

A PERSIAN DWELLING.

There is little to be seen in modern Persia that tends to substantiate the tales of ancient travelers concerning the magnificence and wealth of the cities ruled by the Shah. Colossal ruins attest the grandeur of former days, but centuries of misgovernment have reduced a people naturally industrious and energetic to a mere horde, existing under scarcely more than the semblance of civilization. Persia, or rather her cities, might be termed the abode of shams; for deception reigns everywhere, from the huge paste diamonds of the Shah to the imposing pillars of dust and straw which decorate the wretchedly constructed buildings.

An excellent idea of the exterior of a Persian dwelling of the better class in Teheran is afforded by our engraving. The courtyard, and probably the most attractive portion of the structure, is represented; and the picture shows nothing of the intolerable filthy surroundings of even the finest private grounds. The materials of construction used are sundried bricks, which have little cohesion, and which before long render the walls in a very dilapidated state. The elaborate cornice and columns represented in the engraving are scarcely more stable than so much theatrical scenery, being merely of wood stuccoed over with mud. In some structures stone is used, and tiles are employed for decorative purposes; but this more substantial mode of building is confined to the houses of dignitaries, or to the bazaars or mosques. In the latter the relics of past magnificence are yet discernible, and one edifice is asserted to be roofed with plates of pure gold. In view of the acquisitive nature of Persian officials, and the unconcealed corruption which reigns in every department of the government, the statement that so much treasure is allowed to remain unappropriated to some one's private use is rather questionable. Persian architecture, however, is not without its importance; and as it involves the application of the singularly beautiful arabesques known the world over as Persian patterns, it presents suggestions to our designers and decorators, of which at the present time advantage is widely being taken. The arches shown in our engraving are by no means of the conventional pattern, and are exceedingly graceful; while there is a harmony of design between the general form of the building and its flat decoration which appeals strongly to correct taste. To perceive to what excellent use it is possible to turn the Persian arabesque and the closely analogous Moorish designs, the reader has only to examine the architecture of some of the larger Jewish temples in this city. There—where, as a matter of course, the Gothic and other well known styles which, by custom, are almost wholly appropriated to Christian churches, would not be suitable—architects have been compelled to seek other sources for every variety of decoration; and the results are adaptations of Oriental design, pleasing both intrinsically and because of

their non-conventionality. Workers in other branches of art have likewise recently resorted, to an unusual degree, to Persian ornamentation, and some of the most exquisite productions in *repoussé* silver and niello work are based entirely upon Persian patterns.

Individual design apart, the aspect of groups of Persian houses is not inviting, but rather monotonous; and the eye finds its only relief in the courtyards or in the gardens, where trees are allowed to grow. The interiors of the dwellings, especially those of the richer classes, often, however, bespeak an unlooked-for degree of comfort: that is, if comfort can be had in any structure which is liable to fall down unless constantly repaired. The courtyard represented in the engraving is entirely inclosed by the dwelling, and is reached from the street by a narrow corridor. On two sides of it are simple blank walls; on the others are the fronts of two distinct buildings (one of which is represented), one belonging to the master of the house and the male portion of the household, the other to the harem. Each consists of a large saloon, separated from the courtyard by glass windows, with two smaller apartments on the ground floor, and a balcony chamber above. The flat roofs are reached by an uncovered flight of steps, and are places of frequent resort in the warm season after nightfall. In winter the rooms are heated by jars of charred fuel, half buried in the floor. The houses of the richer classes in Teheran are seldom occupied during the summer, as, owing to its filthy condition, the city then becomes unhealthy. The monarch and aristocracy then betake themselves to tents on the neighboring plain of Sul-tanieh; while the rest of the population accept the ravages of pestilence with that fatalistic indifference peculiar to Oriental races.

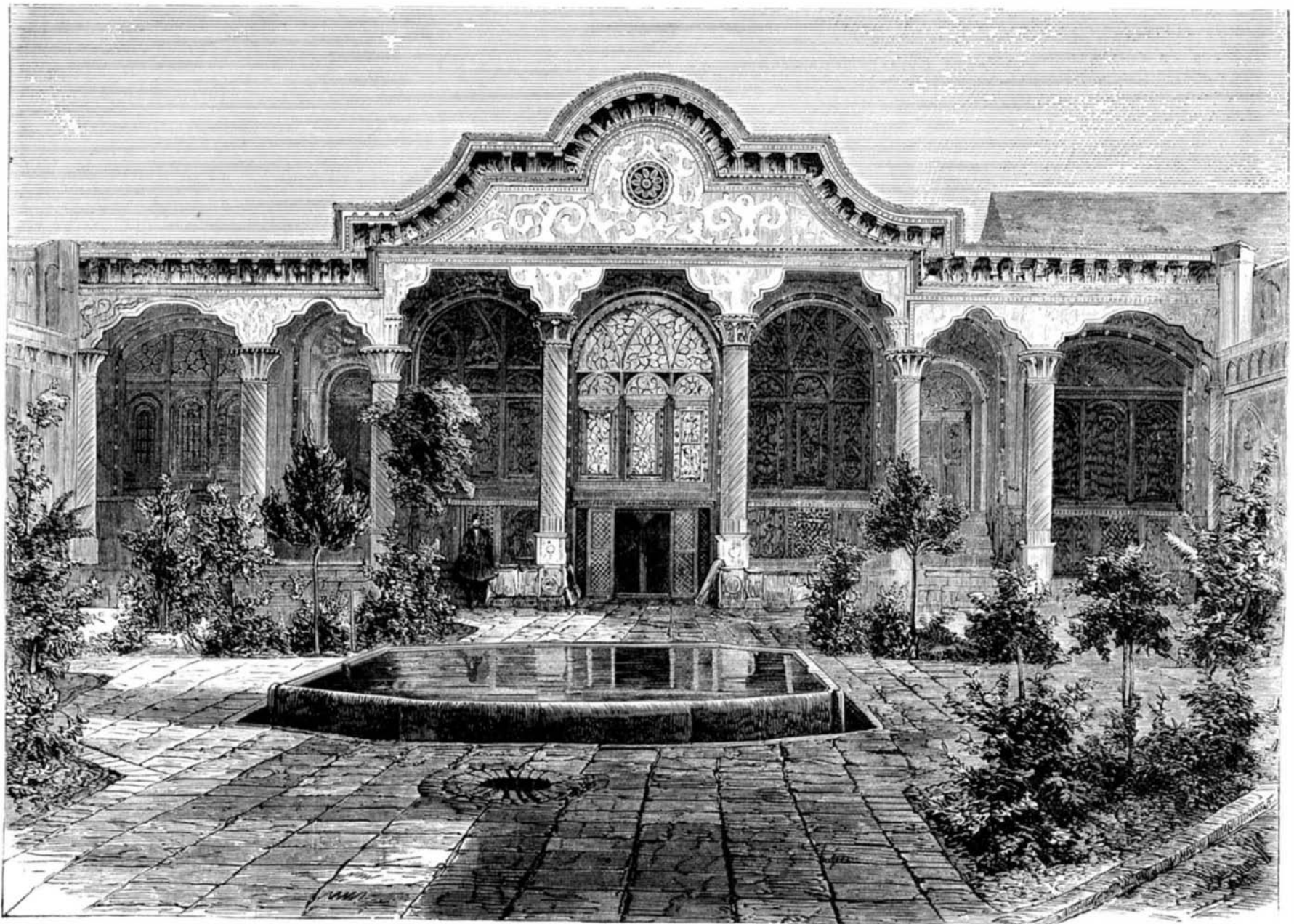
Some Astronomical Notes for March.

A writer in the *New York Tribune* says that March is in many respects an important month. The sun, which has all winter long been south, is now rapidly approaching the north, and will cross the equator at 7:16 (New York time) on the morning of March 20. This point is called the vernal or spring equinox. Many of our young readers know that there are two equinoxes in a year, the verbal equinox in March, the autumnal in September. A simple illustration will probably help them to understand better the meaning of the terms equinox and equinoctial points. Take two large hoops. Place one inside the other, and hold them horizontally. Now tilt the inner hoop a little, so that half of it is above and half below the other hoop, which remains horizontal. Let the latter represent the equator; then the tilted hoop will stand for the ecliptic round which the sun travels in a year. A glance at the two hoops will show that the ecliptic can only cross the equator at two points. These are known as the equinoctial points, and also as the equinoxes,

because when the sun is in these points the days and nights at all places are supposed to be equal. Not that they are exactly equal then, though they would be if the sun were only obliging enough to stay on the equator when it reached it. As a matter of fact, however, the sun's motion north or south when crossing the equator is more rapid than in any other part of his path, and so the days and nights are not quite equal at the equinoxes. Take the equinoxes this year as examples: At New York, on March 20, the sun rises at 3 minutes past 6 A.M., and sets at 12 minutes past 6 P.M., making the day 12 hours and 9 minutes long. Since the sun sets on the 20th at 6:12, and rises on the morning of the 21st at 6:02, the night of the 20th is only 11 hours and 50 minutes long, or 19 minutes shorter than the day. Again, on September 22, the sun rises at 5:48 A.M. and sets at 5:57 P.M., the day being 12 hours and 9 minutes long. But as the sun rises at 5:49 A.M. on the 23d, the night of the 22d is only 11 hours and 52 minutes long, or 17 minutes shorter than the day.

The place in which the sun crosses the equator in Spring is also known as the first point of *Aries*. *Aries* is the constellation of the Ram. But when on the 20th of March this year the sun crosses the equator, it will be in the constellation of The Fishes, almost in a direct line beneath the Alpherat and Algenib in the square of Pegasus. Why do astronomers call this place, then, the first point of Aries? Well, the two points in which the sun crosses the equator are not stationary, but are changing every year. The earth is like a big top spinning around on its axis at a great rate, and at the same time running around the sun along that tilted hoop called the ecliptic. But the top isn't quite steady; as the boys would say, it wobbles a little bit, and the effect of the wobbling is to make the equinoctial points go backward a trifle every year. This going backward—or from east to west—of these points on the equator is called the precession of the equinoxes. But some bright reader will say: "Precession means going before, and these equinoctial points go backward! Why not call it retrogression of the equinoxes?" Well, perhaps that would be a better title; but "precession" here means that the equinox of to-day "precedes" that of to-morrow; that of to-morrow "precedes" or is east of the place of the equinox the next day, and so on. This change of place is constantly going on, but so slowly that it only amounts to 50½ minutes of arc in a year—a quantity so small that it will take nearly 26,000 years for these points to go entirely round the equator.

The man who first found out about this precession of the equinoxes did it a very long time ago. His name was Hipparchus. He was a disciple of the great school of Alexandria, and lived about 140 years before Christ. And he found it out in this way: Some 170 years before his time another astronomer named Timocharis had calculated the distance of



INTERIOR COURTYARD OF A HOUSE IN TEHERAN, PERSIA.

Spica, in the Virgin, from the sun at the time of the autumnal equinox. Hipparchus also measured this distance and found it to be greater than Timocharis had made it. The difference between the two measurements was too large to lead him to suppose that Timocharis had made a mistake, and he was thus forced to the conclusion that the sun and Spica were really further apart than they were a hundred and seventy years before. And he found further that by dividing this difference by the number of years which had passed since the first measurement was made, the annual precession was 49 minutes—which was only a very little wrong. Now, in the days of Hipparchus the sun really was just entering the Ram at the spring equinox, which was then, therefore, the first point of Aries. In the 2,000 years since this point has gone westward nearly 28 degrees, which brings it into the constellation of The Fishes; but the old name has not been changed.

"Hipparchus was a very clever astronomer," says the writer. "It would take too much room to tell all about him, but I may mention one other good thing he did: he made a catalogue of the principal stars—the first of its kind—and calculated their positions. This passed three hundred years later into the hands of another old astronomer named Ptolemy, who made a better catalogue, which has been very valuable in enabling modern astronomers to find out the changes which have taken place in the apparent places of the stars during the past two thousand years."

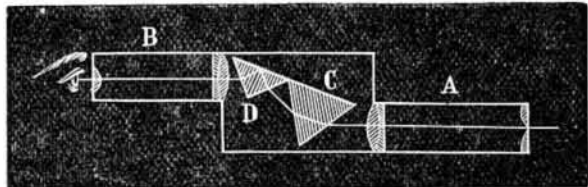
The first point of Aries is important, because it is the point from which the right ascensions of all the heavenly bodies are reckoned. To mark places on the earth we speak of their longitude and latitude. The position of a star is expressed by its right ascension and declination. Declination means distance north or south of the equator. Right ascension is the distance from the first point of Aries measured on the equator, always to the east, and is usually stated in time, one hour being equal to 15 degrees of arc. In consequence of this going backward of the equinoxes, the right ascensions of all the stars are constantly increasing, and will of course go on increasing till the first point gets back to Aries, or right ascensions are reckoned from a fixed point.

Orion is still the most conspicuous constellation, and may be found in the southwest soon after dark, with Sirius in the Great Dog nearly south. Other prominent stars visible on fine evenings are Mirfak in *Perseus*, Alcyone in the *Pleiades*, Aldebaran in the Bull, Capella in the Wagoner, Procyon in the Little Dog, Castor and Pollux in the Twins, Regulus in the Lion, Arcturus in the Hunter, and Spica in the Virgin. The moon is in conjunction with Jupiter and Mars on the 7th, and will occult one or two of the smaller stars in the *Pleiades* a little after 9 o'clock (Washington time) on the evening of the 19th.

[For the Scientific American.]

NEW SPECTROSCOPE FOR DIRECT VISION. BY PROFESSOR A. RICCIO.

This instrument consists of the following parts: A is a collimator, in which the distance of the slot for the admission of light to the achromatic lens is equal to the focal distance of the latter. C is a prism of dispersive flint glass, which decomposes the light of the beam made parallel by the colli-



mator. D is a prism for total reflection, which sends the decomposed light into the telescope, B, parallel to the collimator, A. If the field of view of the telescope will not hold the whole of the spectrum, the prism, D, is made to turn about an axis passing through the middle of the hypotenuse of its base by means of an external lever. By this means the different parts of the spectrum will be successively reflected into the telescope.

On account of its simplicity, this spectroscope is very easily constructed; and by reason of the shortness of the path which the light passes over in the glass, the loss of light is less than that which takes place in a five-prism Amici spectroscope for direct vision.

Modena, Italy.

Metallotherapy—Another Deception.

When the blue glass believers become tired of their hobby, as many of them doubtless already have of mesmerism and "movement," "grape," "will," and other "cures," which from time to time have furnished sensations for the gullible or held out vain hope to the afflicted, they will find a new field for their credulity in the metal cure lately invented in France, and which, according to one of our best French contemporaries, is working miracles. Here are some examples: A young woman was totally paralyzed over her right side. Her body was utterly devoid of feeling; and a sharp needle thrust in her body attracted no notice. Dr. Burg simply gave her a cylinder of gold to hold in the hand, she being blindfolded. In fifteen minutes, she felt a pin prick, then recognized the touch of a plurality of objects, and regained perfect sensibility. Another patient had her left side paralyzed. This called for a copper cylinder, whereupon she too was cured. Then a venerable lady, whose jaw was in a similar unfortunate condition, was cured by a lump of iron under her tongue and a bandage of iron plates on her

head. It should be observed that interchanging metals upon these people did not produce good results. Their "systems" required the metals named, and no others.

Cause, of course, electricity, it being the fashion to use that much-misused word to explain anything which is not readily comprehended, from blue glass radiations to love. "Electric homoeopathy" our contemporary calls this latest deception, while devoting several columns to its grave consideration.

The Obnoxious Franking Privilege Again.

The Sundry Civil Appropriation bill, which was hurried through Congress during the closing hours of the late session, has been made the means of putting through a measure, tacked on as an amendment, which is meeting with the wholesale reprobation that it deserves. It is a resurrection of about the worst feature in the hitherto defunct franking privilege—namely, that of allowing members of Congress to send public documents free through the mails. Luckily the period fixed by law wherein the postal service of the country can thus be turned into an express agency for Congressmen expires on January 1 next; so that, even if the measure be not repealed before that date, public opinion concerning it is sufficiently strong to prevent its subsequent renewal.

We have frequently pointed out how great an imposition on the government any such privilege as this is. The mere sending of Congressmen's letters is in itself no particular burden to the mails; but when it comes to forwarding tons of electioneering documents already printed, and now distributed at the cost of the people, or private packages, or even wash clothes (as used to be the case), and the brunt of all to be borne by a service already working under a deficit, the practice degenerates into an abuse, and there is no reason for its existence. Now, we suppose, the average member will flood his constituents with Patent Office reports and copies of his speeches in lavish profusion, and in marked contrast to his careful distribution of such favors when he had to pay the postage. Government presses will accordingly be kept running, and the people will lose, not only the member's small contribution to post office expenses, but will pay for the production and transportation of some thousands more useless books, which will follow their usual short circuit from the press to the paper maker.

And that is not all; pension agents, land agents, patent agents, and others doing business in Washington, will probably avail themselves of some friendly member's stamp or signature in mailing broadcast their circulars, etc. This was done before, and human nature has not changed.

Blue Glass in a Nut Shell.

General Pleasonton's blue glass theory is assailed by the SCIENTIFIC AMERICAN. His idea that electricity is generated by the passage of light through the glass is declared to be absurd. Nor have colored rays any beneficial effect on life, the reverse rather being the truth, as a pure, white light is best. The only good that can possibly come of blue glass is in its use as a shade for decreasing the intensity of solar light.—*New York Sun.*

PUBLISHERS' NOTICE.

New subscriptions to the SCIENTIFIC AMERICAN and the SCIENTIFIC AMERICAN SUPPLEMENT will, for the present, be entered upon our books to commence with the year, and the back numbers will be sent to each new subscriber unless a request to the contrary accompanies the order.

Instead of a notice being printed on the wrapper, announcing that a subscription is about to end, the time of expiration is now denoted in the printed address each week.

In the article on the oleo-margarin industry in our last issue, the statement that "mixed fat of all kinds" is used should read "mixed beef fat"—this being the only variety employed at the factory described.

Inventions Patented in England by Americans.

From February 3 to February 19, 1877, inclusive.

ARTILLERY GAME.—W. Rose, New York city.
CIGAR MACHINERY.—J. F. Fygh, Philadelphia, Pa.
CIGAR-MAKING MACHINE.—J. S. Winsor, Providence, R. I.
CUTTING PIPES, ETC.—A. C. Wood, Syracuse, N. Y.
DRESSING MILLSTONES.—W. Griscom, Pottsville, Pa.
FIRE ARM, ETC.—E. T. Starr, New York city.
FRICTION COUPLING, ETC.—A. K. Rider, Walton, N. Y.
GAS STOVE, ETC.—E. B. Cox, Brooklyn, N. Y.
LOCK STITCH SEWING MACHINE.—C. F. Hollis, Boston, Mass.
MAKING SAWS, ETC.—G. F. Simonds, Fitchburg, Mass.
PADDLE WHEEL.—W. C. Thompson, Tipton, Tenn.
PAPER PULP BOX, ETC.—S. Wheeler et al., Albany, N. Y.
PARING APPLES, ETC.—G. Bergner, Washington, Mo.
REFRIGERATOR, ETC.—C. L. Riker et al., New York city.
ROTARY ENGINE.—J. C. Thomas, Carlinville, Ill.
SCHOOL SLATE, ETC.—J. W. Hyatt et al., Newark, N. J.
SEWING MACHINE.—C. H. Willcox, New York city.
SHUTTLE.—W. Beatty et al., Gray, Me.
SPINNING FRAME.—G. Draper et al., Hopedale, Mass.
YARN-WINDING REGULATOR.—S. Jackson, Lawrence, Mass.

Recent American and Foreign Patents.

NEW WOODWORKING AND HOUSE AND CARRIAGE BUILDING INVENTIONS.

IMPROVED VEHICLE GEARING.

David G. Wyeth, New Way, O.—The object of this invention is to provide a vehicle gearing in which a reach, fifth wheel, and ordinary form of bolster are dispensed with. The springs are coupled in pairs, and arranged in a triangular relation to the rear axle. The rear clips and front bearings of the springs are also constructed in a peculiar manner. For particulars, see patent.

IMPROVED MACHINE FOR JOINTING STAVES.

Edmund W. Gillman, Long Island City, N. Y.—In this device two rotary concave cutter disks are arranged facing each other, upon a single shaft, each disk being provided with knives arranged tangential to a circle of small diameter described from the center of the disk. A casing surrounds each disk, which is connected with an exhaust fan for removing the shavings. Adjustable guide plates are attached to the side of the casing for supporting the stave, and there is a pivoted frame for carrying the stave centering and clamping apparatus. The machine includes a device for centering the staves, and for clamping them while being jointed; and also an adjusting device, by means of which the ends of the staves may be narrowed more proportionately in wide staves than in narrower ones; and means for inclining the stave in opposite direction to give its edges the proper bevel.

IMPROVED FLOOR CLAMP.

William H. Tarrant, Eau Claire, Wis.—This clamp may be used for laying single or double flooring. It consists of an eccentric cam and lever that operate jointly a sliding bar for pushing the flooring board and spring-actuated and serrated cam levers that bind on the joists for securing the clamp frame rigidly in position during work.

IMPROVED SNOW GUARD FOR ROOFS.

George F. Folsom, Boston Highlands, Mass.—This consists of a wire bent at right angles at one end and sharpened, so as to be readily driven into the roof boards. At the other end it is bent in the opposite direction, and formed into a loop of peculiar shape, which projects upward from the roof, and is provided with a tongue which is capable of retaining a plate of metal, which will retain the snow until it melts, thereby preventing the sliding of large quantities of snow in a mass from the roof.

IMPROVED GANG SAW MILL.

Dudley J. Marston, Amesbury, Mass.—This relates to that class of gang saw mills that employ a series of vertically reciprocating saws for cutting a number of boards simultaneously from a log. The advantages claimed are, that long and slender logs may be sawed without difficulty, as the force is exerted equally from above and below. The gates, having oppositely arranged cranks, counterbalance each other, so that jarring is avoided, and the speed may be increased, and the strain on the frame being lessened, it may be made lighter than the frames of ordinary mills.

IMPROVED MACHINE FOR JOINTING STAVES.

Joseph S. Milton, Bardstow, Ky.—This consists of a swinging stave-supporting or bed frame, with ratchet shaped guides, operated by a hand lever, and swinging in guide grooves of the main frame. The stave is pressed against curved adjustable seats and held in bulged shape by a cam lever and spring ratchet, for being jointed by a planeguided along the table of the machine.

NEW TEXTILE INVENTION.

SOFTENING AND CLEANSING ANIMAL AND VEGETABLE FIBRE.

William Maynard, New York city.—This invention relates to the use of detergents previous to bleaching, by which cotton, silk, wool, and grasses (such as hemp, flax, etc.) may be softened, decolorized, and cleansed, without boiling and with greater economy of time, labor, and materials. The process consists in the use of sulphuric acid, hydrated, mixed with a centralizing proportion of an alkali, but principally sal soda, which mixture is used instead of a solution of the crystallized sulphite salt, and possesses peculiar advantages over the use of the latter in that it obviates the time, labor, and expense of crystallization, is much more effective in its actions, does not injuriously affect the fiber, and is not subject to the deterioration incident to the use of the crystallized sulphites, which, when kept, rapidly oxidize and pass into the sulphates.

NEW MISCELLANEOUS INVENTIONS.

PREVENTING ACCUMULATION OF CARBON IN RETORTS.

Watson Karr, Frostburg, Md.—The process consists in using a small quantity of semi-bituminous coal with the ordinary bituminous or soft coal in the retort. The hydrogen gas produced from the semi-bituminous coal combines with the carbon from the bituminous coal which would otherwise be deposited upon the roof of the retort. The process saves the labor and time required for removing the carbon formations from the retort in the usual way, and likewise avoids the consequent injury to the retort itself, so that its durability is greatly increased.

IMPROVED BALE BAND TIGHTENER.

John L. Sheppard, Charleston, S. C.—The object of this invention is to provide an improved device or apparatus for bringing together the ends of cotton bale bands and taking up the slack while the bales are in the press. The same consists in vertical sliding bars, attracted respectively to the front side of the platen and bed of the press, and provided with slots, or otherwise so constructed as to enable them to clutch the ends of the band, so that when they are slid towards each other the band will be tightened and the slack taken up.

IMPROVED STOCKING SUPPORTER.

E. Louise Demorest and Thomas W. G. Cook, New York city, assignors to W. Jennings Demorest, of same place.—This consists in the combination of a clasp pin attached to the ends of an elastic strap by means of clips, and a combined clasp pin and buckle that receives the elastic strap, which is double. The clasp pins at the lower ends of the elastic strap are fastened into the stocking, and the clasp pin that is attached to the buckle is fastened to the under garments.

IMPROVED TOY WHIRLIGIG.

Charles E. Steller, Milwaukee, Wis.—This toy is so constructed as to give a rapid rotary motion, first in one direction and then in the other, to objects placed upon the revolving table or disks, to cause said objects to represent various beautiful and fanciful forms.

IMPROVED VETERINARY SURGICAL INSTRUMENT.

Lewis Woods Hamilton, Pendleton, Oregon.—This instrument is specially adapted for use in castrating animals. It consists of nippers having curved shaped jaws, and cutting blades which are formed on the outer end of the same levers. Said levers are pivoted together intermediate of the nippers and shears, and the shanks of the latter are provided with a finger-loop and guard.

IMPROVED SAFETY GUARD OR DOCKING FOR HARNESS.

Fayette W. Knapp and Christopher Schlimm, Fiddletown, Cal.—This consists in a peculiar construction of the cockeye which connects the trace with the single-tree. The eye which embraces the single-tree is swiveled to the yoke, which is attached to the trace, and is provided with a spring-actuated follower, between the end of the eye the hook which is upon the end of the single-tree is embraced. The invention was described and illustrated on p. 118, vol. 36.

IMPROVED FLY BRUSH.

Daniel H. Mowen, Greencastle, Pa.—This consists in the arrangement of a vertical shaft carrying a horizontal brush arm, a lever for moving the same, and a clamp for attaching it to a table or chair. The said shaft is provided with a spring for returning it to its normal position after it is moved by the lever. There is also a new adjusting device, by which the brush arm may be readily adjusted to any height on the vertical shaft, and by which the said arm may be made to project more or less from the vertical shaft.