

(No Model.)

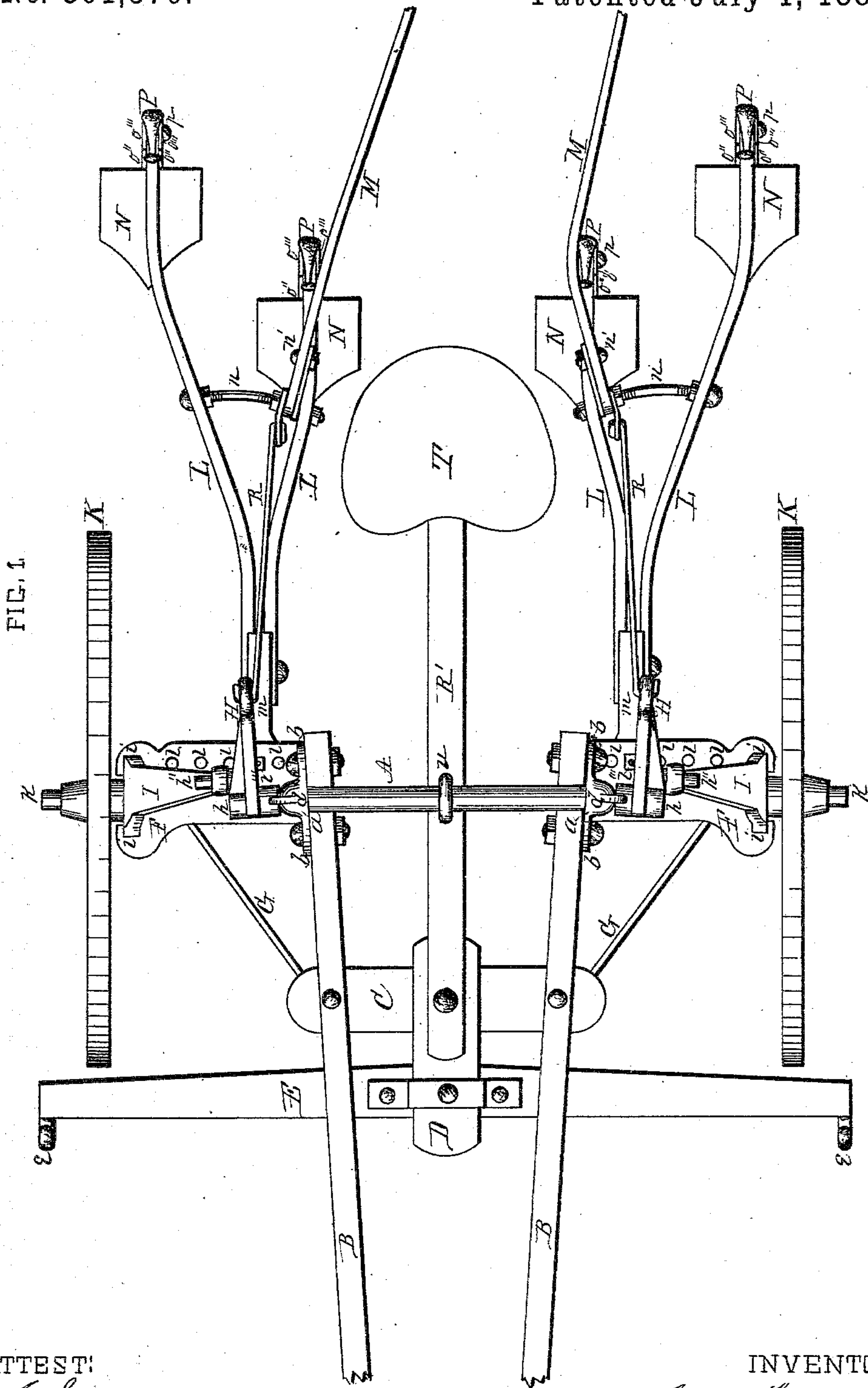
3 Sheets—Sheet 1.

J. H. JONES.

CULTIVATOR.

No. 301,370.

Patented July 1, 1884.



ATTEST:
F. J. Sovereign
A. Behel

INVENTOR:
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(No Model.)

3 Sheets—Sheet 2.

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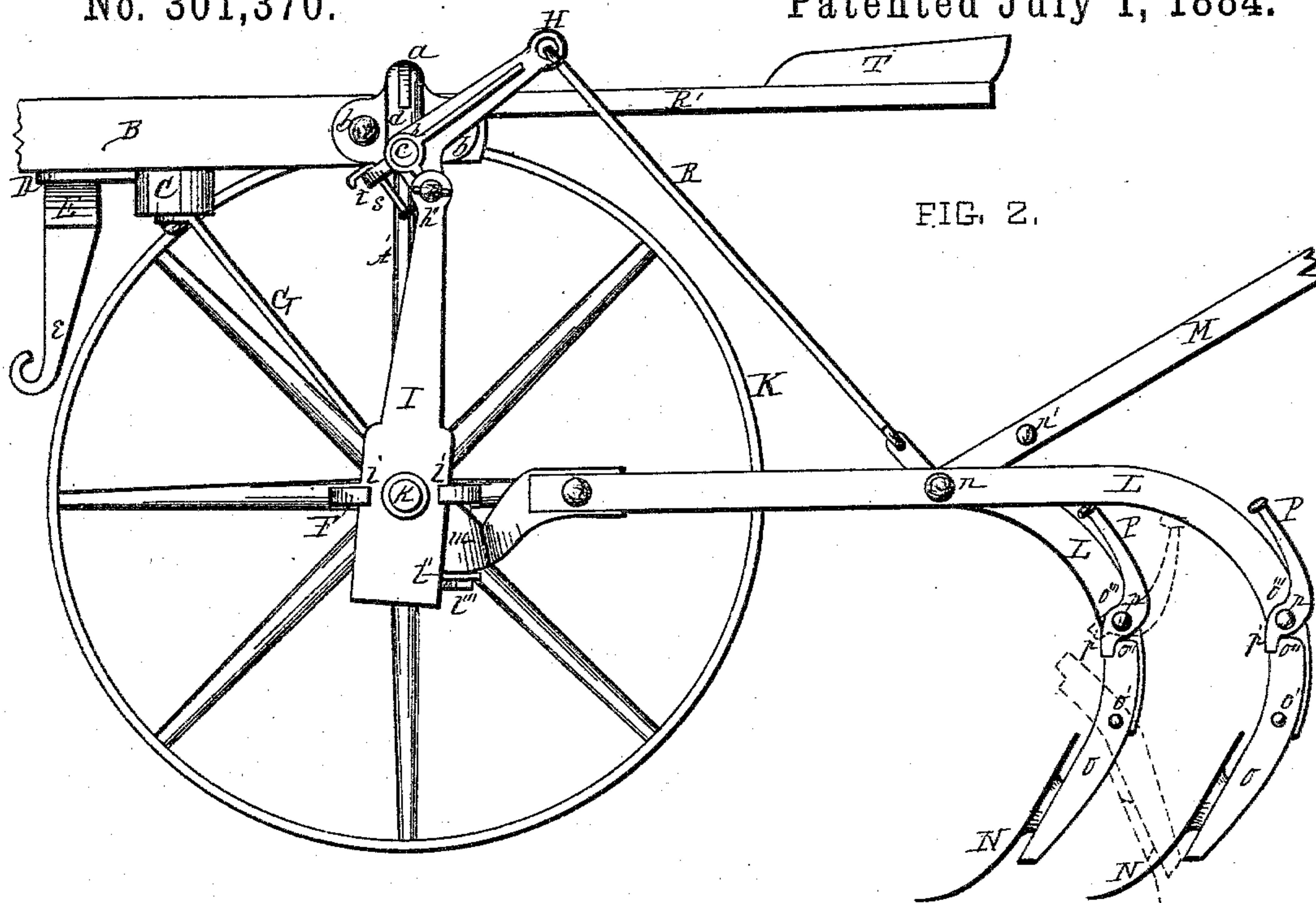


FIG. 2.

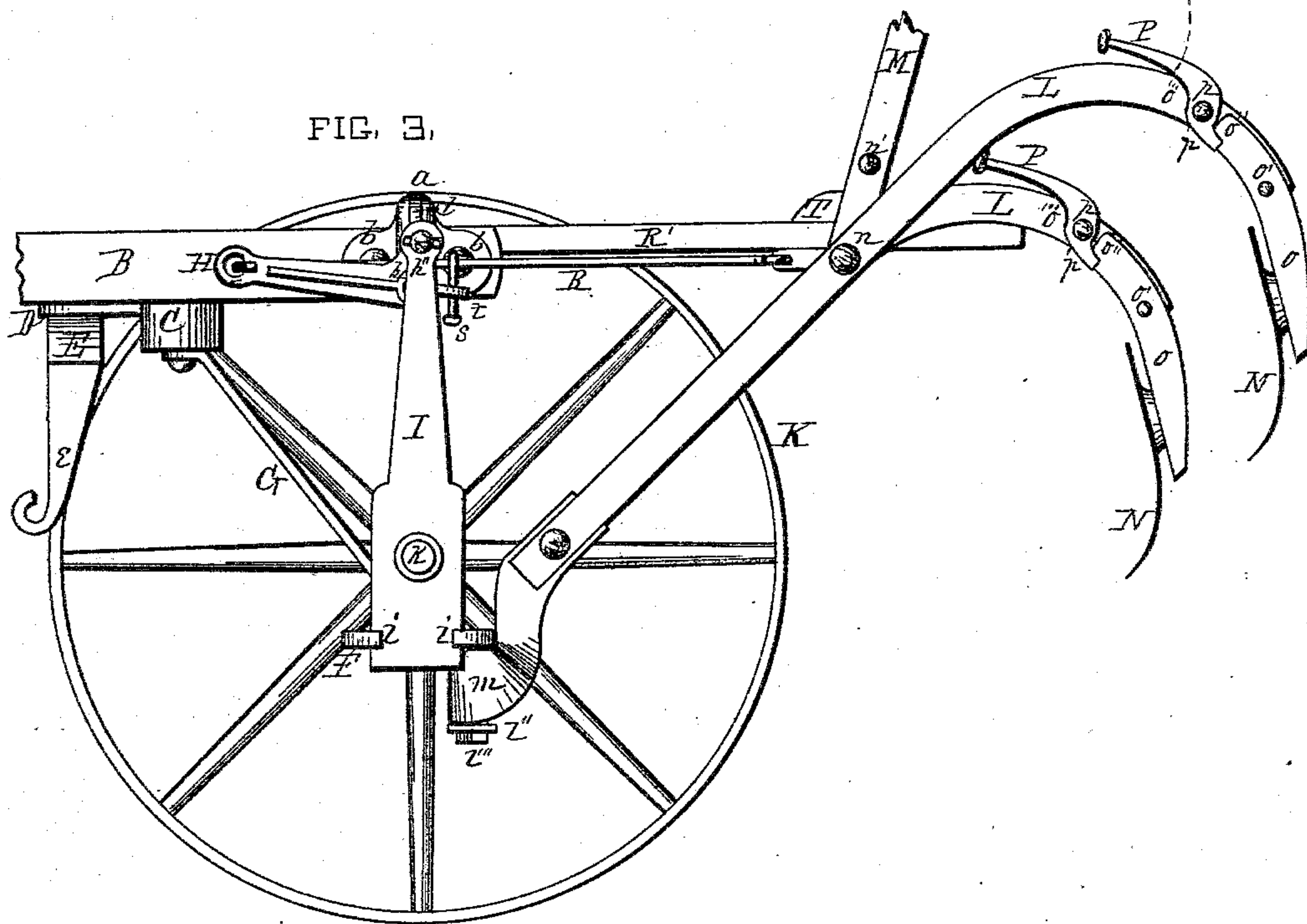


FIG. 3.

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3 Sheets—Sheet 3.

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FIG. 4.

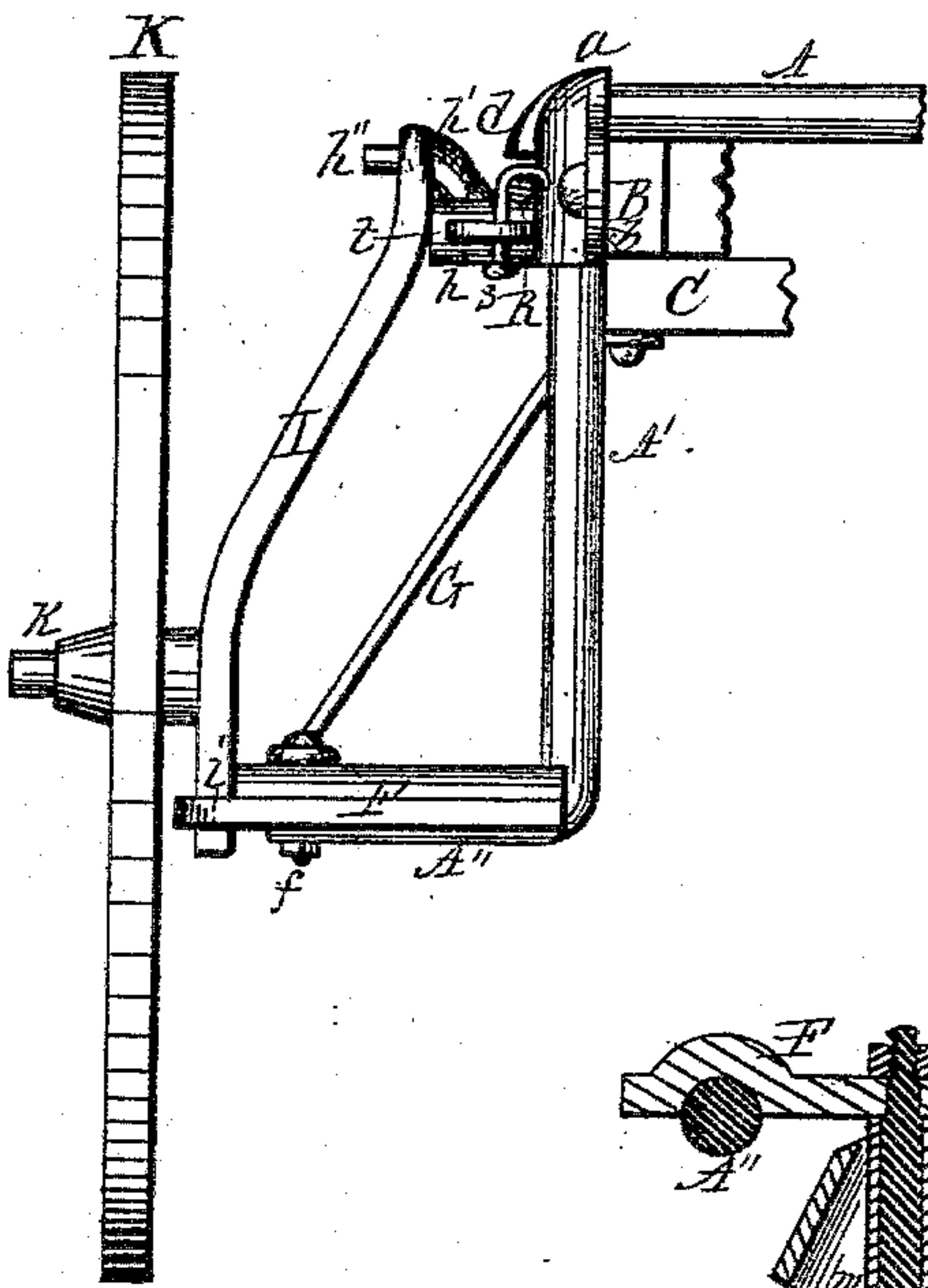


FIG. 5.

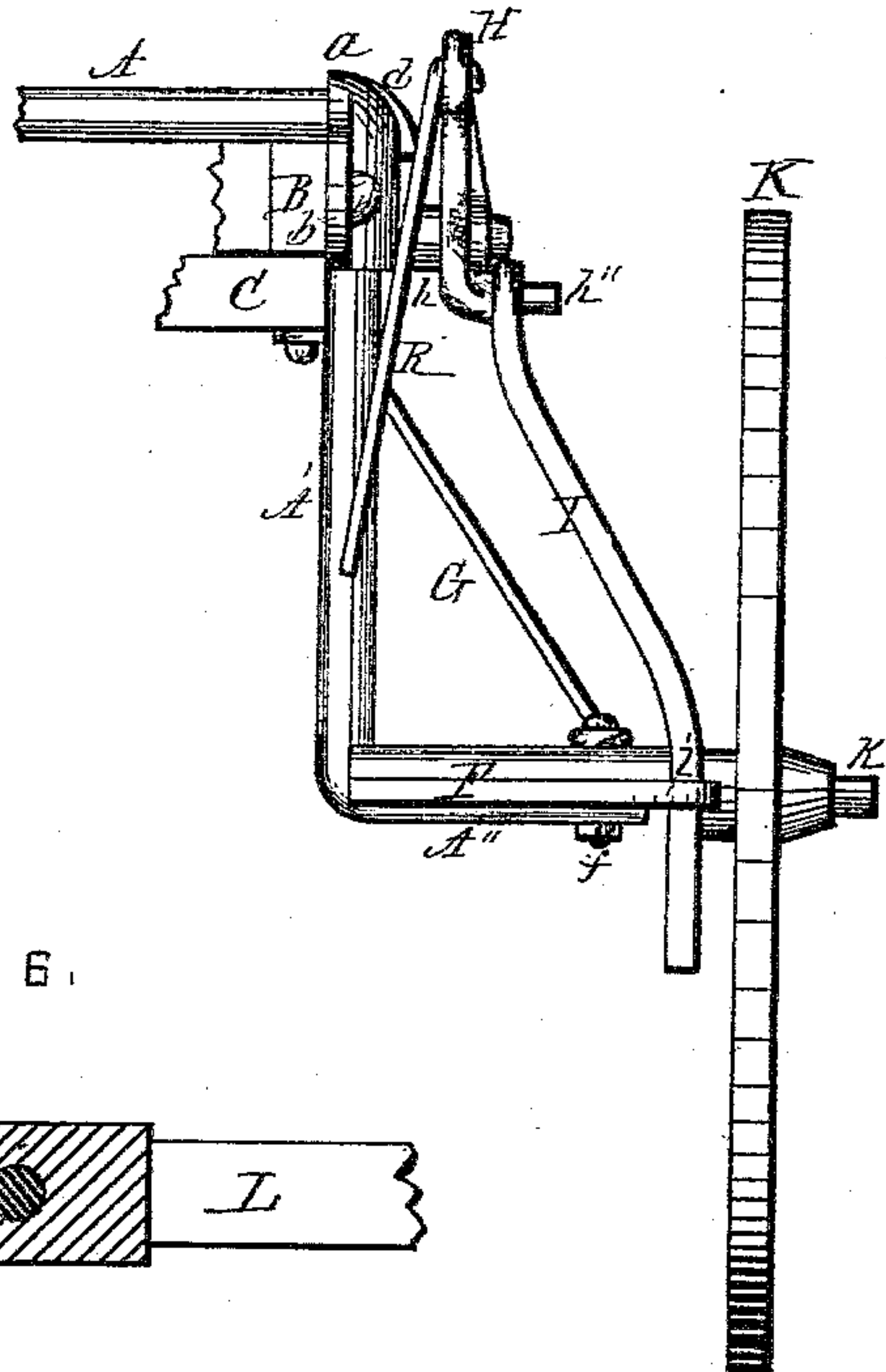


FIG. 6.

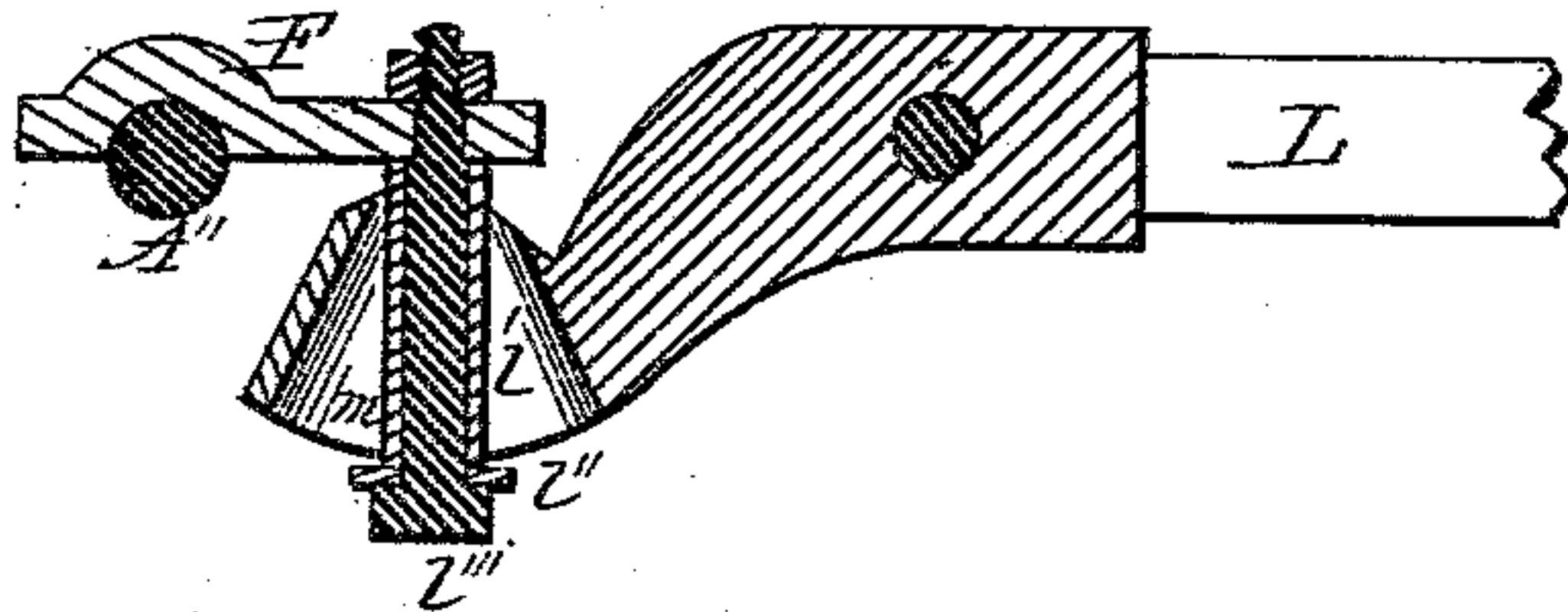


FIG. 7.

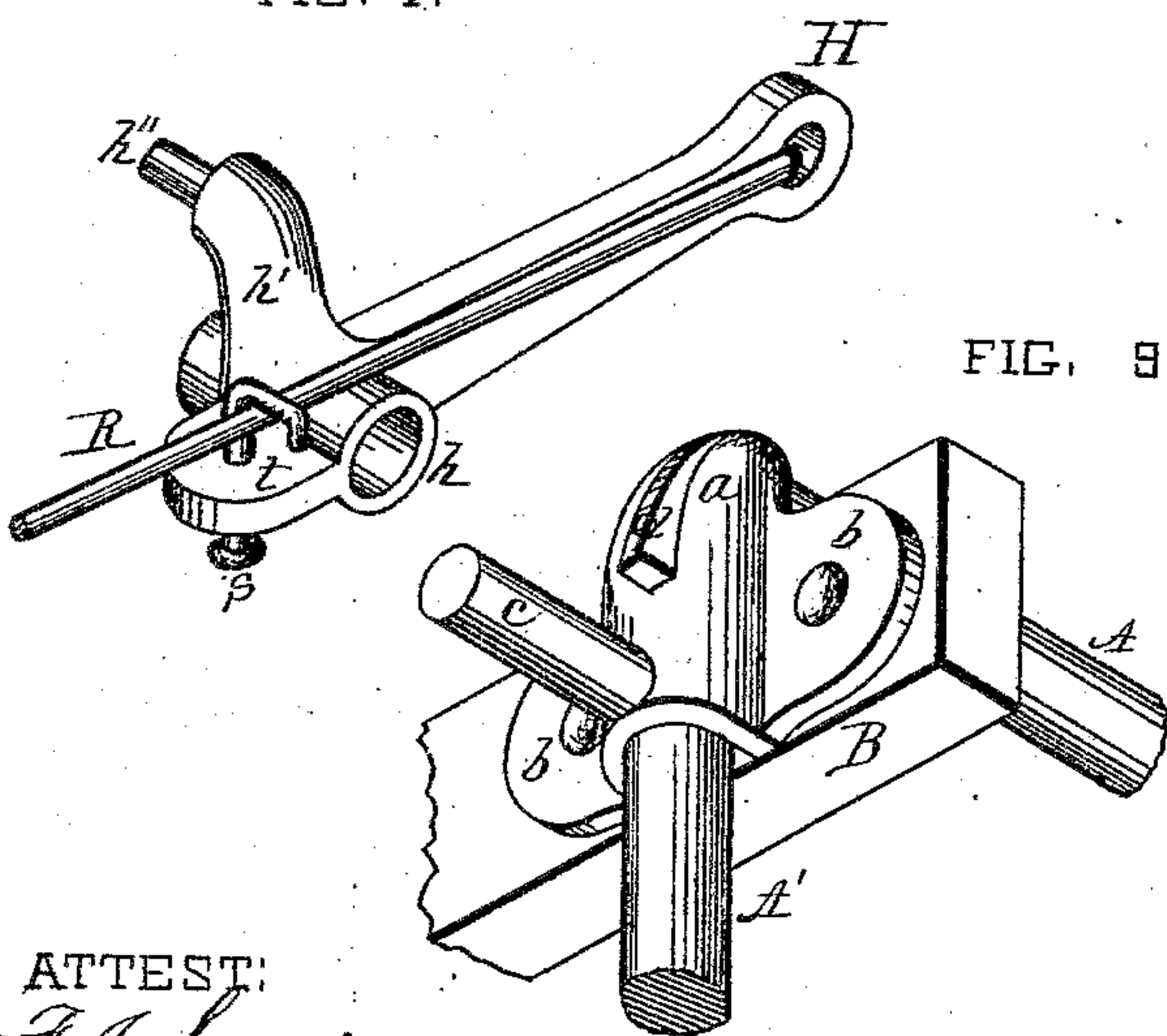
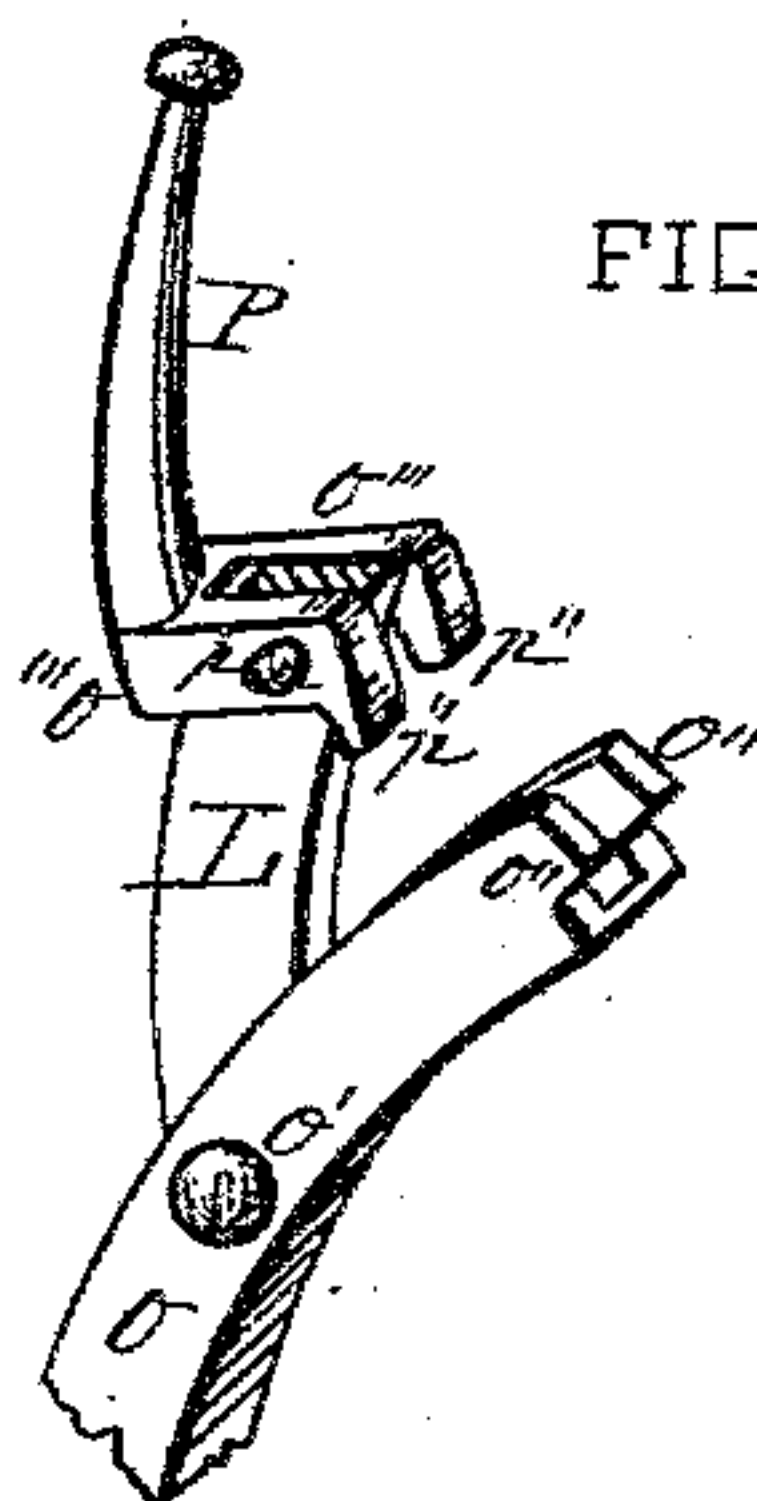


FIG. 8.



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UNITED STATES PATENT OFFICE.

JAMES HERVA JONES, OF ROCKFORD, ILLINOIS, ASSIGNOR TO EMERSON, TALCOTT & CO., OF SAME PLACE.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 301,370, dated July 1, 1884.

Application filed March 27, 1882. (No model.)

To all whom it may concern:

Be it known that I, JAMES HERVA JONES, a citizen of the United States, residing in the city of Rockford, in the county of Winnebago and State of Illinois, have invented new and useful Improvements in Cultivators, of which the following is a specification.

This invention relates to that class of cultivators known in the trade as "straddle-row cultivators," but more particularly as "walking-cultivators," but capable of use as a combined walking and riding machine, in which form I have represented it in the accompanying drawings.

The object of this invention is to produce a cultivator capable of the uses to which such machines are applied, and of a construction such as to render the weight of the frame of the machine available in raising and supporting the shovel-beams, and, when employed as a riding-cultivator, to utilize the weight of the driver to assist in raising and supporting the shovel-beams in their elevated position; and it consists in a novel construction of the carrying-wheel supports made of parts separate from the parts usually known as the "arch-bar axle-tree;" in a novel connection of the carrying-wheels with the main frame in a manner to permit a limited vertical movement of the frame independent of the carrying-wheels; in a novel lever having a pivotal connection with the wheel-support, the main frame, and a link connection with the shovel-beams, to utilize the weight of the main frame in raising and supporting the shovel-beams; in a novel connection of the shovel-beams with the main frame; in a novel locking mechanism to hold the shovel-beams suspended in transit, and in a novel safety slip-tooth mechanism. These and other novel features, the necessary devices and their several combinations, all of which will be hereinafter more fully described, constitute the subject-matter of this specification.

In the drawings, Figure 1 is a plan view of a cultivator embodying my invention, of which Fig. 2 is a side elevation, in which one wheel is omitted, and the shovel-beams are in their working position; and Fig. 3 is also a side elevation, in which one of the wheels is omitted, and the shovel-beams are elevated in position

for transportation. Fig. 4 is a rear elevation of the right side, with the frame in its lowest position. Fig. 5 is a rear elevation of the left side with frame elevated. Fig. 6 is a lengthwise vertical central section of the joint-connection of the shovel-beams with the main frame. Fig. 7 is an isometrical representation of the pivoted lever connecting the supporting-wheels with the main frame. Fig. 8 is an isometrical representation of the safety-slip mechanism employed to connect the shovels to the shovel-beams; and Fig. 9 is an isometrical representation of the pivot-stud support of the pivoted lever, showing its connection with the transverse bar and with the tongue-beams.

In this machine the transverse bar, which is usually known as the "axle-tree" or "arched bar," is produced from bar material bent in crank form, consisting of a central horizontal portion; A, vertical arms A', and outward-projecting horizontal arms A". The tongue consists of two like beams, B, having their forward ends joined to each other and fitted to receive a neck-yoke adapted to connect with the harness of the team. These beams from their point of connection extend rearward in diverging lines, and their rear end portions are connected to the vertical arms of the crank-formed transverse bar in the inner angles thereof, formed by the vertical arms and central horizontal portion.

At *a* are represented caps having their vertical portions semicircular in cross-section, of suitable dimensions and conformation to receive the upper end portion of the vertical arms of the transverse bar. These caps are provided with ears *b*, extending from their vertical sides in the lengthwise direction of the tongue-beams. These ears are perforated to receive suitable screw-bolts, which extend through the tongue-beams, and by means of suitable screw-nuts serve to securely fix the parts in position. These caps are also provided with a stud-journal, *c*, projecting laterally from their lower portions outward, and are also provided with rib-like catch-arms *d*, formed on their outsides, extending from their upper ends downward toward the stud-like journal; and the purpose of these parts will

hereinafter appear. These caps, as will readily be seen, are made interchangeable and capable of use on either side of the machine.

At C is represented a transverse draft-bar fixed to the under side of the tongue-beams forward of the axle-tree.

At D is represented a lengthwise draft-bar, having its rear end fixed centrally to the transverse bar C, from which it extends forward centrally between the tongue-beams, and to its forward end is pivoted an evener, E, having its end portions provided with depending draft-hooks *e*, the lower ends of which are fitted in hook form to receive the whiffletrees.

At F are represented draft-plates fitted to the lower lateral or horizontal arms, A'', of the transverse bar, to which they are fixed by means of a suitable screw-bolt, *f*, passed through the parts, and also fixes the foot of the brace-rod G to the draft-plate. These brace-rods G, from their foot-supports on the draft-plates, extend forward, inclining inward and upward, and meet the transverse draft-beam under the tongue-beams, and are connected therewith by means of the same bolts which fix the draft-bar to the beams.

H represents the free arm of a lifting and holding lever, provided near its end with a transverse socket-bearing, *h*, adapted to receive the stud-journal *c* of the cap *a* in a manner to oscillate thereon freely. These levers H are provided with an outward-curving arm, *h'*, having their outer end portions, *h''*, fitted in stud-journal form, which are eccentric to the socket-bearing *h*.

At I are represented axle-supporting bars having their upper ends pivoted on the stud-journals *h''*, and their lower end portions fitted to enter and slide vertically in guideways *i*, formed in the outer ends of the draft-plates F.

At *k* are represented axle-arms securely fixed to their supporting-bars I, from which they project outward and are fitted to receive the supporting-wheels to revolve thereon.

At K are represented supporting-wheels mounted on the axle-arms *k* in a manner to revolve thereon freely. From the construction and arrangement of these parts it will be seen that if the free arm H of the lifting and supporting lever is turned over forward in the position shown in Fig. 3 the main frame will be in its lowest position, as shown therein; and when it is turned over in its rearward position, as shown in Fig. 2, the main frame will be elevated, as shown therein. The rear edge of the draft-plate F is provided with a series of holes, *l*, adapted to receive a suitable stud-bolt, employed to connect the shovel-beams with the plate. The stud-joint bolt employed to connect the shovel-beams with the draft-plate consists of a tubular portion, *l'*, a washer, *l''*, and a screw-bolt, *l'''*, which receives the washer and the tubular portion, and its screw-threaded end is passed upward through the holes *l* in the draft-plate, and its projecting end is fitted with a screw-nut, by

means of which it is firmly clamped in position and is made adjustable in any of the holes *l* in the plate.

At *m* is represented a sector-formed joint-socket fitted to receive the joint stud-bolt in such a manner as to oscillate thereon in a vertical and lateral plane. The rear end of this joint-socket is fitted with a recess on both sides adapted to receive the forward end portions of the shovel-beams.

At L are represented shovel-beams made from suitable bar material, having their rear ends curving downward. The forward ends of these beams are fixed to the rear arm of the joint-socket, from which point they extend rearward in diverging lines, and are suitably supported in their relative position by means of transverse stay-bolts *n*.

At M are represented handles fixed to the shovel-beams by means of the stay-bolts *n* and additional bolt, *n'*. These handles are employed to enable the operator to control the movements of the shovels.

At N are represented cultivator-teeth of the usual shovel form, fixed in any proper manner to a sleeve, *o*. The sleeves to which the shovels are fixed are of a form to embrace the oppositesides of the downturned end portions of the shovel-beams, to which they are pivoted, as at *o'*. The upper ends of these sleeves are provided with side ears, *o''*, which rise above the front edge portion of the sleeve.

At P are represented lever friction-clamps constructed with jaws *o'''*, which embrace the shovel-beams, to which they are pivoted by means of a suitable clamping screw-bolt, *p*, passed transversely through the parts. The position of these pivoted jaws relatively with the sleeve are such that when the parts are in their working position their depending hook ends *p'* will engage the side ears of the sleeves, and the free arm of the lever-clamp will be turned up against the rear curved edge of the shovel-beam, as shown in Figs. 2 and 3. With these parts in their working position the jaws of the lever are clamped to the shovel-beam by means of the pivot clamping-bolt with a force sufficient to hold the shovels for the purposes of cultivation, but in such a manner that, the shovel meeting with an obstruction offering a resistance to endanger the safety of the shovel, the friction mechanism will render or give way, and permit the shovel to turn backward and the parts to assume the position represented in the dotted lines, in which position the shovels will override the obstruction without injury; and after the obstruction has been passed, the operator, by means of the free arm of the lever, can return the parts to their working position without the aid of tools.

At R are represented suspension-rods having a suitable link connection at their rear ends with the shovel-beams, and at their forward end by loop or pivotal connection are suitably joined to the free end of the lifting and holding levers. When the shovels are in

their working position, as represented in Fig. 2, the free end of the lifting and holding lever, by reason of its rod connection with the shovel-beams, will be in the rearward upwardly-inclined position, as shown in the figure, and the pivotal connection of the levers with the wheel-supports will be slightly rearward of their pivotal connection with the main frame, by which arrangement the weight of the frame will tend, to a limited extent, to relieve the downward tendency of the shovel-beams, and in the operation of lifting the shovel-beams this tendency will be increased by reason of the changed position of the parts in the operation, and when the parts have assumed the position represented in Fig. 3 their relative position will be such as to hold the shovel-beams elevated in a suitable manner for the purpose of turning at the ends and getting the machine in position to be employed for the purposes of cultivation, but in such a manner as to permit the beams to be lowered to their working position by a slight downward pull upon the handles. The outer curve of the arms *h'* of the lifting and holding lever relatively with the catch-arm *d* of the caps *a*, is such that when the shovel-beams are in their elevated position the suspension-rods will be carried by the curve of the arms *h'* under the catch-arms *d*, to prevent the accidental dropping of the shovel-beams.

At *s* are represented hook-bolts, which extend upward through the rear extensions, *t*, of the lifting and holding levers, in position to permit their hook ends to be turned over the suspension-rods to securely hold the shovel-beams elevated for the purpose of transportation. By this construction and arrangement of the parts I produce a cultivator in which the weight of the main frame is utilized to assist in raising the shovel-beams, and when raised to hold them suspended, for the purpose of handling the machine when used in cultivation, and in such a manner that they may be lowered to their working position by a downward pull on the handles. This construction and arrangement also enable me to produce a cultivator in ease of handling within the capacity of boys unable to handle cultivators as ordinarily constructed.

At *R'* is represented a seat-support consisting of a wooden beam rectangular in section and of suitable dimensions. The forward end of this beam is fixed centrally to the transverse beam *C*, which connects the tongue-beams, from which it extends rearward under the central horizontal portion of the transverse bar, at which point it is fixed to the axle-tree by means of a screw-hook or staple-bolt, *u*, which spans the axle-tree, and its screw-threaded arms extend through the seat-support and are fitted with screw-nuts, by means of which the parts are securely held in place.

At *T* is represented a driver's seat, fixed on the rear end of the seat-support. This seat

is so located relatively with the axle-tree and with the shovel-beams that when the driver is mounted thereon his feet will engage the shovel-beams, to enable him to impart the necessary lateral movements to the beams to direct the line of travel of the shovels.

The seat and seat-support are designed to be employed when my improved machine is constructed as a combined riding and walking cultivator, and also when constructed as a riding-cultivator, and in both instances the seat is supported on the main frame, which enables me to utilize the weight of the driver to assist in raising the rear ends of the shovel-beams from the ground when desired.

I claim as my invention—

1. The axle-support of the carrying-wheels, having the main frame connected therewith at its lower end adapted to have a vertical sliding movement thereon, and said axle-support having a pivotal or crank connection with the main frame at its upper end, substantially as and for the purpose described.

2. The axle-support of the carrying-wheels, having the main frame connected therewith at its lower end adapted to have a vertical sliding movement thereon, in combination with the lifting-lever through which it has pivotal or crank connection with the main frame, substantially as set forth.

3. The lifting-lever having a pivotal connection with the main frame, and an independently-formed axle-support, substantially as and for the purpose hereinbefore set forth.

4. The axle-support of the carrying-wheels, having the main frame connected therewith at its lower end adapted to have a vertical sliding movement thereon, in combination with a lifting-lever having a pivotal connection with said axle-support and with the main frame, substantially as and for the purpose described.

5. The combination of the vertical axle-support of the carrying-wheels, having a construction independent of the main frame, the main frame connected therewith by guides and capable of a vertical sliding movement thereon, and the means employed consisting, essentially, of lever pivoted to the main frame and the vertical axle-support by which the weight of the frame is utilized to lift the shovel from the ground, substantially as and for the purpose hereinbefore set forth.

6. The combination of the vertical axle-support of the carrying-wheels, the main frame adjustably connected therewith and capable of a vertical sliding movement thereon, the lifting-lever pivoted to the main frame and axle-support, and the suspension-rod, all arranged and operating substantially as and for the purpose described.

7. The combination of the vertical axle-support of the carrying-wheels, the main frame adjustably connected therewith and capable of a vertical sliding movement thereon, the lifting-lever pivoted to the main frame and axle-

support, the suspending-rods, and means operating in connection with said devices for holding the shovel-beams in an elevated position, substantially as described.

5 8. The lifting-lever, constructed substantially as shown, pivotally connected with the main frame, and the vertically independently-formed axle-support, in combination with a suspension-link connecting the shovel-beams
10 with the free end of the lever, substantially as and for the purpose hereinbefore set forth.

9. The combination, with the suspension-rod, of a hook-bolt to engage the suspension-rod when the shovel-beams are elevated, located in the short arm of the lifting-lever,
15 substantially as and for the purpose hereinbefore set forth.

10. The shovel-beams provided with the sector-formed joint-socket, and the draft-plate
20 connected to the main frame, substantially as described, in combination with the stud-joint bolt for connecting the shovel-beams with the draft-plate, in the manner and for the purpose set forth.

11. The combination, with the suspension-rod 25 connecting the shovel-beams with the free arm of the pivoted lever, of a catch-arm on the cap to overlap the suspension-rod when the shovel-beams are elevated, substantially as and for the purpose hereinbefore set forth. 30

12. The draft-plate F, provided on its end with guideways i, in which the axle-support has a vertical movement, and on its rear edge with a series of holes through which the shovel-beam is connected therewith, as set forth. 35

13. The shovel-supporting sleeve o, pivoted to the shovel-beam, said sleeve fitted to embrace the opposite sides of the beam at its lower end, in combination with the lever P, pivoted to the shovel-beam and adapted to engage the upper end of the shovel-supporting sleeve, substantially as and for the purpose set forth. 40

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Witnesses:

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