

J. G. ROUNTREE.
ROOT CUTTING MACHINE.
APPLICATION FILED APR. 3, 1908.

915,484.

Patented Mar. 16, 1909.
2 SHEETS—SHEET 1.

Fig. 1.

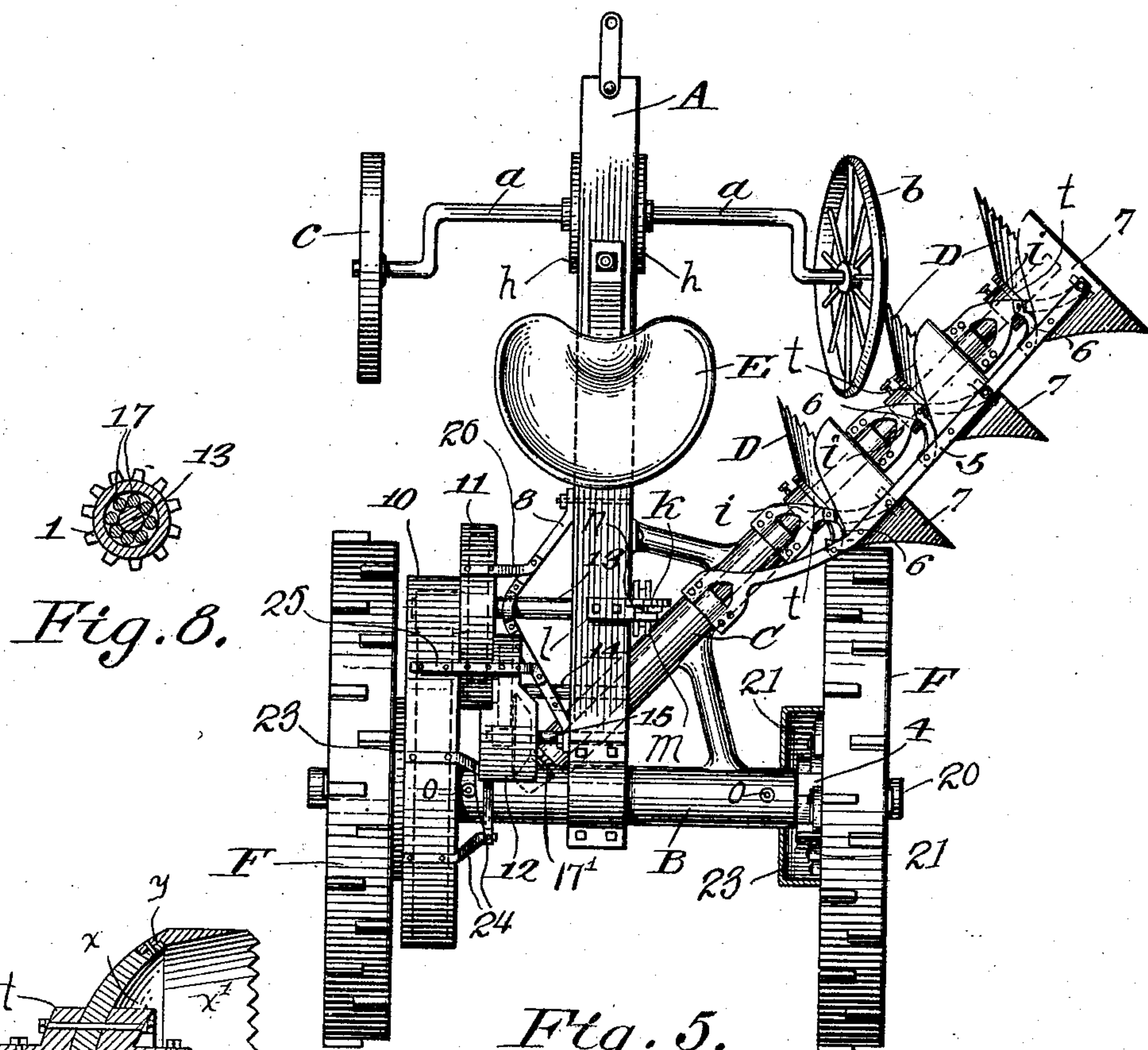


Fig. 8.

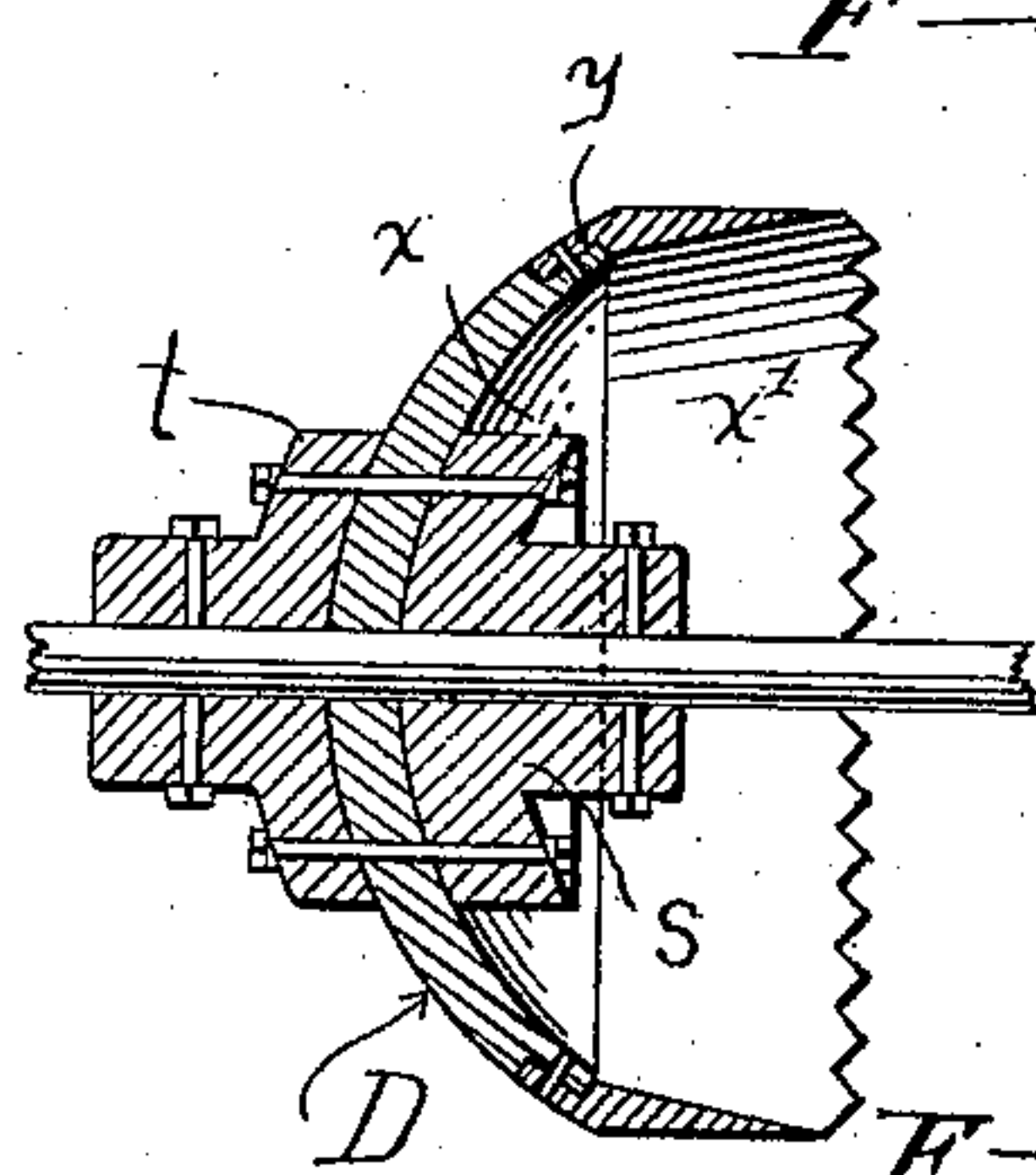


Fig. 10.

Witnesses:
A. S. Johnson.
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Fig. 5.

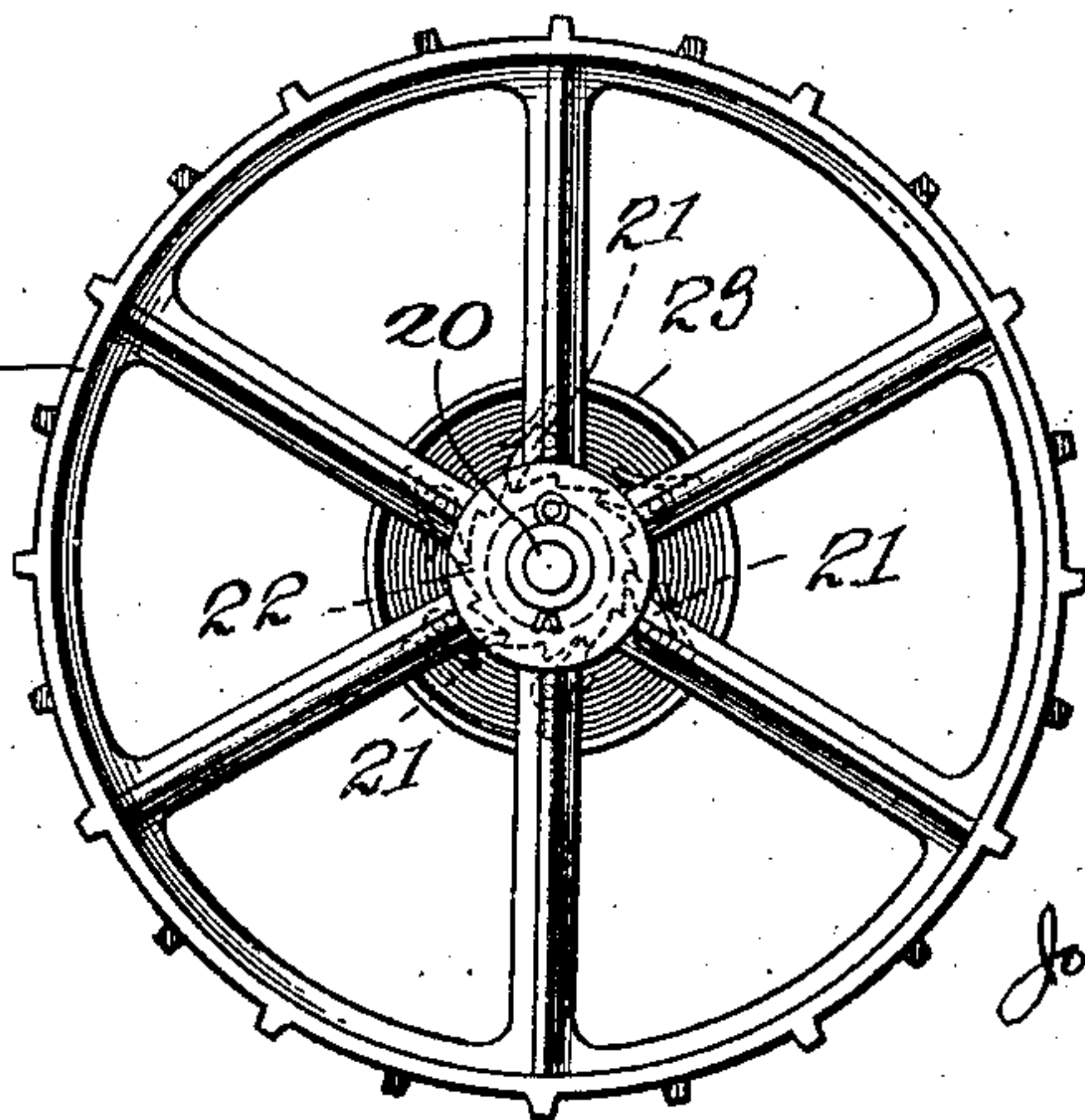
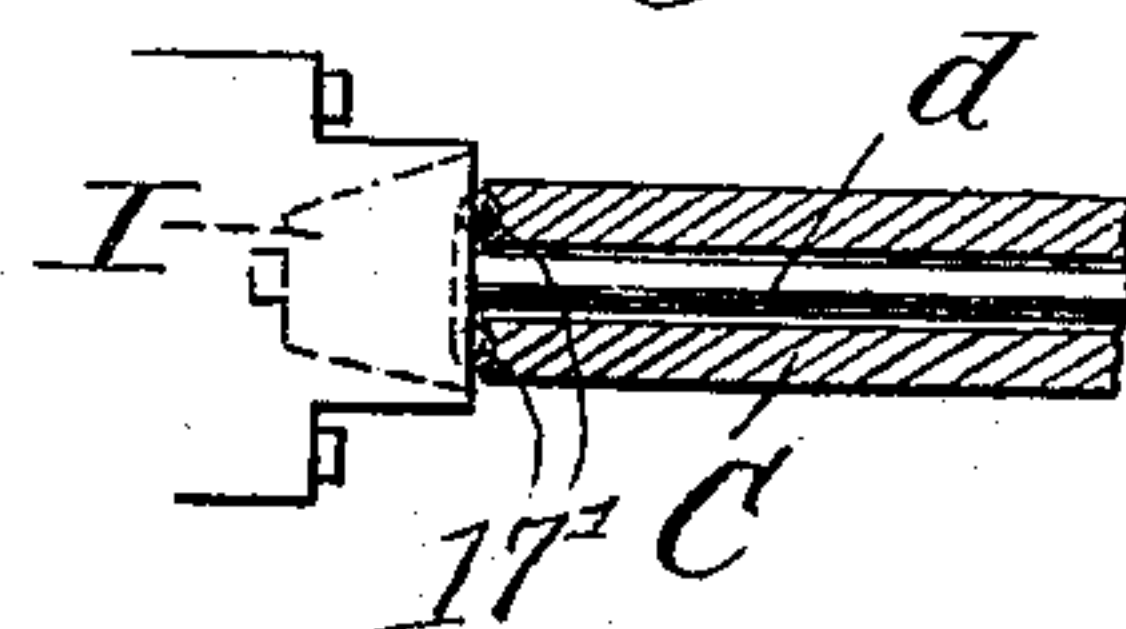


Fig. 9.



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2 SHEETS—SHEET 2.

Fig. 2.

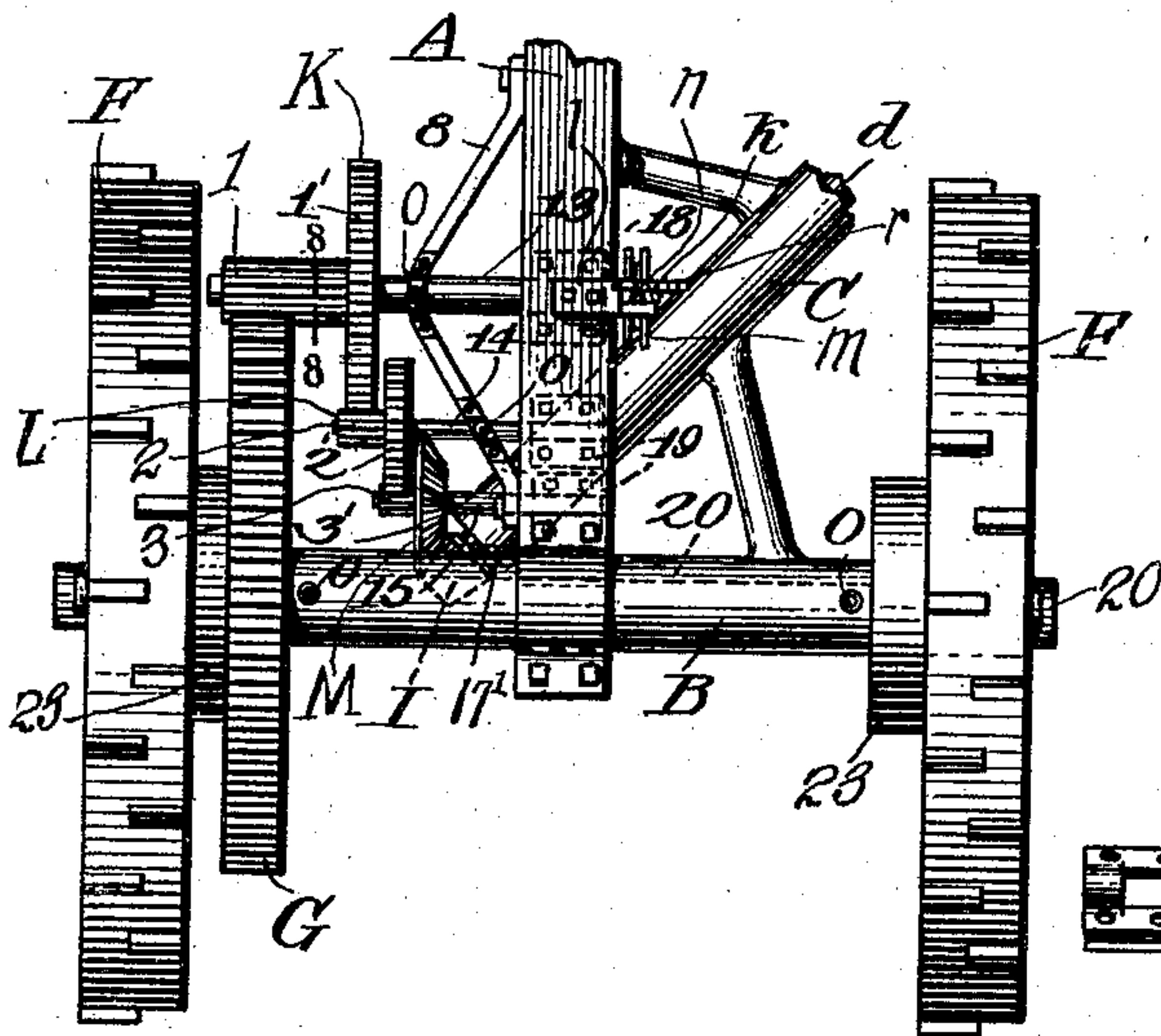


Fig. 7.

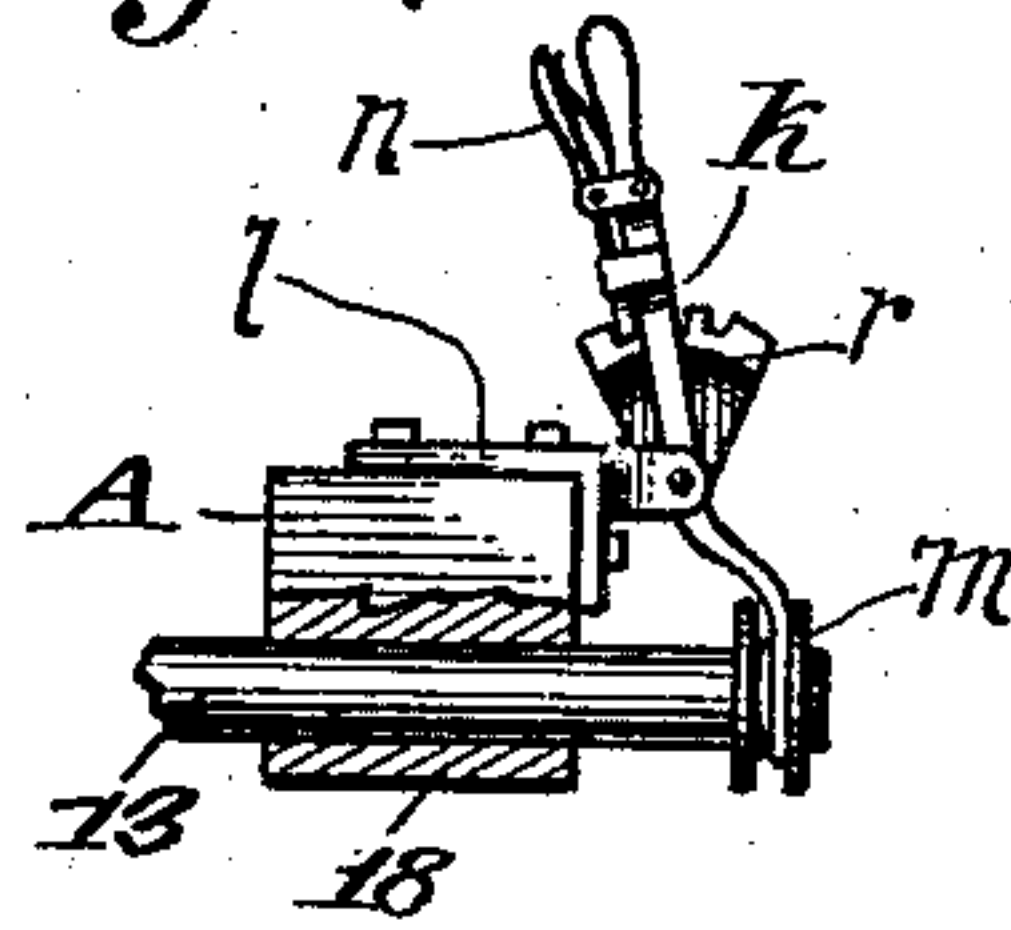


Fig. 6.

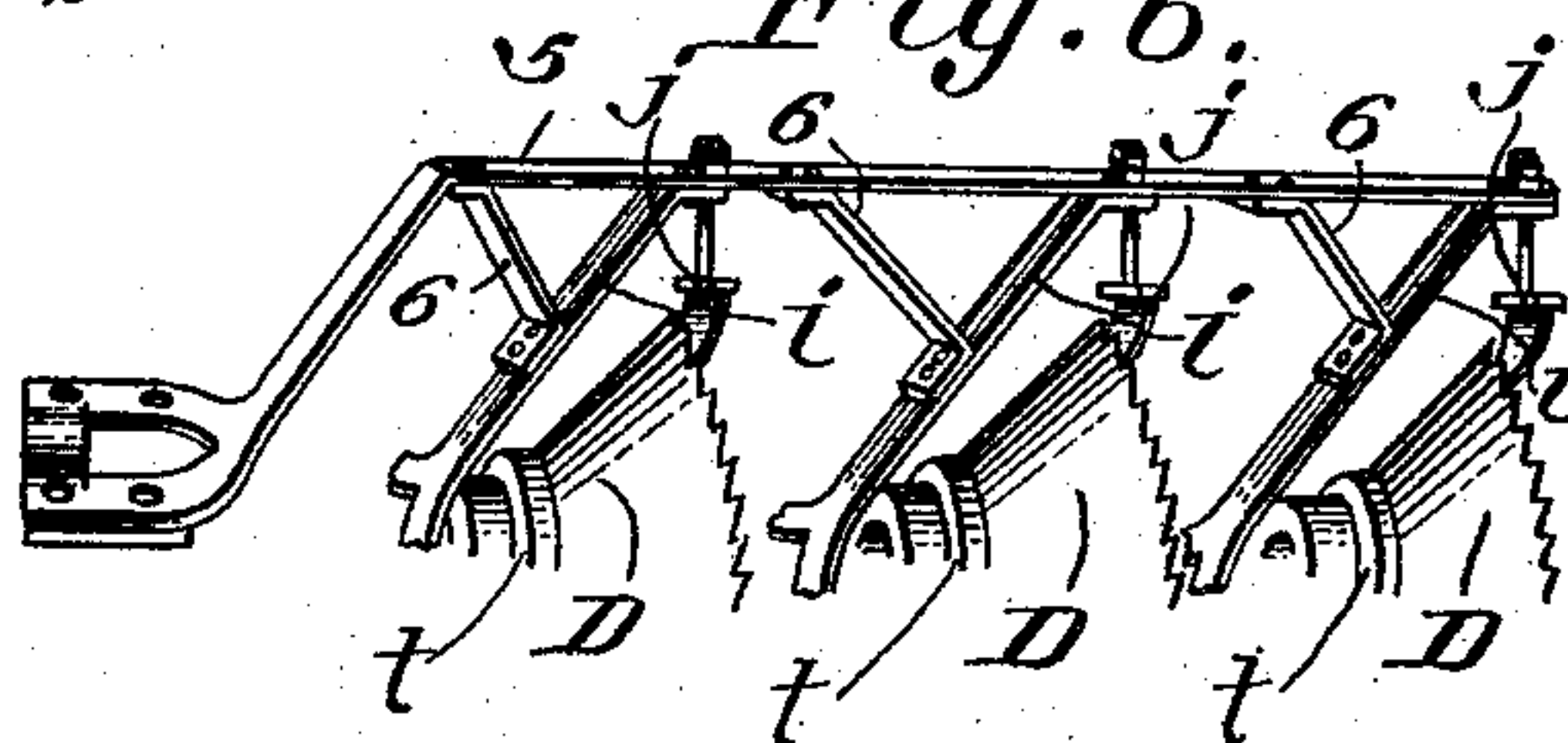


Fig. 3.

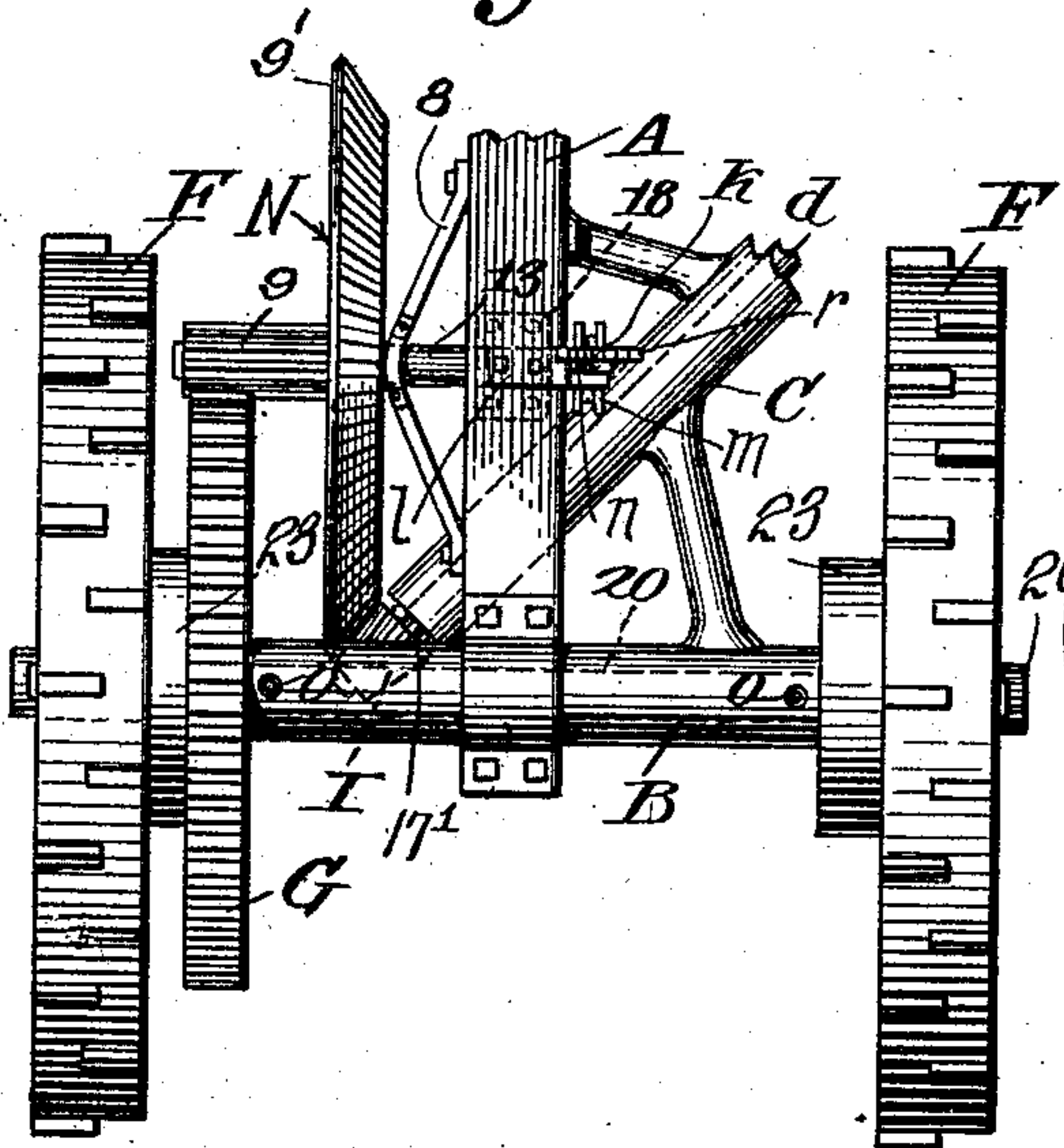
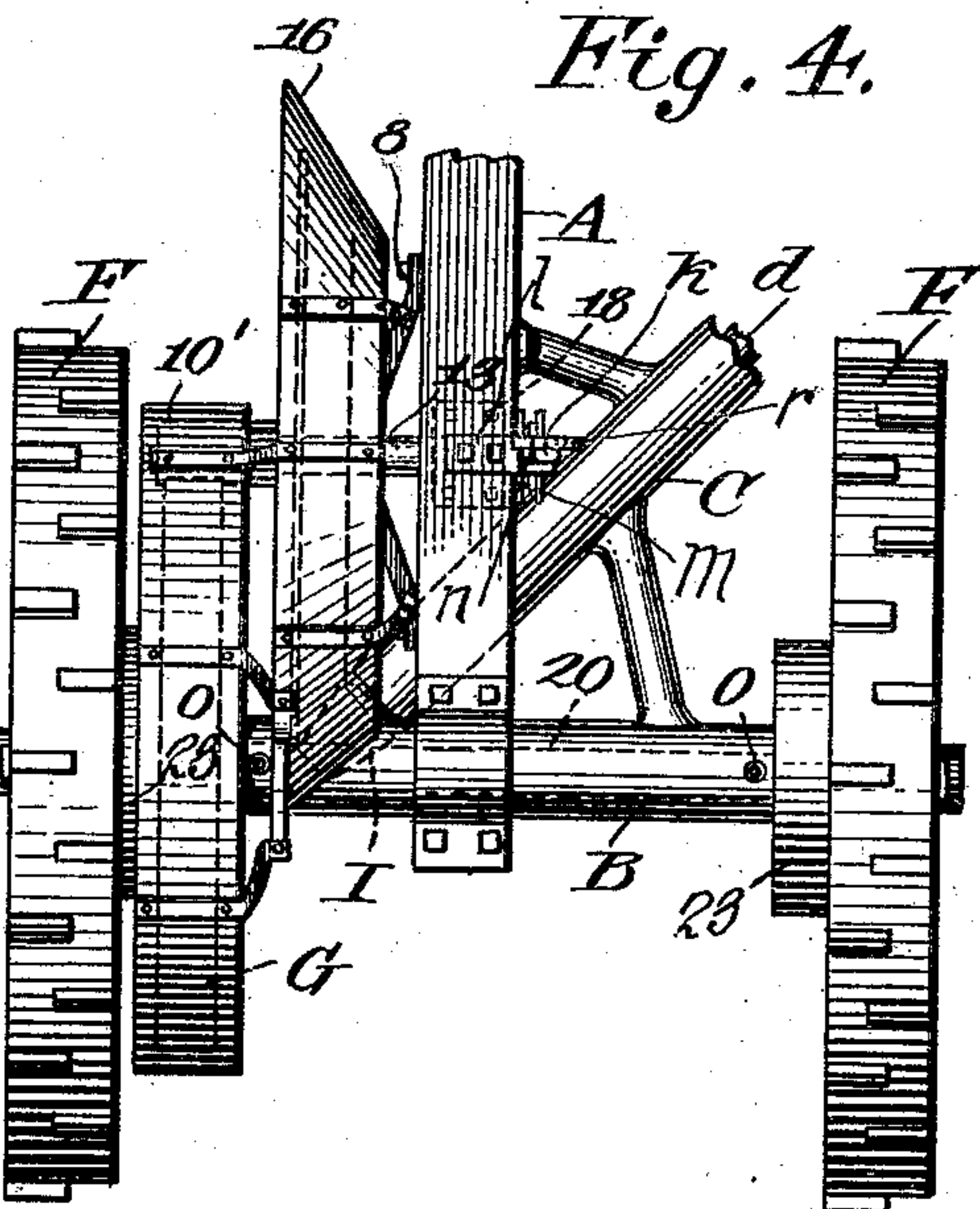


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOSEPH GUSTAVE ROUNTREE, OF BEEVILLE, TEXAS.

ROOT-CUTTING MACHINE.

No. 915,484.

Specification of Letters Patent.

Patented March 16, 1909.

Application filed April 3, 1908. Serial No. 425,046.

To all whom it may concern:

Be it known that I, JOSEPH G. ROUNTREE, a citizen of the United States, residing at Beeville, in the county of Bee, State of Texas, have invented certain new and useful Improvements in Root-Cutting Machines; and I do hereby 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.

The present invention has reference to root-cutting machines, and it resides generally, in the improvement of the construction shown and described in my co-pending application filed August 27, 1907, Serial No. 390,363, these improvements including certain changes in the manner of driving the saw shaft, and the provision of guard casings for the various gears employed, as well as for the saws.

The invention still further resides in the particular construction of the saw guards, and of the frame from which said guards, together with the scrapers, are supported.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which corresponding parts are designated by similar reference characters in the several views.

Of the said drawings, Figure 1 is a plan view of the improved root-cutting machine, showing the various guards in place. Fig. 2 is a fragmental plan view, with the gear guards removed. Fig. 3 is a fragmental plan view showing a modified arrangement of gearing. Fig. 4 is a view similar to Fig. 3, showing the guards in place. Fig. 5 is a side elevation of one of the traction wheels. Fig. 6 is an enlarged perspective view of the supporting frame for the saw guards and scrapers, the saw guards being removed for clearness of illustration. Fig. 7 is an enlarged detail view of the shifting lever and its attendant parts. Fig. 8 is an enlarged transverse section taken on the line 8—8 of Fig. 2. Fig. 9 is an enlarged fragmental section through the sleeve which carries the saw shaft. Fig. 10 is an enlarged sectional view of a modified form of saw.

Referring more particularly to the drawings, A designates the main longitudinal beam of the machine; B a transverse bearing sleeve which is secured to the rear end of said beam and extends on opposite sides

thereof, said sleeve being adapted to support the rear axle 20, which projects therethrough; and C a second bearing sleeve which is connected by ribs with the beam A and sleeve B and supports the saw shaft *d*, whose rear portion extends therethrough, the sleeve B being provided with a pair of oil cups O.

The beam A carries toward its forward end a bearing (not shown) for the squared front axle *a* upon whose cranked ends are mounted the ground wheel *c*, and the inclined furrow opening wheel *b*, as in the construction illustrated in my co-pending application above identified. The rocking movement of the front axle is effected by means of a pair of levers (not shown) provided with spring-pressed dogs adapted for engagement with the segmental racks *h* mounted upon the beam *a*, a detailed description of these elements being unnecessary, inasmuch as they are identical with the corresponding elements shown and described in said application.

The projecting ends of the rear axle 20 have loosely mounted thereon the traction wheels F, the spokes of each wheel carrying spring-pressed pawls 21, each set of pawls being arranged to engage a ratchet wheel 22 rigidly secured to the corresponding axle end, the ratchet wheels being disposed proximal to the inner ends of the hubs of the traction wheels. Each ratchet wheel is inclosed by a cylindrical guard 23 which is attached to the adjacent end of the sleeve B as shown in Figs. 1 and 5. By reason of the engagement of the pawls with the ratchet wheels, it will be apparent that when the machine is in motion, the rotation of the traction wheels will effect the rotation of the rear axle. The rear axle is further provided with a gear G which is rigidly secured thereto and meshes at all times with the pinion member 1 of a combined gear and pinion K, which is mounted upon a transversely-disposed shaft 13 supported in bearings 18 secured to the under face of the beam A. The gear member 1' of this compound gear meshes in like manner, with the pinion member 2 of a smaller compound gear L, whose gear member 2' meshes with the pinion member 3 of a still smaller compound gear M, the compound gears L and M being mounted respectively upon transversely disposed shafts 14 and 15 which are likewise journaled in brackets 19, secured to the under face of the main beam. The member 3' of the com-

pound gear M is beveled, as shown in Fig. 2, and meshes with a beveled pinion I secured to the projecting rear end of the saw shaft *d*. The rotation of the axle, effected by the traction wheels as above described, will thus effect, in turn, the rotation of the saw shaft through the gear G and the compound gears K, L and M, as will be apparent.

The shaft 13 which carries the foremost compound gear is arranged for endwise movement, so as to mesh and unmesh the member 1' of said gear with the member 2 of the gear L, to start and stop the rotation of the saw shaft, the movement of said shaft 13 being effected by means of a lever *k* pivoted intermediate its ends to a strap *l* secured to the beam A. The bifurcated lower end of the shifting lever straddles a collar *m* secured to the adjacent end of the shaft 13, while its upper end carries a spring-pressed dog *n* which engages a rack *r* likewise secured to the strap *l*. Movement of the shifting lever in one direction or the other will thus impart a longitudinal movement to the shaft 13, with a resultant meshing and unmeshing of the member 1' of the gear K with the member 2 of the gear L, as above stated. The member 1 of the gear K, however, has a length sufficient to remain at all times in mesh with the gear G.

The saw shaft is provided with a series of concavo-convex saw disks D which in their preferred form are identical with the disks shown in my previously filed application and therefore, require no extended description, the attachment of the disks to the saw-shaft being effected by means of the cup-shaped plates *s*, and flanged collars *t* which fit respectively against the concave front and convex rear faces of the disks and are connected therewith by bolts, as shown in Fig. 10, the sleeves and collars being likewise bolted directly to the saw shaft.

The inner faces of the saws are engaged by scraper plates *j*, whose reduced stems project upwardly through openings formed in the body portion 5 of a supporting frame which latter is supported upon the saw-shaft and attached to the sleeve C by means of depending arms *i*, whose lower ends terminate in diverging feet, as shown in Fig. 6, said arms being further connected with the frame body 5 by means of braces 6. The upper ends of the arms *i* are bent laterally so as to fit against the under face of the frame body and are provided with openings which register with those formed in said body, thus additionally bracing the scrapers whose stems pass through the pairs of registering openings. The supporting frame further carries a series of guard plates 7, which are located to one side of the corresponding saws and conform partly to the shape thereof. These guards serve to prevent a person or animal from contacting

with and being injured by the saws when the saw-shaft is in motion.

The gear G and the compound gears K and L and M are respectively protected by guards 10, 11 and 12, the guards 10 and 11 being in the form of cylindrical casings which completely inclose the gears G and K, while the guard 12 merely extends across and above the upper portion of the gears L and M. The guard 10 is secured to the sleeve B by means of straps 24 and is further connected by means of a strap 25 with a V-shaped bracket 8 bolted at its ends to the adjacent side face of the beam A, to which bracket, the guard 11 is connected by a strap 26. The guard 12 is secured to the strap 25 above referred to, said strap having likewise fastened thereto, the guard 11. The bracket 8 has a bearing opening formed in its apex through which the shaft 13 extends.

In the modified construction shown in Fig. 3, the compound gears K, L and M are replaced by a single compound gear N whose member 9 meshes with the gear G, the other member 9' of said compound gear being in the form of a beveled gear which meshes with the gear I carried by the saw shaft. The gear N is mounted upon the saw shaft 13. In this form of the invention the gear G and the member 9 of the compound gear N are covered by a cylindrical guard casing 10' similar to the guard 10 above referred to, while the member 9' of said compound gear is incased by a frusto-conical guard 16, as shown in Fig. 4.

The diameter of the axial openings in the members 1 and 9 of the compound gears K and N exceeds that of the shaft 13, so as to provide spaces in which a series of anti-friction rollers 17 are disposed as shown in Fig. 8. The inner faces of the beveled gears I both in the preferred and modified forms of the invention are recessed to form races in which ball bearings 17' are disposed, while the rear end of the sleeve C is likewise recessed to form a mating race (see Fig. 9). If desired, a similar series of bearings may be interposed between the front end of the sleeve C and the adjacent collar *t*.

In the modified form of saw shown in Fig. 10, the disk is constructed in two parts *x* and *x'*, the latter part being in the form of a band whose inner edge is connected with the adjacent edge of the part by a continuous tongue and seat, as indicated by the reference character *y*, the overlapping tongues being bolted together as shown.

The operation of the machine is similar in the main to that of the machine shown in my co-pending application and therefore requires no extended description. In the present instance, however, the traction wheels are loosely mounted upon the ends of the rear axle, which latter is driven by means of the pawl and ratchet construction above

described, the axle being stationary during the backward movement of the machine, the strain upon the gearing being thus relieved to a great extent. The gears are, further-
5 more, completely protected by the guards, while the saw guards not only protect the saws, but also prevent the latter from coming into contact with and injuring a person or animal, while the machine is in motion.

10 What is claimed is:

1. In a root-cutter, in combination, an axle; traction wheels carried thereby; a longitudinal beam connected with the axle; a shaft disposed beneath the beam; means for
15 supporting the shaft; means for rotating said shaft; a series of disk saws carried by said shaft; a frame secured to said shaft; and a series of guards carried by said frame and disposed adjacent the corresponding saws.

2. In a root-cutter, in combination, an axle; traction wheels carried by the axle; a longitudinal beam connected with the axle; a sleeve connected to the beam; a shaft carried by said sleeve and projecting forwardly thereof; a series of disk saws secured to the
25 forward portion of said shaft; means for rotating said shaft; a frame disposed longitudinally of said shaft and connected thereto and to said sleeve; and a series of guards carried by said frame and disposed adjacent
30 the corresponding saws.

In testimony whereof, I affix my signature, in presence of two witnesses.

JOSEPH G. ROUNTREE.

Witnesses:

A. S. JOHNSON,
W. S. BROWN.