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Contents:

(Illustrations are indicated by an asterisk.)

EXTENSION OF PATENTS—FOR WHOSE BENEFIT THEY ARE GRANTED.

There seems to be an impression among inventors that since the law of March 4, 1861, went into force, the previous law, in respect to extending patents for seven years, was abrogated. This is not so in regard to cases which were patented under the old law. Any patent which was granted prior to March 4, 1861, may be extended for seven years on proper application to the Patent Office, provided the patentee has not already been amply remunerated for his invention, and proves to the satisfaction of the Commissioner that he has used proper diligence in attempting to realize gains from his patent. The patentees of 1851 should lose no time in making out a statement of their profits and losses in consequence of their patents, and in seeing counsel in regard to an extension, if they wish the term of these expiring patents continued for another seven years.

It is often the case that the extended term of a patent produces to the patentee a ten-fold profit over the amount realized during the first fourteen years of its existence. The assignees of a patent cannot obtain this extension; it must be done at the instance of the inventor—or, if deceased, his heirs may apply for the extension, but in either case ninety days' notice of their intention should be given—for whose sole benefit it is granted.

For full particulars concerning extension, address

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THE "SCIENTIFIC AMERICAN" FOR THE ENSUING YEAR.

On the first day of January next we shall commence Vol. 12 of the New Series of the SCIENTIFIC AMERICAN, and we scarcely need to remind our readers that in the present state of Journalism in this country, things are so much changed by the exigencies of the war, that publishers are compelled to carry burdens almost too heavy for them. These are not imposed by the arbitrary power of Government, but are the general result of circumstances which the wisdom and foresight of our rulers could not control. A free press we have, and must have; but cheapness is a condition absolutely necessary to its growth and development. Nothing short of these two elements can meet the wants and interests of the American mind. That the latter, however, cannot well be expected at the present time, may be seen from a reference to the high prices which obtain for every thing used in a publishing office. Paper that once cost 9½ and 10 cents per lb., is now hard to be obtained at 30 cents per lb. A like advance has been made in all other articles. Many feeble papers have already expired, and many more must experience a like fate, unless by some sudden turn of fortune's wheel they shall be relieved of present pressure.

In spite, however, of these burdens, which we confess to have felt to some extent by a decreased profit for our labor, we have maintained the standard of the SCIENTIFIC AMERICAN equal to that of any previous year. The paper we believe has lost none of its old renown; indeed, if we may trust to the judgment of many of our oldest readers, we may well cherish the conviction that it was never before so well edited. We are conscious, at least, that our labors in this particular have never been more earnestly directed to gratify our readers. The valuable information published in the SCIENTIFIC AMERICAN can not be obtained from any other journal. In the volume now closing the mechanic will find that special attention has been paid to his interests; the manufacturer will observe many hints on workshop economy, new fabrics, systems and schemes, the inventor and patentee will find the fullest and earliest intelligence on all that belongs to his peculiar calling; and the general reader will observe that all the great industrial enterprises, all the newest and best plans for ordnance, torpedoes, small arms, steam engines and telegraphing are noticed and discussed. Articles on the large manufactories have been illustrated also, and described at length.

The SCIENTIFIC AMERICAN has had early intelligence of every rebel iron-clad of note, and also descriptions of our own monitors, and illustrations of the Government ordnance, and experiments on iron-clad targets. The great question of the expansion of steam has again arisen, and is still being tested. The Hecker and Waterman experiments, as well as those of Government, are yet under way; and the partial results of the former have already been published. Illustrated articles on machinists' tools, as well as practical rules and hints, will be found in the approaching volumes. The first volume will open with an article on "Lathe Tools," in which all the newest and most approved forms, as well as the work to which they are adapted, will be lavishly illustrated. The attractions, past and forthcoming, of the SCIENTIFIC AMERICAN, render it indispensable to every workshop, and we intend that it shall be welcome at the fireside.

AMERICAN MACHINE TOOLS.

Not many years ago, when a machinist drilled a hole in fine work for a five-eighth bolt, he made it a sixteeenth larger than the bolt, for good measure. When he wanted the bolt itself, he got out the stocks and dies if they were not lost, and twisted away until it was made. If he required a hole particularly smooth and true, he took a piece of steel to the tool-dresser and had it forged half round, after which he turned it in the lathe a little tapering, so that it would enter, and so that he would have to turn his work over ten or eleven times, and mark it all up in the vise before he could safely say he had made a good job! When these miraculous holes were finished everybody would put their fingers in "to see how smooth they were."

Not many years ago drills cut three-sided holes, and the drill that worked round without twisting off, was put carefully on one side. Lathes that bored tapering holes, largest on the back or front, as the case might be, were regarded as in chronic difficulties; and the metal that could not be bored out by humoring the tool was afterwards taken off with a half-round file.

How far removed the machinist of the present day is from these rude processes let the tools in use answer. The half-round rimmers that looked like clothes pins, are handed over to boiler makers, to whose work they properly belong. The bolts are cut in engine lathes, and the threads, instead of being half stripped and thrust forth naked to the world, are clear, clean, sharp and well defined. The stock and its dies, except for occasional use, are supplanted by "sizers," or else deposed altogether. Experienced mechanics know well enough how to correct faulty drills; and as for the lathes that bore holes not parallel, they must be some of the old-fashioned ones, for those built lately are given to no such defect.

The lathes built at Moodna, Orange county, N. Y., are most excellent ones. They are convenient of access in all parts, made of superior materials, and in the best manner. They are geared for screw cutting, and the driving pinions on the spindle, as well as those for feeding, are of wrought iron. The nuts of one size all fit one wrench, which is sent with the machine, so that in changing gears for cutting threads no screw wrench need be used. The tool post slides in slots in a raised bed, so that it can be moved sideways, and the bed or ways has no V-shaped slides to get bruised or jammed by laying tools down upon them. There are other good features in these lathes which we need not here enumerate. The experience of all mechanics who have used them verifies our statements. We have, at random, selected them from many others as an example of what first class engine lathes for general use should be.

The shapers or universal planing machines, at one time made by the Lowell Machine Shop, are also excellent tools of their class; and in this city Mr. A. M. Freeland makes lathes and planers of superior finish and durability. In fact, the general character of American machine tools has of late years been vastly improved. Manufacturers have learned that the best work gives the best satisfaction, and that a reputation once gained for good tools is an investment that pays. Messrs. William Sellers & Co., of Philadelphia, build tools which are fine examples of modern machine work. Messrs. Bement & Dougherty, of the same city, have of late years built and introduced a machine for cutting key ways for gibs and keys in connecting rods, which is a most useful one, effecting a vast saving of labor and time. Messrs. Sharp & Browne, of Providence, R. I., are noted for the superior workmanship bestowed upon their milling machines; and the Putnam Machine Co., of Fitchburg, Mass., build most excellent machine tools of all descriptions. We cannot, however, enlarge further upon individual firms, for our columns are not extensive enough to make mention of all deserving public notice. Any who are omitted will feel that their claims are reserved for another day,

Where once we drilled a single hole at a time, we now have gang drills which make two, three or four holes at once, either of the same or different sizes, and the saving in time is very great. Where formerly we chipped the nozzles of heavy cylinders and similar parts on surface condensers, we now employ portable planing machines. Five-eighth and a sixteenth holes for five-eighth bolts are heard of no more. Men have learned that it is better to put the work in its proper place, drill the holes in their places, and fit the bolts to them than to pierce the job with holes too big, put in rough bolts, shift the work to the final position, and insert steady pins to keep it fast. The bodies of the bolts are the steady pins, and nuts screwed up almost with the fingers, will hold more than a screw wrench could make them when the bolts were pitched into the holes.

These are not trivial things, but are of vital importance to the endurance of machines, whether tools or engines, and it is gratifying to know that intelligent mechanics recognize the principles here laid down. Let us continue to improve, to make American tools the best in the world, and they will soon be in general demand.

POTATOES IN FAT.

There is a common notion among cooks, that when tallow has been burned, it can be cleaned and made white by dropping into it a few slices of raw potato. If this be true we can form no idea of the process by which the cleaning is effected, and we strongly suspect that the opinion results from one of those errors of observation which are so very common. But that potatoes will prevent fat from being blackened by heat, in some cases, cannot be doubted.

If tallow be heated to a temperature of about 600 degrees, the oxygen and hydrogen will be driven off, and the carbon remain as a black powder which will settle