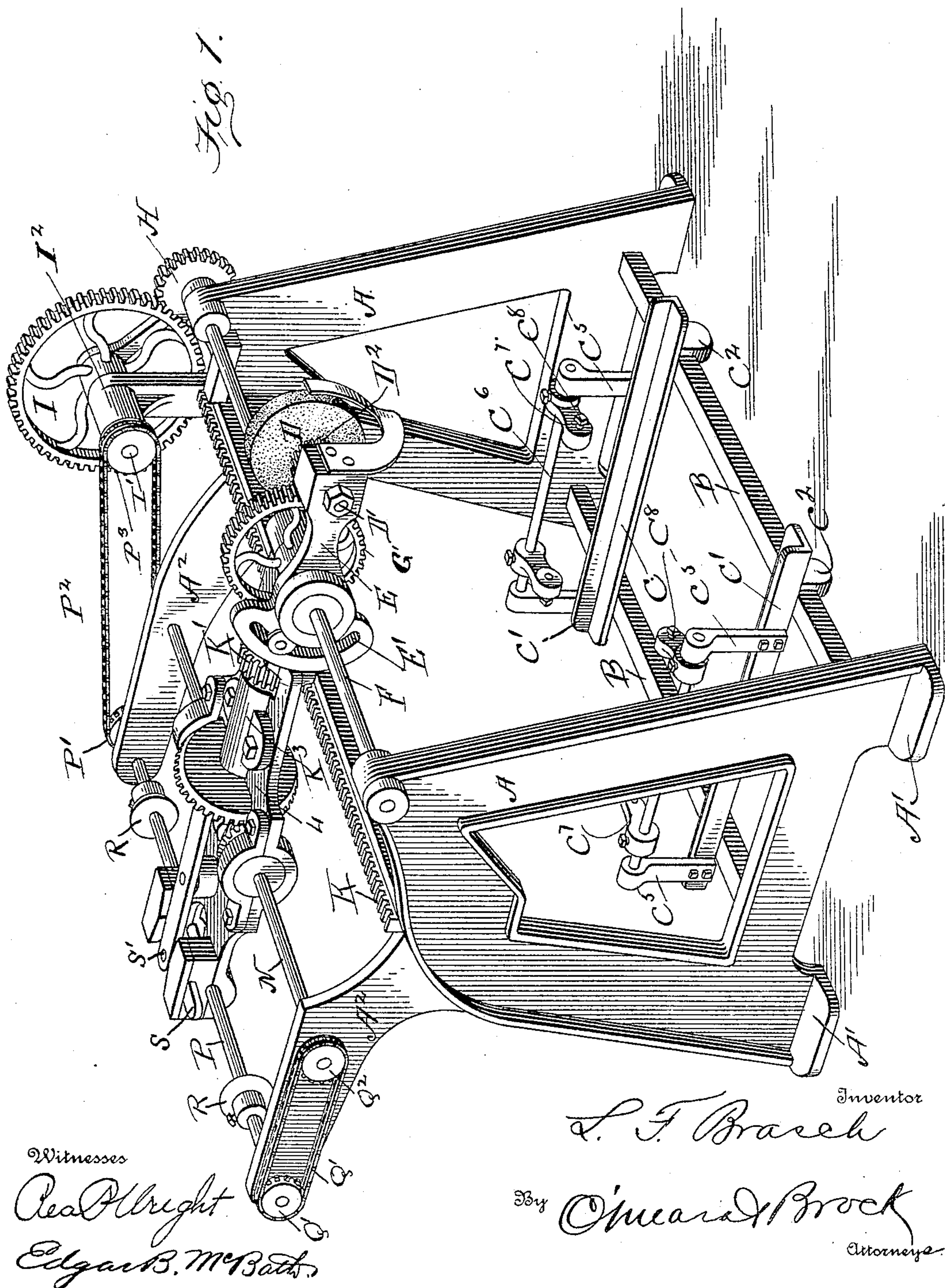


No. 800,975.

PATENTED OCT. 3, 1905.

L. F. BRASCH.
LAWN MOWER GRINDER.
APPLICATION FILED JUNE 28, 1904.

3 SHEETS--SHEET 1.

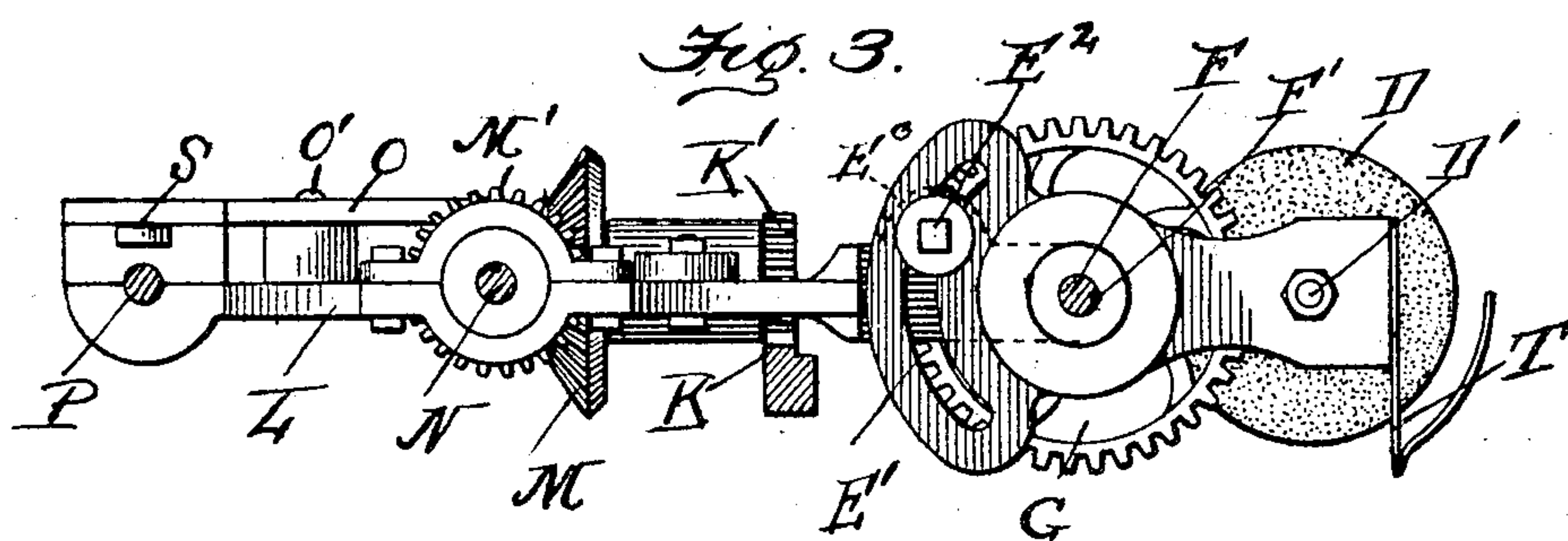
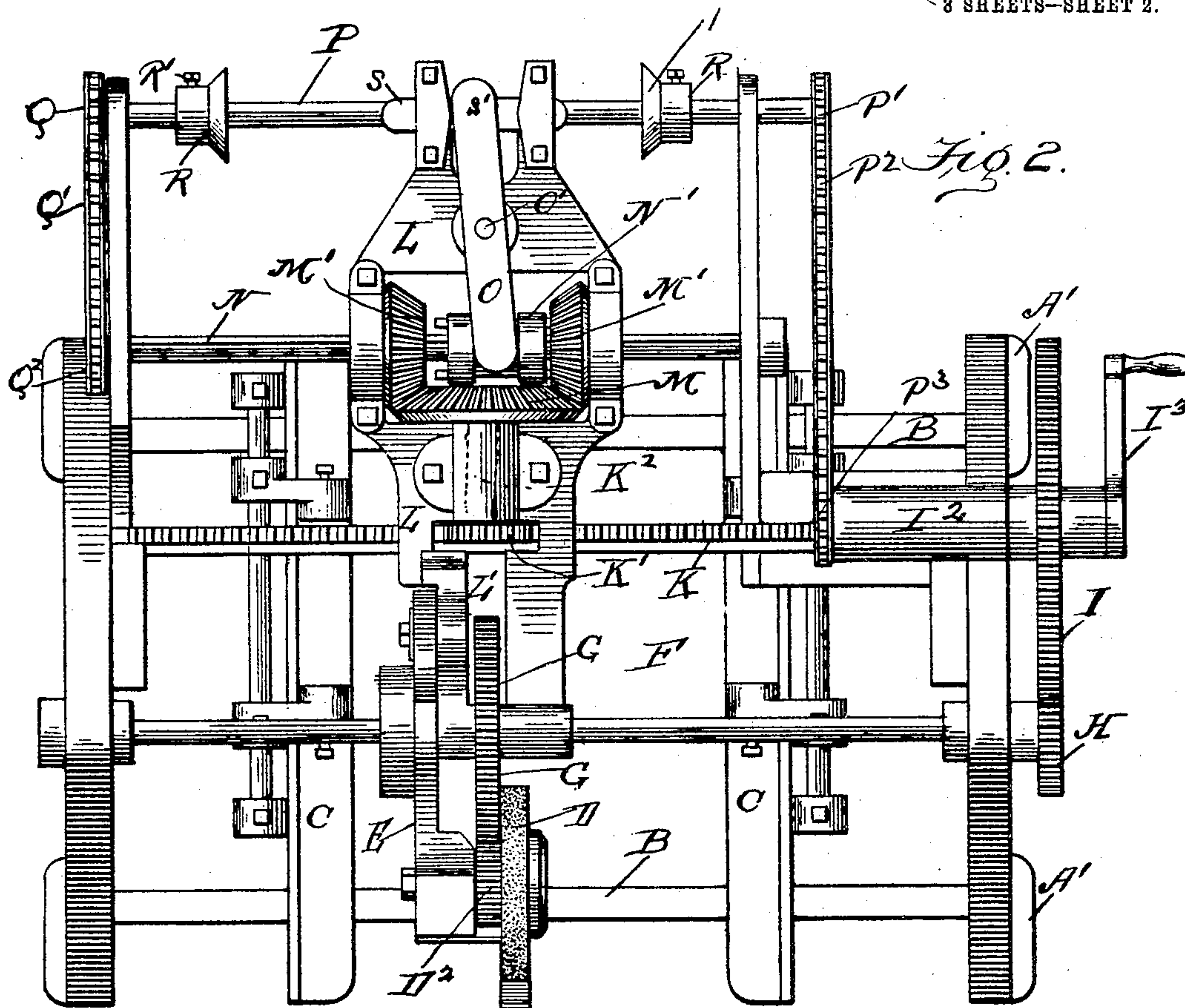


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3 SHEETS—SHEET 2.



Witnesses

Rev. Mr. Wright
Edgar B. McComb.

L. F. Braseh ^{Inventor}

Cineau & Brock
Attorneys

Attorneys

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3 SHEETS—SHEET 3.

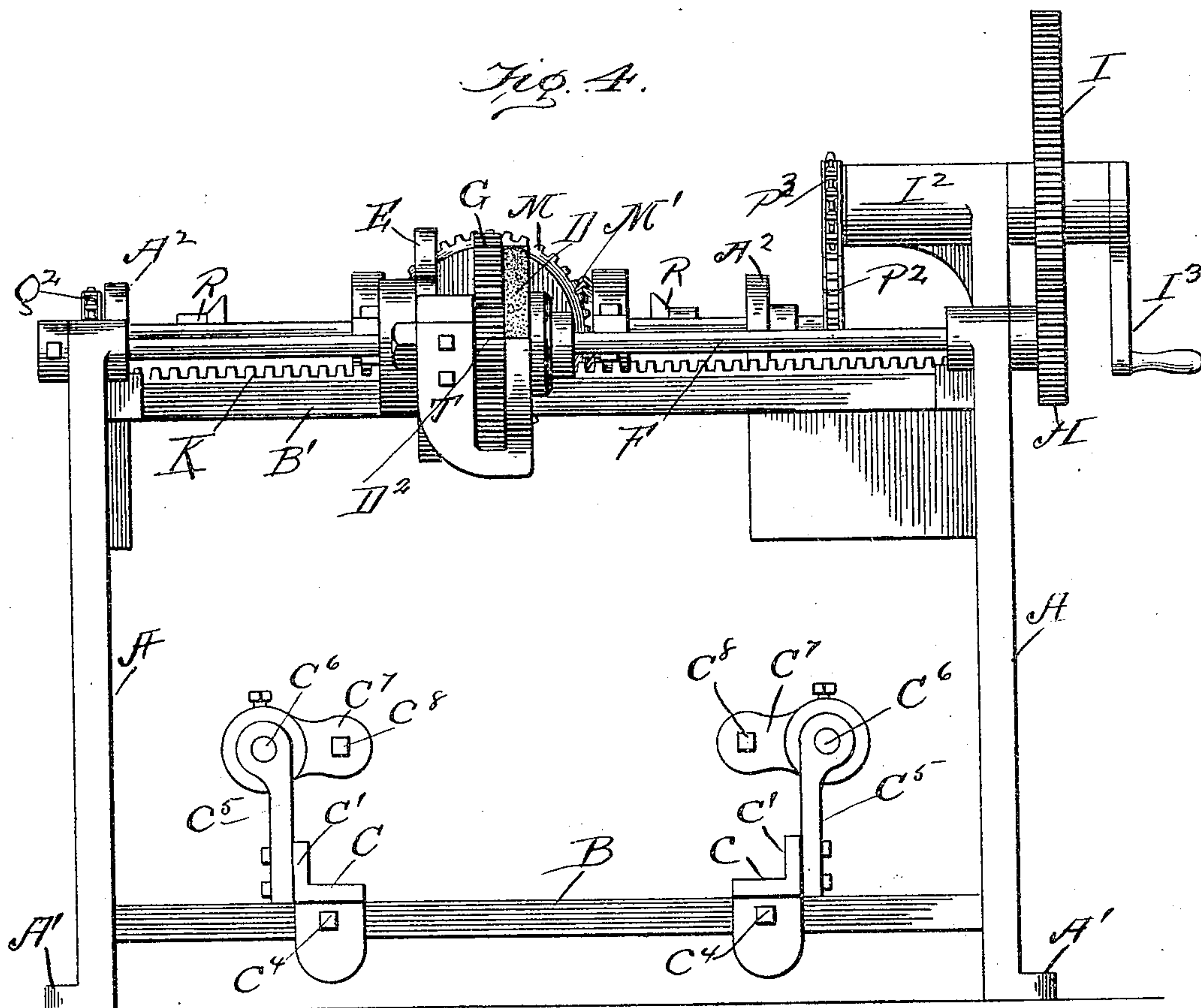


Fig. 5.

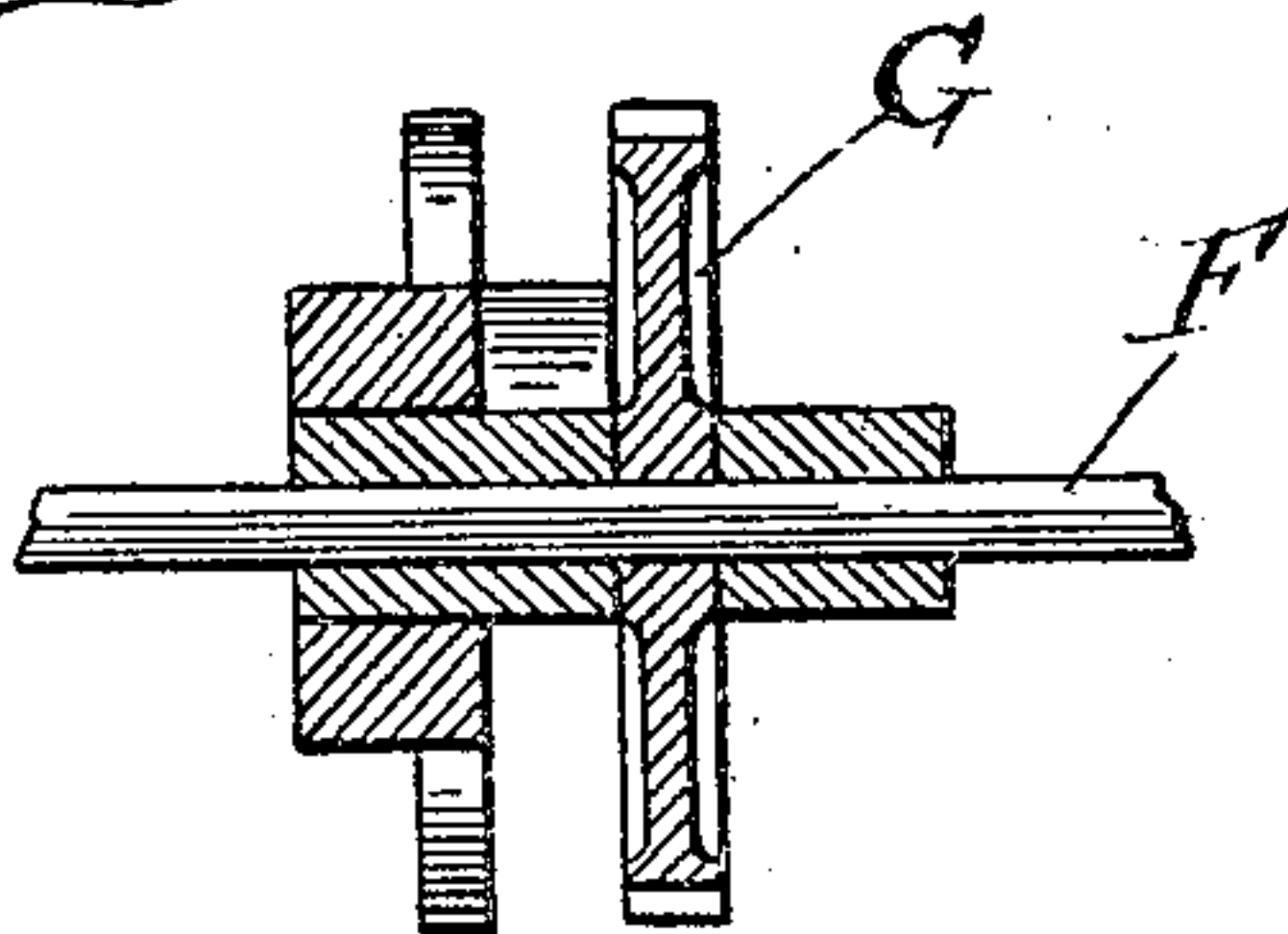
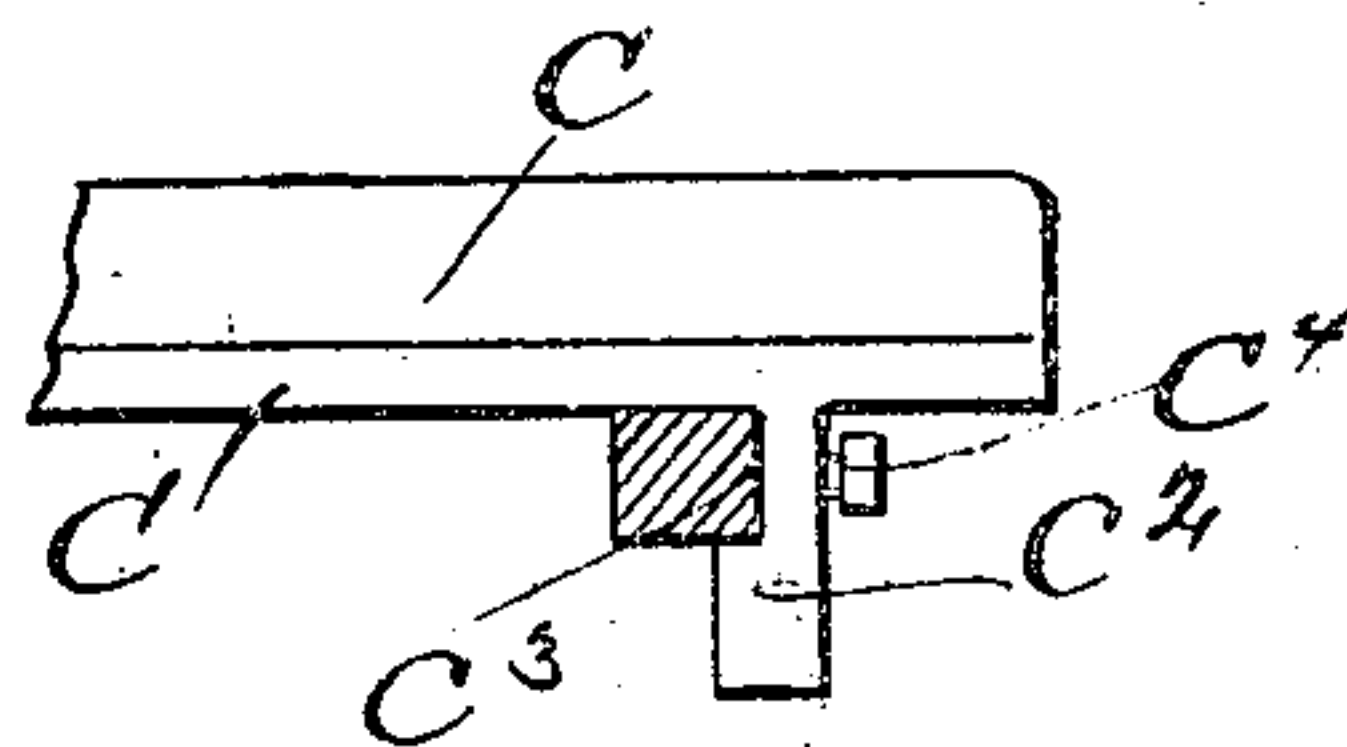


Fig. 6.



Witnesses

Rea P. Wright
Edgar C. McBath

L. F. Brasch ^{Inventor}

By *Oliver D. Brock*
^{Attorney}

UNITED STATES PATENT OFFICE.

LOUIS F. BRASCH, OF YONKERS, NEW YORK.

LAWN-MOWER GRINDER.

No. 800,975.

Specification of Letters Patent.

Patented Oct. 3, 1905.

Application filed June 28, 1904. Serial No. 214,530.

To all whom it may concern:

Be it known that I, LOUIS F. BRASCH, a citizen of the United States, residing at Yonkers, in the county of Westchester and State of New York, have invented a new and useful Improvement in Lawn-Mower Grinders, of which the following is a specification.

This invention relates generally to grinding-machines, and more particularly to one especially adapted for grinding the blades of mowing-machines or lawn-mowers, the object being to provide an exceedingly simple and highly-efficient construction of machine by means of which the blades of a lawn-mower can be quickly and easily sharpened without removing the same from the machine.

Another object of the invention is to provide a grinding-machine of this kind in which the grinding-wheel will be moved longitudinally along the blade while being sharpened and one in which the direction of movement will be automatically reversed when the grinding-disk has traversed the entire length of the blade.

Another object of the invention is to provide for regulating the reversing mechanism, whereby the movement of the grinding-wheel can be checked and reversed at any point desired.

Another object of the invention is to provide for the adjustment of the clamping means and also for the adjustment of the grinding-wheel, so that the machine can be utilized for grinding various sizes of lawn-mower blades.

With these various objects in view and certain other objects, as will hereinafter appear, the invention consists in the novel features of construction, combination, and arrangement, all of which will be fully described hereinafter and pointed out in the claims.

In the drawings forming a part of this specification, Figure 1 is a perspective view of a machine constructed in accordance with my invention. Fig. 2 is a top plan view of the same. Fig. 3 is a detail sectional view on the line 3 3 of Fig. 2. Fig. 4 is a front view of the machine. Fig. 5 is a detail section on the line 5 5 of Fig. 3. Fig. 6 is a detail view showing the manner of securing one of the flanged rest-bars.

In carrying out my invention I employ a main frame comprising the upright side pieces A, connected by the bottom bars B and top bar B'. The side pieces are provided with suitable feet A' in order to provide a

firm base for the machine. Arranged upon the bottom bars B and movable thereon are the supporting-bars C, having vertical flanges C'. These rest-bars form the support for the lawn-mower while the blades thereof are being sharpened, and the flanges C' act as guides and hold the mower in its proper position. Each rest-bar C has a depending leg C² adjacent its end, which leg is grooved at C³ to receive the bottom bar B, said depending leg being arranged to embrace the outer sides of said bars, as most clearly shown, and binding-screws C⁴ securely fasten the rest-bars in position after they have been adjusted to the proper place. Each flanged rest-bar has the brackets C⁵ connected thereto, each pair of brackets supporting a shaft C⁶, to which the adjustable fastening-arms C⁷ are connected, said arms carrying binding-screws C⁸ at their outer ends for the purpose of securely fastening or binding the mower in its proper position.

After the lawn-mower has been properly secured to the base of the main frame by the mechanism just described the blades are ready to be operated upon by the grinding-wheel, and I shall now proceed to describe the mechanism for operating the said grinding-wheel.

The grinding-wheel D, which is preferably of emery, is mounted upon a shaft D', carried by an adjustable arm E, said arm being mounted to turn freely upon the rotary shaft F and also to move longitudinally thereon. This rotary shaft F is journaled in suitable bearings arranged at the upper ends of the side pieces A. This shaft F has a longitudinal groove F', in which travels a spline or feather of the gear-wheel G, mounted also upon said shaft and adapted to rotate therewith and also to move longitudinally upon the said shaft F, said gear-wheel G meshing with a pinion D², arranged upon the shaft D', carrying the emery-wheel D, and by rotating the gear-wheel G the emery-wheel is rotated, and it will be noted that the pinion D² is considerably smaller than the gear-wheel G, thereby providing for a proportionate increase in the speed of the emery-wheel.

The shaft F is rotated by means of a pinion H, mounted upon the end thereof and meshing with the large gear I, mounted upon a shaft I', journaled in a bearing I² and provided with a crank I³ or any other means for driving said gear I. Thus it will be seen that by turning the crank I³ and driving the pin-

ion I the shaft F will be rotated, and consequently the emery-wheel D.

A horizontal rack-bar K is arranged upon the upper side of the top bar B', and meshing
 5 with and traveling upon said rack-bar is a pinion K', which is mounted upon the forward end of a shaft K², journaled in a suitable bearing K³, arranged upon the movable carriage L, the opposite end of said shaft K² hav-
 10 ing a beveled gear M mounted thereon and meshing with beveled gears M', mounted loosely upon the grooved shaft N, which is journaled in suitable bearings carried by the horizontal arms A², projecting rearwardly
 15 from the side pieces A, and between the said gears M' is a double clutch N', which is splined upon the shaft N, and consequently rotates therewith and is adapted to be shifted back and forth by means of a lever O, pivoted at
 20 O', upon the rear portion of the carriage L, the rear end of said carriage being adapted to slide freely upon a rotary shaft P, journaled upon the rear ends of the arms A² and receiving its motion from a sprocket-wheel P',
 25 around which travels the chain P², which in turn is driven by the sprocket P³, mounted upon the end of the shaft I'. Upon the opposite end of the shaft P is a sprocket Q, driving the chain Q', which operates the sprocket
 30 Q², mounted upon the end of the shaft N, which shaft, it will be remembered, operates the double clutch N', which is shifted back and forth by the lever O, so as to throw one or the other of the beveled gears M' into en-
 35 gagement with the shaft N, and as the gears M' are both in engagement with the beveled gear M it is obvious that the moment one of the gears M' becomes fast with the shaft N it will cease to be an idler and will serve to ro-
 40 tate the gear M in the required direction, thereby rotating the pinion K', which engaging the rack-bar will feed the carriage L in the proper direction. The forward end of the carriage travels upon the shaft F and is
 45 bifurcated, as shown at L', to receive the gear-wheel G. Thus it will be seen that by turning the crank and driving the large gear I the emery-wheel D is rotated, and, furthermore, the carriage carrying said wheel is
 50 caused to travel in the proper direction through the medium of the rack and pinion, and in order to automatically shift the lever O whenever the carriage has moved the proper distance in one direction I employ collars R,
 55 mounted upon the shaft P and adjustable by means of the set-screws R'. These collars are adapted to contact with the projecting end of a slide S, mounted at the rear end of the carriage and pivotally connected at S' to the rear
 60 end of the lever. Thus it will be seen that as the carriage moves to the left in Figs. 1 and 2 the projecting end of the slide will contact with the adjacent collar R and immediately shift the lever O, so that the double clutch N' is disengaged from the beveled gear M' at the

right and brought into engagement with the beveled gear M' at the left, thereby reversing the travel of the carriage.

In order to render the arm E adjustable, so as to enable the operator to adjust the emery-
 70 wheel D to any desired point, I provide the rear end of the arm E with a curved slot E', said curve being struck upon an arch the center of which is the center of the shaft F. A binding-screw E² passes through this slot E' and
 75 works into a boss or enlargement E³, formed upon the forward end of the carriage. T indicates a guard attached to the end of the arm carrying the emery-wheel.

It will thus be seen that I provide an ex-
 80 ceedingly simple and highly efficient construction of machine by means of which the lawn-mower blades can be quickly and easily sharpened without removing them from the ma-
 85 chine, and it will also be noted that a continuous rotary movement of the power-shaft is all that is necessary for the complete operation of the machine, inasmuch as the said machine can be set to automatically reverse the
 90 grinding-wheel at any desired points, so that the said grinding-wheel not only moves back and forth the desired distance, but will also automatically reverse as soon as the limit of the line of travel in a certain direction is
 95 reached.

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

1. The combination with the main frame having the longitudinal bottom bars, of the
 100 adjustable flanged rest-bars, the brackets carried thereby, the shaft mounted in the brackets, and the adjustable arms arranged upon the shaft, together with means for adjustably securing the rest-bars to the bottom bars as
 105 set forth.

2. In a grinding-machine, the combination with a main frame of a rotary shaft journaled therein, means for rotating said shaft, an arm
 110 adjustable upon said shaft, a grinding-wheel carried at the end of said arm and provided with a pinion, a gear-wheel mounted upon the rotary shaft, and adapted to rotate there-
 115 with, and move longitudinally thereon, together with means for moving the said gear and arm and also means for locking the arm in its adjusted position as set forth.

3. In a grinding-machine, the combination with the main frame having a rack-bar, of the
 120 carriage movable upon the main frame, a rotary shaft carried by the carriage, a pinion carried at the forward end of said shaft, and meshing with the rack-bar, a beveled gear arranged upon the rear end of said shaft, the
 125 beveled gears meshing with said first-mentioned beveled gear, a rotary shaft journaled in the frame and passing through the said last-mentioned beveled gears, a double-acting clutch arranged upon the shaft, between said
 130 gears, together with means for rotating the

shaft passing through the gears, and also means for shifting the clutch as set forth.

4. In a grinding-machine, the combination with the main frame having a rack-bar, of the carriage movable upon the frame, and carrying the pinion and means for operating said pinion, and a double-acting clutch, a lever for shifting said clutch, a slide connected to said lever and a rotary shaft carrying collars adapted to contact with the ends of said slide, together with means for rotating said shaft, substantially as described.

5. In a machine of the kind described, the combination with the main frame, having the rack-bar at the top, of the adjustable rest-bars provided with means for securing a lawn-mower, a carriage movable upon the main frame and carrying a shaft having a pinion at one end and a beveled gear at the other end, a rotary shaft passing through the forward end of the carriage, an arm adjustably mounted upon said rotary shaft and provided with means for adjustment, a grinding-wheel car-

ried by said arm and provided with a pinion, a gear-wheel mounted upon the rotary shaft and adapted to mesh with said pinion, a rotary shaft passing through the center of the carriage, and having idler beveled gears mounted thereon, adapted to mesh with the beveled gear, mounted upon the end of the shaft carried by the carriage, a clutch mounted to turn with, and slide upon, the rotary shaft, passing through the idler-gears, a lever pivoted upon the carriage and adapted to move the said clutch, a slide connected to the rear end of the lever, a rotary shaft passing through the rear end of the carriage, collars mounted upon said shaft and adapted to contact with the ends of the slide, together with means for rotating all the said shafts, whereby the grinding-wheel is rotated, the carriage fed and reversed, substantially as described.

LOUIS F. BRASCH.

Witnesses:

JOHN FOLEY,

ROBERT FERGUSON.