

No. 785,596.

PATENTED MAR. 21, 1905.

M. H. DALEY.

CLEANING ATTACHMENT FOR DISK HARROWS OR THE LIKE.

APPLICATION FILED JULY 18, 1904.

3 SHEETS—SHEET 1.

Fig. 1.

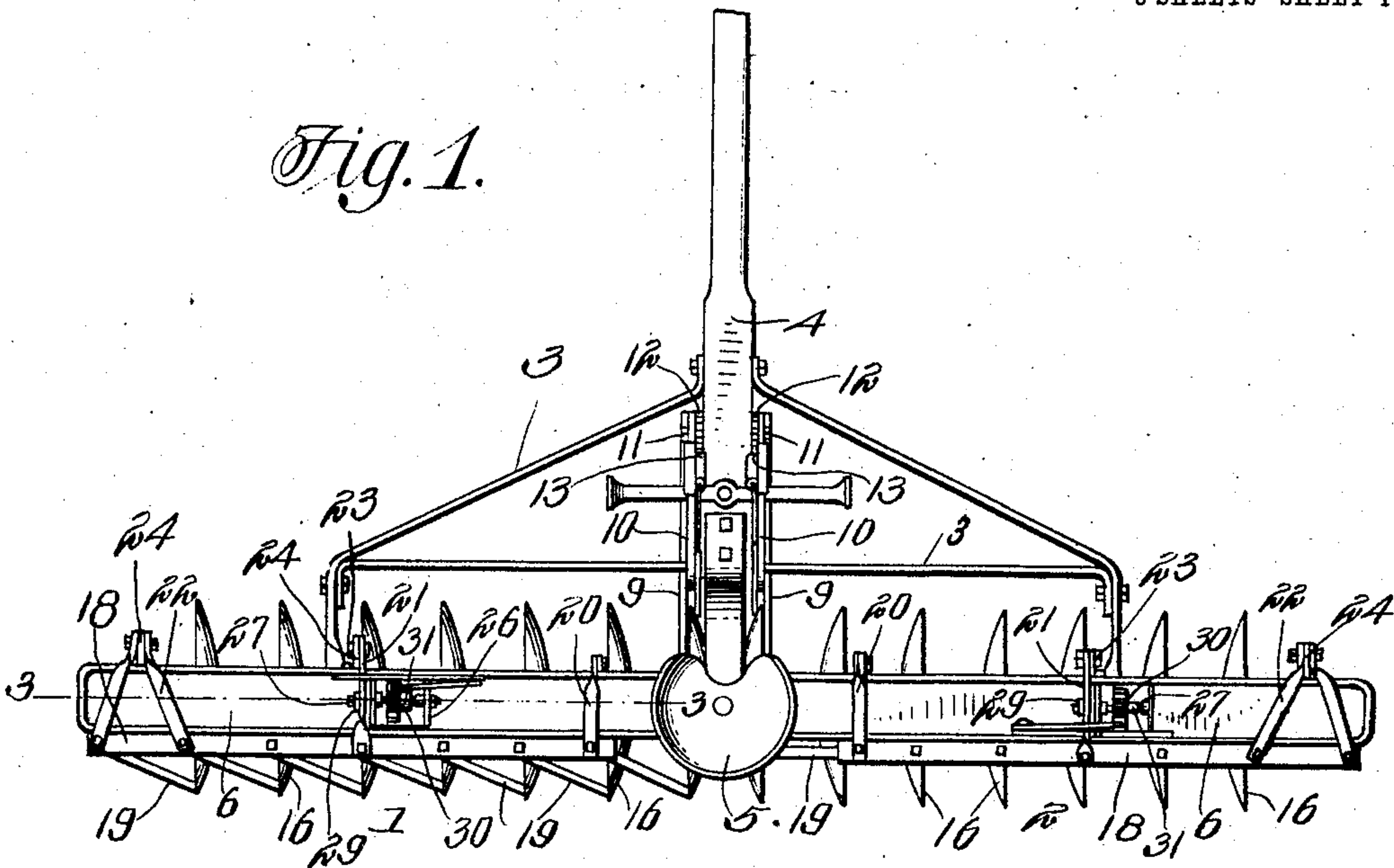
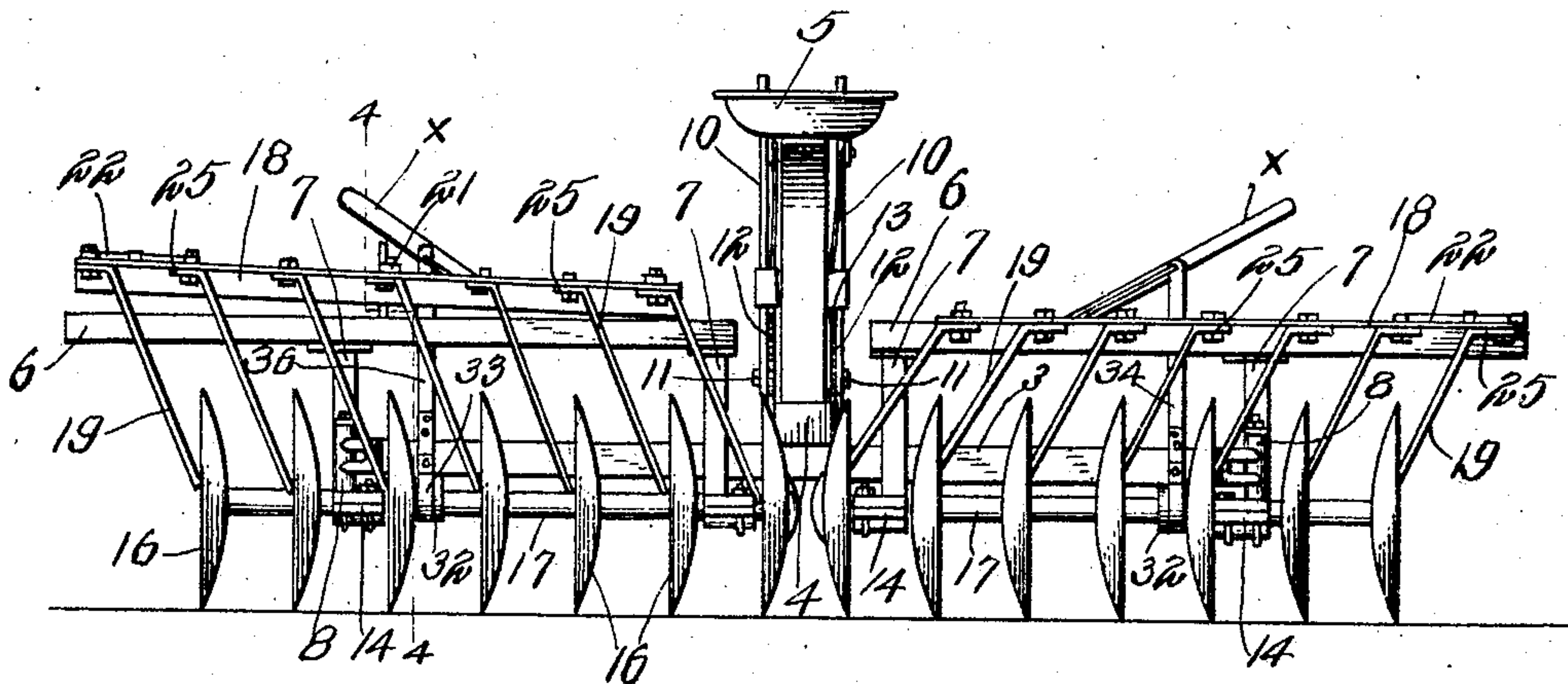


Fig. 2.



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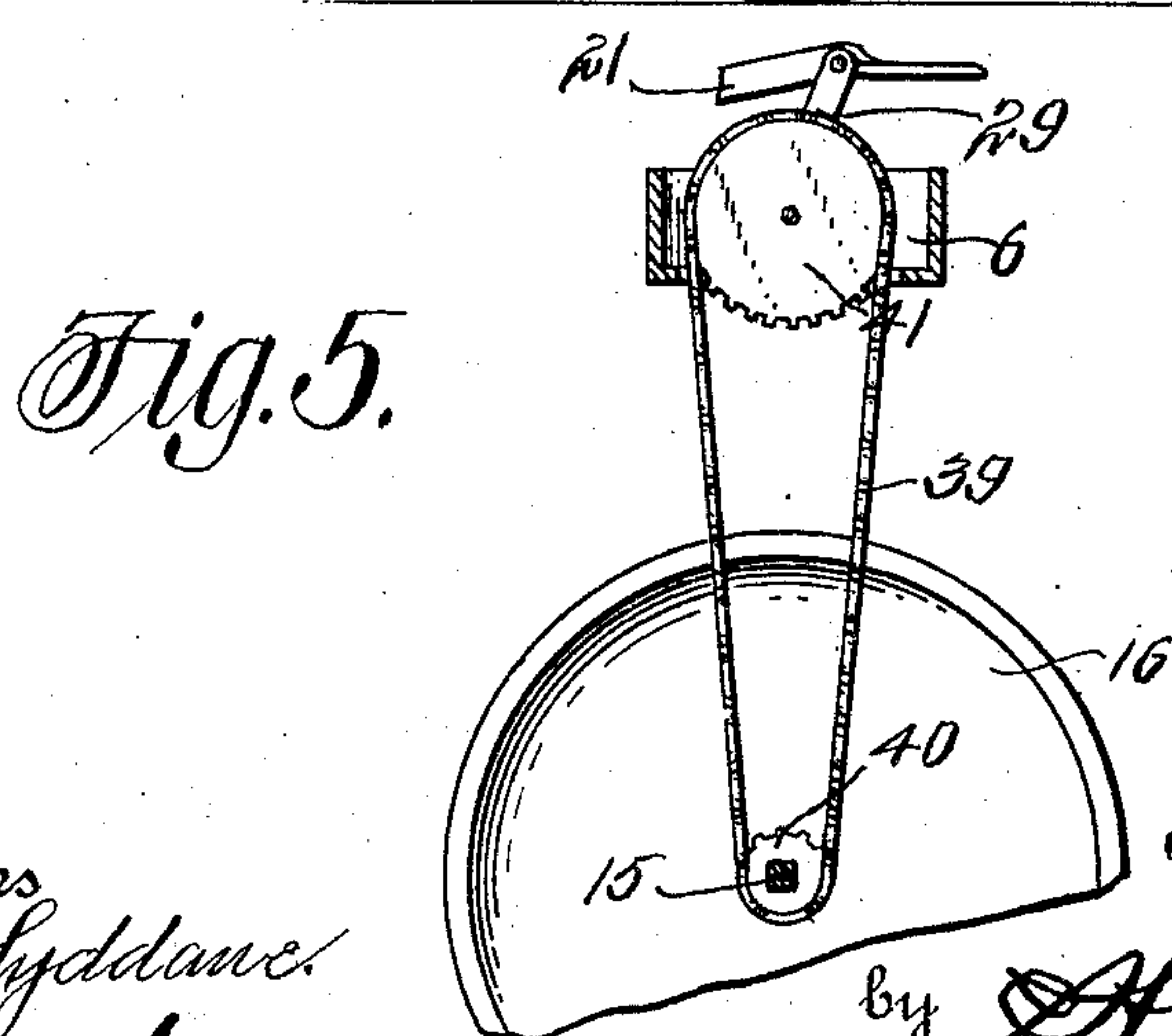
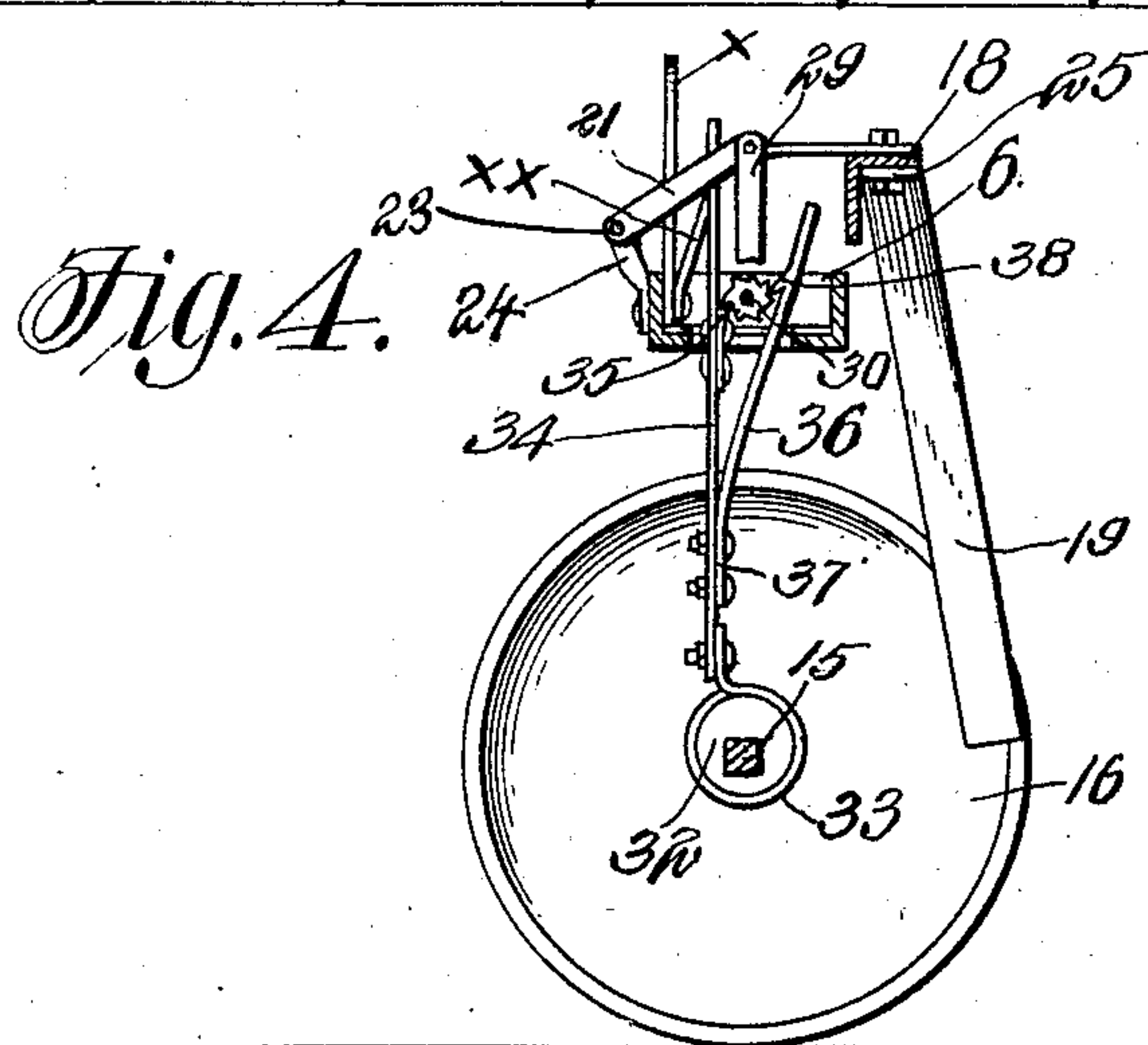
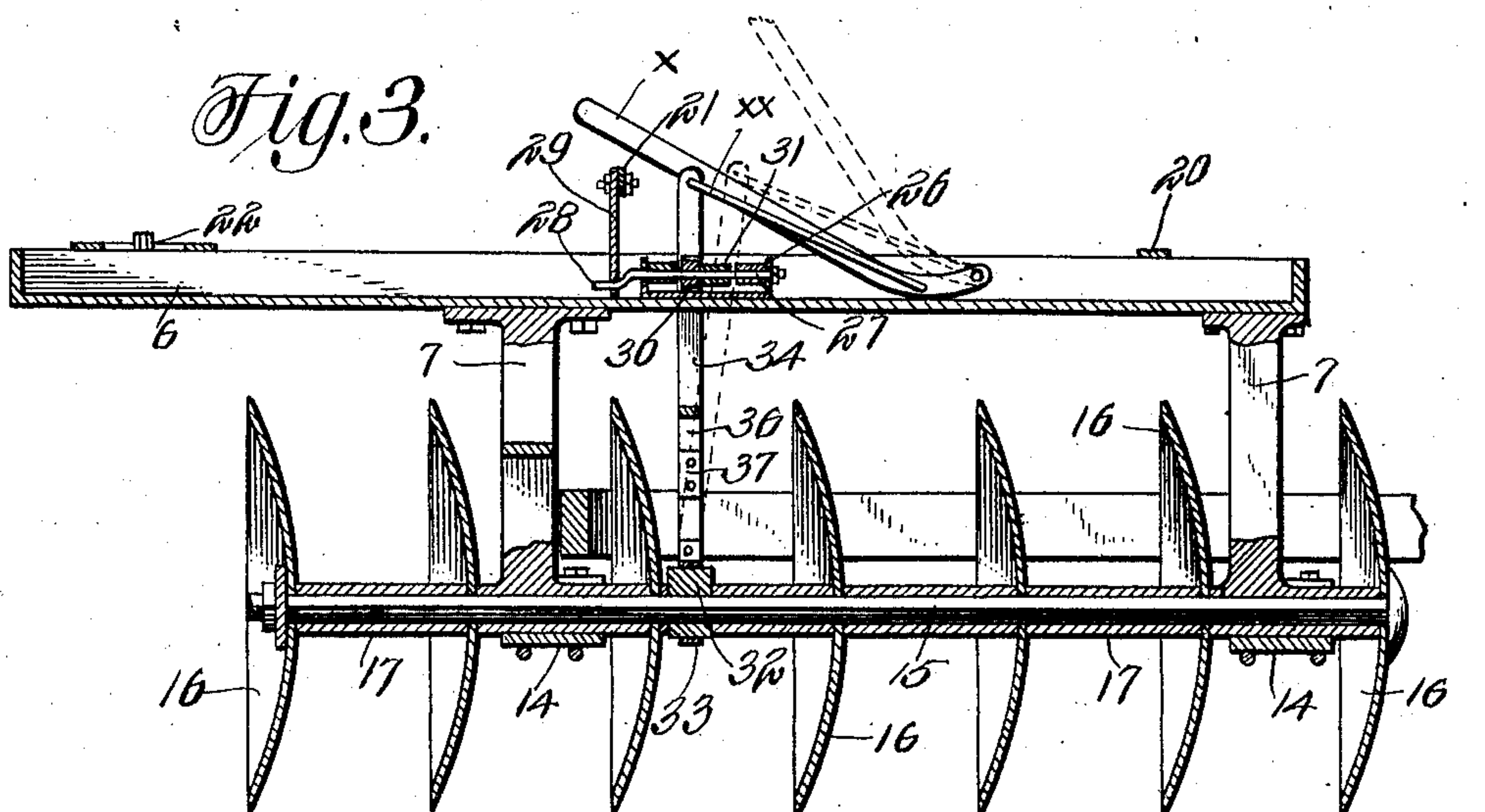
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 6.

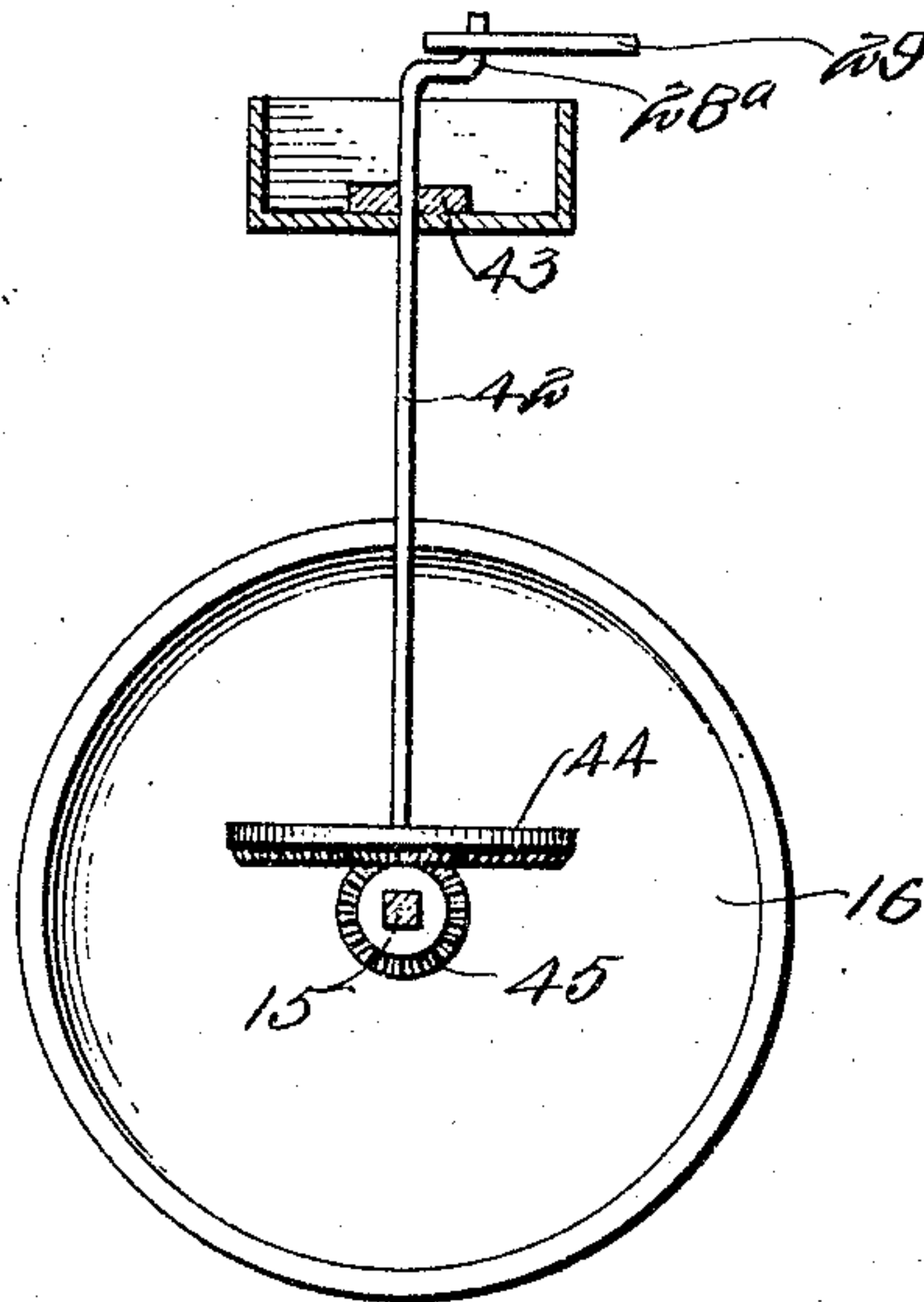


Fig. 8.

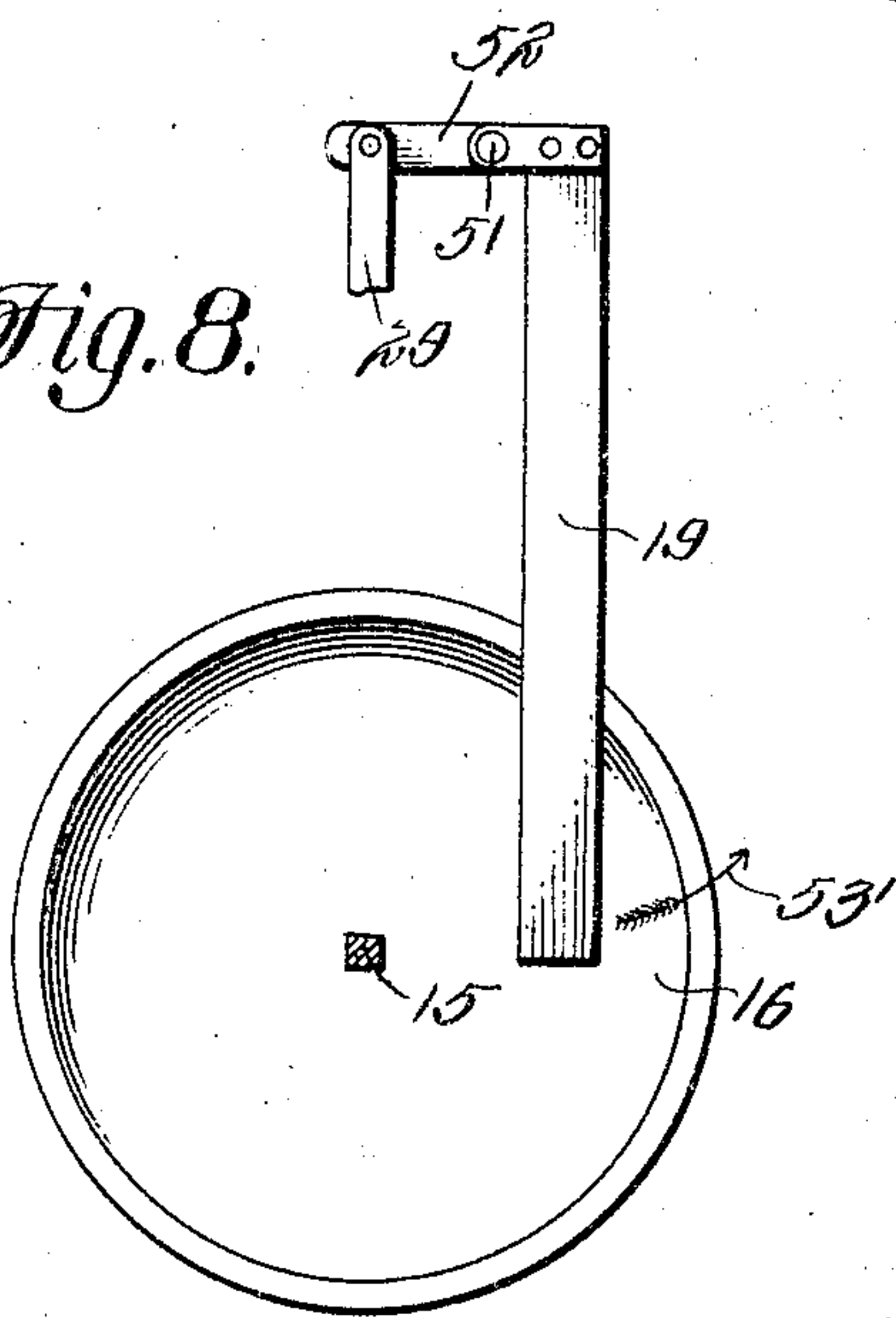


Fig. 7.

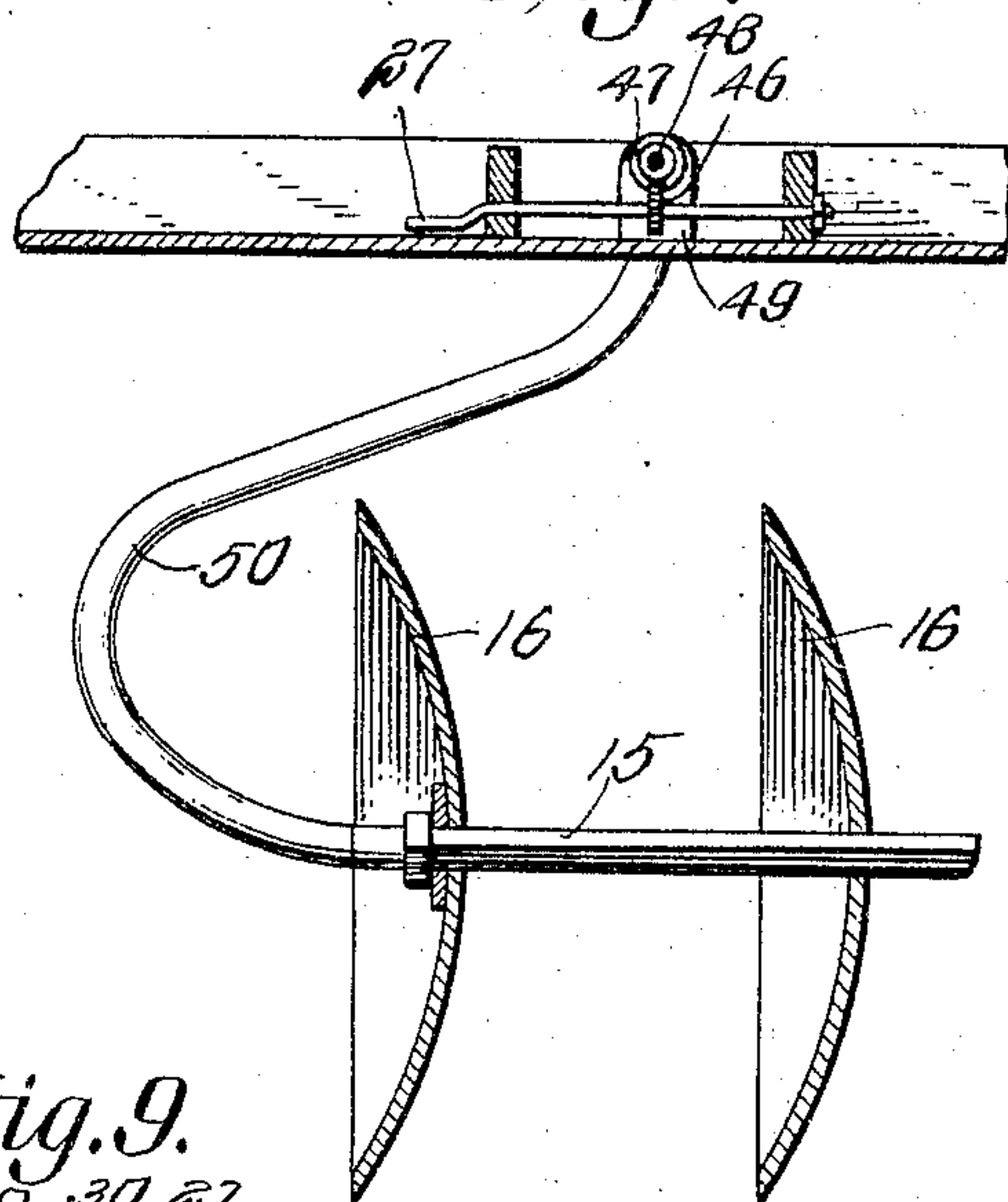
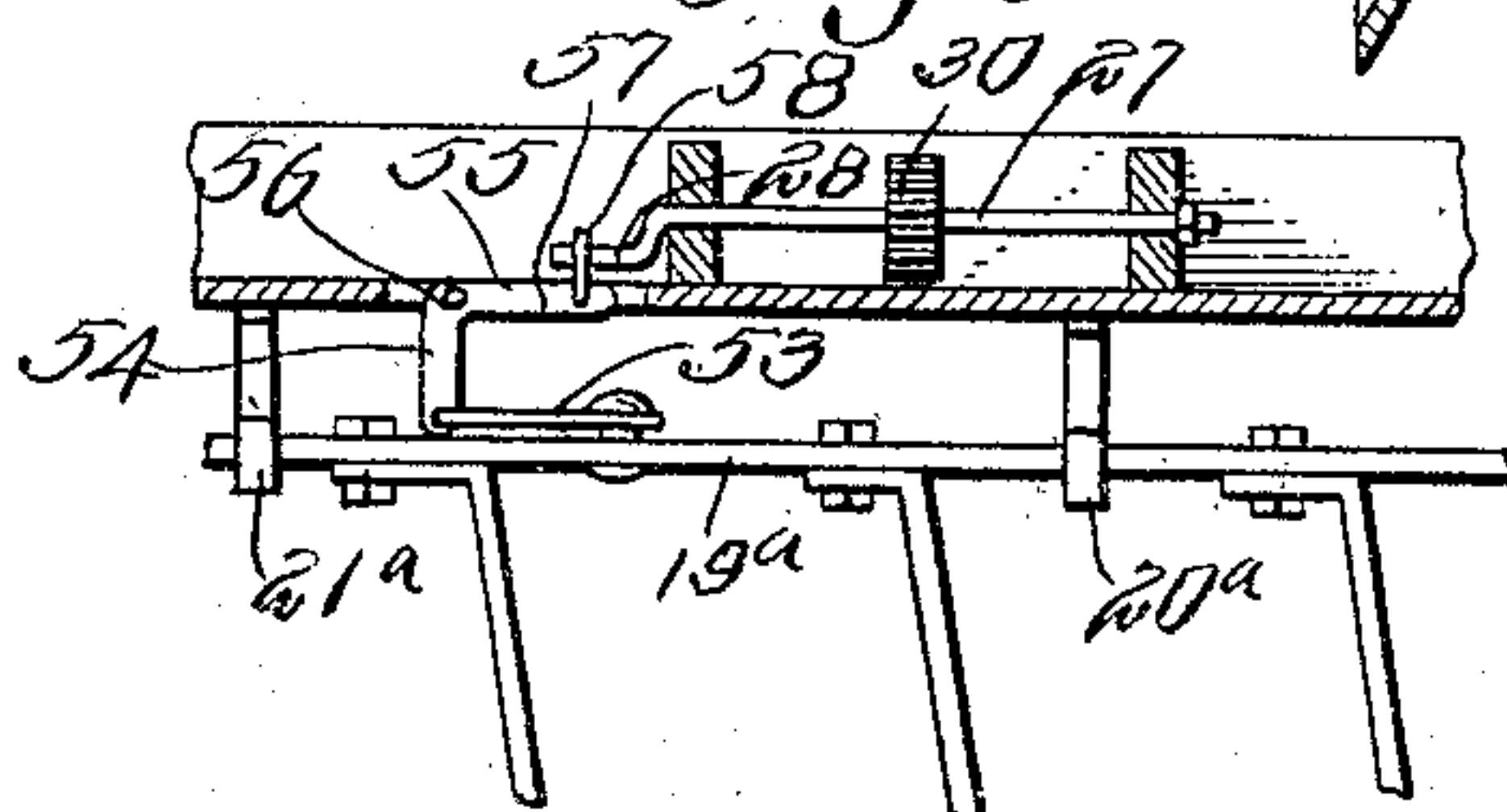


Fig. 9.



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UNITED STATES PATENT OFFICE.

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CLEANING ATTACHMENT FOR DISK HARROWS OR THE LIKE.

SPECIFICATION forming part of Letters Patent No. 785,596, dated March 21, 1905.

Application filed July 18, 1904. Serial No. 217,109.

To all whom it may concern:

Be it known that I, MICHAEL H. DALEY, a citizen of the United States, residing at Charles City, in the county of Floyd and State of Iowa, have invented certain new and useful Improvements in Cleaning Attachments for Disk Harrows or the Like; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in disk harrows, cultivators, seeding-drills, or other machines using disks, and more particularly in the means for cleaning the revolving disks of such machine.

The object of my invention is to provide a simple and efficient disk-cleaning means which will be operated automatically as the disks revolve.

With this and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a top plan view of a disk harrow, showing the application of my invention thereto. Fig. 2 is a rear end elevation of the same. Fig. 3 is a vertical longitudinal sectional view taken on the line 3 3 of Fig. 1. Fig. 4 is a detail vertical transverse sectional view taken on the line 4 4 of Fig. 2. Fig. 5 is a detail sectional view showing how the cleaner-bars may be operated by chain-and-sprocket gearing. Fig. 6 is a similar view showing how the cleaner-bars may be operated by means of bevel-gears and a vertical shaft. Fig. 7 is a similar view showing how the cleaner-bars may be operated by means of a flexible shaft and worm-gearing. Fig. 8 is a detail sectional view showing another way in which the cleaner-bars may be mounted. Fig. 9 is a detail view showing how the cleaner-bars may be reciprocated longitudinally instead of being oscillated transversely.

In the drawings I have shown my invention applied to a double harrow comprising two similar sections 1 and 2, which are coupled to and angularly adjustable upon a frame 3.

These parts may be of any suitable form of construction; but, as shown, said frame 3 is made of metal and is substantially triangular in form. In the center of the same is secured a tongue or draft-pole 4, upon the rear end of which is mounted a seat 5. Each of the sections 1 and 2 comprises a rectangular frame 6, having depending hangers 7, the outer hangers being pivotally connected, as indicated at 8, to the ends of the frame 3, so that said frame 6 may be swung angularly in a horizontal plane. Any suitable coupling may be provided in place of that shown at 8 and any suitable means may also be provided for adjusting said frame 6. As shown, the inner hangers 7 are connected by links 9 to the lower ends of hand-levers 10, which are pivoted at 11 upon segmental racks 12, secured upon the tongue 4. Each of said hand-levers is provided with a spring-seated pawl 13, which coacts with one of the segmental racks 12 to hold one of the cultivator-sections in an adjusted position, as will be readily understood. Upon the lower ends of the hangers are provided suitable bearings 14, in which a disk-carrying shaft 15 is journaled. The cultivator-disks 16, of which any suitable number may be provided, are secured upon said shaft and are spaced apart by sleeves 17, so that when said disks are rotated their shaft 15 will also be rotated.

In applying my cleaner attachment to each of the sections 1 and 2 I preferably mount an angle-iron bar 18 upon each of the frames 6, so that it will swing upwardly and outwardly, and secure a series of cleaner-bars 19 to said bar 18, so that when the latter is moved said cleaner-bars will be swung toward or from the centers of the cultivator-disks in order to clean the same. Said bar 18 may be mounted in any desired manner. As shown, I have provided three hangers, 20, 21, and 22, of unequal length, which have their rear ends bolted to said bar 18 and their forward ends pivotally secured, as at 23, upon bracket-arms 24, secured upon one of said frames 6. By mounting the bar 18 in this manner it will be seen that the lower ends of the scraper-bars 19 which engage the concave faces of the cultivator-disks will be held with equal pressure at all times

upon said disks. The cleaner-bars, as shown, consist of strips of metal which have their upper ends bent, as at 25, and bolted to the angle-bar 18 and their depending portions disposed angularly so that their lower ends bear against the concaved faces of the disks.

In order to swing or oscillate the bar 18 and its cleaner-bars 19, I mount in suitable bearings 26 upon the frame 6 a short shaft 27, upon one end of which is formed a crank 28, which is connected by a connecting rod or link 29 to the central arm 21, said rod or link being pivotally connected to said central arm. The crank-shaft 27 may be rotated in any desired manner; but my preferred construction is illustrated in Figs. 1 to 4 of the drawings. As shown, said shaft has secured to it, intermediate its bearings, a ratchet-wheel 30 and a smooth or cylindrical hub 31. The disk-shaft 15 at a suitable point has secured to it an eccentric 32, upon which an eccentric-strap 33 is mounted. To said strap 33 is bolted or otherwise secured one end of a connecting-rod 34, the other end of which is provided with a fixed dog 35, adapted to coact with the ratchet-wheel 30. Said dog is held in engagement with the ratchet-wheel by a spring 36, which has one of its ends secured, as at 37, to the connecting-rod 34 and its other end provided with a dog 38, which bears upon the opposite side of the ratchet-wheel to prevent the retrograde movement of the same and to hold the dog 35 in engagement with the teeth of said ratchet. It will be seen that when the shaft 15 is rotated the eccentric 32 will reciprocate the connecting-rod 34 and the dog 35 upon the latter will impart a step-by-step or intermittent rotary motion to the ratchet-wheel and its shaft 27. These connections may be so constructed that the crank-shaft 27 will be rotated at any desired speed; but I preferably so construct them that said crank-shaft rotates once in every five or six revolutions of the disk-shaft 15. In this way the cleaner-bars 19 are caused to move slowly upon the disks 16 to thoroughly clean every part of the same. By mounting said parts so that the lower ends of the cleaner-bars will be at the outer edge or at the centers of the disks when the crank 28 is on its dead-center it will be seen that said cleaner-bars will be held a sufficient length of time upon the outer edges of the disks to permit the latter to make a complete revolution, and thus any stalks, brush, or the like clinging to the edges of the disks will be removed from time to time. A lever x , connected by a link x to the rod 34, may be operated to move the said rod and the spring 36, carried thereby, so as to cause the dogs 35 and 38 to engage or disengage the ratchet-wheel 30.

In Fig. 5 I have illustrated how a sprocket-chain 39 and sprocket-gears 40 and 41 may be substituted for the eccentric, ratchet-wheel, and connecting-rod, previously described.

Said sprocket 40 is secured upon the disk-shaft 15 and the sprocket 41 upon the crank-shaft 27. In all other respects the construction of the machine is the same as that previously described.

In Fig. 6 I have shown a construction in which the horizontally-disposed crank-shaft 27 is dispensed with and a vertically-disposed crank-shaft 42 substituted. Said shaft is mounted in suitable bearings 43, secured to the frame 6, and has upon its upper end a crank 28^a, to which the connecting rod or link 29 is pivoted. The link 29 may be connected to the angle-bar 18 to give a longitudinal movement to the cleaner-bars 19. Upon the lower end of said shaft 42 is secured a beveled gear 44, which meshes with a similar gear 45, secured upon the disk-shaft 15. The operation of this form of my invention will be readily seen.

In Fig. 7 of the drawings I have shown a crank-shaft 27 provided with a worm-gear 46, which is in mesh with a worm or screw 47, provided upon a shaft 48, mounted in suitable bearings 49 upon the frame 6. One end of the shaft 48 and one end of the disk-shaft 15 are connected by a flexible shaft 50, by means of which the motion of the disk-shaft is imparted to the screw 47, which in turn rotates the crank-shaft 27.

Instead of mounting the cleaner-bars upon the angle-bar 18, as previously described, I secure them, as shown in Fig. 8, upon a pivot or rock-shaft 51, which may be mounted in suitable bearings upon the rear portion of the frame 6. Upon the rock-shaft 51, as here shown, is an arm 52, to which the connecting rod or link 29 is pivoted in order to impart motion of the crank-shaft 27 to the rock-shaft 51. It will be seen that when the latter shaft is rocked or oscillated the lower ends of the cleaners will be oscillated upon the concaved faces of the disks, as indicated by the arrow 53' in Fig. 8.

Instead of the cleaner-bars oscillating transversely, as illustrated in the first eight figures of the drawings, I may mount them so that they will be reciprocated longitudinally, as seen in Fig. 9 of the drawings. As here shown, the cleaner-bars are rigidly secured to a longitudinal bar 19^a, which is mounted to slide longitudinally in suitable brackets 20^a and 21^a, secured upon the frames 6. Said bar 19^a is loosely connected by a link 53 to one arm 54 of a bell-crank lever 55, which is pivotally mounted, as at 56, and has its other arm, 57, connected by a rod or link 58 to the crank 28 of the crank-shaft 27. It will be seen that when the latter shaft is rotated the bell-crank lever 55 will be oscillated and the bar 19^a will be reciprocated longitudinally.

From the foregoing description, taken in connection with the accompanying drawings, it is thought that the construction, operation,

and advantages of my invention will be readily understood without a more extended explanation.

While I have shown and described some of the preferred embodiments of my invention, I wish it distinctly understood that I do not wish to be limited to the construction herein set forth, since various changes in the form, proportion, and the minor details may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Although I have illustrated and described my invention in connection with a disk harrow, it will be understood that the same may be applied to a disk cultivator, plow, or any other similar machine having earth-working disks.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A machine of the class described, comprising a suitable frame, a shaft, earth-working disks upon said shaft, a bar mounted to swing upon said frame, cleaner-bars secured to said bar and adapted to engage said disks, a crank-shaft mounted upon said frame, a connection between the crank of said crank-shaft and said swinging bar, gearing between said crank-shaft and said disk-shaft, and a lever and link for throwing said gearing into and out of operation, substantially as described.

2. A machine of the class described, comprising a suitable frame, a shaft, earth-working disks upon said shaft, a bar mounted to swing upon said frame, cleaner-bars secured to said bar and adapted to engage said disks, a crank-shaft mounted upon said frame, a connection between the crank of said crank-shaft and said swinging bar, an eccentric upon said disk-shaft, and a driving connection between said eccentric and said crank-shaft for intermittently rotating the latter, substantially as described.

3. A disk harrow, cultivator, or the like, comprising a suitable frame, a disk-shaft

mounted in bearings upon said frame, earth-working disks upon said shaft, a swinging bar upon said frame, disk cleaner-bars upon said swinging bar, a crank-shaft mounted in bearings upon said frame, a link connection between the crank of said crank-shaft and said swinging bar, a ratchet-wheel upon said crank-shaft, an eccentric upon said disk-shaft and a connecting-rod having at one end a strap to coact with said eccentric and at its other end a spring-seated dog to coact with said ratchet-wheel, substantially as described.

4. A disk harrow, cultivator, or the like, comprising a frame, a disk-shaft, disks upon said shaft, cleaners for said disks, a drive-shaft, an operating connection between said drive-shaft and said cleaners, a ratchet-wheel upon said drive-shaft, an eccentric upon said disk-shaft, a strap upon said eccentric, a connecting-rod secured to said strap, a dog upon said rod adapted to engage said ratchet-wheel, and a spring for holding said dog in engagement with said ratchet-wheel, substantially as described.

5. A disk harrow, cultivator, or the like, comprising a frame, a disk-shaft, disks upon said shaft, cleaners for said disks, a drive-shaft, an operating connection between said drive-shaft and said cleaners, a ratchet-wheel upon said drive-shaft, an eccentric upon said disk-shaft, a strap upon said eccentric, a connecting-rod secured to said strap, a dog upon said rod adapted to engage said ratchet-wheel, a spring for holding said dog in engagement with said ratchet-wheel, a lever connected to said connecting-rod for moving said dog into and out of engagement with said ratchet-wheel, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

MICHAEL H. DALEY.

Witnesses:

FRED C. NEHLS,
FRANK TUBBS.