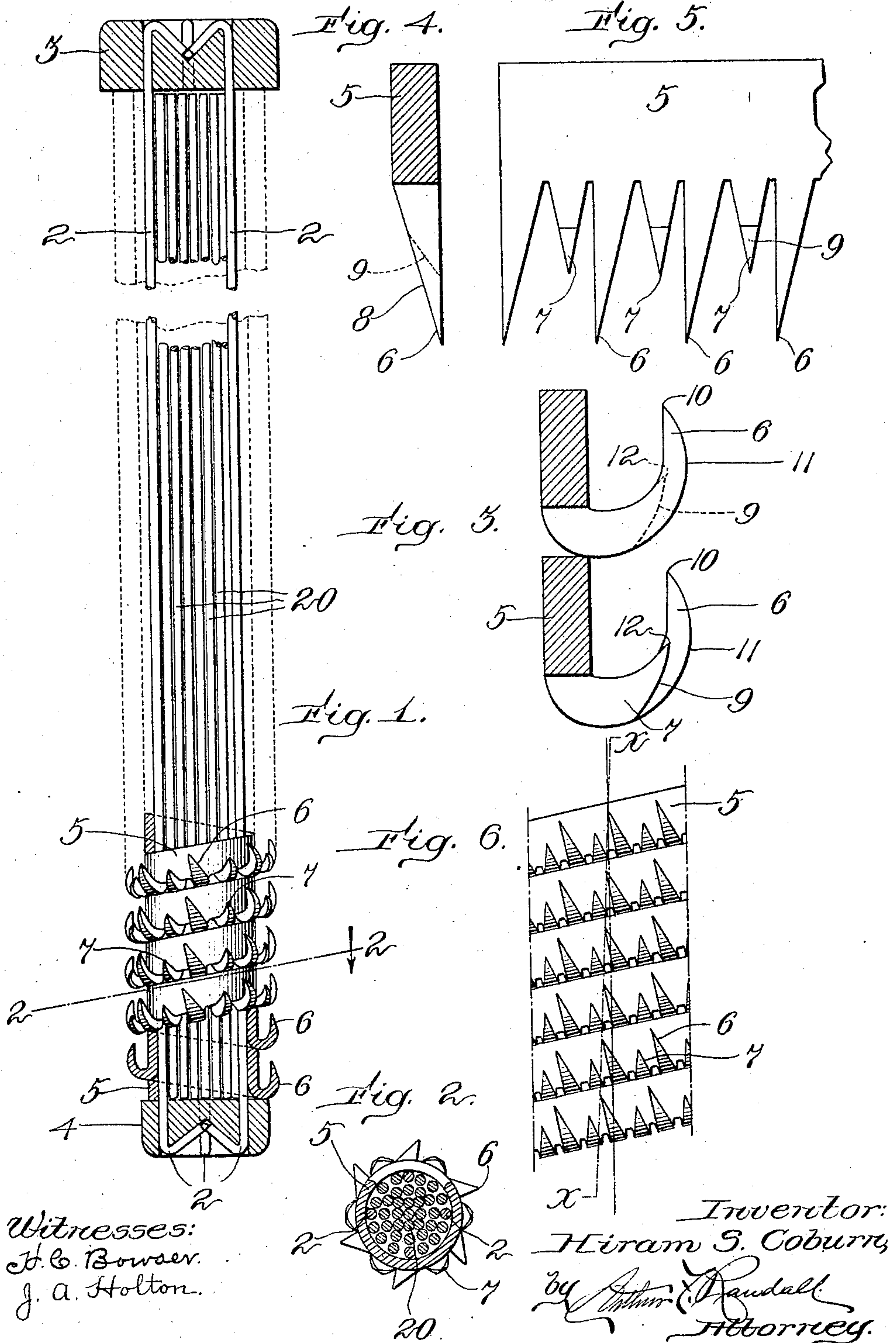


H. S. COBURN.
PICKER STEM.
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936,236.

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PICKER-STEM.

936,236.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HIRAM S. COBURN, a citizen of the United States, residing at Malden, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Picker-Stems, of which the following is a specification.

My invention relates to picker stems for cotton picking machines and the object of my invention is to provide a flexible toothed picker stem that will be sufficiently stiff and yet so flexible that it will freely bend at comparatively sharp angles in passing around limbs or other obstacles.

Also it is the object of my invention to improve upon the construction and arrangement of the teeth as well as to provide a picker stem of simple and improved construction.

To these ends my improved picker stem is made up principally of a spiral strip of metal provided with teeth upon its exterior so as to provide a toothed rod or stem the most prominent feature of which is its flexibility due to the joints between the convolutions.

In the best form of my invention one or more light flexible tie wires of spring material are provided within the hollow spiral for holding the convolutions of the latter together and preventing the spiral from stretching endwise. Also in order to properly stiffen the structure so that the stem will stand on its end without bending or buckling under its own weight, I provide a plurality of loose spring wires within the hollow spiral which supply the desired stiffness without lessening the range of flexibility.

Other features of my invention including the construction and arrangement of the teeth are hereinafter pointed out.

In the accompanying drawings: Figure 1 is an elevation on an enlarged scale of a picker stem constructed in accordance with my invention, parts thereof being broken away for purposes of illustration. Fig. 2 is a section on line 2-2 of Fig. 1. Fig. 3 is an enlarged sectional detail showing the form and construction of the teeth of the picker stem shown in Fig. 1. Figs. 4 and 5 are details hereinafter described. Fig. 6 is an enlarged diagrammatic view illustrating certain peculiarities of the teeth hereinafter described.

Having reference to the drawings, 2, 2 represent four fine and flexible tie wires of spring material that are fixed at their upper ends to a head or block 3 and at their lower ends to a block 4. Surrounding these wires 2 is a spiral tape-like strip of metal 5 formed with relatively long guard teeth 6 and with relatively short auxiliary teeth 7, both sets of teeth being integral with strip 5. The lower end of the spiral strip 5 is brazed or otherwise fastened to the block 4 while the upper end thereof is likewise fastened to the block 3. The interior of the hollow spiral is practically filled with a plurality of very fine spring wires 20 which stiffen the structure to such an extent that the stem or rod will not buckle or bend under its own weight when resting on its lower end, and at the same time these wires being loose and unfastened at their ends do not materially reduce the range of flexibility of the rod or stem. In practice the rod or stem constructed as above measures about four feet in length and one quarter of an inch in diameter.

By making my improved picker stem from a spiral strip a degree of flexibility is secured that is not possible with a solid stem or rod because in order to form or provide teeth on a solid stem or rod it is necessarily made so large that it is practically rigid. A solid stem or rod has the further disadvantage of being comparatively heavy and expensive to make, whereas my improved stem is comparatively light and can be produced much more cheaply.

It is intended to embody a large number of picker stems constructed as above described, in a wagon like machine that is drawn over the cotton field, the picker stems being hung by their heads 3 in vertical positions free to slide vertically on their support. The stems are first lowered among the branches of the plants and then raised again above the latter. During the downward movement the stems surround the bolls of cotton and the segments or lobes of the latter are picked up by the teeth of the stems as the latter are raised. While the picker stems are in their uppermost positions the cotton is removed therefrom and they are again lowered. Such use requires that the stems be sufficiently stiff to avoid buckling if their lower ends strike upon limbs or other obstacles during their descent and yet so

flexible as to readily bend in being drawn across a branch or other obstacle. Also it is necessary that the points of the teeth 6 and 7 be so shielded as not to engage anything but the cotton lint. The necessary flexibility is secured by the spiral strip; the proper degree of stiffness is secured by the wires 20, and the necessary strength is secured by the tie wires 2. The shielding of the points of the teeth 6 and 7 is secured as described later.

In making the strip 5 a band of metal of suitable length is cut as shown in Figs. 4 and 5 so as to provide throughout its length alternating long and short teeth, the former each being beveled as at 9 and the latter each being beveled as at 8. The strip thus prepared is next passed through a suitable machine which bends each tooth into the hook shape shown in Fig. 3, the short teeth 7 being bent, in effect, directly outward but sufficiently hooked to properly engage the cotton. The teeth are bent in a direction away from their beveled sides or to the right in Fig. 4 and the point 10 of each tooth 6 is carried around toward the body of strip 5 until it is nearer said body than the bend 11 of said tooth. It will thus be seen that the bend 11 of each tooth 6 not only shields its own point 10 but also shields the points 12 of the teeth 7 at each side of it. That is, the points 10 and 12 are prevented by the shielding bends 11 from engaging anything, practically, except the cotton lint.

While it is not essential to all of the forms of my invention to construct the picker stem with the two kinds of teeth described, yet as a matter of fact the teeth 7 being pointed outwardly are much more aggressive and effective than the teeth 6, and in the best form of my invention the two kinds of teeth are combined as shown.

Inasmuch as the teeth 6 and 7 are bent back over the body of the strip 5 at right angles to the length of said strip, it follows that when the strip is wound into a spiral form said teeth have a sidewise canted relation to the axis of the picker stem which materially increases the effectiveness of the teeth. Also the effectiveness of the teeth is still further increased and to an important extent by having the teeth on the strip 5 so arranged that the teeth of the successive convolutions are progressively offset slightly so that they are in spiral rows extending lengthwise of the rod or stem at a steep pitch as illustrated diagrammatically in Fig. 6, and with the teeth 6 in rows separate from the rows of teeth 7 which alternate therewith.

What I claim is:

1. A picker stem consisting of an exteriorly toothed strip of flexible material wound into a spiral coil and a flexible core within said coil.

2. A flexible picker stem made of a flexi-

ble spiral strip having teeth upon its exterior, and means to hold said spiral against stretching in an endwise direction.

3. A flexible picker stem made of a flexible spiral strip having teeth upon its exterior, and means to hold said spiral against stretching in an endwise direction without preventing relative movement between the convolutions of the spiral when the stem is bent.

4. A flexible picker stem made of a toothed strip formed into a spiral with the teeth upon the exterior thereof, and one or more flexible tie wires within said spiral for holding the latter against stretching in an endwise direction.

5. A flexible picker stem made of a flexible spiral strip of metal with teeth upon the exterior thereof, and one or more flexible tie wires within said spiral connected at its ends with the ends of the spiral to hold the latter against stretching in an endwise direction.

6. A toothed picker stem having a row of pointed cotton picking guard teeth and a set of pointed auxiliary cotton picking teeth alternating with said guard teeth and shielded by the latter, substantially as described.

7. A toothed picker stem having a row of guard teeth each bent into a hook with the bend projecting farther from the stem than the point to shield the latter, and a set of auxiliary teeth alternating with the guard teeth, each bent directly outward and having its point shielded by the adjacent guard teeth.

8. A flexible picker stem made of a flexible spiral strip of metal with teeth upon the exterior thereof, said teeth being bent into hooks with the bends projecting farther from the stem than the points to shield the latter.

9. A flexible picker stem made of a flexible spiral strip of metal with teeth upon the exterior thereof, said teeth comprising a set of guard teeth each bent into a hook with the bend of the hook projecting farther from the stem than the point to shield the latter, and a set of auxiliary teeth alternating with the guard teeth, each auxiliary tooth being bent directly outward and having its point shielded by the adjacent guard teeth.

10. A flexible picker stem made of a flexible spiral strip of metal provided upon its exterior with integral teeth, said teeth comprising a set of guard teeth each bent into a hook with the bend extending farther from the stem than the point to shield the latter, and a set of auxiliary teeth alternating with the guard teeth, each auxiliary tooth being bent directly outward and having its point shielded by the adjacent guard teeth.

11. A picker stem consisting of a strip of flexible material wound into a spiral coil, said strip being provided with a lengthwise row of teeth bent outwardly transversely of said strip so that said teeth are canted side-

wise with relation to the axis of the stem and a flexible core within said coil.

12. A flexible picker stem made of a flexible spiral strip of metal having teeth upon its exterior pointed lengthwise of the stem, with the teeth of the successive convolutions progressively offset so as to produce spiral rows extending lengthwise of the stem at a relatively steep pitch and with the points of the teeth of one convolution opposite the spaces of the next convolution.

13. A picker stem comprising a toothed

strip of metal formed into a spiral with the teeth upon the exterior, said teeth comprising guard teeth 6 and auxiliary teeth 7, with the teeth of the successive convolutions progressively offset to produce alternating spiral rows of teeth 6 and 7 extending lengthwise of the stem at a relatively steep pitch.

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Witnesses:

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