This invention relates to the suspension of tobacco leaves or other articles along a line in the general arrangement in which tobacco leaves or hands of tobacco leaves are suspended along sticks for treatment in curing barns. It provides a simple and effective device for such purposes which, in its application for instance to the suspension of tobacco leaves, enables a single operative to perform the reaping of the leaves and in substantially the same motion, without repeated handling, their fixing to the device with the necessary security to prevent the leaves from falling away from the device during the handling thereof, and also during the curing treatment when the leaf butts undergo shrinkage and tend to fall out of the strings which have hitherto been used as a means of fixing the leaf butts to the stick. The device dispenses with the use and expense of strings and is not dependent for its security of grip upon the leaves or the like upon tension in the string, applied for example under the weight of the leaves or the like in their hanging positions. Furthermore, it provides for the attachment of the leaves or the like with the required security much more expeditiously than is possible when strings are used: it also minimises or substantially eliminates the breakage of leaf butts, a common occurrence when these are tied "over-the-stick," and one leading to loss of economy. A further feature of the device according to this invention is its suitability for manufacture in such a way and from such materials as to be and remain hygienic in contrast with the ordinary wooden sticks hitherto used in tobacco drying and which rapidly tend to become unhygienic and give rise to or spread barn rot or other disease.

According to this invention a device for the purpose indicated or broadly for the suspension of articles along a line comprises at least one elongated member having attached thereto a series of shorter elements which are resiliently separable from one another. For example the device may comprise a pair of metal or equivalent rod or like members of convenient length in spaced parallel arrangement connected at their corresponding ends and a series of shorter, resiliently compressible elements or compression springs slidably mounted across the space between said members so as to be freely moveable as from a gathered or compacted disposition at one end of the device in series singly towards its opposite end.

More particularly the said elements or compression springs may be spring-wire elements of generally waved or zig-zag form looped loosely at their opposite ends about the respective parallel rod or like members, the limbs of the elements which cross the space between the said members being so arranged or distorted if necessary as to obviate any entanglement or inter-locking of adjacent elements when such are gathered or compacted as aforesaid.

A convenient form of the springs or elements is N-form, M- or W-form, or NV-form, with the loops for running on the rod or like members occurring in symmetrical arrangement at the tails of that form and orientated substantially at right angles to the general plane of the element, to obtain free running.

If desired one or more spacer elements, not in themselves necessarily springs, may be provided which is or are slidable freely along the device and serving to hold the rod or like members against flexure from their parallel or other spaced arrangement when under load. Such spacers may be arranged to alternate with the springs or wire elements if desired, e.g. where the device is sufficiently elongated as, for instance, when loaded, to be subject to any such degree of bending or distortion between its ends such as might interfere with the free operation of the springs or wire elements.

Means may be provided at a region or regions about the middle of or elsewhere in the length of the device for enabling or facilitating its suspension from such regions, so as to take up a generally horizontal hanging position when carrying its load.

Other features and advantages of this invention appear in the following description of the suspension device as applicable to the particular problems of "tying" tobacco leaves securely for curing, and economising in time, in labour and in the handling of the leaves from the actual reaping thereof onwards.

In the accompanying drawing which shows a presently preferred embodiment of this invention, by way of example:

Figure 1 is a semi-diagrammatic perspective view of the device showing also how it may be charged with tobacco leaves; and

Figure 2 is a fragmentary perspective view showing more precisely the shape and arrangement of the resiliently compressible slidable elements or springs;

Figure 3 is a perspective view of the N-form of compression element; and

Figure 4 is a perspective view of the W-form (or M-form) of the compression element.

The device comprises a length of stout-gauge steel wire (e.g. 10 gauge) bent at the middle X into elongated hairpin form some two feet long and closed at the opposite end Y by brazing neatly together or otherwise connecting intertwined extremities (after the required number of resilient elements or springs, to be described, have been threaded into position).

There are thus provided the two straight rod members 1 and 2 in parallel arrangement with a space about one inch wide between them, which is suitable for the admission of say three or four butts, indicated by reference Z of a convenient hand of freshly plucked tobacco as shown in Figure 1.

Threaded on the members 1 and 2 are a desired number, e.g. sixteen, of the elements or springs of which only a few are shown, as indicated by references 3, 4 and 5.

The general form and construction of these elements appears in Figure 1 and they are more exactly represented in Figure 2.

Each element or spring as in Figures 1 and 2 consists of a length of light gauge piano wire (about 140 tensile; .032) rather more than six inches long, formed to a shape of the kind (NV) with its end loops 13 and 14 dimensioned and set to fit loosely about the respective members 2 and 1, while the intervening length pursues from loop 13 a zig-zag course diagonally across the space SS under and over member 1, back over and under member 2, under and over mandrel 1 for the second time and then diagonally across and under member 2 to finish in the reversed handed loop 14.

The loops of the springs lying substantially square with the members 1 and 2, and those end parts of adjacent springs which may contact with one another when a member of the springs are compacted directly together.
making point contact in reversed diagonally arranged ends, any entanglement of the springs is avoided or the risk of such entanglement very substantially eliminated, thus facilitating the use of the device as is hereinabove explained.

The item 15 in Figure 1 simply indicates a spacer or abutment of steel plate or the like, of which one or more may be included, for instance either a single spacer at the centre of the device with half of the springs located on each of it, or several spacers or abutments suitably interspersed among or alternated with the springs.

For the purpose of this description the device may be termed a reaping and tying frame, with modified forms thereof illustrated in Figures 3 and 4. Such a frame, complete with its spring elements, is taken to the lands, the frame is then held in, say, the left hand with one of the springs, as in Figure 1, brought against the end X and the other springs pushed away towards the other end Y. With the right hand, a leaf or hand of leaves is picked and its butt or butts inserted directly within the other portion of the or equivalent parts of other articles to be held there while the next spring, e.g. spring 4, is pulled along and engaged with the butt or butts Z. The operator's left hand then momentarily takes the whole weight of the frame with the first leaf or hand of leaves gripped with a finger against the spring 3. When the second spring has been brought into position against the leaf butt or butts and gripped with the finger of the left hand, the operator's right hand may be removed for the purpose of picking further leaves, while the left hand finger continues to hold the first applied leaf or leaf hand between the two springs 3 and 4 under suitable compression, the said finger also keeping a space clear between spring 4 and the next spring, e.g. spring 5, which is to be brought into use after a second leaf or leaf hand has been inserted. This process of picking, inserting leaf butts in the frame and bringing a spring into operation is repeated until the frame is fully charged and the leaves held with sufficient grip to ensure their not falling away.

During the use of the device in the foregoing manner the frame may be held in any convenient position against the body, e.g. with its one end, say the end X, rested against the operator's haunch, and when this operation of reaping combined with "tying" has been completed, that is when the device is fully loaded with the leaves or hands of leaves, it may then be passed away for processing. During the processing or treatment, as is known, the butts or stems of the leaves will shrink to a very great extent but in the present invention the springs will follow up such shrinkage and maintain their grip upon the leaves, preventing them from falling from the device throughout the curing treatment.

The resilient grip exerted by the springs upon the leaf butts is of a kind which does not obstruct air circulation about these parts for relatively rapid drying and curing of them, and a cause of barn rot attributable to certain measures hitherto of tying tobacco to sticks is eliminated.

Should leaf butts or equivalent parts of other articles to be suspended vary widely in size, adjustment is readily made by varying the number of springs provided within a given length of the device. Also if it be desired to maintain any exact number of leaves between each spring, or each spring and any adjacent spacer, one of the connections between the rod or like members of the device may be formed in the nature of a clasp, the position of which may be adjustable along the length of the device.

The length, breadth and capacity of the frame may be determined in accordance with the weight of leaf intended to be carried thereon, making due allowances for any spacers or stationary abutments which it may be desirable to provide. The degree to which each spring may be compressible may be devised in accordance with the number of leaf butts it may be required to grip between or with the aid of the springs, and the strength of the springs may be varied in accordance with the weight expected to be supported between each pair of springs.

As already mentioned, spacers or abutments may be included in the device, e.g. alternated with springs for adding rigidity to the frame besides cheapening manufacture thereof by reducing the gauge of the rods which may in fact be of the nature of stout fixing wires. The frame may be made of any material which is sufficiently strong and cheap, besides being smooth enough for ensuring uninterrupted easy manipulation of springs and also being sufficiently resistant to corrosion. The springs themselves may also be made of any suitable material of adequate resiliency and which is resistant to corrosion and otherwise suitable. An essential requirement is that the springs shall be of sufficient strength and resiliency, e.g. firmly to hold the leaves during processing. As already noted also the springs should be disposed loosely about the respective elongated members.

2. A device for the suspension of articles along a line, comprising a pair of extended members co-extensively arranged and connected with a space between them through which space ends of said articles may be inserted, and a plurality of shorter, resiliently compressible elements slidably mounted on said members, disposed across said space between them and freely moveable along them in series singly in either direction.

3. A device for the suspension of articles along a line, comprising a pair of relatively rigid rod-like members of convenient length in spaced parallel arrangement connected at their corresponding ends and a series of shorter, resiliently compressible elements or compression springs slidably mounted across the space between said members so as to be freely moveable from a compacted disposition at one end of the device in series singly towards its opposite end.

4. A device as claimed in claim 2 wherein said resiliently compressible elements are spring-wire elements of generally zig-zag form looped loosely at their opposite ends about the respective extended members, the limbs of the elements which cross the space between said members being disposed relative thereto so as to prevent any entanglement or interlocking of adjacent elements when such are gathered or compacted.

5. A device as claimed in claim 3 wherein said elements or compression springs are spring-wire elements of generally zig-zag form looped at their opposite ends about the respective parallel rods or like members, the limbs of the elements which cross the space between said members being disposed relative thereto so as to prevent any entanglement or interlocking of adjacent elements when such are gathered or compacted as aforesaid.

6. A device according to claim 4 wherein said spring-wire elements are of N-form, with the loops for running on the extended members occurring in symmetrical arrangement at the tails of such form and oriented substantially at right angles to the general plane of the element to obtain free running.

7. A device according to claim 5 wherein the springs or elements are of N-form, with the loops for running on the rod or like members occurring in symmetrical arrangement at the tails of that form and oriented

8. A device according to claim 7 wherein the springs or elements are of N-form, with the loops for running on the rod or like members occurring in symmetrical arrangement at the tails of that form and oriented

9. A device according to claim 8 wherein the springs or elements are of N-form, with the loops for running on the rod or like members occurring in symmetrical arrangement at the tails of that form and oriented
substantially at right angles to the general plane of the element to obtain free running.

8. A device according to claim 4, wherein the resiliently compressible elements are of N-form.

9. A device according to claim 4, wherein the resiliently compressible elements are of M-form.

10. A device according to claim 4, wherein the resiliently compressible elements are of N-V form.

11. The device of claim 1, and including stationary abutments between certain of said compression elements limiting longitudinal movement of said compression elements.

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