grows in wild luxuriance.

A Swedish Railway Project One Hundred Years Ago.

Close upon forty years before Stephenson's victory, a Swedish engineer, Karl Hogstrom by name, not only constructed a locomotive on similar lines to the one of Trevithick and Vivian, but also conceived the plan of a regular railroad. His first notion was that his locomotive should be used on ordinary roads, but soon realizing the insurmountable difficulties attending this style of locomotion, he, in the year 1791, brought out his railroad scheme. The rails were to be of cast iron and perfectly smooth, and in order to prevent derailment, the wheels were to have a projecting edge. Convinced of the insufficiency of friction between the smooth wheels and rails for the propelling of heavy trains, Hogstrom proposed that a tooth wheel on his locomotive should work on a central toothed bar or rail placed between the other rails—a plan which of late has been adopted in several instances where the gradient has been exceptional. Hogstrom's plan was laid before several scientists, who were unanimous in denouncing it as utter madness, as it was absurd to imagine that a carriage could ever be propelled by steam alone. The plan was entirely shelved, and nothing more appears to be known as to the fate of Hogstrom, who afterward went abroad.

Coloring Brass a Deep Blue.

A cold method of coloring brass a deep blue is as follows: 100 grammes of carbonate of copper and 750 grammes of ammonia are introduced in a decanter, well corked, and shaken until dissolution is effected. There are then added 150 cubic centimeters of distilled water. The mixture is shaken once more, shortly after which it is ready for use. The liquid should be kept in a cool place, in firmly closed bottles or in glass vessels, with a large opening, the edges of which have been subjected to emery friction and covered by plates of greased glass. When the liquid has lost its strength, it can be recuperated by the addition of a little ammonia. The articles to be colored should be perfectly clean; especial care should be taken to clear them of all trace of grease. They are then suspended by a brass wire in the liquid, in which they are entirely immersed, and a to-and-fro movement is communicated to them. After the expiration of two or three minutes they are taken from the bath, washed in clean water, and dried in sawdust. It is necessary that the operation be conducted with as little exposure to the air as possible. Handsome shades are only obtained in the case of brass and tombac—that is to say, copper and zinc alloys. The bath cannot be utilized for coloring bronze (copper-tin), argentine, and other metallic alloys.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT

No. 361 BROADWAY, NEW YORK.

O. D. MUNN.

A. E. BEACH.

TERMS FOR THE SCIENTIFIC AMERICAN.

One copy, one year, for the U. S., Canada or Mexico.....\$3 00
One copy, six months, for the U. S., Canada or Mexico.....1 50
One copy, one year, to any foreign country belonging to Postal Union.....1 50
Remit by postal or express money order, or by bank draft or check.
MUNN & CO., 361 Broadway, corner of Franklin Street, New York.

The Scientific American Supplement

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PATENT BILLS AND PETITIONS NOW BEFORE CONGRESS.

The number of bills for the modification of patent laws, now before Congress, is considerably more than usual. Heretofore, on the assembling of Congress a large number of bills have been proposed. The most important now under consideration is bill No. 233, which is understood to present the views of the present Commissioner of Patents, H. A. Simonds. Its main object is to make sundry necessary corrections in existing laws, as for example: to make the American patent run for seventeen years from the date of the earliest foreign patent for the same invention; at present, the American patent, if first patented abroad, expires with the date of the earliest foreign patent; hence an American citizen who takes a foreign patent before the issue of his American patent often-times shortens the term of his American patent. The object of this amendment is to prevent such shortening.

Another correction relates to caveats. At the present time, only citizens of the United States may file caveats; this bill corrects the statute by substituting the word "person" for "citizen of the United States," so that under the corrected statute any person will be able to file a caveat. To this no reasonable objection can be made.

The most radical change proposed by this bill relates to interfering applications. It provides that each interfering applicant shall, within a time specified by the Commissioner, file a preliminary statement under oath, giving the history of his production of the invention, in such detail as the Commissioner shall deem reasonable. After the applicant who first filed his application for a patent has filed his preliminary statement, the Commissioner may issue a patent to him for the invention. Nothing is said in this section about issuing a patent to the first inventor, but only to the party first to file his application.

Any interfering applicant who fails to file his preliminary statement, as aforesaid, shall thereby forfeit his right to a patent for the invention in controversy.

This change in the law would inflict a serious hardship upon the first original inventor who happened, by reason of sickness or poverty, to be unable to file a proper preliminary statement. There is no reason why he should be wholly deprived of his right to a patent. He might, at least, be left in the position of being able to present reasons for his omission. To cut him off altogether, and give away his invention to others and deny him hearing or right to make another application for a patent seems to be unjust and uncalled for. It may be well enough to provide that that particular application for a patent shall be forfeited, but to enact that the inventor shall have no right to a patent for his original invention seems to be contrary to our notions of equity.

Another section imposes a fee of \$10 and appeals from the Primary Examiner to the Commissioner, which is another step making it more difficult and expensive for inventors to get justice at the Patent Office.

Senate bill No. 235 provides that the President may appoint three Commissioners to revise and amend those statutes that relate to the protection of industrial property affected by the convention of Paris and Madrid. The Commissioners are to state the reasons for any amendment they may make, also to designate such parts of the statutes as in their judgment ought to be repealed, with their reasons for such repealing, and they are to report on such other matters relating to industrial property as they shall deem proper.

House bill No. 606 is an old and familiar scheme, one of a class that formerly were very often introduced in Congress. It provides for the protection of infringers of patents, and enables any man or company to make use of any patented article, free of charge, provided that they aver that they bought the article in good faith, without any knowledge that it was patented. No damages or costs are to be awarded against the infringer who makes such averment. This bill would be a practical nullification of the patent laws, and especially would benefit the Eastern Railroad Association.

Among the petitions presented to Congress is that of Mr. William K. Tubman, of Maryland, who sets forth in brief, that he brought suit against the Wason Manufacturing Co., of Springfield, Mass., for infringement of his letters patent for a railroad car, and that the said suit is now pending; but he finds that instead of being met by the Wason Company, he is obliged to contend with a corporation called the Eastern Railroad Association, which corporation has assumed and is maintaining the defense of the suit. This association, he says, is a secret combine or conspiracy, composed of nearly all the railroads east of Pittsburg, Pa., and it has offices in Washington. He says it is organized and maintained for oppression and injustice, and for spoliation for railroad uses, of private property of inventors.

The petitioner avers that this association is nothing less than a permanent conspiracy created in the interest of trade and commerce. Its constitution requires unity of action by all its members in opposing individual patentees. It is organized and operated for