

TOOTHED-WHEEL WIRE FENCE.

The engraving represents an improved wire for wire fences recently patented by Mr. Jacob Stoll, and being introduced by Messrs. Jacob Stoll & Co., of Fountain City, Wis. In this wire the usual rigid barb is replaced by a toothed wheel which is capable of revolving, thereby avoiding injury to cattle which may come into contact with it, while it affords a perfect barrier to the passage of either large or small animals.

The wire, as will be seen by reference to the engraving, is made with alternate twisted and looped sections, the latter being pressed inward at the middle to form bearings for the spur or toothed wheels and to receive the wires which bind the two sides of the loop together and also form the main support of the toothed wheels.

Fig. 1. shows a portion of the wire complete, and Fig. 2 shows the parts in detail.

This form of fence wire has a great advantage over those having fixed barbs, as the toothed wheels simply prick the animals without tearing their skin or flesh.

Further information in regard to this invention may be obtained by addressing Messrs. Jacob Stoll & Co., as above.

Another Sinking Railway.

An addition must be made to the list of railway submergences printed in this paper some months ago. One day last summer a strip of railway, eight rods in length, near Ravenna, Ohio, suddenly sank, leaving in its place a pond out of which flowed a stream "the size of a barrel," bearing large numbers of white shiners, sunfish, and rock bass. Gravel, to the amount of 4,000 loads, was thrown into the opening and a new bed made for the road; but the work was no sooner completed than it followed the original part into the same mysterious cavity.

NEW HAMMERLESS GUN.

Mr. William W. Greener, of St. Mary's Works, Birmingham, England, some few months ago turned his attention to breech-loading guns without hammers. The points primarily considered were the important ones of durability and simplicity, combined with safety and easy manipulation, and the engraving shows a gun in which Mr. Greener has successfully combined these essentials.

Fig. 1 is a longitudinal section of the gun, and Fig. 2 is a view from the under side, with the lock plate removed. The barrels are hinged to the breech frame in the usual manner; but instead of the ordinary gun lock without side hammers, the tumblers, A, are made nearly in the form of an elbow lever. These tumblers have their upper ends curved forward, and are provided with a small rounded point, which is arranged to strike through a small hole at the center of the breech piece instead of the ordinary firing pin. The lower front portions of the tumblers, A, are extended forward in the form of a flat arm, and these arms are curved laterally inward, so that their inner ends nearly meet at the center, as shown in Fig. 2, each arm terminating with a small rounded projection on its lower side. These tumblers, A, are located in a recess which also contains the mainspring.

To one of the projections in rear of the joint is pivoted a pendant, C, which plays loosely in a vertical slot in the center of the front arm of the breech frame, directly in front of the converging arms of the tumblers. This pendant has a hook-shaped projection which engages under the front ends of the arms of the tumblers, so that when the rear ends of the barrels are raised the hook raises the arms of the tumblers far enough to permit the dogs, B, to engage in a notch in the tumblers, thus automatically cocking the arm.

To hold the hook, C, back far enough to engage with the arms of the tumblers, a pin extends through a projection on the under side of the barrels. The usual style of triggers are arranged to operate upon the rear arms of the dogs for firing the arm.

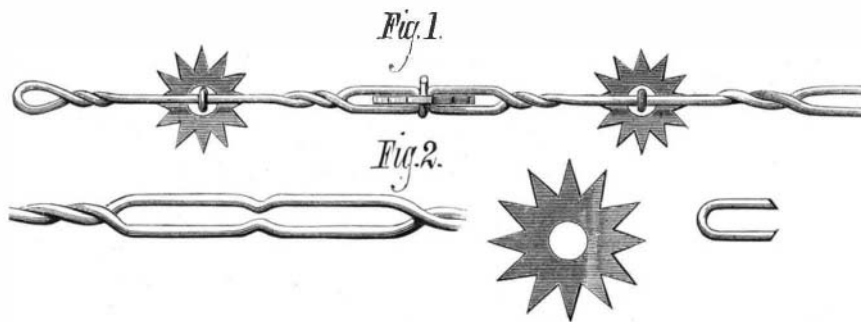
Yale's Heliometer.

The heliometer in process of construction for the new observatory of Yale College will have a six inch aperture and eight foot focal distance. Though an inch less in aperture than the largest instruments in Europe, it is expected that this will be unsurpassed in working efficiency. The cost of the new instrument will be about \$10,000.

The Gabble of Science.

The tendency nowadays to bow down to science, and to measure everything by its scientific standing or importance, has a ridiculous side as well as a good one. The London *Times* comments as follows:

"The popularization of science has its drawbacks, and perhaps not the least of them is the sort of worship, analogous to that of very young ladies for the curate of the parish, which is offered by silly people to those who are—or, more frequently, who are supposed to be—the chief representatives of scientific learning. The absurdities of the so-called æstheticism are not peculiar to gentlemen who lunch upon the sight of a lily, but have their close analo-

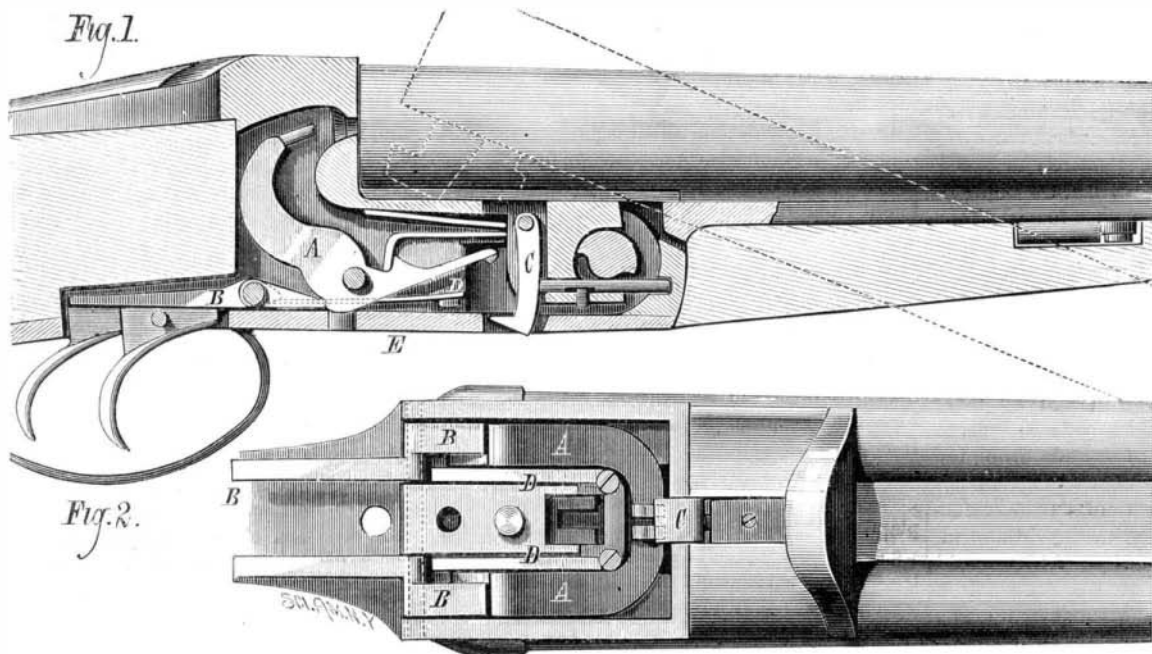
**TOOTHED-WHEEL WIRE FENCE.**

gies among those who profess to be scientific. There is a scientific jargon as well as an art jargon, both of them, in the lips of most people, concealing, or it may be even exposing, the most profound ignorance of the respective subjects of discourse. And there is a widely spread want of knowledge that the writer who has most successfully popularized a given question is not of necessity the one who is best acquainted with its depths."

The Mountains of North Carolina.

A correspondent of the *Tribune*, who went to the mountains of Tennessee and North Carolina "to avoid the heats of a Northern summer," writes as follows from the summit of Roan Mountain, 6,367 feet above the sea:

The prospect is magnificent; the grandest scenery in the United States east of the Yosemite. Over 100 mountain tops, not one of them less than 4,000 feet in height, are in full sight. This uplift in the heart of the Alleghanies, the Unaka range to the north, the Blue Ridge to the south, is declared by Prof. Gray, of Harvard, to be "the most beautiful mountain east of the Rockies." The flora on its sides changes with its increasing altitude. Chestnuts, sycamores, and maples clothe the base of the mountains, yellow birches and magnificent wild cherries line its sides, and beeches, alders, fir balsams, and immense groups of rhododendrons crown all but the very crest. On the top are 1,500 acres of the richest mould; the winds sweep the crest too fiercely for trees. Here botanists love to come to study mountain flora. Pro-

**GREENER'S HAMMERLESS GUN.**

fessors Gibbs and Goodale, of Harvard, have left us, but seven other scientists remain to seek health and to study science. Here they find mountain heather, superb groups of rhododendrons, azaleas, and other shrubs and grasses that can be found nowhere else in America. They will not grow at lower altitudes or on the same height in other places.

The fauna of these mountains is that of much colder regions. Little snow birds abound. They find the temperature their nature craves a thousand miles this side of Canada. An occasional eagle, numerous buzzards, and many robins fly around. Great clouds of fog fill the valleys, and at times sweep the mountain top. But the atmosphere is of

such slight density that no moisture is felt even in the midst of a cloud. Waves of fog roll visibly by and fold one in their white embrace, but leave everything dry; dampness is a thing unknown. The hygrophant morning and evening records from 85° to 96° of moisture, a very large percentage; yet no dampness is felt on dress or skin. The springs are delightfully cool. The one nearest the hotel is only 13° above freezing. Ice is unneeded here.

NEW INVENTIONS.

An improvement in hand trucks, patented by Mr. William May, of Binghamton, N. Y., consists of a double hook hinged on the lower part of the truck frame, so that it may be thrown up or open to rest upon the toe or end cross bar of the device, and operate, in combination with a hook that slides on the central longitudinal bar of the truck, to take hold of and hold a barrel, cask, or large box, the double hook being so hinged that it can be turned or folded down for the purpose of adapting the hand truck for the conveyance of bags or other articles that might be injured by contact with them.

A toy bank, made in such a manner that coin cannot be shaken out through the inlet openings, has been patented by Mr. Edward L. Gobisch, of Jersey City Heights, N. J. The invention consists in combining with the top of a toy bank a flattened inlet tube having keepers attached to the lower ends of its edges, wires sliding in the keepers, and carrying a plate, so that when the bank is inverted the inner end of the inlet tube will be covered, and the escape of coin prevented.

An improvement in the class of heating stoves and grates in which cylindrical pipes are employed to form the inner side walls of the same, the pipes being open at the ends to allow air to enter and pass through them, and thereby become heated, has been patented by Mr. Ross Hall, of Millersburg, Ohio. The invention consists, first, in forming the inner wall or walls of the fire chamber or space of a stove or grate of pipes, having in cross section the form of a triangle (preferably an equilateral triangle), securing a greater heating surface than is practicable with pipes of cylindrical or oval form.

Mr. Enos P. Miles, of Clay Center, Kan., has patented improvements in the arrangement and operation of the evaporating pans and the furnace flues and dampers for regulating the direction and quantity of heating passing under them, the object of which is to supply to the pans a gradually decreasing heat suitable to the successive stages in converting the juice to sirup.

An improved balance slide valve has been patented by Mr. Edmund Haug, of Whistler, Ala. The object of this invention is to secure equal steam pressure upon the top and bottom of a steam engine valve as soon as expansion takes place in the cylinder.

Mr. Thomas B. Cook, of New Lancaster, Ind., has patented an apparatus for filling ditch scrapers, so constructed that the scrapers can be filled more rapidly and with less labor than when the ordinary apparatus is used. The invention consists in a lever anchored at one end by a double clevis, two chains, and two stakes, and provided with a hook and chain to receive the scraper. A shoe or wheel supports the free end of the lever.

An apparatus for raising and lowering the sashes and covers of forcing boxes, cold frames, and similar uses, so constructed that a number of sashes and covers can be raised at the same time and by the same operation, has been patented by Mr. Lewis G. Stocking, Burlington, Iowa.

A combined ash sifter and bucket, so constructed that the ashes may be sifted in a room without raising a dust, has been patented by Mr. Charles C. Burnett, of Iowa City, Iowa, and which, at the same time, will be convenient in use, strong, and durable.

The invention consists in a combined ash sifter and bucket formed of the bucket made with an offset and slots in its upper part, and having a pivoted bail, the sieve having a supporting flange and a handle, and the sliding guard plate to prevent fine ashes from escaping.

Mr. Charles H. Shaw, of Troy, N. Y., has patented a durable and effective clasp that can be attached to the bracelet without soldering.

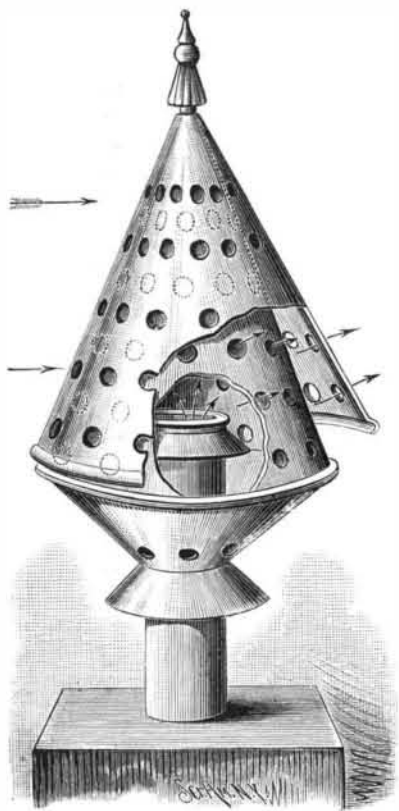
Mr. John A. Harrington, of Groesbeck, Texas, has patented a simple device for preventing the tire from becoming loose because of the shrinking of the felly, and for preventing the loosening and rattling of the spokes.

Method and Apparatus for Destroying Fire Damp.

When fire damp or carbureted hydrogen has accumulated in large quantities in a mine it has been the custom heretofore to vacate the mine and fire the gas. This process is ordinarily attended with great danger, and it has been found that the gas, when lighted, will, in most cases where the gas is heavy, first burn slowly, and as the flame increases in volume the gas will become highly heated from contact therewith, and, being driven into a confined space, will be caused to explode with great violence, and will destroy the timbering of the mine and choke up its passages with debris, which will render them inoperative and oftentimes result in the loss of life. Robert Blackledge, of Enfield, Conn., seeks to overcome this danger by the employment of a great number of separate flash torches or rockets, that are to be distributed over the mine in various places, wherever the gas may be accumulated, and that may be lighted at such points simultaneously or in quick succession, so that the gas will be lighted at a new point before the flame from the first point lighted shall have reached the second point. By this means the gas may be ignited at the farthest point from the pit's mouth first, and carry the gas flame, after damp, and smoke forward toward the mouth of the pit or the nearest draught outlet, where the greater part of the poisonous gases of combustion and the gases remaining unconsumed will escape with the draught harmlessly. The method and apparatus for accomplishing this was patented September 21, 1880.

NEW CHIMNEY CAP AND VENTILATOR.

We give an engraving of a novel and simple chimney cap recently patented by Mr. William D. Bartlett, of Amesbury,



BARTLETT'S CHIMNEY CAP AND VENTILATOR.

Mass. It is designed to meet all the conditions necessary to the perfect working of a chimney or ventilator, and works equally well in a high wind or perfect calm. In this respect it is claimed that this device has great advantages over others intended for the same purpose, and in its construction it is certainly as simple as could be desired.

The chimney cap consists of a perforated cone closed at the bottom and forming a housing around the escape flue, which cap is fitted with a perforated conical hood that is slightly larger than the fixed cap, and is hung loosely at its apex, so that it may swing freely. The holes in the hood do not register with those in the fixed cap, so that as the hood is pressed by the wind against the cap the openings are closed on the windward side, while there is free exit at the opposite side.

The cones are broken away in the engraving to show the internal construction.

This device is adapted equally well to chimneys and to ventilating shafts or flues.

The Comet in Pegasus.

The comet discovered by Lewis Swift in the constellation of Pegasus is as large as any nebula north of the equator, except the nebula in the triangles and the great nebula in Andromeda. It can be seen in moonlight, but is not a bright object. It may be the comet of 1812, but this is a mere surmise. The condensation and nucleus are eccentric, evidently indicating the presence of a tail greatly foreshortened. The comet is so nearly in opposition that the tail is about on a line joining the earth and sun. Its slow motion indicates that it is either approaching the earth or receding in almost a direct line. If approaching it may be come an object of great interest. Its apparent size indicates that it is either quite near the earth or else enormously large.

Paper Making Industries in China.

The Commissioner of Customs at Wuhu (China), in a report recently issued, states that paper is very extensively manufactured in the numerous little villages situated in the valleys among the hills, about eight miles to the southeast of the city of King-hien. It is made from the bark called T'an-shu-p'i, the paper-mulberry tree bark, and wheat straw, which, after having been well washed and boiled with a certain proportion of lime, is again washed, and then exposed to dry for a whole year on the sides of the hills, in spots where the grass and brushwood have been previously cleared away for this purpose. After the year's exposure, it is washed once more, and then pounded on a stone with a large wooden hammer; it is supposed to require 1,400 blows from this hammer to reduce it to the necessary consistency; after which it is removed to another building, and left to soak until it becomes quite a pulp, in a large earthenware vessel, containing a liquid glue, made from boiling the branch of a tree called the Yangkowt'eng, a species of hooked vine. This pulp is then put into a cistern of water, and well stirred up with a stout stick. A finely made bamboo frame, or sort of long oblong sieve, is taken by two men, one at either end, and dipped twice into this liquid, which is made to run equally over the whole surface, somewhat after the manner in which the photographer allows the developing solution to run over his plate. By this means, a thin and tolerably even layer is left, which soon partially dries and forms the sheet of paper, and which is removed by simply reversing the frame. As soon as a sufficient number of sheets has been made, they are taken to the drying room. This room contains a large brick oven, coated on the outside with lime, and built up to within a few feet of the roof. Upon the top of this oven the paper is placed, in parcels of about a foot in thickness, until perfectly dry; after which sheet by sheet is damped once more, and while still moist, is by means of a soft brush made to adhere to the sides of the oven for a short time, to undergo its final process of drying. It is then taken away to the packing room, and made up into bales, weighing from 80 to 120 catty each, the catty being equivalent to 1 1/2 lb. avoirdupois. The largest sized paper is about one "chang" (11 3/4 feet) long, and is worth one dollar a sheet. This particular size of paper is made entirely from the "T'an-shu-p'i," but the smaller sizes are composed of a mixture of the above-mentioned bark, or the bark of the paper-mulberry tree, and wheat straw. This paper is known by the name "Suan-chih," and is considered a good quality paper in the Chinese markets.

The Grotto Under Mount Rossi, Sicily.

The eruption of Mount Etna in 1669, says *La Nature*, was the most formidable of historic times. The side of the mountain opened for a length of about four miles, and there issued from it a torrent of lava four miles broad, which, after destroying several villages and half of the city of Catane, flowed into the sea and formed a promontory two miles long by half a mile wide and sixty feet high. At the same time the scoria and sand thrown out by the craters formed a mountain with a double crest, that was at first called Monti della Rovina, and later Monti Rossi, on account of the reddish color that the scoria on the two crests assumed through the oxidation of the iron contained in it. The higher of the two crests is about 800 feet above Etna, and about 3,000 feet above the sea. In the interior of the cone of Mount Rossi there are two immense extinct craters, exhibiting the characteristic funnel-shape, and the sides of which are formed of scoria in a decomposing state. Up to 1823 no one had had the curiosity to descend to the bottom of these craters; but at this period the intelligent observer, Mario Gemellaro, undertook their exploration. He saw with some surprise a horizontal aperture at the bottom of one of the cavities, and entering it with a torch, he found, after traversing a suite of corridors resembling the galleries of a mine, a large well, into which he caused himself to be lowered by means of ropes. At some feet from the bottom of this well he found a vast rectangular room, at the further end of which there was a passage which grew smaller and smaller, and at last became impassable. This remarkable grotto, which was named Grotto della Palombe, is situated exactly in the center of Monti Rossi. It has now been opened to travelers, the descent being facilitated by a stairway, and the cavern being illuminated by magnesium light instead of the former resinous torches.

Concussons as the Cause of the Oil Fires.

To the Editor of the Scientific American:

Having noticed in your columns the troubles of the oil regions, I thought I would make a few experiments with a view to learn the true reason of the tanks being fired. I find that under certain conditions a mixture of oil vapor and water vapor can be fired by concussion. I would suggest as a remedy a floating cover to each tank. The amount of oil lost by evaporation would pay the cost of such cover, and it would always act as an extinguisher. Heavy thunder is the probable cause of the fires. D. F. STAFFORD.

Skipanon, Clatsop Co., Oregon, October, 1880.

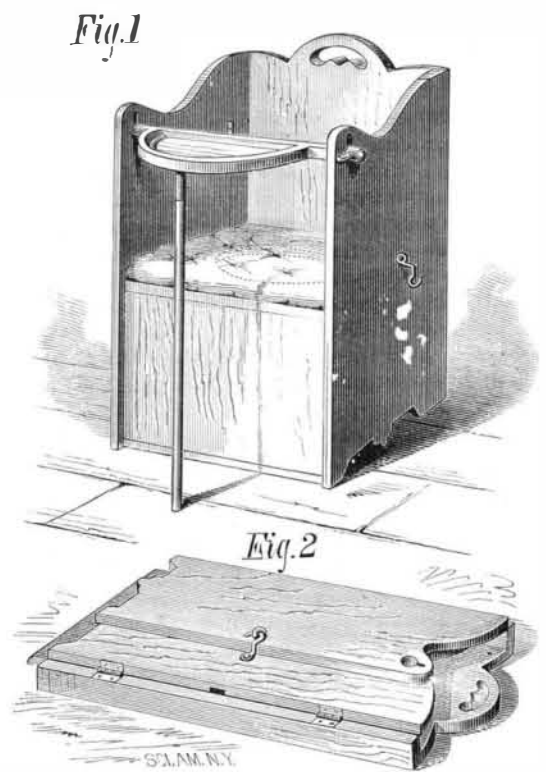
TWINKLING OF THE STARS.—This is generally conceded to be due to moisture in the upper air. M. Montigny, in a paper published in *Les Mondes*, holds that very pronounced twinkling of the stars indicates either commotion in the upper regions of the atmosphere or a sudden fall of temperature there, thus denoting the conditions of an early appearance of bad weather.

Rare Elephants.

There are now on exhibition in this city two peculiar elephants brought from the mountains of the Malay peninsula, about 800 miles from Singapore. They are remarkable for their small size, being respectively 28 and 36 inches tall; and for being covered with a thick coat of bristly hair or wool. They are supposed to be from five to seven years old. In size they resemble the extinct elephants of Malta, and in covering, those of Siberia. Their woolly coat is attributed to the circumstance that they live high upon the mountains where the climate is cold. The species appears to be all but unknown to naturalists, this pair being the first that have survived the passage through the heated low country to the coast and the subsequent journey by sea. The sailors on the steamer which brought them—the Oxfordshire, Captain C. P. Jones—named them Prince and Sidney. They are described as playful and harmless, and they keep their little trunks stretched out to strangers to be petted. They love to be scratched on the under side of the trunk close to the mouth, and they hold their trunks curled back over their heads as long as any one scratches them. Like elephants of larger growth, they keep up a swaying motion, either sidewise or forward and backward. When a visitor lets one of the little fellows take his hand he delicately curls his proboscis around it and carries it gently to his mouth. Then he trumpets his satisfaction.

IMPROVED NURSERY CHAIR.

The engraving shows a light and convenient nursery chair recently patented by Mr. J. C. Klett, 260 West 37th street, New York city. When in use it appears as in Fig. 1, but it is readily folded into the compact form shown in Fig. 2.



KLETT'S NURSERY CHAIR.

The chair is composed of a back, two hinged sides, and a hinged seat, all of which are provided with hooks or catches for retaining them in position while the chair is open for use. The chair is also provided with a pivoted shelf which serves as a stay for the sides and is readily separated from the other parts for packing. This chair is very convenient for regular every day use in the nursery, and is a necessity for persons traveling with children. It folds so compactly and is so light that it may be readily carried in the trunk.

Further information may be obtained by addressing the inventor as above.

Lowell Mills Burned.

Two important Lowell mills, the Chase and the Faulkner, were destroyed by fire October 6. The former was of brick, 225 feet long by 60 wide and 68 feet high, five stories on the front elevation and six in the rear, with a one story L, used as a boiler house. The mill contained 12 sets of cards, 6,600 spindles, 60 broad looms, 40 of them newly equipped last year. It was built in 1863, and gave employment to 300 hands.

The Faulkner mill was of brick, 91 by 54 feet, five stories high, and a three story L, 25 by 54 feet. It had 8 sets of cards, 2,720 spindles, and 44 looms, employing 100 hands. The annual production of the two mills was 750,000 yards of fancy cassimeres and cloakings, consuming 600,000 pounds of wool.

Preserving Rubber Instruments.

Various articles and instruments made of rubber are apt, with time, to become dry, to crack, grow brittle, and lose their elasticity. Dr. Pol recommends the following simple mixture: Water of ammonia, one part; water, two parts; in which the articles should be immersed for a length of time, varying from a few minutes to one-half or one hour, until they resume their former elasticity, smoothness, and softness.