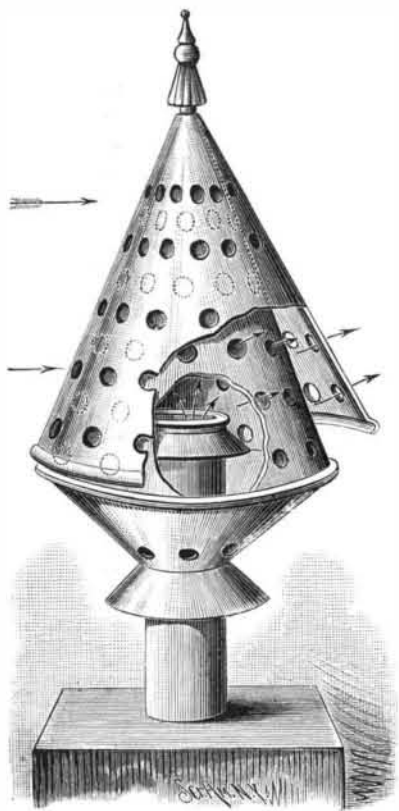


Method and Apparatus for Destroying Fire Damp.

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 shortened. 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 1/4 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.

Conussions 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.

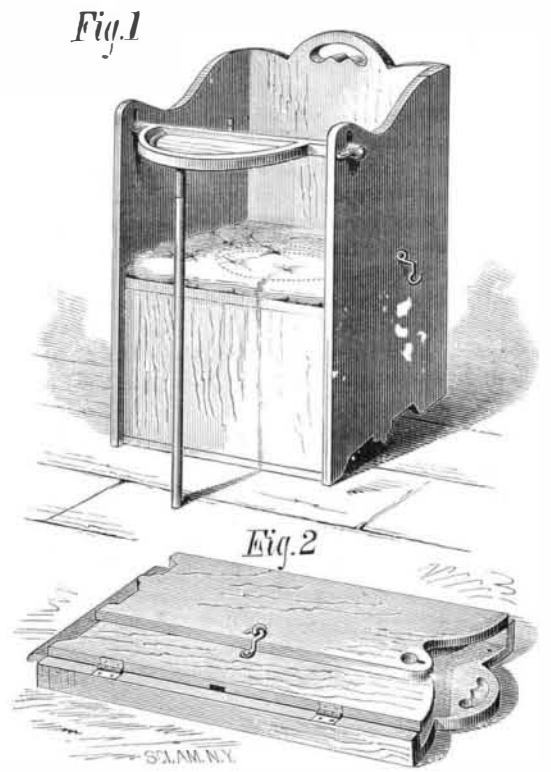
TWINKLING OF THE STARS.—This is generally conceded to be due to moisture in the upper air. M. Montigny, in a paper published in *Les Mondes*, holds that very pronounced twinkling of the stars indicates either commotion in the upper regions of the atmosphere or a sudden fall of temperature there, thus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