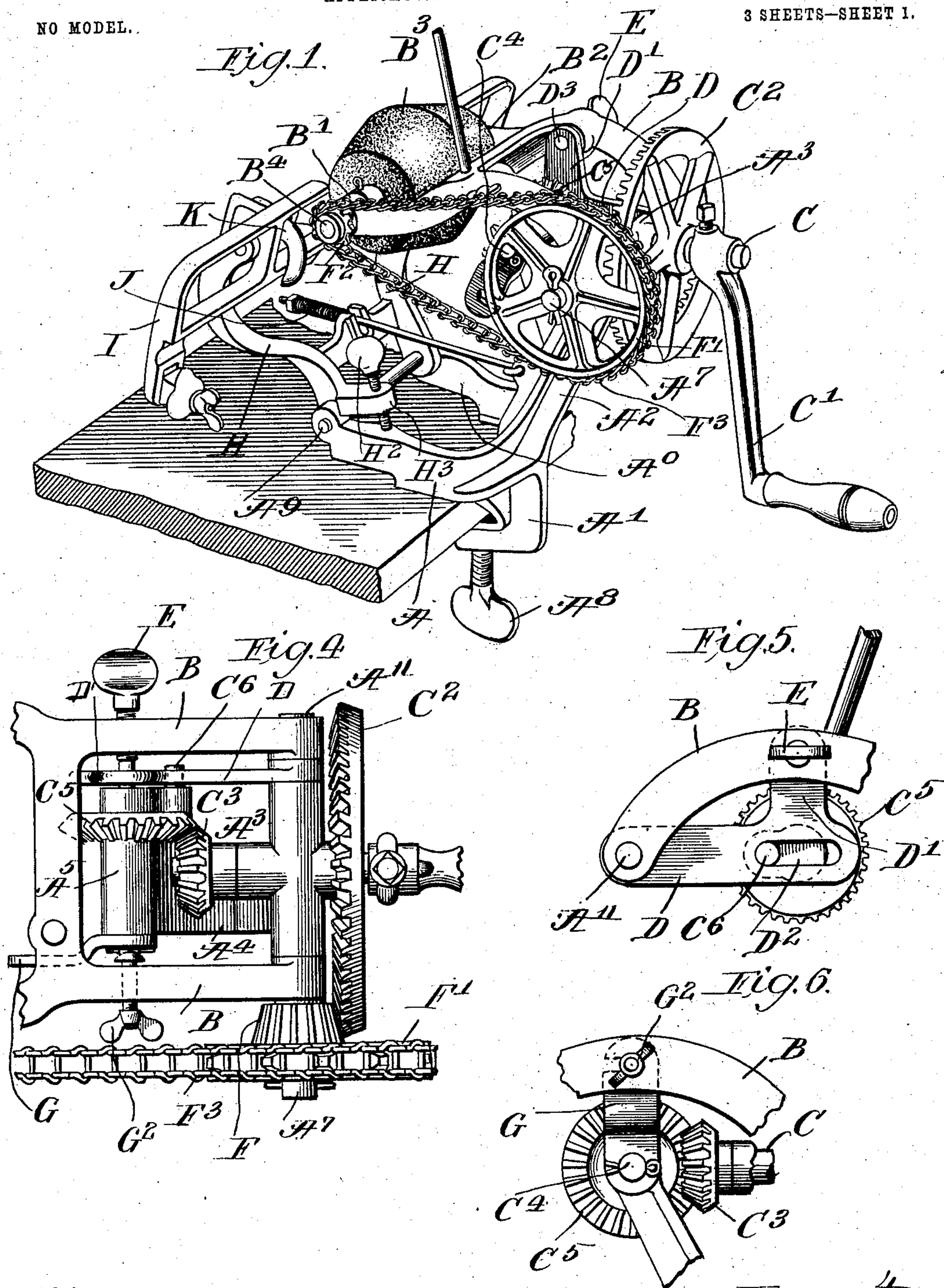


J. W. LATIMER.
KNIFE GRINDER.

APPLICATION FILED JUNE 9, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses
Edward C. Barrett
J. C. Warner

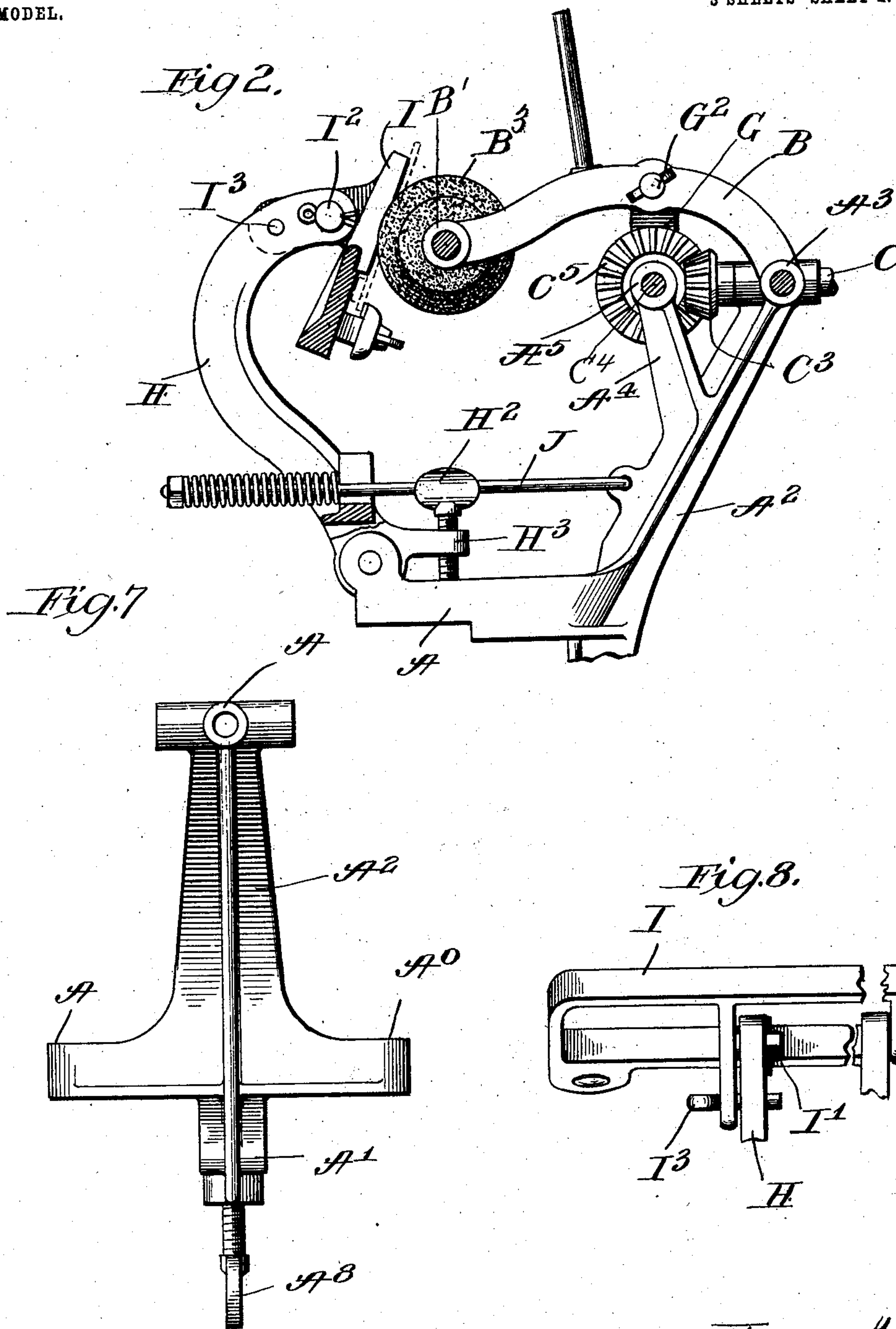
Inventor
John W. Latimer
By John F. Steward
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3 SHEETS—SHEET 2.

NO MODEL.



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No. 741,681.

PATENTED OCT. 20, 1903.

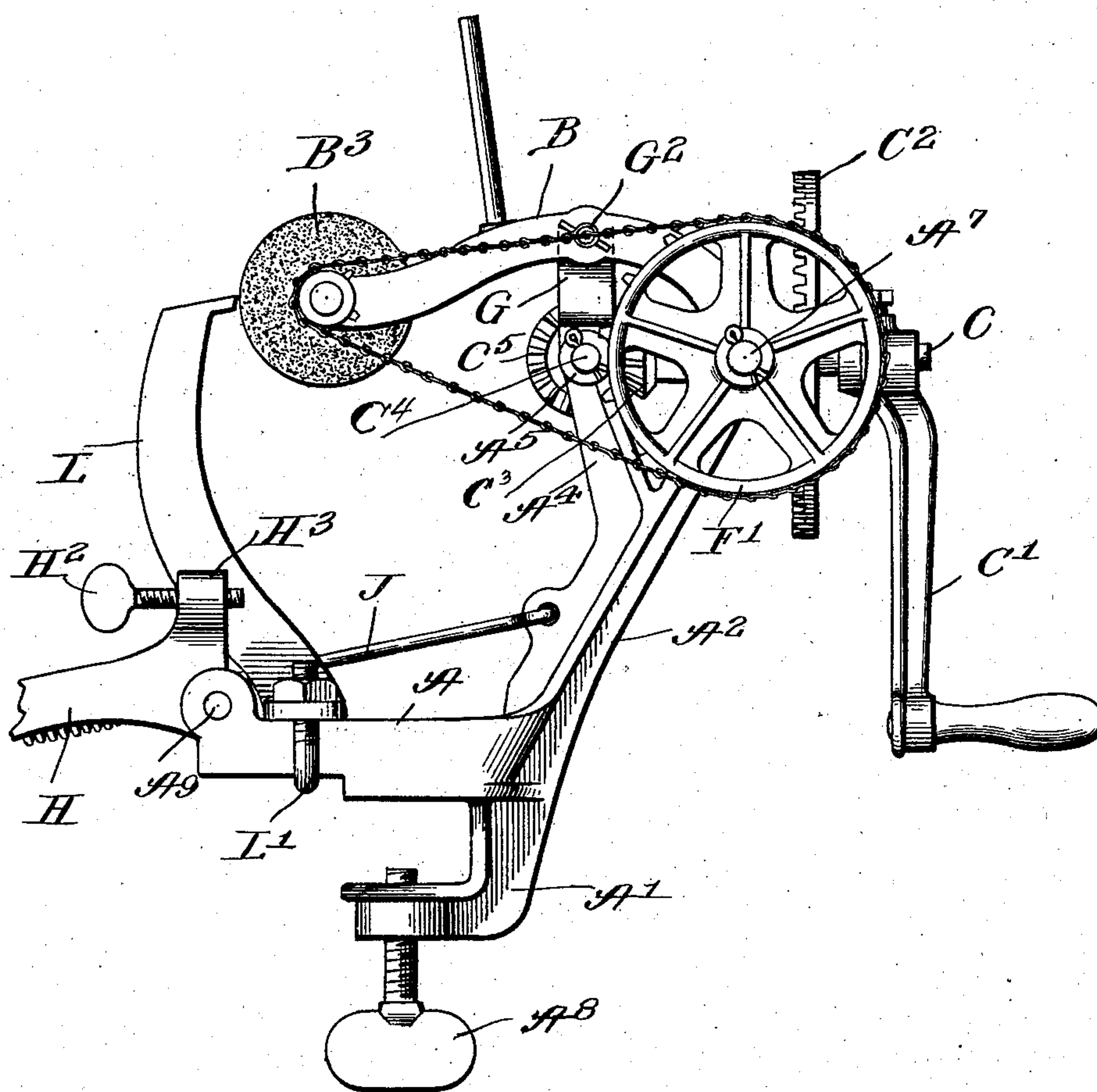
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3 SHEETS—SHEET 3.

Fig. 3



Witnesses:

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J. C. Warner

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UNITED STATES PATENT OFFICE.

JOHN W. LATIMER, OF CHICAGO, ILLINOIS, ASSIGNOR TO DEERING HAR-
VESTER COMPANY, OF CHICAGO, ILLINOIS.

KNIFE-GRINDER.

SPECIFICATION forming part of Letters Patent No. 741,681, dated October 20, 1903.

Application filed June 9, 1902. Serial No. 110,948. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. LATIMER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Knife-Grinders, of which the following is a full description.

This invention relates to machines for sharpening cutting-tools, but is especially adapted to grinding mower-knives. It has for its object the improvement in the general construction of this class of machines and the combining of parts whereby the grinder is rendered either automatic or hand-operated at will. The rotating grinding-wheel can have an oscillatory movement relative to the knife on which it is operating, or the knife may be given a rocking motion by hand, which will present all parts of the edge of a section or sections to the rotating grinding-wheel, even when the latter is so locked as to prevent it from oscillating. If desired, a grinding-wheel of different contour in lieu of a double-cone wheel may be substituted when the axis of the latter is made fixed and an auxiliary rest attached instead of the usual one that clamps the harvester-knife. A combination of features is thus presented which collectively will enable the machine to grind sickles, gum saws, or sharpen cutting-tools generally.

In the accompanying drawings, Figure 1 is a perspective view of the complete machine, showing it clamped to a rigid table, but may be considered to be a mower-wheel. Fig. 2 is a side elevation, partly in section, of the machine partially stripped of the gearing and sprocket-wheels. Fig. 3 is a side elevation of the same, showing the knife-supporting frames detached from spring-fastening and dropped back, the auxiliary rest clamped in place, and the grinding-wheel frame locked in position. Fig. 4 is a fragmentary plan of the machine, showing the arrangement of gears and pinions which impart rotary motion to the grinding-wheel and an oscillatory motion to the frame on which the grinding-wheel is mounted. Fig. 5 is a side elevation of a portion of the frame which bears the grinding-wheel with the lever and its connections by means of which the frame is oscillated. Fig. 6 is an elevation of the same por-

tions of the grinding-wheel frame viewed from the opposite side, showing the lever by which the wheel-supporting frame is held in a fixed position. Fig. 7 is an end elevation of the main frame; and Fig. 8 is a portion of the secondary frame, the knife-holding bracket showing manner in which the two are locked together.

A and A⁰ are the two limbs forming the base of the main frame.

A' is a bracket extending downward and in the same direction as the limbs A and A⁰ and receiving a thumb-screw A⁸, by which the main frame is secured to the mower-wheel, table, or other fixed support.

A² is the portion of the main frame extending upwardly and dividing into two portions, one of which forms the bearing A³ for the motor-crank shaft and stud-supports for the grinding-wheel frame and the other portion A⁴ extending upward and to a point in line with the bearing A³, forming the bearing A⁵. It is thus seen that all of these bearings are integral.

In bosses on the bearing A³ are secured the studs A⁷ and A¹¹, on which pivots the grinding-wheel frame B. On the free end of the frame B in the bearings B' and B² is journaled the shaft of the grinding-wheel B³. In the bearing A³ is the crank-shaft C, to which is secured the crank C', the bevel-gear C², and the bevel-pinion C³. In the bearing A⁵ is the shaft C⁴, to which is secured the bevel-gear C⁵. Eccentrically inserted in the bevel-gear C⁵, Fig. 5, is the pin C⁶. Sleeved on the stud A¹¹ is the longitudinally-slotted arm D, Fig. 5, with a lateral extension D' at its outer end. The slot D² in the arm D engages with the pin C⁶ in the bevel-gear C⁵, and in the lateral extension D' of the arm D is a hole D³, adapted to receive the thumb-screw E, which passes through the bracket B, Figs. 1 and 5. On the stud A⁷ also journals the bevel-pinion F and the sprocket-wheel F', the two being concentric, rigidly connected or preferably integral, and the pinion meshing with the bevel-gear C².

Secured to the shaft B⁴ of the grinding-wheel B³ is the small sprocket-wheel F², so placed relative to the sprocket-wheel F' that the chain F³ may be passed around them. Pivotaly at-

tached to the shaft C⁴ is the hook-link G, Figs. 4 and 6, attachable to or detachable from the frame B through means of the bolt and wing-nut G².

5 Pivotaly attached by a rod A⁹ to the lugs on the end of the limbs A and A⁰, which form the base of the grinder-frame, is the secondary frame H, to which is secured the bracket I, to which in turn is clamped and held a
10 mower-knife while being ground. The secondary frame H and the bracket I, united by means which may render the connection either flexible or rigid, as hereinafter explained, and jointly supporting the mower-knife being op-
15 erated upon, are held yieldingly in working position by the spring-rod J, attached to the main frame of the grinder with the free end, which takes the spring, lying in a slot in the frame H. The thumb-screw H², received by
20 the lug H³ on the secondary frame H, provides a forward stop for and also means of adjusting the position of the knife-holding device relative to the grinding-wheel. The bracket I is normally secured rigidly to the
25 secondary frame H by means of the pin-bearings I¹ and I², one of which is shown in Fig. 8, and a cotter I³. When the latter is removed, the connection is rendered flexible, pivoting on the pins I¹ and I².

30 K is a clamp, Fig. 1, serving to securely hold the sickle or knife being operated upon to the bracket I.

L is an attachable rest that may be secured to the base of the grinder-frame by means of
35 the hook-bolt L', in which case the secondary frame H and bracket I are disengaged from the spring-rod J and allowed to drop back to a position in which it will not interfere with the rest, as shown in Fig. 3.

40 My machine, constructed as hereinbefore set forth, is operated as follows: If the grinding-wheel frame is to be permitted to oscillate automatically after clamping the sickle or knife in the frame I and securing it with
45 the clamp K, then preparatory to the beginning of the operation the hook-link G, Fig. 1, is detached from the frame B by loosening the wing-nut G², thus allowing the hook-link to move to an inoperative position. Further
50 than this, also, the thumb-screw E should be advanced until its end enters the hole D³ in the extension D' of the arm D. When thus engaged and the crank C² turned, an oscillatory movement will be imparted to the
55 grinding-wheel frame through means of the arm D, acted upon by the pin C⁶ in the gear-wheel C⁵. This oscillatory movement of the wheel-carrying frame brings the rotating grinding-wheel to act along the cutting edge
60 of the section, while the knife-sections themselves remain practically stationary, the spring-rod J insuring any desired degree of pressure between the surface of section and grinding-wheel. If instead it is desired to
65 manipulate the sickle being operated upon by hand and have the axis of the rotating grinding-wheel remain fixed, then the thumb-

screw E in the frame B is turned until its end is disengaged from the arm D, thus disconnecting the grinding-wheel frame from
70 any moving part of the machine. The frame is then secured in position and held by swinging the hook-link G into engagement with the bolt having the wing-nut G² and clamping it there. Upon withdrawing the cotter-pin I³
75 the knife-bearing bracket I will then be free to swing on its pin-bearings I¹ and I². The spring-rod J, as before, holding the sickle against the grinding-wheel, the operator can bring any part of the sickle-section into con-
80 tact with the said grinding-wheel or grind on one point, as is often desired in order to remove gaps or nicks in the sickle-section. In grinding or sharpening other tools or instru-
85 ments the spring-rod J is disengaged from the slot in the secondary frame H, and the said frame H and bracket I are allowed to drop back, as shown in Fig. 3. The rest L is clamped to the base of the frame A by
90 means of the hook-bolt L', (shown in same figure,) thus adapting the machine to miscellaneous grinding.

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

1. In a knife-grinder, a main frame having
95 motor-gearing thereon, a grinding-wheel frame pivoted to the said main frame coaxially with the gearing from which motion is imparted to the grinding-wheel, a crank-and-slot device operatively connected with the
100 driving mechanism of the machine and adapted to impart automatic oscillatory motion to the grinding-wheel frame, and means independent of the said crank-and-slot device for sustaining the said grinding-wheel
105 frame in a fixed position at will, substantially as described.

2. In a knife-grinder, a main frame having
110 motor-gearing thereon, a grinding-wheel frame pivoted to the said main frame coaxially with the gearing from which motion is imparted to the grinding-wheel, a detachably-constructed crank-and-slot device operatively connected with the driving mechanism of the
115 machine and adapted to impart automatic oscillatory motion to the grinding-wheel frame, and means independent of the said crank-and-slot device for sustaining the said grinding-wheel frame in a fixed position at will, sub-
120 stantially as described.

3. In a knife-grinder, a main frame having
125 motor-gearing thereon, a grinding-wheel frame pivoted to the said main frame coaxially with the gearing from which motion is imparted to the grinding-wheel, and an arm pivoted coaxially with the pivotal bearing of the said oscillating grinding-wheel frame, the said arm being provided with a longitudinal slot at its free end adapted to engage
130 with and be actuated by a stud secured to a moving part of the driving mechanism, and the said arm further provided at its free end with means for engaging it with and actuating the said oscillatory grinding-wheel frame,

and independent means for rigidly securing, at will, the said oscillatory grinding-wheel frame to the said main frame, all combined substantially as described.

5 4. In a knife-grinder, a main frame having the motor-gearing thereon, a grinding-wheel frame pivoted to the said main frame coaxially with the gearing from which motion is imparted to the grinding-wheel, means for
10 imparting automatic oscillatory motion to the grinding-wheel frame, means independent of the said means for imparting oscillatory motion to the grinding-wheel frame for sustaining the said frame in a fixed position, at
15 will, and an elastically-held knife-bracket-supporting frame, the knife-bracket pivotally supported upon said frame, said pivoted knife-bracket adapted to be locked upon the said elastically-held frame, substantially as described.
20

5. In a knife-grinder, a main frame, a grinding-wheel frame having a grinding-wheel mounted thereon, a secondary frame pivoted

to the said main frame and carrying a knife-holding bracket, said knife-holding bracket 25 elastically held in contact with the grinding-wheel, and means for unlatching the knife-holding bracket from the main frame and permitting it to swing out of the way for the purpose of grinding other tools, substantially as 30 described.

6. In a knife-grinder, a main frame having the motor-gearing thereon, a grinding-wheel frame pivoted to the said main frame coaxially with the gearing from which motion is 35 imparted to the grinding-wheel, means for rigidly holding said grinding-wheel frame in a fixed position at will, an elastically-held knife-bracket-supporting frame, and the knife-bracket pivotally supported upon said 40 frame substantially as described.

JOHN W. LATIMER.

In presence of—

J. C. WARNES,
EDWARD R. BARRETT.