are each made of a single piece of metal, having at each end an ear adapted to inclose the rope. These ears may be formed like a split ring, having on their inner surface a spiral projection which embeds itself in the fibrous strands, as shown in Figs. 2 and 4. The ears may also be made in the shape of a fork, with projections or lugs which embed themselves in the fibrous strands when the prongs are closed around the rope. The form of the rung equalizes the strain on both ropes when carrying a weight, and their shape prevents slipping of the foot of the person ascending or descending the ladder, while permitting a firm grip with the hand. Such a rope ladder is very strong and still quite flexible, while the burning or singeing of the fibrous covering of the cables will not destroy its utility.

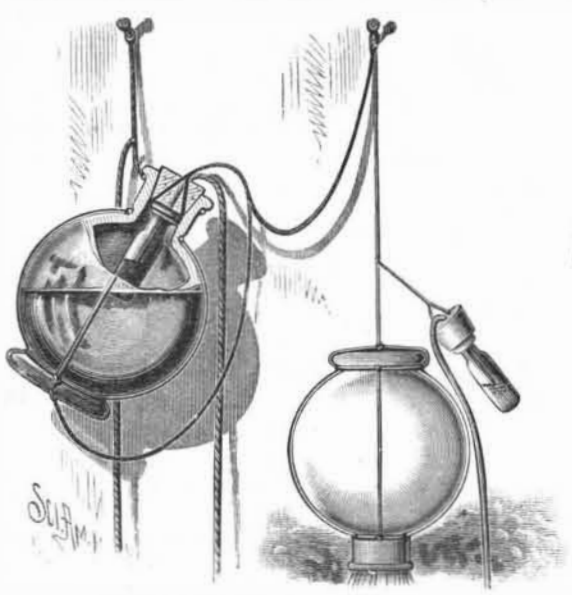
Carbonate of Lime for Cancer.

Nearly twenty years ago Dr. Peter Hood published a communication on the value of carbonate of lime in the form of calcined oyster shells as a means of arresting the growth of cancerous tumors. In the *Lancet* for May 7, 1887, he publishes a second communication on the same subject, in which he states that although his opportunities for employing it in suitable cases have not been large, the results which he has attained through its use have been extremely satisfactory. He refers to several cases in which a persevering use of the calcined shell powder arrested the growth and pain in tumors undoubtedly of a cancerous character. Dr. Hood urges the persistent and fair trial of this remedy in cases of cancer where the nature of the affection is early recognized. It can do no possible harm, it need not interfere with other remedies for the relief of pain, its action can be referred to an intelligible and probable hypothesis, and it has been of utility in a sufficient number of cases for warranting us in reposing some confidence in its use.

An advantage of the treatment is that it may be readily prepared at home by baking oyster shells in an oven, and then scraping off the calcined white lining of the concave shell. The substance thus obtained is to be reduced to a powder, and as much as will lie on a silver quarter taken once or twice a day in a little warm water or tea.—*Therapeutic Gazette.*

AN IMPROVED FIRE GRENADE.

A simple device for extinguishing fires at an early stage, by means of a grenade containing an extinguishing liquid, is illustrated herewith, and has been patented by Mr. Silas H. Van Houten, of Patriot, Ind. To the stopper is attached one end of a wire, the opposite end of which is secured to a fixed support, just over the spot where there may be supposed to exist special danger of a fire starting. Another wire is fastened to this one, just outside the stopper, and also attached to the flanged bottom of the bottle, which is hung up by a readily combustible cord from a nail or other support. A fuse extends through the stopper and into a small bottle within the larger one, the small bottle containing powder. A fire starting near the grenade thus suspended would quickly burn off the light cord by which it is held up, when the dropping of the grenade would cause its cork to be withdrawn and the grenade



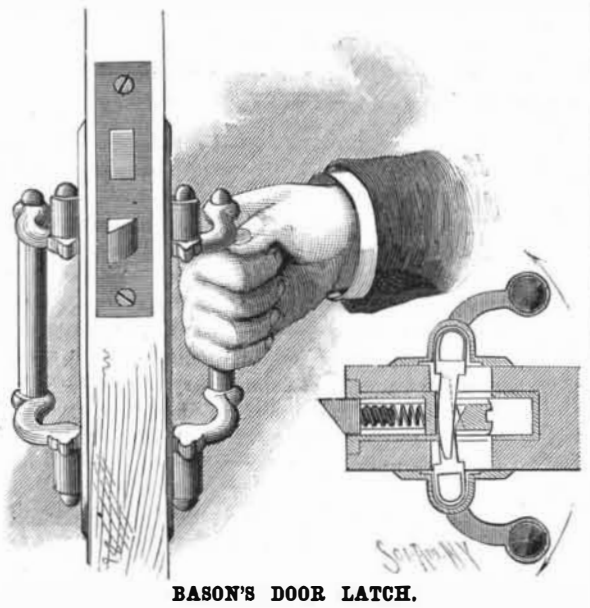
VAN HOUTEN'S FIRE GRENADE.

to be overturned, in the position shown at the right in the picture, thus discharging its contents. Should the stopper stick in the neck of the bottle, or the small supporting cord not be burned off, then the ignited fuse would explode the powder in the small interior bottle, and thus scatter the contents of the grenade. An additional cord is arranged by which the grenade may be detached from its support and inverted, if desired.

SOME queer things are seen in the Veterinary Hospital of Philadelphia. Among others are a pig's easy chair, a padded cell for a lunatic horse, a Turkish bath, and a swinging harness in which a horse may live or die without bearing any weight on his legs.

AN IMPROVED DOOR LATCH AND HANDLE.

A door latch and handle, in which the direction of the pull required to throw the latch is the same as that needed to open the door, so that the latch is almost automatic in its working, while being cheap and simple in construction, and not liable to get out of order, is shown in the accompanying illustration, one view being of a portion of the door with the latch applied and the other a sectional plan on the line of the bolt. The invention has been patented by Mr. Thomas Bason, of Englewood, Ill. The bolt is held normally extended beyond the lock piece by a spring, and the rear walls of the central recess of the bolt are divided into sections that are inversely inclined. The handle is carried by two arms, which have projections fitting within boxes



BASON'S DOOR LATCH.

at either end, the projection of the upper arm being fitted to a lever arm working within the lock case, and these lever arms from opposite sides of the door being made to overlap just in advance of the inclined faces of the rear walls of the bolt recess. With this construction each handle may be operated irrespective of the other, and in closing the door the latch bolt works independently of the handle. Upon the projection from the lower arm of the handle there is formed a downwardly extending spur, fitting within an apertured plate fixed to a spiral spring mounted within the box. When the handles have been moved in the direction of the arrows, forcing the latch bolt back within the casing, these springs are put under tension, so that when the handles are released they will be returned to their normal position. The only strain upon the latch bolt spring is that necessary to keep the bolt projected forward, consequently this spring may be light and flexible, so that the latch will work easily. The latch may be easily fitted for any thickness of door by varying the length of the lever arm, and can be used on either right or left hand doors without alteration.

Amyl Varnish.

This compound ether has recently come into use for manufacturing purposes without attracting any scientific attention. Its value depends on the excellent solvent power for pyroxylin which it possesses. Good soluble gun cotton will dissolve in it until a jelly is formed and the vessel may be inverted. On this account it has become valuable to the manufacturer of celluloid and to the manufacturer of certain kinds of lacquer for coating brass and copper. These two industries are consuming enormous quantities of this solvent, and the probabilities are that the use of it has not fairly commenced.

The employment of acetate of amyl, or pear oil, in the manufacture of artificial fruit essences has long been known, and for this purpose it has commanded a high price, so high indeed as to exclude the possibility of its general use as a solvent; but for the above mentioned industries it can be made commercially pure to answer the purpose as well as the highly purified and more agreeably smelling compound. Two patents have been taken out in England during the past three years bearing on this subject—one on account of its property of dissolving gun cotton, the other on a method of manufacture. In the former the inventors claimed the solution to be valuable for the making of varnishes, and that "when 200 parts nitro-cellulose are mixed with 600 parts acetate of amyl, a mass of doughy consistency is obtained, which can be used for any purpose for which celluloid is used. With the addition of castor oil, china clay, and a small proportion of certain essential oils, a compound suitable for the production of artificial leather may be produced."

Several methods of manufacture have been proposed, but the one most common in the United States consists in heating in a lead or glass retort a mixture of acetate of sodium or calcium, sulphuric acid, and fusel oil.

The ether distills at 137° C., has a specific gravity at 15° of 0·876, and is almost absolutely insoluble in water. Its solvent action is not confined to gun cotton, for it readily dissolves tannin, fixed and volatile oils, resins, and camphors, and may become a valuable solvent in pharmacy, in addition to the several uses it already possesses.—*Amer. Jour. Pharmacy.*

Engraving with Mercury and its Salts.

It is known that when mercury is deposited on a metal, fatty lithographic ink will not "take" upon it when an inking roller is passed over it, and that the black adheres to the untouched parts of the metal. If a well polished and clean plate of zinc is taken, and a design is traced thereon with mercury, the design will appear in brilliant white upon the gray background of the zinc. After tracing the design, an intaglio plate can be obtained by plunging the plate without being coated with varnish into a bath containing 100 parts of water and two parts at least of nitric acid. The action of the acid is very rapid, and for a long time only attacks the parts touched by the mercury. When deep enough, it can be used for lithographic work. If, instead of nitric, hydrochloric acid is used, the contrary effect takes place. The unaffected zinc is strongly attacked, and the traces of the mercury give a relief plate which can be used for ordinary typographical work.

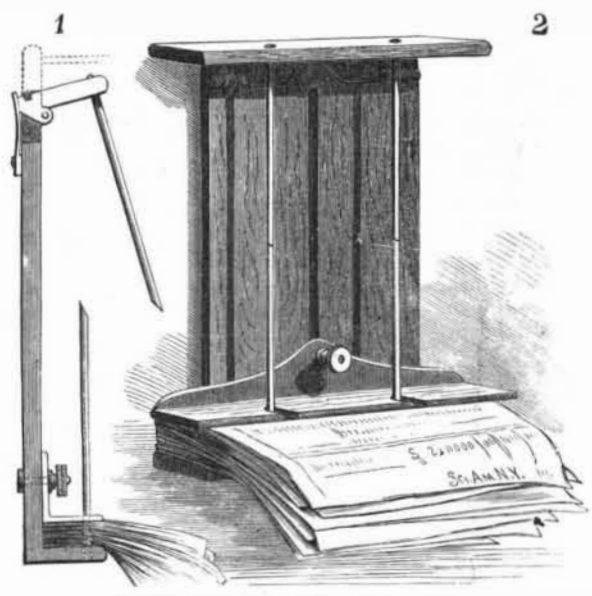
If the operator does not wish to draw upon zinc, the design can be traced upon paper with a salt of mercury. The sheet of paper being then applied for two hours to a plate of zinc, the drawing is sharply reproduced in white lines of amalgam, on the gray surface of the metal, just as if it had been traced directly.

The same result is obtained if the design is traced upon paper with a sticky substance (ink containing gum or sugar), and if it is dusted over with a mercury salt in fine powder. On dusting off the surplus and applying the sheet containing the design to a plate of metal, the same result is obtained. The same result is obtained if a newly printed proof is used, and is dusted with mercury salt while the ink is still wet and sticky. All the lines thus reproduced are chemically engraved, as has been described above. The same results are obtained by dusting with mercury salts a photographic carbon print containing a gummy substance, and the effect of half tints is even secured.

Biniodide of mercury is the salt to use.—*Memorial Industrielle.*

AN IMPROVED LETTER AND BILL FILE.

A ready reference file for retaining letters, bills, papers, and other documents, whereby they will be securely held, and from which all or any of them may be readily removed, is shown in the accompanying illustration, and has been patented by Mr. Wm. Hanford King, of Little Silver, New Jersey. The general arrangement of the back and foot piece, the latter with its fixed vertical file wires, and of the hinged head piece, also carrying file wires or pins, will be readily understood from the illustration, Fig. 1 indicating in dotted lines the position of the head piece when it is swung up to place papers on the file. The retainer, which holds the papers snugly together on the file wires, is fitted loosely with a threaded bolt and set screw, whereby it may be readily adjusted any-



KING'S LETTER AND BILL FILE.

where along the back piece. Bills and papers filed in this way are likewise readily removed in order for binding, the binding cord being passed through the holes made by the file wires, and then tied at the back. This may be more readily effected by having the top pins hollow, or by having eyes near their points.

THE celebrated Lily of the Valley perfume is said to be made as follows:

Extract of jasmine	100·0
Extract of ylang-ylang	15·0
Cardamom seeds	5·0
Oil of orris flower	10 drops

The cardamom odor, if predominating, must be neutralized with jasmine.