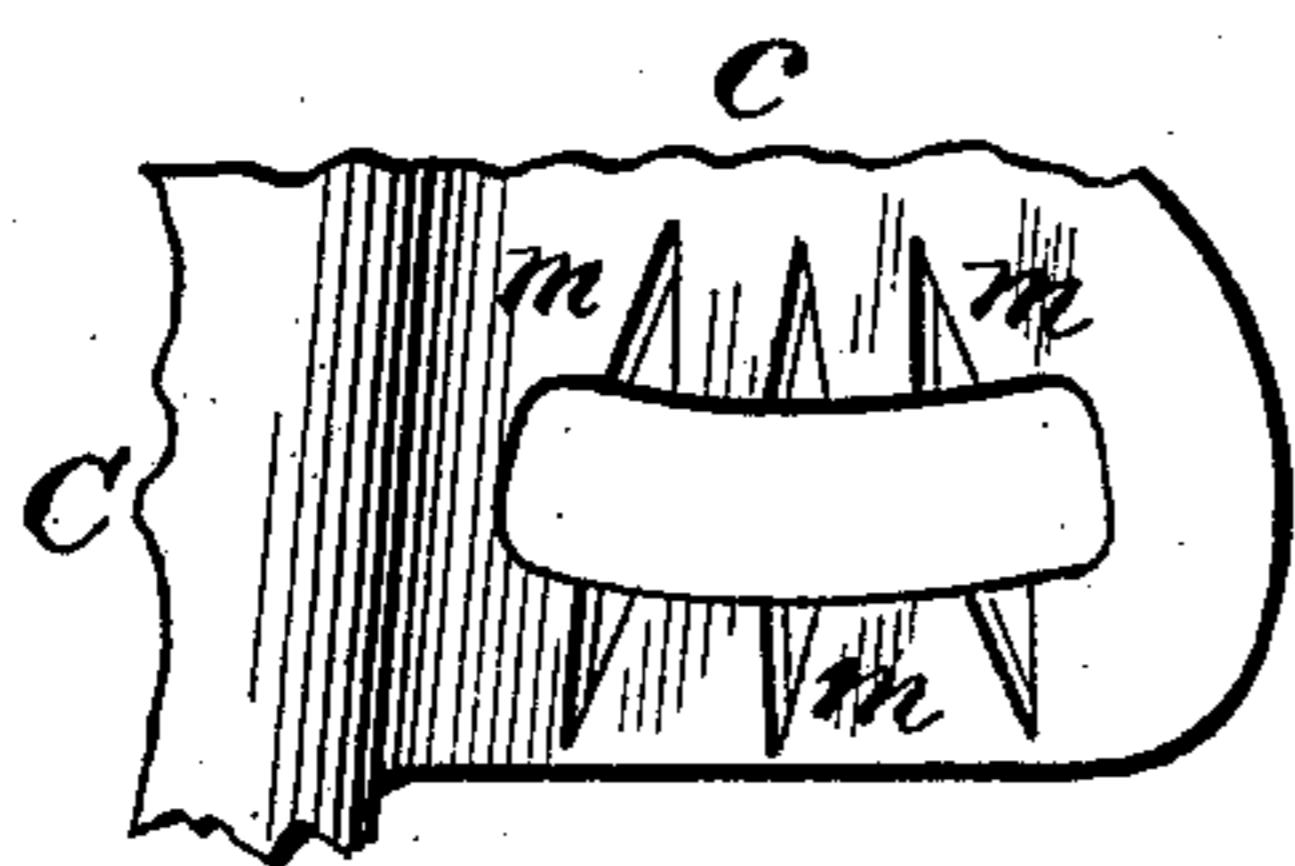
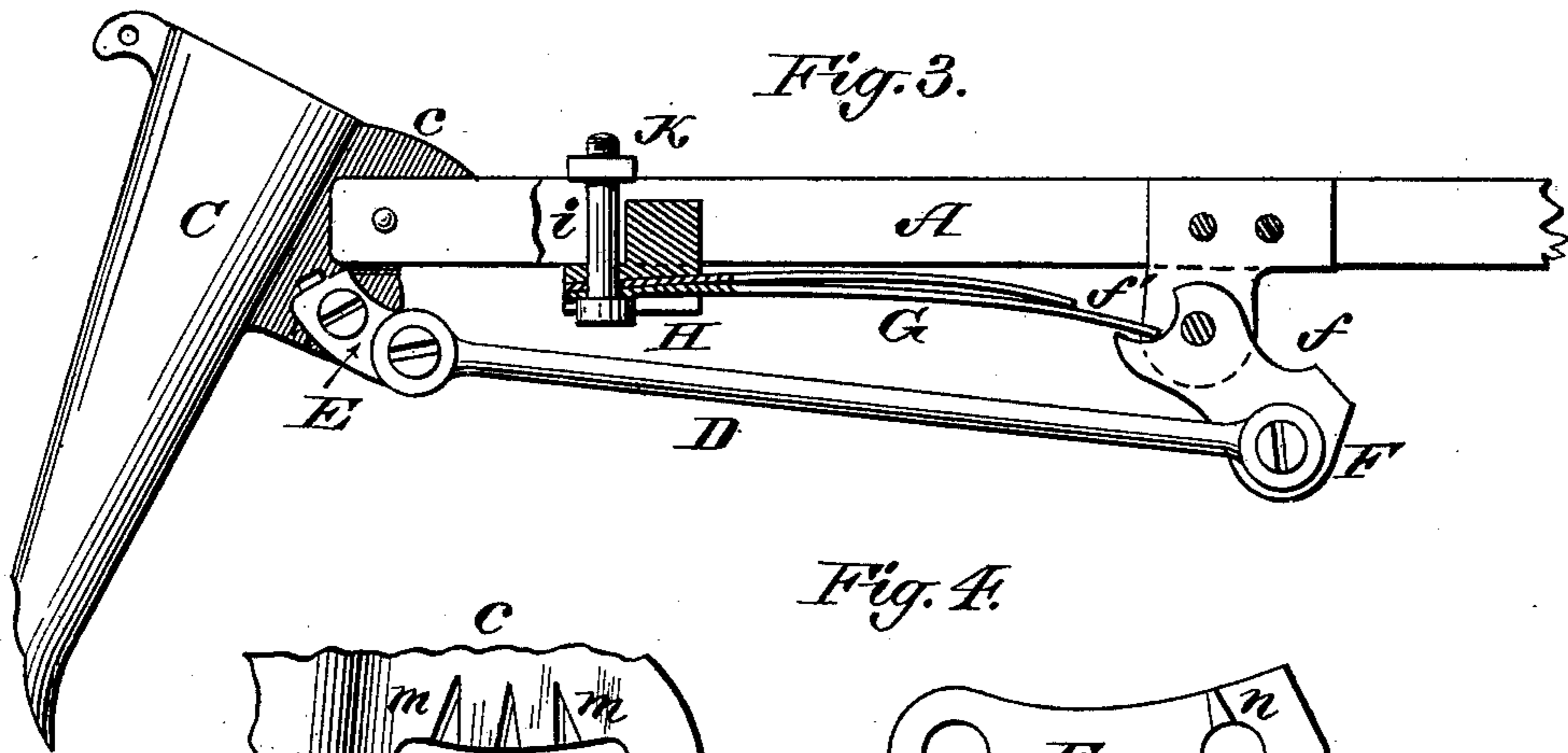
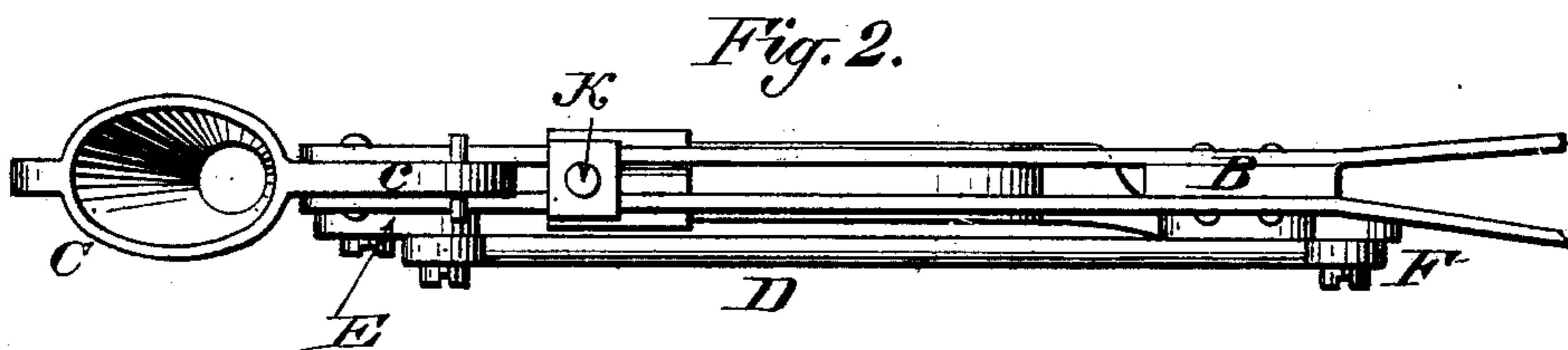
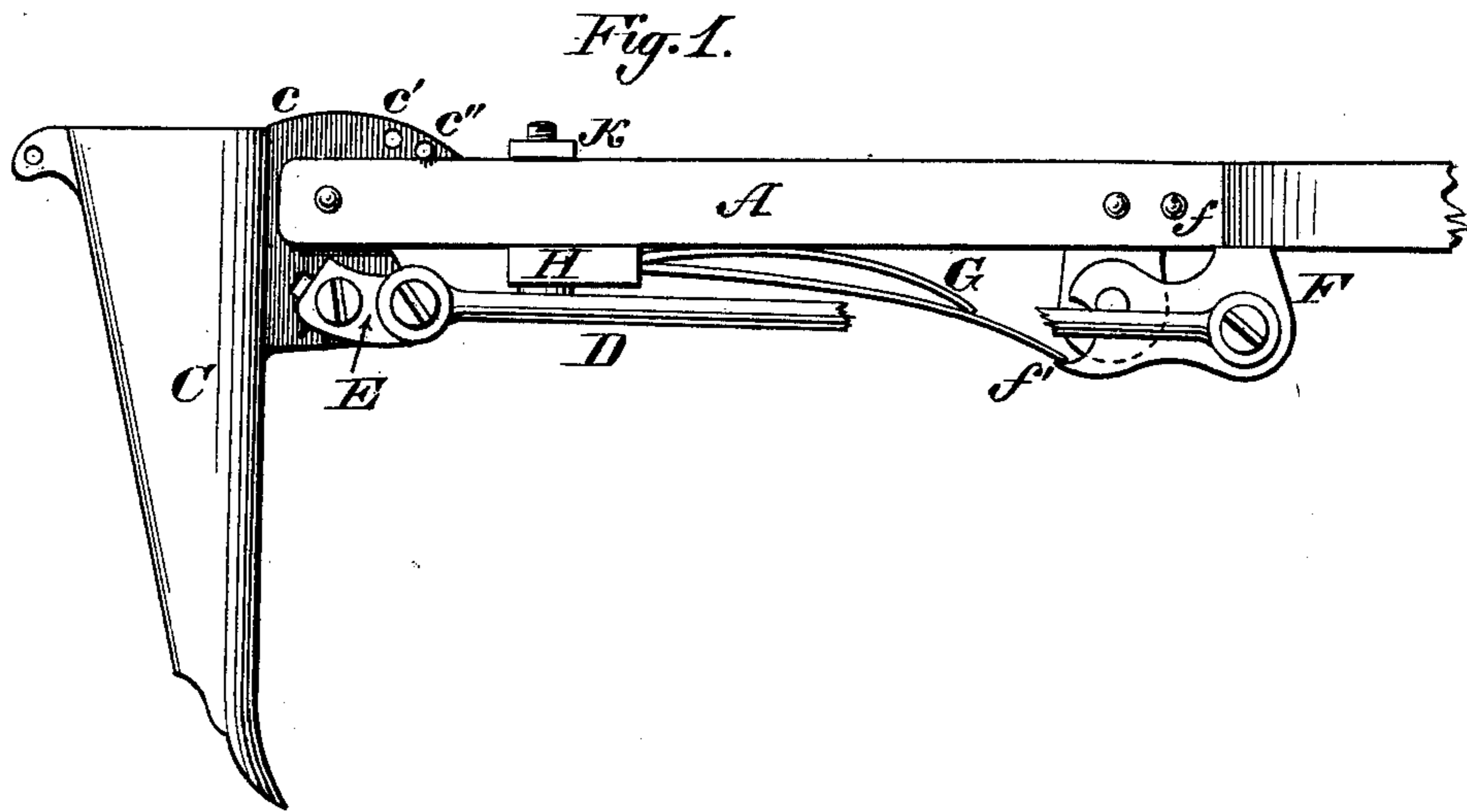


J. P. FULGHAM.
Spring-Hoe for Seeding-Machine.

No. 219,929.

Patented Sept. 23, 1879.



Attest:
William W. Dodge.
Donn S. Twitchell.

Inventor:
Jesse P. Fulgham
By John E. Hatch
his atty.

UNITED STATES PATENT OFFICE.

JESSE P. FULGHAM, OF RICHMOND, INDIANA, ASSIGNOR OF ONE-HALF HIS RIGHT TO THE WAYNE AGRICULTURAL COMPANY, OF SAME PLACE.

IMPROVEMENT IN SPRING-HOES FOR SEEDING-MACHINES.

Specification forming part of Letters Patent No. **219,929**, dated September 23, 1879; application filed June 21, 1879.

To all whom it may concern:

Be it known that I, JESSE P. FULGHAM, of Richmond, in the county of Wayne and State of Indiana, have invented certain Improvements in Spring-Hoes for Seeding-Machines, of which the following is a specification.

This invention relates to a peculiar construction of parts going to make up a spring-hoe attachment for seeding-machines; and consists more particularly in devices and combinations of devices whereby a flexible connection is made between the hoe and drag-bar in a simple and cheap form, and so as to possess greater efficiency and durability than the methods now in use.

It is desirable that the hoe or tooth of a seeding-machine should be so connected with the drag-bar that it would maintain its position ordinarily, but would yield, when coming in contact with roots or other obstacles sufficient to break or injure the hoe, provided the connection was unyielding. Many devices have been suggested and adopted for making this yielding connection. Springs of various forms and in various positions have been used, and connected with levers so as to make a lock-joint. These I do not seek to cover in this application. Many of them are of clumsy and awkward construction, and inefficient in operation. Many of them, and, indeed, those in most common use, are made to use a rubber spring, which soon becomes hard and unyielding on exposure to the weather, and has to be replaced. Some of the devices are constructed to use coil-springs; but these are liable to break, and when broken no ordinary blacksmith can repair or replace them, and those devices that show flat steel springs are generally of a clumsy, awkward, and expensive construction.

In my spring-hoe I attach to the drag-bars of the seeding-machine, at or near the point where they are bifurcated, a piece which projects sufficiently beneath the bar to receive a crank-arm of peculiar and novel construction. This crank-arm is pivoted to the piece in such a way that it works freely thereon, and when in position has its wrist-end farthest from the tooth. This crank-arm is provided with a crank-pin, to which is attached the connecting-

rod which holds the hoe or tooth in position. In the hub of this crank-arm is provided a peculiarly-shaped slot for the purpose of receiving the inner end of the flat steel spring, the other end of which is secured underneath the drag-bar, and, as shown in my drawings, it rests in a recess in the piece which is fastened to the drag-bar near the hoe or tooth. To this piece the end of the spring is bolted in such a way that it cannot move laterally, but has free play vertically to provide for giving the spring more or less tension—that is to say, the spring being curved, and one end resting in the notch in the crank-arm, if the other end is released slightly it tends to relieve the tension, so that the piece that I have shown underneath the drag-bar receives the support of the spring upon its front under side, and by means of the bolt passing through the end of the spring and the rear of the piece, and supported by a nut above the drag-bar, that can be turned up or down, more or less tension can be readily given the spring, as is desired, according to the nature of the ground.

On the hoe or tooth, at a suitable distance beneath where it is pivoted to the drag-bar, is provided a slot-projection, having the side to which the lug or stud is attached corrugated in such a manner as to hold it in any position in which it may be placed. To this lug or stud is fastened the opposite end of the rod which connects the hoe and crank-arm, and by means of the corrugations, by loosening the screw that connects the stud to this slotted projection, the angle or set of the tooth can be adjusted according to the desire of operator. The lug has projections upon its inner surface that fit into these corrugations so as to hold it in place. This arrangement of corrugations I have found much more advantageous for adjusting the angle of the hoe than holes, for this reason: it is simple of adjustment. The parts do not have to be taken apart, and, again, it can be adjusted more exactly to the desired angle, because the corrugations can be placed nearer together than the holes.

The crank-arm is constructed in such a manner that when the hoe or tooth is in its proper position its pivotal point is so nearly on a line with the connecting-rod that the hoe or tooth

is locked in position, and will only yield to a heavy strain.

The projection in the front of the hoe has upon its upper portion the ordinary holes above the drag-bar, into which a wooden pin may be placed, so that if any of the mechanism gets out of order this old method of securing the hoe in place may be used.

My peculiar crank-arm has upon its upper outer side a stop that limits the throw of the connecting-lever, so that it may not rise above or quite up to the pivoted line of the crank-arm.

The peculiarity of my crank-arm, therefore, consists in its service not only as a crank-arm, but as a stop and a bearing for the spring.

I have illustrated this mechanism more fully in the drawings, in which Figure 1 represents a side elevation of the drag-bar and hoe with the connecting device; Fig. 2, a top or plan of the same; Fig. 3, a side elevation, partly in section, showing the tooth and the action of the spring when the tooth meets an obstruction, and Fig. 4 a view of the corrugated plate and the lug with projection to fit the corrugated plate.

A is the drag-bar, the two parts of which are secured at B, as shown, and holding between them, at the end, the hoe C by means of the projecting plate *c*. This projection has in it the holes *c'* *c''* for the reception of the wooden pin to be used when the spring device may be out of gear, as above described.

D is the connecting-rod, one end secured to the lug E, the other to the peculiar crank-arm F. *f* is the stop upon the crank-arm, and *f'* the spring-seat.

G is the spring, made of flat steel, and may be double, as shown. H is the spring-socket, (shown in section in Fig. 3,) the under side of the spring resting upon the front side of the

socket, and the tension of the spring regulated by the bolt *i*, which passes through the spring-socket H, the rear of the spring G, and between the parts of the drag-bar B, and is adjusted from above by the bolt *k*.

n, Fig. 4, shows the projection upon the inner side of the lug E, designed to fit into the corrugations *m* upon side of projection on hoe C.

I claim—

1. In a spring-hoe attachment for seeding-machines, the crank-arm F, provided with the stop and spring-bearing, as and for the purposes hereinbefore described.

2. The hoe having its arm provided with the slot and corrugations, in combination with the arm E, adapted to interlock therewith, and the bolt applied to fasten the parts together, as described and shown.

3. The combination of the drag-bar, the hoe, the lever F, located beneath the drag-bar and provided with the stop *f*, arranged to strike upon the under side of the drag-bar, the connecting-rod, and a spring tending to urge the lever upward, as described and shown.

4. The combination, in the spring-hoe attachment for a seeding-machine, of the crank-arm with stop and spring-rest, the flat steel spring, the spring-seat, and connecting-rod, substantially as and for the purposes described.

5. The combination, in the spring-hoe attachment for seeding-machines, of the crank-arm, the connecting-rod, the spring and spring-seat, and the corrugated front attachment-plate, engaging with corresponding projections on the inside of the lug, substantially as and for the purposes described.

JESSE P. FULGHAM.

Witnesses:

JEREMIAH F. TWOHIG,
WM. L. WRIGHT, Jr.