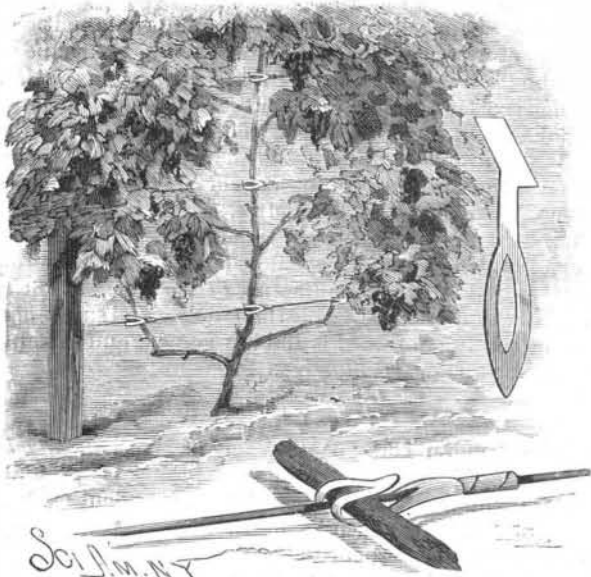


**A SPRING HOLDER FOR SECURING VINES.**

An extremely simple and easily applied device for holding vines in position is shown in the accompanying illustration, and has been patented by Mr. John Stangl, of Harlem, Clay County, Mo. It is cut or stamped from sheet metal, making a flat blank having



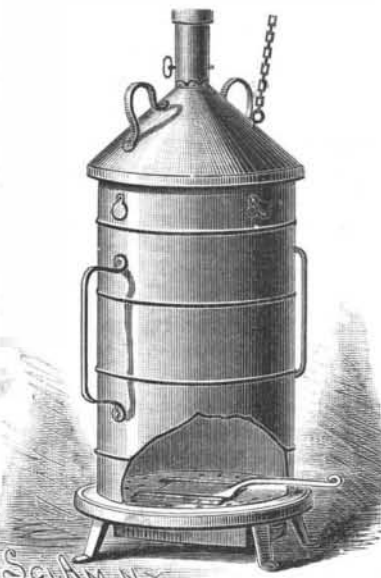
STANGL'S VINE SECURING DEVICE.

more or less spring, one end being elongated and with a longitudinal slot or opening, and the other end shaped to form flat angular lips. To apply this blank to a wire used to support the vine, it is bent to a clip or hook shape at its slotted end, and the lips are twisted or bent around the wire to form a closely fitting tube, the vine being introduced between the wire and the tongue of the hook, which thus makes a yielding holder. By the use of these holders a great deal of labor is saved as compared with the ordinary method of tying the vines by strings, while the device is more durable, and the holder being wide and flat, it cannot cut the vine.

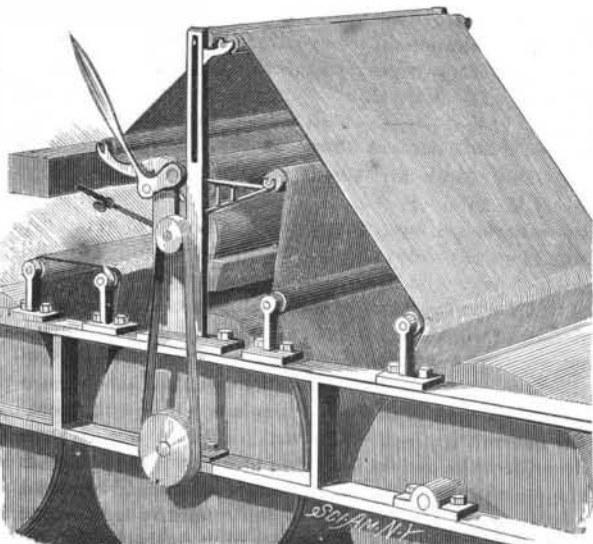
**AN IMPROVED STRAW BURNING STOVE.**

An easily manageable, inexpensive, and efficient stove for burning straw is shown in the accompanying illustration, and has been patented by Mr. Alonzo E. Smith, of Frankfort, Dakota Ter.

The drum of the stove is of sheet metal, and has a bottom plate fixed to it by a flange overlocking an outbent flange on the body, the bottom plate resting loosely on a base plate supported by legs in the usual way, and carrying an ash receptacle. In the bottom plate is an opening, registering with a similar opening in the base plate, and controlled by a damper, the handle to operate which extends out at the front. The draught pipe extending from the cone top of the stove passes telescopically into a draught flue, the cone top having a couple of handles whereby it may be lifted from the stove body, the pipe sliding in the flue, and



SMITH'S STRAW BURNING STOVE.



ANCIRA'S PAPER COLORING MACHINE.

the top itself supported, if desired, by a chain attached to an overhead support. The stove body may then be removed and recharged with fuel, and when returned to its place on the base, the fuel is lighted on the top, the cone top fixed in position, and the upper and lower draughts opened until the fire is well started, after which the dampers should be kept open only as desired to regulate combustion. The fire burns away from the side walls and leaves a core or cone of live embers, which may be made to last a long time and throw out a great heat.

**AN IMPROVED CAR STARTER.**

A car starting mechanism which may be readily controlled by the driver at either end of the car, to start the car either forward or backward, is shown in the accompanying illustration, and has been patented by Mr. Daniel Lynch, of Olmstedville, Essex County, N. Y.

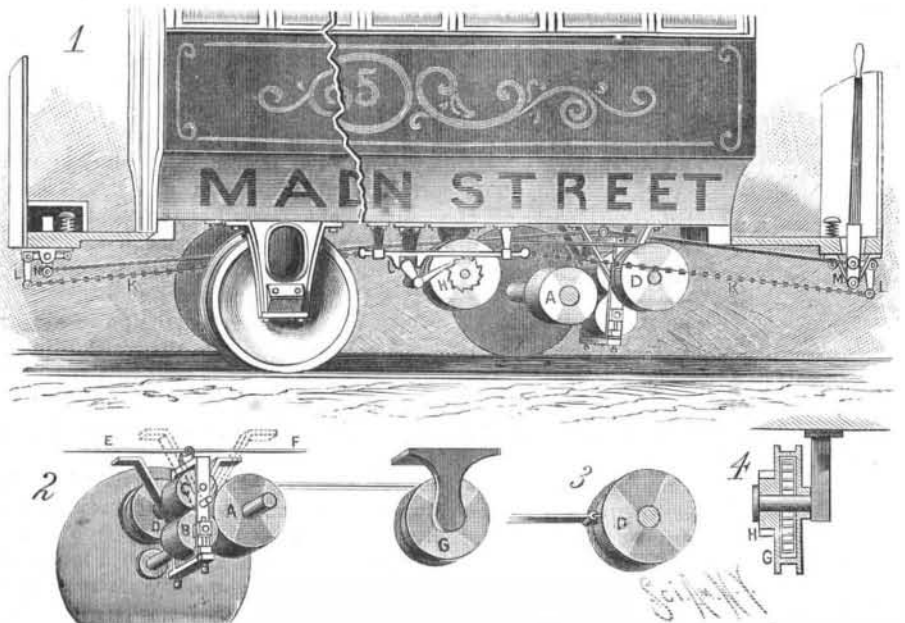
Fig. 1 is a perspective view, partly in section, Fig. 2 is a detail perspective view of principal parts of the mechanism, Fig. 3 shows the connection of the spring tension band with the barrel on one of the friction wheel shafts, and Fig. 4 is a vertical sectional elevation of the starter spring, with its barrel or case and attached ratchet wheel. To the axle of the wheels there is fixed a friction drum, A, against which friction wheels, B C, fitted in a frame, are adapted to act, this frame being so pivoted that either of the wheels may be brought into contact with the drum. On the shaft of the friction wheel, C, there is fixed a barrel, D, to which is connected one end of a band or belt, the other end being secured to the periphery of a case or barrel, G, within which is fitted a coiled spring, the case being journaled on a shaft fixed in a hanger pendent from the car body. One end of this spring is fixed to the shaft, and the other end to the case, to which also is fixed a ratchet wheel, H, with which a dog pivoted in a hanger fixed to the car body is adapted to engage to prevent the unwinding of the spring until the dog is tripped. The connection of the band with the barrel, D, is such as to allow the band to wind in either direction on the barrel. To the top of the pivoted friction wheel frame there are connected two rods, E F, extending to either end of the car, where they are connected with levers, M, whereby the contact of the friction wheels, B C, with the axle drum, A, is controlled. The dog pivoted to a hanger on the car body, and adapted to engage the ratchet wheel, H, on the spring barrel, G, is connected by chains, K, to elbow levers, L, at either end of the car, operated by foot plates attached to the platform.

In stopping the car, the driver pushes the vertical lever from him, thereby carrying the lower friction wheel against the friction drum, and also operating the barrel, D, which, through the belt or band, turns the spring case to store power therein, as the band is wound upon the barrel, D, and the ratchet wheel and dog prevent the recoil of the spring. The friction wheel also operating on the axle as a brake to stop the car. When the car is to be started, the driver, pressing upon the foot plate, operates one of the chains, K, tripping the dog from the ratchet wheel on the spring barrel, thus releasing the spring, and at the same time pulling the vertical lever toward him, brings the upper friction wheel in contact with the car axle drum, A, so that as the spring recoils, the band will be rewound on the spring case, G, and unwound from the barrel, D, and the direct pressure of the friction wheel on the axle drum will correspondingly contribute to turning the car axle and wheels and moving the car forward. If, in starting the car, it is desired to back it, the recoil of the spring may also be utilized for this purpose. When a car has only one driving platform, as is obvious, the rod, chain and lever connections need only extend to one end of the car.

**AN IMPROVED MACHINE FOR COLORING PAPER.**

The invention herewith illustrated provides a simple and effective machine for thoroughly coloring one side of a web or roll of paper, which has recently been patented by Mr. Gonzalo G. Ancira, of Guadalajara, Mexico. The machine has the usual revolving heated drying rollers, from the middle one of which the web is led up over a roller mounted in a bracket projecting from standards secured to the main frame, the standards carrying an attachment for coloring the web or paper on one side only. From this roller the web passes between the color cylinder and the pressure

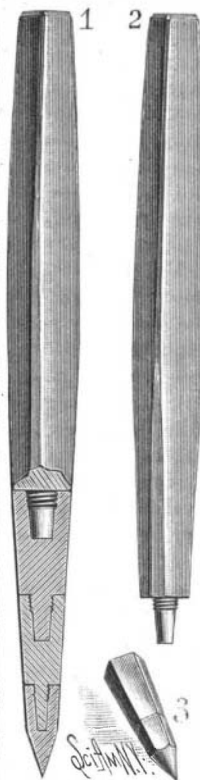
roller, thence around another roller, and upward under a tension roller, two further rollers conducting it to the drying cylinder. When it is desirable to interrupt the coloring process, the operator presses the lever



LYNCH'S CAR STARTER.

shown, whereby the pressure roller is swung upward and permits the web to rise out of contact with the color cylinder. The color supply from the fountain is regulated by means of a stop cock, and the tension roller has a free vertical motion in the slotted standards, whereby any slack is taken up that may occur between the rollers.

For further information relative to this invention address Mr. J. A. Medina, Nos. 104 and 106 John Street, New York City.



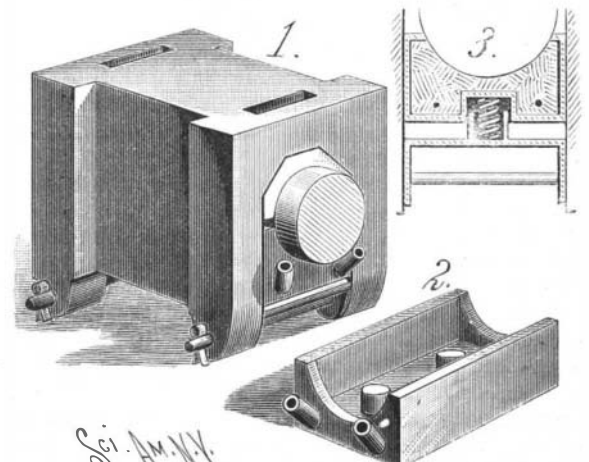
**AN IMPROVED NAIL SET.**

A sectionally constructed nail set, or nail set and punch combined, adapted to act upon variously sized nails, from spikes to brads, is shown in the accompanying illustration, and has been patented by Mr. Richard W. Trotter, of No. 449 Warren Street, Brooklyn, N. Y.

The upper or stock part of the tool is solid or entire, while its lower part is composed of any number of thimble-like extensions, each succeeding one transversely smaller than the other. With this construction one tool is made to take the place of several nail setting tools of different sizes. The lowermost section of all is made rounded, or conical and pointed, in the form of a punch tip, adapted to screw on to the lowermost shank, whereby the nail set may be used as a metal punch for making round holes.

**IMPROVED LOCOMOTIVE JOURNAL BOX LUBRICATOR.**

An improved lubricator for use in connection with journal bearings, and especially designed for use with locomotives, is shown in the accompanying illustration, and has been patented by Mr. Benjamin E. Dupont, of No. 117 Spring Street, Lexington, Ky. A case is made to closely fit the under side of the journal, the upper edges of the sides of the case having inwardly extending flanges to prevent the packing from being drawn out of the case, by the journal in its revolutions. Housings, in which are mounted spiral springs to hold the case against the journal, are fitted within the bot-



DUPONT'S LUBRICATOR.

tom of the case, and project downward to enter sockets carried by a supporting plate, as shown in Figs. 2 and 3, the supporting plate being arranged for connection with the lower open end of the journal box by means of depending apertured ears. The interior of the case is partially filled with waste or other fibrous material, to act as a conveyer of the lubricant to the journal, and the case and its springs having been properly adjusted in position, the lubricant is poured in through the tubes shown at the side, their internal apertures being near the bottom of the case, so that it will be impossible for any grit or cinders which may enter to come in contact with the journal. The springs constantly hold the lubricator closely to the journal at all points, and all the lubricant taken up has to pass through the waste or fibrous packing.

#### The Parcel Post.

The announcement is made that the Post Office Department has established a parcel post service between the United States and Mexico, and certain islands in the West Indies, by which packages weighing not more than four pounds and a fraction, by which we suppose is meant two kilogrammes, can be sent through the mails, and delivered to the person addressed upon payment of the custom dues. We are glad that so much has been accomplished, and hope that the extraordinary facilities enjoyed by those persons who have business with Mexico will call the attention of their neighbors, whose business relations are with other countries, to the inconveniences under which their transactions are carried on, as compared with the postal facilities enjoyed by the inhabitants of all other civilized countries. The absence of a parcel post service, both inland and foreign, is a disgrace to the government of the United States. The Postmaster-General seems, from his annual report, to have made a small effort to give his fellow citizens such use of the mails as is enjoyed by people abroad, but, as he naively says, the express companies opposed the idea so strongly that he was obliged to abandon it.

It is not unnatural that the express companies should oppose a plan for transporting packages by the mails at a small fraction of the rates which they demand for the same service; but there is something to be considered in the administration of a public office besides the interests of the express companies; and their opposition ought not to be regarded for a moment in comparison with the great benefits which would be conferred upon the people of the United States by such a postal service as, for instance, that of Germany. The greatest need of this country is, and will be for many years, cheap transportation. For want of this the California farmers are compelled every year to feed their pigs with hundreds of thousands of dollars' worth of fruit, worthy of the Gardens of the Hesperides, while the poor working people of Chicago and New York, to whom a Los Angeles plum or a Florida pineapple would be a taste of Paradise, must go without everything except the great staple articles, on account of the enormous cost of getting it.

In Germany, supposing it to be provided with such a varied climate as ours, the fruit grower would distribute broadcast in the cities return postal cards, containing blank orders for four, five, or six pound boxes of apricots, grapes, fresh figs, or oranges, which, on receipt of the slip, with money order, would be delivered by the next mail at the house of the consumer. Tons of fresh herrings, butter, and other articles are distributed daily in this way all over Germany, to the advantage of the fishermen and farmers, who find a sure market for the product of their toil, as well as of the citizen, who finds his tastes satisfied at a small cost, and of the public treasury, which can transport such articles profitably at a small fraction of express charges.—*Amer. Architect.*

#### Do You.

Do you take a squirt can in one hand and project a stream of oil as far as you can throw it, in order to save going to the hole itself?

If you do, don't do it any more. Willful waste is downright robbery.

Do you use an oil can at all for oiling, except on emergency, or for the moment?

If you do, don't do it any more, for much better lubrication can be had by automatic apparatus.

Do you keep an old tin coffee pot full of suet on the steam chest, and every time you have nothing else to do pour a dipperful into the steam chest?

If you do, stop it. Get a sight-feed cup, which will save you the labor of slushing the cylinder and save the cylinder and valve seats, the piston and follower, and all other places touched by the grease.

Do you feed up on the boiler until the water is out of sight in the glass, then shut off the feed, put in big fire and sit down in a dark corner with a four-horse brier pipe and smoke until you happen to think that may be the water is low?

If you do these things, you should notify the coroner that some day his services will be needed, but it is better to cease the practices mentioned before the coroner comes.

Do you stop leaks about the boiler as fast as they occur, or do you wait until the place sounds like a snake's den before you stir?

If you do, you waste heat, which is the same word as money, only differently spelled. Every jet of hot water leaking from a steam boiler is just so much money thrown away; and if it was your money, you would be bankrupt in a short time in some boiler rooms.

Do you take a screw wrench and yank away at a bolt or nut under steam pressure?

If you do, there will come a time, sooner or later, when you will do so once too often, and either kill yourself or some one else. Bolts and nuts are liable to strip or break if tampered with under pressure, and they never tell any one when they are going to do it beforehand.

Do you attempt to stop pounding in the engine by laying for the crank pin as it comes round and trying to hit the key once in a while?

If you do, ask the strap and connecting rod how it likes it, when you don't hit the key and do hit the oil cup.

Do you pack the piston by taking it out of the cylinder, laying it on the floor, setting out the rings, and then when the piston won't go into the cylinder, try to batter it in with a four-foot stick of cord wood?

If you do, you should reform, and pack the piston in the cylinder where it belongs, being sure to get it central by measuring from the lathe center in the end of the piston rod.

Do you put a new turn of packing on top of the old hard-burned stuff when the piston rod leaks steam?

If you do, you will have a scored piston rod and broken gland bolts some day. Packing under heat and pressure gets so hard that it cuts like a file when left in the stuffing box, and as soon as one begins to leak, all the old stuff should be pulled out and new put in its place.—*The Milling Engineer.*

#### Industrial Uses of Asphalt.

In view of the important extent to which asphalt is employed in connection with various industrial applications, the details communicated to the *Deutscher Bergwerksblatt* by Dr. Haussermann have a special interest at the present time. Asphalt (or bitumen) is generally understood to be a black pitchy substance of conchoidal fracture, fusible at a moderately high temperature, and remarkable for its peculiar odor, as well as its combustibility. Passing over the discussion of the external characteristics of asphalt and of its chemical properties, it is to a consideration of its technical uses that the author of the paper in question addresses himself, first laying down the distinction between artificial and natural asphalt. The latter is produced by the decomposition of organic substances, partly of antediluvian origin, principally consisting of carbureted hydrogens, more or less complex in their nature, and containing varying quantities of oxygenous or even nitrogenous ingredients.

This substance is sold in its natural state, or is obtained by melting certain bituminous rocks at the lowest temperature which will produce the desired effect. It is known according to its origin as Syrian, Dead Sea, Trinidad, Val de Travers, Bechelbronn, etc., asphalt; but two general divisions of natural asphalt are recognized, the Syrian and the American descriptions, the other kinds being of inferior commercial importance. The Syrian asphalt is distinguished from the American substance by its greater brilliancy and by its solubility. It is used for the best descriptions of lacquers, and has remarkable adhesive properties. American asphalt serves for application to iron, to protect it from atmospheric influences by a solid black coating. Where brilliancy is not required, the latter variety can, in all cases, replace the former. The Val de Travers asphalt is used for paving, mostly in combination with the artificial substance. Asphalt lacquer is produced by dissolving asphalt in turpentine oil or coal tar benzene. Continuous shaking at an ordinary temperature, or careful melting and string, form alternative processes, but the latter requires care on account of the danger of fire. It is recommended to dissolve the asphalt and extinguish the fire before adding the essences required, and if the heating has not been too great there is no reason to fear excessive volatilization of the solvents. With a view to reduce the price of the lacquer (while scarcely lowering its quality), it is a common practice to add in melting the asphalt as much as 30 per cent of ordinary resin.

According to the nature of the substances thus employed, various kinds of lacquers are obtainable from the same asphalt. Turpentine oil is, however, the best admixture to prevent any undesirable odor, and to insure rapid drying. Of the various kinds of coal tar benzene, the purified colorless description, with a boiling point of 194° F. to 302° F., comes nearest to turpentine oil in the results obtained. For inferior qualities of lacquer, tar oils with a higher boiling point may be used, but a slow drying and unpleasant smelling composition is produced. These properties will not, however, in all cases be an objection. The easily flowing distillates obtained from crude petroleum (which are

frequently known as benzenes) are unsuitable for the manufacture of varnish, as they only partially dissolve the resinous substances present. The so-called artificial asphalt is very extensively used, and is principally distinguished from the natural substance by its dull color and its scarcely perceptible odor. It is a product of the distillation of coal tar. The fluid distillate obtained in the manufacture of coal gas represents about 4 to 7 per cent of the quantity of coal used, and after about two thirds of its weight has been removed in the shape of fluid oils by fractional distillation, a residue is left which cools into a firm black substance, known as artificial asphalt or black pitch. The consistency of the asphalt varies according to the quantity of oil removed. One of the most important uses of this asphalt is for fuel in the shape of briquettes, small coal, sawdust, etc., being mixed with it. Asphalt pipes and flooring are also made from it, as well as lamp black of inferior quality. For the manufacture of lacquers, artificial asphalt is much less suitable than the natural substance, as the coating obtained is liable to crack, and is wanting in brilliancy.—*Industries.*

#### Ice Lenses.

The London correspondent of *Le Moniteur de la Photographie* writes to that journal that in the middle of the winter which has just elapsed a student made a lens of ice, with which he lit the pipes of some of the skaters on the Serpentine by means of the solar rays, an experiment, he says, which was first performed in the polar regions by Dr. Scoresby, to the great astonishment of the sailors, for they could not understand why the ice did not freeze the beams of the sun. We may remark that Professor Tyndall at times would set fire, at the Royal Institution, to a little heap of gunpowder with rays from the electric arc concentrated upon the powder by means of a lens of ice. His explanation was that, although ice absorbs rays of certain wave lengths, and is gradually melted thereby, other waves it does not absorb, and these latter produce the heating effect at the focus of the lens. It is wholly a question of the relative motions of the molecules of frozen water and the motions of the waves of light; when there is discord between the two, the discordant waves pass through the ice without absorption.—*British Journal of Photography.*

#### Discovery of the Bacillus of Scarlet Fever.

Drs. W. Allan Jamieson and M. Alexander Edington, of Edinburgh, announce, in the last *British Medical Journal*, the discovery of a specific bacillus of scarlet fever. The micro-organism has been isolated, cultivated, and put through its paces generally, coming out, apparently, with a specific character.

"The rapidity of the growth of this organism—which is such that, if one inoculate a flask of broth, the diameter of which is two and one-half inches, and it be incubated, the pellicle will develop and cover it entirely over in the course of four hours—suggests an explanation of the very short period of incubation in scarlet fever."

Dr. Edington, who carried out the bacteriological part of the work, has failed to show that pure inoculations of cultivated bacilli cause scarlatina in man; also, that the supposed specific bacillus is not found in other diseases.—*Medical Record.*

#### Home Industries.

It is clearly evident to most Americans that the advantage of this country lies in multiplying domestic industries, rather than in diminishing them. Every new industry that can be maintained, which supplies a want felt by the people, is a clear gain in every way, as employing workmen, keeping profits at home, using materials produced here, paying wages that are spent here, and tending to make us industrially independent. The very highest form of national life is that which exists with the widest possible diversification of industry. England suffers to-day because she has intensified her manufactures and neglected to cultivate her soil thoroughly. Ireland and India suffer because they have agriculture without manufactures. We give our people a chance in every direction, and so we possess the highest prosperity and the most robust national life.—*Textile Record.*

#### A New Relay.

A very simple and sensitive relay has been designed by M. Lahmayer, the construction of which will easily be understood from the following description:

A glass tube closed at both ends is about half filled with mercury, and contains a piece of iron rod nearly the full width of the tube, which floats in the mercury. A pair of platinum wires enter the glass just above the normal level of the mercury, and are connected with the circuit to be closed by the action of the relay. The glass tube is placed within a solenoid traversed by the current in the first circuit. The iron float is sucked down by the solenoid. The mercury rises and closes the circuit through the platinum wires. To avoid the oxidation of the surface of the mercury by the spark on breaking contact, the upper part of the tube is filled with nitrogen.