

ing been completed, both will be thrown open to the general traffic as agreed. It should be added that the union depot will stand on the western bank adjacent to the elegant suspension bridge now joining together the two halves of Minneapolis, and of which its citizens are so justly proud. It will be arranged so that most of the tracks will run under the streets, instead of crossing at grade, with the exception of those that may still run to the several depots now in use. When these improvements shall have been completed, in the near future, it is doubtful if any other city can boast of finer approaches than these, or that will give strangers, on their arrival, a more favorable impression as to the attractions and commercial importance of the locality.

Simple Home Remedies.

The following remedies for many simple ailments we find recommended in Hall's Journal of Health. And while the remedies may not be new to many of our readers, they will be found useful to all. We now publish them that they may be at hand for ready reference.

Half a teaspoonful of common table salt dissolved in a little cold water and drank will instantly relieve "heart burn" or dyspepsia. If taken every morning before breakfast, increasing the quantity gradually to a teaspoonful of salt and a tumbler of water, it will in a few days cure any ordinary case of dyspepsia, if at the same time due attention is paid to the diet. There is no better remedy than the above for constipation. As a gargle for sore throat it is equal to chlorate of potash and is entirely safe. It may be used as often as desired, and if a little is swallowed each time, it will have a beneficial effect on the throat by cleansing it and allaying the irritation. In doses of one to four teaspoonfuls in half a pint to a pint of tepid water it acts promptly as an emetic, and, in cases of poisoning, is always on hand. It is an excellent remedy for bites and stings of insects. It is a valuable astringent in hemorrhages, particularly for bleeding after the extracting of teeth. It has both cleansing and healing properties, and is therefore a most excellent application for superficial ulcerations. Mustard is another valuable remedy. No family should be without it. Two or three teaspoonfuls of ground mustard stirred into half a pint of water acts as an emetic very promptly, and is milder and easier to take than salt and water. Equal parts of ground mustard and flour or meal made into a paste with warm water and spread on a thin piece of muslin, with another piece of muslin laid over it, forms the indispensable "mustard plaster." It is almost a specific for colic when applied for a few minutes over the "pit of the stomach." For all internal pains and congestions there is no remedy of such general utility. It acts as a counter-irritant by drawing the blood to the surface; hence in severe cases of croup a small mustard plaster should be applied to the back of the child's neck. The same treatment will relieve almost any case of headache. A mustard plaster should be moved about over the spot to be acted upon, for if left in one place it is liable to blister. A mustard plaster acts as well when at considerable distance from the affected part. An excellent substitute for mustard plasters is what is known as "mustard leaves." They come a dozen in a box, and are about four by five inches. They are perfectly dry, and will keep for a long time. For use it is only necessary to dip one in a dish of water for a minute and then apply it. Common baking soda is the best of all remedies in cases of scalds and burns. It may be used on the surface of the burned place either dry or wet. When applied promptly, the sense of relief is magical. It seems to withdraw the heat and with it the pain, and the healing process soon commences. It is the best application for eruptions caused by poisonous ivy and other poisonous plants, as also for bites and stings of insects. Owing to colds, over-fatigue, anxiety, and various other causes, the urine is often scanty, highly colored, and more or less loaded with phosphates which settle to the bottom of the vessel on cooling. As much soda as can be dipped up with a ten cent piece, dissolved in half a glass of cold water and drank every three hours, will soon remedy the trouble.

A Diamond Mine in Wisconsin.

A dispatch from Milwaukee lately announced that great excitement prevailed at Eagle, a small place in Waukesha County, over the discovery of a rich diamond "find" in that village. It seems that a lady had brought a large bright stone to the city and sold it to a jeweler for \$1, and which turned out to be a rough diamond worth \$800. The dispatch further says that parties have purchased all the land about Eagle at large figures and are making investigations.

Accepting as true the finding of the diamond, to conclude therefrom the existence of a diamond field is decidedly hazardous; diamonds as well as other precious stones are frequently found in places where a diligent search fails to bring other specimens to light, and we would advise intending "investors" to exercise some caution.

Test for Glue.

The following simple and easy test for glue is given in the Tischler Zeitung: A weighed piece of glue (say one-third of an ounce) is suspended in water for twenty-four hours, the temperature of which is not above 50° Fahr. The coloring material sinks, and the glue swells from the absorption of water. The glue is then taken out and weighed; the greater the increase in weight the better the glue. If it then be dried perfectly and weighed again, the weight of the coloring matter can be calculated from the difference between this and the original weight.

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NEW YORK, SATURDAY, MARCH 15, 1884.

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AMERICA A HUGE "JELLY FISH."

Rear-Admiral Rogers, in a letter read in the U. S. Senate February 28, makes the above comparison. He says we have not a single breech-loading gun in any of our ships nor upon any of our forts, nor can we make one of more than six inches caliber in the country. Therefore, with our 7,000 miles of seacoast, we make a very prominent mark, but would be powerless to strike back if assailed. The letter was brought out by the proposition to build seven new steel cruisers, which has passed the Senate. It provides for one cruiser of 4,500 tons; one of 3,000 tons; a dispatch vessel of 1,500 tons; two heavily armed gunboats of 1,500 tons; one gunboat of 750 tons, and one of 900 tons; a steel ram; a cruising torpedo boat, and two harbor torpedo boats.

The cost of these seven cruisers, with the four ordered in 1882, of which the Chicago is the most prominent, and the completion of the double-turreted monitors, will be less than that of two of the first-class iron-clads of England or Italy. While our Government is thus proceeding with such close economy, England, France, and Germany are steadily enlarging their gunmaking and steel shipbuilding facilities. And Krupp is now constructing a gigantic steam hammer, to cost \$2,500,000.

If it were entirely clear in what direction the nation could with the most wisdom proceed for the efficient strengthening of the navy, there can be little doubt but that the public sentiment would not only sanction a much larger expenditure than the completion of these new cruisers calls for, but would earnestly impose upon Congress the duty of prompt action. As it is, however, the cruisers now under way have been so severely criticised as to awaken a feeling of public distrust concerning the advisability of proceeding further in the same way. The vessels now building were said to be only experimental, but the question arises whether the new ones in contemplation are also of the same character, and, if so, whether we need have so many experiments under way at the same time.

VALUE OF INVENTIONS TO THE WORLD.

While the time-servers and place-seekers, who now constitute the majority in our national Congress, are seeking in every way to destroy the value of patent rights, and to take away the material incentives to invention afforded by the Constitution and by former statutes, it may be well to call the public attention to a pregnant paragraph written by Lord Bacon two hundred and fifty years ago. If it was almost prophetic then, there is no man of intelligence now living who can fail to see how wonderfully the truth of its every word has been realized:

"The introduction of great inventions appears to hold by far the first place among human actions, and it was considered so in former ages; for to the authors of inventions they awarded divine honors, but only heroic honors to those who did good service in the State (such as the founders of cities and empires, legislators, deliverers of their country from long endured misfortunes, quellers of tyrannies, and the like). And certainly, if any one rightly compare the two, he will find that this judgment of antiquity was just, for the benefits of inventions may extend to the whole race of man, but civil benefits only to particular places; the latter, moreover, last not beyond a few ages, the former forever. The reformation of the State in civil matters is seldom brought about without violence and confusion, while inventions carry blessings with them, and confer benefits without causing harm or sorrow to any."

PROGRESS IN EXACTNESS.

Since the introduction of absolute fixed gauges of exact sizes into the machine shop, in place of the universal callipers, there has been a steady improvement in the quality of work, particularly of machine tools. Accompanying this improvement there has unquestionably been another—that of the workman. Both are evidences of progress in the right direction; the use of straight edges, surface plates, solid hardened steel gauges, rings for external and plugs for internal diameter measuring, end measure pieces, and thread gauges demand the practice of exactness on the part of the workman and tend to insure exactness in the result of his work.

But the machine tools themselves have been faulty in the most vital parts. Probably there are very few lathes in use which have perfect leading screws, and if this is so the proportion of planers which have twin elevating screws alike is much less. Reference to this lack of exactness and to its probable remedy was made in these columns (date of December 8, 1883, page 352), but since then the enterprise—advertised in succeeding numbers—has grown by the demands upon it, so that an enlargement to more than double its initial capacity has to be immediately made, within four months of its beginning. The reason is that the closest mathematical calculation is allied with the employment of the most scientific means and the use of the best tools to produce results. Four establishments, representing the most advanced stages of improved machinist practice in this country, have sent in orders for lathe leading screws and planer elevating screws to such an amount as to require a very great enlargement of facilities.

This statement shows how needful was the want which is thus supplied; our best machinery was faulty. It has been scarcely possible to make a screw of any pitch, coarse or fine, that for twenty-four inches would preserve its integrity of pitch; the variations from the true standard being at times so great as almost to produce a fractional thread.

Under such circumstances, it was not possible to do exact work on the lathe or planer, and the after-services, of the surface plate and straight edge, guided by human skill, were necessary to secure a good job. On the planer, especially, the requirement of exact threaded screws was noticed. It is difficult on the best of planers to plane a piece with two really parallel surfaces, if those surfaces are wide enough to be tested by straight edges and end measure pieces combined; the elevating screws at each end of the head rarely agree. Possibly this lack of absolute uniformity in the two screws at each side of the crosshead is the reason why the planer cannot be made to do work both ways with roughing and finishing cut, the two ends of the crosshead on both sides of the planer not working together. If the production of exact screws can aid in this improvement, and add at least thirty-three per cent to the profitable work of the planer, it will be a point of much value gained. That this improvement in the exactness of machine tools of precision is possible, and that it can be accomplished by present practical means, is indicated by the fact that several of our best known tool builders are availing themselves of the advantages of the new system.

DECISIONS RELATING TO PATENTS.
BEFORE THE COMMISSIONER OF PATENTS.
EX-PARTE MARSHALL.

Butterworth, Commissioner:

Appeal from the Examiners-in-Chief.

Considered as a generic term, a combination may be defined to be a co-ordination of individual functions, so as to constitute a common function. Co-ordination necessarily implies some modification of the individual function of each part as it existed prior to the combination.

To be patentable a combination must conform to the requirements of the definition given above, and must also contain two other elements—namely, novelty and utility.

A shoe containing the ordinary front lacing and the common elastic web in its side presents a mere aggregation of old features, and not a patentable combination.

PROSPECTS OF THE PATENT BILLS.

The hostile patent bills that have passed the House and other bills now before the Senate have not yet been reached. Meantime hundreds of letters and remonstrances against the passage of these bills have been sent by individuals in all parts of the country, and hundreds more will soon be sent forward. If the friends of the patent laws continue to pour in their protests for a short time longer, it is believed this mischievous legislation may be postponed and at last defeated. Nothing has a more powerful influence with Senators and Representatives than forcible letters from their own townsmen and constituents. We therefore urge upon inventors, manufacturers, and all who wish to uphold the industries of the nation to write directly to Senators, and give reasons why these bills should be set aside. Legislators need to understand the views and feelings of the people they represent, and then they will speak and act accordingly.

No person should defer his protest in the hope that others will do something or that some combined movement will take place. Let each individual promptly organize himself into an association of one, and send forward his arguments, resolves, and letters, without hesitation or delay.

For the convenience of readers we here repeat the numbers and general nature of some of the bills now before the Senate.

House bill 3,925, introduced by Hon. Mr. Calkins, of Indiana, provides substantially that if the inventor or owner of a patent shall dare to attempt to sustain his rights by bringing a suit against infringers, he shall recover no costs, and shall pay to the infringer's lawyer a counsel fee of \$50. This bill was passed in the House of Representatives by an enormous majority, on January 21, and is now before the Senate for concurrence. The members who voted for it apparently regard it as a very upright proceeding to encourage the inventor to reveal his invention by passing laws to give him a patent, and then passing other laws to deprive him of the benefit of said patent. This is the way Congress exemplifies integrity and fair dealing before the people.

House bill 3,934, introduced by Mr. Vance of N. C., provides substantially that any person may use any patented article he pleases without liability, but shall become liable after receiving notice that a patent exists; and may then require the patentee to give him the use of the patent for a royalty to be named by the courts, thus robbing the patentee in the first instance and then depriving him of the control of his patent. This bill was passed by the House, January 22, 1884, by a vote of 114 ayes to 6 noes.

The texts of the foregoing bills will be found on page 73 of the SCIENTIFIC AMERICAN for Feb. 2.

House bill 3,617, introduced by Mr. Anderson, of Kansas, reduces the lifetime of a patent from 17 years to 5 years. Not yet passed, but perhaps soon will be by a great majority, as there is no member in the House who has so far ventured to say a word in protest or speak in favor of inventors or the present patent system.

In the Senate the bill introduced by Mr. Voorhees, of Indiana (S. 1,558), provides in effect that all patents shall be free to the public. This bill caps the climax; it has not yet passed; but soon will be if the members of the Senate share in the views of the House majority.

The following is the text of Senator Voorhees' bill: S. 1,558. "Be it enacted, etc.—That it shall be a valid

defense to any action for an infringement of any patent, or any suit or proceeding to enjoin any person from the use of a patented article, that the defendant therein, or his assignor, purchased the patented article for use or consumption, and not for sale or exchange, in good faith and in the usual course of trade, without notice that the same was covered by a patent, or without notice that the seller had no right to sell such article; and in all such cases notice received after such purchase shall not have the effect to impair in any way the right of such purchaser as absolute owner."

The following are the names of members of the Senate and the States they represent:

- | | |
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| <p>ALABAMA.
James L. Pugh.....Eufaula.
John T. Morgan.....Selma.</p> <p>ARKANSAS.
James D. Walker.....Fayetteville.
Augustus H. Garland.....Little Rock.</p> <p>CALIFORNIA.
James T. Farley.....Jackson.
John F. Miller.....S. Francisco.</p> <p>COLORADO.
Nathaniel P. Hill.....Denver.
Thomas M. Bowen.....Del Norte.</p> <p>CONNECTICUT.
Orville H. Platt.....Meriden.
Joseph R. Hawley.....Hartford.</p> <p>DELAWARE.
Thos. Francis Bayard.....Wilmington.
Eli Saulsbury.....Dover.</p> <p>FLORIDA.
Wilkinson Call.....Jacksonville
Charles W. Jones.....Pensacola.</p> <p>GEORGIA.
Joseph E. Brown.....Atlanta.
Alfred H. Colquitt.....Atlanta.</p> <p>ILLINOIS.
John A. Logan.....Chicago.
Shelby M. Cullom.....Springfield.</p> <p>INDIANA.
Daniel W. Voorhees.....Terre Haute.
Benjamin Harrison.....Indianapolis</p> <p>IOWA.
William B. Allison.....Dubuque.
James F. Wilson.....Fairfield.</p> <p>KANSAS.
John J. Ingalls.....Atchison.
Preston B. Plumb.....Emporia.</p> <p>KENTUCKY.
John S. Williams.....Mt. Sterling
James B. Beck.....Lexington.</p> <p>LOUISIANA.
Benjamin F. Jonas.....N. Orleans.
Randall L. Gibson.....N. Orleans.</p> <p>MAINE.
Eugene Hale.....Ellsworth.
William P. Frye.....Lewiston.</p> <p>MARYLAND.
James B. Groome.....Elkton.
Arthur P. Gorman.....Laurel.</p> <p>MASSACHUSETTS.
Henry L. Dawes.....Pittsfield.
George F. Hoar.....Worcester.</p> <p>MICHIGAN.
Omar D. Conger.....Port Huron.
Thomas W. Palmer.....Detroit.</p> <p>MINNESOTA.
Sam'l J. R. McMillan.....St. Paul.
Dwight M. Sabin.....Stillwater.</p> | <p>MISSISSIPPI.
James Z. George.....Jackson.
Lucius Q. C. Lamar.....Oxford.</p> <p>MISSOURI.
George G. Vest.....Kansas City.
Francis M. Cockrell.....Warrensburg.</p> <p>NEBRASKA.
Charles H. Van Wyck.....Neb'ka City.
Charles F. Manderson.....Omaha.</p> <p>NEVADA.
John P. Jones.....Gold Hill.
James G. Fair.....Virginia City.</p> <p>NEW HAMPSHIRE.
Henry W. Blair.....Plymouth.
Austin F. Pike.....Franklin.</p> <p>NEW JERSEY.
William J. Sewell.....Camden.
John R. McPherson.....Jersey City.</p> <p>NEW YORK.
Elbridge G. Lapham.....Canandaigua.
Warner Miller.....Herkimer.</p> <p>NORTH CAROLINA.
Zebulon B. Vance.....Charlotte.
Matt W. Ransom.....Weldon.</p> <p>OHIO.
George H. Pendleton.....Cincinnati.
John Sherman.....Mansfield.</p> <p>OREGON.
James H. Slater.....Le Grande.
Joseph N. Dolph.....Portland.</p> <p>PENNSYLVANIA.
J. Donald Cameron.....Harrisburg.
John I. Mitchell.....Wellsboro.</p> <p>RHODE ISLAND.
Nelson W. Aldrich.....Providence.
Henry B. Anthony.....Providence.</p> <p>SOUTH CAROLINA.
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Sam Bell Maxey.....Paris.
Richard Coke.....Waco.</p> <p>VERMONT.
Justin S. Morrill.....Strafford.
George F. Edmunds.....Burlington.</p> <p>VIRGINIA.
William Mahone.....Petersburg.
H. H. Riddleberger.....Woodstock.</p> <p>WEST VIRGINIA.
Johnson N. Camden.....Parkersb'g.
John E. Kenna.....Kanawha.</p> <p>WISCONSIN.
Angus Cameron.....La Crosse.
Philetus Sawyer.....Oshkosh.</p> |
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PATENTS AND POLITICS.

It is estimated that between 30,000 and 40,000 citizens of the State of New York have received patents for their inventions which remain unexpired. Nearly every manufacturer in the State is an owner, or is interested in or works under some patent. It is probable that at least 100,000 voters in New York State are directly connected with industries that will be greatly damaged if these bad patent laws are passed. The majority that carries the State in the approaching election will not probably be very large. Which of the two great parties will sweep the State?

Certainly it will not be the party whose senators and representatives in Congress are doing all they can to destroy the interests of their constituents at home. What is true of New York is true of several other States. The inventors and manufacturers of the country will have power enough in the coming elections to determine upon which side the victory shall rest; and that power is likely to be exercised. A little ingenuity, a little determined and united effort, will do the business.

THE TRIPLE THERMIC MOTOR.

A very neat example of the bisulphide of carbon engine has lately been brought to this city for private exhibition to capitalists and others who may wish to purchase shares therein. It is styled the "Triple Thermic Motor." The engine is located at No. 651 West 45th St. The motor consists of a steam boiler, a bisulphide of carbon vessel, an ordinary steam engine, a surface condenser, and pumps. The steam from the boiler warms the bisulphide of carbon and converts it into vapor which drives the engine; the exhaust vapor then passes through the condenser, where it is liquefied and is returned by pump to its vessel to be reheated, and go the rounds again.

Greater care seems to have been taken in this machine to prevent loss of energy than was shown in some of the former bisulphide of carbon engines. For example, in this new motor the pipes, engine cylinder, piston rod, etc., are carefully jacketed, and every precaution taken to prevent the loss

of heat or escape of the vapor; the latter precaution is rather necessary, as it yields an odor of the decayed egg class.

The mechanical execution of the engine and its parts is very creditable to the parties concerned, since its performances are nearly if not quite equal to those of a first class steam engine of the same horse power.

The engine is believed to yield thirty horse power, being about the same as would be obtained from a good steam engine and ordinary boiler of same sizes.

The engine is made under the patents of Mr. Thomas Colwell, of Chicago, Ill. One of his many patent claims is substantially as follows: "A motor for operating machinery, consisting of bisulphide of carbon, water, and plumbago." The addition of water and plumbago seems to be a new feature in this class of engines.

Some very exaggerated reports have been published in regard to the performances of this motor. For example, it has been stated that the steam from the boiler only had a value of fifteen horse power, while the engine yielded sixty-five horse power, the gain of power being due to the bisulphide of carbon. Such absurd statements savor of stock jobbing, and their circulation is to be regretted; probably they are not put forth by any one directly connected with the company.

Those who care to look into the theory of the bisulphide of carbon and analogous motors will find the subject discussed in the back volumes of the SCIENTIFIC AMERICAN. The following is from an article in our paper of Sept. 28, 1872, when the Ellis binary engine was under trial and discussion:

"Could an absolutely perfect binary vapor engine be constructed, its performance would exhibit precisely the same economy of fuel as would a perfect steam engine working between the same limits of temperature. There is, therefore, no purely scientific reason for anticipating economical advantage from this form of prime mover.

"There are, however, some practical considerations which would at least make it appear possible that the introduction of this form of engine may ultimately occur as a consequence of a superiority in economy over even the best of modern engines. It is evident that a wasteful steam engine may be converted into an economical binary engine, in which a large amount of the heat, formerly wasted, may be successfully utilized; and, in all non-condensing steam engines, some considerable proportion of the heat of the exhaust steam may be saved by such a change. Could the additional engine be constructed and operated at a moderate expense, it seems very certain that the binary plan would, in very many cases, be certainly advisable. Even with the best of condensing steam engines, it is by no means certain that the heat abstracted in the condenser might not be more economically removed and made useful by a fluid whose vapor has a higher tension than that of water at the same temperature."

Progress of Soap Fat Butter.

A committee of the Senate of the State of New York has been engaged lately in the investigation of the bogus butter business, with a view to ascertain its nature, extent, and best probable mode of regulation.

Out of thirty specimens of butter sold by as many respectable grocers, analysis showed that only ten were composed of real butter; all the rest were chiefly composed of lard. The price charged for the soap fat butter was about twenty-five cents per pound—the real butter selling for about the same.

Dr. Love, the chemist, testified that he could not distinguish the spurious butter from the genuine so as to swear to it, by its outward appearance, but he had no doubt of the accuracy of his chemical analysis. He said that in the manufacture of butterine and oleomargarine no chemical change takes place, but simply a mechanical mixture, and that all the substances used in the mixture have the same properties after the mixture as before, so that the lard, fat, and oils used in the bogus butter are no more injurious to health in the bogus butter than out of it. He had found no traces of nitric acid in his analysis, and would have noticed it if it had been present. He was of opinion that impure substances could be deodorized, so that they could not be distinguished. Even dead animals could be so deodorized, but if diseased germs were not destroyed they would prove deleterious to health. He knew of nothing in the process of manufacture of bogus butter that would be likely to kill disease germs. He could not say that he knew of an authentic case of injury to health by eating the bogus butter.

LARD CHEESE.

Mr. Martin gave the committee the results of his explorations in a manufactory of Neufchatel cheese, at Chester. He said that Mr. Durland informed him that one and a half pounds of lard mixed with one hundred pounds of skim milk was the mixture used.

Weather Signals.

A Florida correspondent suggests that the Government supply telegraph, railroad, and steamboat companies with flags and lanterns suitable to indicate by day or night the different features of the weather bulletins, and require their display accordingly as the reports are telegraphed over the country. We hardly see on what ground the Government could insist on the signals being so displayed, although it supplies the daily reports to all who care to take them. One of the trunk railroads has, however, shown the enterprise to adopt a system somewhat such as suggested, greatly to the satisfaction of the country people along its line.