

(No Model.)

C. R. DAVIS.

LIFTING SPRING FOR CULTIVATORS.

No. 377,993.

Patented Feb. 14, 1888.

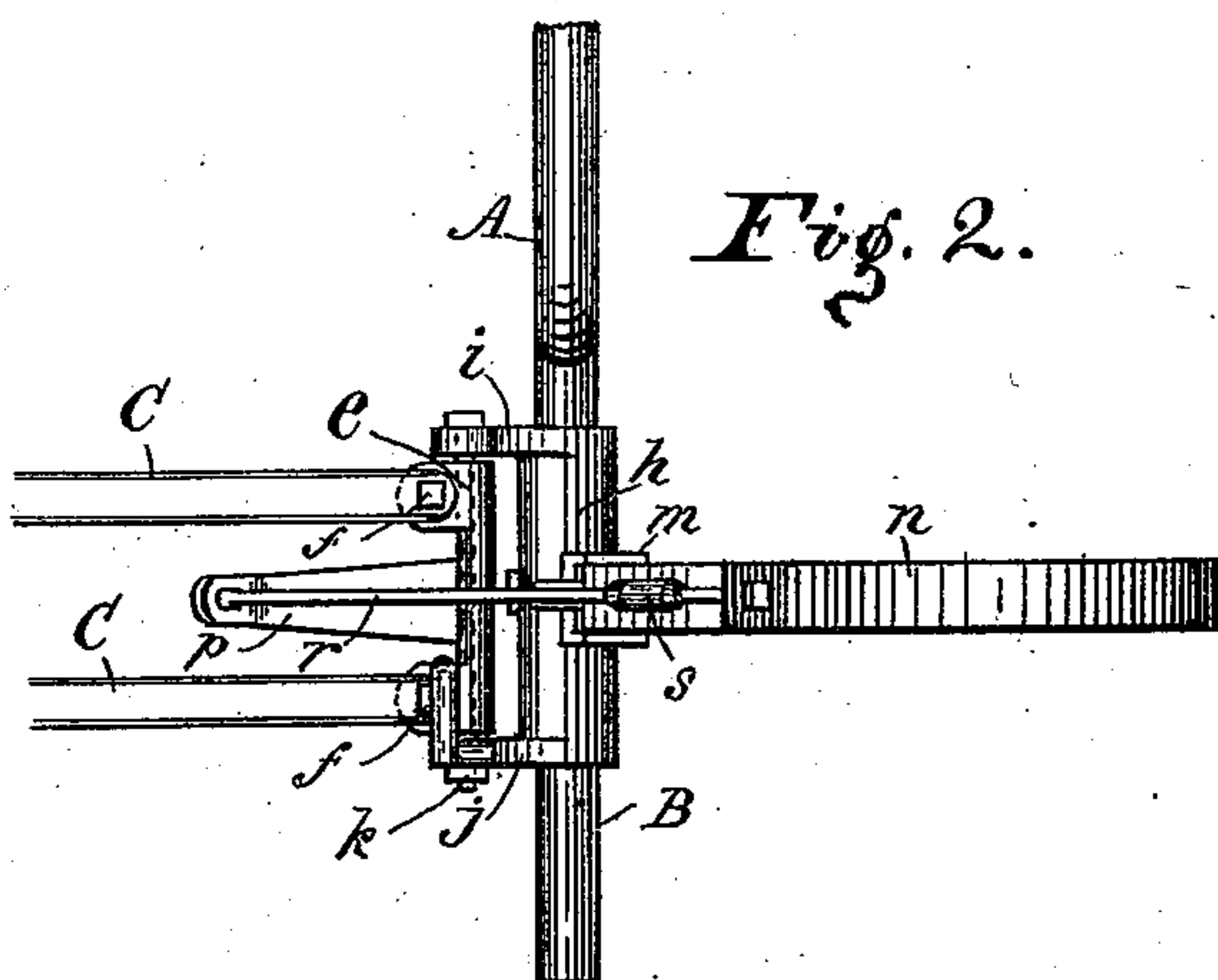
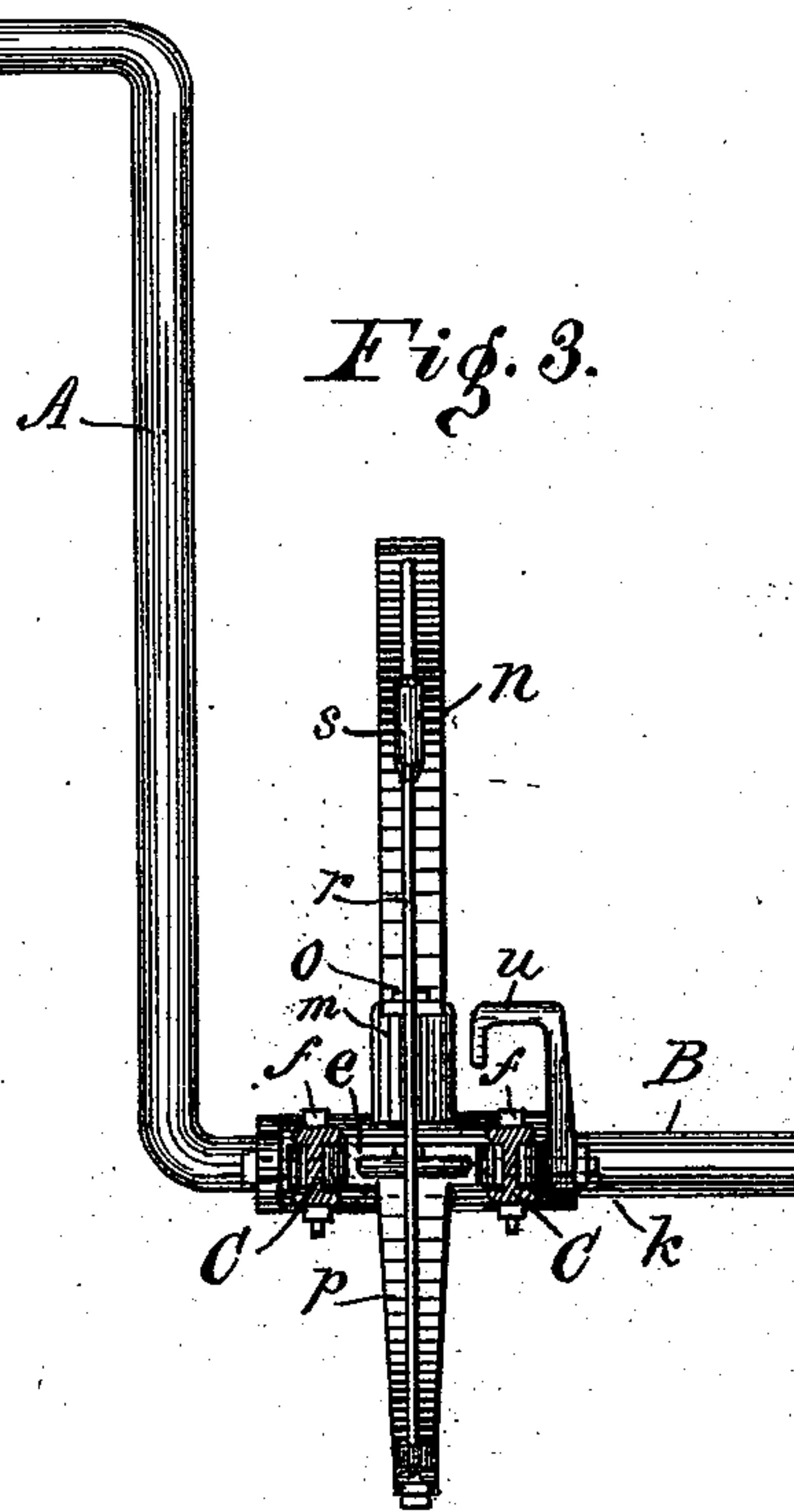
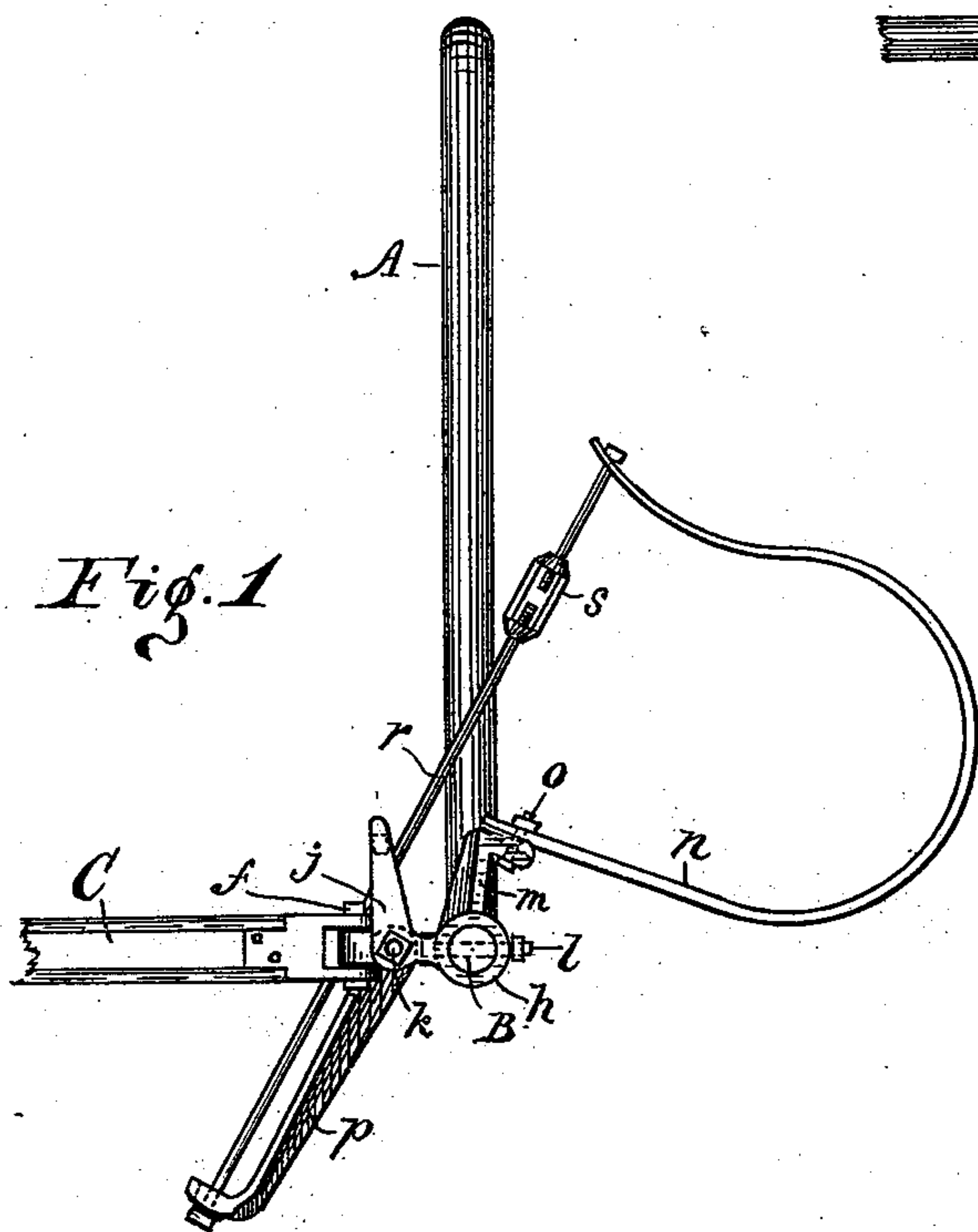
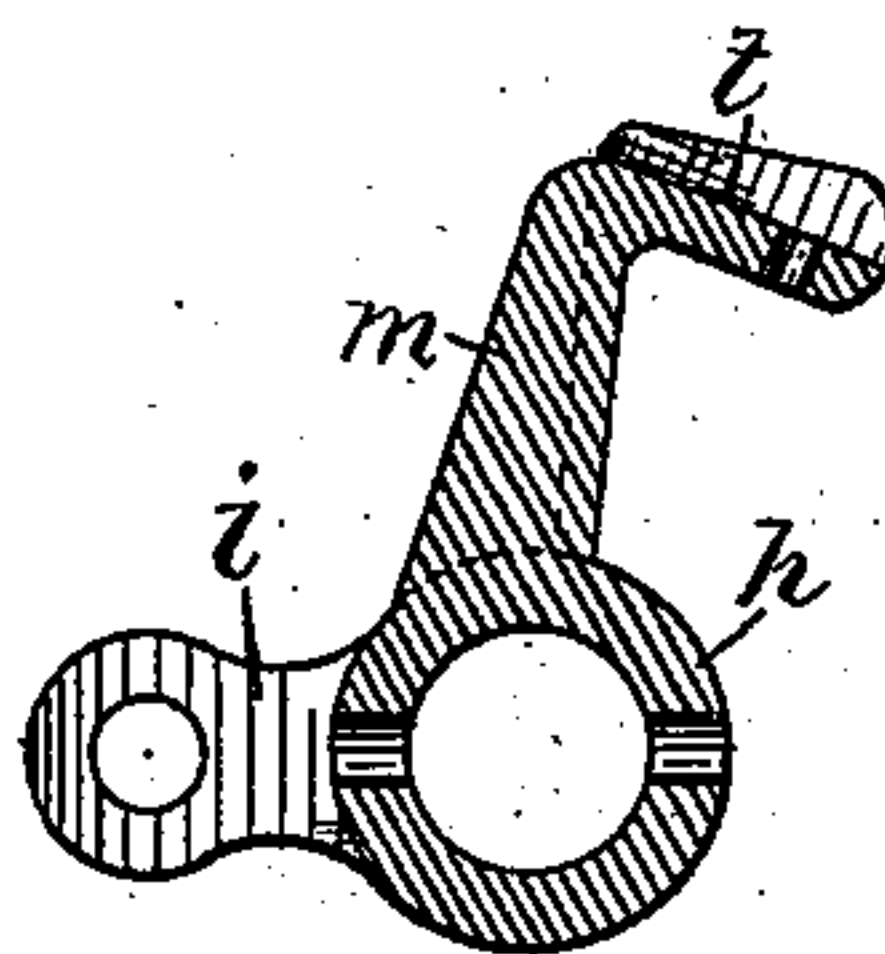


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

CALVIN R. DAVIS, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO THE KIM-BERLIN MANUFACTURING COMPANY, OF SAME PLACE.

LIFTING-SPRING FOR CULTIVATORS.

SPECIFICATION forming part of Letters Patent No. 377,993, dated February 14, 1888.

Application filed September 19, 1887. Serial No. 250,052. (No model.)

To all whom it may concern:

Be it known that I, CALVIN R. DAVIS, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Improvement in Lifting-Springs for Cultivators, of which the following is a specification.

My invention relates to an improvement in mounting and connecting springs for lifting the plow-beams in wheel-cultivators.

The object of my improvement is, first, to so arrange the lifting-spring in relation to the plow-beam, the axle, and the pivot on which the plow-beam swings vertically that the spring shall be at its greatest tension when the plows are at work, but shall at the same time exert but a slight lifting force on the plow-beams, the effect being to cause the spring to act promptly as soon as the plow-beam is slightly raised; second, to provide means for adjusting the tension of the lifting-spring, and also means for adjusting its lifting force when the plow-beams are in the position for work, all as hereinafter fully described.

The accompanying drawings illustrate my invention.

Figure 1 is a side elevation. Fig. 2 is a plan. Fig. 3 is a rear elevation. Fig. 4 represents a central vertical section, on a larger scale, of the spring-bracket.

A is the arched axle, common to this class of cultivators.

B is the horizontal part of the axle, which also forms a spindle for one of the carrying-wheels, (not shown,) in the usual well-known manner.

The plow-beam, as shown, consists of two parallel bars, C C. The bars C C are pivoted to the plow-beam coupling *e*, so as to swing in a horizontal plane, by bolts *f f*. The plow-beam is attached to the axle by means of a bracket, which consists of a hollow cylindrical portion, *h*, which is adapted to slip over the horizontal portion of the axle, and two rearwardly-projecting arms, *i* and *j*, between which the coupling *e* is secured, so as to swing in a vertical plane, by the bolt *k*. Bracket *h* is rigidly secured to the axle by means of a bolt, *l*, which passes through the axle and the bracket.

A short standard, *m*, either formed integral with the bracket *h* or rigidly secured thereto,

supports the bow-spring *n*, which is secured at one end to the standard by the bolt *o*.

Projecting downward and backward from the plow-beam coupling *e* is an arm, *p*. The free end of spring *n* is attached to the lower end of arm *p* by means of a rod, *r*, having a turn-buckle, *s*, by means of which the rod may be lengthened or shortened, and the tension of the spring thereby be adjusted. For the purpose of throwing the free end of the spring forward or backward, and thus changing the direction of the draft of the spring on arm *p*, the top surface, *t*, of the standard, on which the spring rests, is inclined at an acute angle to a line drawn from the center of the axle through the standard, so that while the extreme lower end of the spring rests on the back edge of the standard, the portion of the spring where the bolt *o* passes through it is, when free, raised by the tension of the spring clear of the standard, and therefore by screwing down the nut of said bolt the top or free end of the spring is thrown toward the front, thus bringing the draft of the spring through rod *r* more nearly in line with the arm *p* when the plow-beam is in working position, and lessening its lifting force.

For the purpose of limiting the upward movement of the plow-beam, and also to prevent the beam from swaying from side to side when raised, the arm *j* is extended upward and bent inward and downward to form the hook *u*, which is adapted to receive and retain the edge of one of the bars C when raised. By this construction the spring at all times maintains a fixed relation to the plow-beam coupling, and its tension is not affected by inequalities of the draft, and the arrangement is such that when the plow-beam is in its working position the pull of the spring is in the direction of the length of the arm *p* of the plow-beam coupling, and therefore, although the spring is at that time at its greatest tension, its lifting force is but slight; but as soon as the plow-beam is slightly raised by the hand of the operator, thus changing the angle formed by arm *p* and rod *r*, the full force of the spring is exerted to lift the beam.

I claim as my invention—

1. In a cultivator, the combination of the following elements, namely: a horizontal axle,

a bracket rigidly secured to the axle and having a pair of rearwardly-projecting arms, a plow-beam coupling pivoted to said arms so as to swing vertically thereon, an arm projecting
5 from said coupling, a plow-beam pivoted to said coupling so as to swing horizontally, a bow-spring having one end secured to said bracket, and a rod connecting the free end of the spring and the end of the arm projecting
10 from the plow-beam coupling, all arranged to co-operate substantially as specified, whereby the spring is secured in a fixed position on the axle and is at its greatest tension and exerts its least lifting force when the plow-beam is in
15 working position.

2. In a lifting-spring for cultivators, the combination, with the plow-beam, the axle, the bracket *h*, rigidly secured to the axle and having arms *i* and *j*, and the plow-beam coupling

pivoted thereto and having arm *p*, of the stand- 20
ard *m*, spring *n*, and rod *r*, all arranged to co-operate in the manner and for the purpose specified.

3. In a cultivator, the combination, with the axle, the plow-beam coupling, the plow-beam, 25
and the lifting-spring, of the bracket consisting of a hollow cylindrical portion adapted to embrace the axle and having arms *i* and *j* and standards *m* formed integral therewith, and the bolt *l*, passing through the cylindrical por- 30
tion of the bracket and the axle and securing them rigidly together, substantially as described.

CALVIN R. DAVIS.

Witnesses:

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