

## ASTRONOMICAL NOTES.

BY BERLIN H. WRIGHT.

PENNY YAN, N. Y., Saturday, April 27, 1878.

The following calculations are adapted to the latitude of New York city, and are expressed in true or clock time, being for the date given in the caption when not otherwise stated.

## PLANETS.

H.M.		H.M.	
Mercury sets	7 59 eve.	Saturn rises	3 44 mo.
Venus rises	3 18 mo.	Uranus in meridian	7 28 eve.
Mars sets	10 46 eve.	Uranus sets	2 20 mo.
Jupiter rises	1 22 mo.	Neptune sets	6 43 eve.

## FIRST MAGNITUDE STARS.

H.M.		H.M.	
Antares rises	9 38 eve.	Sirius sets	9 17 eve.
Regulus in meridian	7 38 eve.	Procyon sets	11 28 eve.
Spica in meridian	10 55 eve.	Aldebaran sets	9 03 eve.
Arcturus in meridian	11 46 eve.	Algol (2d-4th mag. var.) sets	9 45 eve.
Altair rises	10 51 eve.	Capella sets	0 56 mo.
Vega rises	7 15 eve.	7 stars (cluster) sets	8 46 eve.
Deneb rises	8 18 eve.	Betelgeuse sets	9 50 eve.
Alpheratz rises	1 51 mo.	Rigel sets	8 16 eve.
Fomalhaut rises	4 31 mo.		

## REMARKS.

Venus is directly south, a few degrees, of the cluster of small stars in Pisces Occidentalis, and is near the moon April 28, being 3° 19' south. She is at her greatest western elongation May 1, being 46° 7' west of the sun. Mars is now in the most attractive part of the heavens; all of the stars in our list, except Alpheratz and Altair, being visible with him. With Sirius, Betelgeuse, and Capella, he forms a large arc, which bends slightly to the southeast, Mars being about midway between the two last. Saturn is near the moon April 28, being about 6° south.

The variable star *Mira Ceti* is now at its minimum, being invisible, remaining so for a period of five months.

## COLEMAN'S IMPROVED PIPE WRENCH.

Mr. Chas. C. Coleman, of Honolulu, Hawaiian Islands, is the inventor of the novel pipe wrench herewith illustrated, which is claimed to effect a more perfect inclosing grip than is usually the case with tools of the kind. The end of the handle is bent, and at the angle a large curved jaw is pivoted. To this a smaller curved jaw is hinged about midway its length, so that with the corresponding portion of the large jaw it forms, when closed, a nearly entire ring about the pipe or bar.

A link unites the outer end of the handle with that of the smaller jaw, so that when the jaws take hold, the movement of the handle acts through the link to press them the more closely together. The inner faces of the jaw are corrugated to prevent slipping, and a thread may also be cut across these corrugations, so that when desired the wrench may be made to seize a nipple and screw it firmly into place without marring or injuring the thread. The jaws so nearly inclose the pipe that a very strong grip may be had without danger of crushing or breaking the latter.

Further information may be obtained by addressing the inventor as above.

## Botanical Notes.

*A Tree that Rains.*—The Consul of the United States of Colombia, in the Department Leonto, Peru, has recently called the attention of President Prado to a remarkable tree existing in the forests near the village of Moyobamba. This tree, which is known by the natives as the *Tamai-Caspi* (rain tree), has completed its full growth, a height of 26 feet and a trunk diameter of about 3 feet. It is said to absorb and condense the moisture of the atmosphere with amazing energy, and to shed it from its branches constantly in the form of a dripping rain. So abundant is the water supply that the ground about the tree is like a marsh. The tree gives out most water during summer, when the streams are dried up and water is usually difficult to obtain. It is proposed to plant like trees in the arid regions of Peru.

The *Papaw* (*Carica papaya*), a tree widely cultivated in the tropics, and bearing an edible fruit, possesses the curious property of rendering newly killed meat tender in a few hours by being suspended among its branches.

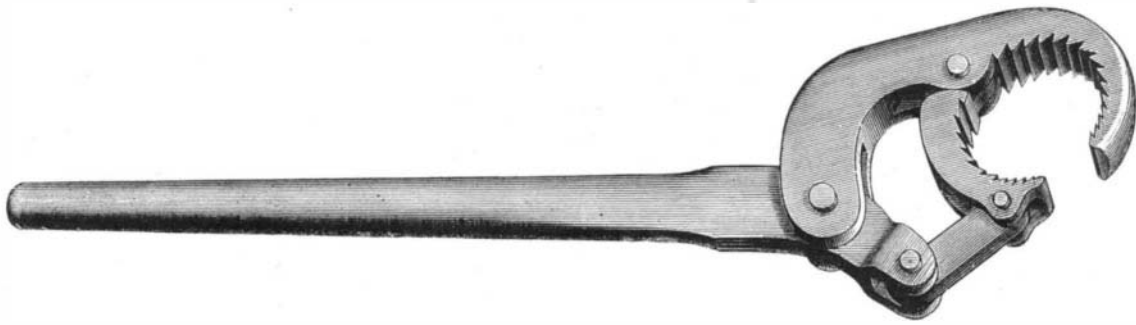
*Novel Botanical Collecting.*—Dr. F. M. Hildebrandt, of Germany, has just returned from an expedition in Central Africa. On one occasion he adopted a novel, ingenious, and decidedly successful method of securing a collection of the organic products of a district. The tribe of Hataitas regarded him as a magician, and forced him to pronounce incantations on their unfruitful fields. That his charms might be effectual, he made the natives bring him specimens of all the animals and plants to be found in the neighborhood, which were shortly packed away in his collection.

*The Atlantus, or "Tree of Heaven."*—It is a well known botanical fact that this tree is dioecious, i. e., the staminate and pistillate flowers are borne on separate plants, and that the male, or staminate, flowers are the only ones that emit the nauseous odor which makes the tree so objectionable. As the tree is a rapid grower and valuable for shade purposes, it has often been suggested that the destruction of all such as bear male flowers might serve to redeem its reputation. If an occurrence recently noted, and recorded in the Bulletin of the Torrey Botanical Club, should prove to be frequent,

the proposed remedy would scarcely avail. The observer writes that he detected growing from the trunk of a tree, from which he had previously gathered specimens of staminate flowers, a small branch which had borne a panicle of well developed fruit. It would thus seem that there is a tendency in the tree to become occasionally monœcious, i. e., to produce its male and female flowers on the same plant.

*Botanical Statistics.*—At a Botanical Congress held at Brussels, Professor Morren gave some interesting particulars of the number of plants known at different periods of the world's history. The writers of the Bible mention, definitely, some 500 different plants, while about 50 others are spoken of in general terms. Hippocrates gives the names of 234 plants; Theophrastus, 500; Dioscorides, 600; Pliny, 800. From the time of the latter writer until the sixteenth century little progress seems to have been made. About the latter period the works of Gesner appeared, in which only about 800 plants were mentioned; but, towards the close of the century, the number had increased to 6,000. In the next century we find the *Historia Plantarum* of John Ray, which treats of 18,665 different species. Linnaeus, the great botanist, wrote in the eighteenth century, and clearly described 7,294 plants, distributed over 1,239 genera. In our own century, the increase of botanical knowledge has been most rapid. According to Persoon (1805-7); 25,000 to 26,000 species were known. In the catalogue of Steudel (1824) are enumerated 59,684 phanerogams and 10,965 cryptogams; in all over 70,000 plants. Loudon gives the names of 31,731 species and 3,732 genera; and Lindley (1846) divides the phanerogams into 66,435 dicotyledons and 13,952 monocotyledons. Later on (1853), the same author enumerates 12,480 cryptogams and 80,446 phanerogams. Lastly, in 1863, Bentley gives the number of known species at 100,000 phanerogams and 25,000 cryptogams. It is stated that about 40,000 distinct species of plants are now cultivated in greenhouses and gardens. When we consider the vast number of varieties into which some of the species are divided, the number of named plants must be truly enormous.

*Origin of Chlorophyll in Plants.*—The results of a careful investigation of this subject by Dr. Julius Wiesner, of Vienna, may be thus briefly summarized: Chlorophyll is derived from etiolin, or xanthophyll, with which it so far corresponds that both are ferruginous organic compounds,



COLEMAN'S IMPROVED PIPE WRENCH.

in which the presence of iron cannot be directly shown. The fact that the elimination of carbonic acid by blanched parts takes place to a greater extent in the dark than in such a degree of light as is favorable to the production of chlorophyll, and to the evolution of oxygen by the green parts of plants, renders it probable that carbonic acid has a direct action on the development of chlorophyll. The degree of light necessary for its production is the same for all the green organs in the same plant, though it differs widely in different plants. Up to a certain degree of intensity of light, the rate of chlorophyll production rises; above this it gradually sinks, so that we may say that there is a lower and a higher zero (in light) of chlorophyll production.

## Circus Riding Taught by Machinery.

If anybody wishes to acquire the useful art of circus riding he has only to go to the Aquarium, in this city, and be taught, free of charge, by machinery. The only condition imposed by the philanthropic manager of the institution is that the learner shall practice in the presence of an audience, but this to many will be compensated for by the liberal offer of five dollars to the pupil who successfully rides around the ring three times standing on the back of an entirely reliable animal, a shade less spirited than the average rocking horse. The "machine" consists of a post erected in the middle of the ring, which freely turns on its vertical axis. This has two hinged arms, one reaching directly over the outer circumference of the circle, the other serving as a strut, and extending from the end of the horizontal arm to the center post near the base of the latter. In the upper arm are pulleys over which a rope passes. Of this one end is attached to a stout leather belt which encircles the waist of the learner, and the other is led inward and is held by the instructor. The pupil is thus prevented from falling off the horse, as the horizontal arm follows him around the ring, being impelled by an assistant who pushes the strut.

To appreciate what an utter slave "the human form divine" is to the attraction of gravitation it is only necessary to witness the frantic efforts of tyros to maintain their balance on the broad pad attached to the horse's back as the animal slowly canters around. For a professional rider to stand gracefully on one foot and fly around the circle seems the easiest thing in the world; and even when he turns som-

ersaults and leaps lightly through hoops and over banners, there probably is not a boy in the audience who does not feel wholly competent to do the same thing even a little better. But to try the feat reveals the difficulty. A victim who had made several futile efforts assured us that he believed there was a new repulsive force inherent to the saddle which science took no account of. No sooner had he got his footing than his head felt too heavy and his feet too light, and in a second he was swimming in the air suspended by the rope, clutching wildly at the horse's tail to regain his position. An attempt to balance himself forward resulted in an involuntary leap over the animal's ears and another suspension in the air, this time in advance of the steed, followed by an affectionate embrace of the latter's head as the placid creature overtook him. The advantages of the "machine" in learning equilibration are quite evident, and, as we said before, a golden opportunity is now offered to obtain a vivid appreciation of what a circus rider's work is, and possibly to make five dollars.

## Gardening in France.

There are over 6,000 men, women, and children engaged in growing early asparagus, lettuces, carrots, and the like in and around Paris. The rent of the land varies from \$180 to \$240 per acre, according to situation and irrigation plant. These market gardens are of comparatively small dimensions, and vary from 1½ to 2½ acres in extent. Taking the smaller size, the plant necessary to carry on business costs nearly \$2,500, including large and small bell glasses, straw mats, glazed lights, frames, tools, baskets, horse, cart, and other necessary materials. The regular workmen, it is said, earn an average pay of about forty cents per day, with board and lodging, all the year round. Extra men receive about seven cents per hour, women five cents. Most of the men come from other sections, not so much for the sake of the wages, which are low for France, but in order to learn a business which they can turn to profitable account when they return to their homes after two or three years' service.

Amiens claims to be one of the oldest market gardening towns in France, vegetables having been grown there in the twelfth century—hundreds of years before a cabbage was grown in England. There are at present about 250 acres under cultivation, the yearly produce of which averages about \$650 per acre. The cabbages often weigh from 40 to 50 pounds, beet roots 20 to 25 pounds, black radishes 12 to 20 pounds, and the turnips from 12 to 15 pounds. A stretch of about fifteen miles of the north coast, near Roscaff, is celebrated for its early artichokes, onions, asparagus and potatoes. England takes every year about 500 tons of early vegetables and 2,000 tons of onions, being about one third of the whole pro-

duction. Four thousand souls make a comfortable living, and even grow rich, on the produce of some two thousand acres of land. Poitou, a neighboring province, has given its name to a gigantic cabbage much grown in western France, and largely used for cattle feeding. The leaves are carefully picked off in the autumn and at the end of winter, the plants being cut down in the spring. Gathered in this way, the Poitou cabbage will yield from 14 to 17 tons per acre.—*Boston Cultivator.*

## The Use of the Uvula.

Professor Alfred H. Garrod, F.R.S., in a recent lecture, laid great stress upon the functions of the uvula, an organ present only in man and the anthropoid apes, and expressed his opinion that the uvula serves the purpose of preventing the food from entering the back part of the nose, if it should so happen that during the act of swallowing the individual should make a sudden effort at expiratory breathing. The uvula, being pressed back by the moving food against the posterior wall of the pharynx, would so retain a free communication between the mouth and the pharynx, at the same time that the nares are closed by the soft palate.

## The Great Eastern.

The largest merchant steamships at present running are the English steamers, Great Eastern, Faraday, and Hooper. There are some very large steamships running regularly to New York from Liverpool, but none are so large as those mentioned above. The Leviathan of ships, the Great Eastern, is one of the wonders of our progressive age, and a mighty proof of the energy, perseverance and skill of man. No other ship is worthy to be mentioned with her. She stands alone, a proud monument to her designers and builders.

She was built at London about twenty years ago, and cost a fabulous sum of money. She is nearly 700 feet long, 83 feet wide, and can carry 20,000 tons of freight. The next largest vessel's capacity is not over 6,000 tons.

Although of such immense size her lines are beautiful, and she sits upon the water as gracefully as a yacht. She has seven masts. Her engines, of the combined power of 10,000 horses, are a wonder to contemplate. Involuntarily the beholder exclaims, as he gazes upon the ponderous moving mass, "How could man ever fabricate them?" They

are without doubt the largest engines ever constructed. Her paddle wheels are fifty feet in diameter. Her saloon is lofty, of great size, and most luxurious in its appointments.

Although built for a passenger and freight steamer, and intended for the Australian trade, she has been used almost altogether in laying submarine telegraphs, proving altogether too large for profitable use as a merchant steamer. There is no doubt, in the event of Great Britain's going to war, she would be used as a transport steamer, being able to accommodate 10,000 soldiers with their baggage. Any one who has read Jules Verne's "Floating City" has a pretty correct idea of her vastness.

#### Domestic vs. Imported Broadcloth.

The question, why American woolen mills cannot produce as good cloth as the imported, is just now receiving considerable attention, and, as carriage builders are obliged to use imported cloths on all their best carriages, we have taken a lively interest in the subject. In procuring information as to why broadcloth cannot be made in America of a quality suitable for trimming our best carriages, we have conversed with several persons capable of imparting valuable information, with the following result: We were told by a gentleman who deals extensively in carriage goods, both foreign and domestic, that the American looms can produce just as good broadcloth as foreign, provided the same wool is used and the same care exercised as there is in cloth of foreign manufacture. This gentleman stated that the wool used in the best foreign cloths is of Australian production, while our domestic wool is inferior as regards length and quality. Imported wool cannot be used in the manufacture of cloth in this country, because the high duties on the raw material make the price of the cloth much higher than the imported can be bought for. There is another reason why domestic cloth is not as good as foreign, the blame for which must be attributed to negligence on the part of our mill owners. The cloth, after being woven, is not entirely cleansed or scoured of its accumulation of grease.

In conversation with a superintendent of a woolen mill in this city (and also inventor of a number of improvements connected with looms) who is familiar with the manufacture of woolen goods both in Europe and America, we were informed that although the Australian wool was longer and of better texture than our domestic, yet it is not necessary that it should be used for the manufacture of good cloths. Long wool is not required, short wool being the best. We therefore have domestic wool that is just as good for all purposes in manufacturing broadcloths as the Australian. One great trouble is on account of the limited capital of our mill owners, which prevents them from keeping a large and full assortment of different grades of wool in stock. Another, and the principal reason, is the great haste which is practiced in the finishing. On this account, the cloths are no sooner out of the looms than they are placed on the market. How detrimental this haste is to the goods will be more easily comprehended when the process of finishing is understood. In manufacturing broadcloths, the wool is first cleansed of all gum or animal fat, and is then oiled with lard or olive oil in order to be spun. In the process of weaving, more or less grease gets on it from the belts and machinery. After the cloth comes from the loom, it is run through scouring machines, in order to remove this oil and grease. In Europe this is done thoroughly, while in America so much care is not observed; therefore, the great objection to the use of American broadcloths for carriages consists in this neglect to remove all foreign matter, consequently the cloth catches the dirt more readily.

The trimming of any carriage is subjected to the most severe usage. It is exposed to the dust and dirt which accumulates upon it while driving in the streets, and which is ground into the cloth by the occupants and set by the action of the atmosphere. When a cloth is used possessing the deleterious qualities attributed to that of American make on account of imperfect scouring, it shows very quickly the presence of foreign matter that should have been removed before it was placed on the market. Could the trimming of a carriage be removed at will, and cleaned with little expense, the ill effects of imperfect scouring could, to some extent, be overcome; but when, as is the case, the cloth once placed must remain in position until worn out, or—in rare instances in these times of quick production—is removed to be replaced by new material, it is important that a cloth should be used that is entirely free from these defects.

Not many years ago our carriage builders were unable to procure an American make of varnish good enough for finishing. Now some American makes of varnish are unsurpassed, and even find a ready sale in London and Paris. The obstacles to the accomplishment of this were by far more difficult to surmount than those which hinder the production of good American broadcloths. Our looms and machinery are far superior to those used in Europe. We cannot pronounce our operatives less intelligent or lacking in skill. Then why should not this one hinderance in the manufacture of broadcloth be overcome by the proprietors

of woolen mills, by placing in the market a broadcloth made from domestic wool, with American machinery and by American operatives, that shall be sufficiently good for the trimming of our best carriages?—*The Carriage Monthly*.

#### A NEW VEHICLE.

To the Editor of the Scientific American:

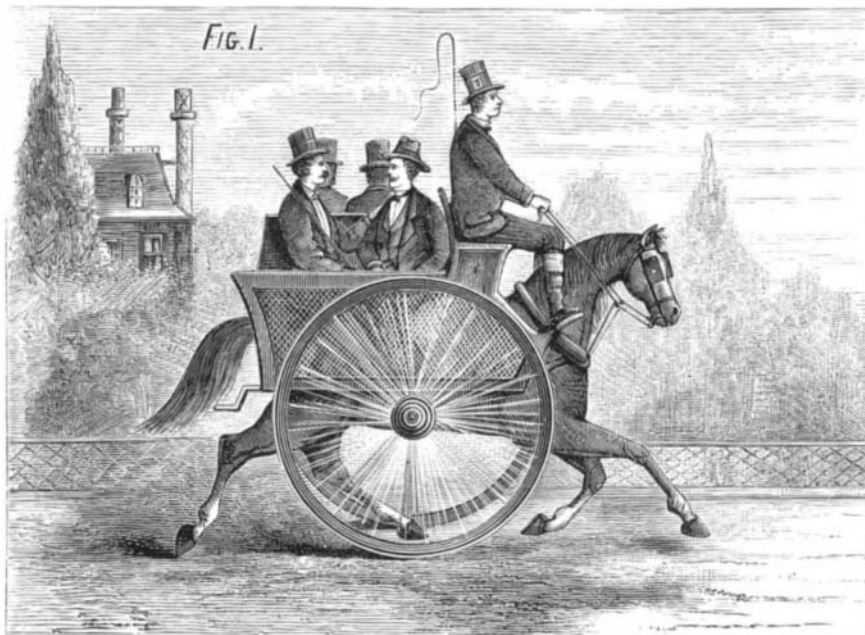
In these days of new rigs for ships there would seem to be no valid reason for not having something new for perambulating our parks. Mail coaches driven by their owners and tandems and double teams are expensive; they require showy horses and costly harness, and, last, not least, they



THE "EQUIBUS"—REAR VIEW.

require much space in which to navigate them. The vehicle I illustrate is eminently well adapted to these hard times, when our pockets and our patience are to be worn out by silver dollars worth only 90 cents. It carries four persons, besides the driver; it is compact, easy of draught, turns in the length of the horse, gives full control over him, is easy of access, makes no dust to annoy unless the wind be aft and the horse too slow to get away from it; is of cheap construction; requires very little showy harness, beyond the head stall; it protects the horse from rain, sun, and flies; if the horse falls you are no worse off than if he fell in a chaise or a dog cart, and last, not least, almost any horse will do, provided he has good legs, a fair tail, and good wind.

The vehicle may be made so that the passengers can sit in several different positions, first as shown in the drawing, back to back, as in an "inside jaunting car;" or they can all sit with their faces to the front; or two can sit facing aft and two facing forward, the first two getting in from the rear, and the others climbing up over the hub and wheel. One great advantage consists in taking hold of the load close to the collar; another prominent advantage is in the near



THE "EQUIBUS"—SIDE VIEW.

proximity of the driver to the horse, whereby he can talk to him in a whisper, and pat him gently if he shows any signs of not liking his load. If the horse should manifest any mutinous spirit, he can neither rear nor kick to do any damage. All that will be required to make this the safest of all vehicles, after the hearse or the wheelbarrow, will be to balance the load so as to bear gently on the fore quarters or back, as in a chaise or two wheel dog cart. In crowded thoroughfares it will have no rival; the "gamins" of the street may pelt you and stand little chance of hitting the horse. To convert it into a sleigh you have only to chock your wheels and shoe them with short runners; but we are not recommending this vehicle for winter or for rough country roads. The saving to the community at large may be estimated by millions.

I estimate the cost of a dog cart at \$500; a handsome 16 hand horse, \$400, a nice Baker harness, \$100; total, \$1,000.

My vehicle will cost about \$250; my horse, say, about \$150 my harness, \$30; saving \$570.

Now it is quite clear to my mind that all the Vanderbilts, Belmonts, Jeromes, Kanes, Camerons, Bonners, Purdys, and men of that sort who can afford it, as also many who cannot afford it, will want this vehicle, besides the vast crowd of speculators, jockeys, savings bank officers, and lobby members; so that at least ten million people of this demonetized nation will each save at least \$500, making a round sum of—well, enough to pay off the national debt in silver coin. There will be a sad falling off in the price of horses and leather, and some of the fashionable carriage makers will have to go to the wall. But, take it all in all, this contrivance must be placed beside the invention of the telegraph, the telephone, the steam engine, the propeller, the monitor, and the double topsail rig for ships, which, though mentioned last, stands to-day among the most useful and humane inventions of the age. I have forgotten to allude to wages in connection with the what-shall-I-call-it; as the appearance of the horse will go for nothing, one man can take care of any number of heads and tails, and as owners will always want to drive themselves, no real coachman in drab coat and big brass buttons will be required. This will add another million or two to the general economy, to which this age seems to be rapidly and necessarily approaching.

EQUIBUS.

P. S.—Won't that be a good name for it?

#### New Inventions.

Mr. Chas. Jansen, of New York city, has invented a Vapor Bath adapted in shape to the entire body or any part, and constructed of outer closed and interior perforated walls, forming compartments to which steam is supplied by pipes.

Mr. Daniel Williams, of West Philadelphia, Pa., has invented a Funnel intended for use in filling opaque vessels, and arranged so as to prevent the liquid from running over or spilling when removing the funnel. A tapering plug, carried on a rod, which is operated by a journaled crank and handle, fits in the nozzle, and closes it when the vessel is shown to be filled by the liquid ceasing to flow. A second external nozzle forms an air space, allowing the air from the vessel to escape.

A new Burglar Alarm, operated by turning a knob or opening a door, has been invented by Mr. August Beck, of New York city. It consists of a ratchet wheel which engages a bell hammer, and is acted upon by two pawls, one moved by turning the door knob and the other by a spring released on opening the door.

Mr. Edwin Harkness, of Vincennes, Ind., has invented an improved Vault for burial purposes, which is made of concrete laid over a sheet iron or wooden form containing the casket; and a modification of this invention is a sheet metal vault, which protects the casket, and may be bedded in concrete or not, as desired.

An improved Gate Latch, which is capable of being adjusted to accommodate the sag of the gate, has been invented by Mr. W. F. Golden, of Morris, Ind. The catch pin is carried by a long and narrow base plate, slotted with a number of countersunk holes for receiving the screws, and may be raised or lowered, as circumstances may require.

Mr. W. M. Rich, of Rome, N. Y., has invented a handy Molasses Sampling Glass for exhibiting and testing samples of molasses and sirup, at the same time keeping the contents free from dust. It is a glass vessel having a funnel-shaped top, with symmetrically hinged cover-sections, through a recess of which a spatula is introduced.

An improved Fence Post, invented by Mr. D. C. Johnson, of New Providence, N. J., is intended for wire fences. The post is made of malleable iron, having divergent limbs or braces and a horizontal cross bar, all welded together and set in a solid base piece.

A Toy Revolver, designed to use paper percussion caps, and of very simple construction, has been patented by Messrs. August Dahler and F. W. Hoffmann, of New York city.

An Outside Window Blind of novel construction, which may also be extended so as to form an awning, has been invented by Mr. James Hester, of Knoxville, Ill. The blind is made of canvas or similar fabric, held in a frame and wound up on a roller, the lower

part of the frame being hinged and connected by folding side sections to the casing, and having pivoted brace rods to throw it out as an awning.

Mr. S. T. Sanford, of Norton, Mass., has patented a Fastening for Shoes, formed by the interlacing of two pieces of leather slotted to form alternate strips and spaces, arranged with the strips of one piece passing through the spaces of the other, and formed upon or secured to opposite sides of the opening; the pointed ends of these pieces being secured by loops to a button placed in such position as to draw the parts snugly together.

An improved Rotary Valve for Brass Musical Instruments, which substitutes a positive action for the string mechanism in common use, has been invented by Dr. Theodore Artaud, of Jackson, Miss. The keys are acted on by springs, and operate curved arms having fixed pins which work in slotted levers directly connected to the rotary valves.