

New Inventions.

The Coal Trade of the United States.

During the year 1858 the coal trade of the United States increased 140,709 tons over 1857, the total being 7,733,833 tons; of these 259,885 only were imported, the remainder being from our own coal beds. In 1820 only 365 tons were traded in this country, and that was all transported by canal; now, great quantities are conveyed from place to place by railroad, and the total amount traded, and from that we may say consumed, since that period is 85,683,830 tons.

Micro-Photography.

Some English artists have become celebrated for the production of exceedingly minute photographic pictures. M. Amadia has recently taken a portrait of Dickens no larger than a pin's point, and another of Westminster Bridge and the Houses of Parliament about the size of the eye of a common darning needle. Those pictures, when magnified by a microscope, appear to be as perfect as those of the largest size. J. B. Dancer, of Manchester, England, commenced taking these curiosities of the photographic art in 1850, and several of his productions have found their way to this city. We have seen the Lord's Prayer taken on a speck no larger than the point of a common pin, and, under a magnifying glass, it appeared as perfect as if printed in *bourgeois*.

Artificial Wood.

M. Latory, of Grenoble, France, has invented a singular method of making wood hard, solid and heavy, and susceptible of the highest polish, and of a dark color like ebony. It is made by mixing very fine sawdust with bullock's blood, and then subjecting the composition to very severe pressure in a hydraulic press. With the material thus formed, all kinds of furniture and ornamental work may be made.—*Exchange*.

We have no doubt but various articles of furniture may be made of this composition, by pressing it in proper molds. The operation must be performed rapidly, as the composition will soon become very hard, and incapable of being molded. By substituting a solution of gelatine, in which a minute quantity of the oxyd of iron has been dissolved for the bullock's blood, a composition equally as good may be manufactured, and it will possess the advantage of being much lighter in the color. Indeed, it may be made of any color desired by the use of pigments. Of course, this artificial wood is not adapted to withstand exposure to the atmosphere.

Improved Lounge and Chair.

The chair and lounge are essential articles of furniture, the one a comfortable rest for a sitting position, the other for a reclining one; but as few want to lie down and sit at the same time, except those who are so lazy that they wish to lie while obliged to sit, and others are obliged to sit who cannot lie from some infirmity, but who would like so to do. For all such a device which can be changed to suit the inclination of the occupant is at once convenient and luxurious. Such an one is the invention of F. J. Gardner, of Washington, N. C., which we will proceed to describe, aided by the accompanying illustrations.

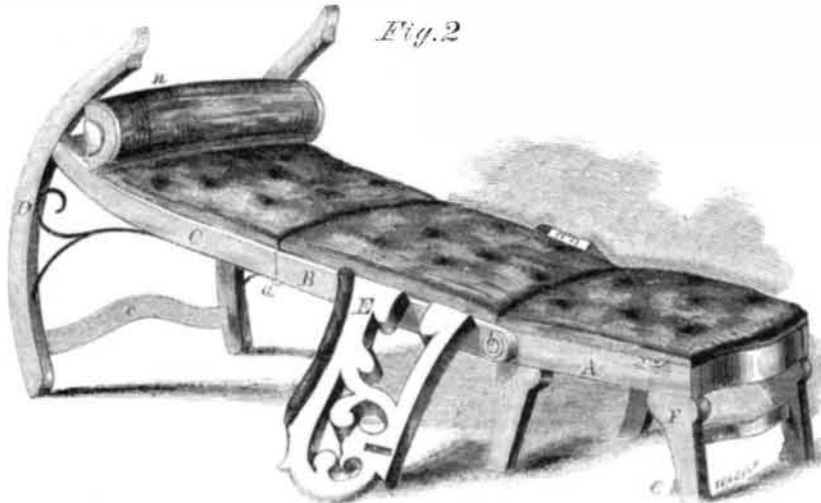
Fig. 1 shows it arranged as a chair, and Fig. 2 as a lounge. A is the seat, and B the back hinged to A by the pivot, *b*, and C is a supplemental back that is hinged to B at *a*, and securely attached to the rockers, D. The rockers are perfectly independent of the legs, F, the front legs having small lugs, *e*, on them that fits on the crossbar, *c*, of the rockers, and the hinder ones having small rings in them, into which the hooks, *f*, attached to

the inside of supplemental back, C, pass, and thus hold the whole securely together when arranged as a chair. The arms, E, are hinged to B, and are held firmly to the seat,

A, by a small bolt on their inside passing into an eye, *d*.

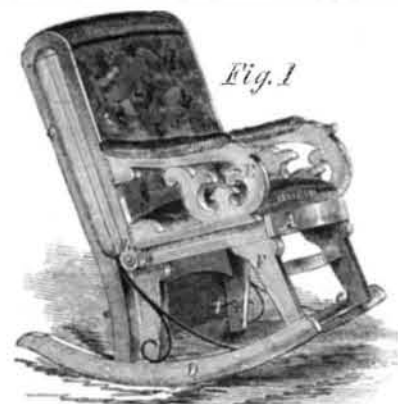
A half-round cushioned piece, *n*, is placed on the top of the back between it and the

GARDNER'S LOUNGE AND CHAIR.



supplemental back, C, to give finish to the chair, and form a comfortable head rest.

This, it will be seen from our illustration, is a very comfortable rocking chair, solid and

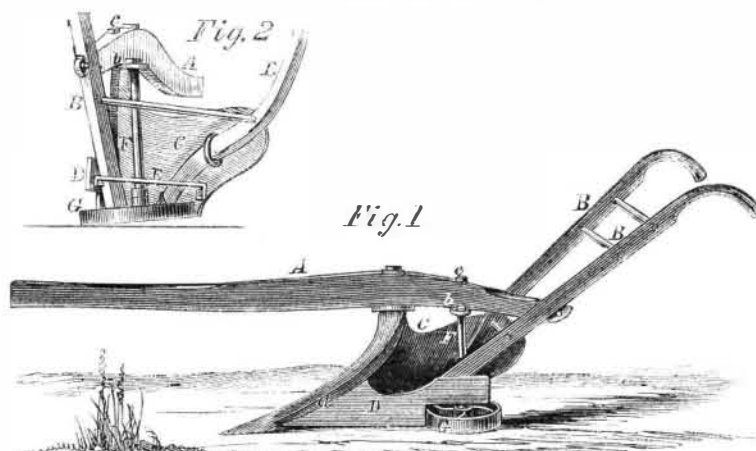


substantial, without any unnecessary work, and very ornamental; the ornamentation can, of course, be left to the taste of the purchaser or cabinet-maker, and the wood chosen according to the fancy. Now, to transform

this chair into a reclining chair is very easy. The hooks, *f*, are first released, and then the top piece, *n*, is taken out, after which the arms must be pulled forward and borne down upon at the same time, allowing the two parts to separate until the legs rest level upon the floor. Then raise the bolts that secure the arms, and throw the arms outward until they touch the floor, and a good reclining angle will be obtained; then by drawing the legs further out to the position shown in Fig. 2, an excellent lounge is obtained, *n* serving as a pillow. When there are no arms, a strap is provided for holding the parts in their respective positions. For the camp or tent such a contrivance as this is especially useful, and indeed it can never be otherwise than a convenient article of furniture, for in it we have a rocking chair, a reclining chair and lounge or bed, the three in one.

It was patented January 25, 1859, and the inventor will be happy to furnish any further information upon being addressed as above. An advertisement concerning it will be found in another column.

WILLIAMS' IMPROVED PLOW.



As the plow glides through the earth, the draft is materially increased by the friction of the land side and mold-board; in the invention which is the subject of our illustration, this is sought to be obviated in a great measure, and also a means supplied of regulating the plow, so that it will form furrows of greater or less depth as may be required. Fig. 1 is a side view of the plow, and Fig. 2 an end or back view of the same.

A is the beam, and B are the handles; C is the mold-board and D the landside, which is secured to the mold-board at *a*, receding a little, so as not to be quite flush with the front of the mold-board. At the back of C and D, and secured to both of them, a slotted bar, E, is placed, and to the beam, A, a curved slotted bar, *b*, is attached by a pivot, *c*.

The outer end of the bar, *b*, forms a bearing for the upper end of a shaft, F, the lower end of this shaft having its bearing in a block

that is secured to E, and can be moved in the slot by a screw. The upper end of F can also be adjusted by moving the bar, *b*, by its slot, through which the pin *c*, passes, that attaches it to the beam. On the lower part of F a wheel, G, is placed. F is inclined, so that the wheel, G, will not be in a horizontal plane, but will have its front part lower than its back.

The operation is as follows:—As the implement is drawn along, the front part of the sole, that is, the underside of the share runs on the ground at the bottom of the furrow, and the edge, *a*, of the mold-board bears against the landside of the furrow in connection with the lower side of the wheel, G. The landside, therefore, does not touch the landside of the furrow, and the wheel, G, prevents a great deal of friction, and also by its lower side bearing on the ground at the bottom of the furrow, the sole of the mold-board and landside are prevented from bearing on the

furrow also, so that the wheel, G, rotates and diminishes friction in two ways. The shaft, F, being adjustable, the wheel, G, can be adjusted laterally to project more or less beyond the outer side of the landside, and thereby gage the width of the furrow as desired. For instance, if a wide furrow is required, G is moved and adjusted to the left in order to throw the point of the share towards the land, and when a narrow furrow is required, the wheel is adjusted in the opposite direction. The invention is very simple and of eminent utility, and it will not materially increase the cost of the implement to which it is applied. Any further information can be obtained from the inventor, S. Williams, Jr., Mill's Mills Post Office, N. Y., and who obtained a patent March 8, 1859.

Iron Gunpowder.

In the year 1850, Mr. March, an able chemist connected with the Royal Arsenal, discovered that it is an invariable rule with iron which has remained a considerable time under water, when reduced to small grains, or an impalpable powder, to become red-hot, and ignite any substances with which it comes in contact. This he found by scraping some corroded metal from a gun, which ignited the paper containing it, and burnt a hole in his pocket. The knowledge of this fact is of immense importance, as it may account for many spontaneous fires and explosions, the origin of which has not been traced. A piece of rusty old iron brought in contact with a bale of cotton in a warehouse or on shipboard may occasion extensive conflagrations, and many lives. It ought to be added that the tendency of moistened particles of iron to ignite was discovered by the great French chemist, Lemary, as far back as the year 1670.

A correspondent sends us the above item, and asks our opinion on the subject, being a really important one. It is perfectly possible that iron when reduced to an infinitely fine powder may have such an affinity for oxygen as to unite quickly, and produce great heat; but we think that this is an occurrence seldom likely to take place, for as the iron would combine with oxygen gradually as it became in a state of powder the heat could scarcely be developed after. All the metals, not precious, decompose water more or less rapidly, and that develops heat, so that although such an accident is possible, in our opinion, it is by no means probable, as iron could not be got fine enough without oxidation to absorb oxygen sufficiently to develop red heat.

PUMP FOR AUSTRALIA—Since the publication of the letter of Messrs. Fisher, Ricard & Co., on page 35 of the present volume of the SCIENTIFIC AMERICAN, in which they set forth the wants of Australian miners, we have received a large number of letters, each offering for our consideration a plan of pump to meet the wants specified. It is not our intention to recommend any of the correspondents who apply to us to take out patents for their alleged improvements, on the contrary we advise them not to incur this expense at present; and we would further state for their guidance that it is impossible for us, without a knowledge of all the more important details to advise our correspondents respecting the practicability of their plans. We published all the information we received for Messrs. Fisher, Ricard & Co., and our readers who feel interested should open a correspondence with the parties themselves, as we can afford them no satisfaction.

CURE FOR SPRAINS.—In the Paris hospitals a treatment is practiced that is found most successful for a frequent accident, and which can be applied by the most inexperienced. If the ankle is sprained, for instance, let the operator hold the foot in his hands, with the thumbs meeting on the swollen part. These having been previously greased, are pressed successively with increasing force on the injured and painful spot for about a quarter of an hour. This application being repeated several times, will, in the course of the day, enable a patient to walk, when other means would have failed to relieve him.