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Bound volumes of the SCIENTIFIC AMERICAN and SCIENTIFIC AMERICAN SUPPLEMENT, for 1879, are now ready, and for sale at the office of publication. Orders are also filled by all News Agents.

NOVEL SIEVE.

The engraving shows an improvement in flour sifters recently patented by Mr. L. H. Thomas, of Reading, Mich. It may be used for sifting the flour, and after it is sifted the

**IMPROVED SIEVE.**

flour may conveniently be carried in it from the bag or barrel to the tray in which it is to be mixed. A series of annular projections are formed on the handle, and marked with the quantity or weight the sieve would contain when filled to that point.

The method of using the sieve is to take it by the handle and plunge it into the flour or other material to be sifted, giving it at the same time a rotary motion. The flour passes inward through the meshes of the sieve, filling it to the point desired.

NOVEL TAP FOR TIN CANS.

We give herewith an engraving of an improved tap for tin cans recently patented by Messrs. John T. Cooper and Julius Wagner, of Silver Reef, Utah Ter. The invention is shown in perspective in Fig. 1, and in section in Fig. 2, and it consists of a bell-shaped body, A, provided with a stopcock, E, and having a central spindle extending through it, carrying at one end the triangular sharp-edged head, B, and at the other end a wing nut, D, for drawing the bell-shaped body against the head of the can. The body, A, is provided with an annular packing which insures a tight joint between it and the can, and a packing ring is placed upon the spindle, B, below the nut, D.

The tap is applied to a can by projecting the triangular head some distance beyond the body, then forcing it through the can top and turning it through a quarter of a revolution, and finally drawing the body, A, tightly against the can top by turning the wing nut.

After the tap is once in place the contents of the can may at any time be drawn out through the stopcock, E.

This device is of great utility when it is desirable to use only a portion of the contents of the can at a time, as it prevents the remainder from evaporating or becoming spoiled by contact with the air. Aside from this it has the advantage of convenience, being capable of ready application to cans of any kind.

A Large Merchant Steamer.

A steamship which promises to be the largest and finest vessel in the world is now building at Barrow, England, for the Inman line. Her dimensions are to be as follows: Length of keel, 546 feet; length over all, 590 feet; breadth of beam, 52 feet; depth of hold, 38 feet 9 inches, and depth from top of deck houses to keel, 52 feet. Her measurement will be 8,300 tons, or over 2,000 tons larger than either the City of Berlin or the Arizona, and 800 tons larger than the Servia, the Cunard steamship now under construction.

The vessel will be finished in about a year, and will bear the name "City of Rome." Her engines will be of 8,500 horse power with six cylinders, three of which are high pressure and three low pressure. There will be eight boilers, heated by 48 furnaces, and a speed of over 18 knots is expected.

The City of Rome is to be built of steel, with a double bottom, and 11 bulkheads. Two longitudinal bulkheads are to be run through the engines' and boilers' space to decrease the danger of the vessel's sinking in case of collision. The top decks are to be of the best teak. The saloon and state rooms will be placed amidships, and accommodations provided for 300 first class passengers.

Was Adam a Peruvian?

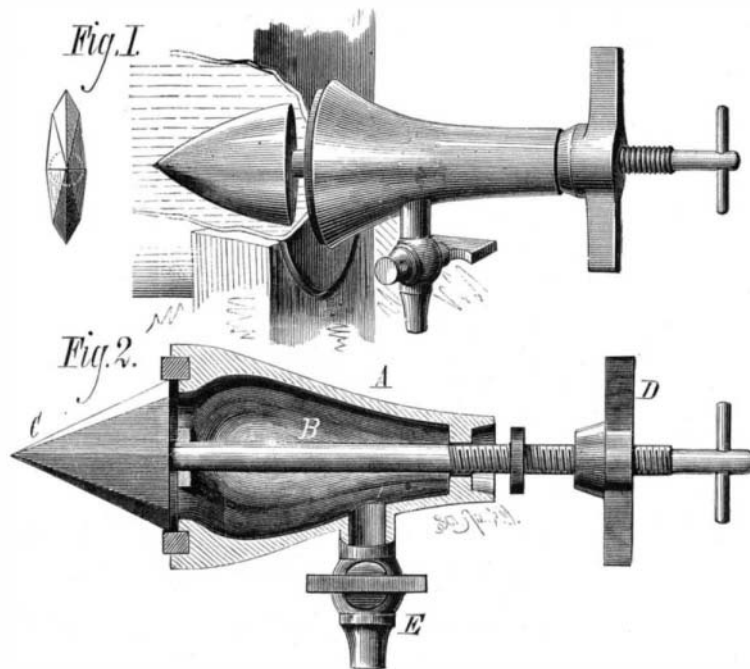
Dr Rudolf Falb, whose linguistic researches in South America have already been noticed in this paper, has lately sent to a Vienna paper a summary of his conclusions. He says that the language spoken by the Indians in Peru and Bolivia, especially in Quichua and Aymara, exhibit the most astounding affinities with the Semitic languages, and particularly with the Arabic—in which tongue Dr. Falb himself has been skilled from his boyhood. Following up the lines of this discovery, Dr. Falb has found, first, a connecting link with the Aryan roots, and, second, has arrived face to face with the surprising revelation that "the Semitic roots are universally Aryan." The common stems of all the variants are found in their purest condition in Quichua and Aymara, from which fact Dr. Falb derives the conclusion that the high plains of Peru and Bolivia must be regarded as the point of exit of the present human race.

John Bright on the United States.

On returning from his visit to this country Mr. T. B. Potter, M. P., was given a demonstrative welcome by the Rochdale Reform Association. In the course of his remarks with regard to his visit, Mr. Potter said that after coming here from the commercial depression of England and its policy of imperialism he seemed to regain faith in the future of humanity and confidence in the English race. In America, if not in England, the people were untainted by the shallow doctrines of Jingoism and free from the benumbing social influences of privilege in church and state. He would advise all of them to go and take their wives with them. It was his pleasing duty to convey to Mr. John Bright the messages of affection and gratitude with which he had been charged from meetings in every part of the United States which he had visited, and the ardent hopes of all, from the President to the artisan, that "he will not die until he has seen America."

After expressing his regret that he had been and probably would be unable to visit America, Mr. Bright spoke at great length and with great eloquence upon the present condition and future prospects of the United States. Touching the size of the United States, he said:

"You know that France is considered rather a big country in Europe, but the United States would make fifteen times France, it would make fifteen times Germany, it would make twelve times Austria, and it would make twenty-five times Great Britain and Ireland. If you look at the map of the United States you will find in the extreme south a State which is called Texas. The size of the single State of Texas is 274,000 square miles. Austria is only 240,000, Germany is only 212,000, France is 204,000, the United Kingdom is

**IMPROVED TIN TAP.**

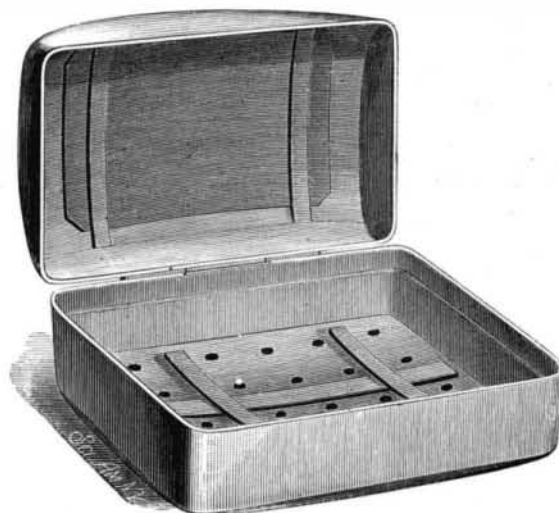
120,000. Texas can afford 2,000,000 acres of land to grow 12,000,000 bales of cotton, which is now about equal to the whole production and consumption of cotton each year over all the globe. This country that I am discussing has only been a country in a certain sense for one hundred years. A hundred years ago it consisted of thirteen small colonies dependent upon this country. Its population now has reached 50,000,000, which is about one-half more than the whole population of Great Britain and Ireland at this date, and I have no doubt but that there are scores in this room, if they live to the age to which I have attained, who will live to see the day when the population of the United States will pass in numbers 100,000,000 of people."

Coursing through the Air.

We have been written by a party who proposes to guarantee to any person of known responsibility, who wishes to take an interest in it, that he will produce a method by which he can direct his course through the air, the activity of which will be in proportion of the weight to the power used.

SOAP AND SHAVING BOX

The combined soap and shaving box shown in the accompanying engraving is the invention of Mr. Anton Hopfen, of New York city. It is composed of three main parts, the lid, the body, and the bottom. The latter is perforated to admit air, provided with cross bars to hold the soap up, and it may be pushed out or extended if required. The cross bars prevent the soap from stopping the perforations in the bottom. The cover of the box contains a piece of flexible rubber, held in place by two straps.

**COMBINED SOAP AND SHAVING BOX.**

This box is especially intended for travelers, and can be used as a shaving box by extending the bottom and covering the perforations with the flexible rubber.

PIGEONS BY THE MILLION.—The celebrated pigeon roost in Scott County, Indiana, is now, as it has been for seventy-five years, the roost of millions of pigeons. They fly away in the morning to their feeding grounds, many of them going to such a distance that they do not return until midnight. The timber on thousands of acres covered by this roost is broken down badly, large limbs being snapped off like reeds, by the accumulated weight of the birds. Thousands are killed nightly, but the slaughter seems to make no diminution in the vast flocks that congregate there.

A New Marble Working Machine.

The *Herald and Globe*, of Rutland, Vt., describes a new marble cutting machine, lately tried in that town, and pronounces it the most effective it has seen.

The principle of the cutting tool consists in the pivoting of one or more toothed wheels or disks to an upright revolving spindle (the teeth of the wheel flush with the end of the spindle), with the axis of the wheels on a different line (in some cases at right angles) to that of the spindle. The revolutions of the spindle, with the teeth of the wheels pressing upon the material to be cut, cause the wheels to revolve so rapidly that the teeth chip the marble at the rate of sixty thousand strokes per minute. The wheels are set at various angles to the line of the spindle, depending upon the work required to be done, and as this arrangement will channel, turn, and flute a column, countersink, mould, panel, letter, and do filigree work, quite a number of different settings are required. Each spindle has about thirty-eight chisels or teeth, and revolves from 1,500 to 3,000 times a minute, thus giving the number of strokes stated above.

Power is communicated to the tool by means of a flexible shaft. The machine is said to work with astonishing rapidity and very economically.

Pig Iron Advancing.

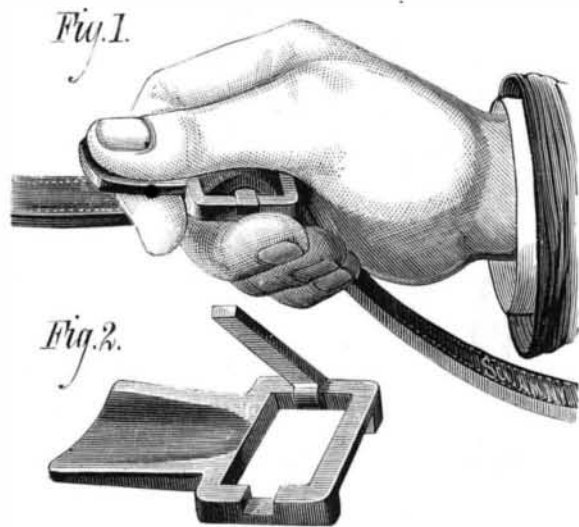
Prices of pig iron are bounding upward again, and, according to the *Hardware Reporter*, some of the more thoughtful iron-makers are feeling uneasy. They fear that values are going to reach a point from which they will drop with a thud one of these days. It was thought some time ago that the English market would regulate ours, but this is proving a delusion, as prices there are bounding upward to as giddy a height as they are here. In other words, instead of the English market controlling ours, the reverse is the case. The cause of the whole trouble is a scarcity of ore. If all the American furnaces were in blast they could meet the enormous demand; but many of them cannot blow in for want of ore—and we notice by our late English exchanges that the same is true with many furnaces in Wales.

A Safe Investment—Dividend Every Week.

The commencement of a year and the beginning of a volume are the best periods for subscribing for either magazines or newspapers. The SCIENTIFIC AMERICAN at this time embraces both these conditions. A new volume commenced with the new year, and any person not a subscriber into whose hands a copy of this paper may fall is invited to become a subscriber at once, and receive its weekly visits during the year 1880. Nothing will return a better income than \$3.20 thus invested. Dividends every week without any liability for assessments, payable at the home or office of the subscriber, free even of postage. Try the SCIENTIFIC AMERICAN for 1880.

NEW HAND HOLD FOR REINS.

The novel rein holder shown in the annexed engraving is to be applied to driving reins to afford the driver a strong



POWELL'S HAND HOLD FOR REINS.

hold upon the reins without undue pressure or cramping the hands. The device consists of a buckle conveniently arranged for attachment to the reins, and having a plate projecting from one side of it to be clasped between the thumb and forefinger, as shown in Fig. 1. Fig. 2 shows the device detached from the rein. This simple holder will add greatly to the comfort of driving, as it enables the driver to hold his reins without exertion, and it is especially valuable in cases of emergency, as it affords a firm hold that is impossible with bare straps.

Further information may be obtained by addressing the inventor, Mr. Hazael B. Powell, of Napoleon, Ohio.

NOVEL VISE.

The annexed engraving represents an improved adjustable vise recently patented by Mr. Fortunato C. Zanetti, of Bryan, Texas. The vise is capable of being placed and secured in any desired position to adapt it to different kinds of work, and to hold it in a convenient position for the workman. The lower end of the fixed jaw is provided with an arm projecting backward, and having a spherical socket for receiving a ball on the end of a fixed standard. The spherical socket is made in two parts, one being an integral portion of the vise, the other being secured to it by screws, and the two parts are capable of being drawn tightly down upon the ball by a clamp screw passing through one part into the other.

In the lower end of the fixed vise jaw there is a socket for receiving a standard having a convex foot which rests on the bench which supports the vise. This standard is adjustable, and is held in place by a set screw. When the vise is set in any desired position the standard is drawn out until it bears upon the bench or table, and assists the ball and socket joint in sustaining the weight and strain of the vise and the work.

Practical mechanics who are often obliged to work at a vise in an inconvenient and uncomfortable position will appreciate the advantages of this vise.

Mystery in Mechanics.

The Boston Journal of Commerce justly observes that there is a class of mechanics who affect great mystery about their work, and appear to imagine they can convey the impression that there is something occult or hidden in the processes they use and the materials they employ. Inventors are peculiarly sensitive about making known what they intend to do or the way they intend to do it, as though the world stood agape, ready to wonder and admire as soon as the letters patent were issued. Perpetual motion mongers are justified in keeping secret their experiments—they usually keep secret the result. But in nine cases out of ten the inventor could obtain the money assistance he requires simply by trusting his proposed improvement in detail to judicious friends, and he might with safety

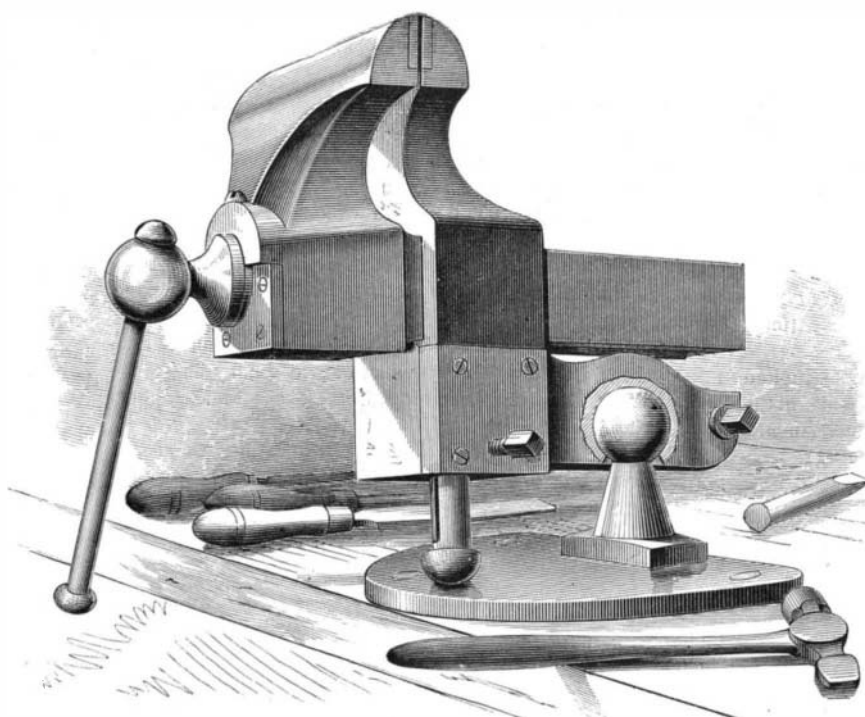
and advantage frequently take a brother mechanic into his confidence.

A short time ago a carpenter, in assisting to move some heavy machinery, had occasion to go into a room where the soldering of preserving cans was being done. He wanted to bore a hole through the floor through which to pass an eyebolt. He was refused admission until he solemnly promised not to notice the work which, with some handy appliances, was performed very rapidly. A visitor to a white lead manufactory was refused admission to a room where the pig lead was cast into sheets previous to being acted on by the acid. Yet there was absolutely no secret in it. The melted lead was simply thrown in small quantities on a sort of shovel of sheet iron, where it congealed to a thin film. The worsted braid used largely for the trimming of ladies' dresses a few years ago is as smooth as silk, without fuzziness, although the yarn is full of projecting fuzz. A certain company kept its process a great secret, but an examination of their braid under the microscope showed it was simply singed. Some temperers of steel profess a great secret in the preparation of their hardening pickle, a secret as patent as though described on a page.

There are very few manipulations or manufacturing processes which are truly secrets, and in many of these cases the secret consists in the quality of the material used, a material perhaps not readily obtainable otherwheres. If a secret process involves much mental calculation or expertness of handling, a chance visitor must have rare observing faculties if he can carry it away with him and reproduce it at will from his memory. The laws of the science of mechanics are open to all investigators, and what one man has learned of them may be learned by another man. It is an absurd and ridiculous pretension generally that assumes that one man knows alone what many are anxious to learn, that the finished article carries no suggestion of the processes through which it has passed, and that on one man's will and life depends the success of some important manufacture.

Singular Case of Lightning Stroke.

A paper was read at a late meeting of the Clinical Society, London, by Dr. G. Wilks, of Ashford, on a remarkable case of lightning stroke, which occurred on June 8, 1878. A farm laborer was struck by lightning while standing under a willow tree, close to the window of a shed in which his three fellow workmen had just taken shelter from a violent storm of rain. His companions found the tree partly denuded of its bark, and the patient's boots standing at its foot. The patient himself was lying on his back two yards off, and though he was fully clothed previously, he was now naked, with absolutely nothing on except part of the left arm of his flannel vest. He was conscious, but much burnt, and his leg was badly broken. The field around was strewn with fragments of the clothing; the clothes were split or torn from top to bottom, the edges of the fragments being often torn into shreds or fringes; they only showed evidences of fire where they came in contact with metal, such as his watch and the buckle of his waist belt. There were no laces in the boots. The left boot was torn and twisted into fantastic shapes, but the sole was uninjured, and there were no signs of fire upon it; the right boot had the leather much torn and the sole rent and burnt. The watch had a hole



ZANETTI'S IMPROVED VISE.

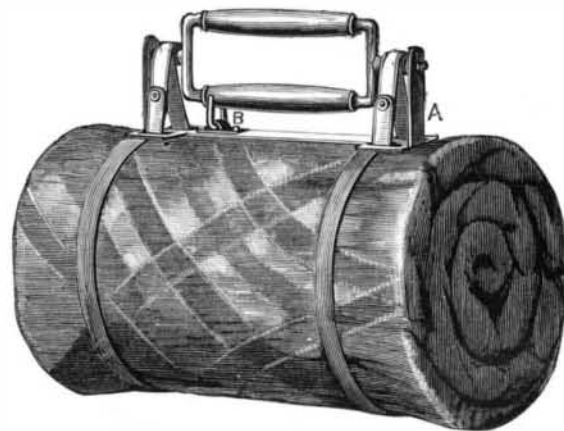
burnt through the case, and the chain was almost entirely destroyed. The stockings were split down the inner side; the hat was uninjured. The patient stated that he was struck violently on the chest and shoulders, became enveloped in a blinding light, and was hurled into the air, coming down on his back, "all of a crash," and never losing consciousness. The hair of his face was burnt, and the body was covered with burns. Down each thigh and leg was a broad crimson indurated band of burning, passing

along the inner side of the knee, and ending below the left inner ankle and the right heel; a lacerated wound, with a comminuted fracture of the os calcis. The bones of the right leg were fractured, and the tibia protruded through the skin in the course of the burn. He was discharged healed twenty weeks after the occurrence. Dr. Wilks remarked on the almost complete exemption of the nervous system and on the probability that the clothes being wet acted as good conductors, and so diverted the electric current from the great nervous trunks, thus saving the man's life.

IMPROVED SHAWL STRAP.

The accompanying engraving shows an improved shawl strap patented by Mr. Max Rubin, of New York city.

Two endless leather straps pass through slots in the frame, A, and through slots in the shanks of the handles. The shanks being pivoted in the frame, A, it will be seen that by



NOVEL SHAWL STRAP.

turning the handles the straps will be wound up, and will consequently bind whatever is inclosed by the straps. A catch, B, holds the handles in position after the straps are wound.

MISCELLANEOUS INVENTIONS.

Mr. James P. Bell, of Pleasant Grove, Ga., has invented an improved hame fastener, simple and inexpensive in construction; easily fastened and unfastened, and not liable to become unfastened accidentally.

An improvement in sole-edge burnishers for boots and shoes, patented by Mr. Samuel Jacobson, of St. Peter, Minn., consists of an ordinary shoemaker's burnisher, to the handle of which a spring is attached in such a manner that by means of a set screw it can be made to cover more or less of the burnishing surface, according to the thickness of the sole. The part that burnishes the upper edge of the sole is provided with a small adjustable tongue.

An improvement in sleds, patented by Mr. James H. Dennis, of Newark, N. J., consists in providing a sled frame with a hand steering device, and sweeps arranged in rowlocks.

An improved window shade attachment has been patented by Mr. Elliott Metcalf, of Findlay, O. The object of this invention is to provide a simple and effective device for suspending and opening and closing the blinds or shades known as "Venetian shades for windows."

An improved door bell has been patented by Mr. Joseph B. Richard, of Columbus, O. The improvement consists of a curved lever pivoted to the spindle of the bell knob, and which acts on a hammer that strikes the gong when the bell knob is pulled outward. The mechanism is compact, simple, and not liable to derangement.

Mr. Jesse H. Allison, of New Vienna, O., has invented an improved plaiting machine, consisting of tubular side frame, end strips, and wires, combined to form a desirable and efficient instrument.

An improvement in the manufacture of window shade cloth has been patented by Mr. Bonheim Birnbaum, of New York city. This invention relates to a new process of manufacturing decorated window shade cloth; and it is designed for producing cloth with a surface ornamented in imitation of moire antique, figured damask, watering, or any other design made by raising engraved lines on a lustrous surface.

Mr. John F. Hause, of Woodstock, Ga., has patented improvements in the construction and operation of tuyeres for blacksmiths' forges, the object of which is to procure a more perfect control of the blast, and to prevent ashes, cinders, dust, etc., from falling into the orifice of the blast pipe.

Mr. C. R. Elliott, of Golden, Col., has patented a simple and convenient device for fastening bags and sacks that may be used without sewing or otherwise permanently attaching it. This device is adapted for grain and ore bags, particu-