

about similar. If there is a gain in the application of power by the Fontaine plan, there would also be a gain by applying it on sidewheel steamers.

It seems to me, however, that if Mr. Fontaine would lower his drivers, if possible, the machine would vibrate less. Place them, if possible, so that their peripheries would be not more than nine inches off the track.

Let some experts give us some information on the above ideas.

SOTOR.

New Orleans, November, 1881.

Fast Locomotion.

To the Editor of the Scientific American:

There seems to be a great desire to have high speed locomotives. It has occurred to the writer that by combining two or more pistons on one rod, or two or more cylinders with one piston rod passing through both cylinders, in this way shorten the stroke of the pistons one half, and make up the loss of travel of piston by having double the amount of piston surface. In this way you would greatly lessen the vibration of the moving parts of the engine, and be able greatly to increase the revolutions of the drivers. As all the working parts are traveling one half the time and distance, but under a double piston pressure, I think the speed of an engine built in this way could be greatly increased without any detriment to the machinery, and accomplish what the Fontaine engine does.

W. B. DUNNING.

Geneva, N. Y., November, 1881.

The Stormy Petrel, or Mother Carey's Chicken.

To the Editor of the Scientific American:

Reading your valuable paper under date of November 27, 1880, in giving the history of the bird stormy petrel, known to us mariners as Mother Carey's chicken, you state it is believed it does not dive. Please allow me to correct that by saying it is one of the greatest diving birds in sea water known, the kingfisher excepted. I have seen fifty to one hundred of them at a time diving six to seven feet after pieces of beef that were thrown overboard to them.

JNO. T. HOLT,

Commanding ship David Stewart.

Ship David Stewart, at sea from Rio de Janeiro, bound to Baltimore, Md., October, 1881.

Note on the Humid Assay for Silver.

To the Editor of the Scientific American:

In making the humid assay for silver a great deal of time is necessarily spent in waiting for the suspended chloride to settle and leave the liquid clear to observe the action of the next drop of the precipitate to greater with the solution has been previously heated. I have reduced the loss of time and insured greater facility in making an assay, by dividing the solution (containing the silver) into several, say, five equal parts, in separate vessels. I place them in a row, and add, say, 3 c.c. of the solution of salt to the first, 4 c.c. to the next, 5 c.c. to the next, and so on. After the precipitate has subsided I add, say, one-half c.c. of the same solution to each of the several parts of the silver solution, successively. Numbers one, two, and three will perhaps show traces of silver still in solution, but numbers four and five none. The total amount precipitated from number three multiplied by five (as it represents only one-fifth of the original solution of silver) will be the amount of silver contained in the ore or alloy being assayed.

A simple means of settling the precipitated chloride almost instantaneously is to agitate the solution with a few drops of chloroform. Its action seems to be entirely mechanical. The agitation disperses the chloroform in minute globules throughout the silver solution, which in settling to the bottom carries with it every particle of the chloride.

A. P. WHITTELL, M.D.

San Francisco, Cal., October 16, 1881.

Brooks' Periodic Comet.

I have, with much pleasure, just received from Prof. S. C. Chandler, Jr., of Harvard Observatory, the following interesting announcement concerning the comet discovered by me on October 4, 1881:

HARVARD COLLEGE OBSERVATORY,
CAMBRIDGE, NOV. 2, 1881.

William R. Brooks, Esq.:

SIR: You will be interested to know that we have been busy investigating your comet, and I have demonstrated it to be periodic; revolution about 8½ years. Of course the numerical value of the perihelion is a little uncertain yet, but the fact that the comet is a short term periodical is beyond doubt. These are the new elements:

Perihelion Passage, 1881, September 12.82437.	Wash. M. T.
Long. Perihelion.....	18° 10' 5''
Long. Node.....	66 9 2
Inclination.....	6 53 26
Log. Perihelion Distance.....	9.8596448.
Period.....	3047.34 days.

S. C. CHANDLER, JR.

From the foregoing it will be seen that another addition has been made to the rather limited list of known comets of short period. Swift's comet of 1880 was the latest addition previous to this one.

WILLIAM R. BROOKS.

Red House Observatory, Phelps, N. Y.,
November 3, 1881.

MECHANICAL INVENTIONS.

Mr. Andrew J. Miller, of Patterson, Ga., has patented an adjustable box for cotton gins, intended specially for application to the McCarthy cotton gin, but capable of being applied to any gin or other machine wherein a striking or shaking motion is used. The improvement relates to the connections between the vibrating stick or rod and its operating shaft. The invention consists in an adjustable box constructed to hold the stick securely, prevent any down or sidewise movement, and to allow compensation for wear.

An improvement in rotary pumps has been patented by Mr. Abijah S. Clark, of Turner's Falls, Mass. The invention consists in connecting the piston case with the base by screw dowel pins and screw bolts, so that the case can be adjusted to keep the inner surface of its upper part in contact with the wings of the pistons as the piston shafts wear down in their bearings; also, in providing the piston shafts with supplementary bearings to prevent the said shafts from springing out of line; and also in connecting the piston shaft stuffing boxes with the piston case heads by slotted flanges formed upon the said stuffing boxes and screw bolts screwed into the heads.

Mr. James M. Trackwell, of Skookumchuck, W. T., has patented an improved wood boring machine, which is more particularly intended for boring in the trunks of trees, either while standing or when fallen, but is applicable to various kinds of wood boring. The invention consists in a novel construction and combination, with an auger stock and its carrying frame, of a frame and devices connected therewith for holding the auger in place while at work.

An improved machine for combing cotton has been patented by Messrs. John M. Hetherington, of Manchester, County of Lancaster, England, and Edouard J. J. Lecœur, of Rouen, France. The invention consists, first, in a particular construction of the rotating clamps; second, in a comb situated on or near the feed plate, operating in connection with the clamps; third, in a comb fastened on a lever and having a reciprocal and oblique movement; fourth, in a pusher having a forward and downward movement and a holder having a vertical movement, in combination with a table for receiving and piecing together in slivers the tufts of fibrous material.

Messrs. Frederick Crich, of Pittsburg, Pa., and John A. Crich, of Naugatuck, Conn., have patented an improvement in that class of devices that are designed to remove the surplus coating metal from wire as it is drawn through the galvanizing or tinning bath. The invention consists of two metallic plates, having opposite edges longitudinally grooved for holding the wiping material and vertically slotted for the guidance and passage of the wires, one plate being stationary, with its grooved edge upward, and the other being pivoted, with its grooved edge downward, and provided with a lever and weight for regulating the pressure upon the wires, the two plates being arranged in such a manner that the wires, as they are drawn from the metal bath, are brought in contact with the wiping material, first of one plate and then of the other.

An improved take-up and let-off mechanism for looms has been patented by Messrs. William A. Bramall and Charles R. Innes, of Chester, Pa. The object of this invention is to operate the yarn beam in looms by connections from the take up mechanism, in order to provide for letting off the yarn uniformly. The invention consists in a sliding stand fitted for movement to and from the yarn beam and carrying friction rollers that are geared to the take-up mechanism. The stand rises as the yarn beam diminishes in size, so that the friction rollers bear constantly on the yarn.

Mr. Terrence H. Hughes, of New York city, has patented an improved machine for printing or coloring the yarn used in weaving carpets. As usually constructed, such machines consist of a drum, on which the yarn is wound, and a traversing carriage carrying the paint box and rollers by which the color is applied. It is essential that the color be scraped into the yarn after application by the roller. The object of this invention is to work in the color by pressure, and also to effect the winding of the yarn on the drum by automatic mechanism.

An improved machine for making split keys has been patented by Mr. Robert T. King, of Columbus, Ohio. This invention consists, principally, of two recessed jaws pivoted upon a table contiguous to a stud or pin, the jaws being operated by a pivoted lever connected with the lateral ends of said jaws by means of links; also, of lever mechanism whereby the completed key is caused to drop out of the way of the next blank.

An efficient carpet sweeper that is simple and cheap of construction and noiseless in operation, has been patented by Mr. Myron G. Stolp, of Aurora, Ill. The casing is of such a form as to admit of using one sheet of material for the covering, and having the end boards of wood, to the edges of which the sheet is fastened. By this manner of construction the work of making the casing is greatly simplified.

An improved stuff regulator for paper machines has been patented by Mr. Charles W. Mace, of Westbrook, Me. The object of this invention is to accurately gauge the flow of stuff to paper machines, so as to secure uniformity in the thickness and weight of the sheets of paper. Heretofore a movable gate has been used to regulate the flow, and the paper weighed at intervals to determine the adjustment of the gate; but between these intervals the paper is liable to vary on account of the constant variations in the density of the stuff. The improvement consists in the automatic ad-

justment of the gate to the variations in the weight of the stuff as it is fed to the machine, and in a combined feed box, balance, and gate.

Mr. W. P. Taylor on the Efficiency of the Fontaine Locomotive.

CANADA SOUTHERN RAILWAY CO.,
BUFFALO, N. Y., JULY 4, 1881.

WM. H. VANDERBILT, President.

WM. P. TAYLOR, General Manager.

E. Fontaine, Esq., New York City:

Your favor of the 2d instant, asking my opinion of the Fontaine engine, is at hand. I am happy to reply that this engine is surely proving herself a perfect success, both in power and speed, also in a great saving of fuel.

The engine has been running for several months on our road in freight and passenger service. A test was made with her against one of our best Baldwin engines, with the same sized cylinders, running on regular passenger trains. An accurate record was kept of the fuel consumed, which shows that the Fontaine made an average of fifteen miles more to a ton of coal than the Baldwin engine doing the same amount of work.

As regards the engine running faster than ordinary engines, that has been fully demonstrated on several different occasions and times by different parties. On Wednesday last, the 1st instant, this engine hauled our regular passenger train from St. Thomas to Amherstburg, and made more than a mile a minute whenever called upon to do so. Our private car was attached, making seven cars in the train. A number of miles were run in fifty-six and a half, fifty-seven, and fifty-eight seconds, as timed by the party on the train, which consisted of Mr. Tillinghast, assistant to President of New York Central; Mr. Cox, Assistant Treasurer of Canada Southern; Mr. W. H. Taylor, Auditor of Canada Southern; Mr. Davis, of Messrs. Brown Bros., Bankers, New York, and several others.

This alone proves that your engine can draw a good sized train a mile a minute, without difficulty. There is no question but what she can perform the same service, has greater speed, and uses from twenty five to forty per cent. less fuel than other engines of the same size. While running on freight, the "Fontaine" handled our heavy freight trains as easily as any of our larger Schenectady engines with seventeen by twenty-four inch cylinder, which are the largest engines we have on the road. This shows, at least, that your engine has as much or more power to draw heavy loads as any engine of the same size. This, in addition to her extra speed and saving in fuel, must necessarily demonstrate her superiority over other engines.

I can only add that I wish we had more of the same pattern on our road.

W. P. TAYLOR, General Manager.

Wrangell Land an Island.

The mystery of Wrangell Land has been solved. The unusually open season just past made it possible for Captain Hooker, of the revenue steamer Corwin, to penetrate the pack ice and effect a landing on the morning of August 10. This was, so far as known, the first landing ever made on that remote and desolate shore. The landing place was in latitude 70° 4' north and longitude 177° 41' west.

A fortnight later the Arctic search steamer Rodgers effected a landing near the same place, and the day after entered a fine harbor, whence expeditions were sent east and west around the coasts to look for traces of the Jeannette, but failed to find any. A land party, under the command of Captain Berry, climbed a mountain 2,500 feet high, whence they saw open water all around except between the south and southwest, where a high range of mountains seemed to terminate the land. The harbor where the Rodgers last anchored for this land exploration was in longitude 178° 10' west, latitude 70° 57' north, south and west of Hooper's landing at Clark's River. The boat's crew made an unbroken tour around the island. After having established Wrangell Land to be an island, the Rodgers steamed 130 odd miles north and northwest in search of further land, but failed to find any.

On September 19 the Rodgers reached latitude 73° 44' north, the highest point yet attained by an exploring vessel, as far as known.

New Process for Sulphur.

The authors boil out the sulphur from its gangue in a solution of chloride of calcium containing 66 per cent of the solid salt and having its ebullition point at 120°. This solution attacks neither the sulphur nor the gangue. In this manner the sulphur is extracted in a state of great purity, at the cost of five francs per ton, and without the production of any nuisance.—*MM. de la Tour du Breuil.*

Radiophony Produced by Lampblack.

Lampblack is not merely pre-eminently the thermophonic agent, but it may, like selenium, act as an electric photophone. The author, referring to the double coil receivers, which he described (*Comptes Rendus*, xcii., p. 789), states that, instead of selenizing one of their surfaces, it may be blackened by exposure to the smoke of an oil lamp, taking care not to carbonize the parchment paper, which isolates the metallic coils from each other.—*E. Mercadier.*