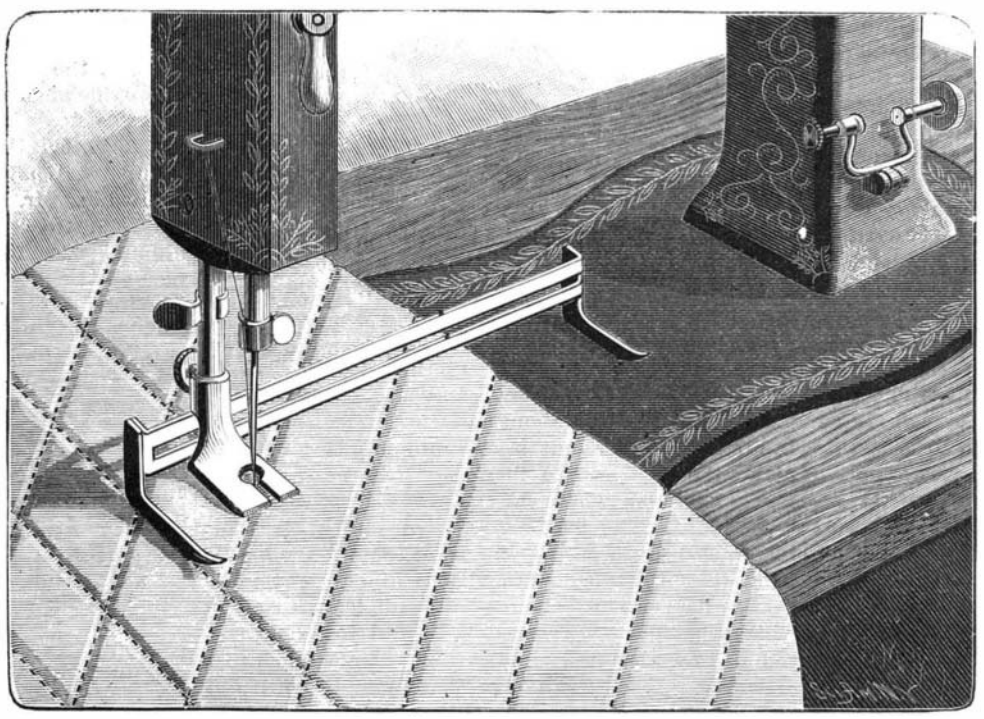
AN IMPROVED GUIDE FOR SEWING MACHINES.

The illustration represents a sewing machine gauge capable of use either as a right or left hand gauge, without being detached from the machine; it is also a device which may be expeditiously and conveniently adjusted, and is of simple, economical, and durable construction. The invention forms the subject of a patent issued to Mrs. A. La Guayra Mayo, of West Duluth, Minn.

The device has two main parts, the gauge bar and a perpendicular standard, to which is attached a sleeve adapted to receive the presser bar of a machine and be secured thereto by a set screw or equivalent device. The gauge bar is capable of sliding upon the standard, and has at each end a downwardly extending arm with right-angled extension having a curved outer end, forming feet for the gauge bar. Upon the inner face of the standard is a slideway, formed by a bracket secured to the standard, and the body bars of the gauge are introduced into the bracket, the adjustment being made by a set screw, whereby the gauge bar may be slid to the right or left and secured at any point in its length. When the gauge bar is placed in position the lower edge of the horizontal section of its feet-arms is practically in the same plane with the lower edge of the standard, or the arms may extend farther downward than the standards, as in practice may be found most desirable.



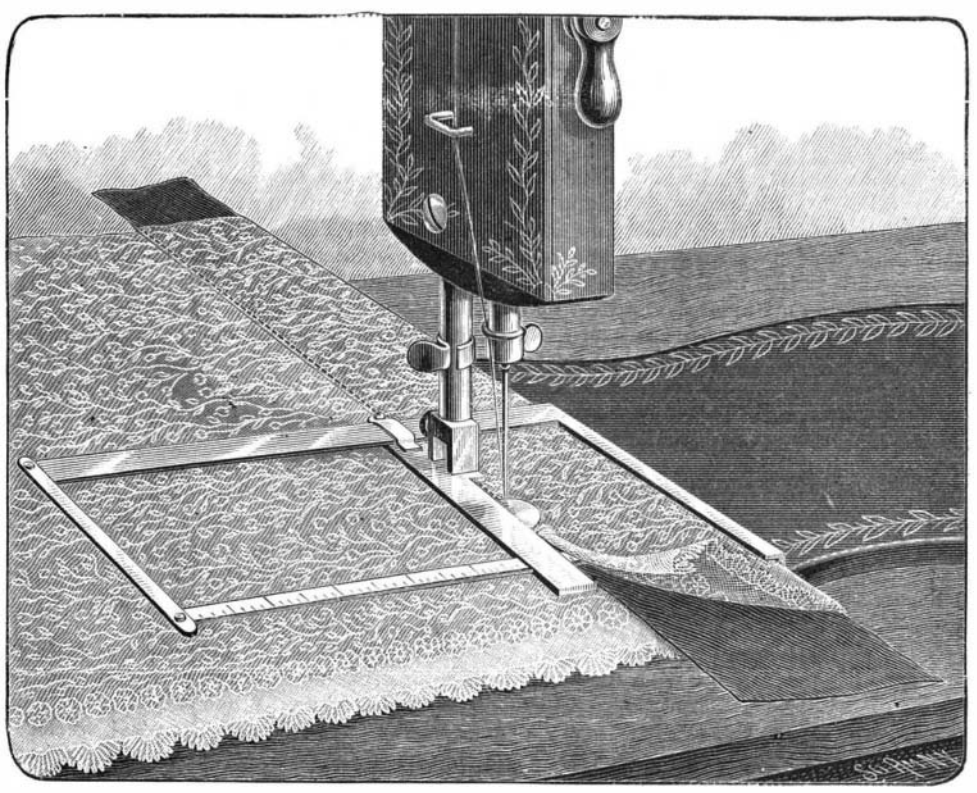
MAYO'S GUIDE FOR SEWING MACHINES.

A HEMMING ATTACHMENT FOR SEWING MACHINES.

The invention herewith illustrated relates to an improvement especially designed to facilitate the hemming of all articles that require a wider hem than the ordinary fell, providing a device that will turn a hem from a quarter of an inch in width to about seven and a half or eight inches in width, and also providing means whereby a draw-string, ribbon, or tape may be inserted in the hem. The hemmer also has a double gauge, and is made in a simple, durable, and practical manner. It has been patented by Mrs. A. La Guayra Mayo, of West Duluth, Minn.

The body bar of the device has a vertically apertured post integral with its upper face, in which the presser bar of the machine is secured by a set screw passing through to a contact with the presser bar. The frame consists of two side bars, one of which is provided with a scale of inches, the side bars being connected at their outer ends by a cross bar resting upon their upper surfaces, while a forward cross or guide bar is formed integral with one of the side bars, and extends at right angles therefrom. The latter guide bar is bent downward to form a vertical flange, so that the guide bar resembles an angle iron. The body bar, carrying the vertical post, is adjustably attached to the longer of the two side bars by a spring clamp or clasp, its other end resting upon or sliding along the side bar having a scale. The hemmer proper is secured to the edge of the body bar, and may be of any desired construction.

In operation the body bar is moved upon the side bar until the inner face of the body bar is made to register with the inch or fraction of an inch to which the hem is to be turned, when the material is passed under the entire frame and body bar, carried down in the direction of the guide bar, and beneath it and into the hemmer. A ribbon or tape may be inserted in the hem by placing it beneath the gauge, and in lace it can be used as a border, and in heavy material as a draw-string.



MAYO'S HEMMING ATTACHMENT FOR SEWING MACHINES.

WOOD brought to a mirror polish is coming into use for ornamental purposes in Germany, and has this advantage, that, unlike metal, it is not affected by moisture. The stuff is first treated with a bath of caustic alkali for two or three days, at a temperature between 164° and 197° F. Next comes a dip in hydrosulphate of calcium, for from twenty-four to thirty-six hours, after which a concentrated solution of sulphur is added. After another soak in an acetate of lead solution, at 95° to 120° F., it is thoroughly dried and polished with lead, tin, or zinc, as may be desired, when it resembles shining metal.

Thunder Storms.

Robert H. Scott, in *Longman's Magazine*, says a flash of lightning a mile in length is nothing very extraordinary, and it is therefore not to be wondered at that experiments to bring electricity down from the clouds are very dangerous, and have frequently had fatal results. Soon after Franklin, in the last century, had made his famous experiment with a kite, and proved that electricity existed in a thunder cloud, natural philosophers generally began to imitate him. One of them in St. Petersburg, a Professor Richmann, arranged an apparatus to collect this electricity. On the first occasion of a storm he went to his laboratory to observe the effects. A ball of fire was seen to leap from the apparatus to his head, and he fell lifeless. Having thus got some idea of the force exerted by lightning, it may be interesting to the reader to learn something as to the means we possess of guarding ourselves, or rather our houses, from injury. A flash of lightning really consists of a discharge between two objects, say two clouds, or a cloud and the earth, oppositely electrified, the charges on which suddenly combine, with the manifestation of light and heat. Lightning conductors are contrivances by which the electricity of the earth is allowed to escape quietly into the atmosphere, where it meets with electricity of the opposite character from the clouds, and the two neutralize each other quietly, without any explosive discharge, or, in other words, without lightning. I need not go back to the first principles of electrical science and explain why it is that electricity passes most easily through metals, and escapes with greater freedom from sharp points than from rounded knobs. Assuming these elementary facts, I may say that on any object, such as a house or other building, the electricity tends to accumulate itself on all projecting portions of the roof, etc., and especially on the highest points of it.

The ideal complete lightning rod system would call for a sharp-pointed copper rod erected at each of these projecting pinnacles, and rising above it, and would then connect all of these separate points by copper rods, and eventually carry down a stout copper rod to the earth. Care must be taken that due attention is paid to certain main precautions: (1) The point of the conductor must be kept sharp; (2) the section of the conducting rod must be sufficient to allow the electricity to pass along it; (3) the rod must be perfectly continuous; and, lastly (4), the rod must be efficiently connected with the ground.

1. The sharpness of the point is insured by gilding it or coating it with some metal which resists oxidation.

2. As to the section of the rod, a bar half an inch in diameter is sufficient for all ordinary buildings. Bars are not usually employed, as it is difficult to bend them over cornices, etc.; accordingly, either wire ropes or tapes are taken. The wire ropes are more liable to corrosion from wet getting in between the strands than are tapes, so that the latter are generally preferred. The metal used is always copper, being less oxidizable than iron, and being reasonably cheap and a very good conductor.

3. The continuity of the metallic connection from the highest point of the rod to the ground can only be secured by having as few joints as may be, and by making those joints as true and firm as possible by soldering. The joints should be examined from time to time, for it is often found, on examination of old conductors, that while the copper wire or tape is quite sound along its straight reaches, at the bends or joints corrosion has set in. As a chain is no stronger than its weakest link, a corroded conductor, such as has been described, is perfectly useless.

4. The earth connection. It is not easy in all cases to insure that this is satisfactory. Electricity will not pass at all so easily into dry earth as into wet earth, and merely plunging the end of the rope or tape into wet earth is not sufficient. The conductor from the building should be soldered at its end to a large sheet of copper, say at least two square yards in area, buried in damp soil, or else soldered to the water or gas mains, so as to insure that a large surface of metal is in contact with damp earth.

Supposing that the whole system of protection against damage from lightning has been properly planned, the work should be carefully tested after its completion, because injury to it often occurs at the very last, owing to accidental causes or to the carelessness of workmen. Conductors should also be examined from time to time, throughout their whole length, to make sure that all the joints are sound. Care should also be taken that the earth in which the terminating plate is buried is kept thoroughly moist. If any of these particulars be neglected, the conductor will be practically useless, and will afford no protection to the structure. The extreme practical importance of security against lightning must be my excuse for having been more diffuse over the subject of lightning conductors than over other details of the phenomena and effects of thunder storms.

Tapping the Underflow.

What promises to be one of the most important features in water irrigation in California has been brought forward at Riverside, in the question as to the right to tap underground flow, or percolating water.

A company is at work upon a tunnel which will tap the underflow that makes a vast body of land around San Bernardino moist. Should this land be drained to such an extent that the moisture will be diminished near the surface, and thus compel irrigation where the character of the soil has heretofore not required it, a great hardship will fall upon property owners, and protracted litigation will follow. It is a wholly distinct feature in riparian law, and may result in riparian legislation. It would seem to be much on the same principle that one artesian well may be sunk on a lower level than another, and diminish or even dry up its flow, yet the owner of the upper well has no recourse at law. The question is fraugh with immense importance to Southern California, and the result will be watched with great interest.—*San Diego Union.*