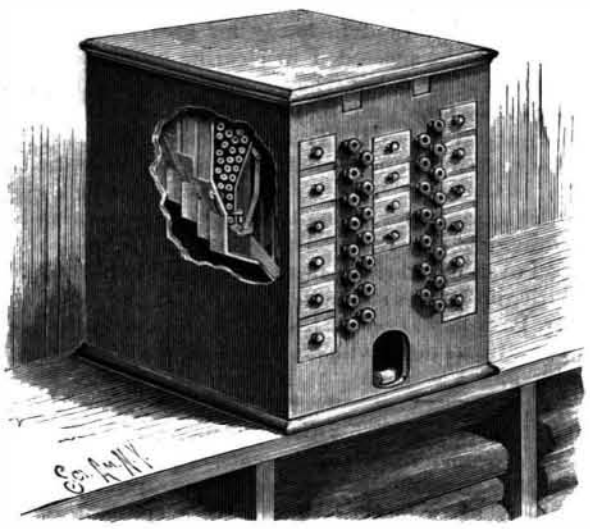
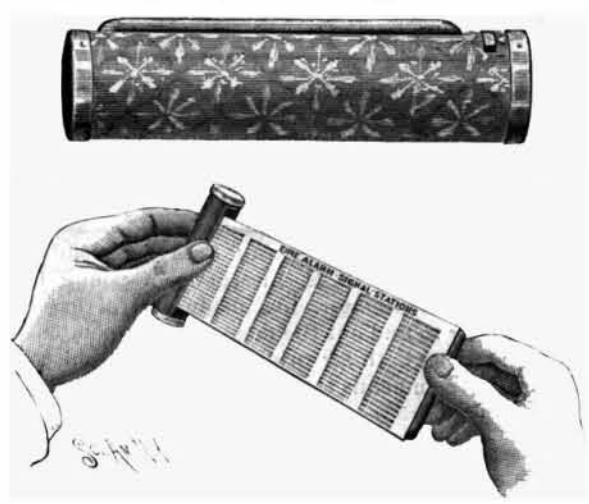
AN IMPROVED CABINET FOR HOLDING SPOOL THREAD.

The accompanying illustration represents a cabinet designed to hold a full stock of thread, delivering a spool of any number on the pulling of a correspondingly numbered button, without the possibility of the

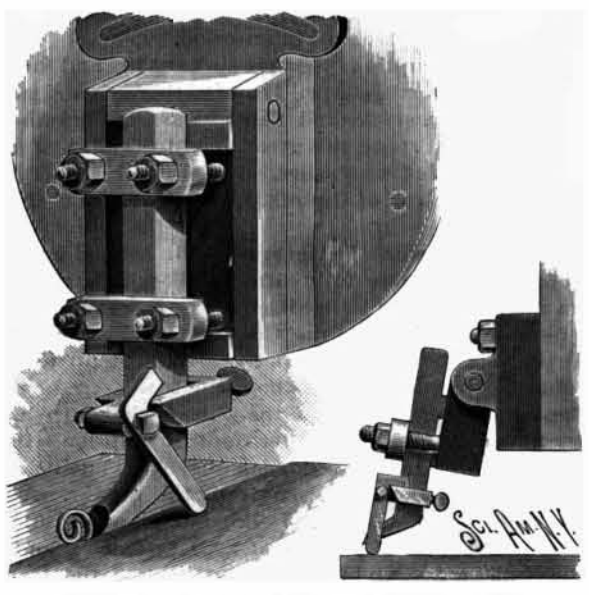


HAYDEN'S SPOOL THREAD CABINET.

jamming of any of the spools, while provision is made for the stowage of surplus spools, and readily returning spools that have been withdrawn. It forms the subject of a patent issued to Mr. James W. Hayden, of Lewisport, Ky. The cabinet has three main series of central and side compartments, from which lead two inclined troughs or ways, one on each side of the series of central compartments, to a receiving tray reached through an opening formed centrally in the front wall of the cabinet near its base. The compartments for the larger spools are nearest the front of the cabinet, and those for the smaller spools behind them, each compartment being proportioned to receive about the same number of spools, thus leaving behind the inclined chutes a space for the stowage of spools, which space is reached through a door hinged to the base at the rear of the cabinet. The spool-receiving compartments are of such width that a number of spools may be placed side by side therein, and, that the spools may be properly upheld until wanted for delivery, a slide is arranged in connection with each compartment, the slides being adapted for withdrawal by being connected through links with bell-crank levers, the latter being also connected to pull rods terminating in buttons on the front side of the cabinet, such buttons preferably being each numbered to correspond with the compartment holding spools of a certain number. To prevent the passage of more than one spool at a time to the receiving tray, a lever is arranged to operate automatically in connection with the slide, one arm of the lever passing between the two lower spools in the compartment before the slide is withdrawn, provision being also made to prevent the arching or jamming of the spools within their respective compartments. For conveniently returning the spools to a place of safety when they have been withdrawn from the cabinet and not used, two receiving trays are provided in the upper part of the case, with swinging flap doors opening inward. In the space between the main interior compartments and the front wall of the cabinet, on each side and in the middle, are also arranged narrow storage drawers. The preferred dimensions of this cabinet are: Length, 24 inches; width, 20 inches; height, 27 inches.



WILLIAMSON'S TAPE ADVERTISING DEVICE.



WILKINSON'S TOOL ATTACHMENT FOR PLANERS.

Insuring Employes.

The Detroit Electric Light and Power Company has adopted a plan of insuring its employes, every one of whom carries a $5,000 policy, the premiums upon which are paid by the company so long as he is in its employ. The arrangement insures the employe's family in case of accidents, and protects the company from damage suits. Why may not other manufacturing establishments adopt the same plan, to the advantage of themselves and their most prized helpers, the annual premium to be paid only as long as the party remains in the employ of the concern?

Special arrangements could undoubtedly be made with insurance companies to refund a large portion of the premiums paid, on the surrender of the policies when the insured is leaving his employer.

A NOVEL ADVERTISING DEVICE.

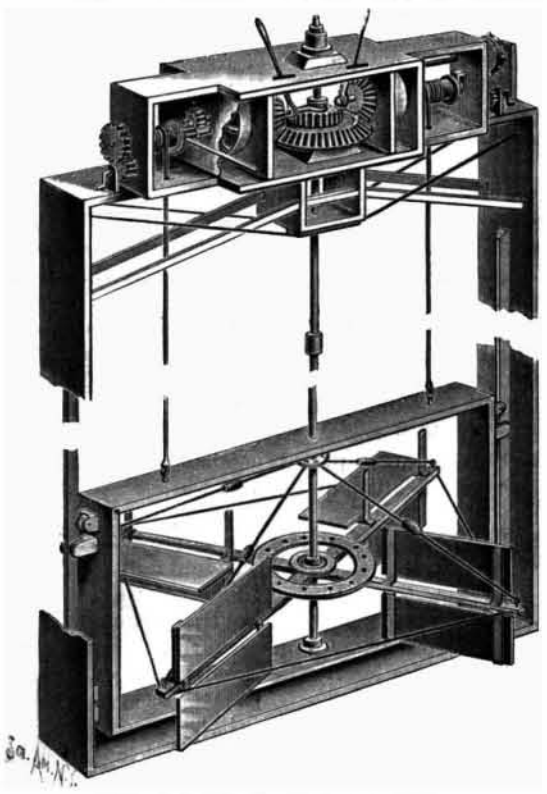
The device represented in the accompanying illustration, designed to be conveniently carried in the pocket, suggests at once a ready means for efficient advertising, by incorporating with the advertisement information which it may be desirable for many people to keep for ready reference. It is a patented invention of Mr. John B. Williamson, of Louisville, Ky., the cut showing as its principal feature the representation of a conveniently unwinding and rewinding tape bearing the record of the fire alarm signal station numbers, to be made according to the requirements of any given locality. The device embraces but few parts, and can be manufactured in quantities at a small cost, any desired information or advertising matter being printed on the scroll or tape.

A CUTTING TOOL ATTACHMENT FOR PLANERS.

The illustration represents the application of an attachment which serves to hold the cutting tool off the bed of the work on the return stroke of the traveling bed on which the work is held, such return stroke being shown in the small figure, while the larger view represents the cutting stroke. It is a patented invention of Mr. James Wilkinson, of No. 2544 Leithgow Street, Philadelphia, Pa. A bracket or frame, having an opening for the passage of the cutting tool, is attached thereto by means of a set screw, the cutting tool being held in the usual holder, pivoted to the head of the planing machine. On the front end of the bracket is a projection, in which is held a transverse bolt on which is loosely fulcrumed a lever, hanging downward, and adapted to swing rearward on the forward stroke of the planer, such motion being limited by a beveled edge on the side of the bracket. On the upper end of the hanging lever is a right-angled extension adapted to engage and rest upon the top of one side of the bracket on the return stroke of the tool, as shown in the small view, thus raising the cutting edge of the tool entirely off the work. The hanging lever may be placed on the transverse bolt at either side of the lug or projection from the forward end of the bracket, to always engage the lower end of the lever with that part of the work not yet planed.

AN IMPROVED WATER WHEEL.

A water wheel designed to be operated for driving any kind of machinery by means of belts or through a chain wheel, or for directly operating a pump or air compressor, is shown in the accompanying illustration, and has been patented by Mr. Lee Middleton, of Clarksville, Mo. On the upper part of the main vertical shaft is a collar riding upon an anti-friction bearing carried by the main frame, the lower end of the shaft being stepped in the base of a wheel frame, and there being on the sides of the latter frame grooved wheels and guides riding upon vertical ways of the main frame, whereby the wheel frame and wheel may be raised out of the current when desired. The upper portion of the main shaft has a feather which rides in a groove in the hub of a gear, this gear engaging gears carried by horizontal shafts, the latter gears being splined to position to be shifted into or out of engagement with the gear carried by the vertical shaft. The horizontal shafts carry pulleys and pinions, and the shifting of the gears is effected by means of levers fulcrumed in standards carried by the flooring. Just beyond the horizontal shafts are drum shafts, chains or ropes from which are connected to the wheel frame, the drum shafts being movable into engagement, by means of pinions on their ends, with the horizontal shaft, to facilitate raising the wheel frame out of the current, other means being provided for completing or entirely effecting such task by hand cranks. Above the gear with which the horizontal shafts are connected is a gear adapted to be thrown into engagement with a crank gear connected with a pitman, whereby either a pump or an air compressor may be operated. The wheel proper consists of a number of radially extending arms carrying vertical braces serving as stops for



MIDDLETON'S WATER WHEEL.

hinged leaves, other bracing rods, connecting the ends of the radial arms, being in such position that the leaves when folded down rest upon them. As the wheel revolves, the leaves are adapted to automatically open out against the current as they come into position for the current to strike them, resting then against the vertical stops; but when the radial arms to which the leaves are hinged, in the further portion of their revolution, move against the current, the leaves then assume a horizontal position, resting upon the horizontal bracing rods.

AN IMPROVED OIL OR GAS STOVE.

The illustration shows a simple form of stove designed to burn oil or gas, and to give out a large amount of heat in proportion to the quantity of fuel consumed. It has been patented by Mr. John A. Field, of No. 822 College Avenue, Racine, Wis. Within the body of the stove, and cast with or attached to the upper section, is a hollow air cylinder, nearly filling the interior, there being an annular flue between the cylinder and the walls of the stove, through which the smoke and noxious gases pass up the chimney. There is an opening from the outer air to the lower end of the interior cylinder, and a similar opening from its upper end, controlled by a damper, and on the top of the cylinder is an evaporating pan. Attached to the under side of the cylinder is a D-shaped generator, the lower oval side of which is perforated, and into this generator projects a pipe from an oil tank, there being at the inner end of the pipe a roll of asbestos or similiar material, on which the oil flows and is burned. In the oil supply pipe is a coil to act as a trap to prevent gas from the stove passing back through the pipe. Gas may also be readily burned instead of oil, by the use of a screen burner in the generator, below which is a dish-shaped receptacle having its central portion formed into a hollow cone, through which air passes to feed the flame. A damper at the bottom admits the necessary supply of air.

FIELD'S OIL OR GAS STOVE.

The Economic Uses of Leaves.

Of the three divisions of nature's products, man is most chiefly indebted to the vegetable kingdom, whether for his food, medicine, or domestic comforts. Every part of plants and trees is more or less utilized by savage and civilized men, and a common category might be furnished by the various uses of the separate parts—the roots, stems, sap, bark, fruit and seeds, and leaves.

If we take the last-named, the foliage, apparently the most insignificant part of the plant, how dependent are we on these for food, clothing, medicine, dyes, stains, and various comforts.

The miscellaneous application of leaves for different purposes as domestic appliances, and for manufacturing uses, of themselves would furnish a long list; some few of these we may pass under notice, because their adaptability and usefulness are mainly confined to tropical countries. It is true that some leaves have been utilized by the paper maker, as in those of the dwarf palm, maize leaves, and others, but this is only on a small scale.

The leaves of many palms are largely employed for making hats. Those best known are Panama hats, so named from being shipped from that port. These are made from the finely plaited fiber of the leaves of a South American screw pine (Carludovica palmata). These hats are much prized for wear in the tropics, being light and flexible, and can be washed and bleached repeatedly.

The tree has no stems, the leaves have long slender petioles, springing from the ground; they are some two feet long, fan-shaped, and four-parted, each segment being again ten-cleft, so that when folded in venation, each segment on its own rib, there are eighty layers in a young leaf. The tree occurs only on the slopes of the Andes.

About 200,000 dozens of these hats are made in Ecuador and different States of South America. These hats are distinguished from all others by consisting only of a single piece, and by their lightness and flexibility; they may be rolled up and put in the pocket without injury.

In the rainy season they are apt to get black, but by washing with soap and water, besmearing them with lime juice, or any other acid, and exposing them to the sun, their whiteness is easily restored. The plaiting of the hats is very tedious and troublesome; the coarse ones may be finished in two or three days, but the fine ones take as many months to plait. It commences at the crown and finishes at the brim. The hats are made on a block, which is placed upon the knees, and requires to be constantly pressed with the breast. The hats vary in price, according to fineness and quality, from 20s. to as many pounds.

The unexpanded fronds of Livistonia australis, prepared by being immersed in boiling water, are dried, and the fiber thus obtained is much valued for the manufacture of hats in Australia, which much resemble the celebrated Panama hats.

The rough leaves of the Chumico (Curatella americana) and of Davilla lucida are used for cleaning iron, and polishing and scouring wood. Curatella alata is used in the West Indies for polishing bows, sabers, etc.; and C. sambaiba in Brazil—indeed, they serve all the purposes of sandpaper to the Indians for polishing their blow-pipes and war clubs. The leaves of Celtis orientalis are used for polishing horns in the East Indies.

The foliage of Guiacum officinale is very detersive, and is frequently used in the West Indies to scour and whiten floors, which it is said to do better than soap.

Leaves sewn together are much used in India as substitutes for the plates and dishes of more civilized life. It is not always poverty that leads natives to use them in preference to metal or porcelain articles, as caste or custom has often some influence in the matter. The leaves principally used are those of the Egyptian lotus (Nelumbium speciosum), Bauhinia species, Semecarpus anacardium, Butea frondosa, those of the banyan (Ficus bengalensis), by Brahmins, and the plantain leaf (Musa paradisaiaca).

The leaves of Bauhinia Vahlii are used in the construction of the curious, rude leaf bellows in Sikkim, with which the natives of the hills smelt iron. These leaves, when sewn together, are used as plates, cups, rough table cloths, rain hats and caps. The leaves are heart-shaped, and above a foot in breadth, and the same in length. Sewn together with twigs, they also serve for baskets for holding pepper, turmeric, and ginger, and are likewise used for thatching.

Under the name of "Chattahs," a kind of umbrella hat or sunshade is made in the East of the leaves of the Licuala peltata and the Talipot palm, or a Plantain leaf. These Chattah hats are much worn by the plowmen, cowkeepers and coolies of Bengal and Assam.

The large fan-shaped leaves of the Talipot palm (Corypha flabelliformis) are, like those of the Palmyra palm, carried over the heads of people of rank as an umbrella, and also used for making books, and for various domestic purposes. The leaves are also cut up into neat bracelets, worn by Santal girls in India. Those of Vanda Roxburghii, split, are also worn by them as anklets. Those of another species, Borassus æthiopicus, occur as much as 12 feet across; they serve also for the manufacture of baskets, mats, ropes, and sieves. The leaves of Nipa fruticans attain a height of 15 to 20 feet, presenting a very handsome appearance, resembling the fronds of huge ferns. This graceful Eastern palm is utilized in various ways, the principal being in the manufacture of thatching for house roofs, in the East called "Ataps." This manufacture is quite an industry of itself, and affords employment to many natives, chiefly women, the men simply bringing cargoes of the fronds to the women, to be stitched with split rattans, and made up. Atap roofs are the best adapted for these climates, for while the winds are never strong enough to blow them away, they afford the coolest protection against the sun of any kind of roofing known.

The leaves of the Palmyra palm (Borassus flabelliformis) were formerly used like paper, to write books on, and to this day they are applied to this purpose in Orissa, Southern India, and Ceylon, where an iron style is employed to write upon them; in certain parts of Bengal, young children use them to write the alphabet lessons on. They are largely employed for making pans, bags, winnows, hats, umbrellas, and for thatching, etc. The leaf takes a dye well, and is worked up in Madras into pretty colored patterns in baskets and mats.

The slips of Talipot and other Palm leaves are coming into European commerce for the manufacture of ornamental braids, and in the construction of straw or Leghorn hats. The fiber obtained from the base of the leaves of the Chusan Palm (Chamærops fortunei) is used by the Chinese for making hats and coarse clothing. The sale of Palm leaves for decorative purposes in the towns of Elche and Alicante in Spain produces a considerable income to the towns.

Kadjan mats, manufactured out of Nipa leaves, are indispensable for traveling purposes. Packed up in the smallest compass when not required, each mat is capable of affording sufficient cover at night for two or three persons, either in boat or forest journeys. They also form, almost exclusively, the material for side walls and divisions within houses. The young leaf unfolded and dried, under the name of Roko, forms the favorite covering for cigarettes in the Malayan Peninsula in preference to paper.

The large leaves of the Teak tree (Tectona grandis) are used for plates, for packing, and for thatching. The leaves of Cordia myxa are employed as plates in Pegu and to cover Burmese cheroots. In Bangalore the leaves of Canna indica are used by the natives in lieu of plates, to serve their Ragi or Millet puddings and other dishes on. The leaves of the Papaw tree (Carica papaya) are employed by the negroes in washing linen, as a substitute for soap. They have also the property of rendering meat wrapped in them tender, owing to the alkaloid papain which they contain, and which acts as a solvent.

For cordage and other textile purposes, numberless leaves are used, and they serve very generally for packing and wrapping up small parcels in India. In Guiana, Tibisiri fiber is obtained from the inner surface of the spiral leaves of the Ita Palm (Mauritia flexuosa). It is used by the Indians for making hammocks, etc. The leaves are cut before they are open, and the midrib separated by drawing each division of the leaf through the finger and thumb. After drying, the fiber is ready for use without further preparation. About a quarter of a pound may be procured from each leaf, and if the central leaf is left uninjured, no evil effect is produced on the tree. Bags or matting could be cheaply and easily made from this fiber, as well as hats similar to those known as Panama.

The foregoing is only a brief enumeration of some of the many uses to which leaves are industrially applied.—*P. L. Simmonds, Gardeners' Chronicle.*

The Perils of Quicksands.

A remarkable example of the dangers of working in quicksands occurred recently at Woodside, N. Y. An intelligent man, Mr. James H. Parsells, undertook to build a well near his house. The well was 15 feet deep in the center of a quicksand. Mr. Parsells went into the well to repair a pipe when the sides caved in, partly burying him. When he was discovered, his head and part of his body were still above the sand, which was slowly pressing around him. He did not seem to be much injured, for he was cool and self-possessed, and with a calm voice himself directed the excited villagers, who were eager to rescue him.

Steven and John Parsells, aged fourteen and nineteen, worked desperately to save their father's life. Dozens of men with shovels worked around the well, while others fastened ropes under Mr. Parsells' arms. Ten men pulled on the rope from the second story of the new house, until deep ridges were made by the rope in the window sill, but all the efforts to pull out the man failed, and the sand packed itself more solidly around his form. It continued to rise, stealing up over his shoulders and about his head. Stimulants were given to the doomed man, and a rubber tube was placed in his mouth to supply him with air.

Meanwhile the rescuing party fought the deadly sands desperately. They could not dislodge the body from the tenacious grip of the sands. Then the sands rose quickly, bubbling up like the waters of a spring. They surrounded the man's head and covered him entirely. John Parsells stood at his father's head, and with a shovel worked furiously for nearly two hours. Three times he succeeded in clearing the sands from his father's head, but they rapidly covered it again, being forced up, no doubt, by the crowds which pressed closely about the well. Trenches were dug at the sides of the well, in the hope that the man might be extricated in that way, but they were quickly refilled.

After working for a long time the rescuers succeeded in dragging out the body, but when the sands had closed over Mr. Parsells' head the air-tube fell from his mouth and he was suffocated.

Mr. Parsells was one of the oldest and most respected of the citizens of his village. He leaves a wife and six children.

PHOTOGRAPHIC NOTES.

Salted Paper for Enlargements. — The *Bulletin* of the Photographic Society of Italy, published at Florence, gives in its last number a special formula for salted paper for enlargements, communicated to it by Signor G. Moretti, a member of the society and director of the studio for the Dilettanti Photographers in Florence. The formula is this:

Water	1,000 grammes.
Gelatine	2 "
Chloride of sodium	4 to 6 "
Citrate of soda	21 "
Ammonia chlorhydrate	13 to 16 "

The gelatine, cut up into very small slices, is first dissolved in the tepid water; afterward the other substances are added; when all are dissolved, the solution is filtered, and placed in bottles for use. To prepare the paper, the mixture is poured into a basin, and the sheets are allowed to float for three minutes, using the same precautions as in the preparation of albumenized paper. After the moisture has been removed from the sheets prepared with this solution, they are sensitized on an ordinary 12 per cent silver bath, and when dry they may at once be used, and a beautiful tint, imitating perfectly that of hematite, will be obtained. When the bath above described is employed, especially if it be fresh and uncontaminated by any noxious vapors, the sensitized paper may be kept in excellent condition for three days during the summer, and for a week in the winter season.

Combined Toning and Fixing Bath for Gelatino-Chloride Paper.—Mr. R. E. Liesegang, a young but very serious investigator, has made careful experiments in order to find out the most efficient combined toning and fixing bath for prints on gelatino-chloride paper. He recommends the following one:

Solution No. 1.

Hyposulphite of soda	200 grammes.
Alum	80 "
Nitrate of lead (pulverized)	2 "
Boiling water	400 c.c.

The solution is allowed to stand for two days; then once more 400 c.c. of boiling water are added, and the solution is filtered. Meantime, the following solution is prepared in a bottle:

Solution No. 2.

Sulphocyanide of ammonia	160 grammes.
Water	1,200 c.c.

Solution No. 1 is mixed with solution No. 2, and then added:

Solution of gold chloride (1 per cent)	10 to 20 c.c.

With this bath the prints take any desired tone within three to five minutes.—*H. E. Gunther in Photo. News.*

A Great Volcanic Eruption in Alaska.

A recent dispatch from San Francisco brings word that Bogoslov, the Alaskan volcano that rose from the ocean depths about seven years ago and blazed and smoked for a time, is again in eruption.

This recent eruption began February 10, and has continued at intervals. April 17 and 22 there were signs of great activity, smoke and flame pouring from the lofty crater, and rising to a great height. The sky for weeks was clouded with ashes, and these fell in liberal showers in the town of Illuliuk, forty-four miles to the eastward.

To the people who saw the eruption it seemed a pillar of fire and smoke fully fifteen miles high, rising from the horizon and losing itself in the low clouds.

Professor Davidson, of the Coast Survey, estimates that the volcanic pillar must have been sent up to a height of at least four miles above the sea.

Captain Everett Smith, of the steam whaler Orca, passed near the scene soon after the first eruption. He noted that four new islets, each detached, but near the volcano island, had arisen from the depths. As the ocean bottom here, off Bogoslov, sounds 844 fathoms, and there is a depth of 1,200 fathoms about twelve miles away, an idea may be gained of the tremendous energy required to raise an islet from the ocean bottom above the surface.