

AMERICAN INVENTIONS IN EUROPE.

It is a fact exceedingly gratifying to the pride of every true American, that American inventors and manufacturers are to-day supplying the Old World with many of its best implements. In the matter of improved firearms, we are so far ahead of the nations of Europe, that many of them are sending large orders to our manufacturers, and where they have attempted to get them up themselves they have almost invariably adopted American inventions.

A writer in the *N. Y. Tribune*, mentions the fact that the Snider alteration of the Enfield, in England, was an American invention; the Henry Martin is but a very slight modification of the Peabody gun, and the Swiss gun is the Winchester (formerly known as the Henry) magazine rifle, altered very much for the worse. At the various trials abroad, the American guns have invariably come out ahead, and the English Commission reported as to magazine guns in favor of, first, the Winchester, and, second, the Ball guns. The Messrs. Remingtons, of Ilion, N. Y., have furnished to the Danish Government 25,000 of their celebrated breech-loading rifles, and to the Swedish Government, 25,000; while this year they will send to Europe generally fully 100,000. These rifles have been sold to Austria, France, Italy, Spain, Egypt, and Cuba, in smaller quantities, with a prospect of much larger sales in the future. Colt's Company is completing 30,000 Berdan rifles for Russia, and it is rumored that the order has been increased to 100,000. At the same time Col. Berdan has gone to Russia to superintend a factory there, probably for altering their present arms. Turkey has bought 200,000 of our rifles, and sent them home, and has just completed the purchase of over \$60,000 worth of machinery, with which to convert them into breech-loaders, on the plan, probably, of those altered at Springfield. Sharp's Company have been converting 30,000 of their rifles and carbines into metallic cartridge guns for our Government. At the same time the Winchester Company is turning out over 100 per day of its repeating rifles, and is increasing its works. It has also bought out the Spencer Company, of Boston, including the Spencer and Fogarty patents, thus combining and controlling all the prominent magazine guns, except the Ball, which is owned by the Windsor Company, of Vermont, and of which quite a number have been recently sold in Persia. The Winchester and Remington rifles are being sent to China and Japan, and the former are also sent to Australia, as well as all over the West, the Plains, and the Pacific coast. Nearly one-half of the entire product of Smith & Wesson's pistol factory, employing some 300 hands, is sold in Europe, mainly in France, notwithstanding their cheaper labor. This result is of course due to the fact that they are mainly the product of machine labor, which machines are themselves of American invention and manufacture, and which produce an accuracy of work and finish that their hand labor cannot equal. But not only are we furnishing Europe and the Old World generally with arms, but we are also supplying them with ammunition. The Union Metallic Cartridge Company of Bridgeport, under the control of Hobbs, of lock fame, is furnishing metallic cartridges—far superior to any ever before seen—to nearly all the world. They had one order of 25,000,000 from the Russian Government, and it is reported that the order has been increased to 100,000,000. They make them of every variety and size, their sale of one small size for pistols averaging 45,000 per day, a large portion going to Australia. And these, too, are all made on machines invented by Americans, the like of which do not exist elsewhere in the world. In addition to all this, the Windsor Company, of Windsor, Vermont, are just completing an order for \$80,000 worth of milling and screw machines, to be shipped to Edinburgh, Scotland, to establish there a large factory for the manufacture of the Singer sewing-machine. Not content with shipping the sewing-machines themselves—of which large numbers of the leading kinds are constantly sent—they intend making them there, and that, too, with American machinery. Already, the Windsor Company has sent one or two lots of similar machinery to Canada for the same purpose; but sending machinery from here to Great Britain is bearding the lion in his den to some purpose. It is also specially worthy of note that the milling machine—one of the most important and useful of all metal-working machines—and the screw-making machine are purely of American origin.

Steam Boiler Incrustations.

According to *Cosmos* a series of experiments, made on purpose, and continued for a sufficient length of time to yield a reliable result, has fully proved that the addition to the feed water of steam boilers of fatty clays, especially the kind known as fuller's earth, entirely prevents boiler incrustations, even where, of necessity, very hard water has to be used as feed water. A loose, soft mud is deposited as soon as the motion of the water, due to the boiling, ceases on cooling. This mud readily runs off on opening the sludge valve of the boiler.

The *Annales de Génie Civil* informs us that these incrustations may be prevented by the use of raw potatoes, which cause all solid matters to be precipitated at the bottom of the boiler in a fine powder, leaving the sides perfectly free. The experiment was tried with an engine of 8-horse power, into the boiler of which ten kilogrammes of potatoes per week were introduced through the safety valve. Every week, when the fires were extinguished, the deposit was removed previous to the introduction of a fresh supply of potatoes. On examining the boiler after fourteen consecutive months of work, no traces of incrustation were perceptible; the appearance of the plates was blackish and slightly greasy, and the corners of the joints were in the same state as when first

made. Refuse leather-cuttings from the tanneries will answer the purpose equally well.

These prescriptions for a bad complaint are not new, unless it be the use of fuller's earth. They have, in common with others of the same nature, the important drawback that they are not applicable to all cases. There is no doubt, however, of their utility in some cases.

The Maddening Mechanism of Thought.

Our brains are seventy-year clocks. The Angel of Life winds them up once for all, then closes the case, and gives the key into the hand of the Angel of the Resurrection. Tic-tac! tic-tac! go the wheels of thought; our will cannot stop them; they cannot stop themselves; sleep cannot still them; madness only makes them go faster; death alone can break into the case, and seizing the ever-swinging pendulum, which we call the heart, silence at last the clicking of the terrible escapement we have carried so long beneath our wrinkled foreheads. If we could only get at them, as we lie on our pillows and count the dead beats of thought after thought and image after image jarring through the over-tired organ! Will nobody block those wheels, uncouple that pinion, cut the string that holds these weights, blow up the infernal machine with gunpowder? What a passion comes over us sometimes for silence and rest—that this dreadful mechanism, unwinding the endless tapestry of time, embroidered with spectral figures of life and death, could have but one brief holiday? Who can wonder that men swing themselves off from beams in hempen lassos?—that they jump off from parapets into the swift and gurgling waters beneath?—that they take counsel of the grim fiend who has but to utter his one peremptory monosyllable, and the restless machine is shivered as a case that is dashed upon a marble floor? Under that building which we pass every day there are strong dungeons, where neither hook, nor bar, nor bed cord, nor drinking vessel from which a sharp fragment may be shattered, shall by any chance be seen. There is nothing for it, when the brain is on fire with the whirling of its wheels, but to spring against the stone wall and silence them with one crash. Ah, they remembered that—the kind city fathers—and the walls are nicely padded, so that one can take such exercise as he likes without damaging himself. If anybody would really contrive some kind of a lever that one could thrust in among the works of this horrid automaton and check them, or alter their rate of going, what would the world give for the discovery? Men are very apt to try to get at the machine by some indirect system or other. They clap on the brakes by means of opium, they change the maddening monotony of the rhythm by means of fermented liquors. It is because the brain is locked up and we cannot touch its movements directly, that we thrust these coarse tools in through any crevice by which they may reach the interior, alter its rate of going for a while, and at last spoil the machine.—*Oliver Wendell Holmes.*

Spontaneous Combustion of the Human Body.

In a former number, we spoke of the belief in the spontaneous combustion of the human body as "a vulgar superstition." A correspondent calls our attention to articles in encyclopedias, which refer to "well authenticated instances" of such combustion. Let us examine this matter in the light of what is actually known.

We must, in the first place, carefully distinguish between the notion of "a preternatural combustibility" of the body under certain abnormal conditions, and that of its spontaneous combustion. The former is not impossible; indeed, there are tolerably "well authenticated instances" of the kind. The latter, if not absolutely inconceivable, is in the highest degree improbable, and eminent physiologists who have carefully investigated all the cases in which it is alleged to have occurred, do not find a single one established beyond a doubt.

The earliest case of the kind which has a semblance of authority to sustain it, is said to have happened in 1725, and from that time down to the year 1847, when the last alleged case occurred, some fifty instances are recorded. Liebig made an analysis of all these cases in 1851, and found that they nearly all agree in the following points:

1. They took place in winter.
2. The victims were hard drinkers, and were drunk at the time.
3. They happened where the rooms were heated with fires in open fire-places or pans of glowing charcoal. Cases where rooms are heated by means of closed stoves are exceedingly rare.
4. It is admitted that no one has ever been present during the combustion.
5. No one of the physicians who collected the cases, or attempted to explain them, has ever observed the process, or ascertained what preceded the combustion.
6. No one has known how much time had elapsed from the beginning of the combustion to the moment when the consumed body was found.

Out of forty-five cases collected by Frank, of Berlin, in 1843, there are only three in which it is assumed that the combustion occurred when there was no fire in the neighborhood; and Liebig clearly shows that these three cases are totally unworthy of belief. The conclusion to which he comes is that "spontaneous combustion in a living body is absolutely impossible." Flesh which has been saturated with alcohol for a great length of time, as anatomical preparations, is not combustible; if ignited, the alcohol burns off, scarcely charring the flesh. The corpses of drunkards have never been found to be combustible.

M. Duvergie has opposed Liebig's views, and has expressed the opinion that molecular changes may take place in the living body by which it becomes more combustible from the absorption of alcohol, or from its conversion into more inflammable compounds; but he admits that the combustion is

probably never spontaneous. Dr. Marc has suggested that inflammable gases, and possibly even phosphoreted hydrogen, which, under certain circumstances, inflames on contact with the air, may be generated in the living body, and may thus give rise to its spontaneous combustion; but this is merely a theory to account for such cases of combustion, if they have occurred.

On the whole, this idea of spontaneous combustion appears to be one of those old medical delusions which, having once gained a sort of credence, are not readily given up. It is easy to see, as Liebig observes, that it arose at a time when men entertained entirely false views on the subject of combustion, its essence, and its cause. It is only since the time of Davy, or for about half a century, that combustion has come to be thoroughly understood. After people had once got it into their heads that the body might take fire of itself, it is not singular that when a man happened to be burned up, the case was explained in that way if it could not readily be accounted for in any other way; just as hundreds of fires caused by carelessness, not easily detected, are charged to the mysterious "incendiary." Then again, other things being equal, the more marvelous explanation of strange phenomena is usually the more popular one. The Latin proverb *omni ignotum pro magno fero est* might be read *omni ignotum pro mirifico est*, with everybody, whatever is unknown passes for a marvel. We need not be surprised, therefore, that this idea of human combustibility, which was not inconsistent with the scientific knowledge of the age in which it had its origin and which consequently came to be accepted by the scientific men of the time, should still live as a popular superstition and even find an occasional defender among the savans of this more enlightened day.—*Boston Journal of Chemistry.*

Official List of Patents.

Issued by the United States Patent Office. FOR THE WEEK ENDING DEC. 7, 1869.

Reported Officially for the Scientific American

SCHEDULE OF PATENT OFFICE FEES:

|                                                                                                                              |      |
|------------------------------------------------------------------------------------------------------------------------------|------|
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Patent Solicitors, No. 37 Park Row, New York.

- 97,470.—LUBRICATOR.—David Adamson, New York city.
- 97,471.—BALING PRESS.—J. L. Albertson, New London, Conn. Antedated Nov. 25, 1869.
- 97,472.—SAFETY VALVE.—Henry Ashfield, Chicago, Ill.
- 97,473.—STEAM GENERATOR SMOKE STACK.—W. F. Beecher, Morristown, N. Y. Antedated Nov. 24, 1869.
- 97,474.—SNOW PLOW.—Gottlieb Beer, Grafton, Wis.
- 97,475.—CONSTRUCTION OF PRESERVING-HOUSES.—Harrison Blackburn, Bedford county, Pa. Antedated, Nov. 20, 1869.
- 97,476.—PLANING MACHINE.—J. B. Brown (assignor to himself and N. F. Libby), Lowell, Mass.
- 97,477.—STOVE GRATE.—Edward Card, Pawtucket, R. I.
- 97,478.—BOOT JACK.—Wheeler Case, Russia, assignor to himself and J. H. Read, Jr., Utica, N. Y. Antedated Nov. 27, 1869.
- 97,479.—BUGGY TOP.—A. M. Cory, New Providence, N. J. Antedated Nov. 23, 1869.
- 97,480.—PUSHING JACK FOR RAILROAD CARS.—R. A. Cowell (assignor to himself and E. N. Keys), Cleveland, Ohio.
- 97,481.—SEWING MACHINE TABLE.—Henry Cowgill, Fredonia, Del., administrator of the estate of J. H. C. Cowgill, deceased.
- 97,482.—BASIN TRAP.—H. H. Crigie, New York city. Antedated Nov. 25, 1869.
- 97,483.—POST OFFICE LETTER BOX.—B. C. Davis, Binghamton, N. Y. Antedated Nov. 22, 1869.
- 97,484.—CLAPBOARD MACHINE.—C. S. Davis, Orono, assignor to himself and T. N. Ekerly, Bangor, Me.
- 97,485.—SAFETY VALVE.—Walter Dawson, Scranton, Pa.
- 97,486.—COMPOUND FOR LINING TEXTILE HOSE.—Julius Dollmann and F. W. Claessens, Boston, Mass.
- 97,487.—HOISTING APPARATUS.—William Dyatt, New York city.
- 97,488.—ORE CONCENTRATOR AND SEPARATOR.—James Edgar, New York city.
- 97,489.—LEVATOR.—William Edson (assignor to E. H. Ashcroft), Boston, Mass.
- 97,490.—SULKY PLOW.—C. A. Edwards, Chatfield, Minn.
- 97,491.—SAW SET.—A. R. Fenner, Cold Brook, N. Y.
- 97,492.—WIND WHEEL.—Leonard Fischer, Sonora, Cal.
- 97,493.—FRUIT BOX.—J. H. Fisher, Chicago, Ill.
- 97,494.—MACHINE FOR POLISHING STONE.—Calvin H. Fitch, Syracuse, N. Y.
- 97,495.—DEODORIZING APPARATUS FOR WATER CLOSETS.—B. A. G. Fuller, West Roxbury, Mass.
- 97,496.—LIGHTNING ROD AND CONDUCTOR.—Theodotus Garlick, Cleveland, Ohio.
- 97,497.—PROCESS OF DYING BLACK.—James Goe, West New Brighton, N. Y.
- 97,498.—LATCH.—Rudolph Geselbracht and Frederick Frey, Galena, Ill.
- 97,499.—BORING MACHINE.—F. M. Gibson, Chelsea, Mass.
- 97,500.—GANG PLOW.—D. H. Gleeson (assignor to himself and Dennis Cannon), San Leandro, Cal.
- 97,501.—WELL AUGER.—J. Y. Goode, Water Valley, Miss.
- 97,502.—SASH HOLDER.—A. F. Gregory and C. H. Ensign, Bridgeport, Conn.
- 97,503.—COAL ASH SIFTER.—Abram Hagadorn, Canajoharie, N. Y.
- 97,504.—DITCHING MACHINE.—H. L. Hall, Buffalo, N. Y.
- 97,505.—ELECTRO-MAGNETIC RAILROAD SIGNAL.—T. S. Hall, Stamford, assignor to Hall's Patent Electric Railway Switch and Bridge Company, New Haven, Conn.
- 97,506.—BORING MACHINE.—Joseph Hampson, Newburg, N. Y.
- 97,507.—TWEED.—J. F. Harly, Kipton Station, Ohio.
- 97,508.—GARDEN PLOW AND MARKER.—Henry Haynsworth, Sumter, S. C.
- 97,509.—STEAM GENERATOR SMOKE STACKS.—William Holdcraft and David McLaughlin, Philadelphia, Pa. Antedated Nov. 20, 1869.
- 97,510.—MACHINE FOR TESTING SPRINGS.—George Hopsen, Bridgeport, Conn.
- 97,511.—CLOTHES DRYER AND STOVE-PIPE SHELF.—G. E. Hoyt, Hebron, N. H.
- 97,512.—SHOT AND BULLET MACHINE.—E. A. Hyde, Ann Arbor, Mich.