

ing the whole time, and with one exception, which was purely the result of carelessness, and which only lasted about a minute, the smoke was scarcely perceptible during the entire journey, and it was evident that this minute quantity was entirely owing to the temporary nature of the arrangements for regulating the admission of air to the furnaces. As regards the merits of this system over coal burning, we cannot venture to offer a decided opinion without more accurate data than can at present be obtained. It was stated that the average consumption of creosote during the trip was thirty-five gallons, while the usual consumption of coals was eight hundred. As the present price of creosote is less than one penny a gallon, this shows a large direct saving, to which must be added the great saving effected by entirely dispensing with stokers, and the increased carrying capacity of the vessel.

"We believe that this is the first thoroughly practical exhibition of the merits of liquid fuel for steam navigation, and it has certainly, so far, proved a success, as to justify perfecting the various mechanical details, and giving the system a fair trial."

Correspondence.

The Editors are not responsible for the opinions expressed by their correspondents.

Water and Wind Power at the West.

MESSES. EDITORS:—The Commissioners of Maine exhibit an immense grand total of water power, which the young state of Nebraska can leave far in the shade with a species of power she possesses, and which is susceptible of development to an almost unlimited extent.

Unfortunately this State, "so far as heard from," is not abundantly supplied with fuel for steam and our streams are not well located for manufacturing purposes.

Fuel here will necessarily be dear until our planted forests have time for growth or cheap transportation can bring us coals from the rich mines of our mountains west.

We have no lack of wind force, which can be put to turning our wheels as it passes over our broad plains.

Wind mills are now constructed so as to govern themselves to a regularity of speed, between a good running wind and a gale, not surpassed by the operation of the steam governor. With such mills pumping can be done at no expense of power, and no cost except oil and a few minutes' attention each day to apply the lubricator.

The Union Pacific Railroad Company are now better served with water at their large shops in this city, by a windmill, at nominally no expense, than they were one year ago by steam at a running expense of about fifteen dollars per day. This mill is but partially self-regulating and cost about one-half as much as did the engine.

For grinding grain, and in fact for all machine work which can be done without much attention and hand labor, wind power is both practicable and profitable; but where artisans are employed it is important that the time of running should be controlled, and my object in writing is to call inventors to this point. Give us a plan that will "bottle up" power to be used as we see proper.

In good situations here a wind mill will run upon an average of fifteen hours per day of twenty-four hours during the year. Elevating water to drive machinery is objectional from its scarcity, great evaporation, and expense of reservoirs. Concentration of air is only limited in capacity by the strength of machinery and power used, and in it we may possibly find the proper element.

Of course when wind is "in season" machinery should be driven by it direct, thus avoiding the loss by friction, leakage, etc. Your correspondent who discussed utilizing the sun's power, would find himself far in the rear if he should attempt a race with some of our "gentle zephyrs."

While Holland is kept above water by very rude windmills, why not use our ingenious Yankee devices to float us upon the tide of commercial prosperity? G. Omaha, Nebraska, Nov. 16, 1868.

Smoke Wreaths.

MESSES. EDITORS:—In answering J. M. D., of Mass. (see answers to correspondents in No. 20), you do not assign any reason for the formation of wreaths of smoke. Now as I have often asked myself the reason, and taken pains to ascertain the cause, I think that I have succeeded in arriving at a conclusion that would stand the test of experimental research. I will add that I have never heard any reason assigned for it, but have experimented solely with the view of satisfying myself (and in that at least have been successful), and the theory that I have formed is this, viz:

In order to form a wreath of smoke, there must be another gaseous or aeriform body in contact with the smoke as it issues from the tube. Smoke, especially if "fat" or damp, has an attraction to the walls of the chamber through which it is passing or in which it is confined, unless continually kept moving by a current or blast of air. Now in the smoke stack of a locomotive at rest, the smoke gathers around the sides; a volume of steam from the exhaust forced through the stack with considerable violence has not sufficient time to expand enough to drive out all the smoke ahead of it, but remains more compact and forces its way through the center of the smoke in the shape of a cylinder, dragging out at the same time a certain amount of smoke (by the force of attrition or friction), which smoke, impinging on the external air, is at one blow literally hammered or pressed down to the shape of a nimbus or wreath.

This is my theory of the formation of the smoke wreath, whether from the smoke stack, the cannon, or the human mouth. C. H. DAVIDS.

Brooklyn, N. Y.

Something for Watch and Clock Makers.

MESSES. EDITORS:—I am a practical watchmaker—or as near it as Americans often arrive—have had fifteen years' experience and have always found more or less trouble with the pivots becoming rusty and stopping the watch, particularly in English lever and American watches; also on the staff of marine clocks. Many times I have cleaned a watch or marine clock and oiled with the best oil I could get (Ezra Kelly & Son's oil), and they would run from three to eight weeks and sometimes longer, and then refuse to go without any apparent cause. I would take them down and find in watches, generally, the lower center bearing under the canon pinion corroded or rusted, so tightly that it would be difficult to remove the wheel from the plate. This occurs on all pivots, but more generally on this than any other pivot or bearing; oftener on the large than the small pivots and on the staff in marine clocks than in watches.

The corrosive substance is sometimes nearly black, but generally of a red hue like crocus, which it appears to resemble, having the same properties in its action on steel; for in every case the pivot is cut and sometimes ruined, even when it is so hard that a file will not touch it. I used to think the fault was with the oil, but by changing the oil used I could find no advantage.

I have talked with a great many watchmakers and found them as much in the fog as myself. Some attribute the difficulty to the action of the atmosphere but can give neither reason nor remedy. D. E. C.

Traverse City, Mich.

Estimation of Size Comparative.

MESSES. EDITORS:—The extract from the Boston Journal of Chemistry concerning our knowledge of magnitudes being obtained only by comparison, which appeared in the SCIENTIFIC AMERICAN of Nov. 4th, is pleasingly confirmed by the following experience: Several years ago, after experiencing for seven weeks the severe monotony of the ocean-like levelness of the plains, on arriving at the Rocky Mountains and winding among the "foot hills," the hills seemed mountains, the slopes precipitous, the valleys gorges, and the roads narrow and of dangerous inclination. One year and a half elapsed before we returned to the plains. In the meantime we had crossed and recrossed the range and stood upon the loftiest peaks of the Sierra Madre. As we returned to the "plains" and recalled the localities which were impressed upon our minds, it was with the greatest difficulty that we could recognize them, they were so changed, for the hills were but mole hills instead of mountains, the slopes were not precipitous, the valleys were not simply passes, and the roads were not narrow or steep. Our first impressions were annihilated and our feelings entertained must be experienced, language cannot express them. At first they were compared with the plains we had just crossed. Now they are compared with the lofty peaks and surroundings of the Snowy Range, thus showing in a pleasing and instructive manner "that our conception of magnitude is comparative." G. E. M.

Georgetown, Cal.

OFFICIAL REPORT OF PATENTS AND CLAIMS

Issued by the United States Patent Office.

FOR THE WEEK ENDING NOVEMBER 24, 1868.

Reported Officially for the Scientific American.

PATENTS ARE GRANTED FOR SEVENTEEN YEARS, the following being a schedule of fees:—
 On filing each caveat.....\$10
 On filing each application for a patent, except for a design.....\$15
 On issuing each original patent.....\$20
 On appeal to Commissioner of Patents.....\$20
 On application for Reissue.....\$20
 On application for Extension of Patent.....\$20
 On granting the Extension.....\$50
 On filing a Disclaimer.....\$10
 On filing application for Design (three and a half years).....\$10
 On filing application for Design (seven years).....\$15
 On filing application for Design (fourteen years).....\$30
 In addition to which there are some small revenue-stamp taxes. Residents of Canada and Nova Scotia pay \$500 on application.

Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the Scientific American, New York.

- 84,247.—PLANTING MACHINE.—Samuel L. Allen, Cincinnati, N. J.
- 84,248.—SWAGING ATTACHMENT FOR SHEET METAL WORKING MACHINES.—Henry E. Anderson, Ripon, Wis.
- 84,249.—STEAM ENGINE.—Earle C. Bacon, New York city.
- 84,250.—MANUFACTURE OF CARBONATE OF SODA.—Hayden M. Baker, New York city.
- 84,251.—STEAM PUMP.—John S. Barden, Providence, R. I., assignor to himself and Daniel N. Pickering, Boston, Mass.
- 84,252.—PLOW.—Edward D. Benjamin, Old Town, Ill.
- 84,253.—LET-OFF MECHANISM FOR LOOMS.—Thomas Booth and Chas. C. Sanderson, Norway, Me.
- 84,254.—HORSE RAKE.—L. S. Bortree, Grand Rapids, Mich.
- 84,255.—BANDAGE FOR PRETERNATURAL ENLARGEMENTS.—Anson R. Brown, M. D., Albion, Mich.
- 84,256.—HINGE MACHINE.—Edward Brown, New York city.
- 84,257.—HAY SPREADER.—Geo. E. Burt and Edwin A. Hildreth, Harvard, Mass.
- 84,258.—CAR SPRING.—E. T. Bussell, Indianapolis, Ind.
- 84,259.—METHOD OF GENERATING FIXED GASES FROM HYDROCARBON VAPORS.—John Butler, Brooklyn, N. Y.
- 84,260.—STEP LADDER.—Joseph Charleville, St. Louis Co., Mo.
- 84,261.—SPINNING WHEEL.—Chas. L. Cole (assignor to himself and Thomas Johnson), Richmond, Mich.
- 84,262.—WATER CLOSET.—H. H. Craigie, New York city.
- 84,263.—MANUFACTURE OF PAPER BELTING.—Jas. B. Crane, Dalton, Mass.
- 84,264.—DIVIDED AXLE FOR RAILWAYS.—Daniel M. Cummings, Wyman Pattee, and Albert M. Shaw, Enfield, N. H.
- 84,265.—THRILL COUPLING.—Wm. H. Curtiss, Panesville, Ohio

- 84,266.—DEVICE FOR HANGING PICTURE AND OTHER FRAMES.—Chas. B. Davies, Dayton, Ohio.
- 84,267.—CLOG.—Job A. Davis, Watertown, N. Y.
- 84,268.—HOD ELEVATOR.—Paul Dehlinger, Buffalo, N. Y.
- 84,269.—HORSE HAY FORK.—Wm. E. Derrick, Jordan, N. Y.
- 84,270.—REFLECTOR FOR PUBLIC HALLS, ETC.—Ossian E. Dodge, St. Paul, Minn.
- 84,271.—HORSE HAY FORK.—Geo. H. Dow, Fieport, Ill.
- 84,272.—COMPOSITION FOR PAVEMENTS.—Gustave Dubelle, Boston, Mass.
- 84,273.—TYPE SETTING MACHINE.—F. G. Foster, Eagle Rock, N. C.
- 84,274.—PUMP.—Earl J. Hall (assignor to himself and Jacob Eldridge), Indianapolis, Ind.
- 84,275.—CENTRE BOARD WENCH.—Everett C. Hammond, (assignor to himself, O. H. Pennock, and Ira G. W. Pennock), Oswego, N. Y.
- 84,276.—FAN.—Anne B. Hancock, Suspension Bridge, N. Y.
- 84,277.—EVAPORATOR.—James Harris, Janesville, Wis.
- 84,278.—BALANCE SLIDE VALVE.—Thomas M. Herriott and Samuel M. Meyers, South Pittsburg, Pa.
- 84,279.—MOLDING MACHINERY.—William T. Horrobin, Bennington, Vt.
- 84,280.—ROTARY STEAM ENGINE.—Charles Kaiser, New York city.
- 84,281.—CLOTH MEASURING APPARATUS.—R. H. Kent, Middlebury, Ohio.
- 84,282.—WATER ELEVATOR.—Chester King, East Cleveland, Ohio.
- 84,283.—PORTABLE GAS APPARATUS.—George H. Kitchen, New York, and Scott C. Nash, Brooklyn, N. Y.
- 84,284.—BRICK MACHINE.—J. Klinkhardt and W. Kiburz, (assignors to themselves and Paul Oehler), St. Louis, Mo.
- 84,285.—LIFTING JACK.—Francis Krick, Fidelity, Ohio, assignor to himself and Eli Sinks.
- 84,286.—BEE HIVE.—J. C. Lander and R. R. Lander, Manitowish, Wis.
- 84,287.—COTTON GIN.—Charles Leavitt and W. H. Burrige, Cleveland, Ohio.
- 84,288.—BRIDGE.—J. H. Linville, Philadelphia, Pa.
- 84,289.—MODE OF PACKING LAMP SHADES.—Edward A. Locke and William N. Weeden, Boston, Mass.
- 84,290.—CLOTH MEASURING APPARATUS.—Samuel B. Luckett, Corydon, Ind.
- 84,291.—ANIMAL TRAP.—Harmon F. Lushbaugh and Oscar Z. Hurd, Mount Pulaski, Ill.
- 84,292.—WATER WHEEL.—Theodore W. Mahler, Rome, N. Y. Antedated November 9, 1868.
- 84,293.—WATER ELEVATOR.—Cornelius W. L. Martine, Scotch Plains, N. J.
- 84,294.—HORSE SHOE.—Samuel Mason, Newark, N. J.
- 84,295.—SAFETY STOVE FOR RAILROAD CARS.—William C. McGill and William Knox, Cincinnati, Ohio.
- 84,296.—SEEDING MACHINE.—Lynfred Mood, (assignor to Titus and Bostwick), Ithaca, N. Y.
- 84,297.—POTATO DIGGER.—F. A. Morley, Syracuse, N. Y.
- 84,298.—WATER INDICATOR FOR STEAM BOILERS.—Adolphus F. W. Neynaber, Philadelphia, Pa.
- 84,299.—MODE OF POLING HOPS.—Garret J. Olenendorf, Middlefield, N. Y.
- 84,300.—SPRING BED BOTTOM.—Henry H. Palmer, Rockford, Ill.
- 84,301.—MACHINE FOR PRODUCING WEAVER'S CUT MARKS.—William G. Perry, Manchester, N. H.
- 84,302.—SAP SPILE.—Charles C. Post, Hinesburg, Vt.
- 84,303.—DEVICE FOR PREVENTING HENS FROM SCRATCHING.—Eli Rice, West Northfield, (assignor to himself and N. H. Richardson), Fitchburg, Mass.
- 84,304.—ANCHOR.—Carl Wilhelm Roeden, San Francisco, Cal.
- 84,305.—MOLDING GEAR WHEELS.—Warren Rowell, (assignor to himself and John Heck), New York city.
- 84,306.—PAPER CUTTING MACHINE.—George H. Sanborn, New York city.
- 84,307.—PAPER CUTTING MACHINE.—George H. Sanborn, New York city.
- 84,308.—CAR HEATING STOVE.—Ethiel Sanger, Alton, Ill.
- 84,309.—POTATO PLANTER.—Norman B. Sherwood, Millville, N. Y.
- 84,310.—SLEIGH AND BABY CARRIAGE.—Louis Shmetzer, Chicago, Ill.
- 84,311.—RING FERRULING MACHINE.—John Siddons, Rochester, N. Y. Antedated November 7, 1868.
- 84,312.—RAILROAD CAR STOVE.—James Spear, Philadelphia, Pa.
- 84,313.—ADJUSTABLE PRESS.—Norman C. Stiles, Middletown, Conn.
- 84,314.—GUN LOCK.—John Stokes (assignor to Wesson Fire-Arms Company), Springfield, Mass.
- 84,315.—HORSE RAKE.—O. O. Storle and Lorens Swenson, Norway, Wis.
- 84,316.—CARRIAGE SPRING.—A. C. Stowe, San Jose, Cal.
- 84,317.—STRAW CUTTER.—Edward Strothman and John Strothman, Milwaukee, Wis.
- 83,318.—IRON FENCE.—Andrew Terry, Waterbury, Conn.
- 84,319.—CAR-WINDOW VENTILATOR.—Wm. Thompson, Dublin, Ireland. Patented in England No. v. 11, 1867.
- 84,320.—BOILER-TUBE SCRAPER.—Charles W. Tremain, Chicago, Ill.
- 84,321.—ADJUSTABLE FLOODGATE.—Newell Tupper, Grand Blanc, Mich.
- 84,322.—COMPOUND FOR TREATING RINGBONE, SPAVIN, ETC., in Horses.—W. H. Vance, Corydon, Ind.
- 83,323.—HAT VENTILATOR.—William F. Warburton, Philadelphia, Pa.
- 84,324.—CANE AND WILLOW STRIPPER.—A. F. Ward and J. H. Bean, Marietta, Ohio.
- 84,325.—FELTED TUFTED FABRIC.—John T. Waring, Yonkers, N. Y.
- 84,326.—JOURNAL BEARING FOR RAILROAD CARS.—Isaac P. Wendell (assignor to Ebert J. Wendell), Philadelphia, Pa. Antedated May 25, 1868.
- 84,327.—PAINT BRUSH.—Darius White, Portland, Me.
- 84,328.—REIN HOLDER.—Chas. Whittaker, Milwaukee, Wis.
- 84,329.—METHOD OF INSERTING INDIA-RUBBER IN HUBS OF Carriages.—G. F. Wilson, East Providence, R. I.
- 84,330.—ROAD SCRAPER.—J. F. Winchell, Springfield, Ohio, assignor to himself, G. C. Steele, and L. A. Simons.
- 84,331.—HAND PLOW.—Jesse Winecoff, Berlin, Pa.
- 84,332.—APPARATUS FOR CARBURETING AIR.—J. S. Wood, Philadelphia, Pa.
- 84,333.—APPARATUS FOR REFINING IRON AND MAKING STEEL.—John Absterdam, New York city.
- 84,334.—PROCESS FOR REFINING IRON AND MAKING STEEL.—John Absterdam, New York city.
- 84,335.—APPARATUS FOR MAKING STEEL AND REFINING IRON.—John Absterdam, New York city.