

that brings in a multitude of minute animals upon which the worm feeds. The serpula is furnished with an arrangement for stopping its tube when it wishes to retire; this is a conical appendage developed from one of the little antennæ, which hangs from the tube and is called the operculum. One specimen in a tank has two kinds of plants growing from its operculum. When first placed in the tank the serpulæ are very sensitive, and pop into their tubes at the least jar. Near the serpula is shown the common shrimp, which is regarded as an excellent scavenger of the tank. The shrimps are so transparent that the food can be seen in the stomach, and we can almost trace the process of digestion.

Attached to the lower part of the rock work are more of the brown, and some of the beautiful little white, anemones. It is almost impossible to describe their form, as they are so changeable. At times hanging from the rock to which they are attached, the tentacles drooping like the petals of a withered flower, again the body stands erect, the tentacles extended to their utmost limit, and in constant motion. Suddenly a part of the body will be contracted as if a string had been drawn tightly around it, and sometimes there will be two or three of these constrictions at the same time. Again, they will assume the form of a rose, and one never tires of watching them. Some days they appear of an opaque white or cream color; an hour later we find them so nearly transparent that the interior divisions of the body can be clearly seen.

At the lower left hand corner is shown a mussel (*modiola plicatula*), and above it the soft clam (*mya arenaria*). The black mussel (*mytilus edulis*) is not shown in the drawing, but is a useful member of the aquarium family, as it lives upon the little animalculæ that sometimes become so plentiful in the tank as to obstruct the view. The star fishes are curious and interesting, but are hardly safe for the aquarium, as they are ravenous eaters, and will probably destroy the shell fish we most wish to preserve. They have a singular way of feeding. Placing themselves upon the animal they wish to devour, the digestive sac is turned inside out so as to enclose their prey, and the animal is sucked from its shell.

The hermit crab (*pagurus longicarpus*) is shown inhabiting the shell of a *tritia trivittata*. These curious little crabs have no armor of their own, and so take possession of any mollusk's shell that happens to fit them—usually one of the *buccinum* family. The rock crab should not be introduced, unless it is a very small specimen, as they over turn the rock work, and are blessed with an appetite that is never satisfied. The spider crab (*labinia canaliculata*) is interesting and less destructive. It loves to dress itself with bits of plant, or anything that comes handy, and then parades with as much evident satisfaction as any dandy.

At the extreme right of the picture is shown a bunch of *tubularia*. This plant-like object is formed of a number of tubes branching in all directions; the end of the tube appears a flower, its petals opening and closing constantly. These heads live a few days, then drop from the stem to be replaced by a new head that may be seen slowly traveling up the tube. The sea horse (*hippocampus Hudsonius*) is another strange little animal that we should possess if possible. Its natural food is the *serpula* which it sucks from the tubes, but it will feed upon the soft part of a shrimp or clam. At the top of the illustration is shown a branch *sertularia*. In a picture of this kind only a faint idea can be given, as the beautiful little animals that have formed it are scarcely discernible with the naked eye.

Nearly all the animals we have named can be found on our own coast. Those who prefer to do so can purchase them of dealers. In conclusion we would say that the care of a marine aquarium can be only a source of pleasure to any one who loves Nature. These animals have been drawn from a glass jar holding about twelve quarts of water. For many months it has supported twenty or thirty anemones, besides many other animals, and has always been in a perfectly healthy condition. The only care required was now and then the addition of a little fresh water to replace that evaporated.

#### A Purple Cyanide as a Dyestuff or Pigment.

When cyanide of potassium is added to an acid solution of a copper salt, a red color is produced which has already been mentioned by different observers. The substance formed is very changeable, at least in the liquid where it is formed. It is decomposed by acids, alkalis, cyanide of potassium, and even decomposed spontaneously, the color changing to yellow. It is precipitated by insoluble cyanides; hence when a dilute acid is added to the red solution, the dye is at once thrown down along with the cyanide of copper. If the precipitate thus obtained is treated with sulphuretted hydrogen, it is decomposed and the substance set free. This substance can combine with iron, like cyanogen, so as to conceal the properties of the iron. This compound is very permanent, and has lately been studied by G. Bong, who gives the following directions for its preparation:

Cyanide of potassium is added in excess to an acid solution of a copper salt until the red color at first formed has disappeared, when a ferric salt is at once added. On the addition of the iron salt, of course, a copious precipitation of Prussian blue takes place, and the liquid again turns to a dark purple-red. To separate the coloring substance from the alkaline salts in the liquid, a dilute acid is added which precipitates it and the cyanide of copper. This precipitate is combined with the Prussian blue, which also contains a considerable quantity of the coloring substance, and then treated with a boiling solution of carbonate of ammonia, in which it dissolves. As the cyanide of copper also goes into solution, it is separated by again precipitating it with an

acid and treating the precipitate with sulphuretted hydrogen. The coloring substance thus liberated now contains a certain amount of hydroferrocyanic acid, which is removed after neutralization by acetate of lead. It is now filtered, and the purification completed by precipitating with a silver salt and treating the precipitate with sulphuretted hydrogen.

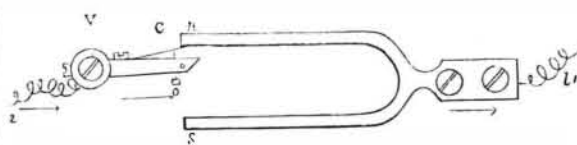
This purple-colored compound crystallizes very indistinctly. To determine its composition Bong precipitated it with acetate of copper. When dried at 212° Fah., the rose-colored precipitate had the following composition: Carbon 24.31, nitrogen 28.04, hydrogen 1.88, iron 13.66, copper 17.67, oxygen 14.44. Total, 100.00. These numbers correspond to the formula  $Cu, Fe Cy_4 (HO)_4$ .

This substance is likewise precipitated by salts of zinc, mercury, and silver. All these precipitates are pink or purple, very beautiful, and of remarkable brilliancy. They are soluble in alkalis. Iron salts yield no precipitate, nor do lead salts except in the presence of ammonia, when a blue-violet precipitate is formed. When treated with sulphuretted hydrogen, these precipitates yield purple-red and acid liquids, which undergo change in the air, especially if warm, forming Prussian blue. When these liquids are neutralized with alkali, purple compounds are formed, which are permanent in the air, soluble in water, slightly so in alcohol, and insoluble in ether. Their coloring is exceptionally great. These pigments will unite with ferrocyanides, and in its preparation such a compound is produced in considerable quantity; it is likewise of a purple color, and gives a rose-colored precipitate with acetate of lead. Both alone and in this compound it is very permanent; it resists the action of sulphurous acid, concentrated and boiling alkalis, and dilute acids, but is rapidly destroyed by chlorine and nitric acid. If this pigment could be prepared cheaply enough, it would probably be used with advantage in the arts, on account of its resistance to chemical re-agents and light, the variety of its shades, and its brilliancy. It does not color fibers directly, but can readily be fixed on them from slightly acid solutions, if they are previously mordanted with metallic oxides.

#### MUSICAL TELEGRAPHY IN PARIS.

It is now proposed to utilize the La Cour system of musical telegraphy in Paris, in connection with the project of M. Bourbouze of sending telegraphic messages without wires. M. Bourbouze conceived the idea, during the siege of Paris in 1870, that the river Seine might be used as a conductor, so that the beleaguered city could hold communication with the provinces without the enemy suspecting the fact. Tests actually proved that the plan was feasible, but before it could be carried into practical effect, the armistice was declared, and so the device became unnecessary. M. Bourbouze has recently again brought forward his idea, and proposes to use the water in the mains and pipes of the city as a conductor. Every one having the necessary simple apparatus could

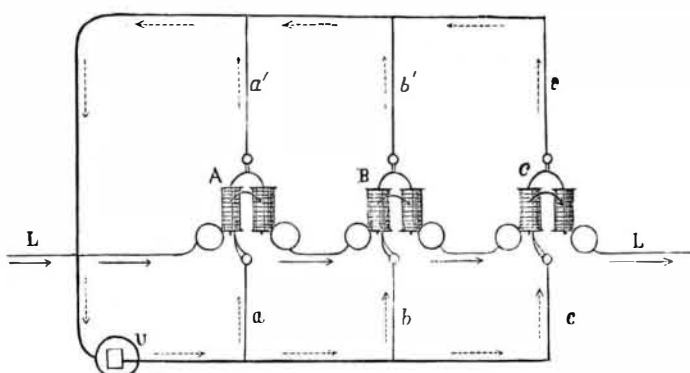
Fig. 1.



then learn to telegraph for himself. Each house would be a station, and any citizen could converse with friends scattered in all parts of the city without stirring from his own domicile. To this somewhat sanguine scheme there is one fatal objection; it is that the result would be a new Babel; for hundreds would telegraph simultaneously, and unless each despatch had some easily distinguishable characteristic, inextricable confusion would follow.

As stated in the beginning, it is suggested that M. La Cour's musical telegraph may furnish a means of transmitting distinguishable despatches. The invention was described recently in the SCIENTIFIC AMERICAN SUPPLEMENT, but the annexed engravings, which we take from *La Nature*, will serve to render its mode of operation more clearly comprehensible.

Fig. 2.



When the most common phenomena of acoustics are recalled, for example, the transmission of a melody played by an orchestra which is perceived by an entire audience at long distances from the players, it is not easy to analyze the effect. Physics tell us that the sounds produced by each instrument have their own tonality and their distinct measure; in other words, the notes from a violin, a flute, or a trombone correspond to different vibrations, transmitted through the atmosphere and characteristic for each note. Besides, the rhythm in the succession of notes, which makes the mea-

sure in music, produces the cadence, constituting, with the tonality and the timbre of the instruments, the *ensemble* of the air which affects us. The transmission is so precise that the ear, from the medley of sounds, instantly distinguishes a discordant or untimely note.

Suppose now a series of three tuning forks vibrating continuously and producing, respectively, 100, 300, and 500 vibrations per second. It is easy to perceive that each fork may interrupt and establish an electric current with intermissions regulated by the number of its vibrations. If, then, there be three other forks identical with the first, each set being located at an extremity of the conductor between them, the trio at one end will affect those at the other; and further, if one fork be impressed with a cadence which does not coincide with its regular vibrations, then its corresponding fork will likewise emit the same discordant sounds.

The above very briefly states the principle of the invention, but it is sufficient to show that the indefinite multiplication of despatches over the same conductor is feasible, each current, moreover, being distinctly individualized.

Fig. 1 represents the device for transmitting the vibrations of the fork to the conductor. The arm, *n*, of the fork vibrates in contact with the platinum tongue, *c*, the position of which is regulated by the screw, *v*. A current entering at *l* is closed, when the extremity, *n*, touches the plate, *c*, and is open when contact is broken. Nothing further is needed than the opposite wire, *l*, connected with the fork as shown.

Fig. 2 shows how the character of an intermittent current is recognized. *L L* is the main line traversing the station. *A B C* are three forks similar to those at the point of transmission. The fork, *B*, for example, which is in unison with the current, will be thrown into vibration while the rest will remain silent. This fork, *B*, will then touch the platinum plate, *c*, Fig. 1, and will establish in the circuit, *b b'*, a local current of the battery, *U*, the poles of which are respectively applied at *a b c* and *a' b' c'*. The local current will likewise be intermittent, according to the measure of the fork, but by reason of the velocity of the pulsations it will manifest itself in many cases as a constant current, either by operating a chemical decomposition, or by deviating a magnetized needle, or by exciting an electro-magnet.

#### The New Hampshire Greenstones.

The greenstone formation of New Hampshire covers a large area in the northern part of the State, and is referred by Professor Hitchcock to the Huronian age; the rocks are generally green, with remarkable uniformity in their composition. Yet they are inter-stratified, apparently not by volcanic eruption, as they appear to have accumulated in quiet waters.

Of the group of greenstones, the most prominent member is metamorphic diorite, which varies in its texture in different localities, some of the specimens being so coarse as to enable the crystals to be mechanically separated. A hydrous rock, metamorphic diabase, is also very common, in which chlorite is a prominent ingredient, imparting a light green color. In this rock, organic remains, such as a tabulated coral resembling a *chonetes*, are found, and Mr. George W. Hawes states that there is little doubt but that it is a fragment of a rhizopod mass or foraminifer. The presence of rhizopods is additional evidence of the sedimentary origin of these rocks, and it suggests a source for the lime of the labradorite and other mineral constituents. Chlorite schist is also found in these greenstones; it is of a light green color, and gives off water when heated. Twelve per cent of this mineral consists of various oxides of iron. Dolomite and argyllite are also found in the formation, the former containing: Silica 40.25, iron oxides 15.82, lime 10.31, titanate acid 6.53. In the latter, silica 60.49, alumina 19.35, iron oxides 6.46, and magnesia 2.89 were found.

#### Bat Guano.

That a little creature, not very common in the North, could congregate, in sufficient numbers to make extensive deposits of excrement which have a commercial value, seems almost incredible; but in numerous caves, from Virginia to Texas, are found deposits of this material sometimes reaching 20,000 tons in extent, and yearly increasing. During the war it was thought to extract niter from it for powder making; but though the manufacture was somewhat successful, the nitric acid was present in such small quantities as to render it so expensive as to be abandoned at the close of the war. The material has been used as a fertilizer to a slight extent, and is found to exert considerable influence on the crops treated. The attention of Mr. McMurtrie, chemist to the Department of Agriculture, having been called to the matter, analyses have been made of samples collected. These are all of a similar light to dark brown color, according to the moisture, except those containing much insoluble matters, which resemble soil, of which they probably largely consist. The physical

condition when air-dried is excellent, both for handling and application, being finely pulverulent. The analyses fairly represent the average composition, which, according to the valuations of Professor Goessmann, the Massachusetts State Inspector of Fertilizers, adopted by the department, show them to possess a value of from \$15 to \$55 per ton for use as fertilizers. The values compare favorably with those of fish fertilizers, and even of Peruvian guano. Microscopical examination shows the material to consist largely of the hard parts of insects upon which the bats feed. Mr

McMurtrie wisely concludes: "With these facts before us, we may readily recognize the importance of the development of these deposits in the South, where fertilizing materials are so much needed and are so costly, and especially when they may be obtained for the mere cost of removal."

#### Naval Items.

##### NAVAL ENGINEER CORPS GAZETTE.

Chief Engineer George Sewell, Wm. G. Buehler, and Ezra J. Whittaker, Passed Assistant Engineers J. P. Kelley, H. L. Slosson, John D. Ford, E. T. Philippi, and Richard Inch, and Assistant Engineers William Rowbotham and George Cowie, have been detached from duty and placed on waiting orders.

August 9. Passed Assistant Engineer John F. Bingham's orders to the Tuscarora, North Pacific Station, have been revoked, and he has been ordered temporarily to the Navy Yard at Mare Island, Cal.

#### To Remove Nitrate of Silver Stains.

The following method of removing indelible ink and other silver stains, without the use of cyanide of potassium, is given by Grimm in the *Polytechnisches Notizblatt*: Chloride of copper is first applied to the tissue; it is next washed with hyposulphite of soda solution, and afterwards with water. It is said that this may be employed on colored woven cotton tissues. For white cottons and linens, dilute solutions of permanganate of potash and hydrochloric acid, followed by the hyposulphite of soda and clear water, is preferable. For cleaning the hands, we use iodine dissolved either in iodide of potassium or in alcohol, following by aqua ammonia.

#### Hypochlorite of Alumina in Bleaching.

Dr. E. Jacobsen proposes to use hypochlorite of alumina for purifying bone grease, a gentle heat being employed. This salt is prepared by the mutual decomposition of alum or sulphate of alumina and bleaching powder. A saturated solution is made of the former, and to it is added a corresponding quantity of chloride of lime as a milky liquid. The bleaching is performed, not by the chloride, but by the oxygen liberated as ozone, and the coloring substances are precipitated as lakes by the alumina.

The following is said to be a Texan practice for training sheepdogs: A pup is taken from its mother before its eyes are opened, and put to a ewe to suckle. After a few times, the ewe becomes reconciled to the pup, which follows her like a lamb, grows up among, and remains with the flock, and no wolf, man, or strange dog can come near the sheep; and the dog will bring the flock to the fold regularly at half past seven o'clock, if he is habitually fed at that hour.

#### NEW BOOKS AND PUBLICATIONS.

**THE HOUSEKEEPER'S FRIEND**, a Practical Cook Book. Compiled by a Lady of Zanesville, Ohio, and Sold for the Benefit of the Home for the Friendless. Price \$1.50. Zanesville, Ohio: Sullivan and Parsons, 87 Main street. New York city: Wiley & Sons, 13 Astor place.

This is a collection of recipes, selected with discretion from a great variety of sources. It is a handy and useful volume, and is sold at a very moderate price; so that purchasers will receive value for their money, and will also aid a charitable institution, the nature of which should enlist the sympathies of all classes and creeds.

**THE AMERICAN IRON TRADE IN 1876 POLITICALLY, HISTORICALLY, AND STATISTICALLY CONSIDERED.** By James M. Swank, Secretary of the American Iron and Steel Association. Philadelphia, Pa.: The American Iron and Steel Association, 265 South Fourth street.

We took up this book of 200 pages, in the hope of finding some account of improvement in the condition of the prostrate iron industry, some probability of its thousands of toilers receiving fair wages, and some ground for believing that 30 years of political bolstering has not finally extinguished the trade. We find nothing of these things; but instead, there are 114 pages of censure on the government of Great Britain for its conduct (in bygone times) in dealing with its own interests, and also for its illiberal conduct in now admitting American manufactures duty free. We think that our producers who are now seeking a market in England will hardly concur with Mr. Swank and his fellow theorists in believing that every interest is to be sacrificed to the greed of the particular ring which he represents.

**STRUBLE'S WEBFOOT MAGAZINE**, devoted to Literature, Science and Art, Commerce, etc. Price \$2 a year. Portland, Oregon: Wallace R. Struble.

This new comer into the world of periodical literature draws on a variety of authorities for his articles, one of which, "Suspended Animation as a Preserving Agent," is selected from our own pages, no credit being given for the same.

**LOUISIANA AS IT IS: its Typography, Resources, etc.** By Daniel Dennett. New Orleans, La.: Eureka Press, 33 Natchez street.

A well compiled handbook of the chief features, agricultural, mineral, and climatic, of all parts of the State of Louisiana.

### Recent American and Foreign Patents.

#### NEW HOUSEHOLD INVENTIONS.

##### IMPROVED DOOR LOCK.

Charles Guild, Piedmont, Wyoming Ter.—This invention is a lock having a series of vertically sliding tumblers with beveled ends, the same being adapted to coincide with a notched rib attached to the bolt. It also relates to the construction of the key with removable interchangeable wards secured by a clamp.

##### IMPROVED CHAIR.

Aaron Rice, Fitchburg, Mass., assignor to Walter Heywood Chair Company, same place.—The object of this invention is to improve the construction of the backs of chairs, especially those known in the trade as ladies' crown dining chairs and York dining chairs, in such a way as to make them less liable to come apart, and thus stronger and better. It consists in an improved chair, in which the upper ends of the back posts are connected with the ends of the back top with a tongue and groove joint. The construction prevents the back posts and the back top from working loose and coming apart, and thus makes the chairs stronger and more durable, without increasing the cost of manufacture.

#### HOSE ATTACHMENT TO WASH BASIN CONNECTIONS.

Daniel G. Trembley, Brooklyn, N. Y.—The object of this invention is to provide a simple means for attaching fire hose to the wash-stand pipe or faucet, so that, in case fire breaks out in a room having water from the street main, water can be quickly applied for stopping it. The connection is perfectly made with the faucet, but it may be made with the pipe below the basin. By this attachment, fires may often be prevented which would otherwise get too strong to be extinguished by the ordinary appliances before they can be brought to bear. The hose connection may be connected to the pipe below the basin.

#### IMPROVED FOLDING CHAIR.

George W. Parker, Gardner, Mass.—The object of this invention is to furnish an improved chair, so constructed that it may be easily folded into a compact form for storage or transportation, and which, when opened out for use, shall be strong and firm. With this construction, in folding the chair, the arms and the seat are turned up. The front posts and the rockers are then turned up forward into position, and the chair is folded. The chair is unfolded by reversing this operation.

#### IMPROVED PETROLEUM COOKING STOVE.

Frederick Hildebrandt, New York city.—This is a petroleum cooking stove that rests directly on the lamp, and produces the complete consumption of the gases of combustion of the flame, by an increased supply of air, preventing the smelling of the stove, and furnishes an economical cooking stove. It consists of a perforated sheet metal body resting directly on the lamp, and supporting an interior chimney that is connected at the top by an inverted conical diaphragm with the body, and provided at the base with a burner-encircling cone inside of the chimney to conduct the air both at the inside and outside of the cone to the flame of the burner. The combustion takes place within the chimney and above the base cone, so as to draw the heat upward away from burner and lamp, keeping the body of the stove cool, and admitting the direct position of the stove over the lamp without requiring an insulating air space or cooling water chambers.

#### IMPROVED LOCK FOR DOORS.

Theodore Hendricks, New York city, assignor to himself and William E. Price, Brooklyn, N. Y.—This invention consists in providing the split or double spring of a tubular lock with hook ends that differ in length, to be applied in connection with the catch plate. The split spring is attached to the side of the bolt by a stud, and is raised by the key without raising the bolt to engage and disengage the hooks with the catch slots for fastening the bolt. This spring is made in two parts, one of which has a longer hook or catch than the other, to be raised by a bit, and there is a stud on the bolt to prevent it from being raised by a key not having the ward. Shoulders in the side of the bolt constitute forward and backward stops, and act against a stud which bears against the side of the bolt to keep it in its place.

#### IMPROVED WASHBOARD.

Westly Todd, Wauseon, Ohio, assignor to himself and H. H. Williams, same place.—This invention furnishes a washboard which shall be so constructed that the gritty water from the soiled clothes may run off at once, which will facilitate the washing, and will produce a stronger and more durable board than those constructed in the usual way. This washboard has on its back a zinc facing, provided with parallel corrugations, beginning at each side and meeting at an angle in the middle, a groove being arranged at said angle.

#### IMPROVED FIREPLACE.

Molesworth B. King, Chicago, Ill.—This is an air-heating contrivance with a fire grate for heating upper rooms; and consists of a fire grate, below which is an ash sifter over the ash pit, for sifting the cinders from the ashes as they fall into the pit, and having a rod extending out at the front or side of one of the joints for working it. There is a blower, in which a damper admits air to prevent the blaze from striking the enameled front of the fireplace, and for admitting a regulated supply of air over the fire bed. A pipe admits fresh air from outside to the space under the fire grate, for supplying air for combustion. The inventor also proposes to make a hollow handle to the blower, with perforations, to allow the air to circulate through it and keep it cool.

#### IMPROVED IRONING APPARATUS.

Daniel Bennett, Chillicothe, Ohio.—This invention consists of a reciprocating iron, with contrivance for heating it by steam, which is admitted to and exhausted from it, while running, by pipes having an extension joint, with stuffing box working correspondingly with the iron; and also of a work table having vertical and lateral reciprocating movements, in combination with the reciprocating iron, to present the work to the iron. The work table is mounted on a support, which is adjustable laterally in the support by a lever, to allow the goods to be shifted along the iron as the work progresses; and it is mounted thereon by springs which yield to the inequalities of the goods, and press them up to the iron by an elastic pressure calculated to enable the iron to work easily and pass the goods uniformly.

#### NEW WOODWORKING AND HOUSE AND CARRIAGE BUILDING INVENTIONS.

##### IMPROVED WEATHER BOARDING.

Thomas Reynolds, East New York, N. Y., assignor to himself and Jacob W. Erreger, of the same place.—This invention consists of the siding, roof boarding, and other outside clapping of buildings, tongued and grooved in the lap to make tighter and more efficient joints, for preventing the air from blowing in and out, and also to prevent dampness from working through. Siding has been rabbet jointed, but such joints, this inventor claims, are not sufficiently effectual for excluding damp air and strong winds; and he proposes to employ this method in roof boarding as well as siding.

##### IMPROVED SCROLL SAW.

Peter G. Giroud, Brooklyn, N. Y., assignor to himself and Theodore L. Jabine, of same place.—The object of this invention is to provide an improved scroll saw for sawing the minutest work in wood, iron, and other materials, by providing a steady tension that keeps the saw blade at an even strain during its whole stroke, without interfering in the least with the driving power. This is effected by a saw blade, clamped securely in such manner that it may be put in or removed with great facility. The back of the saw blade is steadied along the table to work with great accuracy.

##### IMPROVED SAW-FILING MACHINE.

Gershom Wiborn, Manistee, Mich.—This invention consists of a head in which a frame is supported, in which the reciprocating file-carrying rod works, the said head being a solid block, with a bifurcated extension of one side forming a couple of legs, which straddle the saw, and fasten the head to it by set screws, and one leg carries an adjustable rod, which holds a gage, by which the position of the head is gaged from the collar of the saw arbor. The pivot connection of the reciprocating rod-holding frame is adjustable in the head, to regulate the inclination of the file to bevel the top of the tooth, and said frame is adjustable, to adjust the file for the bevel of the front of the tooth, so that the file may be fixed for making both of these angles without changing either of its inclinations.

#### IMPROVED MACHINE FOR DRESSING STAVES.

Adam Luckhaupt, Columbus, O.—This invention relates to a machine for manufacturing staves for beer kegs and barrels of all kinds, in such a manner that the wood is cut transversely to the grain, and not in the direction of the same, the wood being readily and without danger inserted into the machine, and quickly cut to the shape required. It consists of two series of cutters that are secured to shafts revolving in opposite directions, and adjusted at such distance as to cut the shape of the stave. The stave is secured to the clamps, prongs, or jaws of a weighted and swinging frame that runs in arc-shaped guides, being locked in vertical position, in connection with a sliding table or guard plate, and fed to the knives by releasing the locking device, and swinging the frame into horizontal position to expose the wood to the action of the knives. The finished stave is then released from the clamps and dropped, the frame being carried back to take up the next piece of wood.

#### NEW AGRICULTURAL INVENTIONS.

##### IMPROVED ANIMAL MUZZLES.

Rufus K. Blodgett, Morrison, Ill., assignor to himself and Henry M. Myers, of same place.—The first of these two inventions is an improved muzzle for calves and other animals, to prevent them from sucking other animals or themselves. It consists in the combination, with each other, of a part provided with a knobbed arm, and having a short perforated tenon upon its outer end, and a long tenon with two or more holes upon its inner end, the part provided with a knobbed arm, and having a hole or socket through its base, the open rings or links, and the plate having its upper edge turned over. The second invention furnishes a device for preventing calves from sucking cows, and for preventing cows and other stock from sucking themselves or each other. It consists of a muzzle formed of a suspended plate, hinged loops and a wire spring clamp. With this construction the muzzle will prevent the animal to which it may be applied from sucking itself or another, will allow the animal to eat and drink freely, and may be worn without pain or inconvenience.

##### IMPROVED CULTIVATOR PLOW AND HARROW.

Jacob Haynes, Basnettsville, W. Va.—The object of this invention is to furnish a machine for loosening up the soil and cultivating corn and other crops platted in hills and drills, and which shall be simple in construction and easily guided and controlled. The machine seems to be well adapted to the purposes for which it is designed, but it is too complicated to admit of description without engravings.

##### IMPROVED SEED PLANTER.

Henry O'Neal, Concord, Tenn.—The object of this invention is to furnish a planter, for planting cotton, corn, peas, and other seeds, so constructed as to enable the planting to be done in perfect check row, without previously marking the land. The machine which appears to be well adapted to the purpose for which it is intended, is too complicated for explanation without engravings.

##### IMPROVED STACK COVER.

George E. Tuck, Herbert Dorn, and James Steinson, Ridgway, Ja.—This invention consists in a conical stack cover, provided with a lifting ring at its apex. A cap of canvas or other approved material is constructed in conical form, and having a rope or cord around the base, with rings on it for hitching on the stay ropes to keep the cap in place, and stay the stack against the wind. The cap may be made of waterproof material, but probably ordinary canvas, with a coating of waterproof paint, will generally be used. A ring or loop is placed at the apex of the conical cap, so that the latter may be conveniently lifted with a rod or pole having a fork at one end, and then dropped over the grain or hay without the trouble of climbing, by ladder or otherwise, upon the stack.

##### IMPROVED PLOW FOR LAYING OFF LAND FOR TOBACCO.

John Preston and Charles W. Tennis, Millford, Ky.—This invention is an improved plow for laying off land and making the hills for tobacco, cabbages, and other plants cultivated by transplanting, so constructed as to open a furrow, roll the land, and mark the places for the hills. It consists in a wheel having diamond-shaped blocks attached to its face, in combination with a beam or frame and the plow, and in combination with guide arms, sliding band, and adjusting lever, the beam or the frame, and the plow.

##### IMPROVED PLOW.

Jacob Heckendorn, Ann Arbor, Mich.—In this plow, a skiver, jointer, or colter, is connected with the plow in such a way that its position will not be changed by the lateral adjustment of the beam, that it will leave space for the ready escape of rubbish, that it may be adjusted to work deeper or shallower in the ground, and will throw the rubbish into such a position that it will be covered by the furrow slice. With this construction, a skiver cuts a smooth, clean groove or channel, and throws the soil and rubbish in front of the turning furrow slice, so that it will be covered by said slice; and the plow beam may be adjusted without affecting the position of the skiver, and a large space will be left beneath to allow rubbish to pass off freely.

##### IMPROVED ANIMAL TRAP.

John H. Morris, Seward, Neb.—This invention is an improved trap for catching animals, for the entrance of stock yards, for the chutes through which cattle are loaded upon cars, and for other similar uses, which shall be so constructed as to remain open except when an animal may attempt to go out, and which will again open as soon as he desists from his attempt. It consists in the combination of the hinged gate and the tilting platform, with the end or ends of a passage, and in the combination of the second passage, the box, and the drop gate with the main passage, provided at one or both ends with a hinged gate and a tilting platform.

##### IMPROVED RIDING HARROW.

Isaac N. Harris and William H. Bowne, Pavilion, Ill.—This invention is an improved riding harrow, simple in construction, effective in operation, convenient in use, easily guided and controlled, and of light draft. The wheels revolve upon the journals of the axle. The axle is made long, so that the harrow frame may be received between the wheels. To the middle part of the axle is attached a frame which consists of two side bars, connected at their ends by two end bars. The tongue, to which the draft is applied, by which the harrow is guided, is attached to the axle and to the front cross bar of the frame. The harrow frame is made in two parts, halves or sections, each section consisting of six, more or less, parallel cross bars, to which the teeth are attached, and to which, near the ends of their upper sides, are attached two longitudinal bars. To the forward end of the longitudinal bars of each part of the frame are attached the lower ends of two chains which cross each other, and are hooked upon hooks attached to the middle and outer parts of the long cross bar attached to the front bar of the frame, consisting of the side bars. To the rear ends of the longitudinal bars of each part of the frame are attached the lower ends of two chains, the upper ends of which are attached to the middle and outer parts of the axle. By this arrangement of the draft chains the parts of the harrow frame are free to adjust themselves to the surface of the ground, however uneven it may be, and at the same time will be kept in their proper relative positions.