Scientific American.

MUNN & COMPANY, Editors and Proprietors

PUBLISHED WEEKLY

At No. 37 Park-row (Park Building), New York.

O. D. MUNN, S. H. WALES, A. E. BEACH.

TERMS—Two Dollars per annum—One Dollar in advance, and the remainder in six months.

Single copies of the paper are on sale at the office of publication, and at all the periodical stores in the United States and Canada.

Sampson Low, Son & Co., the American Booksellers, No. 47 Ludgate Hill, London, England, are the British Agents to receive subscriptions for the SCIENTIFIC AMERICAN.

☞ See Prospectus on last page. No Traveling Agents employed.

VOL. III., No. 25....[NEW SERIES.]....*Sixteenth Year.*

NEW YORK, SATURDAY, DECEMBER 15, 1860.

TO OUR FRIENDS.

NOW IS THE TIME TO FORM CLUBS.

We are now about to close the present volume of our journal, and we appeal to its staunch friends in all sections of the country to endeavor to form clubs for the coming year. We feel justified in asserting that no other journal in this country furnishes the same amount of useful reading. Think of the extraordinarily low price at which it can be obtained. Fifteen persons can club together and get the paper at $1 50 each for one year. Twenty persons clubbing together can have it at the rate of only $1 40. Think of getting a volume of 832 pages of useful reading matter profusely illustrated with between 500 and 600 original engravings for such a small sum of money. Single subscriptions one year, $2; six months, $1. Even though the times may be hard, the long winter evening must be relieved of its dullness, and we must keep reading and thinking, and thus be prepared to overcome temporary difficulties and open new channels of wealth and prosperity. Friends, send in your clubs.

WHAT WILL BE THE EFFECT UPON PATENTS IN CASE OF SECESSION?

WE have recently been solicited by several inventors to give our opinion as to "what would be the effect on patents in the event of a dissolution of the Union?"

Although it is impossible for any person to tell what will assuredly take place in the future, we are able to state what would be the result, and what probably will follow, with respect to patents that issued prior to a separation of the States.

All such patents will undoubtably be considered legal, and held in full force in *all the States* until their terms have expired. Such is the conclusion at which every person must arrive who examines into the history of our legislation on patents, and into the nature of a patent itself.

The nature of a patent consists of a bargain or agreement between an inventor and all the people of the United States, to the effect that, upon the condition of the inventor revealing his invention to the people, they shall protect him in the exclusive use, sale and manufacture of it for a limited term on every foot of land in all the States and Territories. The patent contains a description of the invention, and is a witness to the fulfillment of the inventor's part of the agreement with the people. The seal and certificate of the officer who represents the people is also attached to their bond in the fulfillment of the bargain. As the bargain between these two parties can only be consummated and fulfilled by the people—the whole people—protecting the inventor in his rights until his patent expires, all the people in every State are bound in honor—and no doubt they will consider it so—to carry out the terms of the agreement.

Some new rules may be adopted by seceding States with respect to certifying to the legality of present patents. They will probably require that all of them must have a supplementary new government seal attached to render them valid within their dominions; but this will be all that is necessary. Each State will consider it an object of wise political action to encourage and protect all patentees and inventions. An opposite course would be detrimental to the material interests of any State. Although there have arisen many jealousies and strifes between different States, respecting commercial regulations and political theories affecting local interests, there has always been perfect unanimity regarding patents, because there is nothing local about them. They are of general benefit, and all reap equal advantages from them. Two of the most profitable patents of the present day have been obtained by citizens living very far removed from one another—the one in the most extreme Southern State, and the other in nearly the most extreme Northeastern. We refer to the patent for the Peeler plow, by a citizen of Florida, who is reported to have made $500,000 by it; the other the patent of E. Howe, Jr., of Massachusetts, for his sewing machine. We could instance a great number of like cases; but it is unnecessary to do so, as it is generally acknowledged that the citizens of all the States are equally and mutually benefited by patents, and it is therefore reasonable to conclude that, upon every consideration, all patents granted by the Federal Government will remain in force and be sustained in all the States, even in the event of a dissolution of the Union.

The history of patent legislation also affords us good grounds for entertaining these opinions. In colonial times, there were no such patent laws as we now have. It was customary for the several Assemblies to grant patents by special acts, and sometimes the King granted patents for all the colonies. No fees were required of the applicants; they simply prayed for all issues of Letters Patent, which petitions were granted by special bills. There were constant conflicts in those days between the dividing lines of patent jurisdiction, and the only way to secure full protection to an invention was to obtain a special act or grant in each colony. When the colonies resolved themselves into sovereign States, they all felt the inconvenience and insufficiency of the old modes of granting patents; and the consequence was that, on the adoption of the present consitution, each State gave up its power of granting patents to the general government with alacrity and pleasure, while it was far otherwise with most of their other sovereign privileges. Virginia took the lead in this great movement, and to Jefferson we owe our present confederate system of patents. He took a great interest in promoting the progress of science and the useful arts, and we believe that American inventors never had a warmer friend.

Viewing this question in the light of history, wisdom, honor and true policy, we believe that all patents which are now in force will be sustained in all the States until their terms expire.

EXPLOSIVE ENGINES.

A few weeks ago we corrected the reports which had been disseminated by many of our daily papers in regard to the novelty and utility of an explosive gas engine which had recently been exhibited in Paris. We stated that an engine, similar in every respect, had been invented long ago by Dr. Drake, of Philadelphia, and was exhibited during two fairs of the American Institute in this city, and finally destroyed by the burning of the Crystal Palace. Although we have done all this, we notice that our cotemporaries are still using their columns in describing the exploits of the Paris gas engine. Explosive gas and explosive powder engines are quite old. Twelve years ago, when gun cotton was first prominently introduced, quite a number of enthusiastic inventors believed that it might be employed as a substitute for steam, and theoretically various advantages may be claimed for a solid and suddenly expansive agent like gunpowder or gun cotton. Thus, with a package of gun cotton and a small galvanic battery, a portable explosive engine may be transported from place to place and operated on mountains or plains, for purposes of peace or purposes of war, for which it would be a most terribly efficient and destructive agent. The gas engine requires that coal be made into gas before it can be operated, and in this respect it is far more complex, troublesome and expensive than the steam engine. The gun cotton engine would require neither boiler nor furnace like steam and hot air engines, but it will be very difficult to give it an equable motion because the expansion of the charges is so sudden that they tend to produce great irregularity of motion in the piston. On page 180 Vol. III. (old series) of the SCIENTIFIC AMERICAN, we illustrated a gun cotton engine, invented by the celebrated W. Fox Talbot, of England—inventor of the Talbottype—the charges of which were ignited by electric sparks, like the gas engine in Paris. It never came into use; it merely reached the condition of an experiment, but some other inventor may yet be able to improve upon the first ideas, and render such an engine useful for many purposes.

WHAT WILL BECOME OF THE PATENT OFFICE IF THE UNION IS DISSOLVED?

The above inquiry we extract from a business letter received from a correspondent residing in Alabama. The idea of a dissolution of the Union has forced upon his mind a painful interest in behalf of one of the noblest institutions of our government. The dissolution of the Union can only be effected by a secession of some of the States. This would not necessarily break up the Federal Government, and, for the present, its seat of power would remain at Washington. Should the government acquiesce in the peaceful secession of the States, then, to all intents and purposes, these seceding States would be regarded as foreign countries, and their citizens treated accordingly. But the business of the Patent Office would still go on, and all applicants for patents would be dealt with according to law.

The citizens of a seceding State would, under such circumstances, be subject to all the legal inabilities imposed upon foreigners, and upon the presentation by one of them of an application for a patent, the government fee would be $300. If an inventor could swear that he was still a citizen of the United States, even though residing temporarily in a foreign country, he would be required to pay a fee of only $30.

We believe we have stated the matter fairly and correctly, without reference to any of the political issues that connect themselves with the subject. Inventors who are desirous of applying for patents, and are apprehensive that the States in which they reside will withdraw from the Union, had better file their applications at once, and thus save themselves $270, being the difference between the present fee and the one to which they would be liable when they could no longer swear that they were citizens of the United States.

OUR STELLAR SYSTEM.

The grandest of all the problems with which science has ever grappled is the relation of the stars to each other. Sir William Herschell, with his great telescope and his comprehensive mind, led the way in this sublime study, and the path which he marked out is now being pursued by able and earnest observers all over the civilized world. The results yet obtained in regard to the position of the fixed stars in relation to each other and their distances apart, are neither as positive nor as definite as our knowledge of our own solar system, still, within certain limits, some facts have been determined which almost overwhelm the mind with their inconceivable grandeur.

First, it has been ascertained that our sun is one of an innumerable multitude of stars which are grouped together in one collection or system, separated from other stars in the universe. The general form of this stellar system, and our position in it, have been roughly determined. It is in the form of an irregular wheel, with a deep notch in one side, and with a portion of another wheel branching out from it. Our sun is situated pretty near the middle of the system, and about where the branch divides. The dimensions of this collection of stars are so vast that if expressed in miles they would require rows of figures of such confusing length as to convey no definite idea to the mind, and the plan has been adopted of stating the time which a ray of light would require to traverse them. It would take a locomotive 500 years to pass from the earth to the sun, while a ray of light makes the journey in eight minutes, and yet a ray of light moving with the same velocity, would require three years to reach

© 1860 SCIENTIFIC AMERICAN, INC