

No. 797,645.

PATENTED AUG. 22, 1905.

O. P. VROOM.
HAY RAKE.

APPLICATION FILED FEB. 24, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

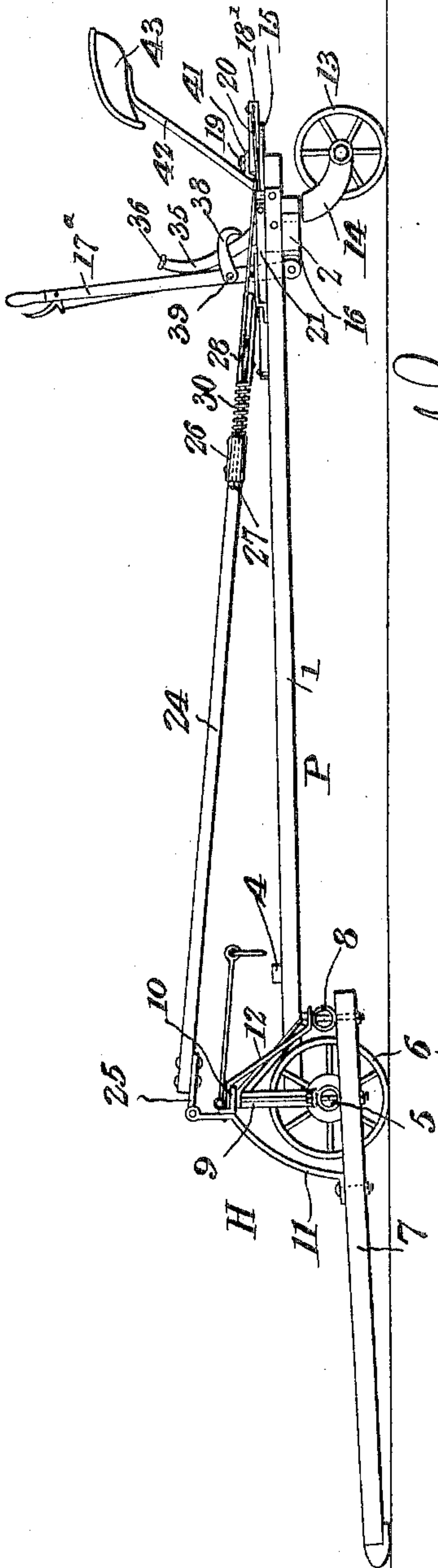
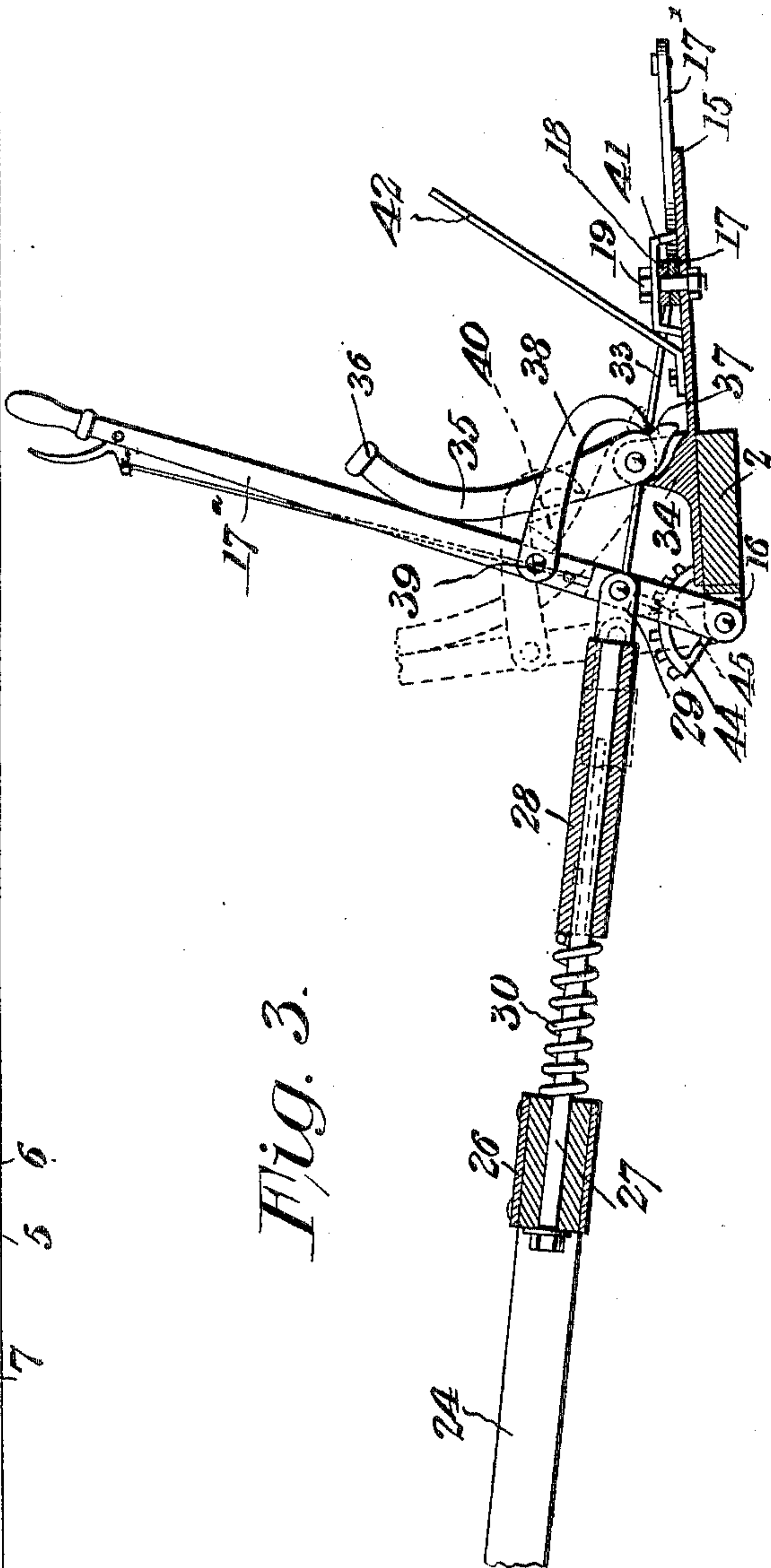


Fig. 3.



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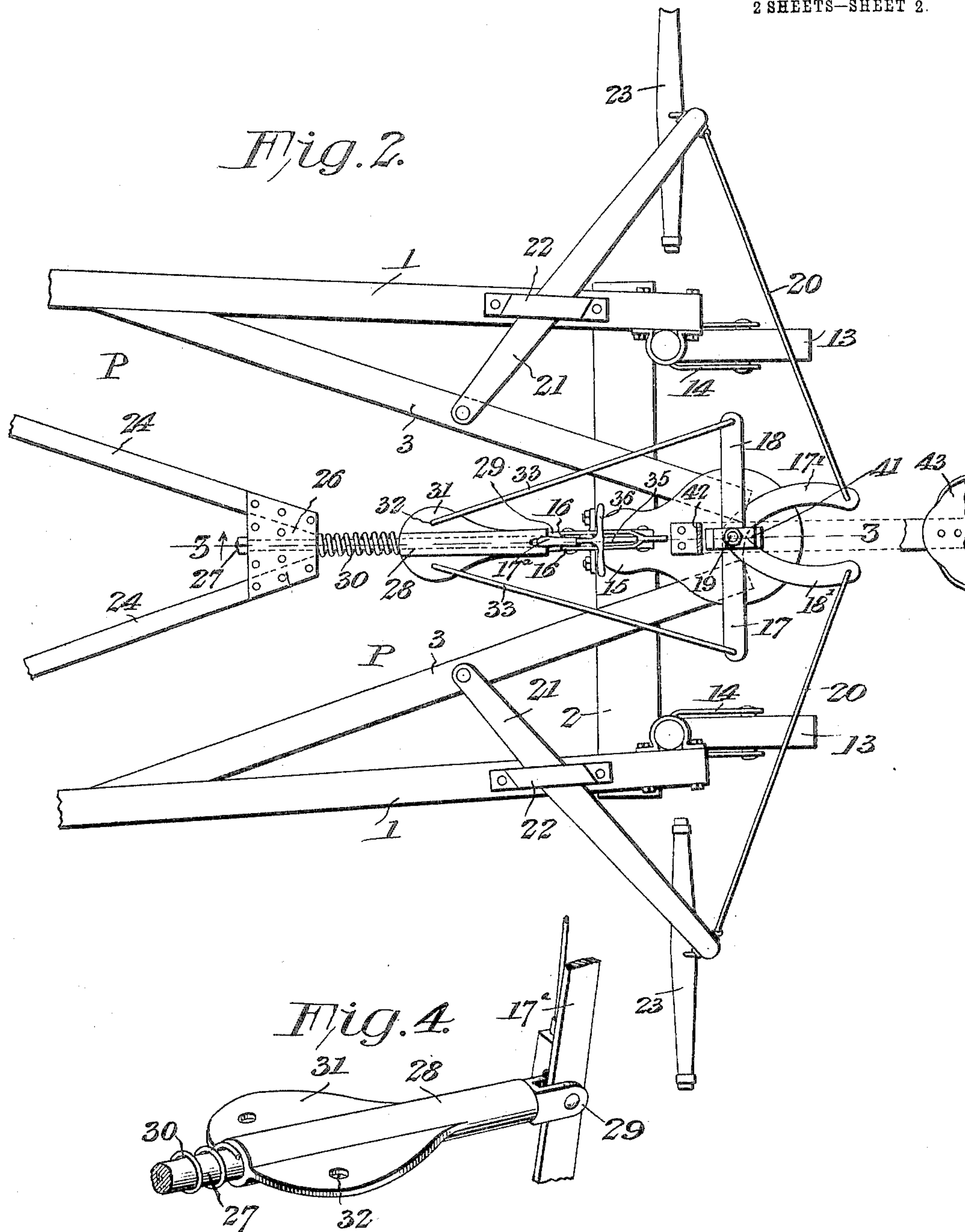
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UNITED STATES PATENT OFFICE.

OLER P. VROOM, OF LINNEUS, MISSOURI, ASSIGNOR TO THE SUPERIOR
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HAY-RAKE.

No. 797,645.

Specification of Letters Patent.

Patented Aug. 22, 1905.

Application filed February 24, 1905. Serial No. 247,185.

To all whom it may concern:

Be it known that I, OLER P. VROOM, a citizen of the United States, residing at Linneus, in the county of Linn and State of Missouri, have invented a new and useful Hay-Rake, of which the following is a specification.

This invention relates to hay-rakes of that class which are known as "push-rakes;" and it may be described as an improvement upon the device for which Letters Patent of the United States No. 738,819 were granted on September 15, 1903, to Lewis O. Knapp, Thomas S. Stephenson, and myself jointly. In the said patent a push-rake has been shown provided with a tilting head, and means have been provided whereby said head may be tilted to elevate the points of the rake-teeth from the ground by the tractive power exerted by the team, a trip mechanism being provided whereby the rake-teeth will be held in contact with the ground until such time as it shall be desired to tilt the rake-head, when by operating the trip mechanism the tilting is effected.

Among the objects of the present invention are to provide an improved connection between the rake-head and the draft mechanism.

Another object of the invention is to provide a cushioning device for the rake-head, whereby a certain freedom of movement shall be permitted to the latter.

Other objects are to promote simplicity and effectiveness in the construction and operation of the device.

With these and other ends in view, which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of embodiment of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations, and modifications may be resorted to within the scope of the invention and without departing from the spirit or sacrificing the efficiency of the same.

In said drawings, Figure 1 is a side elevation of a hay-rake embodying the improvements of the present invention. Fig. 2 is a top plan

view of the parts embodying the present invention. Fig. 3 is a longitudinal vertical sectional view taken on the plane indicated by the line 3 3 in Fig. 2. Fig. 4 is a detail view in perspective of a part of the device.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

P designates the push-frame, of which 1 1 are the side members, 2 the rear cross-piece, and 3 3 obliquely-disposed braces, which are connected with the inner sides of the side members and converge in a rearward direction, being supported upon the rear cross-brace 2. The side members 1 1 are connected near their front ends by a cross-piece 4, and they have pivotal or hinge connection with the rake-head H, which includes an axle 5, having supporting-wheels 6; teeth 7, connected with the under side of the axle and connected in rear of said axle by a tubular cross member 8; uprights 9, connected by a cross-piece 10, and suitably-disposed braces 11 and 12. The uprights 9 and cross-piece 10 cooperate to form what may be termed a "back wall" for the rake-head, which, as illustrated in Fig. 1 of the drawings, is in all essential particulars identical with the rake-head shown in Letters Patent No. 738,819, to which reference has been made above. It may be stated, however, that I do not consider myself limited to the use of a rake-head of this particular construction, inasmuch as any wheel-supported rake-head having upright members with which the lifter-bars, to be hereinafter described, may be connected will answer the purposes of the present invention.

The rear end of the pusher-frame is supported upon one or more wheels, as 13, the supporting-frames of which, as 14, are preferably swiveled to the under side of the frame in order that the said wheel or wheels may have a caster action. Securely mounted upon the rear portion of the pusher-frame is a plate or supporting member 15, which is provided at its front end with lugs 16, between which a hand-lever 17^a is pivoted. The said plate 15 also supports a pair of bell-crank levers 17 18, placed one above the other and fulcrumed upon a single pivot 19. The rearward-extending arms 17' 18' of the bell-crank levers are connected by means of links 20 with the outer free ends of levers 21, pivoted upon the braces 3 and supported upon the

side members 1 of the push-frame, where the said levers are guided and their movement limited by means of clips or guide-plates 22. Swingletrees 23 for the attachment of the draft are also mounted at the free outer ends of the levers 21.

24 24 are the lifter-bars, the front ends of which are connected pivotally with the rake-head through the medium of brackets 25, connected with upward extensions of the braces 11. The converging rear ends of the lifter-bars 24 are connected by means of a plate or casting 26, through which extends a bolt 27. Said bolt also extends through a buffer-plate 28 (shown in detail in Fig. 4 of the drawings) and is provided in rear of said buffer-plate with a bifurcated head 29. A spring 30 is coiled upon the bolt 27 between the buffer-plate and the plate or casting 26, which, in conjunction with the side members 24, constitutes the lifter-frame. The buffer-plate 28 is provided with laterally-extending wings 31, having perforations 32, connected, by means of links 33, with the laterally-extending arms of the bell-crank levers 17 18. The hand-lever 17^a is pivotally connected a short distance above its fulcrum with the bifurcated head of the bolt 27.

The plate or supporting member 15 is provided with a bearing 34, upon which is pivoted a foot-lever 35, provided at its upper end with a foot support or treadle 36 and having near its heel a recess 37, adapted for the accommodation of the point of a hook 38, which is pivotally connected with the hand-lever 17^a at a point 39 which is some distance above the pivotal connecting-point of said lever with the bifurcated head 29 of the bolt 27. The hand-lever 17^a and the foot-lever 35 are disposed in coinciding vertical longitudinal planes, so that one will abut upon the other. These levers, together with the hook 38, constitute the trip mechanism, which is in all essential particulars similar to that shown and described in Letters Patent No. 738,819, previously referred to, the hook 38 being bifurcated to embrace the levers 35 and 17^a and provided between said levers with a triangular cross-piece, as shown at 40 in Fig. 3 of the drawings.

The bell-crank levers 17 and 18 are straddled by means of a clip-plate 41, through which the pivotal bolt 19 passes, thus preventing said bolt from binding the said levers and preventing them from moving freely. The supporting-plate 15 also carries a spring-support 42 for the driver's seat 43.

The supporting-plate 15, between the lugs 16 16 of which the hand-lever 17^a is pivoted, is provided with a rack-segment 44, concentric with the fulcrum of said lever, which carries a suitably-operated spring-actuated dog or pawl 45, engaging the rack-segment for the purpose of retaining said lever and the parts connected therewith in adjusted position.

Regarding the operation of the trip mechanism, it will be readily seen that when the hand-lever 17^a is thrown forward to the position indicated in dotted lines in Fig. 3 the lifter-frame will drop forward, thus permitting the rake-teeth at their free ends to rest upon the ground while a load is being accumulated, the teeth being retained in this position partly by the weight of the load and also by the pressure of the spring 30. If obstructions should be encountered by the points of the rake-teeth, they will be free to move slightly in an upward direction, throwing the rake-head back against the tension of the spring 30. When a load has been accumulated, pressure upon the foot-lever is relieved, and the foot-lever, as well as the hand-lever 17^a, is thrown back to the position indicated in full lines in Fig. 3. The hand-lever 17^a will thus exercise a direct strain in a rearward direction upon the lifter-frame and the rake-head will be tilted so as to elevate the points of the rake-teeth, thus enabling the load to be conveniently transported to the place where it is to be stacked. It is obvious that the tilting operation is not performed by the strain exercised by the operator on the hand-lever 17^a, but that as soon as said lever is released from locking engagement with the rack 44 the traction exercised by the draft-animals becomes effective to tilt the arms 17' 18' of the bell-crank levers 17 18 in an outward direction and the laterally-extending arms of said bell-crank levers in a rearward direction, thus exercising a backward strain upon the buffer-plate 28, which is transmitted, through the bolt 27, to the lifter-frame, thus causing the rake-head to be tilted without the exercise of any special effort on the part of the operator. The rake-head will be retained in tilted position by means of the hook 38 engaging the recess 37 in the heel of the foot-lever. When the trip mechanism is released for the purpose of dumping the load, the cushion-spring 30 will be effective to prevent injury to the rake-head or to other parts of the machine by the too sudden or violent movement of the rake-head under the impulse of the weight of the load.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of this invention will be readily understood by those skilled in the art to which it appertains. The construction is simple and inexpensive, and a rake constructed in accordance with this invention may be handled with ease and without necessity of the exercise of violent muscular or manual effort.

Having thus described the invention, what is claimed is—

1. In a rake of the class described, a push-frame, a rake-head connected pivotally therewith and having an upward-extending member, a lifter-frame connected hingedly with

said member, a bolt connected for longitudinal movement with said lifter-frame, a buffer-plate upon said bolt in contact with the head of the latter, a spring coiled upon said bolt between the buffer-plate and the lifter-frame, and a hand-lever connected with said bolt.

2. A push-frame, a rake-head connected therewith for pivotal movement, a lifter-frame connected hingedly with said rake-head, a hand-lever, a member connected pivotally with said hand-lever and slidably with the lifter-frame, and a cushion-spring between the lifter-frame and the hand-lever.

3. A push-frame, a rake-head connected therewith for pivotal movement, a lifter-frame connected hingedly with said rake-head, a rod or bolt connected slidably with the lifter-frame, a buffer-plate slidable upon said bolt, a cushion-spring between the buffer-plate and the lifter-frame, and means for applying traction in a rearward direction to the buffer-plate.

4. A push-frame, a rake-head connected therewith for pivotal movement, a lifter-frame connected hingedly with said rake-head to tilt the same, a bolt member connected slidably with the lifter-frame, a buffer-plate slidable upon said bolt, a cushion-spring between the buffer-plate and the lifting-frame, suitably-supported levers having means for applying draft to their free ends, a pair of suitably-supported bell-crank levers having rearward-extending arms, links connecting the latter with the free ends of the draft-levers, and links connecting the laterally-extending arms of the bell-cranks with the buffer-plate.

5. A push-frame, a rake-head connected therewith for pivotal movement, a lifter-frame connected hingedly with the rake-head, draft-levers pivoted upon the push-frame, bell-crank levers pivoted upon a supporting-plate mounted upon the push-frame and having laterally-extending and rearwardly-extending arms, a hand-lever supported upon the push-frame, a bolt member connected pivotally with said hand-lever and slidably with the lifter-frame, a buffer-plate slidable upon said bolt member, a cushion-spring between said

buffer-plate and the lifter-frame, links connecting said buffer-plate with the laterally-extending arms of the bell-crank levers, and links connecting the rearward-extending arms of the bell-crank levers with the draft-levers.

6. In a hay-rake of the class described having a lifter-frame connected hingedly with the rake-head for the purpose of tilting the same and means for transmitting traction exercised by the draft-animals in a rearward direction to said lifter-frame, a cushion-spring interposed between said lifter-frame and the means for applying rearward draft to the same, whereby said lifter-frame may move rearward, against the tension of said spring, independently of the draft appliance.

7. In a hay-rake of the class described, a push-frame, a rake-head connected therewith for pivotal movement, a lifter-frame connected hingedly with the rake-head, draft-levers pivoted upon the push-frame, means for guiding and for limiting the movement of said draft-levers, a supporting-plate mounted upon the push-frame, a pair of bell-crank levers supported upon said plate and connected therewith by a single pivot, said bell-crank levers having laterally-extending and rearwardly-extending arms, a hand-lever pivoted upon the supporting-plate, a bolt member connected pivotally with said hand-lever and slidingly with the lifter-frame, a buffer-plate slidably engaging said bolt member and having laterally-extending wings, a cushion-spring between the buffer-plate and the lifter-frame, links connecting the laterally-extending wings of the buffer-plate with the laterally-extending arms of the bell-crank levers, and links connecting the rearward-extending arms of said bell-cranks with the free ends of the draft members.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

OLER P. VROOM.

Witnesses:

J. B. WILLIAMS,
GEO. B. MILBURN.