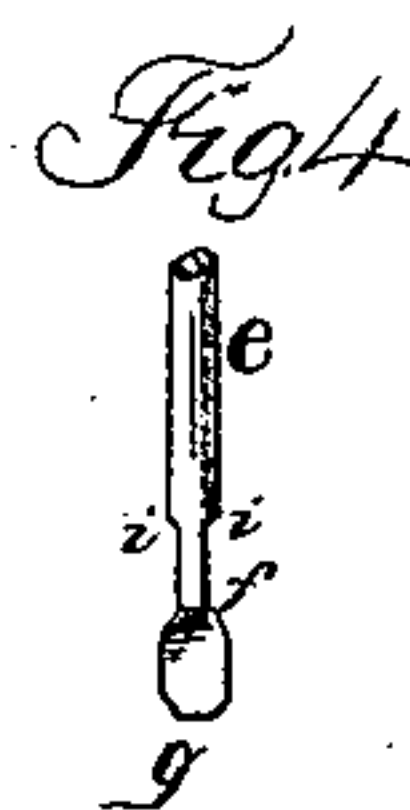
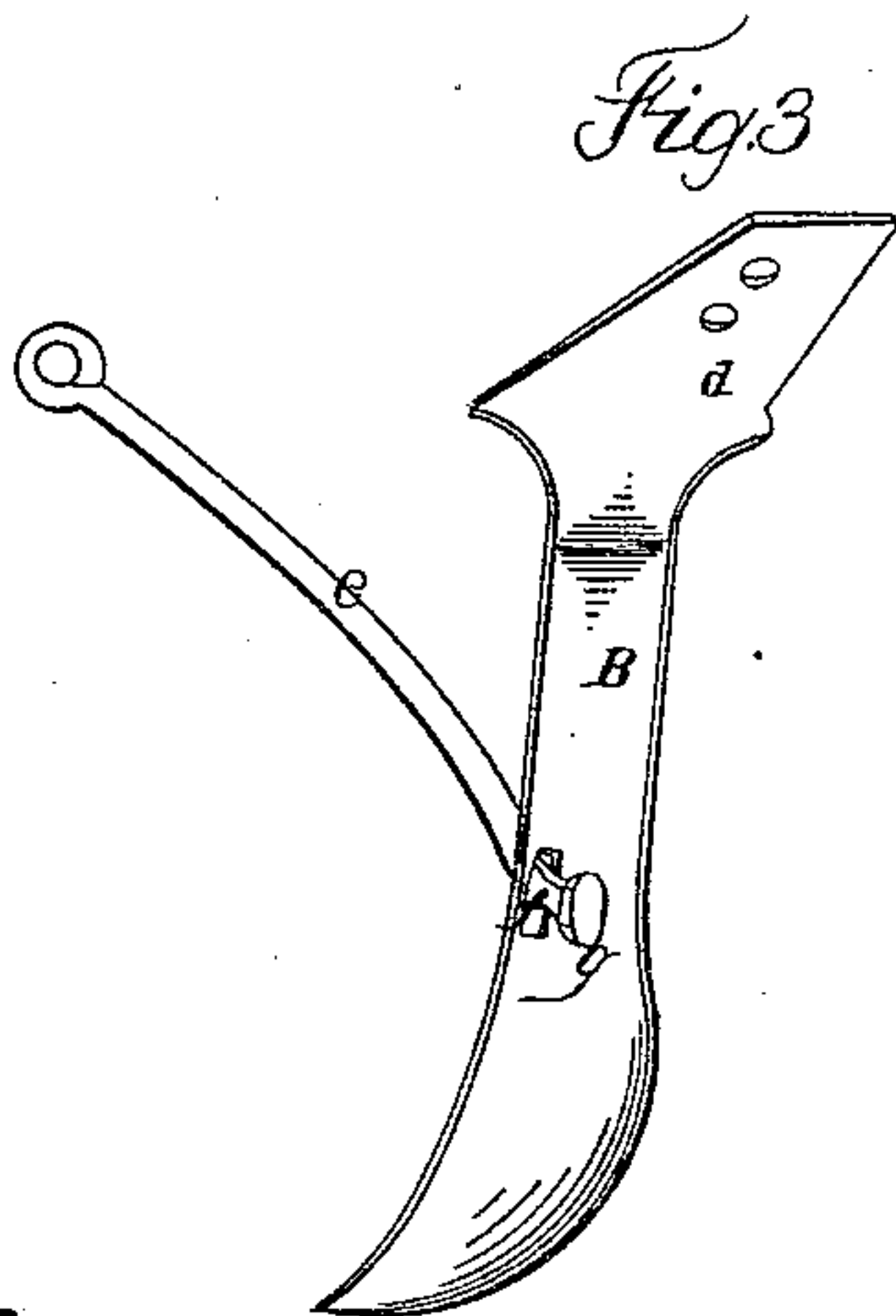
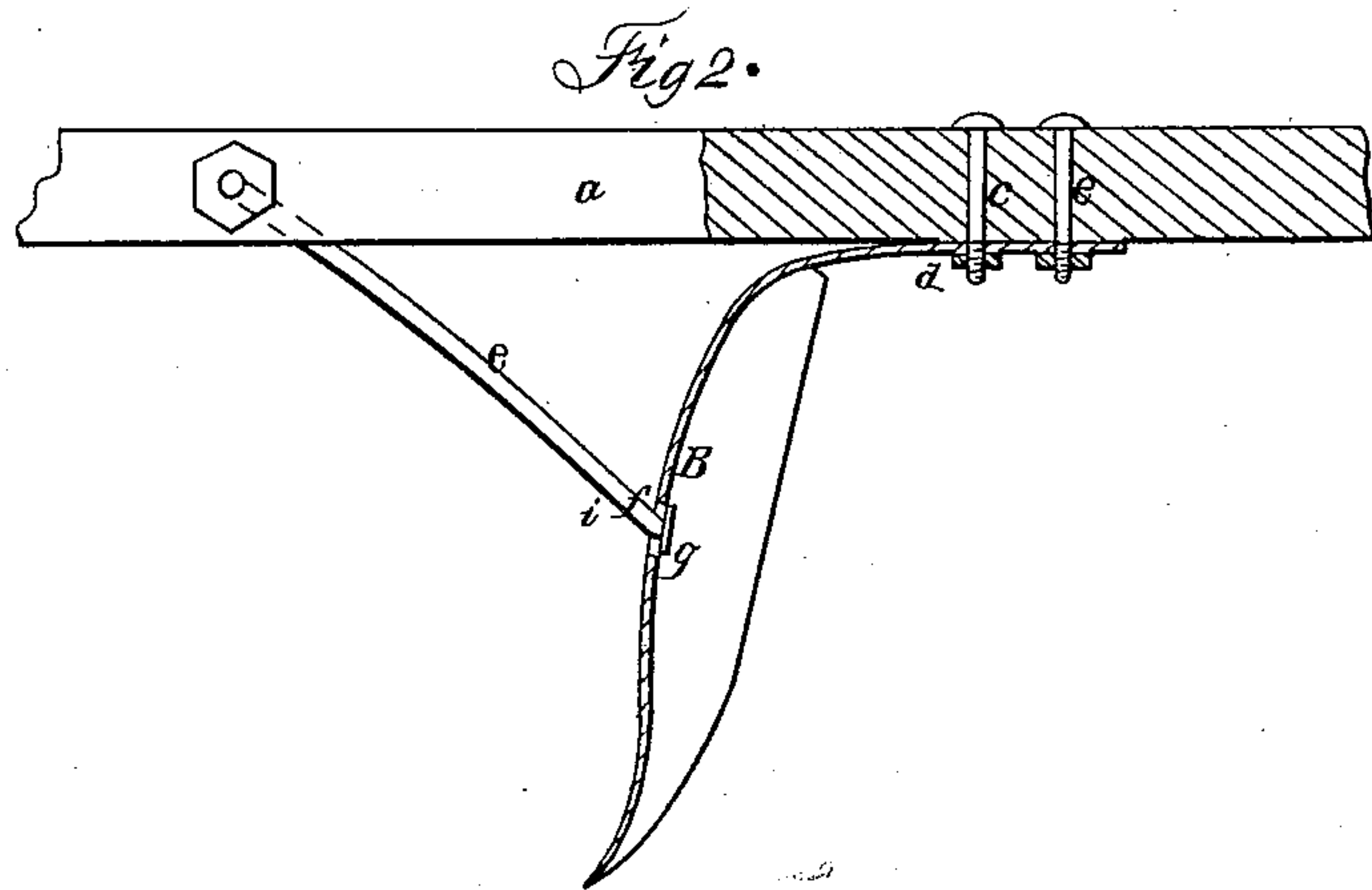
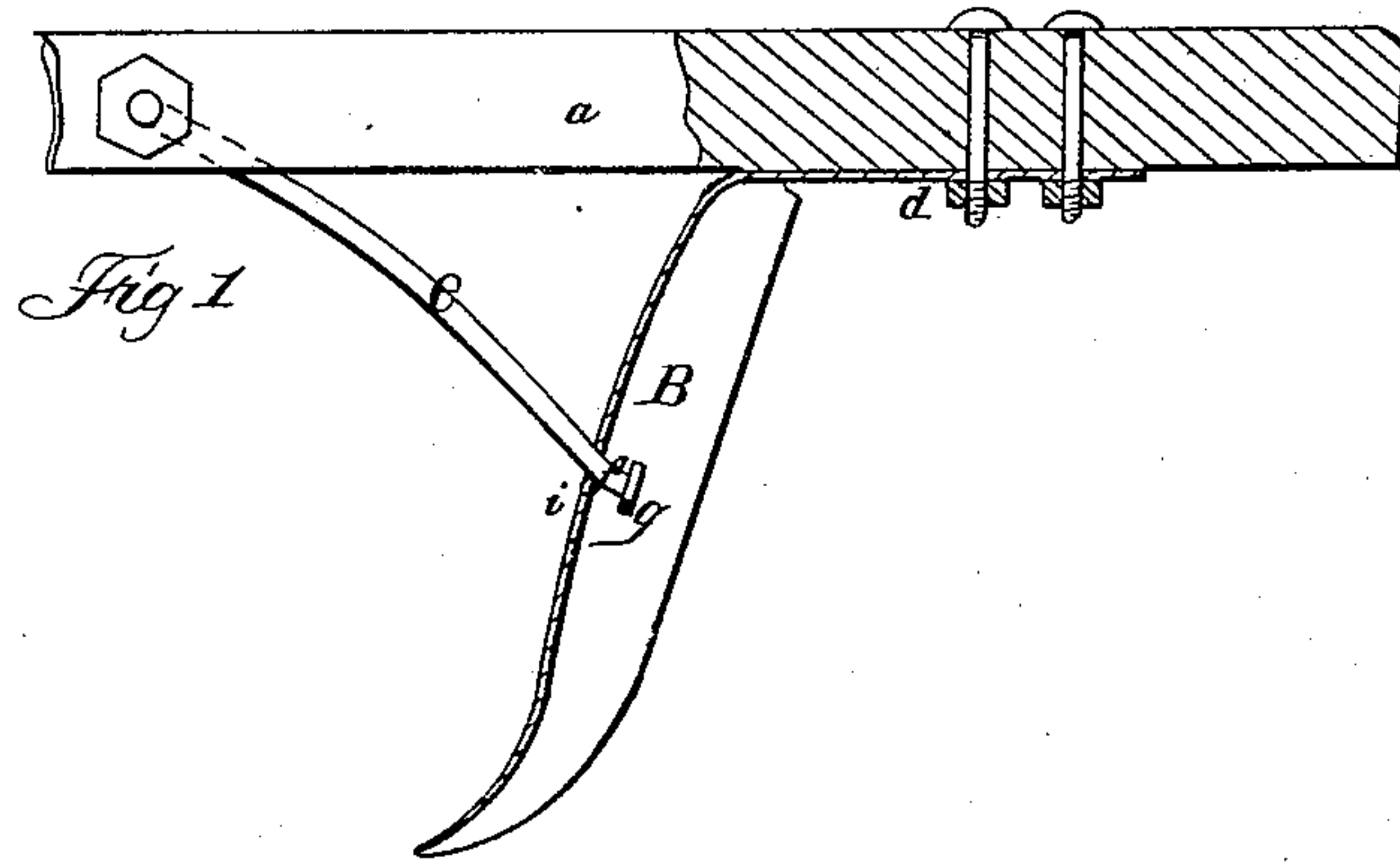


H. FRANCISCO.
Cultivator-Teeth.

No. { 2,637. }
 { 33,641. }

Patented Nov. 5, 1861.



WITNESSES:
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UNITED STATES PATENT OFFICE.

HENRY FRANCISCO, OF WHITE WATER, WISCONSIN.

IMPROVED SPRING-TOOTH FOR CULTIVATORS.

Specification forming part of Letters Patent No. **33,641**, dated November 5, 1861.

To all whom it may concern:

Be it known that I, HENRY FRANCISCO, of White Water, in the county of Walworth and State of Wisconsin, have invented a new and useful Mode of Constructing Cultivator-Teeth; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, constituting a part of this my specification of my said invention.

Cultivator-teeth which are constructed of thin plates of metal or sheet iron or steel by swaging the same in a die into the form as shown in the drawings, although of the most approved character for all purposes of cultivation and of much less cost than other teeth, have nevertheless been subject, as heretofore constructed, to serious objections.

In order to secure the advantage of the most approved form of the lower working end of a cultivator-tooth of the class above named, and adapt it not merely to the purpose of a scarifier, such working end must be made flaring on each side of a vertical line in the center of the tooth in order to overturn the soil through which it passes rather than press apart the soil in its passage through it, as is the action of the ordinary drag and scarifier tooth. The consequence of such construction, although the best for a cultivator-tooth, is that when in use in stubborn ground a heavy leverage or pressure is brought to bear upon the lower, forward and flaring, and working portion of the tooth, and the strain thus thrown upon its shoulder, at which point it is attached to the beam of the cultivator, results in the bending and breaking of the tooth at that point, or the wrenching and loosening of the bolts which pass through the shoulder and the beam. If in the use of the tooth, therefore, it happens not to be broken by being suddenly brought up by an obstruction in its path, the bolts, by such strains oft repeated, work loose, enlarge the holes through which they pass in the beam, and thus permit the tooth after a little use to wobble. It also frequently happens, particularly when the wood of which the beam is constructed is cross-grained, that a heavy wrench sidewise upon the tooth will split the beam, and thus render the whole implement for the time being useless.

The object of my invention is therefore to overcome these objections; and my invention consists in so constructing the shoulder of a cultivator-tooth between the point where the upper main portion or standard of the tooth comes in contact with the beam and the point at which the bolts pass through said shoulder to secure the tooth to the beam that between said points there shall be a sufficient spring or elasticity to the shoulder to compensate for any unusual strain upon the tooth, and thus relieve the implement from damage incident to its use as above noted. This object may be accomplished in two ways. First, when the shoulder is made of the same thickness of metal as the body of the tooth, by leaving a sufficient length of metal or space between the top of the standard where it comes in contact with the beam and the point in the shoulder where the bolt passes through to allow of the necessary yielding of the tooth; or, second, by cutting away between these points a portion of the superficies of the metal composing said shoulder.

To enable others skilled in the arts to make and use my invention, I will now proceed to describe its construction and operation as required by statute, reference being had to the accompanying drawings and letters of reference marked thereon, like letters indicating the same parts in the several figures.

Figure 1 is a longitudinal vertical section, showing the tooth as attached to its beam and in a state of rest. Fig. 2 is a like view, showing the action of the tooth when obstructed in its path and the function performed by the check-brace. Fig. 3 is a rear view of the tooth and shows the cutting away of a portion of the superficies of the shoulder, by which the shoulder may be made shorter than shown in Figs. 1 and 2, and yet allow the desired action of the tooth.

a is the beam, to which the cultivator-tooth *B* is applied, the two being secured together by means of bolts *c* passing through the shoulder *d* and beam and there held by screw and nut upon the bolts. Forward of the tooth *B*, I attach a check-brace, *e*, to the beam *a* by means of a bolt, as shown in the drawings. This check-brace extends down to a point nearly central of the length of the tooth and passes through a rectangular opening in said tooth,

which opening is of a greater length than the width of the flattened portion *f* of the check-brace and of a sufficient length to allow of the play of the part *f* therein when the tooth is in the act of being forced from its normal position by any obstruction in its path when in use. The flattened portion of the check-brace terminates in a head or detent, *g*, which limits the extent of the backward movement of the tooth B, as clearly shown in Fig. 2. The check-brace is also provided with a shoulder on either side of the flattened portion *f* in front of the tooth, (clearly shown in Fig. 4,) so that said shoulder (marked *i* in said Fig. 4) will come in contact with the front of the tooth, and thus prevent the tooth from being bent forward and upward toward the beam *a* in case, from casualty or otherwise, a heavy weight should fall upon or at any time be placed upon the frame of the cultivator.

Cultivator-teeth of the class shown in the drawings and constructed of plate or sheet metal in the usual way with my improvement thereto possess all the advantages without any

of the objections heretofore pertaining to such teeth, and this without the introduction of a cast-iron shank for strengthening the tooth at the point upon which the principal part of the strain comes.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A spring cultivator-tooth constructed and operating substantially in the manner and for the purpose herein described, in combination with a check-brace, substantially as described.

2. So constructing the shoulder of a cultivator-tooth that when the working point of the tooth is arrested by any sudden obstruction the strain upon the tooth will be relieved by the action of the shoulder, substantially as described.

Witness my hand in the matter of my application for patent on improved cultivator-tooth this 20th day of September, 1861.

HENRY FRANCISCO.

Witnesses:

N. S. MURPHY,
S. M. BILLINGS.