of every variety of potato from the above mentioned locality, their anti-fungoid qualities in the open field and in contrast with the usual varieties grown in that section of the country.

THE NEW EXPLORATION OF THE AMAZON RIVER, BY PROFESSOR ORTON.—UP THE AMAZONS.

No. 8.

A THOUSAND MILES ON THE GREAT RIVER.—SCENERY.

A voyage on the Amazons is excessively monotonous. A vast volume of smooth, yellow water, floating trees and grass, low, linear-shaped islets, a dark, even forest, the shore of a boundless sea of verdure, and a cloudless sky with occasional flocks of screaming parrots, these are the general features. No busy towns are seen along the banks; only here and there a palm hut or Indian village, half buried in the wilderness. No mountains break the horizon, only a half a dozen table-topped hills; and while many bluffs of red and yellow clay are visible, they are exceptional, the usual border being low alluvial deposits, magnificently wooded, but half the year covered with water. The real grandeur, however, of a great river like this is derived from reflecting upon its prospective commercial importance and immense drainage. A lover of Nature, moreover, can never tire of gazing at the picturesque grouping and variety of trees with their mantles of creeping plants; the wild, unconquered race of vegetable giants; the "reckless energy of vegetation," compared with which the richest woods on the Hudson are a desert; the dense canopy of green, supported by crowded columns, branchless for fifty or eighty feet; the parasites and undergrowth struggling for life; the broad-leaved bananas and gigantic grasses; the colossal nut and pod-bearing trees; and above all the hundreds of species of palms, each vying with the other in beauty and grace. Through such a densely packed forest flows the Amazons with all the grandeur of an ocean current.

In giving our voyage up the great river to its source among the Andes, we shall touch only at representative points, and confine ourselves mainly to such commercial and industrial facts as will be likely to interest the practical man. From Pará to Santarém, the first town of importance, is 543 miles. The passage can be made by steamer once a week, sometimes oftener; fare, $25; time, four days. Twenty hours after leaving the capital, the steamer stops at the little village of Breves on the southwest corner of the great island of Marajó. Rubber is the chief article of export. Here begins a labyrinth of narrow channels connecting the Amazons with the Pará; and as the forest is usually luxuriant, the sail through to the Great River is the most memorable part of the whole voyage. Here the palms are seen in all their glory; the slender assaï and jupatí with their long, plume-like leaves, the míritĭ with enormous fan-like leaves, and the bussú with stiff, entire leaves, some thirty feet long. The banks are frequently bordered with heart-shaped arums and waving arrow grass, or with plantations of the cacao tree and mandioca shrub.

The first view of the Amazons is disappointing, as it is nearly filled up with islands, but where the Xingú comes in, it shows its greatness, being ten miles wide. At the mouth of this tributary is situated the pretty village of Porto de Mos, now numbering but 800 souls, but destined to be an important center in the rubber trade, while the country up the Xingú is admirably adapted for coffee. Passing the singular hills of Almeyrém and the rightly named village of Monte Alégre, famous for its cattle, we reach

SANTAREM

at the mouth of the Tapajós. This ambitious but, to an American, sleepy looking city is the half-way station between Pará and Manáos, and is now aspiring to become the capital of a new province, to be called Baixo-Amazonas, extending from Obydos to Gurupá. It is not thriving, however, barely maintaining its old number of 2,500 souls. Of these about 2,000 are Indians, Negros, and mixed, including two hundred slaves. The situation is beautiful, lying on a green slope facing the clear Tapajós, with undulating campos and flat-topped hills in the rear. Three or four long rows of low, whitewashed, tiled houses, with less than half a dozen two-storied buildings and one Jesuit church, make up the city. There is a "Collegio" for boys and girls, the former department having fifty students varying in age from eight to sixteen, and a course of four years for the study of grammar, arithmetic, geography, history, French, Latin, algebra, and geometry. Just now there is a conflict between the Jesuits and the Masonic order, the government siding with the latter. The priest declared from the pulpit he should obey Rome rather than Rio. The climate of Santarém is delightful, the trade winds tempering the heat (which is seldom above 83°) and driving away all insect pests. The chief diseases are syphilis and fevers. Dr. Stroope, an immigrant from Arkansas, is the sole physician. The soil in the immediate neighborhood is sandy and poor; but inland, especially, where the

AMERICAN COLONISTS

have located, it is exceedingly fertile, rice, for example, having a yield of seventy-five bushels to the acre, and tobacco, one thousand pounds. The great want is a laboring class; there are too many shopkeepers and too few workers. Yet such as are willing to work can be hired for fifty cents a day. One paper, a foot square, is published weekly. The following prices will give some idea of living at Santarém: Wheat flour (mostly from Harper's Ferry, U. S.) costs $16 a barrel; and New York goods generally sell at three times their original value, the chief addition being made at the custom house at Pará. Agricultural implements are at double their price. Butter (all from England and the United States), 80 cents a pound; Holland cheese, 75 cents; Newfoundland codfish, 20 cents a pound; Lowell domestics, from 25 to 40 cents a meter; sawn lumber, $20 a hundred. Of home productions, cacao sells in the city from $2.10 to $2.20 an arroba (32 lbs.); coffee from 16 to 24 cents a pound; sirup (no sugar is made), 40 cents a frasca (5 pints); maize, $2 a bushel; cachaça rum, 50 cents a gallon: peanuts, $2 a bushel; Brazil nuts, $1.50 a bushel; farina, $5 a bushel; tobacco, $1 to $1.25 a pound; lime, $3 a barrel; pork, 35 to 40 cents a pound; beef, 7 to 9 cents a pound; hides, at the ranchos, 5 cents a pound, at Santarém, 7 cents a pound, at Pará, 12 to 14; cattle, at the ranchos, $15 to $20, at Santarém, $25 to $28, at Pará, $35 to $50; horses, at the ranchos, $35 to $40, at Santarém, $40 to $50, at Pará, $50 to $100.

The best paying business at Santarém would be in the manufacture of brick, leather, and lumber. The only articles manufactured are cajú wine, cachaça, soap, and lime. Nearly all the following exports, given in the order of their valuation, come down the Tapajós: Rubber (about 7,000 arrobas annually), cacao, hides, dried beef, fish, farina, salsaparilla, tobacco, guaraná, copaiba oil, Brazil nuts, tallow, cattle, horses, and lime. Coffee, sugar, and rice are imported from below, although hardly any part of the Amazons valley would produce more. Rubber gathering has not only killed agriculture, but drained the district of 2,000 inhabitants.

Santarém is of interest to the American reader as it was selected for colonization by emigrants from the Southern States. Most of the colonists have left, only six families remaining; but these contain nearly all the enterprise and intelligence of the motley party that left Mobile in 1867. These have chosen their plantations on the slopes of the hills, six miles south of the city, and are astonishing the Brazilians with the results of their industry. The land is rated at 22 cents an acre; but practically the colonists enjoy "squatter sovereignty," pre-empting a square mile, and paying no taxes except on exports. They can sell their improvements, but not the land. The soil is black and very fertile. It beats South Carolina, yielding, without culture, 30 bushels of rice per acre. Sugar cane grows eight feet high, or twice the length of Louisiana cane, and fully as sweet. Sweet potatoes grow naturally; indeed it is impossible to exterminate the plant. Broom corn and cotton grow luxuriantly. Indian corn does not mature well; turnips grow finely, but do not come to seed; grapes do well, but the ants devour them. The following

VALUABLE VEGETABLE PRODUCTS

abound at the American settlement: abio, ata, pine apple, pikiá, papaw, aracá, ingá, abacati, bread fruit, orange, banana, cocoa nut, peach palm, cupuassú, cajú, cará (or yam, four or five kinds), three kinds of mandioca, tomato, pepper, ginger, Brazil nuts, tonka bean, sugar cane, sweet potato, squash, Lima bean, rice, tobacco, indigo, and pita; while in the dense forest we find the following trees, many of them unknown to commerce, but furnishing the richest cabinet woods or timber: itaüba (often 60 feet high and 4 feet through), cedar (specimens of which occur 100 feet high and 7 feet in diameter), jutahí (a very hard, dark wood, used for sugar mill rollers, etc.,) sapucaya (resembling hickory, the clear trunk of which is often 50 feet high), loira (the pine of the country), moira-pushúva (similar to black walnut), cumarú, sapupéra, macacaúba (very close grained), acariúba (very durable), javána, rosewood, pracuúba (very hard), pao-mulatto, pao-prito, pao-d'arco, and andiróba. With Nature so generous, with a healthy location at the outlet of the rich Tapajós, and, though 500 miles from the sea, accessible to Atlantic vessels of heavy tunnage, Santarèm is sure of a brighter future. From Santarém to

MANAOS,

the capital of the upper province of Amazonas and the second city in magnitude on the river, is 460 miles. Three villages of importance are passed in this voyage: Obydos (seated beside a bluff on the "narrows," where the river, contracting to a strait not a mile wide, has a depth of forty fathoms and a current of 24 feet per second) exports considerable cacao and Brazil nuts. Villa Bella, insignificant in itself, is the outlet of a large and rich inland district, exporting cacao, guaraná (from Manés), piraracú fish, bast, Brazil nuts, tonka beans, tobacco, coffee, caferána, copaiba oil, hides, and beef, but importing almost every necessary of life. And Serpa, built on a high bank of variegated clay, nearly opposite the entrance of the Madeira, has a deep water frontage, where vessels might easily dispense with lighters, montarias, etc. But wharves and piers are yet to be on the Amazons. The excuse for not building them is that the great difference between high and low water (50 feet) precludes their construction. We think any experienced mechanic from the North could easily show that piers on the river are among the possibles, and at the same time reap a fortune for himself. One is greatly needed at Manáos, where sometimes twenty-five steamers unload every month.

On the left bank of the dark Rio Negro, ten miles from its junction with the Amazons, stands the St. Louis of Brazil, the city of Manáos. The site is admirably located for either residence or commerce. It is uneven and rocky, twenty feet above high water mark. The river in front is deep enough for the Great Eastern, and its banks for hundreds of miles are packed with a luxuriant forest of valuable trees. The soil is fertile in the tropical sense; and the climate is Neapolitan, Nature having left little to be desired in this respect. We did not see the mercury rise above 93° at midday, and the nights are invariably cool, with but few mosquitos. The country around is quite romantic for the valley, being undulating and covered with picturesque vegetation; while the *igarapés* or canoe paths winding through the forest are among the most beautiful features in the Amazonian landscape.

The city, for a long time stagnant, is now rapidly improving. As we saw it in 1867, it was meanly built, without a show of enterprise, without a hotel, and not 3,000 inhabitants. It now numbers 5,000 souls, with 17,000 in the district, a mixture of Brazilians, Portuguese, Negros, Indians, Italians, Jews, Germans, and English; it has a fine cathedral, to cost, when completed, $200,000, and a President's palace in process of construction; two hotels and a market, beside many elegant private houses. The city is lighted with 500 kerosene lamps, has day and night schools, with an *Episcopal Seminario*, three newspapers, one daily; and one two horse carriage, which is advertised "to let, rain or shine." But there is neither bank nor book store.

Agriculture, as everywhere on the Amazons, is dead; even farina, the bread of the land, is imported from Pará, although this is the mandioca country. In fact, there is a constant lack of food in the city.

PRICE OF LABOR AND PRODUCTIONS.

The only productive industry worth mentioning is seen in one steam saw mill, one brick and tile establishment, and one soap factory. Masons and carpenters get from $2.50 to $5.00 a day; pilots $100 a month; and physicians $5 a visit. The daily "Commercio de Amazonas" costs $10.00 a year. Hotels, $2 per day. The following prices, current the present month (August), will serve to illustrate life a thousand miles up the Amazons: Cacao, $2.20 an arroba; tonka beans, 20 cents per kilogramme; puxurí (nutmegs), 90 cents per kilogramme; guaraná, 68 cents per kilogramme; Brazil nuts, 5 cents per kilogramme; copaiba oil, 70 cents per kilogramme; fish glue, 90 cents per kilogramme; dried meat, 21 cents per kilogramme; dried pirarucú fish, 23 cents per kilogramme; vanilla, 45 cents per kilogramme; indigo, $2 per kilogramme: salsaparilla in bundle, 80 cents per kilogramme; tucum thread, $1.00 per kilogramme; tallow, refined, 90 cents per kilogramme; rubber, from 56 cents to 85 cents per kilogramme; rubber, in liquid, $2.53 per kilogramme; aguardente (cane rum), from 15 to 20 cents a liter: tapioca, 20 cents a liter; piassaba in the rough, 12 cents per kilogramme; piassaba cord, 50 cents a centimeter; piassaba brooms, $1.60 a dozen; estopa or bast, 9 cents per kilogramme; hides, 26 cents per kilogramme; cotton hammocks, from $5 to $14 each; tucum hammocks, feathered, $45; cedar logs, $1 per meter; cedar or itaúba boards, sixteen feet long, eight inches wide, unplaned, $18 a dozen; cabinet wood in boards, 45 cents a meter; steamer fuel, $20 a thousand sticks, each weighing on the average fifteen pounds*; native brick (8×6×2 inches) and tiles, from $50 to $75 a hundred, at Pará $35; the ordinary red sandstone rock, which abounds in the vicinity, unworked, 75 cents a cubic foot.

DUTIES AND FREIGHTS.

The provincial duty on liquors is 25 per cent; on rubber, 12 per cent; on fish, 5 per cent; on all other articles, 10 per cent. If exported, 5 per cent extra is collected at Pará, besides fees. Rubber collected in Peru and Bolivia pays no duty. Steamer freight between Manáos and Pará, on rubber, 25 cents an arroba; on coffee and cacao, 24 cents an arroba; on Brazil nuts, 35 cents a bushel; on brick, $20 a thousand; cotton, 30 cents an arroba; hides, 20 cents each; crude piassaba, 25 cents an arroba; salsaparilla, 30 cents an arroba; tobacco, 25 cents an arroba; boards, $3.30 per dozen; beeves, $7.50 each; horses and mules, $10 each. Freights between Manáos and San Antonio on the Madeira; on rubber and salsaparilla, 40 cents an arroba; cacao, coffee, dried beef and tallow, 32 cents an arroba; Brazil nuts in sacks, 35 cents a bushel; hides 25 cents each. To Hyutanahan on the Purús, the tariff is about the same.

The produce of the Rio Negro and Solimoens does not stop at Manáos, but goes directly to Pará, and must be purchased there. This is owing to the fact that Pará merchants have put the producers under obligation, so that producers up the river cannot sell at an intermediate place. But Manaos is determined to become independent of Pará; and the project of a through line of steamers from Manáos to Europe is on foot. With a healthy climate and fertile soil, a situation near the mouths of four great rivers, the Maderia, Negro, Purús and Juruá, and having water communication with two thirds of the continent, this city has commercial advantages unsurpassed. What it wants is an even and generous legislation and an industrial class.

JAMES ORTON.

*Cutting wood for the steamers is very lucrative. Many will soon go into the business with steam or horse power and make fortunes. The forest is free to all. The great difficulty in ascending high up certain tributaries is not so much the lack of water as the lack of fuel, there being no one to cut it.

Honors to Operatives and Foremen.

The Society of Arts and Manufactures, Vienna, has issued 134 silver medals, with diplomas, to operatives and foremen, recommended for the honor by employers who were exhibitors at the Exposition.

The distribution is as follows:

United States of America	5
Great Britain	10
France	18
Germany	13
Italy	9
Switzerland	5
Belgium	5
Holland	4
Portugal	5
Denmark	4
Sweden	7
Russia	5
Greece	3

Trial of Steam Canal Boats on the Erie Canal, in Competition for the State Reward of One Hundred Thousand Dollars.

The trial of steam canal boats on the Erie canal, in competition for the $100,000 prize, came off between Syracuse and Utica, N. Y., on October 15 and 16.

The members of the State Commission present at the trial were Van R. Richmond, George Geddes, John D. Fay, E. S. Prosser, Daniel Crouse, W. S. Nelson, and George W. Chapman; also D. M. Greene, engineer in charge, and H. A. Petrie, Secretary of the Commission.

The boats were required to be able to carry 200 tuns of cargo, besides their motive power, and to make an average of three miles an hour. But none of the boats made this time, and none can claim the reward.

The following is a brief description of the five competing boats, their machinery, etc.

THE WILLIAM BAXTER

was built especially to compete for the prize. She is 96 feet long and 17 feet beam, and has much sharper lines than the ordinary canal boats. Her bottom is perfectly flat, and her sides, stem, and stern, vertical. The outlines of the immersed portions of her bow and stern are the same. She has an overhanging deck at the stern to protect her propellers, and with 200 tuns of cargo she draws 5½ feet water. Her machinery consists of a Baxter upright boiler, and a pair of Baxter compound condensing engines, 7x12 and 12x12. Her boiler is 6 feet high, 46 inches diameter, and has 152 two inch flues, and a grate surface of 7 feet. She is propelled by 2 three bladed twin screws, of 4½ feet diameter and 4 feet pitch. The amount of coal consumed in running from Syracuse to Utica, a distance of 56 miles, was 830 lbs.

THE PORT BYRON.

This is a full sized canal boat of the ordinary outlines, but with a recess or trunk, extending along the center of the bottom of the boat and terminating in an opening, cut in the stern for the reception of the paddle wheel. This paddle wheel is 10 feet in diameter and has eight feathering paddles made of boiler iron. The wheel is driven by two 12x24 horizontal non-condensing engines, which are set on the quarter. The amount of coal consumed from Syracuse to Utica was 4,450 lbs.

THE CENTRAL CITY.

This boat is built somewhat sharper at the bow than the ordinary boats. She is 96 feet long and 17 feet 4 inches wide; and she is driven by two common paddle wheels, placed in recesses cut in the stern. These wheels are of 9 feet diameter, and are driven by a 10x17 horizontal engine. The boiler is 16 feet long and 4 feet diameter. The peculiarity of this boat consists in an arrangement for raising and lowering the paddle wheels and machinery, so as to obtain an uniform immersion of paddles without regard to the draft of water. This adjustment is accomplished by means of four vertical screws, on which the entire machinery, engine, and boiler, rest. The amount of coal consumed from Syracuse to Utica was 7,280 lbs.

THE C. C. POPE

is a regular canal boat of the largest size, to which the screw propeller and machinery are attached without any cutting away of the hull of the boat. A common screw is placed on the outside of the stern in a triangular frame, and an upright shaft and gearing connect this with the engine. The propeller wheel is raised and lowered by means of a screw to suit variable depths of water. The engine is 10x12, and, with the boiler, occupies but 12 feet of the length of the boat, at the stern. This boat has a steam windlass attached, which is used in hoisting cargo and pulling the boat in and out of locks. The amount of coal consumed from Syracuse to Utica was 3,454 lbs.

THE WILLIAM NEWMAN

is on about the same model as last year, but has a Hubbard hydraulic propeller in place of her old screw. She has an horizontal tubular boiler, 8 feet long and 44 inches in diameter, and a grate surface of 13 feet; and she is driven by a single 12x12 upright engine. The propeller is 4 feet 8 inches in diameter and 3 feet long. The amount of coal consumed from Syracuse to Utica was 4,500 pounds.

The boats left Syracuse, October 15, as follows:

William Baxter	6:23 A. M.
Port Byron	9:15 "
Central City	10:16 "
C. C. Pope	11:00 "
William Newman	11:19 "

They arrived at Rome as follows:

William Baxter	9:26 P. M., October 15.
C. C. Pope	5:30 A. M., " 16.
Port Byron	6:09 " " "
Central City	6:55 " " "
William Newman	8:53 " " "

The boats left Rome as follows:

William Baxter	9:45 P. M., October 15.
C. C. Pope	8:40 A. M., " 16.
Port Byron	9:00 " " "
Central City	9:10 " " "
William Newman	9:50 " " "

The boats arrived at Utica dock, October 16:

William Baxter	2:30 A. M.
C. C. Pope	1:22 P. M.
Port Byron	2:15 "
Central City	2:18 "
William Newman	2:31 "

The detentions of the various boats along the way were very great, the total detentions of the Newman alone being about five hours.

The Syracuse *Journal* gives the following conclusions, drawn from remarks made by several of the commissioners:

1. That it is quite impossible to invent any machinery that will propel a boat carrying two hundred tuns at a less cost than when moved by horse power, with the present dimensions of the canal.

2. That boats, as now constructed, are too large for the capacity of the canal, their progress being retarded by natural and well known laws relating to space for the displacement of water.

3. That as the law requires that inventions shall be of a character making them practical for superseding horse power, an award is not likely to follow the test.

4. The law requires a speed of at least three miles an hour; and as none of the boats made that time, an award cannot be legally made.

ERRATUM.—The address of Mr. Dittenhaver, the inventor of the wood filling described on page 186 of our current volume, is Napoleon, Ohio, and not Chapalear, Ohio.

Recent American and Foreign Patents.

Improved Check Runner.

John Haggerty, Corry, Pa.—This invention consists in providing the base portion of the loop or runner with projections, to prevent the same turning on its axis, and in combining therewith a screw and disk (or washer) which are applied to the opposite side of the strap or head piece of the bridle.

Improved Car Coupling.

William F. Senior, Ripley, Ohio.—Two arms are placed in the cavity of the hopper-shaped coupling box. The forward ends of the arms are rounded off, and rest against concave shoulders formed in the forward parts of the sides of the box, where they are securely pivoted to said box, the said shoulders projecting inward sufficiently to prevent the forward ends of the arms from being struck by the entering coupling bar. Springs are placed between the rear ends of the arms and the sides of the box, and are designed to hold the rear ends of the said arms pressed inward or toward each other. The ends of the coupling bar are rounded off, and have shoulders formed upon their sides, so as, when pushed in, to force the inner ends of the arms apart. As the shoulders of the end of the coupling bar pass the ends of the arms, the springs force the arms inward, so that the shoulders of the said coupling bar may rest against the ends of the arms, which thus sustain the draft. In the cavity of the box is formed a recess to receive the coupling bar and center it, so that it may bear equally upon the arms. Upon the inner ends of the arms are formed projections, between which is placed a block, so that the arms may be forced apart to release the coupling bar, by turning the said block, which is thus protected from being struck by the entering coupling bar. The block is attached to the end of a crank which passes up the platform of the car, so that the arms may be forced apart to release the coupling bar by turning the same. When the crank is released, a spring brings the block parallel with the projections of the arms. With this construction, when the cars are being run together, should the end of the coupling bar drop too low, it may be raised and held in proper position by the attendant from the platform of the car by means of a rod having a hook formed upon its end, or from the top of the car, by using a longer rod. The cars may thus be coupled without danger. By suitable construction, the cars can be readily uncoupled when under headway.

Improved Nut Lock.

Homard C. Lowe, Northeast, Md., assignor to himself and John B. Haley, of same place.—This invention is an improvement in the class of nut locks in which a metal plate is placed in a recess of the washer of the nut, and its ends bent up against the sides of the latter. The improvement relates to the combination of a washer provided with projections on its under side, and two straight grooves in its face (the same crossing each other at right angles), and a sheet metal locking plate, whose form is that of a Latin cross, to adapt it to fit in said grooves, and thus form a double lock for the nut.

Improved Stamp Mill for Ores.

Giles S. Olin, Deer Lodge, Montana Ter.—The object of this invention is to improve the machines now in use for crushing quartz in the process of mining. The cam shafts are supported in boxes on the uprights. There are rubber springs on the stamp stems, which are compressed by the cam as the stamps rise and react to give the stamp a quick downward movement. The stamps are placed on the hypotenuse of the triangular bed, and the coarse quartz is fed through a hopper under the most elevated stamp, which has the coarsest screen. After undergoing the stamping process within this screen, the quartz is spouted under the next stamp, whose screen is finer, and from this it is spouted under the last stamp, and when it passes from the last and finest screen it has been reduced to powder. The quartz falls by its own gravity from one stamp to another through the spout. This is what is called spouting the quartz from one stamp to the other. The screens not only increase in fineness as the quartz descends, but also in speed, and are reduced in lift from the first to the last stamp. By reducing the lift and increasing the speed of the lower stamps, the latter are made to work nearer the dies.

Improved Head Band.

Daniel McKinnon, Wappinger's Falls, N. Y., assignor to Elias Brown, of same place.—The band is made in one piece, in the form of a bow, of horn, rubber, or any other suitable material, and its extremities are provided with hooks the office of which is to hook into the hair of the wearer, so as to bind and ornament the same.

Improved Chandelier Center.

Joseph Kintz, West Meriden, Conn., assignor to himself and P. J. Clark, of same place.—The first feature of the invention consists in a construction of the center in such manner that the lower part can be readily lowered away from the upper part, and the center thereby opened to allow the arms to be put in without entirely removing the lower part, although the lower knob, which, together with the rod and upper knob, secures the parts together, be removed. The second part consists of the arrangement of the hooks on the inner ends of the arms by which they are secured to the center. The third part consists of openings in the lower part of the middle portion of the center, in connection with the contrivances for securing the hooks of the arms to facilitate the connection of them, and securely hold them when connected. The fourth part consists of a bearing flange projecting from the under side of the top part of the center to secure the upper hooks of the arms: and the fifth part consists of a connection of the suspending rod to the center, so as to prevent it from turning when screwing the knobs.

Improved Can for Paint, etc.

Oliver E. Walker, Cincinnati, Ohio, assignor to himself and Charles F. Stites, of same place.—This invention consists of a paint can composed of a metal cylinder with wooden heads at each end, secured, by a flange of the cylinder end turned over the outside and a bead raised on the inside of the cylinder against the inside of the head, by impressing a groove in the outside of the cylinder. One of the heads has a large opening through it to allow of putting in and removing the paint, and a plug is used to close the hole.

Improved Revolving Fire Arm.

William H. Philip, Brooklyn, N. Y.—This invention relates to the combination of a sliding pawl bar and a series of pawls with a series of revolving cartridge cylinders arranged on the same axis, and provided with spiral and and straight grooves to enable them to be turned in succession, whereby, when one cylinder is exhausted, it sets the next one in motion, and ceases itself to rotate. The invention also consists in connecting the pawl bar and series of pawls with the hammer.

Improved Spring Rocking Chair.

Franklin Chichester, Milwaukee, Wis.—This invention relates to the construction of that class of rockingchairs which have the stationary legs or stands, with which the seat is connected, by springs, which allow it to have a rocking motion; and consists in the peculiar mode of applying a plate spring to the front of seat at the rear, and to the middle of back.

Improved Reel for Skeining Silk.

Robert Simon, New York city.—For crossing the threads of "greges, thrown, raw, and soft silks, and other threads or yarns, in skeining them, to prevent the threads from mixing and knotting together, and thus save much loss of time and waste of material in winding from the skeins upon bobbins, in consequence of the breaking and snarling common to the ordinary mode of skeining, it is proposed to have a wide reel with, say, six arms and as many longitudinal bars, in the outer sides of which are small transverse grooves. In combination with said reel there are one or more traversing guides to lay the thread on the reel, the guide being operated so that it will cross the threads at intervals between some of the bars—say, every second pair—and lay them parallel, or nearly so, between the others, and at the same time shift at each revolution of the wheel by a slow forward and backward motion, independent of the crossing motion, so as to lay the threads parallel and not directly upon each other, and thus construct flat skeins with crossed threads.

Improved Centering Chuck.

George H. Miller, Binghamton, N. Y.—This is an improved chuck for centering shafting and other work to be turned in a lathe, and consists in a frame formed of arms crossing each other, and provided with slots to receive the clamping dogs, a crank and pinion and ratchet mechanism for moving the dogs toward or from each other and holding them at any point and of a central tube and a punch working through the same.

Improved Cotton Press.

Paul Williams and Robert A. Williams, Winona, Miss.—This invention consists of joints in the screws which work the follower, whereby the latter can be swung conveniently away from over the case, to allow of filling the case with the cotton or other material to be pressed.

Improved Cock for Drawing Beer.

John Moffet, New York city.—The drawing cock is fitted into the head from the inside, and a plug is fitted in the inside extension. The outside extension is shorter than the chine of the barrel. The ventilating cock is fitted in the side of the barrel directly over the drawing cock, with its plug also inside of the barrel. There is a vent passage through the cock, and a corresponding passage through the plug, also an extension of the plug out through the cock, for the application of a wrench for turning the plugs. A rod connects the two plugs, for turning one by the other. Said rod is capable of a slight endwise motion in the plug, and a spring is arranged with it and said plug to keep both plugs tight on their seats. By turning the plug one way to open the drawing cock, the ventilating passages will be brought into line, so as to admit the air; but by turning them the other way the passages will remain closed while the drawing cock is opened, so that ventilating passages may be opened or not, at will.

Improved Water Cooler.

Thomas Smith, Brooklyn, N. Y.—The object of this invention is to so improve the water cooler in common use that pure water or other liquids may be cooled and drawn off for use without the admixture of ice water and its impurities. It consists in arranging the receptacle for the liquids as a casing around the ice chamber of the cooler, providing it with an inclined bottom and a faucet at the lowest point thereof. A feed opening or funnel at the top admits the liquid.

Improved Griddle.

Samuel Kennedy, Allegheny City, Pa.—This invention consists of a griddle for baking pancakes having a hoop or flange projecting downward from the edge of the lower side, to elevate the griddle above the stove top and inclose a hot air space for equalizing the heat throughout the whole area of the griddle. The invention also consists of a damper, in combination with this elevated griddle and hoop or flange, for regulating the heat within the flange by opening or closing passages through it.

Improved Wheel for Vehicles.

Charles W. Spayd, Wilkesbarre, Pa.—This invention consists in the combined spoke socket and felly clip of a wheel, having one end of the socket circular, but gradually changed in shape to an oval toward the felly to allow the spoke to be wedged.

Improved Brush Washboard and Roller.

Isaac Hussey, Ironton, Ohio.—This invention relates to the application of bristle brushes in the operation of washing. A roller is employed that is made both to rotate and reciprocate over the clothes, which are themselves spread upon a stationary subjacent brush. In using the machine, the article is spread upon the brush, and the roller brush moved gently up and down upon it, said brush being immersed in the suds between each downward and upward movement.

Improved Washing Machine.

James H. Hill, Boone, Iowa.—This invention consists of a rectangular tub with corrugated or ribbed bottom and sides, mounted on trunnions at the sides on a suitable stand, so as to oscillate in its longitudinal plane, with several loose balls of wood placed in it on the clothes to act in conjunction with the water to effect the washing of the clothes. The tub is oscillated or swung on its trunnions by the attendant to cause the necessary motion of the water, balls, and clothes.

Improved Sewing Machine Power.

Alfred W. Cochran, Eufaula, Ala.—This invention consists of a sewing machine mounted on the operator's rocking chair, and having its pitman connected to the wall or other stationary object, so that, by rocking the chair, the pitman gives rotary motion to the driving wheel of the machine. The sewing machine table, divested of the stand ordinarily used, is mounted on the arms of the chair in front of the operator, and swings forward and backward in unison with him, so that no inconvenience in managing the work arises from the rocking motion. The pitman is, by preference, attached to the stationary support on the horizontal plane of the crank shaft; but it may vary from it either way to some extent without material effect. The crank shaft is arranged at the front of the chair and parallel with it.

Improved Means of Adjusting Paddle Floats.

Juan B. Baptista, New York city.—The novelty of this frame and arrangement of the paddles consists of the upper and lower parallel cross bars for supporting the paddles vertically between them, and the fastening of the paddles in them by keys, or other equivalent devices, driven or screwed in holes in the paddles above and below the cross bars, the paddles having several holes at different hights. By simply taking out the keys or bolts, shifting the paddles up or down, and putting said key or bolts in again, the paddles may be readily shifted to any required condition. Thus the paddles are adapted to be changed with special facility, as often as may be required, in the navigation of rivers, bays, and other water courses having numerous sand bars and other shallow places.

Inventions Patented in England by Americans.

[Compiled from the Commissioners of Patents' Journal.]

From September 22 to September 27, 1873, inclusive.

BOOT HEEL STIFFENER.—J. W. Hatch, Rochester, N. Y.

CAR WHEEL, ETC.—J. K. Sax, Pittston, Pa.

PEAT FUEL.—W. S. Tisdale, New York city.

PURIFYING SUGAR, ETC.—J. M. O. Tamin, New York city.

ROLLING STEEL AND IRON.—D. J. Morrell, Johnstown, Pa.

SILVERING MICA.— W. M. Marshall, Philadelphia, Pa.

SWITCH, ETC.—W. Wharton, Jr., Philadelphia, Pa.