

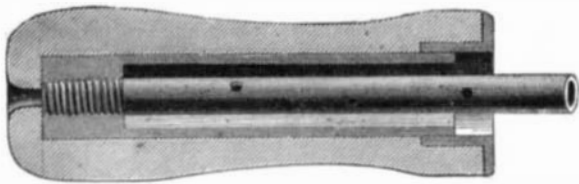
Collodion Films.

According to M. E. Gripon, if a layer of collodion, such as is used by photographers and surgeons, be poured upon a plate of very clean glass, it will be found, after the layer has dried, that an extremely thin and transparent film is formed, which, with a certain amount of care, can be separated from the glass, and may then be stretched upon a frame. This film, so placed, is seen to have some curious physical properties, which the author just named describes as follows: In the first place he finds that this delicate thin membrane reflects light exactly as glass does, and polarizes it both by reflection and by transmission of the rays of light through its substance.

M. Gripon has also found that films obtained in this manner may be procured as thin as 0.01 of a millimeter, and that when no thicker than this they transmit a very large proportion of radiant heat. Polarizing piles, he tells us, may be formed of these layers of collodion film, which are much more transparent than the piles of mica usually employed by physicists for this purpose, and necessary in studying the properties of heat; and although they are, of course, much more fragile, and require more careful handling than mica piles, they are also more easily replaced than the latter when destroyed.

NEW HANDLE FOR SOLDERING IRONS.

In ordinary soldering irons and like tools it is well known that the wood which surrounds the shank is liable to become loose on account of the shrinkage and expansion of the contiguous wood and metal, and to keep the handle tight in its place it has frequently to be driven on to the shank. This results in splitting the wood and the speedy destruction of the handle. Mr. A. A. Park, of Gill, Mass., has patented a handle which obviates this difficulty and renders the handle as durable as other parts of the tool. This handle is shown in longitudinal section in the annexed engraving. The shank of the iron is made of small gas pipe threaded at its

**PARK'S HANDLE FOR SOLDERING IRONS.**

free end and fitted to a perforated tube supported in the middle of the handle, which is hollow. This construction admits of a free circulation of air, which keeps the handle cool.

This handle may be fitted to an iron having an ordinary solid shank.

Comparative Health Statistics.

The cities of the United States which made weekly sanitary reports to the National Board of Health last year numbered sixty-eight. The Bulletin of the Board for February 19, contains in tabular form the aggregate results of reports so received, from which table it appears that Vallejo, California, was the healthiest place reported in 1880, and Norfolk, Va., the unhealthiest. The average life in Vallejo was 83.5 years, and only one person in 1,000 of population died of consumption, while in Norfolk the average life was only 27.9 years, and one person in 241 of population died of consumption. The aggregate population of the sixty-eight cities is 7,359,937, the average duration of life in them was 44.5 years, and there was one death from consumption for every 326 of population, and one death from acute disease of the lungs for every 429 of population. In other words, of every 100 deaths 24.4 were from lung diseases, and of these 14 were from consumption and 10.4 from acute diseases of the lungs. Four of the best cities for health were Yonkers, N. Y., average life, 70 years; Omaha, Neb., average 68 years; Utica, N. Y., 67.5 years; Keokuk, Iowa, 67.1 years; and four of the worst cities were Jacksonville, Fla., 35 years; Vicksburg, Miss., 34.8 years; Charleston, S. C., 31.3 years; and Savannah, Ga., 30.6 years. In Boston the average life was 42.5 years, deaths by consumption one in 246, by acute lung disease one in 336 of population; in New York average life 37 years, death by consumption one in 254, and in acute lung disease one in 260; in Philadelphia, life 47.8 years, consumption one in 314, acute disease one in 844; in Cincinnati, life 47.8, consumption 346, acute disease 494; Louisville, life 47.6, consumption 300, acute disease 410; Indianapolis, life 47.8, consumption 447, acute disease 381; Chicago, life 48, consumption 593, acute disease 453; St. Paul, life 58.5, consumption 561, acute disease 715; San Francisco, life 51.8, consumption 295, acute disease 459; New Orleans, life 41.3, consumption 256, acute disease 584; St. Louis, life 52, consumption 447, acute disease 580. The difference between New York and Philadelphia in the general death rate and in that from consumption is great; in that from acute lung disease it is striking. Next to lung diseases diarrheal disorders cause the greater number of deaths. In every 100 deaths from all causes in the sixty-eight cities, 10 are from diarrheal disturbances, and there is one death from this source in every 436 inhabitants.

**RECENT DECISIONS RELATING TO PATENTS.
United States Circuit Court.—District of
Massachusetts.**

SMITH *et al.* vs. MERRIAM *et al.*—PATENT PRESSER FOOT FOR SHOE SEWING MACHINES.

Lowell, J.:

1. Where the thing shown and described in the original patent and in the reissue is the same, but in the original has been claimed with all its features in combination, the patentee can in the reissue modify or divide his claim so as to embrace severally the distinct features of the thing invented.

2. The case of *The Giant Powder Company vs. The California Vigor Powder Company et al.* (18 O. G., 1,339) considered and commented upon.

3. The most natural construction of the law relating to reissues (Rev. Stats., sec. 4,916) would perhaps be that, if a patent should be inoperative by reason of a defective specification or invalid for claiming too much, the defect might be supplied or the excessive claim be reduced by reissue.

4. But the courts have given a very different interpretation, much wider in most respects and narrower in only one. They do not permit a defective specification to be supplied excepting from the drawings or model; but they do permit the claim to be varied, provided the same invention is described in both patents.

5. The law is extremely liberal, perhaps too much so, and has been much abused; but if we change it suddenly we shall make a destruction of titles which it is impossible to contemplate without dismay.

6. As to the mere question of the necessity for a reissue, supposing the new patent itself to be unobjectionable, the decision of the Commissioner has always been held to be final, and this for an unanswerable reason that no patentee, however honest or careful, can be safe in obtaining a reissue if he is to be informed when he gets into court that the judge is unable to see why he should have surrendered his first patent. The slighter and more obviously unobjectionable the change the stronger will be the argument that there was no occasion to make it, so that honest and careful patentees will be the most likely to suffer.

7. A mistake by the Commissioner as to the necessity of issuing a new patent is not an excess of jurisdiction, but a mistake in a matter clearly within his jurisdiction, and the real question is whether it is one which the courts will correct by destroying a new patent after the old one has been surrendered.

8. Urgent reasons of justice require that, upon the mere question whether the paper called a reissue shall be given, the finding of the Commissioner should be, as it has hitherto always been held to be, conclusive.

9. If it be found that the claims the original patent were valid, and that the reissue for the same invention states the claim or claims in a different way, the law is well settled that the change does not of itself vitiate the new patent, but that, on the contrary, the original claims are conclusively presumed to have been made as they were through inadvertence, accident, or mistake.

10. It has been brought out a little more decidedly by the later cases that the invention must be the same; but it has never been held in the Supreme Court or any circuit court that the Commissioner's decision is not final as to the propriety of a reissue as distinguished from its validity upon what may be called its merits, or that the claims may not be varied to express the real invention.

11. The claim is part of the specification, and if defective may be amended.

12. The Reissue No. 7,558, to Daniel A. Sutherland, March 13, 1877, for "improvement in presser-feet for sewing machines," was granted in order to enable the patentee to claim the actual operations of his tool in detail, which is a perfectly legitimate reason for a reissue until the law is changed by Congress or the Supreme Court.

Patent sustained.

MECHANICAL INVENTIONS.

Messrs. Francis W. Ashton, of Hyde, county of Chester, and William Mather, of Salford, county of Lancaster, England, have patented machinery for washing fabrics, which consists in certain combinations of machinery, whereby the fabrics in a distended state are continuously lifted out of and immersed in the water, soap liquor, or other liquid, while passing through the machine, so as to obtain a dashing action, which will effectually cleanse the piece while extended to its full width and without undue tension, thus obviating the necessity of washing pieces that are printed with color in the form of a rope, as at present.

An improved glove-sewing machine has been patented by Mr. Claude M. Boland, of New York city. This invention relates to that class of machines for sewing gloves and furs in which are employed two parallel feed disks, a reciprocating needle, and an oscillating looper; and it consists in an arrangement of parts which cannot be clearly described without engravings.

EXPERIMENTAL RESEARCHES ON MAGNETIC COERCITIVE FORCE.—(D. Kulp.)—The author magnetizes iron and steel rods in spirals, which he opens before taking out the rods. On percussion, the permanent magnetism of the rods is partly increased, partly diminished, and partly inverted. As a series of induced currents arise in the rods on opening the spiral they have been exposed to magnetizing forces in alternating directions, whereby their behavior is explained. — *Wiedemann's Beiblätter.*

IMPROVEMENT IN TELEPHONE AND TELEGRAPH LINES.

We give an engraving of an elevated support for telephone and telegraph wires invented by Mr. T. G. Ellsworth, manager of the John St. office of the Metropolitan Telephone and Telegraph Company, New York city. Many useful and improved appliances are combined in this invention, making the whole structure an ornament rather than a blemish to the streets. In the larger cities telegraph wires are becoming objectionable to the public on account of the space they occupy, on account of the unsightliness of the poles and fixtures; and the great expense and trouble of constructing and maintaining the lines on house tops and in streets, is becoming a burden on the different companies.

The number of wires in many localities has become very large since the telephone has been so universally adopted. In many instances the breaking of a single wire has interrupted communication on twenty or thirty other wires, suggesting the necessity of some better means to carry the wires from point to point. The great value of telegraphic and telephonic communication lies in uninterrupted service, and any means that will insure this will undoubtedly prove valuable. The particular tube shown in the engraving has been selected from many desirable forms to illustrate this invention. Inside the tube, are arranged a number of shelves for supporting the cables, which are marked at suitable distances along the route in the covering. At each

**ELLSWORTH'S TELEPHONE AND TELEGRAPH LINE SUPPORT.**

street crossing is located an electric light, its support being a part of the structure. At proper distances are located letter boxes arranged for the attachment of a pneumatic tube for collecting the letters, or they may be collected in the usual way by carriers. Electric clocks are located at desired points. Police time detectors form a part of this system, each policeman to signal to station while on his beat. By this arrangement it may be known where the men are at stated times. Fire-alarm boxes are placed at suitable distances, and ambulance boxes are provided for calling ambulances. Drinking fountains are distributed at different points. These attachments constitute some of the uses which can be made of the structure. The columns being hollow admit of cables passing unseen underground to offices wherever desired, or special tubes can be arranged for conveyance above ground.

Birch for Cabinet Work.

The small value of birch wood for fuel, and its lack of toughness and strength, except in the smaller twigs, have led to its general neglect in the arts. Our more enterprising builders of railway cars, however, have discovered that its light weight, close grain, and rich finish make it admirably suited for certain applications where fine finish and bright effects are desired. The contrasts presented when white birch and light colored ash are relieved by the red of the cherry birch, are said to be peculiar but very pleasing.

Simple Mode of Toughening Glass.

A Leipzig journal gives a method which it asserts will prevent lamp chimneys from cracking. The treatment will not only render lamp chimneys, tumblers, and like articles more durable, but may be applied with advantage to crockery, stoneware, porcelain, etc. The chimneys, tumblers, etc., are put into a pot filled with cold water, to which some common table salt has been added. The water is well boiled over a fire, and then allowed to cool slowly. When the articles are taken out and washed, they will be found to resist afterward any sudden changes of temperature.

THE DISAPPEARANCE OF A RIVER.—The labors of a number of miners have been successful in filling up the large chasm caused by the river Bradford breaking through the roof of a disused mine at Alport, in Derbyshire. The stream, however, still flows through the mass of rock and timber thrown into the opening, and finds its way to the Derwent underground. It is impossible to divert the stream by reason of the conformation of the ground. A large number of persons have visited the spot.