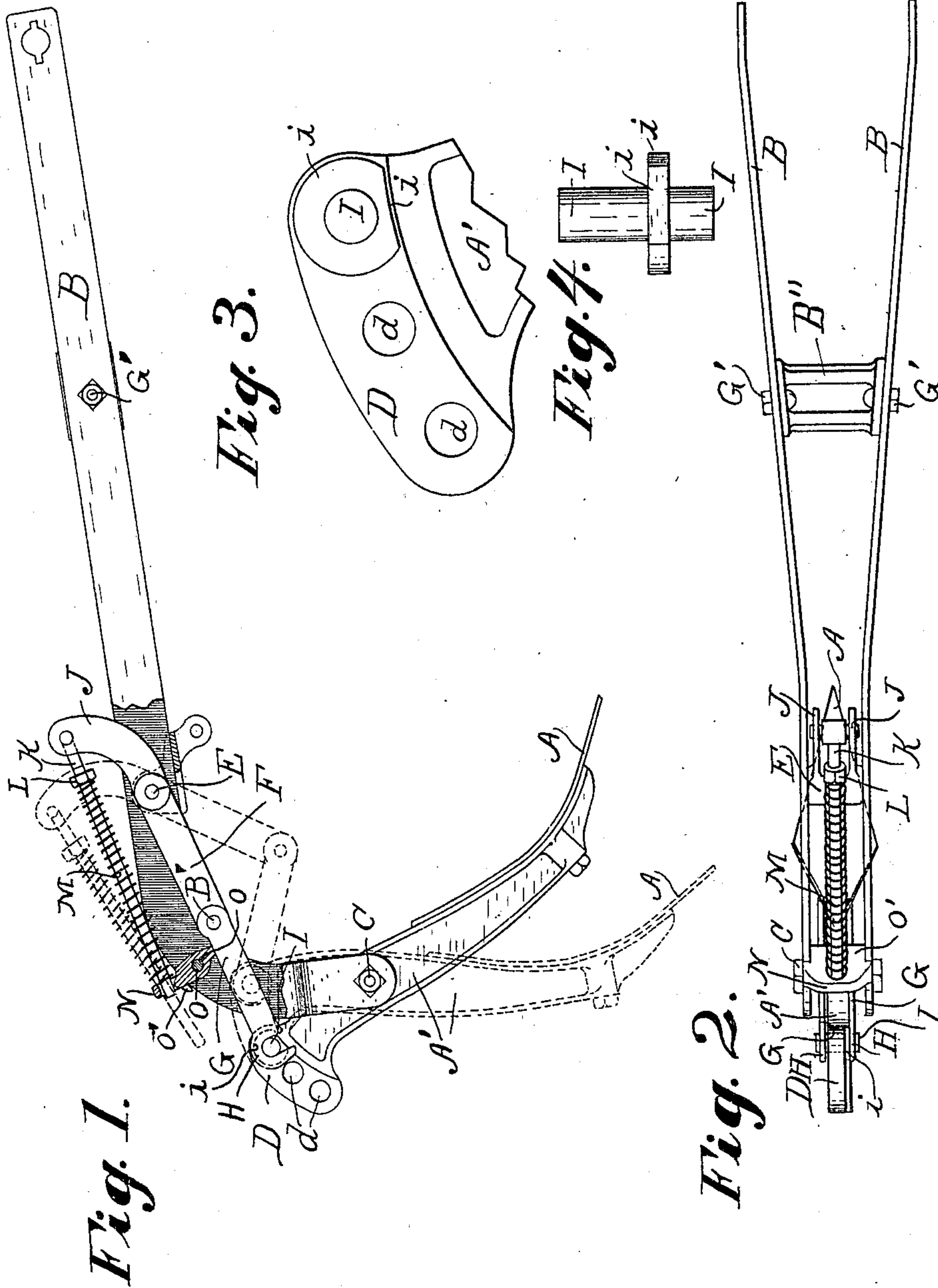


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PATENTED DEC. 4, 1906.

N. R. NELSON & C. J. KALKHURST.
AUTOMATIC SPRING CULTIVATOR TOOTH.
APPLICATION FILED JAN. 3, 1905.



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AUTOMATIC SPRING CULTIVATOR-TOOTH.

No. 837,335.

Specification of Letters Patent.

Patented Dec. 4, 1906.

Application filed January 3, 1905. Serial No. 239,322.

To all whom it may concern:

Be it known that we, NICHOLAS R. NELSON and CHARLES J. KALKHURST, citizens of the United States, residing at Beaver Dam, county of Dodge, and State of Wisconsin, have invented new and useful Improvements in Automatic Spring Cultivator-Teeth, of which the following is a specification.

Our invention relates to improvements in mechanism for holding and adjusting cultivator-teeth, and it pertains to that class of cultivators in which the teeth are adapted to be adjusted at various angles to the vertical and to resist a greater or less predetermined pressure, said adjusting mechanism being adapted when such predetermined pressure is exceeded to permit the teeth to yield and pass over the obstruction against which they are brought to bear, whereby the liability of being accidentally broken by contact with a stone or other obstruction when in use is avoided.

The construction of our invention is explained by reference to the accompanying drawings, in which—

Figure 1 represents a side view thereof, part in section. Fig. 2 represents a top view of the device shown in Fig. 1. Fig. 3 is a detail showing the upper end of the shank of the tooth, and Fig. 4 represents an adjusting-pin by which the tooth is secured at different points of adjustment.

Like parts are identified by the same reference-letters throughout the several views.

A represents the tooth proper, which is detachably secured to the shank A' in the ordinary manner.

B B are two bars comprising the tooth-supporting beam, to which the shank A' is pivotally connected by the bolt C.

The shank A' is provided with a radial flange D, which flange is in turn provided with a plurality of apertures *d*, located at short intervals apart corresponding with the several points of adjustment of said shank, said apertures *d* being formed for the reception of the pin I, which projects laterally toward the right and left upon the respective sides of said flange, while their protruding ends serve as places of engagement for the hook H of the toggle-joint levers F and G.

The toggle-joint levers F and G are pivotally connected at their contiguous ends by the bolt B', while the levers F are pivotally connected with the bars B by the bolt E. The upper end of the levers F extend past the bolt E and form arms J. The arms J are curved upwardly laterally and are connected with the bars B by the rod K and bracket N, said bracket N being rigidly secured to the bars B by the bolt O. One end of said rod K is pivotally connected with the arms J, while its opposite end is slidably connected with the bracket N and is adapted to pass freely through an aperture formed for its reception in said bracket. L is a nut adjustably secured to said rod K near its upper end. M is a spiral spring which is interposed between said nut L and said bracket N in such a manner that the tension of said spring is increased by turning said nut L downwardly against it and decreased by turning said nut L in the opposite direction. The toggle-joint levers F and G are adapted when in line with each other, as indicated in Fig. 1, to retain the shank A' and tooth A in the position shown in said figure. The contiguous ends of said levers F and G, however, are adjusted slightly below their longitudinal center and are retained at such point of adjustment by contact with the lower end of the bracket N, whereby when the tooth A is brought in contact with a stationary obstruction the contiguous ends of said toggle-joint levers F and G will be thrown downwardly into the position indicated in dotted lines, when the tooth is free to pass over an obstruction without being broken, when the tooth may be readjusted in its normal position, as shown.

It will now be understood that when the tooth A is brought in contact with a stationary object its resistance to such object may be increased or diminished by the tension of the spring M. It therefore follows that by turning down the nut L against said spring M said spring may be adjusted so as to hold said tooth against any predetermined pressure which may be brought to bear against it.

When operating the cultivator in a rigid or stiff soil, it may often become necessary to increase the tension of the tooth or spring, so

as to hold the tooth A against the required resistance, when while using the cultivator in a softer soil the resistance of the tension-spring may be diminished, it being understood that as the toggle-joint levers G are thrown from the position shown in Fig. 1 to that indicated in dotted lines the arm J will be thrown rearwardly to the position indicated in dotted lines, whereby the rod K will be forced through the retaining-aperture of the bracket N, as indicated in dotted lines, against the resistance of the spiral spring M.

When desirous to change the angle of adjustment of the shank A', this object is accomplished by raising the toggle-joint levers G and disengaging the hooks H from the pin I, when the pin I may be placed in any one of the several other apertures *d* required to give the shank the desired adjustment. The pin I is provided with a radial flange *i*, which bears against one side of the radial flange *d*. The hooks H and toggle-joint levers F and G are formed in duplicate sets, one of said levers and hooks being located upon each side of the radial flange *d*, said hooks being adapted to engage the respective protruding ends of the pin I, as shown in Fig. 2. Thus it will be understood that when the pin I is in place in the aperture *d* of the radial flange and said hooks H are in place upon the protruding ends of said pin the radial flange I will be brought between the radial flange D and one of said hooks H, whereby said pin I will be retained in said aperture *d*.

The bars B comprising the beam are connected together at their centers by the bracket B'' and bracket-retaining bolts G', while the lower ends of the bars comprising said beam are connected with the respective sides of the supporting-shank A', as stated, by the bolts C. The respective sides of the bracket N are connected with the respective bars of said beam, as stated, by the retaining-bolt O, said bracket N being provided with shoulders O', which engage with the upper edge of the bars B and prevent said bracket from being forced rearwardly by contact of the spiral spring M as pressure is brought to bear against the same.

It will be understood that by the construction shown the angle or inclination of the shank A' to the supporting-beam is readily changed by raising the hooks H from the supporting-pin I and adjusting said pin I from one of said retaining-apertures to another.

While we have shown and described the mechanism for adjustably connecting a single tooth to the supporting-beam or draw-bar of a cultivator, it will of course be understood that each cultivator comprises a plurality of such parts.

Having thus described our invention, what

we claim as new, and desire to secure by Letters Patent, is—

1. In a cultivator of the described class, the combination of a tooth-supporting beam formed of two parallel bars; two sets of toggle-joint levers, each set being pivotally connected at a distance from its forward end between the bars comprising said beam and provided at its opposite end with hooks adapted to be detachably connected at various points of adjustment with the tooth-supported shank, a tooth-supported shank provided at its upper end with a plurality of transverse apertures and pivotally connected at a distance from its upper end between the respective bars of said beam, a pin interchangeably supported in any one of the several transverse apertures of said shank, said pin being adapted to serve as a means of engaging the hooks of said toggle-joint levers at various points of adjustment with the upper end of said shank and means for yieldingly retaining said toggle-joint levers substantially in line with each other, substantially as set forth.

2. In a cultivator of the described class, the combination of a tooth-supporting beam formed of two parallel bars; two sets of toggle-joint levers, each set being pivotally connected at a distance from its forward end between the bars comprising said beam and provided at its opposite end with hooks adapted to be detachably connected at various points of adjustment upon the respective sides of the upper end of the tooth-supporting shank; a tooth-supporting shank pivotally connected at a distance from its upper end between the respective bars of said beam; means for adjustably connecting the hooks of said toggle-joint levers with the upper ends of said shank, comprising a pin provided with a radial retaining-flange, said pin being adapted to be detachably retained in any one of the several apertures formed in said shank, by contact of the sides of one of said hooks with the exterior side of said radial flange; means for yieldingly retaining said toggle-joint levers in line with each other, comprising a rod pivotally connected with the front end of said toggle-joint levers and slidably connected through a bracket with said beam; an adjustable nut having screw-threaded bearings on said rod and a resilient bearing interposed between said nut and said bracket, substantially as set forth.

In testimony whereof we affix our signatures in the presence of two witnesses.

NICHOLAS R. NELSON.
CHARLES J. KALKHURST.

Witnesses:

CHARLES BEECH,
G. F. MESSER.