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No. 858

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ANOTHER NEW PATENT BILL.

Among the various bills introduced at the present Congressional session for the modification of the patent laws is H. R. 601, which is understood to embody the views of the present Commissioner of Patents, the Hon. W. L. Simmonds.

The bill contains several excellent features which if adopted would improve the existing law; it also presents some objectionable clauses that ought never to pass.

The proposed amendment of the section relating to caveats, giving the privilege to foreigners as well as citizens, is a good one: so, too, is the section which prevents a foreign patent from nullifying an American patent, provided the application for the American patent was filed prior to the issue of the foreign patent.

One of the most radical changes proposed by this bill relates to those cases where two or more different parties claim a patent for the same invention. These are called interfering applications. The present law provides that proofs of priority of invention shall be presented to the Commissioner of Patents by all the contestants, and he awards the patent to the original and first inventor, as proved by the testimony placed before him.

The change proposed in this new law does away with this presentation of proofs and authorizes the Commissioner to issue a patent to the party who first files his application, irrespective of the real date of his invention.

The true inventor may be thus driven away from the Patent Office; but he is allowed the forlorn remedy of seeking redress by a bill in equity. The general idea or aim of this section is to relieve the Patent Office from the burdensome litigations of interference questions, which now so often and fruitlessly occupy time and cause prolonged delays in the settlement of Patent Office cases. The idea of relief is a good one, but the mode of doing it seems harsh and unjust to inventors.

It would seem to be better in such cases that each of the claimants should receive a patent, and then go to the courts as in other cases to settle which of the claimants is the rightful patentee and which patent is valid. But to authorize the Commissioner to issue a patent only to one of the claimants, simply because he filed his case a second of time ahead of the other claimants, seems unfair and unnecessary.

Another objectionable section (13) of the bill is that which deprives the patentee of remedy in case of infringements. By the terms of the bill, anybody who buys a telephone, for example, of a vendor on the streets, may set it up and freely use it, and the patentee has no remedy against such infringer. He must proceed against the maker, who, perhaps, lives in Canada and cannot be reached. This is in effect a nullification of the patent laws. Another section of this bill requires a poor inventor to pay a fee of ten dollars to enable him to ask the high and mighty Commissioner to correct a blunder made by one of his subordinates. The inventor must pay or keep his mouth shut.

These are poor methods of encouraging inventors and promoting the useful arts. On the whole we think the law as it stands is better than it would be if all the proposed changes were enacted.

The bill has been formally reported by the Patent Committee, and we trust will have careful attention and full discussion by the Congress.

A Benzine Explosion.

A sad accident occurred in Philadelphia recently, resulting in the death of two men, and in serious injurious to another. The men were repairing a leak in the boiler of locomotive No. 618, of the Philadelphia & Reading Railroad Company, known as the "Reading Flier." The top of the dome had been removed, and at the moment of the explosion the men were still working about the dome. The foreman, whose name was Hoster, was inside the boiler, and the other two men were on the top of it outside. A can of benzine had previously been taken into the boiler, and Hoster, apparently forgetting this fact, asked one of the men to hand him a light through the dome. As the lamp was passed to him, the vapor from the benzine ignited. The flame spread instantly to the body of the fluid, and a terrific explosion followed. Hoster, being in the dome, blocked up the only vent, and he was blown violently into the air like a shot from a cannon. His body lodged in the truss work that supports the roof of the building. A ponderous electric crane was moved across under the hanging form of the injured man, and from it workmen reached Hoster and brought him to the floor. He was still living, and was removed to the hospital, where he soon died. Within half an hour of his death he talked cheerily to the occupant of the next cot, telling him what he knew of the explosion. He congratulated himself upon what he called his own "close call," expressed regret at the death of Jordan, and said he hoped Kenney and himself would soon recover. Jordan, who had his head over the dome at the time of the explosion, was struck by Hoster's body, and badly mutilated and burned about the face. He was thrown to the ground, and died in a few minutes. Hoster was a skilled mechanic and a careful workman, well aware of the danger of working about benzine with a light; and when he called for the lamp, he must have forgotten, for the moment, that the can was in the boiler.

Accidents of this character sometimes happen when a light is brought to the open handhole or manhole of of a boiler in which kerosene has been used to remove scale, though we do not know of an accident of this kind whose results were so terrible.—*The Locomotive.*

Magazine Guns.

While the magazine gun board is concluding its tests of submitted weapons at Springfield it is interesting to notice, says the *Army and Navy Register*, that Mr. Very, of the Hotchkiss Ordinance Company, whose residence in Europe has afforded him ample opportunities of watching the ravages of the magazine gun epidemic, believes the Springfield single loader is the superior of any of the magazine guns. Undoubtedly half a dozen shots or whatever the magazine holds can be fired more rapidly from a magazine gun than from the Springfield rifle. But Mr. Very judiciously observes that the critical period, during which a great rapidity of firing will be important in battle, will last three or four minutes and a soldier can fire more shots in three or four minutes from a Springfield single loader than he can from a magazine gun. Mr. Very also makes the curious but important criticism of the magazine guns, that no soldier in the excitement of combat will keep count of his shots and that he will go through the motions of firing at an advancing enemy after he has exhausted his magazine. Even in practice and target firing he believes that most soldiers fire once more than they have cartridges, and amid the noise and excitement of battle, especially in the face of a charge from the enemy, he believes that a large portion of the troops would forget all about the magazines and go on automatically with the motions of loading and firing. Most of the officers of companies that were a few years ago supplied experimentally with magazine guns reported adversely on them. They have with them a careful and intelligent observer fresh from the Continent, where all armies are equipped with magazine guns. The investigation now going on is of exceptional thoroughness, and the report of our small arms board will be of great importance; it will probably be conclusive.

Wire Pillows and Cushions.

Recently I had brought under my notice, says a writer in the London *Illustrated News*, a new invention, which I think should be made widely known in view of the sanitary benefits likely to accrue from its use. I refer to the braided wire pillows, mattresses, and like articles which, I understand, are being introduced into this country by an American firm. The pillows I saw and examined are made of braided wire; they are perfectly resilient, accommodate themselves to every movement, and are, of course, always cool. The chief point to which public attention should be directed, I think, is the possibility of such an invention superseding the ordinary stuffed pillows and cushions, which, with the lapse of time, become loaded with dust and germs, saturated with perspiration, and demand—what they seldom get—thorough disinfection and cleansing. Do we ever think of the amount of dust and microbes which the stuffed cushions of a theater, church, hall, or other public place absorb, with no speedy prospect, as far as I can judge, of cleansing and renewal? If managers and others would only fit their seats with the braided wire cushions I saw, not only would they be much more comfortable, but, what is more to the point, much more healthy. Railway carriage seats, too, get, in course of time, most uncomfortable, as every traveler knows. Fitted with the wire cushions and wire padding, railway seats (and those of carriages as well) would be always shapely and practically indestructible.

Paper Friction Hoist.

Consists of a pinion having the rubbing surface formed of paper. In making the disk a great number of thin sheets of paper are tightly compressed together by bolts passing through the central core of iron. Although the first cost of the paper arrangement is somewhat greater than that of cast iron, it is claimed that this is more than counterbalanced by the advantages secured. As the friction between iron and paper is greater than that between two metal surfaces, less force is required on the hand cord of the operating lever to set the machine in motion. The paper will also adapt itself to the contact with the large iron wheel, and the latter will therefore, it is said, run true and require no facing, while the paper disk itself does not wear so rapidly as those constructed of iron.

A VESSEL which is intended to be an exact copy of the Santa Maria, on which Christopher Columbus made his first voyage to America, is being built with the greatest activity at the government yard at "La Carraca." As soon as the Spanish centenary feasts are over, the vessel is to sail for New York.

The Proposed Railway Through the Grand Cañons of the Colorado.

A very interesting paper was lately read before the American Society of Civil Engineers, in this city, by Robert Brewster Stanton, giving some of the results and conclusions drawn from his remarkable explorations of the cañons of the Colorado, in 1890, from which we make the following abstracts:

The Grand Cañon of the Colorado has been pronounced by those who have carefully studied it to be "by far the most sublime of earthly spectacles." The Grand Cañon is 218 miles long—from the Little Colorado to the Grand Wash—and in cutting its way through the Kaibab Mountains the river has formed a chasm from 5,000 to 6,200 feet deep, and from 6 to 13 miles wide on top. Taken as a whole, the river runs through quite a wide valley.

As compared with other well known cañons in the Rocky Mountains through which railways have been built—the Royal Gorge of the Arkansas and Clear Creek Cañon—this has a form peculiar to itself. Its walls start from the water's edge with generally a few feet—10 to 50—of vertical cliff, and then slope back in a ragged, irregular slope 300 to 1,200 feet or more, at an angle varying from a few degrees to 45 degrees from vertical, with some small patches jutting out boldly into the river and towering hundreds of feet high, forming almost perpendicular cliffs, or, more accurately speaking, they form buttresses and towers to the general slope of the wall. Above the granite rise the sandstone, limestone, marble, and higher sandstone ledges in cliffs, benches, and slopes, stepping up and back till the chasm is from 6 to 13 miles wide.

From the end of the granite to the Grand Wash cliffs the cañon is but a repetition of the lower end of Marble Cañon. The lower 100 or 200 feet of "the walls" consist of great slopes of the softer limestones, covered with loose debris. For miles these slopes extend to a height of 500 to 800 feet. In this section of the cañon are numerous streams of clear water coming in from immense springs in every direction and at different heights above the river. This water is strongly impregnated with carbonate of lime, and in running over the cliffs and slopes has left deposits of lime which in places stand up 100 feet high.

The line would start from the town of Grand Junction, Col., situated in a large and rich agricultural valley.

At this point it would connect with the Denver and Rio Grande Railway and the Colorado Midland, and all their railroad connections from the east, and the Rio Grande Western Railroad from Salt Lake City and the west. By its recently built line, the Rio Grande Western road comes down to the Grand River at a point about 22 miles below Grand Junction, and practically follows the river for a distance of 30 miles farther.

Starting from the town of Grand Junction it is possible to build a railway with a continuous down grade the whole length of the line to the Gulf of California, and to have a returning grade with a maximum not exceeding 12 feet per mile, except for a distance of 20 miles, and then it need not exceed 20 feet. It would be neither economical nor advisable to construct such a line. From the surveys made it is believed that in no place would it be necessary to use a grade in either direction to exceed one-half of 1 per cent or 26·4 feet per mile. A careful location may make it advisable to increase this maximum.

The question of falling rock and loose material from above is not different here from what obtains on hundreds of miles of operated railroads through the Rocky Mountain region. The immense width of the cañon on top prevents the great mass of rock loosened from above by storms reaching the inner or lower gorge in a way to do any damage. The lowest gorge is of a harder material and not so easily affected.

One feature largely affecting the maintenance of way, and also the traffic of such a road, is the almost entire absence of snow and hard freezing from so large a portion of the line in the great cañons. During the winter of 1889-90, the expedition experienced only two hours of snow storm at the level of the river, while the whole upper plateau was covered with from 3 to 6 feet of snow. It may be remembered that the winter of 1889-90 was one in which the transcontinental railroads through the Western mountains suffered more from snow blockades than they had for years previous.

Taking, then, the whole line into consideration, when once properly built it would not only be not highly expensive to maintain, but in many points would be far below the average of mountain railways, and in the matter of winter transportation would have advantages over any line crossing the country from the Rocky Mountains to the Pacific coast. The scarcity of water through this same section that so affects the present transcontinental roads would be entirely done away with, the supply from the river being the best possible when allowed a little time for the settlement of the sand.

What, then, would be the advantages of a railway line which over the very roughest portion of the section traversed by all these roads would have 1,000 miles of its distance with grades not to exceed one-half of one per cent. or 26·4 ft. per mile? And what advantage would it also have for the whole year's business, when this 1,000 miles, the very worst for winter travel, would be almost entirely free from frost and snow? Such a line would, of course, cross the Sierra Nevadas, but so far south and so low that it would have but little to fear in winter.

It is here only estimated for a line to Grand Junction and across the Rocky Mountains by existing roads. The crossing of the Continental Divide has never yet been accomplished so as to secure the best advantages. This cañon road carried up the Grand River through Middle Park and across the range on a line located by the writer more than ten years ago, it is believed would secure many advantages and reduce the rigors of winter travel and transportation to a minimum.

The initial point of this proposed railway is at the town of Grand Junction, Colorado, the largest and most prosperous agricultural center in the western part of the State. Mesa County, in which it is situated, and which at this point contains a valley of nearly 500,000 acres of the finest agricultural and fruit land, has also varied and extensive mineral resources. Its coal fields are considered inexhaustible. Many large bodies of coal have been discovered and developed. Some extensive deposits lie in close proximity to this proposed route. Many of the extensive anthracite coking and steam coal fields of western Colorado are connected with Grand Junction by rail. This point is practically the western terminus of all the railroads coming into Denver from the east. The section of country around Grand Junction is rapidly settling up. Following the Grand River, 75 to 80 miles, is the Little Castle Valley. This, with the Little Grand and other valleys along this river, forms a large tract of rich, though only partially developed, agricultural land. Anthracite coal has been discovered within 7 miles of Richardson on the Grand, and other large deposits of coal have been located at various points. The present cattle interest in this section is considerable. It is estimated that there are in the valleys and on the mountain ranges tributary to the Grand and Colorado Rivers 1,500,000 head of cattle, between this point and the Kaibab Mountains.

The line from here to Dandy Crossing, through the lower part of the Grand River and through Cataract and Narrow Cañons, does not encounter any productive land near the river. Back at the heads of many of the side cañons are large tracts of grazing land, many of them occupied by herds of cattle.

From Dandy Crossing to Lee's Ferry, a distance of 150 miles, the gold placer deposits are almost continuous the whole way. In past ages, while the river was cutting its way down the red sandstone of Glen Cañon, there were deposited on the successive levels of the stream vast beds of fine and coarse gravel, into which has settled great quantities of fine gold dust. Whence this gold has come is a question on which there is a great difference of opinion; this is of but little importance to the present investigation. These beds of placer gravel are found all along this whole extent of 150 miles, on the benches of the cañons, at various heights, some being 100 ft. and more above the level of the water, while the larger amount of the deposit is from 10 to 50 ft. above low water, with very extensive bars in the bed of the river, which are overflowed during high water.

From personal examinations the writer considers these gold deposits not only very extensive, but very rich and valuable. On account of their situation, so much above the level of the stream, and the fact that through this section the river has so little fall, these bars can only be worked by using more machinery and much more extensive plants than are usually necessary in such cases. This is the reason why these bars have not been more extensively worked up to this time. With a railroad through this cañon these mines would be largely and profitably handled. The transportation of machinery, lumber, mining supplies, provisions, and all the traffic incident to such a population as would be engaged in even placer mining, extending as it would along the river for 150 miles, could not but create quite a local business through this section. From some measurements and estimates made on particular bars, it would be difficult to wash out these deposits within the next one hundred years.

Through this section of Glen Cañon at various distances from the river many other valuable mineral deposits have been discovered. These are, as yet, undeveloped. The mineral and coal deposits of the Henry Mountains are within twenty-five miles of the river. Coal has been found at several other points from six to twenty miles back in the side cañons above Lee's Ferry. In the neighborhood of the San Juan and Escalante rivers are well defined deposits of petroleum.

The great variety of building stones through all the cañons, sandstones, limestones, marbles and granites, would undoubtedly create some considerable business for the road. The fact that the largest building being erected to-day in the city of Denver is being built of the same stone that forms the upper walls of the Grand Cañon, and that this stone, shipped from Flagstaff, Arizona, is carried as far east as Kansas City and Chicago, shows that a traffic for this road in building stones is not beyond the probabilities.

Some fifteen miles above the head of the Grand Cañon begins the great mineral belt that extends all the way through and on either side of this great chasm. In the lower end of Marble Cañon, as the sandstones and limestones rise and recede from the river, there come up other strata of limestone, sandstone and quartzite, which lie above the granite, and between these are extensive veins of mineralized matter. At the head of the Grand Cañon, above the granite, are immense veins, mostly horizontal, of iron ore and silver, lead and copper deposits; and at one point a large bed of roofing slate has been located. As the granite rises, quartz veins of various sizes are seen in every direction and running at every angle, while the horizontal veins of mineralized matter—silver, lead, copper and iron—above the granite extend all the way to the Grand Wash cliffs.

Below the great cañons is found an entirely different country. Taken as a whole, it is a broad and open valley. At the mouth of the Rio Virgin connection is made with the old settled and richly cultivated country of southwestern Utah. Along the valley of the Rio Virgin and its tributaries are rich agricultural lands. At the mouth of the river are raised to-day, besides grain, all the varieties of European and native grapes, peaches, plums, pears and nectarines, limes, pomegranates, figs and almonds.

It is believed that there is awaiting the opening of such a road as is herein described both a local and through business in excess of what was ready for many of the lines when built that now are in operation through the western part of the United States, and that a local business would be developed far larger than can ever be expected on some of our great Western railways.

Progress of the National Gun Factory.

Forgings for the first one of the twelve 13 inch guns which are to be placed on the battleships Indiana, Oregon, and Massachusetts have been received at the Washington gun foundry, and the labor of finishing the tubes and jackets and assembling the various parts will be prosecuted with vigor, and, when completed, this gun, with a diameter of bore of thirteen inches and a weight of sixty tons, will be the heaviest and most powerful gun yet made in this country.

Up to date there have been completed at the Washington gun foundry eighteen 10 inch guns, nineteen 8 inch and 129 6 inch high power rifled guns, while under construction, but practically completed, there are four 10 inch and two 8 inch guns, the whole number being intended for the primary batteries of the new vessels of the navy. As secondary batteries of the battleships, or as primary batteries of certain other vessels, particularly those of the gun boat and smaller cruiser class, there are completed, or nearly so, twenty-nine 5 inch and thirty-five 4 inch rapid-fire guns, from which excellent results are expected.

When it is remembered that only a few years ago many of the forgings for our guns were shipped from England, as were all our armor plates, it is a satisfaction to know that we have a plant where we can turn out a great number of high power rifled guns which, caliber for caliber, equal in range, velocity, penetration and accuracy those manufactured in any other country.

Fall of an Enormous Aerolite.

A dispatch from St. Petersburg says: What is believed to be the largest aerolite ever known to have fallen is lying in the Caspian Sea, a short distance from the peninsula of Apsheron. The aerolite made a terrific noise as it rushed through the air, and the white-hot mass made a light that illuminated the country and sea round about for a great distance. When it struck the water immense clouds of steam arose, and the hissing could be heard for a great distance. Huge masses of water were thrown upward, and the sight to those who were not frightened was an exceedingly beautiful one. So enormous is the aerolite that it projects twelve feet above the water, and, save for its fused black crust, which gives it the appearance of having been varnished, it has every appearance of being one of the usual rock formations met with along the coast. Scientists are deeply interested in the phenomenon, and several of them are making preparations to visit the peninsula to examine the aerolite. Further information is needed before credence can be given to the above.

New Argentine Salt Industry.

The Rio Negro Salt Company, in the Argentine Republic, now supplies the market with more than 50 tons of salt a day. It is brought to the company's stores at the Boca, where, immediately on being landed, it is dried in large kilns. Afterward it is purified, and separated into different classes—viz., fine table salt, refined salt in barrels, common salt, and salt specially prepared for the "saladeros," or meat-curing establishments, for which purpose it is considered quite equal to the foreign salt, and is much cheaper.