PROPOSED INJUSTICE TO INVENTORS.

In a recent article on Section 11 of the proposed amendment to the patent law we referred to the injustice of compelling inventors to pay a second time for their patents at the for under the European system, which it is now proposed to end of four years, or else forfeit all rights they may have ac- add to ours. quired in their inventions. We now propose to show how such a clause might have robbed some of the greatest benefactors of the human race of all means of profiting by their in reaping their desired reward, had we time to hunt up the inventions had such a clause been in existence at the time data and space to print them, but we think sufficient has been of the granting of their patents.

Take, for instance, the case of Watt. Although he commenced his labors in connection with the improvement of with a very few exceptions, have a hard time of it; and Conthe steam engine in 1763, it was not until 1769 that he ob- gress should pass laws that would encourage them, rather tained his patent, and it was nearly six years after its issue than such as would rob them of one of their chances of rebefore he succeeded in making a working engine which gave ; ward. For even after an inventor has succeeded in benefitsatisfaction, having in the mean time spent all his own ing himself as well as the world, and is apparently in the means. At the end of this six years his prospects were then receipt of a good income, litigation steps in, and robs him of so doubtful that although eight years of the life of his patent | the lion's share of his reward, as in the case of Goodyear, remained, yet he could find no capitalist who would embark who, in the height of his apparent prosperity, was, as the resufficient means to carry on the business of manufacturing sult of litigation to enforce his rights, cast into prison for until he succeeded by some means in inducing Parliament to debt, and while in prison received the mockery of forced open with a loud explosive noise, and the side be split extend his grant for an additional ten years. Is it not possi- the Cross of the Legion of Honor from the Emperor of the ble that under the modern English system of fees, which it French. is now proposed to graft on to our law, the payment of an additional tax at the end of four years, when Watt was discouraged with repeated failures, might have been the "last straw" which we so often hear about?

inventor of the sewing machine. His invention was patented sion of the Tradeston Mills, at Glasgow, Scotland. Dein 1846, but it was not until after 1853 that he succeeded in structive fires had before that date happened in different making anything by his invention, and he would not have parts of Germany, but the appalling magnitude of the disbeen able to do so then but from the fact that his father aster that overtook the Tradeston Mills in July, 1872, at once mortgaged his homestead to raise money to begin a law suit | elicited a general discussion and attracted the notice of sciagainst infringers. To give an idea of his poverty previous to this time it may be stated that although his wife was dying of consumption at Cambridgeport he could not go to see her until his father had sent him money to pay his fare from New York to his wife's death bed. He did not even have mill. A similar explosion occurred at the City Mills, at his patent in his possession at this time, it being pawned for Port Dundas, Scotland, on September 15, 1874, attended a hundred dollars. And yet under the proposed amendment (?) he would have been called upon at this time to pay \$50 the minds of the British people the possibility of explosions or lose his patent. Could anything be more unjust?

Goodyear may be cited as another instance of how such a tax would work. Although he was the owner of a patent on the combination of sulphur with rubber, it was not for many years after that he succeeded in bringing the invention He relates how an explosion was produced in the Ofen-Pesth into practical use, after a long series of experiments, which steam mill at Budapest, Hungary, which blew off the roof beggared him and brought him so low financially that himself and family were frequently without food. How could ing some fine varieties of flour. The door of the mixing a man in this condition pay an additional tax of \$50 to keep his patent alive, when he could hardly find food to keep body and soul together ?

As another instance of the difficulties inventors have to contend with after their patents are granted, Bessemer's invention may be cited. The foundation of the patent of the fine state of division, gives off a gas at 450° Fah., which, Bessemer process was granted in 1856; it was not until 1863 when mixed with nine volumes of air, forms an explosive that the process was commercially successful; and it was mixture, liable at any time to be fired by a spark or flame." even then doubtful, and for several years after it was still He recommends that the use of exposed portable lights in considered so, for it was not until 1869 that the Hon. A. S. Hewitt, one of the members of Congress who will have to vote on this bill, and a very prominent and intelligent iron grain in the form of impalpable flour undergoes rapid commaster, who had watched the growth of the invention very carefully, considered that it was so far successful as to war- bustion a highly explosive hydrocarbon gas is generated, rant its introduction into America, although other gentle-¹which, when mixed with air, becomes highly explosive. We men with greater faith in its success had introduced the pro-shall notice this opinion further on. cess here some years earlier. Bessemer was a wealthy man, and had access to the plethoric pocketbooks of some of the vanced by Professor Stevenson Macadam. When the Tradesrichest English capitalists and iron masters, and he was ton Mill explosion took place, Professors Macadam and Rantherefore able to keep up his payments on his English pat- kine were requested to take an active part in investigating Squibb, in a valuable paper on the subject read before the ents, so that he and his backers finally reaped an abundant, the causes that led to the explosion. Professor Macadam reward. But supposing him to have been a poor man, as published his views in Iron, an English periodical, from the majority of inventors are, and without the aid of the which we extract the following: capital which Bessemer's connections gave him, is it not cutting off all possibility of his reaping any advantage from process of making steel, for without Bessemer's indomitable perseverance the process would have been given up long ago, and we should have to pay \$200 per ton for steel in-

"spiegeleisen," a compound of manganese, iron, and car- from the flour, burn with equal readiness. This he patented in 1856, but from the cost of his exbon. tous Section 11 become law, Mushet's patent became public "When bruised, the flour resolves itself into gases. The Review.

property, and although every pound of Bessemer steel is made in accordance with Mushet's process he received no re-

Many other instances could be given where the inventors have had a long struggle with poverty before they succeeded stated to show how badly this Section 11 would work in practice. Inventors under the most favorable circumstances,

Flour Mill Explosions.

Although theories had been previously constructed to account for the phenomena of flour mill explosions, the sub-As another example, take the case of Elias Howe, Jr., the ject was first brought into prominence in 1872 by the exploentists. The insurance companies at first refused to pay the insurance on the property, but afterwards paid the full amount, as it was known that the causes leading to the explosion were not within the control of the owners of the with less disastrous results: but it served to keep fresh in taking place, even in such peaceful establishments as flour mills. The first opinion as to the cause of these phenomena which we shall notice is that of Dr. W. Smith, of Manchester, England, who gave considerable attention to the subject. of the building and caused other damage, by workmen mixroom was left open, and a thick cloud of dust became ignited from a light. A similar explosion took place at Friedict, Germany.

Dr. Smith states his opinion as follows: "It has been demonstrated that flour and bran intimately mixed, and in a mills should be prohibited.

Wiebe, a German chemist, has advanced the theory that bustion when ignited, and that during the process of com-

Perhaps the most generally received opinion is that ad-

"The chemistry of grain and flour may assist us in arthat can be devised, will probably be adopted. more than probable that the tax on his English patent would riving at an understanding regarding these fire explosions. have been the cause of his abandoning his invention, thereby, The chemical components are principally starch and gluten, The Belcher Springs. with small proportions of gum, sugar, oil, woody fiber, and it? In this case, not only would he have lost his reward, ash. The starch and woody fiber are composed of carbon, but the world would have lost the benefit of the Bessemer hydrogen and oxygen ($C_6H_{10}O_6$); so are also the gum, sugar, and oil; and the gluten contains these elements, accompanied by nitrogen, sulphur and phosphorus. All these stead of about \$45 per ton, as at present. But, it may be objected, these are all supposititious cases. diffused as a cloud through the air.

carbon, by uniting with the oxygen of the air, becomes carbonic oxide (CO), or carbonic acid (CO₂), and the hydroward, having lost it through the imposition of the tax called gen and oxygen become water, vapor or steam (H₂O). The volume of these gases is much increased by their high temperatures at the moment of combustion.

> "The conditions required to bring about a flour explosion" are somewhat similar to those which cause a gas explosion. Coal gas is combustible and not explosive when unmixed with air, and it only becomes explosive when it is mixed with sufficient air to burn it. This proportion is obtained in the most powerful degree when one volume of gas is mingled in ten parts of air. A lesser or larger proportion of air lessens the power of the explosion by causing the gas to burn less quickly, and consequently with less explosive force, and thus tending more to ordinary combustion.

> "In order to bring about the explosion it is necessary also that the flour-air mixture be confined within a given space; hence, if the flour be incased in a box with the lid fastened down, and the bellows be brought into play to produce a cloud while a light is introduced, the box will be up, while weights placed on the box are thrown off.'

> Such is the theory of Professor Macadam, whose eminence as a scientist entitles it to the highest consideration. It is certainly very plausible and has many facts in support of it. -American Miller.

HYDROBROMIC ACID.

The success which seems to have followed the experiments with this new remedy warrants the belief that it is destined to assume a permanent place in the Materia Medica. This acid is a sedative neurotic, and now comes into use as an occasional substitute or alternate for the bromides of potassium, sodium, and ammonium, when the influence of bromine, the active medicinal agent of these salts, is sought.

The well known fact that these alkaline bases, and especially potassium, when given for a long time are liable to enfeeble muscular tissues and produce other undesirable changes through undue alkalinity of the blood, is a sufficient reason for seeking a substitute which shall be free from these defects, without suspending the action of bromine, the continuous sedative action of which is often very important. It should be understood, however, that this remedy is not well adapted for prolonged use, for, like the other mineral acids, it would be likely to interfere fully as much with the animal economy as the alkaline bromine salts; it must, for the present, be regarded simply as an alternate for the latter rather than for general use. In hospitals for the insane, especially in epileptic wards, it will be found very useful both in effect and ease of administration, since it can be given in the form of a lemonade, if moderate or small doses should prove effective. It has been highly spoken of as a corrective and preventive remedy for the headache, ringing of the ears, and the general cerebral distress which often follows on the use of salts of quinine. Another important application of this remedy will be found in its occasional substitution for the salines in chronic affections of the nervous systems, where, from long continued use, the |patient has acquired a disgust for the alkaline bromides.

Hydrobromic acid-which is really hydrogen bromide-is a gaseous substance containing 98.76 per cent of bromine. The solution of the gas in water, which constitutes the liquid commonly known as hydrobromic acid, is limpid. colorless, and odorless, and has a strongly acid taste. As the strength of the liquid depends on the quantity of gas held in solution it is difficult to state the proper dose without knowing the formula used by each manufacturer, no fixed standard of strength having yet been agreed upon. Dr. Medical Society of the State of New York, proposes a formula and process for making the acid of a definite strength; and this process being simple and easy, and as good as any

One of the attractions of St. Louis, and where flocks of people go for health, is the Artesian well, known as the Belcher Springs, on O'Fallon street, by the Belcher Sugar Refinery. This well is one of the most noted in the United proximate constituents are combustible when burned in the States, and owes its existence entirely to Mr. William H. ordinary way, and are consumed with greater rapidity when Belcher of St. Louis. An interesting account of its boring is given by A. Litton, M. D., in the Transactions of the Let us, therefore, cite a case that actually occurred, where one | "When the flour is showered from a sieve placed some Academy of Science of St. Louis. The boring of this well of our benefactors has actually been robbed of his reward distance above a gas flame, rapid combustion takes place; was begun from the bottom of an old well, 30 feet deep, in because he happened to be poor. The Bessemer process as findeed the flour burns with explosive rapidity, and the spring of 1849, and the work was stopped in the spring originally patented was not a practical working success, as flame licks up the flour shower somewhat in the same way of 1854. The bore to the depth of 219 feet was 9 inches in above stated, and many difficulties had to be overcome be-that it flashes through a mixture of gas and air, or that it diameter, then 5½ inches for 731 feet further, and continued fore such practical success was reached. Mr. Robert travels along a train of gunpowder. Similarly, the flour, at 31/2 inches till the full depth of 2,199 feet was reached. Mushet, of Cheltenham, England, succeeded in breaking blown into a cloud by a pair of bellows, at once takes fire At 550 feet, the top of a limestone layer, the water became down one of these difficulties by the introduction into the and burns with a sudden and vivid flash. The smut taken salty; 200 feet below this, in a layer of shale, it contained molten Bessemer metal of from one to five per centum of from the grain during cleansing, and the shorts separated 11% per cent of salt; and at 965 feet, below a bed of bituminous marl, 21% per cent. At the depth of 1,179 feet the "Probably the best way of showing the explosive com- hardestrock was encountered, being a bed of chert 62 feet periments he became embarrassed and had to put his patent bustibility of flour particles is to place some flour in a box thick. The water is discharged through a 20 inch pipe at into the hands of trustees; and the apparent failure of the lying inverted on its lid, introduce a light, and blow the the rate of 75 gallons a minute. It is used for medicinal Bessemer process (upon which his was dependent) led the flour into a cloud by bellows, when instantly the box is purposes, having a strong odor of sulphureted hydrogen, parties who were holding his patent in trust for him to think lifted from its lid and much flame rushes out. The fine and contains over 8 per cent of mineral matter, including 6 it not worth while to pay the additional tax when it became division of the flour has necessarily much to do with the per cent of salt. Its temperature is even at about 73° Fah. due, and Mushet himself was too poor to do so. Under rapid combustion; and, indeed, coarse gunpowder can be The total cost of the work exceeded \$10,000, and is located these circumstances, which will be the case with thousands passed through a flame without burning, while iron filings within the premises of the Belcher Sugar Refinery, and is of struggling and meritorious inventors should the iniqui- cannot fall through the same flame without being set fire to. called "Belcher Water." It is free to all comers.-St. Louis