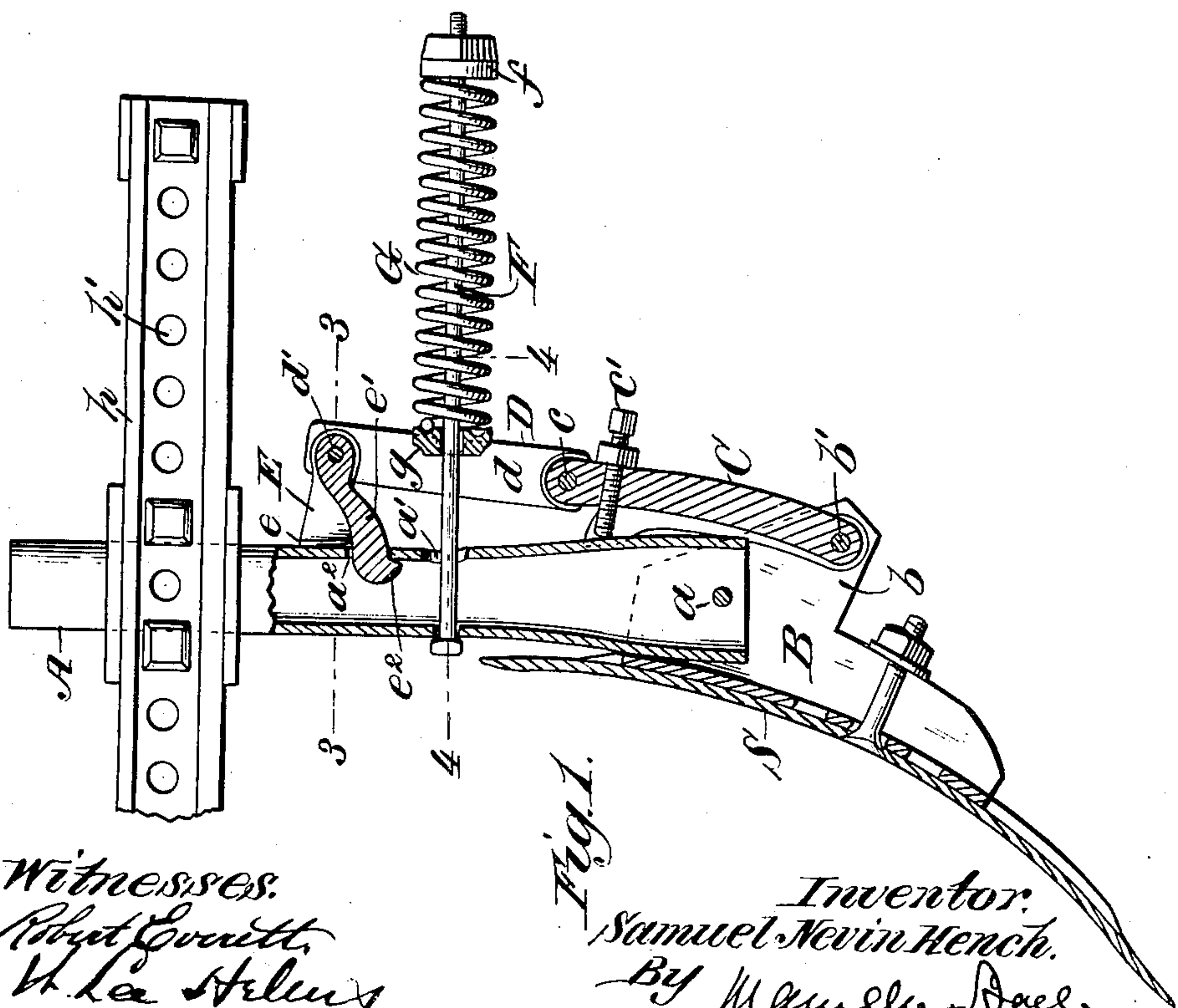
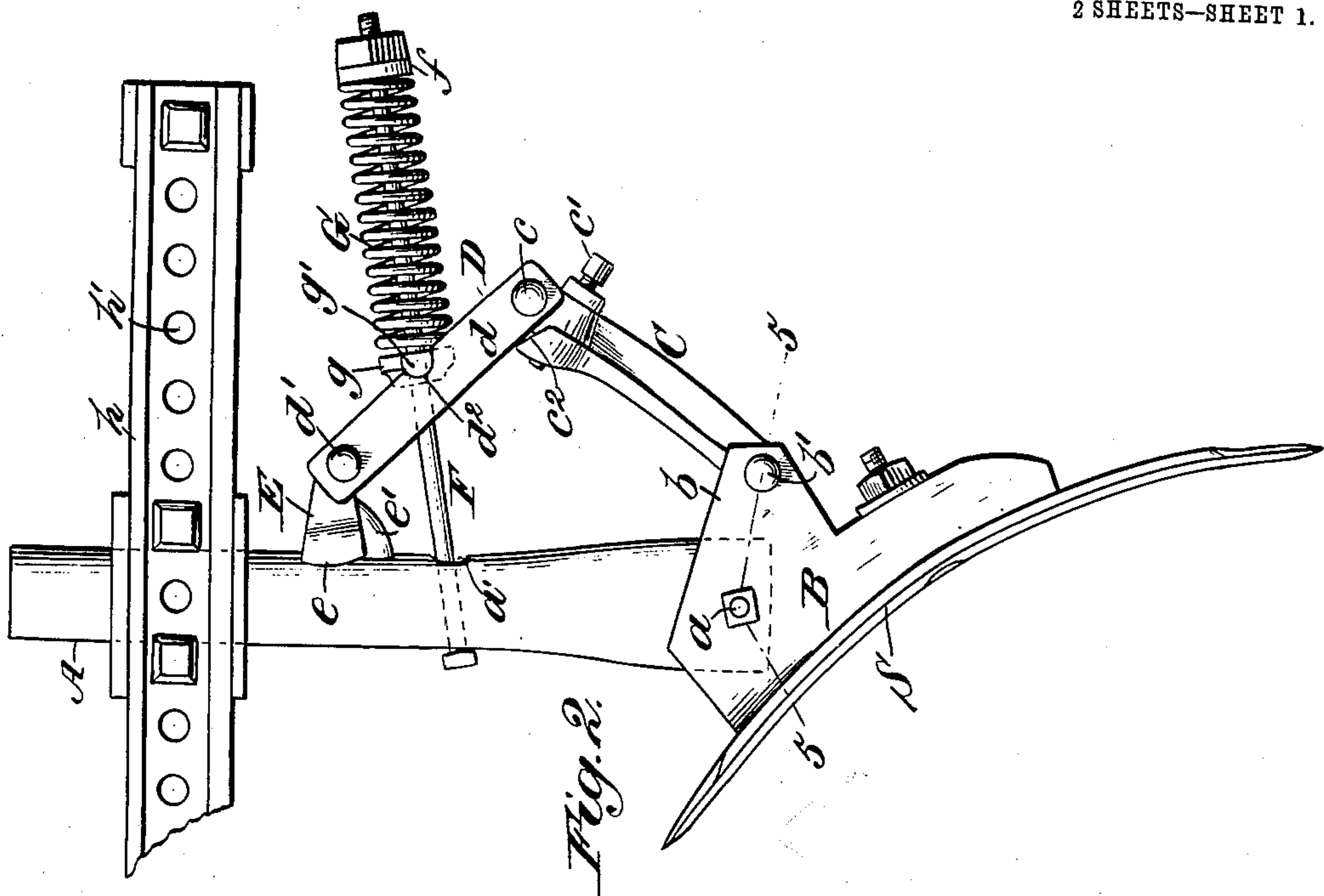


917,603.

2 SHEETS—SHEET 1.



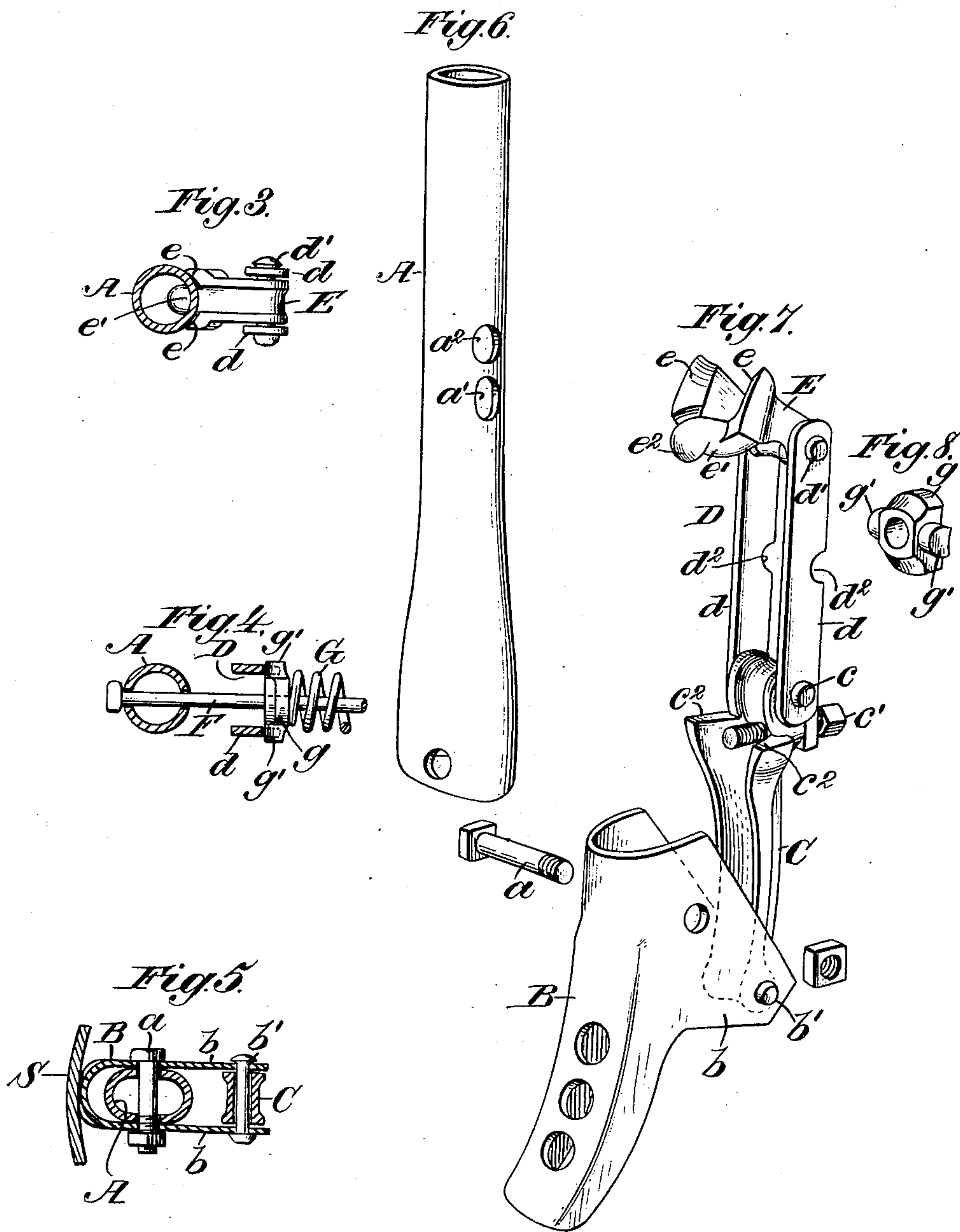
Witnesses:
Robert Corbett
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Fig. 1.
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CULTIVATOR AND LIKE MACHINE.
APPLICATION FILED DEC. 12, 1908.

917,603.

Patented Apr. 6, 1909.
2 SHEETS—SHEET 2.



Witnesses.
Robert Everett
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UNITED STATES PATENT OFFICE.

SAMUEL NEVIN HENCH, OF YORK, PENNSYLVANIA.

CULTIVATOR AND LIKE MACHINE.

No. 917,603.

Specification of Letters Patent.

Patented April 6, 1909.

Application filed December 12, 1908. Serial No. 467,295.

To all whom it may concern:

Be it known that I, SAMUEL NEVIN HENCH, of York, in the county of York and State of Pennsylvania, have invented a new and useful Improvement in Cultivators and Like Machines, of which the following is a specification.

This invention relates to what is known as "spring-trip" mechanism for shovels or hoes of cultivators and like agricultural machinery wherein the hoes or points are hinged or pivoted to their standards and are adapted to turn back on their hinges when they meet an obstacle which offers more than the predetermined resistance for which the "spring-trip" mechanism is set. A "spring-trip" mechanism of this general kind is old in the art. And it has consisted, in most instances of which I have knowledge, of a toggle, having the outer ends of its two members pivoted the one to the standard and the other to the hoe or hoe-carrying shoe jointed to said standard; a spring which tends to force the toggle joint in a direction opposite to that in which it is moved by the backward swing of the hinged hoe, and a set screw which determines the normal position of the toggle joint, and, consequently, the force required to start the movement of the joint against the stress of the spring.

My invention consists in certain improvements in a "spring-trip" mechanism of this general kind—designed to simplify and cheapen the construction, and to enhance the efficiency of the mechanism—which will first be described in connection with the drawings accompanying and forming part of this specification and will then be more particularly pointed out in the claims.

In said drawings—Figure 1 is a partly sectional side elevation of a "spring-trip" hoe and shank embodying my improvements together with a portion of the beam or drag bar to which the standard is attached—the parts being in normal position. Fig. 2 is a side elevation of the same with the parts in "trip" position. Fig. 3 is a section on line 3—3, Fig. 1. Fig. 4 is a section on line 4—4, Fig. 1. Fig. 5 is a section on line 5—5, Fig. 2. Fig. 6 is a perspective view of the standard. Fig. 7 is a view of the shoe and toggle system connected together but detached from the standard. Fig. 8 is a perspective view of the spring seat or block.

The beam may consist, as in my Patents No. 785,038 of March 14, 1905 and No.

684,571 of Oct. 15, 1901, of two parallel I bars *h* provided with longitudinal rows of perforations *h'* in their webs through which pass the bolts which clamp the standards A of the hoes or shovels S between the bars *h*, these bolts engaging split boxes the parts of which encircle the standards and are clamped thereto by the action of the bolts in the usual way.

The standard A of the hoe is preferably tubular, of cylindrical exterior form with its lower end slightly flattened laterally to provide faces to be overlapped by the sides of the shoe B to which the shovel or hoe S is bolted, as shown. The shoe is preferably made of sheet steel, substantially U-shaped in cross section, the closed face being placed foremost and furnishing a broad bearing base for the attachment of the shovel or hoe. The shoe is jointed to the standard by a pivot bolt *a* which passes through the sides of the shoe and the flattened portion of the standard included between those sides.

On the upper portion of the shoe are rearwardly projecting ears *b* between which fits and is held by a headed pivot pin *b'* the lower end of the lower member C of a toggle, the upper member D of which toggle is at its upper end pivoted at *d'* to a lug E mounted on the rear face of the standard A and projecting rearwardly therefrom. The meeting ends of the two members of the toggle are pivoted together at *c*. The lower member C of the toggle carries the adjustable set screw *c'* for determining the normal position of the toggle joint, and the consequent force requisite to overcome the spring pressure which holds the joint in normal position.

As thus far described there is nothing essentially new in the mechanism.

The spring pressure device is applied to and combined with the standard A and the toggle as follows: Through the tubular standard A from front to rear is formed a hole or opening *a'* which flares and widens rearwardly. Through this hole is passed from the front of the standard the tension rod F. The head of the rod brings up against the front of the standard, and the rod thence extends approximately horizontally and at right angles to the standard, rearwardly beyond the standard and the upper member D of the toggle, passing between the two parallel links or bars *d* of which said member is composed. That portion of the tension rod in rear of the member D is encircled by the coiled pres-

sure spring G which is confined between the member D and a set nut f on the screw threaded rear end of the tension rod. In order that the front end of the pressure spring G may adapt itself without friction to changes in position of the toggle member D against which it bears, that end of said spring seats itself against the spring seat or block g which is pivoted between the bars d , so that it may adapt itself to said changes in position. The spring seat g for this purpose is preferably provided with laterally projecting trunnions g' which are cradled in half round recesses or bearings d^2 formed in the rear edges of the bars d . I thus obtain a pivoted pressure-spring seat, which can be readily applied to and removed from the toggle member with which it is used. It can be applied to and removed from the tension rod, along with the spring, thus permitting the parts of the spring-pressure device to be readily fitted to and removed from the toggle and standard. On the lower member C of the toggle is a stop piece or flange c^2 which when the toggle joint is broken and flexed by the rearward movement of the hoe, as shown in Fig. 2, brings up at a predetermined point against the upper member D, and thus prevents the further bending of the joint.

I pass now to the lug E, the construction of which, and the manner of attaching it to the standard A, are material features of my invention. The lug is not welded or otherwise permanently fixed to the standard. It is detachably connected thereto in such manner as to permit its ready application to and removal from the standard, while at the same time, when in place, it furnishes an absolutely stable support for the upper member of the toggle; being in fact so formed and arranged that the greater the pressure upon the toggle system the tighter and more rigidly it is held in its place.

The base e of the lug has a saddle-like formation so that it may snugly fit the back of the standard A against which it comes. On the lug and projecting from the face of the base e , is a shank e' at the end of which is a downwardly projecting toe or point e^2 —this portion of the lug having a hook-like formation. At the proper point in that portion of the standard A against which the base of the lug E seats itself is formed an opening a^2 , of shape and size to fit the shank e' . When the base e of the lug is applied to the standard the hook like portion e' , e^2 , is inserted into and through the opening a^2 . When the base e is seated against the standard A, as seen more clearly in Fig. 1, the shank e' of the hook portion fills the opening a^2 , while the toe e^2 extends under and brings up against the solid portion of the standard A below the opening a^2 . The pressure of the spring G holds the lug most securely in this position.

At the same time, by removing the spring, as can readily be done, the lug E is loose again and can be removed from the standard with the greatest ease. By this construction I am enabled to fit together all parts of the toggle system and to attach them to the shoe B before connecting the latter to the standard A; and thus the shoe and the toggle system as an entirety can be removed from and applied to the standard A. The shoe and toggle system thus connected together, but removed from the standard, are shown in Fig. 7.

Having described my improvements and the best way now known to me of carrying the same into practical effect, I state in conclusion that I do not limit myself strictly to the structural details hereinbefore set forth in illustration of my invention, since manifestly the same can be varied considerably without departure from the spirit of the invention: but

What I claim herein and desire to secure by Letters Patent is:

1. The combination of the standard; the shoe or hoe support hinged to the standard; the toggle arranged in rear of the standard having its upper member pivoted on the standard, and its lower member pivoted on the shoe; the tension rod passing rearwardly, and approximately horizontally, through the standard, and thence rearwardly beyond the toggle; a seat or block swiveled in the upper member of the toggle and provided with a hole through which the tension rod passes; and a coiled spring held under compression on the tension rod with its front end seated against the swiveled seat in the upper toggle member, as and for the purposes hereinbefore set forth.

2. The combination with the standard, the shoe or hoe support hinged thereto, and the toggle having its members pivoted to the standard and the shoe respectively, of the spring-supporting block, provided with trunnions cradled in half round recesses in the rear edges of the two parallel bars of which the upper toggle member is composed, the tension rod extending rearwardly from the standard through said spring-supporting block, and a coiled spring encircling and held under compression on the tension rod with its front end seated against said block, substantially as and for the purposes hereinbefore set forth.

3. The combination with the standard, the shoe hinged thereto, the toggle and the spring pressure device for holding the toggle in normal position, of the lug E to which the upper member of the toggle is pivoted, said lug being detachably seated upon the back of the standard, and provided with a hook-like projecting portion, having a shank e' which enters and fills an opening a^2 in the standard, and a toe or point e^2 , which extends under and brings up against the solid portion of the

standard below the opening a^2 therein, substantially as and for the purposes hereinbefore set forth.

4. The combination of the standard; the shoe hinged thereto; the toggle on the rear of the standard having its two members jointed to the standard and shoe respectively; the spring pressure device bearing against the upper member of the toggle; the set screw mounted on the lower toggle member for determining the normal position of the toggle joint; and the stop c^2 also on the lower toggle member for limiting the rearward bending of the toggle joint.

5. The combination of the tubular stand-

ard having opening a^2 in its rear wall; the shoe hinged to said standard; the lug E provided with a projecting limb to enter said opening a^2 and engage the standard; the toggle having its members jointed to the shoe and the standard respectively; and a spring pressure device for holding the toggle in normal position.

In testimony whereof I affix my signature in presence of two witnesses.

SAMUEL NEVIN HENCH.

Witnesses:

T. E. DROMGOLD,
R. N. ZIMMERMAN.