The Spider's Thread.

In a lecture at Boston, Mass., Professor Wood dealt with the phenomena of spider life. The female is larger and much fiercer than the male, who, while paying his addresses, is in constant peril, frequently losing some of his legs. In one tribe the female is 1,300 times as large as the male. The spider's thread is made up of innumerable small threads or fibers, one of these threads being estimated to be one two-millionth of a hair in thickness. Three kinds of thread are spun: One of great strength, for the radiating or spoke lines of the web. The cross lines, or what a sailor might call the ratlines, are finer and are tenacious—that is, they have upon them little specks or globules of a very sticky gum. These specks are put on with even interspaces. They are set quite thickly along the line, and are what, in the first instance, catch and hold the legs or wings of the fly. Once caught in this fashion, the prey is held secure by threads flung over it somewhat in the manner of a lasso. The third kind of silk is that which the spider throws out in a mass of flood, by which it suddenly envelops any prey of which it is somewhat afraid, as, for example, a wasp. A scientific experimenter once drew out from the body of a single spider 3,480 yards of thread or spider silk—a length little short of three miles. Silk may be woven of spider's thread, and it is more glossy and brilliant than that of the silkworm, being of a golden color. An enthusiastic entomologist is said to have secured enough of it for the weaving of a suit of clothes for Louis XIV.

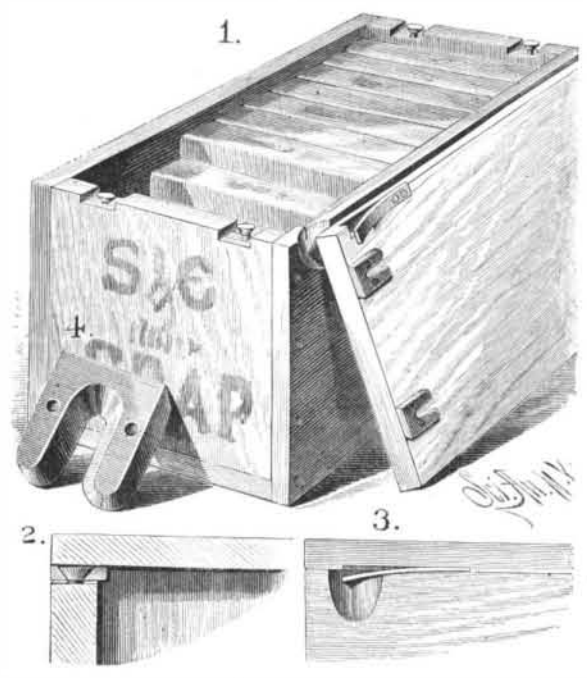
The New French Cruiser Sfax.

This cruiser, which was laid down at Brest eighteen months ago, was launched there recently. The Sfax, which is built of steel with twin screws and watertight compartments, is 290 feet long by 50 feet beam, and draws 23 feet of water, with a total displacement of 4,500 tons. The hull is entirely of steel, with a wood facing and a sheathing of copper. The vital portions of the vessel, such as the engines, boilers, and magazine, are protected by a deck with iron plates 2 inches thick. The Sfax carries six 6 inch guns, ten 5 inch guns on hydraulic carriages, and several revolving guns. Her two screws derive their motive power from two separate engines, which can develop at full pressure 7,500 horse power. The maximum speed is estimated to be 16¾ knots, and the Sfax will carry enough coal for a cruise of 6,200 miles. She has cost so far £153,000, of which about £80,000 has been spent upon the hull, and the remainder upon the engines, etc. If to this is added the expense of arming and equipping her, she will cost about £200,000.

DEVICE FOR SECURING BOX COVERS.

The body of the box is of ordinary construction, except that the end pieces are cut away at their upper edges, and that one of the side pieces is cut away to form the locking shoulder with which the free end of the spring engages for locking the cover in place. The outer surface of the side board is also cut away, to afford access to the spring for lifting it above the offset when the cover is to be removed. In the cutaway places are headed screws with which claw plates (shown detached and enlarged in Fig. 4), secured to the under side of the cover, engage to hold the cover securely upon the body. The screws stand flush with the upper edges of the end boards, so that when the cover is removed they will not interfere with the placing of a glass cover over the box for exhibiting the contents.

The claw plates may be stamped out of sheet metal, and secured to the cover by small nails or screws, or they may be made of cast iron. The spring is fastened to the cover,



SHAW & CHIDLEY'S DEVICE FOR SECURING BOX COVERS.

as shown in Fig. 1, and is so arranged that its free end will drop behind the offset just as the claw plates fairly receive the screws, thereby preventing all backward movement of the cover. The box is especially intended for the use of biscuit and soap manufacturers, who usually charge the boxes to their customers and have them returned to be refilled.

This invention has been patented by Messrs. H. A. Shaw and E. D. Chidley, of 784 Yonge Street, Toronto, Canada.

THE HARDEN HAND-GRENADE FIRE EXTINGUISHER.

Ever since P. T. Barnum, the renowned showman, brought to this country and attempted the general introduction of Phillips Fire Annihilator, about a quarter of a century ago, there have been a number of chemical fire extinguishers introduced, some of which have proved quite successful.

There has been recently introduced a very simple and inexpensive apparatus, called "The Harden Hand-Grenade Fire Extinguisher," and from the result of the numerous

HAND-GRENADE FIRE EXTINGUISHER

tests made before the public in this city, this would seem to fill a want not before obtained.

These little hand grenades extinguish fires on the same principle as the chemical fire engines, which are charged with carbonic acid gas, which by calculation possesses forty times the extinguishing effect upon fire that water has. These grenade extinguishers consist of a glass globe about four inches in diameter that resemble a small jug, and this contains the liquid which produces large volumes of fire extinguishing gas when brought in contact with flames.

The liquid it is said will stand a temperature of fifteen or twenty degrees below zero; thus all danger from its freezing and becoming useless when wanted is avoided.

A representative of the SCIENTIFIC AMERICAN was present at an exhibition trial of this extinguisher a few days ago, and witnessed the following experiments:

A fire was lighted at the side of a pine board fence, some 8 feet high by 15 long, the surface of which was coated with tar, and kindling wood and paper placed against it, the whole having a gallon or so of benzine scattered over it. The blaze sprang up almost instantly, and in less than half a minute the flames shot up twenty or thirty feet. To put out this fire, which it took but a few seconds to accomplish, three of the grenades were flung with enough force to break them and scatter their contents over the fence in the midst of the blaze.

Another trial was also made, in which the grenades were hung against the fence and the fire kindled under them. This time the blaze did not reach the height it attained in the former trial, but the grenades burst by the heat when the temperature had reached about 180° Fah., and the fire was again quickly extinguished. A watchman making the rounds of a factory with one or two of these in his hands would find them vastly more serviceable than a pail of water or a small hose, were either of the latter always on hand, as they so seldom are; and the grenades can be successfully used in cases where it is difficult to exactly locate or get near to a fire. To hang them in places where there is liability to fire, so they will burst before a fire has gained much headway, is one of their obvious uses.

For summer houses and stables, where the materials of construction are usually of an inflammable character and water is seldom at hand, these grenades would prove highly valuable. At the brewery of J. C. G. Hupfel a few days ago a fire broke out which promised to be more or less serious, but it was quickly extinguished by using four of the grenades.

An Ice-water Well.

In digging the well to supply the railroad tanks at Palouse Junction, W. T., the workmen passed through strata of alkali, clay, and finely-broken basalt rock, to a depth of 185 feet, where water of great purity and limitless quantity was found. The water in the well is five feet deep, and a steam pump, actively worked, makes little impression on the quantity. The most curious thing about the well is the fact that in digging the last fifty feet the workmen in the well had to wear heavy clothing and wrap their feet and legs in gunny bags to keep from freezing, while the men in the open air worked in their shirt sleeves. Water left in the bucket in the well over night would freeze. The water in the well does not freeze, because it flows too fast. The new well at Eltopia is seventy-five feet deep, nearly all the distance being through clay. The first twelve feet are through solid white alkali.—*Portland Oregonian.*

Intelligence of the Oriole.

On the western side of Central Park, very near 103d Street and Eighth Avenue, stands a row of elm trees, difficult to approach on account of a heavy growth of syringa bushes around them. On a branch of one of the trees, about sixteen feet from the ground, a pair of Baltimore orioles set to building a nest a few weeks ago. They chose the extreme end of the bough, with evident intention of making it a hazardous experiment for any bird nester to attempt to molest them. But in their excess of caution they appeared not to observe what the few persons whose eyes were keen enough to see the first labors of the little architects saw—that the branch was much too slender to support so large a nest as an oriole builds.

When the nest was about two-thirds finished the birds saw their mistake. The branch had bent so low that it was getting perilously near the grass. Work was at once stopped, and the builders sat close together for a long time, and seemed to be discussing the situation. Finally, they flew side by side to a bough about fifteen inches over the one on which their nest was, and, leaning over, inspected the distance. They seemed to be satisfied, and, though it was growing rapidly dusk, the birds flew away in opposite directions. In the morning it was found that they had firmly secured their habitation, and prevented the branch from bending lower, by passing a piece of white string, which they had found somewhere in the park, over the upper bough, and fastening both ends of it securely to the edges of the nest. The building then went rapidly on, and the orioles are now engaged in hatching their eggs. Very few persons have seen the nest, and there is a fair prospect that their skill and ingenuity will be soon rewarded by a brood of young orioles.

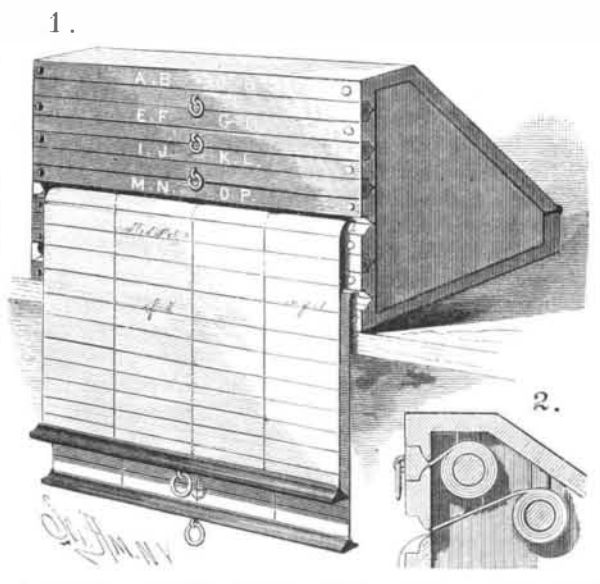
The Baltimore oriole is a very intelligent bird, but a New York ornithologist, who saw the nest, said he had never seen an achievement quite equal to this one before. He says the art of knitting fibers or strings together is well known to many birds. The weaver bird of India builds its nest out of a large, strong leaf, which it stitches together at the edges, making a compact and closely adhering funnel.—*New York Sun.*

Eucalyptus Globulus in Whooping-Cough.

The editor of the *N. E. Medical Monthly* having seen eucalyptus globulus recommended in pertussis, gave it a trial in his practice. He administered it in some twenty-five or thirty cases, and the results were of a very gratifying nature. Its effect was to greatly modify the severity of the paroxysms in every case, and in so abating the symptoms occasionally, that what gave promise of being a very severe attack in its incipiency turned out to be little more than what is known as a sympathetic cough. These results certainly merit for this agent a trial at the hands of other practitioners, for few will be prepared to admit that the best possible remedy for this affection has yet been employed.

INDEX FOR JOURNALS, LETTER FILES, ETC.

An index recently patented by Mr. Thomas C. Brown, of Norborne, Missouri, is conveniently arranged, and contains a great number of names in a very small space. The top of the box is inclined upward from the rear to the front, and is hinged to the back. The front is provided with a series of equidistant longitudinal slots, widened toward the outer surface to form grooves. As many spring rollers as there are slots are journaled in bearings within the case, and on each roller is fastened a sheet of strong paper muslin, to the outer edge of which is attached a slat fitting in the groove. Sheets fastened to the rollers, or pasted on the fabric, are



BROWN'S INDEX FOR JOURNALS, LETTER FILES, ETC.

ruled and divided into vertical columns, on which the names are written, with the corresponding page of the ledger, journal, etc. The initial letters of the names on each sheet are produced on the front of the corresponding slat. By pulling a slat the sheet is drawn outward so that the name and page number can be found; as soon as the sheet is released the spring roller winds it up again in the same manner that a curtain is wound on its roller.

England One Hundred Years Ago.

From an address delivered not long since by Mr. Thomas Ashbury, C.E., before the Manchester Association, we extract the following as to what was the state of affairs in England a hundred years since:

"We need not further consider the engineering works of the past ages, but come at once to the period of say about a century ago, or at all events the period when George III. began to reign (1760), and glance at the state of our own country at that time, the better to understand and appreciate the advantages and blessings of the present time.

"One hundred years ago England could hardly be called a manufacturing country, as we imported almost everything except corn, wool, and flax; iron from Spain, Germany, Sweden; pottery from Holland; hats from Flanders; silk from France; cloth and carpets from Belgium. One hundred years ago we had, as a country, fallen very low. Our cotton, woolen, flax, machine, etc., manufactures were struggling into birth; we could not keep the water out of our coal pits; we could not build steam engines; we could not build a church fit to be seen; we had no harbors or docks; we had no ships fit to go to sea; we had no literature worthy of our nation; we had our roads swarming with highwaymen. We had our army and navy composed of prisoners or pressed men captured openly; we had gibbets at nearly every cross road in the country; we had bribery and corruption of the grossest kind at Parliament elections; we had drunkenness, profligacy, and brutality, not only among the ignorant, totally neglected, common people, but also among the so-called upper classes; we had public abominations and obscenities that were not surpassed in the days of Nero; we had bull baiting, cock fighting, men fighting, dog fighting, badger drawing, and other coarse, ferocious, savage sports (pigeon shooting, unfortunately, still exists); we had the pillory, and men and women placed there for disgusting crimes, and crowds as foul as the criminals would pelt them with stones and rotten eggs, and horrid scenes were of common occurrence; we had women publicly whipped as well as men, and all feelings of refinement and delicacy were smothered in the licentious tendencies of the people; we had women and girls working down our coal pits; we had blasphemy, brutality, skepticism, irreligion, atheism, prevailing among all classes and causing the ships, the barracks, the works, the clubs, and even very many of the English homes to be turned into places of reveling and vice, disgracing the English name, and only worthy of the demon of darkness; we had, however, a few manly, plucky, brave men, who amid the darkness, drunkenness, and vice endeavored to educate, lift up, and arouse the people to a purer and more noble life; but these men fought against tremendous odds, for some of them were carried off by press gangs as sailors or soldiers, some were publicly whipped out of the town, and even in Salford the very first use made of the new town fire engine was to drench that noble, godly man, John Wesley, when he boldly and courageously 'bearded the lion in his den,' and publicly reproved and exposed the prevailing vices and iniquities of our sister borough.

"James Watt, while learning his trade in London, had to keep his house, and durst not walk abroad for fear of being seized and sent to labor as a sailor on our then 'floating hells,' or on our plantations in India or America. One hundred years ago there was in Scotland a veritable *slavery* class of colliers and salters, and it was only in 1799 that this was finally abolished. One hundred years ago the main roads in this country had ruts four feet deep in many places; in fact, one writer says the ruts were navigable; another says they were like the roofs of houses put together, and they had only just superseded the pack horse and bridle paths. One hundred years ago hanging was common for nearly all offenses; human life was little thought of. One hundred years ago or thereabouts, the first eight bags of cotton arrived in Liverpool, and the Custom House officer seized them as not being a product of the United Kingdom; now we import £60,000,000 worth per annum. One hundred years ago our shipping did not reach two millions sterling; now the sailing of our own and foreign ships runs up an average of forty-five millions sterling. In the year 1777 the borough of Liverpool bought up the revenue of its manorial rights for £2,350; one hundred years after, the annual revenue from the same source was £250,000! One hundred years ago there were no public docks in London or anywhere else. One hundred years ago the mail coaches had just begun to run; now our railways carry 700 millions of people in the United Kingdom every year. One hundred years ago ballooning was in vogue, and seemed destined to achieve great things; a voyage was made from England to France; no real progress in this direction can be recorded.

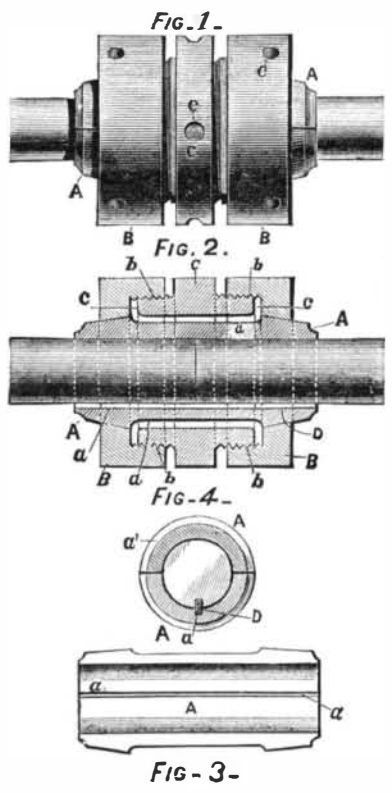
One hundred years ago, or thereabouts (1776), independence in America had been declared. One hundred years ago Arkwright had just invented his spinning machines, looms, etc. One hundred years ago or a little more, the country was astonished at the recent erection of the first *stone* lighthouse. (Smeaton, 1759.) One hundred years ago Watt had just invented the condensing steam engine. One hundred years ago Brindley had just finished his first great canal and Worsley tunnel. One hundred years ago England imported nearly all its iron, for Henry Cort only invented 'puddling' in 1783. One hundred years ago there was no gas or electric light, no high pressure steam engines, no steamboats, no telegraphs, no railways, etc. The working men of Lancashire one hundred years ago had precious little book learning, but an enormous amount of *brain* power. Many of the principal inventions were made by them and large fortunes was the result to some. They had great physical strength, could walk long journeys with heavy loads, and their fare was simple, generally milk, bacon, and some kind of oatmeal, one kind of which was thick and hard, and was called 'jannock,' since become in Lancashire synonymous with anything genuine and thorough. The goods were principally carried by packhorses. John Kay, of Walmsley, near Bury, the inventor of the 'fly shuttle,' made his escape from a riotous mob by being made up into a pack and carried away on the back of a horse. He died in Paris of a broken heart, guilty, like many other men, of having invented something for the good of Lancashire people, who turned against him for it.

"Tennyson has hymned the praises of our wondrous 'mother age,' and bids us remember how much better 'fifty years of Europe than a cycle of Cathay.'

"Every one can see the great contrast between the material condition of to-day and that which existed centuries ago. Take the last century or thereabouts; the merely material, physical, mechanical change in human life is greater than occurred in the 1,000 years, nay, even 2,000 years or more, that preceded it. In England this material change has been more rapid than in any other country, and is beyond parallel in the world's history. Yet the question has been asked in our times, 'With a thousand times the resources of any that preceded it, does it use them to a thousand times better purpose?'"

SHAFT COUPLING.

The engraving shows a device by which the ends of two shafts may be quickly and effectively joined. The bore of the two sleeve sections, A, is slightly smaller than the shaft



GOLDEN'S SHAFT COUPLING.

they are to embrace when they are put together. In one section the key seat, *a*, is formed. The sections are tapered toward the ends and provided with a slight recess, *a'*, to allow the central collar, C, to turn freely on them. This collar is provided with two circular projections, *c*, one having a right hand and the other a left hand screw thread, and is bored sufficiently large to slip readily over either end of the sleeve. The collars, B, are each provided with a conical shaped bore sufficiently large to closely embrace the tapering ends of the sleeve, and are formed with projections on the inside which have bores, *b*, threaded to correspond with and engage the threaded projections on the central collar. The collar, C, has four spanner holes, and the collars, B, two each.

After the collars, B and C, have been slipped over the ends of the shaft, the latter are brought together and the key placed in position. Then the sleeve sections are placed in position, and the collars, B, brought in contact with the central collar. By turning the collar, C, the collars, B, are drawn toward the center, and the sections are tightly pressed against the shafts, which they firmly hold.

This invention has been patented by Messrs. T. E. and J. P. Golden, and further particulars may be had by addressing Golden Bros., Columbus, Ga.

SLATE for roofing originally costs, per square, $4.50, and lasts at least 60 years; boards cost $2.00, and lasts 8 years; shingles cost $4.00, and last 12 years; corrugated iron costs $6.00, and lasts 20 years; and tin costs $6.50, and lasts 20 years. Making the average cost per annum as follows: slate, 7½ cents; boards, 25 cents; corrugated iron, 30 cents; tin, 32½ cents; and shingles, 33⅓ cents. Making slate, without reference to other considerations than original cost and life, almost four times cheaper than boards, more than four times cheaper than corrugated iron and tin, and nearly five times cheaper than shingles.—*Slate Trade Journal.*

DECISIONS RELATING TO PATENTS TRADE MARKS ETC.

United States Circuit Court.—Northern District of Illinois.

CURRAN *et al vs.* BURDSALL.—PATENT LUMBER DRIER.

Blodgett, J.:

Where a patentee after selling all his rights under the patent and subsequently purchases an older patent to defeat his assignee's rights, *Held* that such proceeding is manifestly unjust and inequitable, even if the older patent clearly anticipates the patent for the device sold.

Where a patentee has sold all his right, title, and interest in, to, and under his patents and subsequently purchases an older patent, *Held*, that by such subsequent purchase an assignee cannot be dispossessed of the full benefit of what has been acquired from the patentee.

Where others are associated with the patentee in the purchase of a prior patent subsequent to a sale by the patentee of all his right, title, and interest in, to, and under his own patents, *Held* that the prior sale operates as a license as against all of the purchasers.

If others join with the seller in the purchase of the prior patent, such owners must look to the original seller for their compensation.

United States Circuit Court.—Southern District of New York.

THE ATLANTIC MILLING COMPANY *vs.* ROBINSON.—TRADE MARK CASE.

Wallace, J.:

The proofs show that in 1861 the firm of Alex. H. Smith & Co., then the proprietors of the Atlantic Mills, at St. Louis, Missouri, adopted the word "Champion," and employed it to distinguish a particular quality of flour made and sold by them. From that time until the present it has been used as a trade mark either by that firm or the several firms and corporations that became the proprietors of the property and business of the Atlantic Mills. The flour to which it was applied was particularly adapted for the Southern export trade, and became generally known and recognized as the production of the Atlantic Mills by the word which was thus used to designate it. The complainant has not made proof of any formal transfer by Alex. H. Smith & Co. to any of the succeeding proprietors of the Atlantic Mills of the right to use the trade mark, and if complainant has acquired that right it is because it passed upon the purchase of the mill property and business as an accessory thereof to each purchaser who became the proprietor of the premises, including the complainant, without any agreement respecting the trade mark.

The right to the exclusive use of a word or symbol as a trade mark is inseparable from the right to make and sell the commodity which it has been appropriated to designate as the production or article of the proprietor. It may be abandoned if the business of the proprietor is abandoned. It may become identified with the place or establishment where the article is manufactured or sold to which it has been applied, so as to designate and characterize the article as the production of that place or establishment rather than of the proprietor. A trade mark of this description is of no value to the original proprietor, because he could not use it without deception, and therefore would not be protected in its exclusive enjoyment. Such a trade mark would seem to be an incident to the business of the place or establishment to which it owes its origin, and without which it can have no independent existence. It should be deemed to pass with a transfer of the business, because such an implication is consistent with the character of the transaction and the presumable intention of the parties.

Decree ordered for the complainant.

Non-Freezing Wet Meters.

Chloride of magnesium is a by-product of salt working, found in the deposits lying above the true rock salt. Three parts of this material are dissolved in five parts of warm water, and diluted to 22–23° Baume, to make the solution for filling meters. The salt costs, in Dessau, 10 marks per 100 kilos. In 1879 a number of new and old meters at a small station were charged with this mixture; and the result has been so favorable, that its use has since been extended. The solution is used in the first filling of consumers' meters, precisely the same as water, and the corrections for level are made with water in the ordinary way at the following visits of the inspectors. After two or three adjustments, however, the water line is found to maintain remarkable constancy, as the solution does not evaporate. In consequence of this feature, there are fewer deposits of water in consumers' pipes.

The greatest advantage on the side of the chloride of magnesium, however, is its power of resisting frost. In Central Europe this is a most important consideration; and when, as in this case, a non-freezing solution is also non-corrosive and non-volatile in hot weather, the argument on behalf of adopting it is conclusive. It might have been thought that the use of this solution instead of water would be an additional expense. But, as already stated, the contrary is the fact; for taking into account the prevention of damage to the meters from frost, the diminished charge for inspection and watering (due to the constancy of the water line), and the saving in special cold weather inspection, there is a considerable economy from the use of chloride of magnesium, apart from the great advantage of preventing complaints from consumers during severe frosts.