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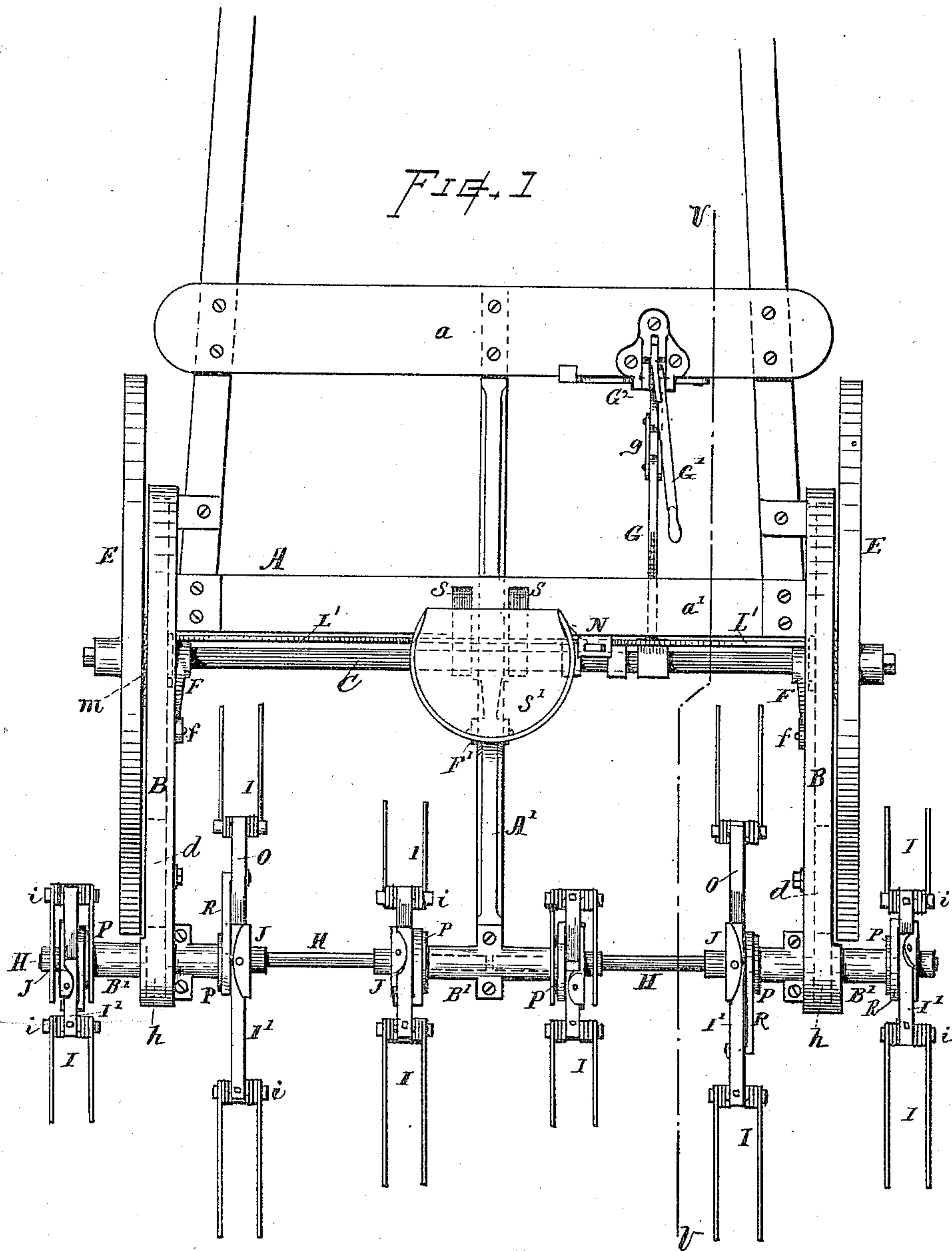
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L. S. HEALD.

HAY TEDDER.

No. 330,112.

Patented Nov. 10, 1885.



WITNESSES

*Geo. M. Rice 2^d
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INVENTOR.

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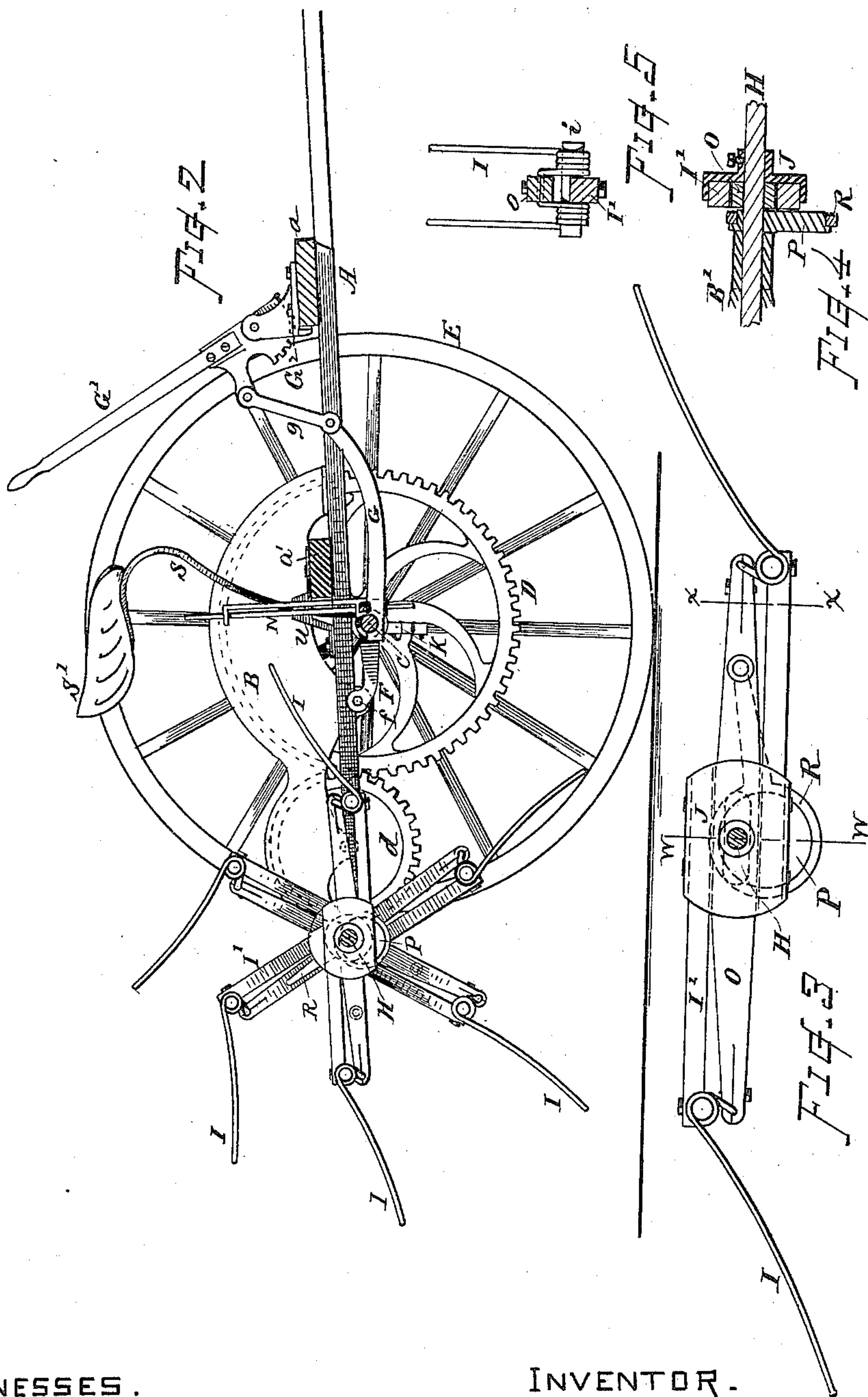
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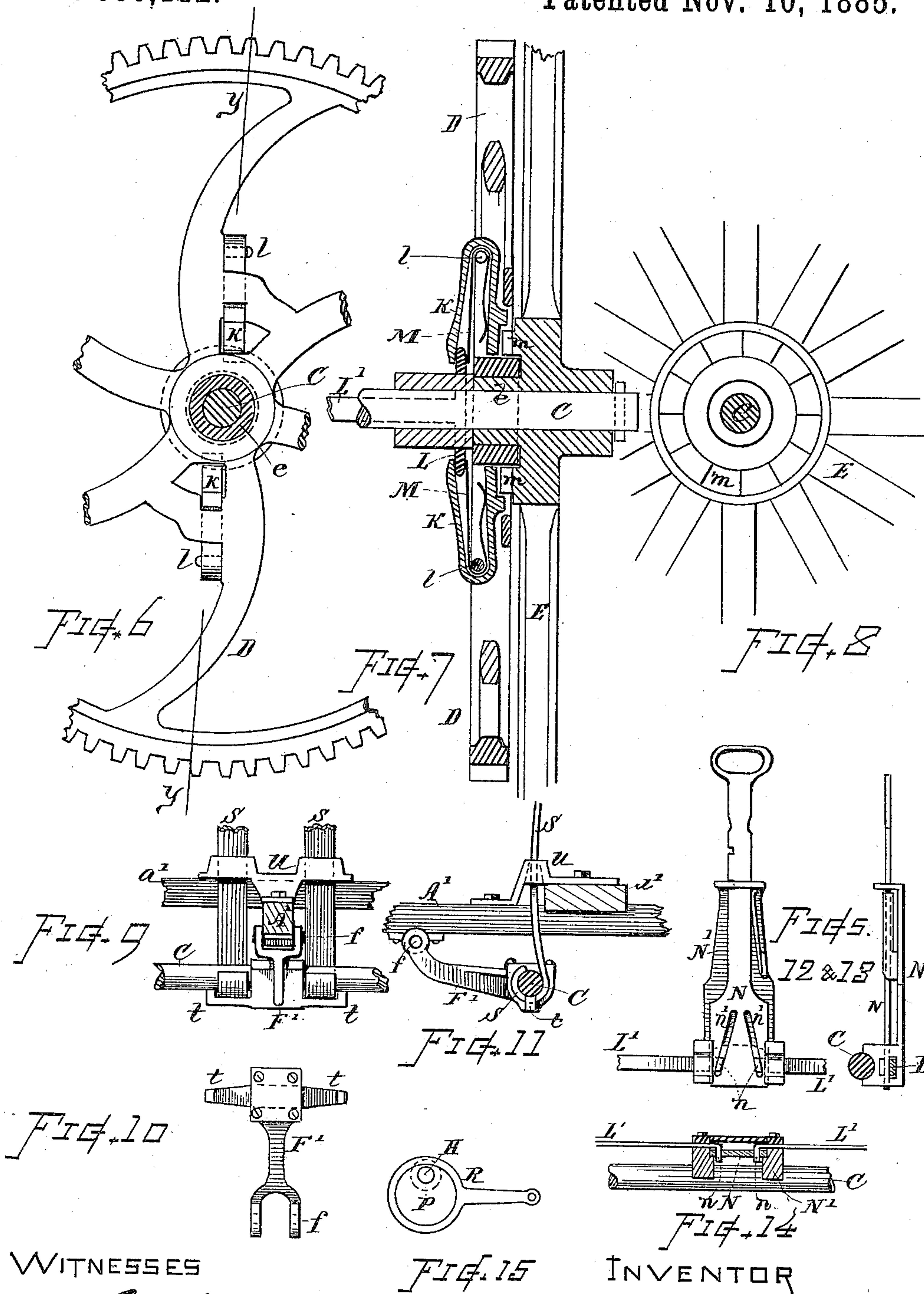
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UNITED STATES PATENT OFFICE.

LEANDER S. HEALD, OF BARRE, MASSACHUSETTS.

HAY-TEDDER.

SPECIFICATION forming part of Letters Patent No. 330,112, dated November 10, 1885.

Application filed August 25, 1884. Serial No. 141,361. (No model.)

To all whom it may concern:

Be it known that I, LEANDER S. HEALD, a citizen of the United States, residing at Barre, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Hay-Tedders; and I declare the following to be a description of my said invention sufficiently full, clear, and exact to enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

The objects of my present invention are to provide in a hay-tedder means for elevating and depressing the frame by a rotative action of the supporting-axle for regulating the working height of the forks in relation to the ground, to provide improved mechanism for supporting and operating sets of forks at the outside of the tread-line of the wheels, to afford facilities for imparting the eccentric swing or feathering action independently to the several forks or pairs of forks, to provide a simple and efficient ratchet mechanism and a convenient shipping apparatus, and to afford facilities for supporting the driver's seat in connection with the main axle and adjustable frame. I attain these objects by mechanism the construction and operation of which is shown in the drawings, and explained in the following description, the particular subject-matter claimed being hereinafter definitely specified.

In the drawings, Figure 1 is a plan view of a hay-tedder constructed in accordance with my invention. Fig. 2 is a vertical section at line *v v*. Fig. 3 is a side view of the fork supporting and operating arms on larger scale. Fig. 4 is a section of the arm and eccentric devices at line *w w*. Fig. 5 is a section of the arm at line *x x*. Fig. 6 is a view showing the arrangement of the ratchet-pawls in the driving-gears. Fig. 7 is a vertical section of the ratchet mechanism at the position of line *y y*. Fig. 8 is a face view of the ratchet on the wheel-hub. Fig. 9 is a view showing the means for connecting the central frame and the seat-springs with the axle. Fig. 10 is a plan view of the connecting-arm casting. Fig. 11 is a sectional view showing the side of the

connecting-arm and springs. Figs. 12, 13, and 14 show the details of the shipper devices; and Fig. 15 shows one of the eccentrics and its strap.

In referring to parts, A denotes the frame, composed of the thills, the two cross-bars *a a'*, the backward-extending center bar, A', and side pieces, B B, which are preferably formed as shields or guard-plates for covering the working-gears. Said shields B are made of metal, and are rigidly secured to the wooden frame A at either side of the machine, as illustrated.

C denotes the carrying-axle, on the ends of which are mounted the main driving-gears D and the traveling wheels C. The axle C and frame A are connected by means of arms F F', that are rigidly fixed at one end to said axle C, while their other ends are pivoted, respectively, to the shield-pieces B and to the center bar, A', of the frame, as shown at *f*, at a position eccentric to the axial line of the wheel-centers, or so that said arms are arranged in such manner that partial rotation of the axle effects the elevation or depression of the frame for regulating the height of the forks.

An arm or lever, G, rigidly fixed to the axle C, has its forward end connected by a link, *g*, to a hand-lever, G', mounted on the forward transom, *a*, in suitable manner to effect rotative action of the axle when said lever is swung backward or forward. The lower end of the lever G' is provided with a notched quadrant and a locking-latch, G², for retaining the mechanism at any desired position of adjustment.

At the rear ends of the center bar, A', and the shield or side pieces, B, are suitable journal-boxes, B', in which are supported the tedding reel-shafts H, having mounted thereon the series of tedding-forks I. Said forks are severally arranged at the ends of separate arms I', and are provided with eccentric operating devices for imparting independently to each fork or pair of forks the feathering action, as hereinafter explained.

The bearings on the ends of the shields B extend past the rear of the wheels E, so as to support a pair of forks that work outside the line of tread of the wheels, thus making a broad machine having revolving forks of improved

construction. The reel-shaft H is formed in two parts, divided at the center bearing so that the two sections of the fork-reel operate separately, one section being driven from each of the wheels E. The shafts H are provided with pinions located within the shields at *h h*, which pinions mesh with intermediate gears, *d*, which in turn mesh with the main or driving gears D. The gears D are mounted to run loose on the axle or inward-extended portion *e* of the wheel-hubs, and are provided with laterally-swinging pawls K, that engage with ratchet-teeth *m* formed on the inner side of the wheels.

The pawls K are made in U shape, (see Figs. 6 and 7,) and are hung on pivots or studs *l*, so as to swing laterally through the gear in suitable spaces or slots, within which they are confined, their movement being sufficient to bring their ends into and out of engagement with the teeth *m* of the ratchets. A U-shaped spring, M, is arranged within the pawl in the manner illustrated, which tends to press the end of the pawl into engagement with the ratchet-teeth. A ring or flange, L, movably supported on the axle or surrounding hub, and connected by a rod, L', with the shipper mechanism, is employed for throwing the pawls K into and out of engagement with the ratchets.

The edge of the ring L is inserted between the inner arm of the pawls K and the inner arm of the springs M in the manner illustrated, so that when the ring is pressed toward the gear the spring is caused to exert its force to press the pawl K into mesh with the teeth. The spring also at the same time permits of the pawl springing inward to slip past the teeth *m* in case the wheel E is turned backward. When the ring L is drawn away from the gear, the pawl K is positively drawn away from engagement with the teeth *m* and retained by the shipper mechanism, which latter consists of a slide bar or plate, N, (see Figs. 12, 13, and 14,) mounted in a suitable guiding-standard, N', and provided with a suitable handle for its convenient operation. The standard is fixed to the axle C, and the rods L' are guided in the lower part of the standard. The ends of the rods L' are turned at right angles or fitted with studs *n* to engage with diagonal slots *n'*, formed in the shipper-plate N, so that when said plate is raised or depressed the rods L' and rings L are thereby operated for throwing the ratchet mechanism into and out of engagement for starting and stopping the gears and tedding-forks. The handle-bar of the plate N is fitted with notches to latch the parts at positions of adjustment, and with a suitable spring for retaining the latch, as shown.

In my improved construction the tedder-forks I are supported on short spools *i*, that are attached to the ends of the arms I'. The coils of the forks surround the spools in such manner that the forks are free to swing thereon. Each of the forks has a separate arm,

which arms are supported singly or in pairs by hubs J, fitted upon and keyed to the shafts H, so as to revolve therewith. The loops of the forks are connected with a bar, O, which extends from one fork to that on the opposite arm, as illustrated in Fig. 3. The length of the connection between the forks is such that when one fork is extended the other is swung back, and vice versa.

Eccentrics P are attached to the ends of the journal-boxes B', and these eccentrics are each surrounded by a strap or arm piece, R, that connects with the bar O of the adjacent forks in the manner indicated. An eccentric is provided for each pair of forks.

When the arms I' revolve with the motion imparted to the shaft H by the driving-gearing, reciprocative action is imparted to the connection O relatively to the arms I' by the strap-piece R, working around the stationary eccentric P, thus giving to the forks the desired swing or feathering action. The center of the bar O is slotted, so as to pass over the shaft H and permit longitudinal motion thereof.

The operation of the forks could be effected by eccentric-straps connecting directly to the loops of forks in lieu of employing the bar O; but as this would require two eccentric-straps to each eccentric I prefer to employ the bar O, as shown.

For connecting the bar O to the loop of the fork, a hole of suitable size for the fork-wire is made through the bar near its end, and a longitudinal saw-kerf is cut therein, which allows the divided portions to separate sufficiently to permit of the loop being passed into the space formed for its reception, after which the wood is closed together and secured by a screw-bolt or rivet, thus confining the loop within its opening, as indicated in Fig. 3.

The springs S, by which the seat S' is supported, have their lower ends curled about the axle C, and they are held thereto by lugs or side extensions, *t*, formed on the arm-casting F', which supports the center bar of the frame, which lugs embrace the springs, as indicated in Figs. 9, 10, and 11. These springs S are also confined in upright relation by the eye-pieces *u*, fixed on the frame A at the junction of the transom *a'* and center bar, A', said eyes being so arranged that the springs will freely slide within them when the frame is raised and depressed for regulating the working height of the tedder-forks.

By arranging the seat-supporting devices in the manner shown and described the weight of the operator is borne on the axle, and does not require to be lifted when raising the frame A by the hand-lever G. The stud for the intermediate gear, *d*, the arm-pivot *f*, and the axle C are relatively arranged so that their several axes will be in the same plane with each other, or nearly so, when the frame is at central position of adjustment, so that the variation in the meshing of the gears D and *d*, occasioned by the eccentric swing of the arms

F as the frame is raised and depressed, is reduced to a minimum, and is practically inconsequential in the action of the mechanism.

I am aware that tedders have heretofore been provided with forks operating outside the line of the wheel-tread, and I do not therefore herein broadly claim such feature irrespective of the construction of the mechanism. I am also aware that eccentrics have heretofore been used for giving a feathering or quick swing action to tedder-forks, but in different construction and arrangement from that herein specified.

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

1. In a hay-tedder, the combination, substantially as hereinbefore described, of traveling wheels, a reel-supporting frame, a revolving reel mounted on the rear end of said frame, a rocking carrying-axle, the connecting-arms fixed to said axle and pivoted to the frame, as shown, and means for rocking said axle to effect the elevation of said frame and revolving reel, for the purpose set forth.

2. In combination with the axle C, the frame A, the revoluble tedding-reel mounted thereon, and means for elevating and depressing said frame and reel by the rocking action of said axle, substantially as described.

3. The combination of the wheels E, the frame A, supporting the reel or forks I, the axle C, and connecting-arms F, rigidly fixed to said axle and having their opposite ends pivoted to the frame at a position eccentric to the axial line, substantially as and for the purpose set forth.

4. The combination of the wheels E, the frame A, supporting the reel or forks I, the axle C, the connecting-arms F, the lever G, and hand-lever G', with latching devices G², substantially as and for the purpose set forth.

5. In combination, substantially as set forth, the frame A, mounted on the supporting axle and wheels, the rearwardly-extended shields B, having at their end, in rear of said wheels,

journal-boxes B', that project laterally beyond the plane of said wheels, the eccentrics fixed on the end of said boxes, the reel-shafts H, located back of the wheels, supported in and projecting beyond said journal-boxes, with arms I', eccentric connections O R, and tedding-forks I, supported on the outer ends of said shafts, all as shown and described.

6. The combination, substantially as described, with the ratchets *m*, of the drive-gears having pivot-studs *l*, the radially-disposed laterally-swinging pawls K, pivoted on said studs, and the U-shaped springs arranged within the interior of said pawls, for the purpose set forth.

7. The combination, substantially as hereinbefore described, with the axle C and traveling wheel E, having ratchets *m*, of the drive-gear D, the pawl K, having interior hollow or space, pivoted in said gear, the U-shaped spring M, arranged within the pawl and retained by the pivot-stud *l*, the slide-ring L, running between the ends of said pawl and spring, the shipper-rod L', and rod-actuating devices, for the purpose set forth.

8. In combination with the reel-shaft H, eccentric P, and eccentric-strap R, the flanged hub J, the arms I', disposed in connection with said hub, as shown, and provided at their outer ends with short spools *i*, the wire forks I, mounted to swing on said spools, and the bar O, passing between said arms and having its ends respectively gripped onto the loops of the forks, all as hereinbefore set forth.

9. The seat-springs S and supporting-eyes, in combination with the axle C, frame A, and casting F', provided with the arms *t*, for retaining said springs, substantially as hereinbefore described.

Witness my hand this 21st day of August, A. D. 1884.

LEANDER S. HEALD.

Witnesses:

HARDING WOODS,
JAMES N. HEALD.