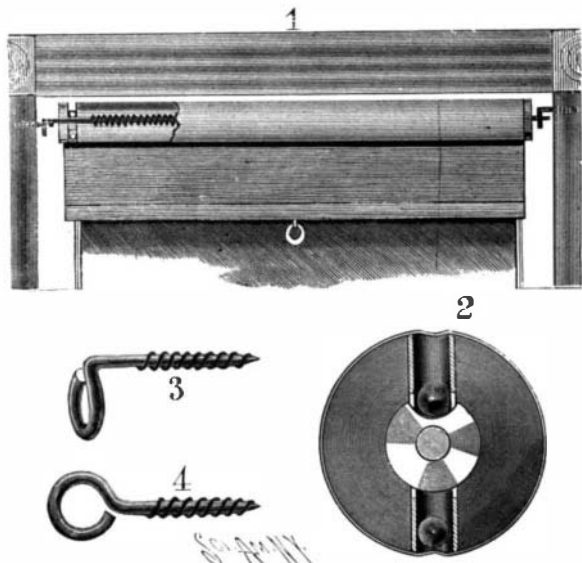


A NEW SHADE-ROLLER ATTACHMENT.

A patent has been granted to Herbert W. Mower, of 98 Cutler Street, Newark, N. J., for a shade-roller which is so constructed that it may be hung either from the upper portion of a window-frame or from the sides, and which is provided with a novel, positively-acting brake for the spring-controlled trunnion.

Fig. 1 is a front elevation of the upper portion of a window-frame, showing the roller in position. Fig. 2 is a cross-section of the roller. Figs. 3 and 4 are perspective views of brackets for hanging the roller.

The roller consists of a metal tube provided at one end with a fixed trunnion, and at the opposite end with a spring-controlled trunnion, bent at an angle to its body to form a pendent bearing. A transverse tube is secured in the roller near the pendent bearing of the spring-controlled trunnion, by indenting a portion of the metal of the roller into the ends of the tube. At its center the tube is longitudinally slotted to receive a



MOWER'S SHADE-ROLLER ATTACHMENT.

disk which is firmly attached to the spring-controlled trunnion. The disk is provided with a recess to receive balls, one of which is located in each end portion of the transverse tube, as shown in Fig. 2. When a ball enters the recess, the disk is prevented from turning until the ball has been dislodged.

The shade is secured to the roller by springs passed at one end through apertures in the shade and through corresponding apertures in the shade-roller, the other end of the spring engaging with the outer surface of the roller.

The hangers, as illustrated in Figs. 3 and 4, are screw-eyes. The eye of one of the hangers is in alignment with the screw-shank; but the eye of the other hanger is at a right angle to its screw-shank.

These hangers enable a shade to be hung from the upper portion of a window-frame or from the sides, and permit a roller to be fitted to a window-frame in which an ordinary roller of the same length could not be hung. The pendent bearing of the spring-controlled trunnion passes through the bent eye; while the fixed trunnion enters the straight eye.

A RAPID WAY OF MARKING OUT CLOTH PATTERNS.

The marking out of cloth by machinery, although it has engaged the attention of many an inventive mind, has not kept abreast with the development of other branches of the clothing and tailoring trades. The particular form of marking out which has attracted most garment cutters is a method in which stencils or perforated "lays," as they are technically known, are employed. Most attempts in this direction have failed because the material for the lays was unsuitable; because the perforations were imperfect; and because there was no satisfactory way of fixing the pattern upon the cloth to be cut.

These defects have been overcome in a method which although originally patented in part in the United States, up to the present time has found its greatest application in Great Britain and in France. The method in question is employed in connection with a patent process marker, and is the invention of Mr. James Marsden, of Wigan, England, a large clothing manufacturer.

The material used for the lays is a durable and inexpensive fabric, the meshes of which are closed by a filling insuring the production of sharply cut perforations. Upon this filled fabric a skilled designer plans and marks out the various patterns ("lays"). After having been thus marked out, the filled cloth is ready to be perforated on the lines of the pattern.

The machine used for this purpose differs in no essential from the usual sewing-machine, except that the needle-bar, instead of holding the usual needle, carries a punch, fitting accurately one of a series of holes formed in a disk sunk flush with the machine-table. These holes are conical in shape; and the end of the punch is similarly formed. By reason of this construc-

tion the punch is cleaned at each stroke, and the minute portions of cloth removed drop into a receptacle below the machine table. The holes are circularly arranged in the disk for reasons of economy; for when a hole has been worn out, another can be swung into place by rotating the disk through the proper distance. In size these holes vary from a perforation so exceedingly fine as to be hardly perceptible to an opening equal to the diameter of a pipestem hole. This perforated disk insures the production of sharply cut perforations and the cleaning of the punch. It is by means of this modified sewing-machine that the marked-out cloth is pierced to form the stencil-like lay.

In order to mark out the cloth to be cut, a glutinous powder is used which is rubbed over the lay, so that an imprint is left on the cloth wherever the powder has passed through the perforations. In order to fix these marks a hot roller machine provided with an automatic folder is used, whereby the powder marks are fixed by the action of the heat on the glutinous ingredients. Thus fixed, the marks cannot be rubbed out during the process of machine cutting. For hand cutting or for linen, cotton and close-grained fabrics, this heating process can be dispensed with.

A lay once made can be used over and over again. It corresponds in effect with the type of a printing press, from which as many prints can be made as may be desired. Not the least remarkable feature of the whole process is the great rapidity with which patterns can be reproduced. A lay which originally required one hour's work of a skilled cutter can be reproduced by means of the process more than twenty times within the same period. The process marker has been applied to every branch of the clothing trades, even to "custom tailoring."

The Excavation of Babylon.

German archæologists are busy with plans for the excavation of Babylon. The late Sir Austen Henry Layard, the explorer of Nineveh, was the first one to do anything in the way of excavating Babylon, then Sir Henry Rawlinson followed. The excavations, it is claimed by the Germans, were done in a half-hearted way, and they are determined that their work shall be thorough. It will be very costly, and it is estimated it will occupy five years. It will be carried on by the Orient Society jointly with the Directors of the Royal German Museum and the leader of the expedition is Dr. Robert Koldewey, who has already had much experience in such work. The expeditions will start from Beirut, going from there to Aleppo, whence they will travel by caravan to Bagdad. Babylon itself is two days' journey from Bagdad, and consists of rough mounds scattered on the banks of the Euphrates, under which lie the ruins of a great city. The excavators will begin with the fortress which is what remains of Nebuchadnezzar's palace, where Alexander died. In addition to their excavating upon the city site proper they will investigate a number of other ruins situated near.

A DEVICE FOR REMOVING DENTS FROM GUN-BARRELS.

In order to provide a means for removing the dents or depressions from gun-barrels, Henry H. Hotz, of Cuero, Tex., has invented a simple device which, by means of an expander-rod and expanding-tube, forces the indented portions outwardly.



Fig. 1 shows the expander-rod and expanding-tube screwed together. Fig. 2 is a perspective view showing part of the device. Fig. 3 is a longitudinal section through a gun-barrel with the device in operative position, the gun-barrel being shown in dotted lines.

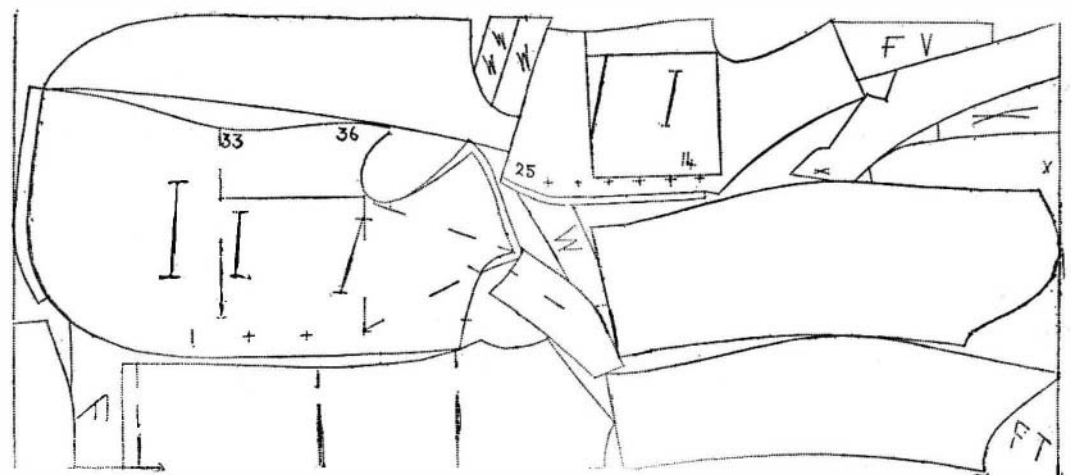
The expanding-tube is constructed in semicylindrical sections which are provided at their upper ends with a threaded bore communicating with a reduced smooth bore, and which are connected by two spring sections secured to a handle.

The expander-rod at its upper end is provided with an operating-handle. The lower end of the expander-rod terminates in a conical tip, surmounted by a reduced plain surface, above which a threaded surface is formed.

In operation the expanding-tube is inserted in the gun-barrel with the semicylindrical sections opposite the indentations to be removed. The expander-rod is then entered at the opposite end of the barrel; and the tip of the rod is inserted in the tube until the threaded surface of the rod engages the threaded bore of the tube. By turning the operating-handle, the expander-rod is screwed into the threaded bore of the tube, thus causing the reduced plain surface of the rod to engage the smooth bore of the tube and force it outwardly against the depressed portions of the barrel.

The device can be employed to remove the indentations in organ-pipes and other tubes as well as from gun-barrels.

A MEMBER of the faculty of a Western university has announced that he has succeeded in very materially reducing the cost of lithium. The full details of the method have not been disclosed, but electricity is the method by which the metal is separated.



A PERFORATED LAY.



FIXING THE PATTERN-MARKS UPON THE CLOTH.

Pet Animals as Causes of Disease.

Papers presented last summer at the French Congress for Tuberculosis at Paris demonstrate, says The Medical News, what has hitherto been very doubtful, that aviary and human tuberculosis are essentially the same pathologic process due to the same germ modified by a cultural environment, but convertible under favorable circumstances one into the other. An Englishman has found that more than ten per cent of canaries and other song birds that die in captivity succumb to tuberculosis, and parrots have come in for a share of condemnation in this connection. By far the larger number of monkeys who die in captivity are carried off by tuberculosis, and while, fortunately, the keeping of monkeys as house pets is not very general, at the same time there is some danger of contagion. Nocard, the greatest living authority on tuberculosis in animals, and the man to whom we owe the best culture methods for the tubercle bacillus, found in a series of autopsies on dogs that out of 200 successive autopsies on unselected dogs that died at the great veterinary school at Alfort, near Paris, in more than one-half the cases there were tubercular lesions, and in many of them the lesions were of such a character as to make them facile and plenteous disseminators of infective tuberculous materials.

Parrots are known to be susceptible to a disease peculiar to themselves, and a number of fatal cases in human beings of what was at first supposed to be malignant influenza pneumonia was traced to the bacillus which is thought to be the cause of the parrot disease. Cats are known to sometimes have tuberculosis, and that they have in many cases been carriers of diphtheria and other ordinary infections is more than suspected. There is not at present any great need for a crusade on sanitary grounds against the keeping of pet animals, but they are multiplying more and more, and it does not seem unreasonable that greater care in the matter of determining the first signs of disease should be demanded of their owners, and then so guarding them as to prevent their being a source of contagion to human beings. Attention should be paid to this warning as regards children, as animals play more freely with them and the children are more apt to be infected.

Stoves and Methods of Heating in Korea.

In reply to numerous inquiries from manufacturers of stoves in the United States as to the prospects of extending their business to Korea, I wish, says Mr. Horace N. Allen, Consul-General, to make answer in this general manner.

Stoves are not used to any extent by the native Koreans. The Korean method of heating is most excellently adapted to their resources and conditions. In building their houses they lay down a system of flues where the floor is to be. These flues begin at a fireplace, which is usually placed in an outer shed or connecting closed alleyway. From this fireplace the flues extend in a more or less curved direction, like the ribs of a round fan, to a trench at the rear of the room, which in turn opens into a chimney, which is usually placed some distance from the house. Flat flagstones are then placed carefully over these flues, and the whole is cemented over and finally covered with the thick oil paper for which the country is noted. This paper keeps smoke from entering the room, and a little straw or brushwood, used in the fireplace for cooking the rice, serves to heat the stone floor and gives an agreeable warmth which lasts till the time of the next meal. Two heatings daily serve to give the people a nice warm floor, upon which they sit in the daytime and sleep at night. By leaving their shoes at the door the inmates preserve the paper floor, which, from constant polishing, takes on a rich brown color.

Among the poor these rooms are cubes of eight feet, but in more pretentious houses there will be a suite of four of these rooms opening into each other by sliding doors and capable of being thrown into one large room. A suite of these rooms on either side opens upon a large room with a board floor, which is 18 by 18 feet or larger, and unheated. This is used for summer, and at all times as an outer hall and reception room. These houses are built around an open court, upon which, at the back, opens this large reception room. A better system of heating, or one more economical, would be difficult to devise for a country where the winters are so severe as in Korea and where fuel is so scarce and expensive.

Korea has little timber, but excellent deposits of bituminous and anthracite coal, especially the latter. So far all requests for concessions to mine these coal deposits have been positively refused by the Korean government. Natives dig out the surface coal in the crudest and most expensive manner, allowing the debris and water from the heavy rains to fill up the shaft or hole and damage the coal to be got out the following year. The result is that the coal finally offered for sale is so rotten from exposure to wet and cold that, after it has been frequently handled and packed on pony back, it arrives in Seoul mostly in the condition of fine dust, which has to be mixed with wet, red clay and made into balls by hand. These balls, when dry,

are used by the foreigners in their stoves. This poor stuff is exceedingly expensive, costing this year 18 yen (\$9) per ton, from which must be taken the included weight of some fourteen or sixteen heavy straw bags in which the coal arrives.

The few hundred foreigners in Korea (Americans and Europeans) use stoves, as the paper floors do not answer for foreign use, owing to the fact that our rooms are too large and our shoes and furniture soon ruin the floors. Stoves from Germany at one time were quite in favor, but the stove most commonly used now is one made at Dowagiac, Mich. Even a few Koreans have begun to employ them.

Owing to the high price of coal, numbers of kerosene stoves are now being used, and these seem to appeal to the Koreans, as they are neat and handy and furnish light as well as heat.

There can never, however, be a large trade in heating stoves in Korea so long as the people adhere to their present style of houses.

A KNOCKDOWN CASK.

In certain branches of business, especially in the transportation of beer from place to place, it is a matter of no little expense to return the empty casks. This expense might be greatly reduced by the use of a simple knockdown cask, which when collapsed would take up but a small portion of the space usually required. Such a cask has been invented by Phillis Mayotte, of Escanaba, Mich.

From the annexed illustration it will be observed that the staves and the top and bottom heads of the cask differ in no essential from those ordinarily employed. The hoops, however, are composed, not of iron bands, but of chains, the end links of which are held together by tightening-bolts. Pins are secured in the staves, which enter slots in the links, thus permitting a slight circumferential movement of the links, while holding the chain to the staves.

When it is desired to return an empty cask, the

**MAYOTTE'S KNOCKDOWN CASK.**

chains are loosened by unscrewing the tightening-bolts, whereupon the staves may be laid out flat, and the heads removed. A number of casks which have been thus collapsed may be packed in the space which would otherwise be required for one cask.

Rescue by the Aid of Wireless Telegraphy.

The Marconi system of wireless telegraphy proved very serviceable on April 28, when the "Goodwin Sands" lightship was run into by the British steamer "R. F. Matthews." The lightship was provided with a wireless telegraphy apparatus, and by it the crew was able to notify the station at South Foreland that their vessel was sinking. The message was transmitted to Margate, and tugs were at once dispatched to the lightship. Marconi's assistant was in the lightship at South Foreland, twelve miles away from the lightship. He was startled at hearing the alarm bell ring, and immediately replied to the signal. He forwarded the message at once with the aid of the ordinary telegraph.

Antarctic Explorations.

A letter has been received at Christiania from Capt. Borchgrevink. It will be remembered that the captain is in command of the expedition which sailed from England on the steam whaler "Southern Cross" in the latter part of August, 1898, to make an exploration of the Antarctic continent. It is dated from Cape Adair, Victoria Land, February 28. It states that he had landed on the great Antarctic continent with his staff, instruments, and seventy-five dogs.

A Cable to Germany.

New York city is to be the terminus of a new transatlantic cable which will connect the United States and Germany. When it is laid, the new cable will be the first ever constructed between Germany and the United States. The German terminus will be at Ems, Prussia, and the route as now planned will be by way of the Azores. The company will be called the German-Atlantic Telegraph Company.

Science Notes.

After the "Britomart" is launched, Liverpool will see the last launch which will be made within the city limits. Seven miles of shore is now under the control of the Dock Board, which has set to work on the scheme of reconstructing the docks authorized by Parliament.

St. Lothaire, in the Jura Mountains, has erected a monument to Charles Marc Sauria, a country doctor who, in 1831, invented the lucifer match. Unfortunately, he was too poor to patent his invention and reap his reward. There are, however, Austrian and Hungarian claimants to priority in this invention.

Old Ben Bush, the giant half-breed Indian, was recently burned in his cabin at his New Jersey home. It is believed that the cabin blew down and was set on fire by the burning logs on the hearth. He was one of the most noted of the many strange characters of the wild Sourland Mountain district in the western part of Somerset County. He was seven feet in height and was straight and agile as many of the young mountaineers, notwithstanding the fact that he was a centenarian.

Prof. Angelo Heilprin, of the Philadelphia Academy of Sciences, has just completed his calculations of the heights of the five principal volcanic mountain peaks in Mexico. The results of his measurements are as follows: Orizaba, as measured by the Delcros tables, 18,206 feet; Popocatepetl, 17,523 feet; Izaccihuatl, 16,960 feet; Nevada de Toluca, 14,954 feet. It has long been said that Popocatepetl was the highest mountain peak in Mexico. Baron von Humboldt's measurement of Orizaba peak was 17,375 feet.

H. le Chatelier gives in the Comptes Rendus tables showing the increase of resistance of steel after tempering at various temperatures ranging from 710° to 1,100°. The samples tested consisted of two pieces of ordinary steel, four of tungsten steel, and three of chrome steel. At a high temperature chromium adds to the increase of resistance due to the carbon alone; tungsten, on the other hand, diminishes it. In all cases the resistance increases with the increase of temperature up to a limiting value depending upon the constitution of the steel.

A correspondent living in the State of New Jersey wrote us some time ago asking for information relative to a proper substitute for leather. He stated that he was a vegetarian and wished to supply all his needs without the necessity of killing any innocent creature. He said: "I found out how to satisfy my needs inside of the vegetable kingdom and desire to supply the outside needs from the same source, where it can be done easily, and by little extra effort. Perhaps you may not know that there is one farm in the State of New Jersey which does not raise animals to kill and eat. There are ten of us on this farm. We find in grains, fruits, vegetables, and nuts a substance giving greater health and better strength physically and mentally than when we formerly dined on flesh years ago. We are endeavoring to enlighten the minds of people hereabout on this subject, in the hope that they may be induced to go and do likewise some day, and thereby be free from the diseases which inflict many of them by reason of indulging in chewing the bodies of their fellow creatures." This letter is dated "From the Lord's Farm."

A new system of cross road post offices has been devised by a Virginian inventor. The idea is to form an adjunct to the suburban system now being developed for the relief of the country residents. All who have lived in the country where there is no free rural delivery know the trouble it is to drive two or three miles to the post office to get mail. In the new system a large mail box is arranged at cross roads or any other convenient locality, and the box is divided by a number of partitions into small individual post boxes, which are adapted to receive mail. The carrier drives along the main road in a wagon, opens the front of the box, which falls in a horizontal position and acts as a shelf. A number of small individual boxes are revealed; the postman can swing out the whole front of the box containing the small windows and locks, and can then put the mail in the various boxes. When he finishes his task, the front is swung to again and locked and the mail is shielded so that a resident can only obtain the mail in his particular box. When the resident wishes to obtain his mail, all he has to do is to unlock the outer door, which swings down again, revealing the front with the rows of boxes. He then opens his individual box, takes out the mail, closes and locks it and swings the front again into place. Facilities are also provided in the new system for stamping mail, so that letters collected at one point on the route can be delivered to another point without carrying them to some main office for cancellation and stamping. A large space is reserved in the bottom as a repository for mail matter that is dropped in the usual way, through a slot. The patent contemplates the combination of an electrical system by which the box owners may be notified at their homes when mail has been placed in their individual boxes.