Rail-Road News.

Mobile and Girard Railroad.

The commissioners of this important enterprise have lately visited New Orleans and received from her citizens a very large subscription to the stock. When this route is finished, New Orleans and New York will be seventy-six hours apart. The distance is 1,497 miles by the way of Wilmington, Branchville, Augusta, Macon, Girard, and Mobile. The distance from Mobile to New Orleans is 160 miles, to be traversed by steamer in 10 hours. The length of this road is to be about 230 miles : cost of road formation, which includes grading, drawing, and building, is estimated at $1,472,000 ; cost of superstructure, wood, and iron, $1,158,000 ; equipments for road, including machinery and station houses, cars, etc., $300,000, making an average cost of $12,000 per mile. It is estimated that it will pay 16 per cent per annum on the capital stock. The traveller from New Orleans will not hesitate in availing himself of this direct line of railroad, in preference to the meandering of a river with all its dangers, delays and uncertainties. If he does not regard the time lost in fogs, and upon sand banks, his care for personal safety will not fail to remind him of the fires, explosions, and other disasterous accompaniments to western navigation, and to whichever point in the great segment radiating from Nashville to Savannah he may be destined, he will take his departure from the gulf by the Girard Railroad. This will also be the case in going South.

Railroads in Russia.

Major Brown, our countryman, the consulting railroad engineer of the Emperor of Russia, states in a letter, that the Emperor has determined, as soon as the season will allow, to commence the projected railroad from St. Petersburgh to Warsaw, the surveys for which were made last year. Major Brown will, by his position, have the chief superintendence. The distance in this instance to run is from 750 to 800 of our miles, and stretching, for the most part, through an inhospitable tract of country, intersected by many rivers, broad morasses, and lowlands. The railroad will be begun in the latter part of May, and its completion will quicken into activity the internal commerce of Northern Europe.

The railroad from St. Petersburgh to Moscow, of which our talented countryman, Major Whistler, was Chief Engineer when he died, is now nearly finished. It is 421 miles long.

Length of American Railroads.

It is calculated that at the end of 1851, there will be 10,600 miles of railroads in operation in our country ; and with those which have already been contracted for, there will be 2,000 miles more constructed in 1852. No country in the world can equal ours for the number of railroads.

## CHAPMAN'S SPIRAL PADDLE WHEEL.---Figure 1.
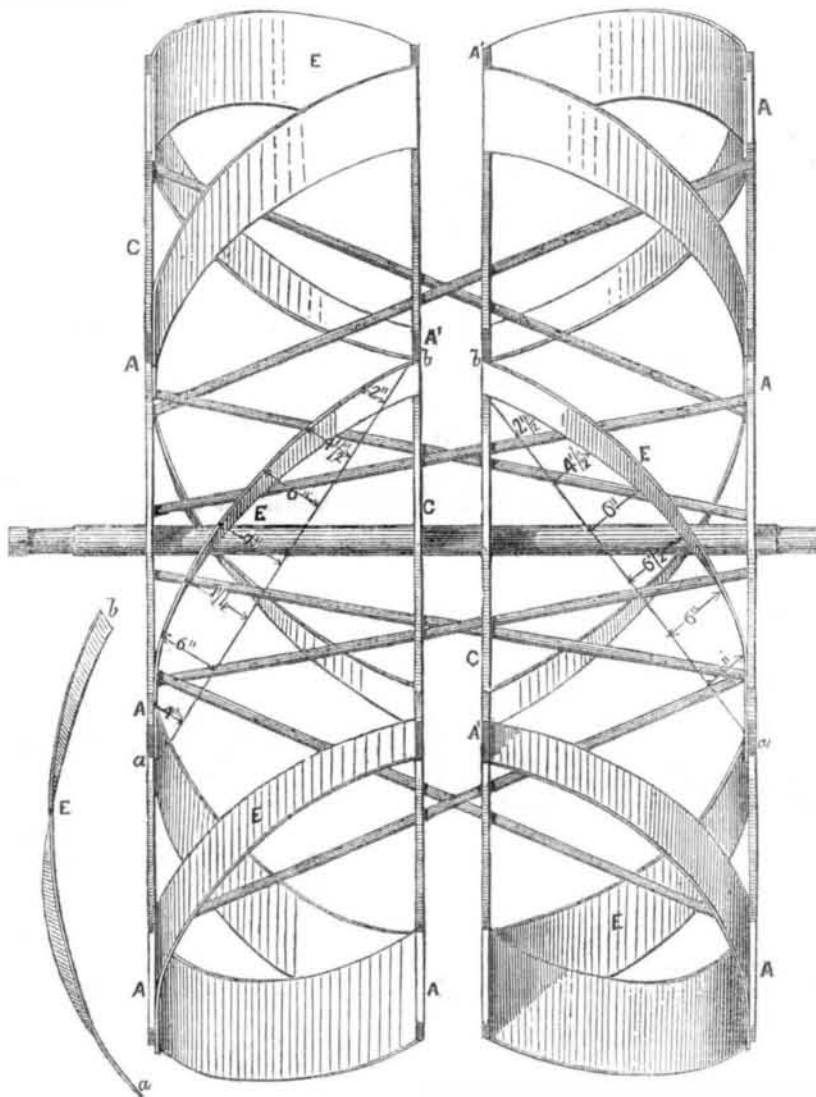
This paddle wheel for steamships and steamboats, is the invention of Abner Chapman, of Fairfax, Franklin Co., Vt. A patent was secured for it last year in England.

Fig. 1 is a front elevation of the wheel, with an edge view of one of the paddle, beside it.

Fig. 2 is a reduced side elevation. The same letters refer to like parts.

Each paddle or blade is made of a curved and twisted or winding form, and there are two sets of such paddles on each wheel, with a space between them, each paddle of one set is placed opposite to its fellow on the other set, each pair forming a figure of a semi-eliptical form, with an opening at its vertex. The

FIG. 2.
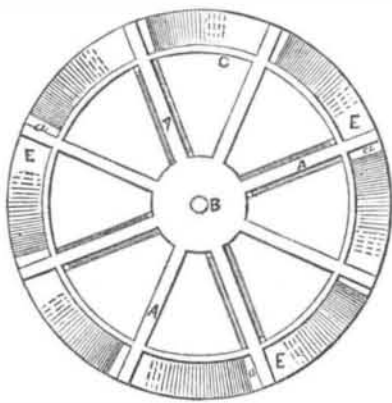
wheel has four sets of radial arms, A A A A' They are seccured in bosses made fast upon the shaft, B, and bound together by bolts to the rings, C C C C. The paddles or buckets, E E, are made of plates of metal, each in the form of the section of a flat ring, the circumference of which is equal in diameter to a circle circumscribing the outside of the wheel when complete, and the distance between whose inner and outer diameters is equal to the required depth of the paddle. Each blade is twisted as follows :—The buckets are supposed to be when curved about 7 feet 9 inches in length, in a straight line from end to end of the outer edges, C, commencing at the end, a, its deviation from the straight line, at one foot from a is four inches, at two feet six inches, at 3 feet seven and a quarter inches, at four feet it is eleven inches ; at five feet it is six inches, at six feet four and a half inches, and at seven feet two inches. Their length from end to end in a straight line, is about 6 feet 9 inches on the inner edge. There is an elevation from the straight line on both edges, thus giving the blade a slightly twisted form as represented by the edge view, E a b. Each blade is secured at its end, a, close to the inner face of the radial arms, A A, of one of the outside sets ; and at its opposite end, b, close to the front edge of one of the arms, A' A', of the corresponding inside sets, at a distance behind that to which the end, a, is secured. Each pair of blades resembles a single bucket with an opening between them. These buckets enter the water edgewise in such a manner as not to displace it until the bucket arrives at a proper position to exert its propelling power. The buckets being set opposite to one another have a tendency to throw the water towards one another, thereby gathering the water in such a manner as to enable the blades to exert their leverage on a firmer fulcrum, if we may be allowed to use such an expression. The oblique position of the blades with the opening between them,

allows the escape of backwater, and prevents water lift. This paddle wheel was applied to the steamboat *Santa Claus* belonging to this city, and her speed, without any other alteration, was increased one third. The great jarring to which she was subjected by the old paddle ceased at once, and she sailed along with a gentle steady motion.

Hair of Different Races of Men.

Mr. P. A Brown, of Philadelphia, has communicated to the American Ethnological Society, an essay entitled " the Classification of mankind by the hair and wool of their heads," with an answer to Dr. Prichard's assertion that the covering of the head of a negro is *hair* and not *wool.* He states that there are, on microscopic examination, three prevailing forms of the transverse section of the filament, viz :—the cylindrical, the oval, and eccentrically elliptical. There are also three directions in which it pierces the epidirmis, and is prolonged to its apex. The straight, and lank, the flowing or curled, and the crisped or frizzled, differ respectively as to the angle which the filament makes with the skin on leaving it. While the cylindrical and oval pile has an oblique angle of inclination, the eccentrically elliptical pierces the epidermis, at right angles and lies in the dermis perpendicularly. The hair of the white man is oval ; that of the Choctaw and some other American Indians, is cylindrical ; that of the negro is eccentrically elliptical or flat. Hair, according to these observations, is more complex in its structure than wool. In hair the enveloping scales are comparatively few ; in wool they are numerous.

Anhydrous Steam---Stame.

A few weeks ago we requested some of our correspondents to send us the results of any experiments they had or might make about testing the principles of steam changed into *stame,* as Mr. Frost terms it, by exposing steam to a hotter surface than its own specific heat, apart from the water in the boiler. The following is the answer of one correspondent :—

" I tried the experiment of heating steam separate from the water, in 1848, with a six horse-power engine, whereby I saved one quarter of the wood. In 1849 I tried it on a steam boiler 28 feet long and 2 feet in diameter, and supplied steam for a 7 inch cylinder and 15 inch stroke, with 300 revolutions per minute, with 90 pounds of *stame* per square inch, and before heating the steam it would not make steam for a 5 inch cylinder, 24 inch stroke, 25 revolutions per minute. I have since run a one horse-power with *stame,* and found it to be a great saving of fuel. I heat my steam in a cylinder at or near the back end of the boiler."   W. G. WHIPPLE.

Westfield, Mass.

[In answer to a correspondent, last week, we stated that we would give an abstract of Dr. Haycraft's experiments with *stame* (he proving it to be anhydrous steam) this week, but owing to the number of other articles which are somewhat long, and which we could not avoid inserting this week, we defer the remarks spoken of for a week longer.

Artesian Wells.

It is proposed by the citizens of Montgomery, Alabama, to supply that city with pure water by boring one or more artesian wells on Capital hill. In connection with the project, it is stated that a plan or machine for boring artesian wells has been invented by Dr. C. A. Woodruff, which will effect a great economy of time and labor in such excavations. It is the opinion of Dr. W. that, with the apparatus furnished by him, almost any quantity of water can be had on Capital Hill at a depth of five or six hundred feet, for the very small expense of three hundred dollars.