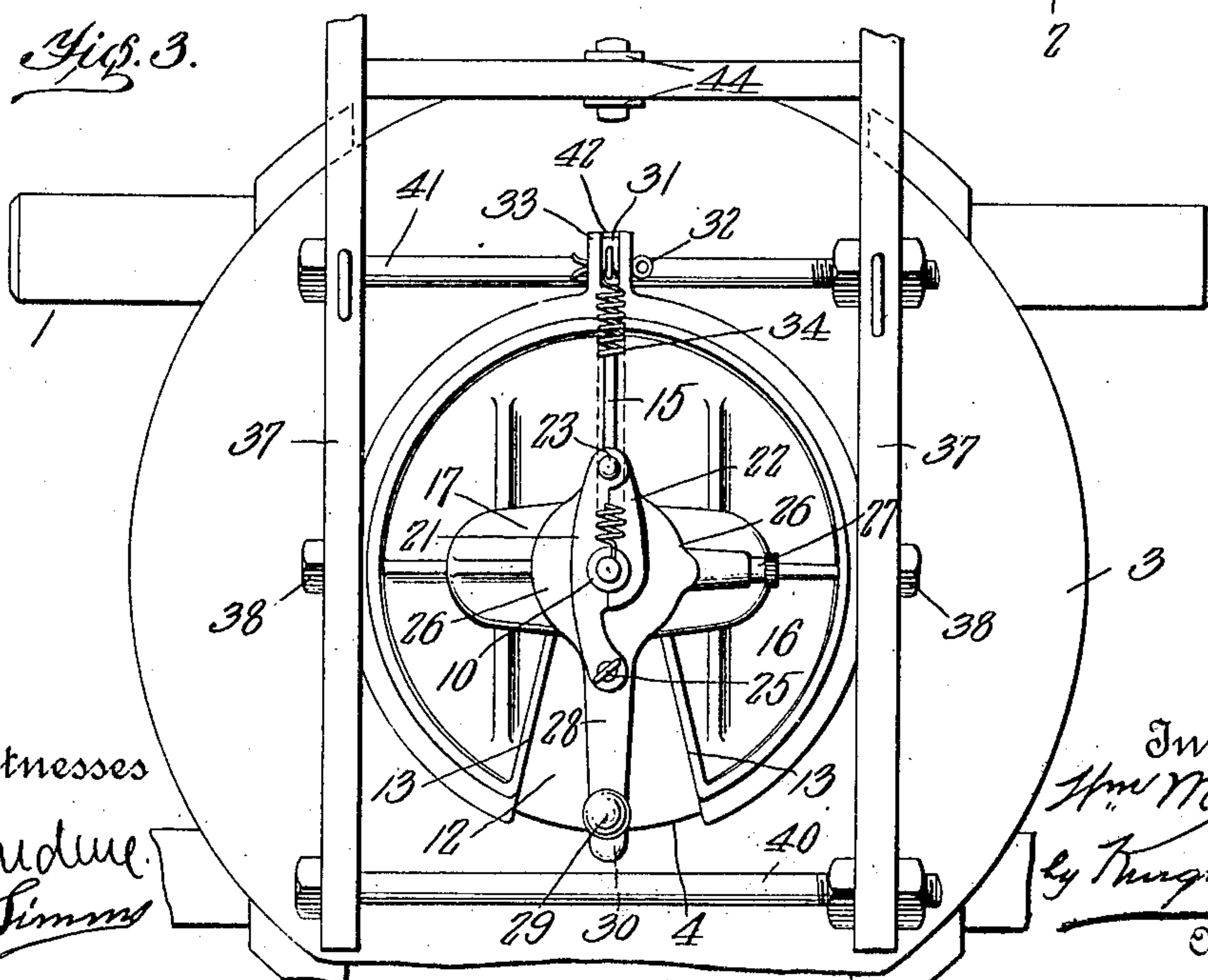
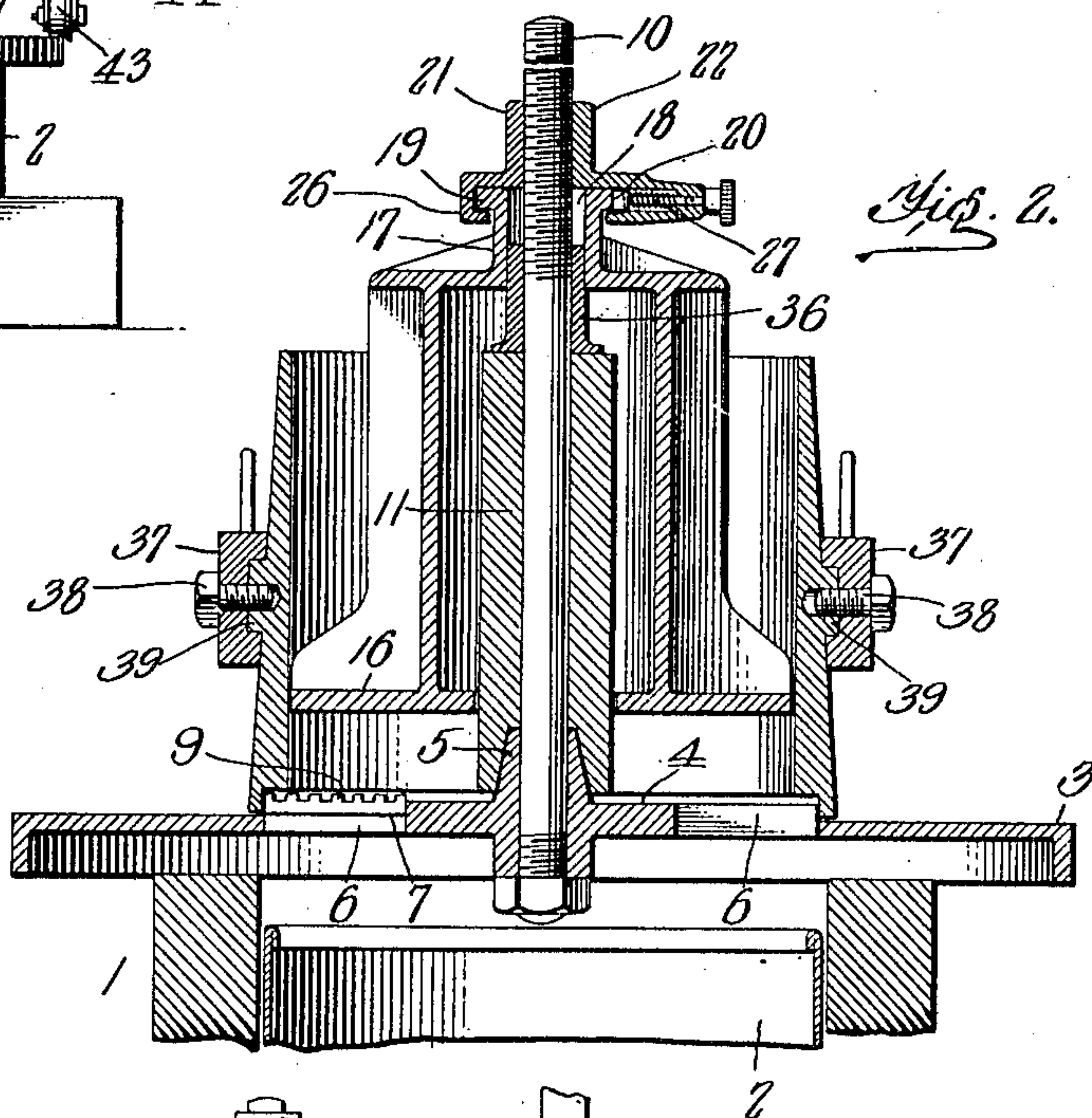
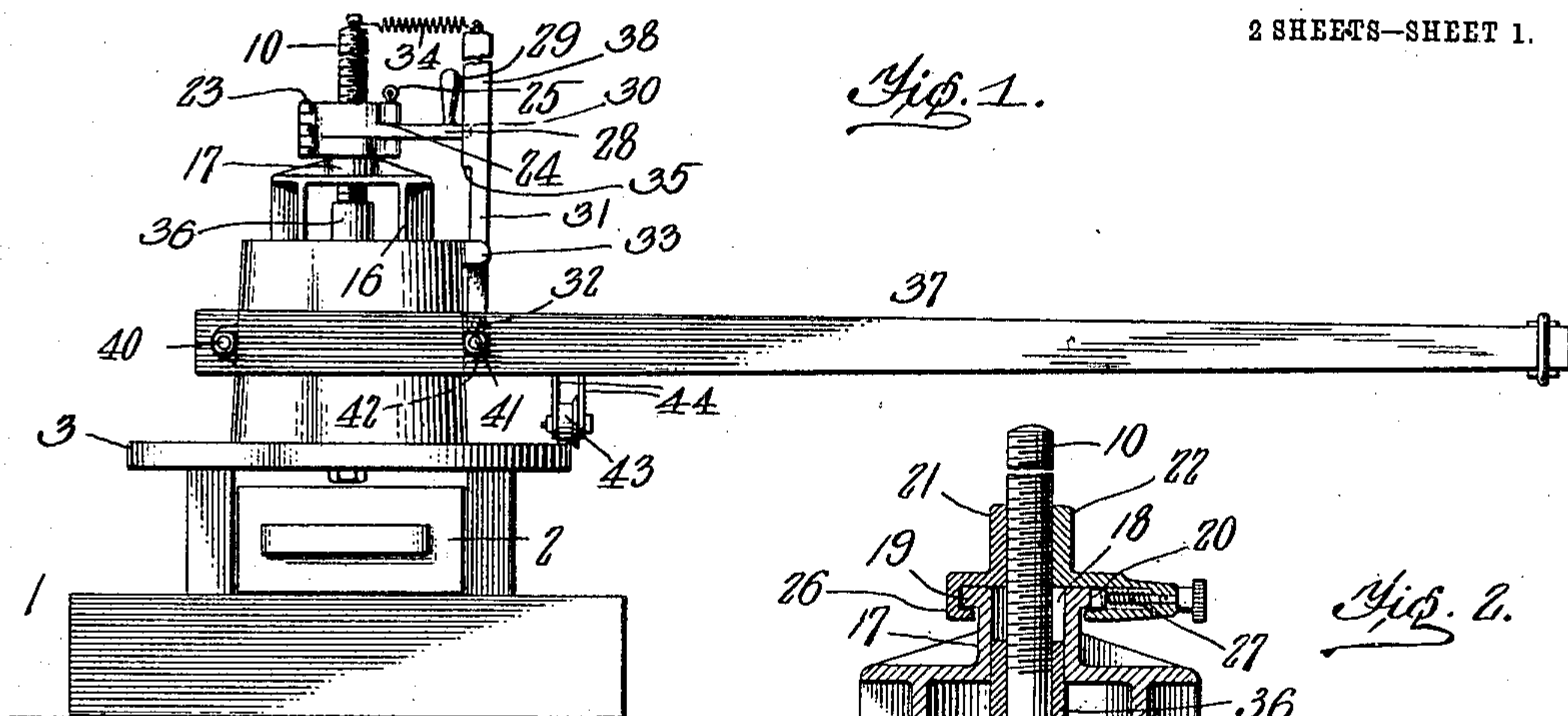


No. 871,674.

PATENTED NOV. 19, 1907.

W. M. CONNER.
BONE CUTTING MACHINE.
APPLICATION FILED JULY 2, 1906.

2 SHEETS—SHEET 1.



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Fig. 4.

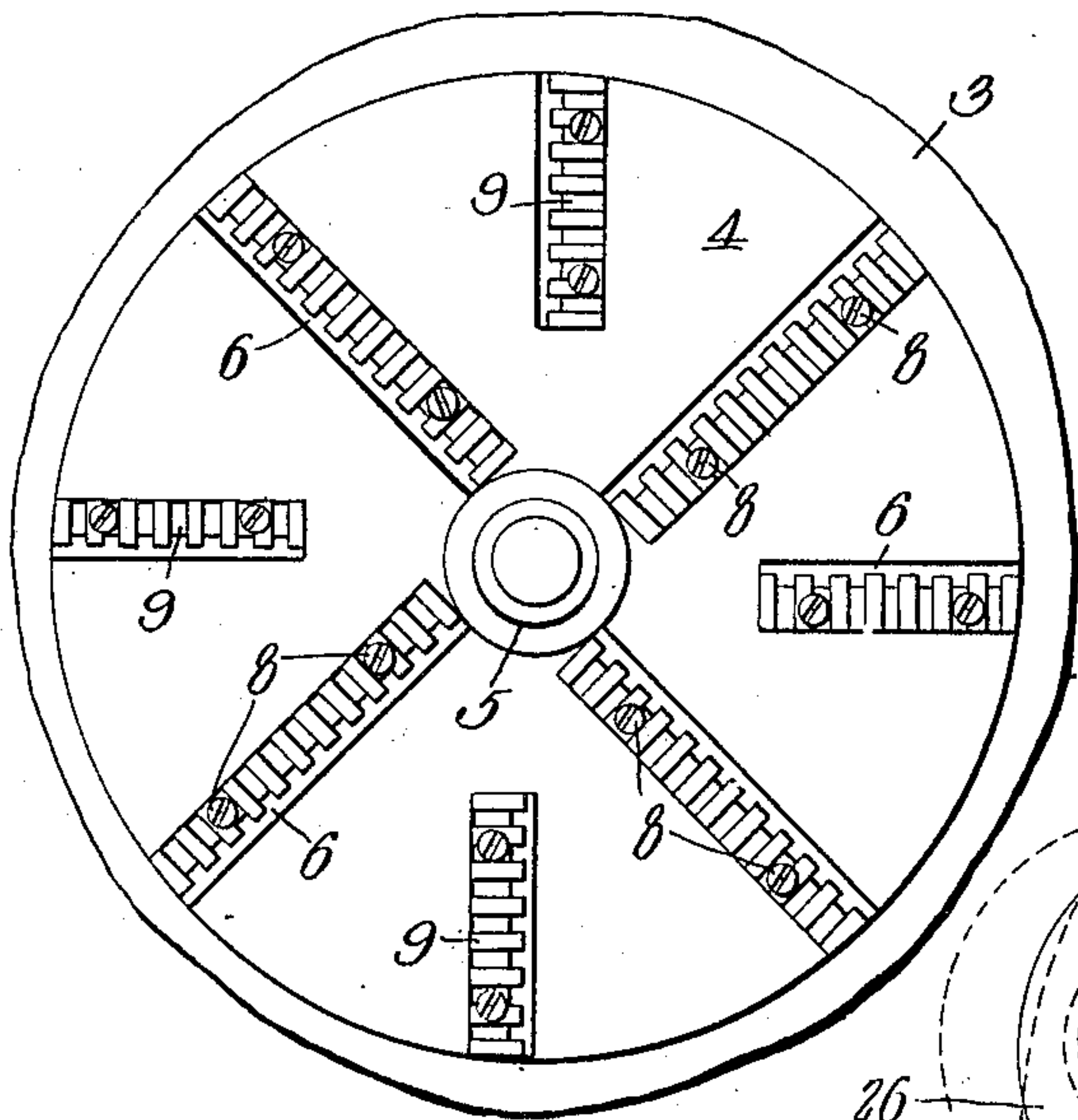
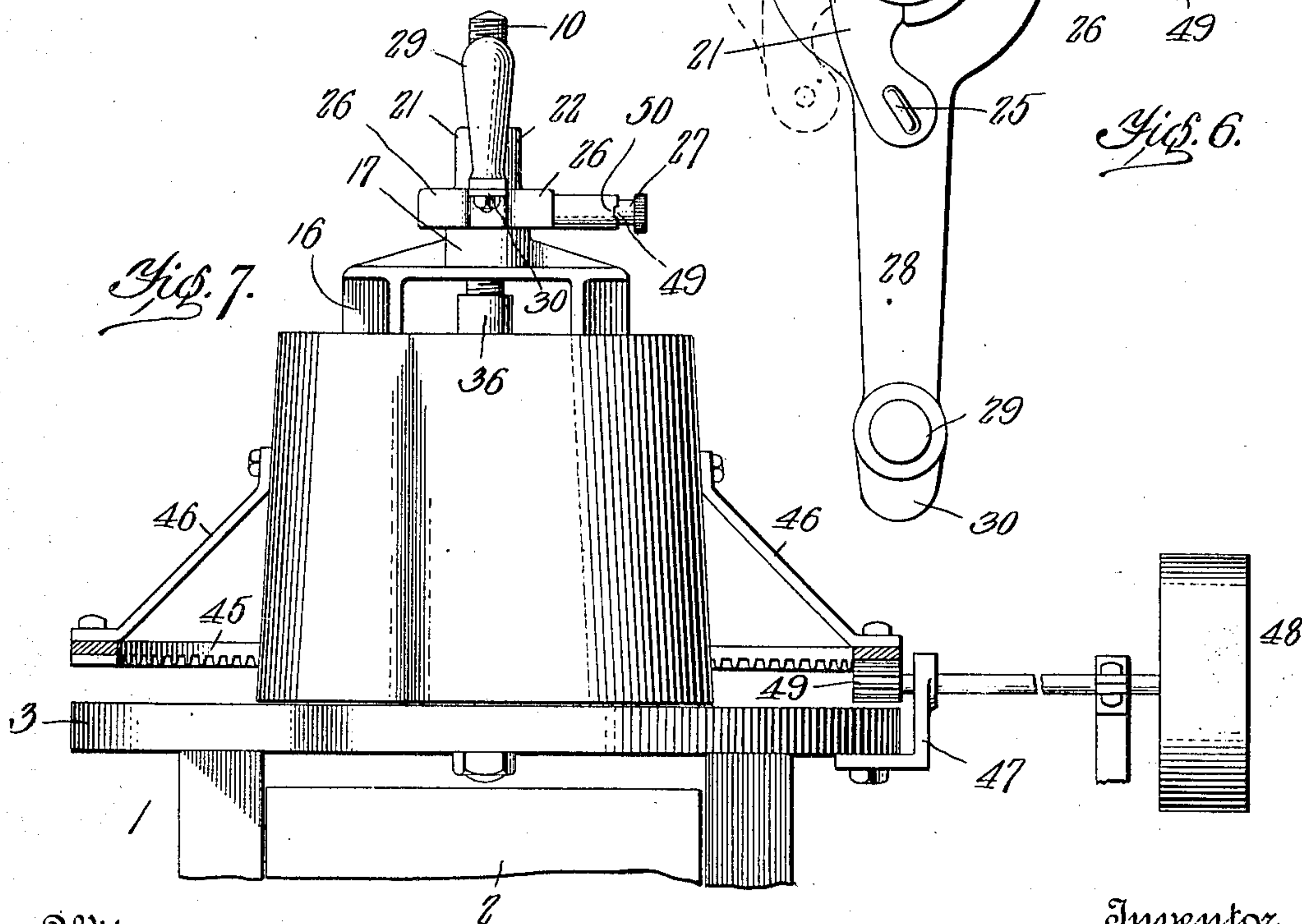
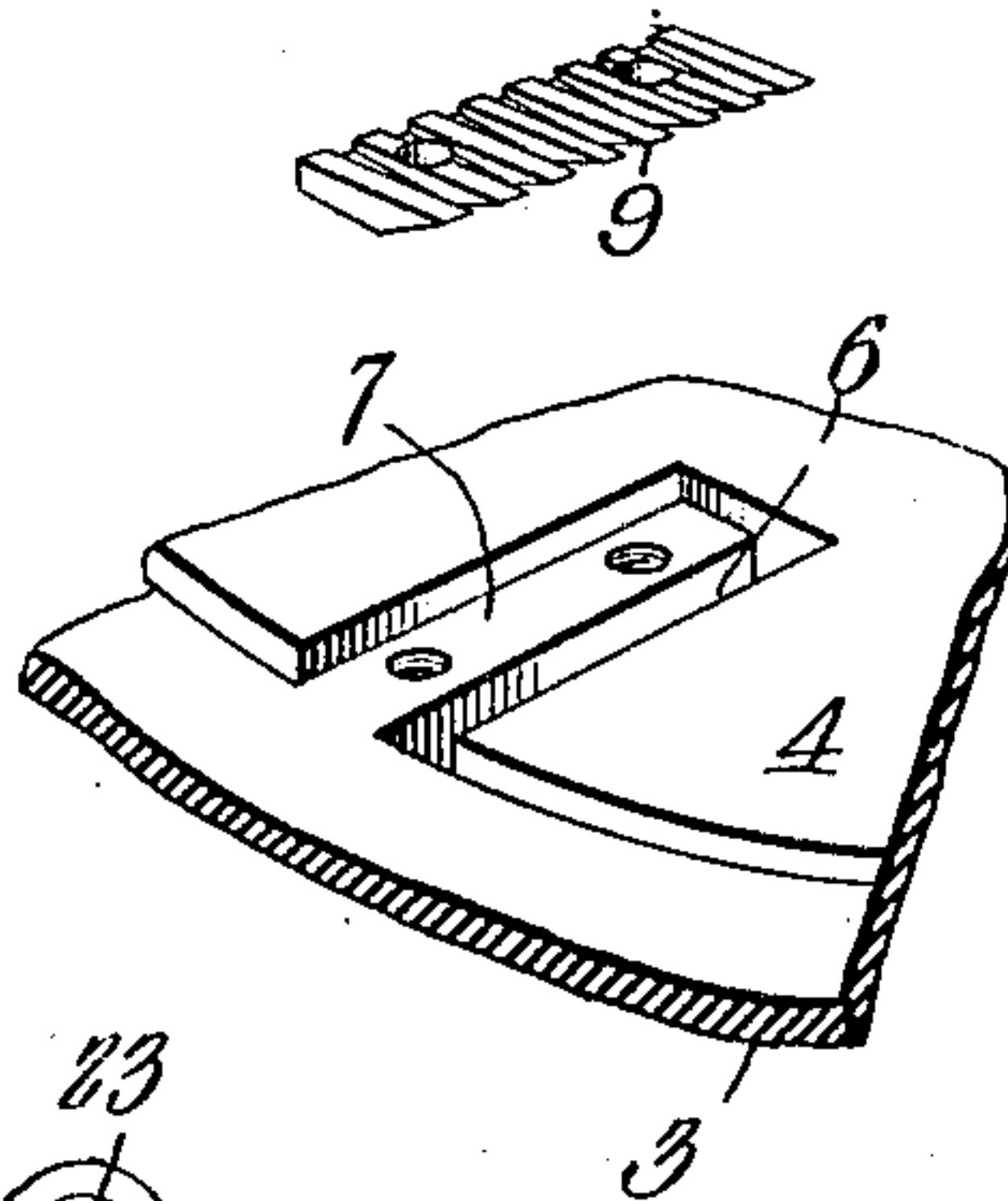


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM M. CONNER, OF CINCINNATI, OHIO.

BONE-CUTTING MACHINE.

No. 871,674.

Specification of Letters Patent.

Patented Nov. 19, 1907.

Application filed July 2, 1906. Serial No. 324,485.

To all whom it may concern:

Be it known that I, WILLIAM M. CONNER, a citizen of the United States, and resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Bone-Cutting Machines, of which the following is a description.

In machines of this class, owing to the material cut being very hard, it is necessary that the machine shall have a great deal of strength, at the same time, the construction should be such that the machine will be inexpensive to manufacture and simple to operate.

The machine should also be constructed so that it may be quickly and easily cleaned, for the reason that in warm weather the decay of the animal matter will render the use of the machine objectionable.

It is an object of my invention to provide a machine meeting these requirements.

Other and further objects of my invention will appear in the following description and will be more particularly pointed out in the appended claims.

In the drawings: Figure 1 is a side elevation of my mill; Fig. 2 is a vertical section through the upper part of the mill; Fig. 3 is a top plan view; Fig. 4 is a top plan view of the knives; Fig. 5 is a detached perspective of one of the knives and its seat. Fig. 6 is a top plan view of the divided nut, and Fig. 7 is a side elevation of another embodiment.

Referring more particularly to the drawings, 1 indicates a base frame made of wood or any other suitable material and having a sliding drawer 2. Above the drawer 2 on the base frame is arranged an annular plate 3 having a central elevated portion 4 which in turn is provided with a central tapering boss 5. The central elevated portion is provided with radial slots 6, every other one of which extends from the central boss 5 to the edge of the elevated portion 4, while the others extend from a point about midway between the central boss and the edge, to the said edge. To one side of each slot 6 is a horizontal knife seat 7 upon which is clamped by screws 8, a grooved knife 9, which has its edge adjacent the slot beveled.

Extending vertically from the central boss 5 is a screw shaft 10 which is surrounded the greater portion of its length by a central tube 11 within the hopper, the central boss extending into an enlarged tapering bore in

the end of the tube and acting as a bearing for the hopper. The hopper is open at its top and at its bottom, the bottom edge being grooved to surround the central elevated portion 4 and rest upon the said elevated portion near its edge, the ends of the knives thus projecting beneath the edge of the hopper so as to act upon any bone that collects between the hopper and the knife carrying plate or member 3, thereby preventing any binding between these relatively movable parts.

The hopper has its wall increasing in thickness from its top to its bottom and is provided with a pocket 12 which is formed by walls 13 extending to the tube 11. This pocket serves to permit the knives to be cleaned and removed to be ground, without separating the knife plate and the hopper.

A wall 15 divides the hopper into two compartments in which work plungers or followers 16 connected by a cross head 17 having an opening 18 through which the screw 10 projects, the walls of said opening being spaced from the screw so as not to produce any wearing action thereon. The portion of the cross head surrounding the opening 18 is of sleeve form, the upper end of the sleeve being provided with an annular flange 19 having a notch 20 in its periphery.

Working on the screw 10 is a nut, divided into two axial sections or members 21 and 22, each of which carries one half of the screw threads of the nut. These members are hinged together at 23. On the opposite side of the screw, one of said members is provided with an opening and the other is bifurcated at 24 to fit above and below the former, the arms of the bifurcation of the latter being perforated so that a pin 25 may be passed through both of said arms and the perforation of the former member and thus hold the sections of the nut together.

The nut is provided with an overhanging annular flange 26 which surrounds and engages below the annular flange 19 so as to turn relatively thereto. The flange 26, forming a connection between the nut and the followers or plungers, permits the operator to easily raise the followers or plungers should they become stuck either by suction or slivers of bone coming up between the sides of the hopper and the follower. Further the operator can raise the follower completely from the hopper without taking the split nut off and lifting the follower by hand. Car-

ried by the nut is a radially movable spring pressed plunger 27 which has its inner end beveled on opposite vertical sides and is movable into the notch 20 in the flange 19.

5 Also carried by the nut is a horizontal arm 28 provided with a handle 29, said arm 28 being formed with a projection 30 at its end. This projecting end 30 of the arm is of a length to engage an upright 31 pivoted at

10 32 to the hopper guided by lugs 33, and held in an upright position by a coil spring 34 connecting the upper end of the screw 10 with the upper end of the upright. It will be apparent that if the hopper is rotated,

15 the upright 31 will revolve and as the upright engages the end of the arm 28, said arm will revolve, thus rotating the nut and causing it to travel upon the screw 10, which, being secured to the stationary knife plate,

20 does not rotate. As the nut travels on the screw, it carries the followers with it, thereby pressing the material upon the knives, the material being carried over the knives by the rotating hopper. Should the material clog

25 or be pressed too hard upon the knives, something would break and to prevent this, the spring 34 permits the upright to yield or pass by the projecting portion of arm 38, thus preventing the feed of the follower

30 until the upright again reaches the arm 28. If the material is still clogged or pressed too much, the upright will again yield past the arm. So that the nut will stop feeding when the follower approaches the knives,

35 the upright is provided with a cutaway portion 35 which, when the arm 28 reaches this portion of the upright, permits the upright to revolve without turning the nut. In some instances, I have found that the above

40 described construction is not sufficient to prevent the nut turning with the hopper and for this reason, I provide on the screw 10 a cylindrical sleeve or collar 36 which is adapted to enter opening 18 in cross-head 17 and

45 engage the bottom of the divided nut thus limiting the downward movement of the latter. As this nut cannot move further downward, the spring pressed plunger 27 yields and permits the followers 16 to turn

50 with the hopper. This yielding connection between the nut and the followers may also be employed should the upright get out of order. The sleeve 36 is secured to the screw and serves to hold the hopper down.

55 In Figs. 1, 2 and 3, I have shown one means for imparting rotation to the hopper. This means is in the form of a horse power. It comprises a pair of converging horizontal members 37 having their outer ends connect-

60 ed together and to which the whiffletree is attached. Near their other ends, the members 37 engage on opposite sides of the hopper, being secured to said hopper by bolts 38 which are anchored in lugs 39 on the hopper. On

65 opposite sides of the hopper, the members 37

are connected by tie rods 40 and 41, the latter passing through a lug 42 to which the upright 31 is pivoted. The cleaning pocket 12 is arranged adjacent to tie rod 40 so that with the exception of said tie rod, which is so

70 small that it is of no consequence, nothing will interfere to prevent access to said pocket.

To prevent the sagging of the arm formed by the members 37, I provide a flanged roller

75 43 journaled in a hanger 44, depending from said arm, said roller traveling along the edge of the annular plate 3.

Another means for rotating the hopper is shown in Fig. 7. In this embodiment a cir-

80 cular rack 45 is suspended by arms 46 from the hopper and a pinion 49 journaled in bracket 47 meshes with the circular rack, the pinion being driven by a pulley 48 which is secured on the same shaft as the pinion.

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When it is desired to elevate the followers 16, the plunger 27 is withdrawn from notch 20 in flange 19, and the plunger 27 is rotated 180° so that projection 49 thereon is posi-

90 tioned away from notch 50 in which it rests when the plunger is in operative position. It is now possible by turning arm 28 through handle 29 to elevate the follower.

Having thus described my invention, what I claim and desire to secure by Letters Pat-

95 ent is:

1. In a bone cutting machine, a knife support, a hopper rotatable on the support, and provided with a pocket permitting the knives to be reached without separating the hopper

100 and the knife support, and a plunger working in the hopper.

2. In a bone cutting machine, a knife support carrying knives, a hopper provided with a pocket permitting the knives to be reached,

105 a screw extending from the knife support, and through the hopper, a plunger working in the hopper and a nut working on the screw, and moving the plunger.

3. In a bone cutting machine, a knife plate

110 provided with a central elevation, a hopper grooved at its lower edge and surrounding and resting upon the central elevation, and radial knives carried by the plate and extending below the edge of the hopper.

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4. In a bone cutting machine, a knife plate provided with a central elevation, with radial slots extending to the edge of the central elevation and with horizontal seats in the

120 central elevation to one side of the slots; radial knives seated in the seats, and having their outer ends alined with the periphery of the central elevation; and a hopper grooved at its outer edge to surround and to rest upon the central elevation.

125

5. In a bone cutting machine, the combination of a rotary hopper, a fixed screw, a nut on the screw, and a rotating follower having a flanged cross-head, said nut abutting the follower and having a flange engag-

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ing the flange of the cross-head, thereby preventing relative axial movement between the nut and the follower, when the nut moves on the screw in either axial direction.

5 6. In a bone cutting machine, the combination with a relatively rotatable knife support and hopper, of a screw carried by the knife support, a plunger in the hopper, an annular flange on the plunger, a nut on the
10 screw connected with the flange to turn relatively thereto but to cause the plunger to move therewith in both directions, and a connection between the nut and the plunger whereby the plunger and nut turn together.

15 7. In a bone cutting machine, the combination with a knife support and a hopper, one of which is rotatable, of a screw carried by the part not rotating, a yielding upright carried by the rotating part, a plunger, a
20 nut connected to the plunger, and connection between the nut and the upright constructed to permit the upright to move past the same when the plunger is retarded.

8. In a bone cutting machine, the combination with a stationary knife support, of a
25 screw carried by said support, a hopper turnable on the screw, a plunger for the hopper, a nut on the screw, connected to the plunger, a yielding upright on the hopper, and an
30 arm extending from the nut, to be engaged by the upright and formed to permit the upright to yield and pass the same when the plunger is retarded.

9. In a bone cutting machine, the combination with a stationary knife support, of a
35 screw carried by said support, a hopper turnable on the screw, a plunger for the hopper, a nut on the screw, connected to the plunger, a yielding upright on the hopper, and an
40 arm extending from the nut, to be engaged by the upright and formed to permit the upright to yield and pass the same when the plunger is retarded, said upright being cut away to permit it to pass the arm when the
45 nut approaches its lower limit.

10. In a bone cutting machine, the combination of the relatively rotatable knife support and the hopper, of a screw on the knife support, a plunger in the hopper, a sleeve on the plunger, fitting about the screw, an
50 annular flange on the sleeve, provided with a notch, a nut movable on the screw and connected with the flange to turn relatively thereto, and a radially movable spring pressed plunger to engage in the notch on
55 the flange.

11. In a bone cutting machine, the combination of the relatively rotatable knife support and the hopper, of a screw on the knife support, a plunger in the hopper, a sleeve on
60 the plunger fitting about the screw, an annular flange on the sleeve provided with a notch, a nut movable on the screw and connected with the flange to turn relatively thereto, a radially movable spring pressed
65 plunger to engage in the notch on the flange, and means entering the sleeve and engaging the nut when the nut approaches its lower limit.

12. In a bone cutting machine, a hopper, 70 a screw, a nut on the screw, a plunger in the hopper, and a connection between the nut and the plunger permitting a relative turning between these parts.

13. In a bone cutting machine, a hopper, 75 a screw, a nut on the screw, a plunger in the hopper, a yielding device causing the nut and the plunger to turn together, and means engaging the nut when it nears the end of its movement to cause the yielding device to
80 yield and permit a relative turning between the nut and the plunger.

The foregoing specification signed at Jersey City, N. J., this fifteenth day of June, 1906.

WILLIAM M. CONNER.

In presence of two witnesses—

ODA M. BISCHOFF,

T. P. SWEENEY.