#### Adjustable Heads for Gear-Cutting and Slotting poisonous, milky juice, containing hydrocyanic acid and an on Lathes.

In small shops it is often required that a gear should be cut for some specific purpose where the demand for this sort of work is not sufficient to warrant the purchase of a gearcutting engine; and if a milling machine or planer cannot some convenient attachment to the lathe might be advisable and handy. To fill both these requirements is the object of the inventor of the devices shown in the engravings.

Fig. 1 shows Parker's gear-cutting attachment for engine by a bolt passing through the curved slot in the projection, A, which carries a spindle in the box, B, that supports the bearing, C, and the index wheel and finger, D. Under the platform is a plate secured to the upper part of the lathe car- end as the power. Her weight draws the sides of the basket

riage by a bolt similar to that used in fastening the ordinary tool post, so that the appendage can be swung around in such a position as to meet all exigencies. The blank to be cut is secured to the arbor, E-shown in blank-in the usual way. The screw, F, elevates or lowers the index wheel and its parts and the set-screw, G, secures them in place. The segmental slot in A allows the attachment to be turned at an angle to the ways of the lathe in order to accommodate itself to the cutting of " slashed " or spiral teeth, and the means of elevation or depression by the screw, F, adjusts the arrangement for different sized gears or ratchets. Every machinist will see how readily it may be adapted to the cutting of the straight, bevel, miter, or

inches diameter, with any desired number of teeth. For cutting bevel gears it is only necessary to set the arbor, E, with its connections by means of the nut on the end of the box, B, to give the proper incline to the arbor, and its appurtenances. The arm of the finger, D, has a scale of figures marked on it to designate the number of the holes in each concentric circle on the index. It appears to be a very neat and complete device for the purpose intended.

Fig. 2 is a handy attachment to be affixed to the carriage of a lathe for fluting reamers and taps and splining studs and short shafts. The stationary center, A is furnished with a radial clutch, B, to receive the tail of a dog or any other device for holding the shaft or taps, having a set-screw to prevent "back-lash." On the end of this center, at C, the index plate of the other device can readily be affixed. The other center, D, can be moved from point to point and secured by the set-bolt. The center of this movable part is dressed down to allow the action of a milling tool or cutter to the lowest point. No further explanation is required by the practical workman.

These appliances are the subjects of patents, one issued July 3d, 1866, and have been tested for more than a year and proved to be valuable aids to the machinist. All additional information desired can be obtained by addressing the manufacturers, Warwick Tool Co., Middletown, Conn.

#### Science Kamiliarly Allustrated.

## STARCH, ARROWROOT, SAGO, AND TAPIOCA.

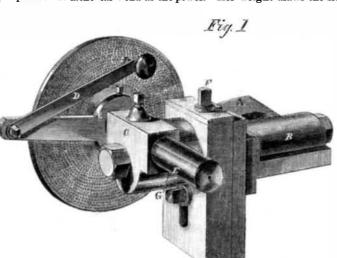
All the above are only synonyms for one and the same substance, that of starch, the difference between them being mainly those occasioned by the differing proportions of the constituents and the presence of more or less foreign matters. Starch is a component of many articles of food, all the farinaceous vegetables containing a large proportion. That manufactured variety known as corn starch is prepared from the maize called the "white flint." Before being ground, the corn is soaked in vats, and then is run through the stones with water. The mass is then filtered and the residue is dried in a kiln until all, or most of the water is evaporated, when it is again ground to a dry powder,

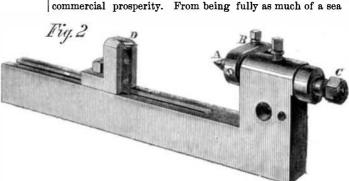
Arrowroot is a term loosely applied to the starch extracted rom a number of roots and cereal products, as the maranta mandioc, tacca, arum, potato, etc. That from the maranta of the East and West Indies is the true arrowroot, but much of that in commerce is from other substances. It is a simple food, very nutritious, containing no nitrogen, and well adapted for producing adipose matter or fat.

Sago is a farinaceous substance prepared from the pith of a species of palm growing on the islands and main land of the Indian Archipelago. To obtain it the tree is felled and the trunk split. The pith is then removed, macerated with water, and beat with paddles, when the woody fibers separate and float. These being removed, the grains settle and the flour or grain, after being dried, is sifted and then generally bleached with chloride of lime. Pearl sago is prepared from the ordinary sago by being heated on an iron surface. In cold water neither forms of the sago are solvent, but only in hot water, when they form a thick starch-like solution, and make an excellent and very nutritious food.

Tapioca is prepared from the root of the mandioca or cassava grown in the West Indies, South America, and some parts of Africa. The root grows sometimes to the weight of thirty pounds. It contains, with the starch, a large proportion of a steel tired.

acrid bitter substance. The poisonous principle is used by the inhabitants of northern South America to poison thorn arrows thrown from their pucunas, or blow guns, for the killing of game. The root is brought from the mandioc patch and then washed and peeled. The peeling is usually perbe at liberty to be used for fluting reamers, taps, etc., then formed by the teeth; after that the root is grated, the grater being a wooden slab about three feet long, a foot wide, slightly hollowed, and set in diamond-shaped patterns with sharp pieces of quartz. The grated pulp is then partially dried on a sieve and placed in a long cylindrical basket of elastic lathes. It is a standard to be secured to the lathe carriage fibers. One end of this basket is affixed to the limb of a tree or a stout peg in the wall and a pole passed through a loop on the lower end. One end of the pole is rested under some projection and the Indian woman seats herself on the other





The inventor of this combination wheel believes that its

value for durability is far in advance of those generally in

use, and that it is cheaply made and easily kept in repair, as

the tire can be removed at any time when worn and replaced

This plan was patented through the Scientific American

Patent Agency July 23, 1867, by David Forrest assignor to

himself and James Eldridge, Jr. For further information ad-

Railway Bridge Excitement in Hamburg.

some reason to believe that Prussia is seriously contemplating

the expediency of constructing the much talked-of railway

bridge across the Elbe, at a spot that has hitherto never en-

tered the wildest dreams of the most speculative engineer-

namely, below Altona, near the terminus of the Kiel and Al-

tona Railway. There can be no doubt that, as the two banks

of the river belong to Prussia, that power has as much right

to build a bridge there as over the Rhine at Cologne and

Coblentz, where both banks are also Prussian; but should the

plan be really executed, Hamburg will be cut off from all

direct communication with the sea, and then good-bye to its

Hamburg is in a state of alarm and excitement, as there is

dress Forrest and Eldridge Eastport, Me.

by a new one; or any other part can be similarly replaced.

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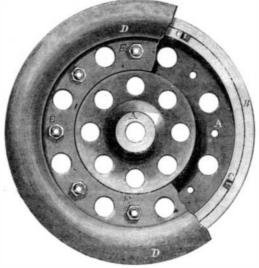
### PARKER'S GEAR-CUTTING ATTACHMENT FOR LATHES.

uid deposits the starch known as the tapioca of commerce. granulates, as is seen in that so extensively used for puddings. Sometimes it is denominated Brazilian arrowroot, but under whatever name, it is the product of a root which in its natural state is one of the most virulent of poisons.

It is almost impossible to believe that one of the most nutritious and palatable of the elements of our cuisine should be derived from one of the most fatal poisons known in the vegetable kingdom, yet such is the case.

## FORREST'S COMBINATION CAR WHEEL.

The engraving presents adouble view of a car wheel intended to overcome the objections to the common cast wheel and the wrought wheel used on European roads. It is composed



of three distinct parts, secured together by screw polts. The hub and body, A, of the wheel is either cast from suitable iron | perhaps even twice that number, since only two hundred or forged from good wrought iron-which is preferable-to pounds of ivory is calculated as the average weight produced prevent breaking. The tire, B, is a separate piece of chilled by a pair of tusks. iron, or cast steel. It has projections, C, on its inner surface which fit into corresponding recesses in the rim of the body, A, which reach partially across its face. The disk-flange, D is either of chilled iron or steel, and is made to fit over the central projection of the body, A, and confine the tire in place. The three parts are secured by square shanked bolts, seen at E, which may be of any convenient number. To procure lightness, the webbing of the wheel may have a number of holes of any form made through the parts. The flange of the wheel and the webbing of the wheel outside of the hub is in one piece and when bolted to the mass of the wheel secures the tire place. The tire or tread may be of the hardest metal, as steel or chilled iron, as its position on the wheel rim does not depend upon shrinkage. The advantages of wrought over cast car wheels have never been acknowledged in this country, where chilled cast car wheels have been used to the exclusion of wrought wheels, ever since the first successful running of railroad cars. But in Europe, except Russia, the rule is that car wheels should be of wrought iron or

spiral gears, from the smallest up to those of ten or twelve | together until it assumes the shape of an inverted cone. The | port as London, at present, it will! become as much an inland milky juice drops into a vessel placed to receive it. The pulp city as Dresden or Berlin. The trade of Altona will also be is then removed and dried in a kiln or oven. This pulp is totally ruined by the bridge, but as that town is now Prusknown as semonilla and used for a bread. The poisonous liq- sian, the government has the right to do what it likes with it. As far as regards Hamburg, however, the case is different; This deposit is dried either in the sun or by rude, kilns and and in an international point of view, it is very doubtful whether Prussia has the right to cut off the traffic of an inde-

## Editorial Summary.

pendent state and preclude it from direct commercial inter-

course with the rest of the world.

METEORITES.-M. Daubrée, who has been investigating the specimens of meteorites in the Paris collection, divides all meteorites into two primary groups-Siderites and Asiderites—the former being characterized by the presence of metallic iron, and the latter by its absence. The Asiderites contains one group only, which is termed Asideres. The Siderites are divided into two sections: in the first the specimens do not enclose stony particles, and in this we find the group of Holosideres; in the second both iron and stony matter are present. This, then, induces two groups: Syssideres, in which the iron is seen as a continuous mass; and Sporadosideres, in which the iron is present in the form of scattered grains.

SURGERY AMONG THE INCAS.-M. Broca, says the British Medical Journal, has presented to the Academy a skull found in the tomb of the Incas four miles from the city of Cuzco, which is chiefly remarkable from bearing marks of having had a surgical operation performed upon it. The skull gives evidence that it underwent a fracture and denudation of the frontal bone, and traces prove that trepanning was performed. A circular white spot is visible which shows an inflammation of a portion of the bone, terminating in death, as is believed, in about fifteen days after the operation. M. Broca thinks that the trepanning was performed with a gouge.

Fossil Ivory.—About forty thousand pounds of fossil ivory, that is to say, the tusks of at least one hundred mammoths, are bartered for every year in New Siberia, so that in a period of two hundred years of trade with that country, the tusks of twenty thousand mammoths must have been disposed of-

It is said the Indians have an ingenious way of setting fire to houses with their arrows. They wrap with a rag some powder on the heads of their arrows, and on the tip of the arrow head place a percussion cap. When the arrow strikes the object to be fired, the cap is exploded and the powder and rag ignited. The rag burns long enough to set combustibles with which it may come in contact on fire.

THE FRENCH SCIENTIFIC ASSOCIATION promises to take the lead of all the Continental organizations in promoting the cause of science. It has this year appropriated 78,000 francs for investigations and experiments. In future, its Bulletin is to be published every week instead of monthly, as hereto-

Substitute for Coffee.—In Germany the seeds of grapes are frequently used in place of the coffee berry. When pressed, they yield a quantity of oil, and afterward when boiled, furnish a very economical, and it is said, a very delicious substitute for the genuine Mocha,

CUTTING GLASS.—Take an old three-cornered file, heat it red hot and suddenly plunge it into a previously prepared mixture of salt and ice, stirring it about so as to cool as rapidly as possibly. Now grind the point on a stone preserving the three sides as much as possible, when it is ready for use. The glass to be cut is nicked on the edges, then laid on a perfectly smooth surface, and the point of the file is, with a moderate pressure, drawn over its surface, the direction being guided by a rule. Such an instrument will be found serviceable for cutting glass for windows and all ordinary purposes. So says an exchange.

CHLOROCARBON, the new anaesthetic of Dr. Protheroe Smith, is a tetrachloride, or as it used to be called, bichloride of carbon. Although powerful and rapid in its effects, consciousness is rapidly restored after its use. Its vapor is very agreeable, having a delicate perfume not unlike that of a quince, and when inhaled imparts at first a sensation of coolness to the throat similar to that experienced in drawing in one's breath after taking peppermint, followed by a feeling of warmth on the surface of the body generally. Drowsiness and other sensations similar, but in a less degree, to those experienced from chloroform follow.

Is SWEEDEN A RISING NATION?—Sir Charles Lyell, thirtytwo years ago, from an examination of some ancient sea marks on the Sweedish coast, concluded that the peninsular was rising at the rate of three feet a century. The Earl of Selkirk, from a recent examination of the same marks, comes to an opposite conclusion, which he has communicated to the Royal Geographical Society. The change in the position of the marks he attributes to fluctuations in the level of the water, and not to any upward movement of the land.

CARRIER PIGEONS lately traveled the distance between Brussels and Cologne, one hundred and ten miles, in from three to five hours. One bird flow thirty-seven miles, another twenty-two, and others twenty miles per hour. A pigeon race between birds owned in the former city, and others belonging in Hamburg, is soon to take place. The birds are to be thrown up in the Zoological gardens in Cologne and to fly thence to Hamburg, two hundred and thirty miles distant.

BEER VERSUS BREAD.—The amount of nutriment contained in beer is generally greatly over estimated. Liebig asserts that in 1,460 quarts of the best Bavarian beer, there is exactly the nourishment of an ordinary two and a half pound loaf of bread. This beer is about on a par with our best American beer. Instead of being a condensation of the nutriment contained in the grain, in just so far as the liquid has under gone fermentation, the nourishment has disappeared.

THE NIAGARA SUSPENSION BRIDGE.—Ever since the middle of March, 1855, from thirty to forty railway trains have passed over the Niagara Bridge daily. With the exception of the removal of the timber girders, and some other wooden parts which showed signs of decay, no part of the suspended system has ever been disturbed. The work is considered just as strong this day as it was at the time when the first train of cars passed over.

ANOTHER NEW FIRER.—By a late patent, a species of nettle, which grows luxuriantly and spontaneously throughout the Mississippi valley, is employed in the manufacture of cord, rope, cloth, bagging and paper. The stalks, which grow from four to eight feet high, are gathered in the winter, and are ready for the brake without any rotting process. The fiber is said to be exceedingly fine, strong, and susceptible of a high finish by dressing.

FISH BISCUIT .-- Professor Rosing, of Asa, France, has invented a process of making flour from a species of sea fish, which he forms into buiscuit, thereby providing a very nutritious and compact article of food. These biscuit are four times as rich in albuminoid substances as beef, four and a half times as fresh codfish, and sixteen times as fresh milk.

LECTURES AT THE PARIS EXHIBITION.—The Imperial Coramissioners have made arrangements for the delivery of a course of lectures, at various places within the buildings and grounds, on various subjects, such as caoutchouc, artificial ice, iron smelting, brass founding, and other kindred themes, connected with the mechanical and art displays in the Exposition.

AN INEXHAUSTIBLE ICE HOUSE.—A company has been formed in France for supplying towns in the southern provinformed in France for supplying towns in the southern provin-genuine sapphires in that territory. The precious stones found on El Dorado ces with ice from the sides of Savoy Alps. The glacier ice is Dar, are familiarly known in that locality by then ame of "Collin's diamonds" loaded on vehicles at the foot of the mountains, transported to Geneva and thence by rail to its destination.

WE are indebted to Mr. H. T. Anthony, 501 Broadway, N. Y., for samples of Lithographic paper, from Paris, which we find excellent for printing photographic pictures. The keeping qualities of this paper render it convenient and valuable.

J. H. HAIL, 102 Fourth Avenue New York, cured by his patent process; for one man in Cincinnati last year 11,000 dozen eggs. They were so well preserved that the dealer sold them in February as fresh eggs.

MESSRS. NOTMAN & Co., of Boston, Mass., have sent us some photographic cards which indicate excellent skill in portraiture.

# National Academy of Science.

This association held its semi-annular session in Hartford. Conn., during the past week. A report of their proceedings, which we had prepared, is crowded out of this issue by other matter, but will appear next week

#### Patent Report for 1867.

We are glad to learn that the contract for engraving the diagrams for the Patent Report for 1867 has been awarded to Messrs. E. R. Jewett & Co., Buffalo, N. Y., whose excellent the road there is an uniform gradient of 1 in 12, This latter section of the It appears that in the present case Messrs. Jewett had no competitors; at least none who were willing to engage to produce work equal in quality to theirs at the same price. The engravings for the volumes for 1867 are to be finished by July 1868, and then the work for the latter year will be begun, this is quite again in time. Heretofore the publication of the reports has required about two years. The report for 1865 is not yet out.

### Distances from San Francisco to New York,

THE CENTRAL PACIFIC RAILROAD ROUTE

The following complete table of distances and elevations of points on the Central Pacific Railroad of California, and other roads connecting therewith, between San Francisco and New York, is useful for reference.

To

Places.		Names of	Atane dat to	tal d	ta f	Names of	stance	etai d	in f	
Goat Island		Places.		distance	ration feet.	Plages.	e from	distance	feet.	
San Leandro	Gos	it Island			tide.	Two mile Canon	22	545 568	4,925 4,990	
Haward's   5   19	San	Leandro	9/2		45	North Fork		577 60 t	5,052	ı
Vallejo's Mills.	Hav	ward's			73	Bishop's Creek		620	5,418	ĺ
Livermore Pass   12   49   734   Point on Salt Lake   75	Val	leio'u Mills		27	121	Humboldt Wells		€35	5.650	1
San Joaquin Ri'r. 20	Kot	tinger's						700	4,830	١.
Stockton	Live	rmore Pass			734	Point on Sait Lake.		775 820	4,290 4,320	
Woodbridge	Stor	obaquin ivi r						845	4,654	ľ
Cosumnes River   12   106   106 Echo Pass   26	Wo	odbridge			88	Echo Cañon		376	5,355	
Arcide 7 121 76 Reed's Summit 30 Antelope 8 139 139 (Green River 75 14 14 18 14 14 14 14 14 15 14 14 14 15 14 14 15 14 14 15 14 14 15 15 14 15 15 14 15 15 15 16 16 16 16 16 16 16 16 16 16 16 16 16				106	106	Echo Pass		905	6,879	
Aniclope	Bacı	rame nto	18		56	Bear River		920	6,045	
Junction	Arc	:de	7					950	7,567	
Rocklin.	Ant	elope			180	Bitton Crook Sumit		1,025 1,045	6,092 7,175	
Pino.   3   149   490   Bridger's Pass   97   1,	Roc	klin						1.058	6,315	
Newcastle	Pin	0			420	Bridger's Pass		1.155	7,584	
Second Park	New	roastle			930	North Platte		1,178	6.695	
Colfar	∙ub	urn						1,232	7,560	
Gold Run	Clip	per Gap			1,785	Laramie River		1,267	7,175	
Dutch Flat.	Con	d Pun			2,440	Foot Dlack Hills	3:) 91	1,297 1,328	8,242 7,040	
Alta. 2 193 8,e55 North Platte Juc'n. 73 1,5 Shady R.n. 4 197 4,125 Brady Island 22 1,7 Blue Cañon. 5 202 4,700 Willow Island. 22 1,0 Emigrant Gap. 6 208 5,300 Flum Creek. 0 1,6 Creet. 13 29 7,02 Fort Kearney 21 1,7 Truckee River. 14 243 5,866 Wood River. 19 1,4 Little Truckee. 8,4 251,5 5,56   Grand Island. 18 1,4 Eagle Gap. 13/5 285 5,600 Lone Tree. 22 1,8 Eagle Gap. 13/5 285 5,000 Lone Tree. 22 1,8 Eagle Gap. 13/5 285 5,000 Lone Tree. 22 1,8 Eagle Gap. 13/5 285 5,000 Lone Tree. 22 1,8 Eagle Gap. 13/5 285 5,000 Lone Tree. 22 1,8 Eagle Gap. 13/5 285 5,000 Lone Tree. 12 1,9 Eagle Gap. 13/5 285 5,000 Lone Tree. 12 1,9 Eagle Gap. 13/5 285 5,000 Lone Tree. 14 1,9 Eagle Gap. 14 1,0 Crean. 15 1,0 Eagle Gap. 15/5 1,0 Eagle	Dut	ch Flat			\$ 425	Juleshurg 1	49	1,477	3,51.	1
Shady R.n.	Alta	1		193	8.625	North Platte J'nc'n.	78	1,555	2,790	
Emigrant Gap. 6   208   5,300/Plum Creek   0   1	Sha	dv Ran	4		4.125	Brady Island	23	1,577	2,640	
Cisco	Blue	Cañon			4,700	Willow Island		1,595	2,514	
Crest.   13   229   70.42 Fort Kearney   21   1   1   1   1   1   1   1   1					5,300	Plm Crack		1,615	•••••	
Truckee River	Cres				7 049	Fort Corror		1,684 1,655	2,128	
Little Truckee. 8½ 251½ 5.56. Grand Island 18 Eagle Gap. 13½ 255 5.00 Lono Tree. 22 14 Eagle Gap. 13½ 285 5.00 Lono Tree. 22 14 Huntor's. 9 274 4.640 Silver Creek 22 14 Eagle Gap. 13½ 285 4.430 Columbus. 18 14 Eagle Bend Truckee. 28 811 4.219 Shell Creek 17 14 14 Creans 30 232 4.60 Fremont 15 14 Creans 30 232 4.60 Fremont 15 14 Eagle Bend Humboldt 37 4.250 Elk'orn. 18 14 Eagle Bend Humboldt 37 450 Fremont 16 14 Eagle	Tru	ckee River			5.866	Wood River		1,674	~,148	,
Eagle Gap				2511/2	5,56J	Grand Island		1,693		
Glendale	Eag	le Gap	1334		5,000	Lone Tree		1,714		1
Big Bend Truckee. 29   811   4,219 Shell Creek. 17   1,11	Hur	iter's			4,640	Silver Creek		1,736	. , ,	
Humboldt Lake. 41   852   4,947   North Bend   14   17     Oreana	Gler	Idale			4,450	Shall Creek		1,754	1.458	
Oreana   50   382   4.166   Fremont   15   1.   Mill City   55   417   4.250   Bik orn   18   1.   Big Bend Humboldt 37   454   4.892   Papillon   16   1.   Iron Point   19   478   4.460   Omaha   12   1.   Reese River   33   556   4.550   Chicago   4.94   2.   Skull Ranch   10   513   4.590   Clevoland   118   2.   Shoshone Point   18   529   4.690   Clevoland   113   2.   18   2.   18   2.   4.785   Dunkirk   1.18   2.   18   2.	Hin.	nholdt Lake			4,047	North Bend		1,771 1,785	•••••	1
Mill City.     35     417     4.250 [Rik-orn.     18     1.       Big Bend Humboldt     37     44     4.392 [Papillon     16     1.       Iron Point.     19     473     4.460 Omaha     12     1.       Keese River.     33     506     4.550 Chicago     494     2.       Skull Ranch     10     313     4.590 Toledo     224     2.       Shoshoue Point.     18     529     4.690 Clevoland     113     2.       Be-o-wave Gate.     8     537     4.785 [Dunkirk     148     2.			ŝô		4,160	Fremont	15	1,800	::	
Big Bend Humboldt 37	Mill	Citv	35		4.250	Elkorn	18	1.818		
Reese River.         33         506         4,550 Chicago.         494         2, 8kull Ranch.         10         513         4 590 Toledo.         244         24, 8knoshone Point.         13         529         4,690 Cleveland.         113         2, 113<	Big :	Bend Humboldt	37		4,392	Papillon	16	1,834		
Skuil Ranch	Iron	Point	19		4,460	Objects		1,845	968	ı
Shoshoue Point 13 529 4.690 Cleveland 118 2, Be-o-wa-we Gate 8 537 4.785 Dunkirk 148 2,	nee Chr	1 Ranch			4,500	Toledo	144	2,34 <b>0</b> 2,584	625	
Be-o-wa-we Gate 8 537 4.785 Dunkirk	Sho	shope Point			4 696	Cleveland	iis	2,697	585 585	
					4.785	Dunkirk	148	2,8.0	585	
· · · · · · · · · · · · · · · · · · ·			4	511	4,780	New York	160	8,300	tide.	
						··				

### MANUFACTURING, ININING, AND RAILROAD ITEMS.

The oldest mills in Pennsylvania are in the quaint old town of Bethlehem Pa., built by the Moravians in 1793, and are now in good running order.

A stationary engine of 500 horse power is being built in Newburgh, Cuya hoga Co, Ohio, This, the largest stationary engine in the Western States, is the property of the Cleveland Rolling Mill company who are erecting immense Bessemer steel works in the former place, The engine is horizontal non-condensing. 36 inches bore, and 60 inch stroke. Two blowing cylinders of 50 inches bore and 60 inch strokefurnish an air blast of from 20 to 24 pounds per square inch, a pressure far beyond anything heretofore used in the pro duction of iron. The full capacity of the works when complesed, will be from 50 to 60 tuns of steeling ots daily, or 12,000 tuns per annum.

Large importations from Belgium are annually made of rough plate glass there being hitherto, a lack of suitable apparatus for manufacturing the article in this country A practical glass blower in Birmingham, Pa., has in vented an apparatus for making the rough plate and furnishes an article which is pronounced equal to the best imported.

The salt springs of New York produce nearly 7,000,000 bushels of salt per year. The wells: are owned and worked by the State, the water being purchased for evaporation by private parties, at a fixed rate per bushel of salt varying from one to twelve and a half cents per bushel. The net revenue to the State, from this source during twenty years, has been \$421,582.

The work of changing the North Missouri rallroad from a broad to a nar row gage, for a distance of one hundred and seventy miles, to Macon, was turnished in four adys. Quick work.

The Viceroy of Egypt is said to be the owner of more than one hundred steam plows, We would like to get drawings of them for publication.

Ransome's concrete stone, is to be manufactured in this country by a joint stock company of Baltimore. The process of making this artificial stone is simple enough. The sand or chalk is intimately mixed with its proper proportion of asolution of silicate of soda; the plastic material is then pressed intomolds or rolled into slabs, and afterwards immersed in a solution of chlor ide of calcium, when the silica combines with the calcium forming insoluble silicate of lime, firmly comenting the sand particles together, while at the same time chloride of sodium, or common salt is produced, which is subscribed. quently removed by washings.

The Montana people are congratulating themselves over the discovery of and are said to be quite plenty and easily procured,

The largest dye-house in America is about to commence operations in Pat erson, N. J. Its appointments are on a very extensive scale and all its arrangements have been made under the direction of a French gentleman, for many years superintendent of the largest dyc-house in Lyons, It is believed that 1.000 or 1.200 pounds of silk can be turned out in one day.

An exceedingly rich bed of oinnabarhas been discovered about four miles south of San Jose, Cal. There is a solid ledge about twelve feet wide and eight feet thick, between walls of rock, which grows richer as the excavation proceeds.

A sudden reduction has been made in the working force at the Springfield Armory, in consequence of an order to reduce the production of breechloaders to two hundred a day.

A train on the New York Central Railroad ranfrom Spencerport to Roches ter, a distance of 10 miles, the other night, in 9 minutes.

The net profits of the Anglo-American Telegraph company for the elever months ending on the first ult.. was more than sufficient to meet the sums of £125'000 and \$25,000 payable to the company as a first charge upon the working of the two cables and the lines of the New York Newfoundland and London Telegraph company. After paying a dividend of nearly 23 per cent for the year, the sum of £12,889 0s. 11d. is carried forward to credit of next year'

Natural soap, it is again announced, has been discovered in Missouri some sixty miles from St. Louis. What has been really found, is probably "fullers earth "a variety of clay which from its unctious touch might easily be mistaken for sosp.

The Mount Cenis railway is to be forty-eight miles long. The initial point on the French side is 2,493 feet, and the summit of the pass, 6,322 feet above sea level. For six miles before reaching the summit the ascent must be on an average gradient of 1 in 14. From this point to the Italian terminus of work has for many years adorned these important volumes, | road was expected to be open for travel by the 1st ult. The French section of the road having suffered severely from inundations last year will not be ready before September, by which time the entire road will be completed. The existing travel across Mount Cenis averages 220 passengers and 120 tuns of goods, daily. The time required is from nine to fourteen hours, but by the railroad the journey will be completed in less than five hours.

> The largest iron works in the country are located at Johnstown, Pa. The works are run day and night and give employment to 3,000 hands.

Steel boilers, it is said, are coming into use on French locomotives. Twelve express engines, with steel boilers, are employed on one railway leading out of Paris, fifteen on another, and several on other roads.

The entire tankage capacity of Oil City, nearly 200,000 barrels of oil, is awaiting a rise in the river for transportation to Pi. tsburg.

The new bridge at Louisville. Kv., is to be 5.220 feet, or nearly one mile in length. The longest span will be 360 feet, thirty-six feet longerthan the longest span of the Montreal "Victoria bridge." The lowest projecting point of the long span is ninety feet above low water, while the highest rise ever known in the river was forty four feet, leaving a clear space of fifty two feet.

The Anglo-Indian Telegraph company propose to build a direct telegraph line, via. Egypt and Aden, with subsequent extensions to Singapore, China, Japan and Australia. The direct route from London to Sucz will, it is anticinated, be in actual work during the present year and the company have entered into a contract with responsible parties for laying a thoroughly efficient line from Suez to Bombay. The entire line will be completed next year, or atthe latest, in the May following.

It is found necessary on some railways having numerous short curves, to have the flanges of the driving wheels of the ordinary 6-wheeled engines turned anew as often as everysix weeks.

For the past three years, \$4,000,000 worth of boots and shoes have been shipped annually from Worcester, Mass. This business gives employment to 2,000 hands in the city, and as many more in the neighboring villages.

#### Latents. Becent American and Loreign

Onder this heading we shall publish weekly notes of some of the mars prominent home and foreign patents.

LATHES.-S. L. Hart. Milwaukie. Wis.-This invention has for its object to furnish an improved device for attachment to lathes for the purpose of cupping the ends of wagon hubs, turning the interior of hollow wooden ware, and for similar uses.

Bob Sleight .- G. O. Momeny, Locust Point, Ohio. - This invention has for its object to furnish a bob sleigh, or other sleigh or sled so constructed as to adapt it to all kinds of roads, and to enable the beams and raves of the sleigh to be readily removed from the knees and runners for convenience in storage, making the sleigh limber, strong, and durable.

Ox Yox E-W. A. Thompson, West Winsted, Conn.-This invention has for its object to so improve the construction of ox yokes as to diminish their weight and increase their strength and durability.

BEDSTEAD FASTENING .- L. Jackson, Paterson, N. J.—This invention has for its object to furnish an improved bedstead fastening, simple in construction, reliable in operation and which will enable the bedstead to be easily and quickly set up and taken down.

SNAP HOOK .- W.S. Furlow, Geneseo, Ill .- This invention has forits object to furnish an improved snaphook simple in construction, not liable to get out of order, not liable to freeze up in cold weather, and which can be manufactured at a small expense.

AERIAL MACHINE.-J. F. Elston. Elston Station. Mo.-This invention has

vorits object to furnish an improved machine for navigating the air so constructed and arranged as to be completely under the central of the navi-FOUNTAIN PRN HOLDER.-J. S. Charles, Omaha, Nebraska.-This fountain

pen holder is made in two parts, arranged to move the one within the other, and relatively so constructed that the ink can be drawn in at one end, and from the other discharged and expelled upon the pen, attached or inserted at

WELL SEED BAGS. - A. D. Griffin, Meridith, Pa - This invention relates to a method for closing the bore of an oil, artesian, or other well, and thereby stopping off the surface or other water, during the process of boring or working the said wells.

Ox Yoke.-C. H. Post, Guilford, Conn.-This invention consists in attaching a hinged metallic plate to the yoke, the end of which engages with the ow in such a manner that the bow is securely fastened thereby

OAR COLLARS .-- Jackson Robinson, Curwinsville, Pa.-This invention consists in supporting and moving the steering oar on metallic surfaces whereby the friction is greatly lessened, and the management of the steering or rudder oar is rendered much less difficult, and consequently the raft is much more easily managed than by the old method.

RADIATORS.-J. A. Marvin, Red Wing, Minn.-This invention consists in forming the flue through which the products of combustion pass, in such a manner that the heat from the stove is compelled to travel a long distance and be retarded in its course and radiated from the surface of the flues and the easing utilized.

WATCHES .- Thos. Baker, New York City .- This invention relates to that class of watches, which are provided with an arrangement of mechanism, for stopping and setting free the second hand, or the hand for indicating half, quarter, or any other fractional parts of a second.

COMMINED BUREAU AND BEDSTEAD .- John Stark, El Paso, Ill .- The present nyention consists in so constructing a bureau, in such a manner, and in parts hinged or hung together, that they can be opened from each other and broughtinto a horizontal position for use as an ordinary bedstead, while at the same time, it so desired, they can be brought into an upright position and shut the one upon the other, forming a bureau, to all appearances, with the mattrasses and other articles constituting the bedding, encased within the

SNAP-HOOK -M. F. Mitchell, Wank an, Wis - This snap-hook is so construct. ed as to be most durable and substantial, and most convenient and serviceable.

LUBRICATOR.-R. P. Underwood, Brooklyn, N. Y.-This lubricator is for the spindles and shafts of machinery, and is more especially intended for cotton and spinning machinery.

HOLDER FOR REINS.—Phineas Jones, Newark, N. J.—The object of this invention is to provide a simple device, whereby harness reins may be securely held, and whereby they will effectually be prevented from slipping out of the hand.

SPRING MATTRESSES .- Henry H. Vere, New York City .- The object of this nvention is to so arrange and hold spiral springs in mattresses that the durapilityof the mattress will be increased, and to do away with the wooden ames now generally used in spring mattresses, that the mattresses may be easily handled, and may be reversed and used on both sides.

CALCULATING MACHINE.—A. Mendenhall, Cerro Gordo, Ind.—The object of this invention consists in constructing a machine by which figures of any desired magnitude may be readily added, subtracted, multiplied and divided.

STOP ATTACHMENT FOR REGULATING THE LENGTH OF STITCE IN SEWING MACHINES.—George Robinson, Detroit, Mich.—This invention relates to a new and improved attachment for sewing machines, more especially designed for the Wheeler and Wilson machine, whereby the length of stitch may be regulated or varied as desired, with far greater accuracy and facility than by the ordinary cam attachment now used for that purpose.