

[Concluded from the first page.]

in the underside of the revolving plate, I, which actuates the inner end of the looping needles, and pushes them in and out alternately, to throw off made loops in rows and form new ones. There are two sets of needles, one vertical and the other horizontal, and one thread feeds them both, from the spool, F, passing over guide, G, through the cone eye, H, thence into another eye in traveler, N, which, as it revolves, feeds it on to the needles, the one set working alternately between the other and making the ribs. A cam-groove in the cone, K, moves the vertical needles up and down alternately. E is a stationary ring-plate on the machine. L is a tension-bar which keeps the needles firm, and v opens any latch of a needle which, from any cause, may have been kept closed, so that devices are arranged to meet every contingency that may arise in the operation. A needle can be put in or taken out of the conical hub, K, at any moment by removing a key, X; the same facilities are furnished for removing and adjusting the horizontal needles in plate, I. The *throw* of the needles, to make long or short stitches, can be changed by turning a screw, R. As each hooked needle has a revolving latch on its end, when the thread is laid in a hook the latch closes, the hook is drawn in, then thrust out again, when the latch opens, permitting the loop to pass up on the needle-shank, then another thread is laid on the hook of the needle, the latch closes, is drawn in again, and the loop formed on the needle is pushed off and over its point, forming part of the knit fabric, and so on, each needle doing its part in the circle. The two series of needles work harmoniously together, producing a continuous web, S, of ribbed fabric. Any girl of ordinary ability is capable of tending with ease ten of these machines, making about 70 dozen pairs of fine ribbed hosiery per day—each loom using but a single thread, and the total making 108,000,000 loops per diem. The circular ribbed tubular fabric, after being taken from this machine, is cut into proper lengths for stockings, which are footed on the machine represented by figure 2, which we will now describe.

This machine knits plain work with one set of needles, and makes a common web with a selvage at each side. A represents the frame-work to which the operative part of the machine is attached. B is the needle-plate in which the needles slide; C is the driving pulley, and D the main shaft. R is a reciprocating bar for operating the needles. On the middle of shaft D is a pinion, K, fitting into one, O, on the vertical stud, H, which has a slotted crank, J, attached by a pin to the vibrating rod, T, and is secured by a pin to the bar, R, that moves back and forth operating the needles, and also carrying the two threads from the spools, F, on frame, L, through the eyes on carriers, N N, and delivering them on the needles to form two loops for the footing of a pair of stockings at one operation. Y is a toothed bar for keeping the fabric in its proper position while being knit. This bar swings upon pivots, U U, and is brought forward by pressing the spring, Q, downward, and when down a new stocking is put on, or one that is footed taken off. The weights, W W, feed off the knit fabric as in figure 1. Z Z are gages for setting the length of a foot to be knit. E E E are guide-bars, under which the reciprocating bar, R, moves. P P P are selvage guides, by which the threads from the spools are, at every stroke, guided over the needles, making a perfectly true selvage without a failure. By the screw, X, the throw of the needles can also be increased or diminished. The loops are formed by latch-needles in this machine, in the same manner as in figure 1.

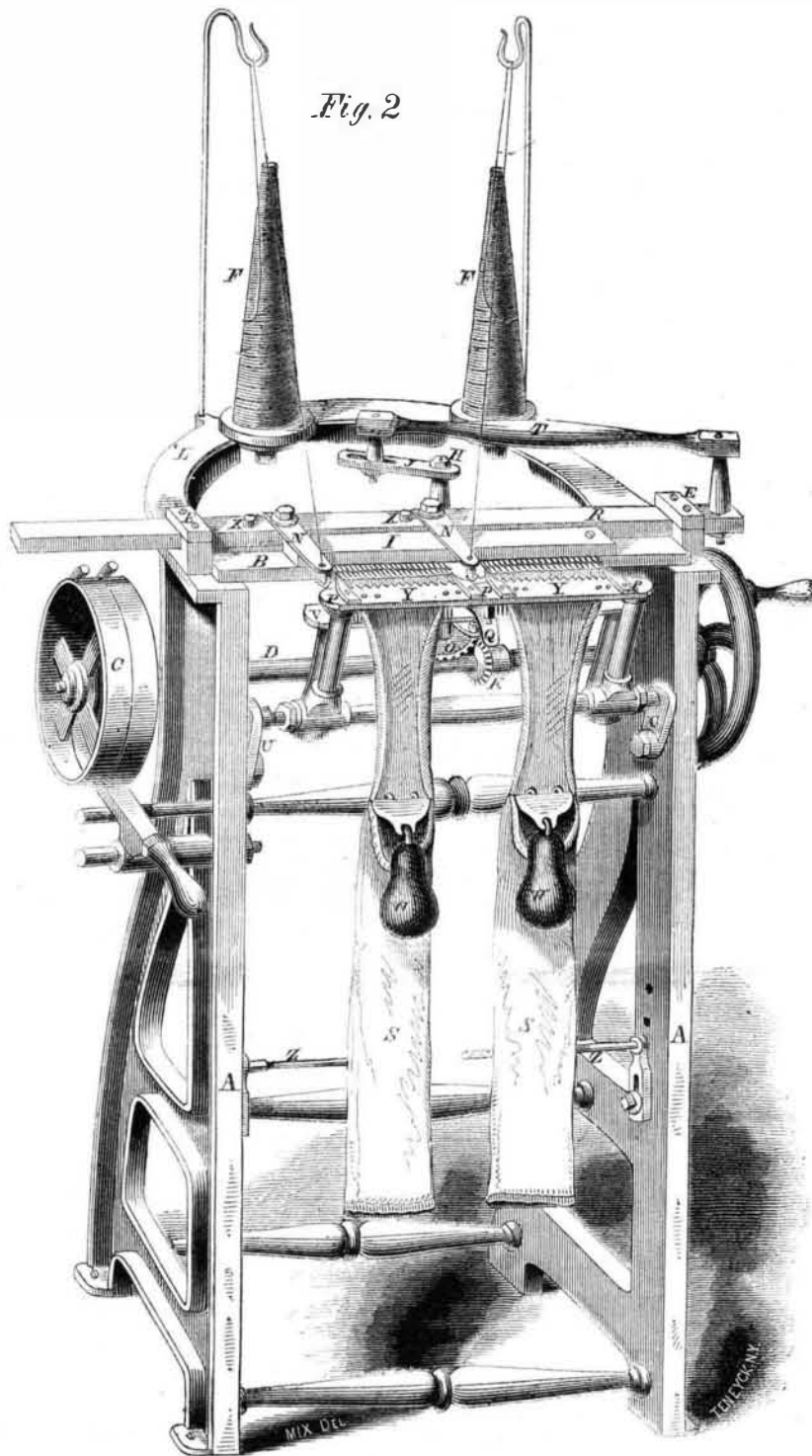
It will be understood that the feet of these hose are closed at the sides by hand, but this is an easy and short operation. One of the machines (Fig. 1) can fit on a stand like a sewing machine, and may be operated in the

same manner; and from their portability and completeness, it appears to us, that in their present state they must soon occupy a position in families equal to the sewing machine.

One girl can tend two of these represented by figure 2, and foot 30 dozen pairs of fine

hose per day. The machine illustrated by figure 1 is the invention of J. B. Aiken, and the one by figure 2 that of W. Aiken. The circular-ribbed machines can be used to advantage on various kinds of work, without the aid of the footing one figure 2. J. B. Aiken manufactures circular-ribbed and plain

### AIKEN'S KNITTING MACHINE.



knitting machines of all sizes and gages, from one which knits the smallest misses' stocking up to one which makes a heavy knit jacket. Patents for these machines have been applied for, through the Agency of this office, in foreign countries, and further information concerning their price, &c., may be obtained by addressing J. B. Aiken, No. 84 Elm-street, Merchants' Exchange, Manchester, N. H., where they may be seen at all times in operation.

#### Barking and Renovating Trees.

The *Gardener's (London) Chronicle* says:—"The system of stripping the bark off the trunks of trees, for the purpose of destroying the insects which infest them, has now been generally applied to a large number in the Champs Elysees, and elsewhere in Paris, and has led to the discovery of a curious but important fact. It appears that trees may be deprived of the whole of their bark, not only without experiencing any injury, but even with considerable advantage, the operation tending to increase their power of vegetation. Elms, for example, which, before the oper-

ation, did not increase more than one or two millimetres in diameter in each year, have been found to increase four or five when stripped of their bark. Trees having a very thin bark, such as the birch and others, need not be stripped to obtain a similar result; it is sufficient for the purpose to make longitudinal incisions in the bark by means of a kind of three-bladed scarificator. It is now intended to subject all the young elms in a languishing state to this treatment throughout Paris, it having answered perfectly with those planted on the fortifications. It has long been the practice where trees have been denuded of their bark by cattle, to coat them over with some kind of composition, and in most cases the result has been highly satisfactory."—[As we have seen this paragraph copied into other papers we would state that we understand it to mean, not the removal of the entire bark to the wood of the trunk, but the outside rough bark, leaving the under cuticle unbroken. As the sap of trees flows between the outer bark and the wood of the trunk, the removal of the entire bark would be fatal to their life.—Eds.]

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