PATENT LAWS.

SPEECH

OF

HON. BAINBRIDGE WADLEIGH,

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The Senate as in Committee of the Whole having under consideration the bill (S. No. 300) to amend the statutes in relation to patents, and for other purposes—

Mr. WADLEIGH said:

Mr. PRESIDENT: This bill proposes certain amendments to the patent laws to increase their efficiency and remove some defects which time and experience have revealed in them. The evils produced by those defects have in some localities rendered the whole patent system unpopular and created a clamor for its virtual abolition. With that clamor I have little sympathy. It demands a remedy which is worse than the disease. All the vexatious annoyances to which the patent laws have given rise are counterbalanced more than a hundred-fold by the benefits which they have conferred. They are intimately connected with our national progress, to which they have vastly contributed, and should be improved rather than repealed. If this bill becomes a law, I believe it will render them less odious, without impairing their vigor, and thus avert the impending storm which threatens their existence.

Patent laws are based upon the principle that the making and publication of useful inventions should be encouraged for the promotion of the public welfare. They do not, as is sometimes asserted, rest upon the absolute right of inventors nor seek to reward them except so far as to promote the public good. Webster, with his usual force, once likened the inventor's right of property to that of the savage in the canoe which his labor fashions from the tree of the forest. But the natural sense of justice would hardly accord to the wild mechanic a monopoly in any improvement which his experience or skill suggested; still less would it prohibit any subsequent inventor of the same improvement from using it.

It rarely happens that any important invention is the work of one person alone. The utility of such inventions has generally been obvious for a long time; many minds have sought for them; they have been approached step by step until some lucky person, instructed perhaps by the multiplied failures of others, hits upon the element essential to success.

Some very lucrative inventions have been merely obvious applications of widely-known scientific discoveries. For instance, about a third of a century ago Liebig had discovered and shown how bone-earth might be made a soluble manure by mixing it with sulphuric acid. Some manufacturers of artificial manures applied this discovery to coprolites or fossil excretions of extinct animals—vast beds of which exist in the Old World and in our own country—procured letters-patent for that application of the process, and held a monopoly

of it for fourteen years. This so-called invention required no inventive talent and very little mental labor. It was so easy an application of a well-known discovery that it might not now be held to be the subject of a patent. But nevertheless it illustrates forcibly the rule that the exclusive right granted to patentees does not depend upon their merits. He who takes the last step to success, however easy and unimportant it may be, is alone rewarded. He who can prove priority, if only for an hour, wins the prize, though strict justice may require the lion's share of it to be given to others. This seeming injustice results from the fact already stated, that patent laws rest upon the public welfare rather than upon the absolute rights or merits of inventors. Priority of invention is alone rewarded to stimulate inventors to win success and show the public the pathway to it at the earliest possible moment.

The inventor may, if he chooses, conceal his invention. If he does others may discover and patent it. But the patent law says to him, "Publish your invention—give it to the world and for seventeen years you shall have the exclusive right to it." Without this promise to inventors, and the belief on their part that it would be kept, many valuable inventions if made at all would have been concealed and lost to the world. Many arts known to ancient and mediæval manufacturers were practiced in secret, were handed down as heirlooms from father to son until they were finally lost and have never been rediscovered. A few of those "lost arts" have furnished a subject for a fascinating lecture to one of the most eloquent of American orators. Such instances even now are by no means rare. I know the inventor of a very ingenious machine which gives to him the virtual monopoly of a certain trade, who has never procured a patent for it but conceals it from the public. He prefers a monopoly based on secrecy alone to the exclusive right which the law grants in terms but too often fails to protect. The public may thus forever be deprived of his invention. Legislation hostile to patents will not only tend to prevent the making of inventions but to deprive the public from deriving any benefit from such as are made.

The patent system appeals not only to the inventor's love of approbation, but also to that love of gain which underlies so much of human enterprise and effort. I know it is sometimes asserted that inventors need not the stimulus of pecuniary reward, but that they must execute the law of their being, which is to invent. They are likened to poets, and we are asked with an air of triumph if money could have induced Homer to sing the siege of Troy or Milton to write the Paradise Lost. But such comparisons and arguments are vain. The excellence of a poem depends mainly upon the force of the author's imagination, but the making of inventions calls into action other and radically different mental qualities. Nature yields her mighty talismans and hoarded secrets to no idle dreamer. No brilliancy of imagination can wrest them from her. The inventor's feet must rest upon the solid earth. To conquer the difficulties which confront him generally requires a thorough practical knowledge of mechanical forces and pertinent scientific facts, and the power of combining them and reasoning logically from them. The means he uses, the ends he seeks, are all material. The utility of his invention is the sign and the measure of his success. It must not only be useful, but most useful. Unless it furnishes the best and cheapest method of producing some useful result, it is unprofitable and therefore worthless. Such a struggle, with such means and for such ends, begets no scorn of wealth, but rather a keener appreciation of its power and its uses.

Hence it follows that inventors universally either apply for patents or use their inventions secretly in the hope of obtaining pecuniary profit. Without that hope the genius of invention would languish. Nearly all great inventions result from the anxious, sleepless toil of years and costly experiments which impoverish their creators. Few men, if any, would make such sacrifice to create inventions if they could have in them no exclusive right. A few glittering prizes laboriously won by men like Watt and Arkwright, in England, and Howe and McCormick in this country, lure thousands of ingenious minds into efforts and experiments which are rarely successful, but whose failure lights the way to success.

We must bear in mind, too, the fact that the success of inventions rarely depends upon inventors alone. Most of them are poor, and few of them could procure the funds necessary to perfect their inventions and introduce them into use except by assigning a share in them when completed, which would be impossible without a patent law. No one would advance money to perfect the invention of another in which there could be no right of property. Hence it is that the greatest inventions of modern times are due to patent laws, and have been made in the few countries where such laws exist.

History furnishes almost countless illustrations of the truth of what I have said. The case of James Watt, the inventor of the steam-engine, is a typical one. That stupendous invention has been to modern civilization what the genii were to the hero of oriental fable. Yet the facts seem to show conclusively that without the encouragement and protection afforded by a patent law it would never have been made and completed for use. At the very threshold of Watt's experiments he had exhausted all his own means. His first associate, to whom he assigned two-thirds of his invention, was soon reduced to bankruptcy. He then applied for assistance to Matthew Boulton, a manufacturer of great wealth and surpassing skill. Six years of his patent had then expired. It had only eight more to run, and that time was too short to perfect the invention and get it into use so as to realize any profit from it. Parliament, upon petition, granted a new patent for twenty-four years, in which Boulton invested his wealth, energy, and business talent. Yet the struggle for success was long, arduous, and doubtful. Workmen had to be laboriously trained to make and run the engines. Doubt, ridicule, the fear of failure, and the passive force of conservatism rendered it well-nigh impossible to introduce the invention, and when its utility had been demonstrated infringers seized upon it and created a ruinous competition. The four and twenty years had nearly gone before it began to yield a return for the toil, anxiety, and money which it had cost.

Such is usually the fate of even the most successful inventors. Without a patent law, nay without a patent law giving the right to freely assign inventions, we should even now have been without the steam-engine and hundreds of other important discoveries which have changed the face of the world and given to modern civilization its distinctive features. This is as susceptible of proof as any proposition not purely mathematical can be. Imagine, if you can, what our civilization would now be without those inventions, and then, if you can, legislate in a spirit hostile to the system which created them. The legislator who, in obedience to prejudice caused by temporary grievances, destroys or cripples that system is likely to be classed with the caliph who burned the Alexandrian library with its accumulated treasures of ages.

It is sometimes urged by the opponents of patent laws that many

great and useful inventions were made before such laws existed. They point to the printing-press, gunpowder, the magnetic needle, telescopes, watches, and the galvanic circuit. But those were due either to some lucky accident which revealed unsought mysteries of nature or to an ingenious application of the simplest mechanical forces. Few of these as they stood before patent laws had added to them countless improvements were the product of long and intelligent study, numerous experiments, and a mastery of scientific truths. The rude hand-worked presses of Faust or Guttenberg or Franklin no more resembled the gigantic machines which in a few hours print a million copies of a metropolitan newspaper than the acorn resembles the giant oak. All early mechanical inventions have been similarly improved, and those improvements are nearly all due to patent laws.

I wish here to refer to an argument or rather a piece of rhetoric which is often used against patents. We are told with great emphasis that they are oppressive monopolies, which originated in royal favor, and which are hostile to the spirit of our free institutions. But, sir, it seems to me that patent systems are the outgrowth of that bold spirit of inquiry and audacious enterprise which chafe even in golden chains and war against despotism in all its forms. The genius of invention avoids the nation composed only of masters and slaves. The latter, whose lot is hopeless, do not aspire to invent; the former, despising labor, will not stoop to invent. The stupendous monuments of ancient civilization were reared by millions of toiling hands, little aided by any but the simplest mechanical powers. Great as they were, they dwindle into insignificance when compared with the countless triumphs which our own nation, young as she is, has won over nature.

The first patent law ever passed was the result of a successful struggle with arbitrary power. Up to the year 1624 the English sovereigns granted monopolies to their favorites, not only in new inventions, but in various kinds of trade and manufacturing, which had before been open to all the freemen of the realm. Against the latter odious monopolies Parliament protested so vigorously that, in 1597, Queen Elizabeth promised to "examine all patents and abide the touchstone of the law." This gracious answer proved evasive, and the evil increased till her courtiers monopolized nearly all the trade and manufactures of the realm. Even the dealing in many of the necessaries of life was burdened by oppressive restrictions. In 1601 the indignation of Parliament broke out afresh. The long list of oppressive monopolies was read to the wrathful Commons.

"Nay," thundered one bold representative, "if no remedy be found for these, bread will be there before the next Parliament."

The assurance of Cecil, the prime minister, that all existing monopolies should be repealed, and no more granted, quelled the rising storm. But under James I, who was ignorant of the spirit of the people and surrounded by worthless and greedy parasites, the evil was renewed. In 1621 the same Parliament which degraded Bacon from the chancellorship for corruption impeached and exiled Mompesson for practicing extortion under a patent for licensing inns and ale-houses. Its dissolution and the vindictive punishment of its leaders soon followed. But the next Parliament, in 1624, passed the famous statute which declared the granting of monopolies in existing trade and manufactures to be contrary to law and the known liberties of the English people, but which enlarged the privileges of inventors by treating as a right the exclusive use of their inventions which they had before received only from the grace of the monarch.

Under the theory of the English constitution that law required the monarch to grant patents to inventors who complied with the legal formalities. Within six and twenty years after the passage of that act a great revolution swept away the throne and the House of Lords, sent the King to the block, and erased from the tables of English law the last trace of kingly or ecclesiastical tyranny; but the patent law evoked no hostility. It has survived substantially unchanged the restoration of the Stuarts, the revolution of 1688, and the peaceful revolution which for nearly two centuries has been silently transferring the scepter from the King and Lords to the House of Commons. Under it and by it Great Britain has been the workshop of the world. Her inventors have given to her machinery which is equivalent to the labor of more than four hundred millions of men. With the experience of more than two centuries and a half the only change she proposes to make in her patent law will bring it more closely to our own.

Nor, Mr. President, does the history of the patent law in this country furnish any evidence of the truth of the charge that it is hostile to freedom. Under the principle of the statute of monopolies some of the English colonies in America granted patents to inventors. An intelligent gentleman of my own State has referred me to an act of the general court of the colony of Massachusetts Bay, passed in 1646, granting to one of his ancestors, Joseph Jencks, the exclusive right of making and selling his improved scythe for the term of fourteen years. That I think was the first patent granted to an inventor in America. The improvement referred to changed the short, thick, straight English scythe into the longer, thinner, curved implement with stiffened back now in use.

The great statesmen of our revolutionary period imbedded the germ of a patent law in our Federal Constitution. It empowers Congress "to promote the progress of science and the useful arts by securing, for limited times, to authors and inventors the exclusive right to their respective writings or discoveries." The first act in execution of this power was passed in 1790, and was repealed and superseded by the act of 1793. The latter act, with slight modification, remained in force till 1836, when the law was completely revised. Up to 1836 patents were granted here as in England, merely upon application, without proof of their value or originality. The statute of 1836 established the Patent Office, in charge of an officer intrusted with the power and charged with the duty of rejecting applications for want of value or originality. Since 1836 our patent system has suffered no great change.

The Patent Office is self-sustaining. The fees received by it have paid all its expenses and have furnished a surplus of more than a million and a half dollars to the Treasury. That surplus for the year 1877 was more than $100,000, and more than $68,000 for the year ending June 30, 1878, notwithstanding the threat of hostile legislation, the hard times, and the loss occasioned by the partial destruction of the Patent Office by fire.

France first passed a patent law in 1791, in the enthusiasm for national progress inspired by her great revolution. It has outlived all the radical changes in her government, and has contributed much to her prosperity. In these three countries and under their patent laws nearly all great labor-saving inventions have been made.

The existence of a patent law in England one hundred and sixty-seven years before France had one will help account for the fact that the inventive triumphs of the former far surpass those of the latter

country. But in two respects we have had great advantages over both England and France; first in the cheapness of our patent system, and, secondly, in the power of rejecting an application for want of value or originality, which makes a patent more valuable when granted. In those countries very few laboring-men could procure the means to get patents, and that inability has chilled and benumbed the inventive faculties of their artisans. The cheapness with which a patent could be procured here has made us not only a nation of inventors but has given to our workmen an eagerness for improvement, a willingness to adopt new methods, and a dexterity both mental and manual which has made them the most efficient artisans of this or any age. To their ingenuity and matchless skill we owe our only chance for success in the international contest now being waged for the scepter of commercial and productive supremacy. Without that ingenuity and skill which are due to our patent system as much or more than to all other causes a successful conflict with the cheaper labor of other lands would be utterly hopeless. This is not my view alone, but that of the most intelligent American manufacturers, some of the most eminent of whom reside in my own State and who have given me much valuable information.

These views are confirmed by the highest European authority. Mr. Bally, one of the commissioners from the Republic of Switzerland to the international exposition in Philadelphia in 1876, and the largest manufacturer of boots and shoes in Europe, upon his return home addressed to Swiss manufacturers a letter evincing much practical wisdom and the keenest intelligence. In it he warns his countrymen that unless they adopt a patent system like ours, and thus encourage new inventions, the United States will conquer them in industrial warfare. He says of us:

Another factor which aids to favor the education of the people is the excellent system of patents, by means of which at a very moderate expense a patent is obtained; not only the inventor is protected against infringement but the invention is made known, and the American more than any one else loves inventions and adopts them the moment they are recognized as good.

Many European states have also a patent system, but as they see in it first of all a source of revenue for the state, those of moderate fortune can hardly obtain a patent. In Europe the inventor anxiously hides his secret from all eyes until he is in possession of his patent. The Americans do not know this uneasiness, because there the inventor alone can take a patent, which he afterward has the right to sell if he pleases.

Every intelligent man has thus before him the possibility of fortune, often by a very slight improvement, and this keeps in ceaseless activity the intelligent part of the population. I am satisfied from my knowledge that no people has made in so short a time so many useful inventions as the Americans; and if to-day machinery apparently does all the work, it nevertheless by no means reduces the workman to a machine. He uses it as a machine, it is true; but he is always thinking about some improvement to introduce into it, and often his thoughts lead to fine inventions or useful improvements.

Again he says, in referring to our shoe manufactures:

A manufacturer complained to me of the high wages he was obliged to pay. He could not find workmen at less than $2 a day, which he said prevented him from thinking of exporting; but I added up from his books the wages which he paid for piece-work, and I saw that the price per piece which I pay for the same article is almost double his, and nevertheless my men grumble at the work. My workmen work also with American machines. They have the same tools, but their productive capacity is far inferior to that of the American operative. The same observation has been made to me by superintendents who have established German shoe factories after the American system, and who often cannot succeed with German workmen.

He sums up by this remarkable and emphatic declaration:

We have but one thing to do if we will avoid the entire decadence of our industry, and that is to imitate the Americans.

The report of the British commissioners to Parliament on the same exposition has a similar tone. On page 135 of that report, under the head of "textiles," is the following:

As regards extent of invention and ingenuity the United States was far ahead of other nations. * * * The extraordinary extent of ingenuity and invention existing in the United States and manifested throughout the exhibition I attributed to the natural aptitude of the people, fostered and stimulated by an admirable patent law and system, and to the appreciation of inventions by the people generally.

Sir William Thompson, president of the mathematical and physical section of the British Association, said to his associates and countrymen in September, 1876:

If Europe does not amend its patent laws (England in the opposite direction to that proposed in the bills before the last two sessions of Parliament) America will speedily become the nursery of useful inventions for the world.

Such, Mr. President, is the testimony of our industrial foes, and it can be multiplied indefinitely. They see in our patent system the magical weapon which insures our victory and their own subjugation. They earnestly appeal to their respective countrymen to adopt it to prevent the scepter of manufacturing supremacy from passing over the ocean into the hands of the great Republic of the west.

Sir, these declarations of our own manufacturers and admissions of their foreign rivals are supported by the statistics of our industrial and inventive growth. Let us compare the increase of our patent system with our swift advance in productive greatness.

During the first ten years of our patent system, from 1790 to 1801, only about 150 patents were granted in each year, and up to the passage of the act of 1836 only 10,020 had been granted in all. Since that time more than 200,000 have been issued, notwithstanding the rejection of from 35 to 50 per cent. of all those applied for. The present annual issue is about 13,000, while that of Great Britain, under a system requiring no rejections, is only about 4,000. This increase in our patent system was most remarkable at two periods. The first was about the year 1854. The average annual issue for four years previous to that year was only 961, while for the six years following it was 2,931. The second period was from 1860 to 1870 when the issue increased from about three thousand to about seven thousand annually. The census tables show a corresponding increase in our manufactured products. They rose from $1,000,000,000 in 1850 to $1,800,000,000 in 1860, and to $4,200,000,000 in 1870. The growth of manufactures, too, in different sections of our country has uniformly been attended by an increase of patents taken out in those localities. For a long time New England took out more than any other six States excluding New York. New York has long stood first, and Pennsylvania now stands next. But in 1870 the six great Western agricultural States, Ohio, Indiana, Illinois, Iowa, Wisconsin, and Missouri took out more patents than all New England—2,915 against 2,757. In 1877 Ohio, Indiana, and Illinois received 2,579 patents against 2,479 received by New England. For the ten months ending November 1, 1878, Ohio, Indiana, and Illinois received 1,961 patents, while New England received only 1,958. Texas, Georgia, and Tennessee during those ten months received 288 against 277 issued to Maine, New Hampshire, and Vermont with their varied manufactures. The number granted to the Southern States rapidly increased with the growth of their manufacturing industries.

We have been accustomed to regard ours as almost exclusively an agricultural nation, and a certain school of American statesmen have contended that we should confine ourselves to the raising of raw materials and rely upon the cheap labor of other lands for manufactured

goods. This theory crops out, if I am not mistaken, in some legislation now pending. It is doubtless true that we are now able to control the agricultural markets of the world. But we are able to do so only by the aid of patented machinery created and constantly improved by the influence of our patent system. Were it not for this advantage the cheaper labor of Russia would give to her an easy victory over our western prairies.

Yet it is no less true that we are rapidly becoming a great manufacturing nation. Even in 1870 our manufactured products surpassed in value those of our agriculture, the former amounting to $4,232,325,000, the latter to $2,447,538,000. The wages of farm laborers, including board, then amounted to $310,286,285, while the wages of manufacturing operatives amounted to $775,564,343. Between 1850 and 1870 our population increased only about 65 per cent., while the product of our manufacturing industries increased nearly 322 per cent. In 1870 the agricultural industry of the seven great agricultural States of the West, Ohio, Indiana, Illinois, Missouri, Iowa, Wisconsin, and Minnesota, produced $361,000,000, while their manufactures produced $937,000,000.

Our commercial statistics tell the same story. For the ten years ending in 1830 our average annual export of the product of our manufacturing industry amounted only to $6,550,000 out of a total export of $53,221,241, while for the ten years ending in 1850 they were $15,750,000 out of a total of $112,000,000. But in 1877 the exports due to our manufacturing industry were $152,000,000 out of a total of $632,000,000, and in 1878 the proportion was yet greater.

The same statistics show that our imports of manufactured goods are steadily diminishing. Between 1875 and 1878 they fell much more than $100,000,000.

I do not include in these estimates breadstuffs nor dressed lumber among manufactured articles, though neither could be exported without the aid of many patented inventions.

Look for a moment at the statistics of the commerce of England and France, our chief manufacturing rivals. The amount of articles other than raw materials and food imported into England advanced from $269,147,000 in 1875 to $284,710,000 in 1877, while her exports of such articles fell from $353,177,000 in 1875 to $296,394,000 in 1877.

The imports of such articles into France increased from $316,613,000 in 1875 to $349,839,000 in 1877, while during the same period her exports of them fell from $362,489,000 to $320,954,000.

Thus we see that England imported $15,563,000 more and exported $59,753,000 less in 1877 than she did in 1875, making a difference against her of $75,346,000.

France imported $33,225,000 more and exported $41,535,000 less in 1877 than in 1875, a difference of $74,761,000 against her manufacturing industries.

During the same period that our great rivals in manufacturing lost more than $150,000,000 we gained more than $120,000,000. The next census will show, I believe, yet more astonishing progress on our part.

The excess of our imports over our exports in 1875 was $19,500,000. But in 1876 our exports exceeded our imports $79,643.81; in 1877, $151,152,094, and in 1878, $257,814,234. At the end of the present fiscal year the balance of trade in our favor must be yet greater.

These figures tell eloquently the great story of our national progress. Fresh from studying them Gladstone recently declared that we alone "could and probably would at a coming time wrest from England her commercial primacy."

Now, sir, let me ask the Senate to consider how much of our marvelous progress, how many of our gigantic triumphs over nature, how great a share of the wonderful development of our almost limitless resources is due to the aid of inventions whose very existence came from patent laws. Without patented inventions our vast crops could neither be planted, nor raised, nor gathered, nor marketed. Our mineral treasures would sleep secure in their beds of adamantine rock; our petroleum instead of illuminating the civilized world would remain hidden in its subterranean caverns; our vast and infinitely varied manufacturing industries could never have existed.

But, sir, we are told that the increase of labor-saving machinery has induced overproduction and deprived our workmen of labor. Yet it is an undeniable fact that in countries where labor is done by machinery its wages are much higher than in those countries where it is not. We are pre-eminently a machinery-using nation, but nowhere else does labor command so high a price. Mr. Edward Dubied, an eminent Swiss manufacturer, upon his return home from the Philadelphia exposition of 1876, published a pamphlet upon our manufactures, in which he says:

> At this rate there is no reason why all our industries should not be overwhelmed, one after another, by those of America; and yet when we ask what wages are paid the workmen in the latter country we learn with surprise that they are three times as much as those which our workmen, both artisans and farm-hands, receive.

From this it would appear that under a good patent system, such as ours is acknowledged to be, workmen receive higher wages than they do where no such system or a less popular one exists.

The reason is obvious. Manufacturing cannot now be prosecuted to any extent without machinery. Those who deplore this cannot deny it. That country which has the best machinery can manufacture most cheaply, and can, therefore, undersell and ruin competitors, other things being equal; consequently it can afford to pay high wages to its operatives. A patent system like ours encourages and creates numerous labor-saving improvements in machinery which are slow to go into countries where a less popular system or none exists. Our manufacturers, therefore, keep always a few years in advance of their foreign rivals in the use of such improvements. It is not generally known how constantly and rapidly machinery is improved in this country by inventions which individually appear insignificant, but which aggregated produce great results. The efficiency of cotton-manufacturing machinery has thus been so much increased that no manufacturer could now afford to accept as a gift and use the best machinery of fifteen years ago. The same thing is true of many other kinds of machinery. These inventions are generally made by workmen who are stimulated to it by the cheapness with which patents can be secured here, and who, under the laws of England and France, would be unable to secure patents or to derive sufficient profit from them to warrant the outlay necessary to obtain them; besides, the encouragement which our patent system gives to workmen and their familiarity with inventions vastly increase their efficiency.

If, then, that system is crippled or destroyed our manufacturers must still use machinery. But improvements in it will cease to be made, or if made they will be kept secret. The result will inevitably be that countries having patent laws will soon gain over us the advantages we now have over them. Our manufacturers will be compelled to reduce the wages of their operatives to compete with foreigners even in our own markets, and to abandon the hope of finding markets abroad. Our agricultural machinery will cease to be

improved; it will in a few years be adopted by other countries, and the western farmer will be compelled to contend with the cheap labor of Russia, wielding our mechanical weapons. No more fatal, peaceful blow could be aimed at our national greatness.

I firmly believe, Mr. President, that our labor-saving inventions do not permanently deprive our workmen of labor. Were they not made our manufacturers would be ruined by foreign competition and their operatives driven to the raising of raw materials, and thus kept in a state of ignominious and badly paid vassalage to foreign countries, where alone they could find markets. But labor-saving machines not only cheapen the product and thereby increase consumption, but furnish new markets abroad and thus immensely enhance the amount of work to be done. The operatives whose labor has been temporarily superseded by machinery are thus soon employed in running and in making such machinery.

Why, sir, when we look around us we see the mechanical industry of this country almost wholly employed in making and using the inventions which have been made within the last half century.

It is sometimes urged that if our patent system were abolished we should get the inventions of other nations free of cost. But, sir, we should then get them too late, if at all. They would first go into use abroad, and thus we should always be at a disadvantage. Other nations have tried that experiment and have repented of it. Bismarck advocated it less than a dozen years ago, but Prussia has to-day a patent law based upon our own. Switzerland and Canada believed in it till recently, but to-day confess their error and have either followed or are about to follow our own example. They have found that without the protection of a patent law their people will either not invent at all or keep their inventions secret or carry them to countries where they can have such protection. They have found their own manufacturers unwilling to adopt foreign inventions without protection against rivals who incur neither the expense of the trial nor the risk of failure.

Had the secrets of nature and the potentiality of mechanical forces been fully discovered and revealed it might be expedient to abolish all patent systems. But such is by no means the case. As the ever-widening circle of invention grows it opens new and broader realms to discovery and conquest. The mysteries and powers of nature seem limitless like the universe and countless like the stars which sweep through it in endless procession. We are assured that the lightning which but lately was tamed into carrying our messages will soon be compelled to light our dwellings, and it is hinted that it may soon be harnessed to the yoke in the place of steam. Eager minds are dreaming of the stupendous problem of decomposing water into its inflammable elements, and thus making it supply light, heat, and motive power to the world. Never before was the genius of invention so eager, so well equipped, or so powerful; never before had it so fair a prospect for winning startling and magnificent triumphs. It has ample room for effort in the further development of old and long-used discoveries. Take the steam-engine for example, the swart genie whom our civilization has converted into its most useful servant: its powers, gigantic as they are, are as yet mainly undeveloped. In the Cornish mines in the fifteenth year of the present century an engine could lift only twenty million pounds of water one foot for a bushel of coal. Five and thirty years after, in 1850, its powers had been developed threefold.

Since 1850 improvements have constantly been made, yet even now

reliable estimates show that the best engine wastes nine-tenths of the power contained in the fuel which it burns. What a vast field for invention is afforded by this single machine. A monopoly of one-ninth of that wasted energy would give to any individual wealth beyond the wildest dreams of avarice and to any nation supremacy greater than any ever won by conquest. No daring inventor need sigh for new worlds to conquer. There is a realm before him wider, richer, and more magnificent than that over which flew the eagles of Macedon or Rome. His conquests once made will be more enduring, more civilizing, more beneficent than any ever won in the pomp and glitter of war or by the subtlest schemes of cold diplomacy. England was given greater power by the inventor of the steam-engine than by all her warriors from Caractacus to General Roberts.

Let me remind the Senate, too, that even during the life of a patent, when in terms the inventor has the exclusive right to its use, the public has nearly all the benefit of it. Statistics conclusively show that the inventor or his representatives rarely if ever obtain as royalty or otherwise more than one-tenth of the value of any invention during that period, and generally much less. The rest goes to the people in the cheapening of manufactured commodities. Some striking illustrations of this fact have been shown your committee in the hearings upon this bill.

The Senator from Minnesota offered a resolution the other day instructing your committee to inquire into the expediency of substituting for the patent laws the system of granting to inventors, by act of Congress or otherwise, specific rewards based upon the value of the invention and the labor and skill required to perfect it.

To this and all similar propositions there are objections which to me seem insurmountable. In the first place, such a plan is unconstitutional. Congress has no power over the subject except "to promote the progress of science and useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."

How under this provision can Congress secure or grant to inventors anything but the exclusive right to their inventions? If Congress chooses to execute the power, it can do so only in the manner the Constitution prescribes. The grant of a pecuniary reward, or of a qualified right, or of anything more or less than an exclusive right for a limited time, seems to me unauthorized. Under such a system of rewards, when should they be granted? If before the invention went into use, its value would be uncertain, and receiving the reward would so chill the interest of the inventor that his invention would seldom if ever get into use. The British Parliament once attempted to grant such rewards, and the greatest one fell to the inventor of a pretended dyspepsia cure which was never afterward heard of.

I share to some extent the feeling expressed by the Senator from Michigan as to the trivial character of many patented inventions, but think it dangerous to apply the remedy for it which he suggests. The plain truth is that no Commissioner should exercise a power of rejection so undefined and so liable to abuse. I cannot forget that the steamboat, the locomotive, the electric telegraph, nay, even the steam-engine itself, were in their infancy the objects of much ridicule, and that many very worthy and learned men would have refused them the letters-patent without which they never could have been perfected.

Only a few years ago the learned Senator might have ridiculed the machinery for hatching fishes' eggs more keenly than he now does

that for hatching the eggs of fowls, yet the former discovery is now universally recognized as of immense importance. Newcomen's engine was long regarded as a scientific toy, yet it was the germ of Watts's. I am disposed to look with some patience upon inventions relating to toys and articles of dress when I remember how much they have contributed to the wealth of Germany, Switzerland, and France. I console myself with the thought that the science of chemistry owes its origin to the foolish search of alchemists for the philosopher's stone and the elixir of life, and that even the manufacture of patent hoop-skirts, which we all doubtless consider a frivolous nuisance, led to valuable discoveries in the nature of steel. Trivial inventions pay to the Government more than they cost it, and do little, if any, harm. If they are worthless, the eleventh section of this bill will soon sweep them out of existence.

I now ask the attention of the Senate to the several sections of the bill.

The first section of the bill establishes the period of limitation in patent causes at four years.

There is now no statute of limitations applicable to patent causes, unless it be the act of July 8, 1870, which creates no bar from lapse of time till six years after the expiration of the patent, and which was omitted from the Revised Statutes. The present state of the law encourages patentees to sleep upon their rights for many years till their inventions have gone into general use and become interwoven with large business interests, and then to extort large sums from innocent infringers. This section will prevent such a practice and yet give the patentee time enough to carry one test case to judgment in the circuit court, at least, before embarking in extensive litigation to preserve his rights. It also provides that while one suit is being prosecuted in good faith and with reasonable diligence, proceedings in other pending cases involving the same issues may be staid by any court in which they may be pending. The amendment of the Senator from Illinois, adopted in the Committee of the Whole, seems to me to be unnecessary and inoperative, and I shall ask a vote upon it in the Senate. The cases for which it provides seem to me to be provided for in the bill.

The second section of the bill relates to damages and profits in suits for infringement and evokes more conflict of opinion than any other. Under the existing law (Revised Statutes, section 4919) a patentee may recover against an infringer in a suit at law "actual damages," and these are "to compensate him for the injury sustained by the unlawful violation of the exclusive right secured to him by the patent," (Birdsall *vs.* Cooledge, 93 U. S., 68.) Of this rule there is no complaint and the bill does not change it. The bill makes this rule as to the measure of damages applicable to suits in equity as well as to suits at law and authorizes the court to apply it. Damages, technically so called, are not recoverable in suits in equity except by force of some statute. But courts of equity have jurisdiction of trusts and have allowed the patentee to treat the infringer as his trustee holding his invention in trust. Upon this theory of a trust the infringer is held liable in equity to account to the patentee for all the profits derived from his unlawful use of the invention. In deciding what were profits for which the infringer must account the courts have adopted rules which sometimes work grievous injustice upon innocent infringers, which are not necessary for the protection of the patentee, and which often can be administered only with extreme difficulty.

In the recent case of Mowry *vs.* Whitney (14 Wall., 621) it was held that the "profits" consisted in the gain in advantage or in economy between the old method or machine open to the defendant and the new and improved machine invented by the patentee. This definition wrought no great injustice in that case, because the defendant had made actual profits from the infringement.

But afterward, in the case of Mevs *vs.* Conover, (11 Pat. Off. Gaz., 1111,) where the infringement had cheapened the manufacture, though it resulted in a loss, the Supreme Court held the defendant liable for the amount he had saved by the infringement, though the article made by the patented machine could not be sold for what it cost.

In similar cases the same rule has since been laid down by other courts. This rule compels an infringer who may be innocent of intentional wrong to account as trustee for imaginary profits which he never realized and which he could not possibly have realized.

This rule erroneously assumes that the "profits" from the use of a patented invention equal the saving it effects in the cost of production. Practically such is never the case. The use of a patented labor-saving invention lessens the cost of the product, but at once diminishes its selling price, so that the consumer, and not the manufacturer, gets the lion's share of the advantage. The experience of many years has shown that at least 90 per cent. of such saving in the cost of manufacture goes to the consumer. This rule, therefore, compels an innocent infringer, through a legal fiction, to account for profits at least nine times as large as his actual profits could possibly have been.

This rule has led to decrees giving almost fabulous sums for the use of worthless inventions and has wrought great injustice. The Supreme Court signified, in the case of Packet Company *vs.* Sickles, (19 Wall., 611,) its strong dissatisfaction with the operation of the rule, but subsequent cases have shown that it cannot break away from the precedents it has made. Legislation alone can do away with the rule, and the second section does it.

Courts of equity have also found it extremely difficult, if not absolutely impossible, to arrive by any process of accounting at the profits derived from a patented invention which is merely used in carrying on any business. For instance, how can any one determine the profits derived by a farmer from the use of a patented corn-planter? His profits depend upon his crop, and that depends upon the fertility of his soil, his skill, his care, the weather, the use of perhaps a score of other patented inventions and a score of accidents. It will not do to charge him with savings as profits because the general use of the corn-planter has so cheapened the product that he would not have undertaken to plant corn without it, and such savings might sometimes exceed the market value of the crop. It is absolutely impossible to ascertain his actual profits from the use of that invention. The same is true of every case where a patented invention is merely used in a business. It is especially true where the invention effects no pecuniary saving, but only produces increased comfort or safety, as in the case of a ventilator, railroad-brake, or an electrical fire-alarm. Now, this section says that in all such cases the courts shall not attempt to do what it is impossible for them to do and what they are bound to do only by a fiction of law.

It does away with the rule which requires the defendant to account for savings as profits, or for imaginary profits where he has made none, or to account for profits where it is impossible to determine what share of them is due to the use of the patented invention. In all such cases the courts must decide what sum the infringer must pay as a license

fee for the actual use he has made of the invention. In arriving at that amount they are bound to consider the utility and advantage of the invention (including, of course, any saving it may have made in the cost of production) and all the material circumstances of the case. This section thus secures to the inventor in all such cases full and adequate compensation for any injury he may have suffered from the unauthorized use of his invention. It leaves to him unimpaired the sovereign remedy of an injunction. It protects all his rights so fully and completely that he has no just ground of complaint.

Where the defendant has made an actual profit from making for sale or selling the thing patented, or the product of it, there is much less difficulty in ascertaining the profits, and in such cases the bill leaves to the patentee the right to demand an account. It enlarges his remedy by providing for the appointment of an auditor to take such account in actions at law. If the profits do not equal the amount of a reasonable license fee, it allows the plaintiff to recover the difference.

This section repeals the allowance of treble damages but authorizes the court where the suit or defense is vexatious and malicious, or the infringement willful, to allow against the defeated party a just and reasonable sum as counsel fees and expenses of suit. The amendment offered by the Senator from Alabama allows the court in such cases to allow such just and reasonable sum, not only against the defeated but against the successful party. I am heartily in favor of that amendment. It will prevent the unnecessary multiplication of suits and accumulation of cost against innocent infringers, and will furnish to the worthy constituents of my friend the Senator from Minnesota protection against the oppressive and vexatious litigation they fear.

I am opposed to the amendment offered by the Senator from Illinois to this section. It allows an account to be taken of savings as profits when they are never justly such; it authorizes an account for merely imaginary profits, and an account for profits when no human ingenuity can tell what they are. It authorizes the court taking an account of these so-called profits, which is one of the most expensive and troublesome proceedings known to the law, to allow the plaintiff just what sum it may deem reasonable. It really leaves the question of damages in all cases to the discretion of the court, and allows the court to consider as evidence facts which should have no weight in the case. I am opposed to intrusting any court with such vast and undefined powers, however pure and learned it may be.

The third section of the bill gives the circuit courts power to allow appeals to determine the questions of validity and infringement before putting the parties to the delay and expense of an accounting which will be useless if its decision is reversed. I see no objection to the amendment to this section offered by the Senator from Illinois.

The fourth section enables the circuit courts, subject to the direction of the Supreme Court, to exercise control over the parties by injunction pending an appeal.

The fifth section supersedes section 4916 of the Revised Statutes, and relates to reissues. It changes the existing law in several respects.

First. Upon an application for the reissue of a patent it allows no evidence of what the intention is except such as is afforded by the papers filed in the office before the original patent issued, whereas the present law allows evidence beyond the record by *ex parte* affidavits.

Secondly. It does not allow the model to be resorted to at all as evidence for the reissue.

Thirdly. It makes it the duty of the court to inquire in suits on a reissued patent whether it is for anything except the same invention shown, contained, or substantially indicated in the specification or drawings of the original application and its amendments, and which the patentee would have been entitled to include as a part of his invention in the patent originally granted.

Fourthly. It forbids the granting of a reissue unless the same is applied for within seven years from the date of the original patent or within four years from the date of the passage of this act.

I hope and believe that the provisions of this section will be sufficient to prevent the frauds which have heretofore often been accomplished by means of reissues, and which have brought discredit on the patent system.

The sixth section provides that reissues shall not have a retroactive effect against any machine or other article made before their date.

The seventh section merely authorizes the correction of mistakes made in issuing patents to more or fewer persons than were entitled to receive them, with the consent of all the owners.

The eighth section authorizes the taking of testimony *in perpetuam* in patent causes, for which there is now no adequate provision.

The ninth section allows suit to be brought by special leave of the court to repeal and annul void patents.

The tenth section gives a remedy for cases where a person injures the business of another by setting up a claim that it infringes his patent and yet refuses to bring a suit to try its validity or the question of infringement.

The eleventh section requires the payment of a fee of $50 when the patent is about four and one-half years old, and another of $100 when the patent is about nine and one-half years old. This section is in the interest of inventors as well as of the public, and will annul the abandoned and worthless patents which obstruct valuable inventions, and which reappear in reissues and otherwise only for purposes of annoyance and oppression. This plan has been tried in other countries and proved beneficial.

The twelfth section requires exclusive licenses to be recorded like technical grants, because the two are identical. It shortens the time allowed for recording assignments from three months to one month, a change justified by improvements in the mail service since 1836. It also allows all agreements relating to patents to be recorded, and makes certified copies from the record legal evidence.

The thirteenth section gives effect to an agreement between joint owners of a patent as to which shall grant licenses when the same is in writing and recorded.

The fourteenth section punishes by imprisonment not exceeding one year, or by fine of $1,000, frauds perpetrated in the sale of patent rights which are not punishable at common law nor by the usual State criminal laws against fraud.

The fifteenth section requires the assistant commissioner of patents to give the same bond as the Commissioner.

The sixteenth section establishes the price for Patent-Office copies, in no case to be less than the actual cost, and the maximum price to be the same that it now is.

The seventeenth section authorizes the use of certified copies of models as evidence.

The first sentence of the eighteenth section conforms to the existing law, the second merely relates to a matter of convenience in the

Patent Office, and the proviso enacts that an inventor who has done all that the law requires shall not suffer by the delay of the office.

The nineteenth section provides that if an inventor publishes his invention by patenting it abroad he must apply for a patent here within two years, if at all. The present law provides that if the inventor procures a patent abroad his patent here shall expire as soon as his foreign patent; but if he allows foreigners to use it without restriction he shall have the whole seventeen years here. This unjust discrimination against American patentees is abolished.

The twentieth section provides that applications for reissues may be signed and sworn to by the owner of the patent or his legal representatives.

The twenty-first section corrects a palpable oversight in the present law, by merely inserting the words "in order to be a continuance of the original application."

The twenty-second section provides that for the convenience of the Patent Office the patentee shall mark the number of his patent upon the patented article.

The twenty-third section amends section 4904 of the Revised Statutes so as to include applications for reissue and make them conform to the decisions.

I refrain from discussing the power of Congress to make the provisions of the second section of the bill applicable to existing causes of action and pending suits. That power has not been questioned in this debate. That section leaves to patentees just and ample remedies, which is all they are entitled to. Your committee has long and carefully considered this bill. Before them, in numerous hearings have appeared many of the ablest patent lawyers in the land, representing all classes of persons interested in patents, the officials of the Patent Office, and many prominent patentees, who have discussed every feature of the bill and furnished a vast array of facts bearing upon the whole subject. For nearly two years the subject has been before your committee. Entering upon its consideration with different and conflicting views, they have, after exhaustive deliberation and discussion, unanimously arrived at the conclusion that the bill, if it passes, will have a good effect and promote the best interest of patentees and of the people.

The able discussions to which it has given rise have clearly shown the enormous influence our patent laws have had and still have upon our national progress and prosperity. Doubtless they have sometimes been used for the purposes of oppression; and what laws have not? I can find no terms sufficiently strong to express my condemnation of the chicanery which has aroused the indignation of the Senator from Minnesota. I trust the worthy citizens of the West whose wrongs he has so eloquently portrayed will seek and obtain justice from their legal tribunals. I feel sure that this bill, if it passes, will relieve the people from vexatious and malicious prosecutions and remove all just cause of complaint they have against our patent laws.

I am confident also that the provisions of this bill will, if they pass into law, strengthen our patent system. Its importance to our people justly demands for it the fostering care of Congress. Now, when our foreign rivals recognize in it the secret of our success, is not the time to treat it with indifference, much less with hostility. The inventive genius of our people, stimulated by our patent laws, is our chief reliance for success in the great conflict going on between the nations of the earth for industrial and commercial primacy, in which

our opponents have the advantage of cheap labor. Encouraged and protected by wise legislation, that inventive genius will win yet greater victories over nature and place our country first and foremost among nations.