

No. 675,446.

Patented June 4, 1901.

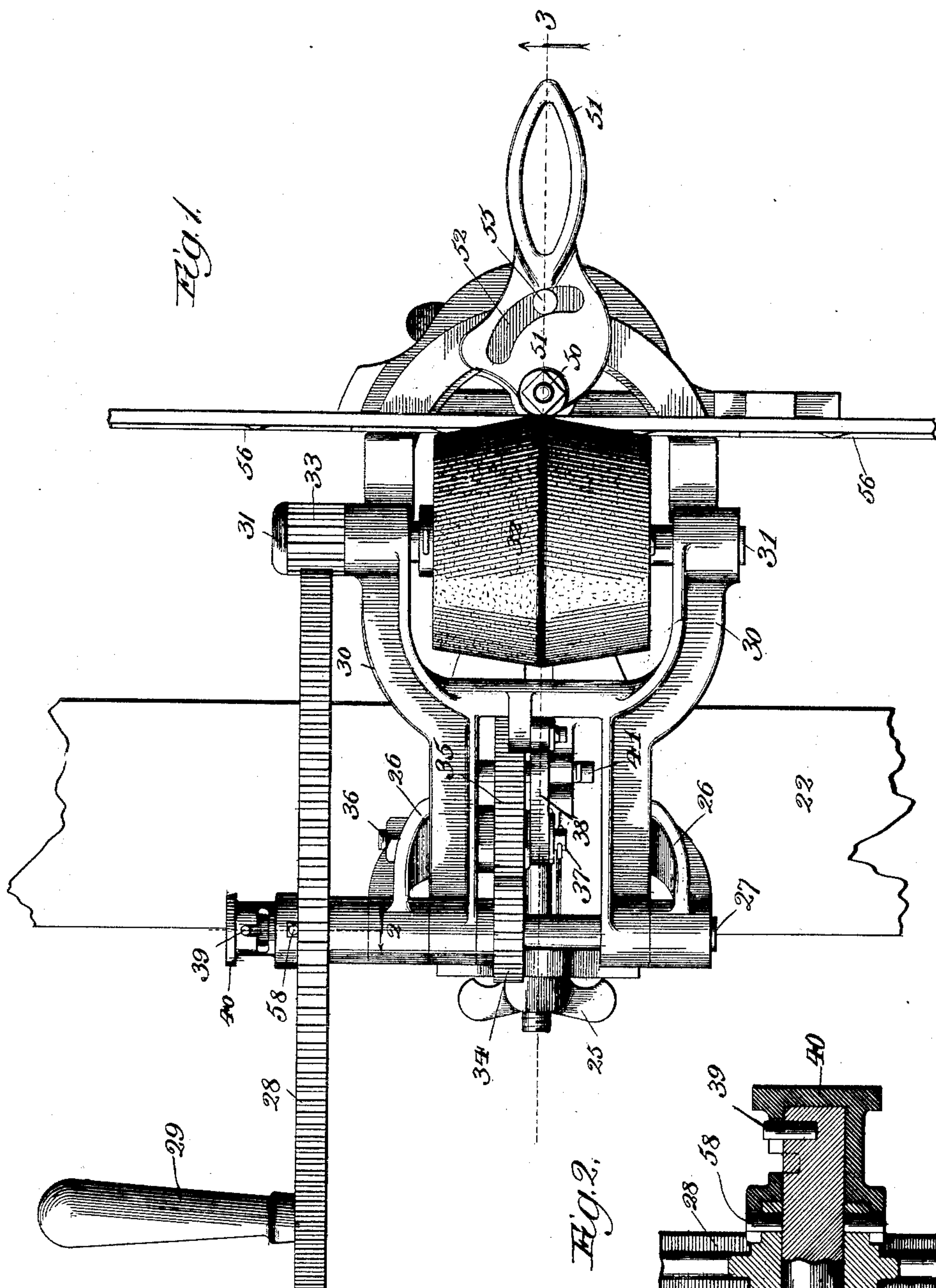
H. J. MARTIN & H. S. CAMPBELL.

MOWER KNIFE GRINDER.

(Application filed June 28, 1899.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:
E. S. Gaylord,
Lute S. P. H. S.

Inventors
Henry S. Campbell
Henry J. Martin
By Dwight B. Cheever
Att'y

No. 675,446.

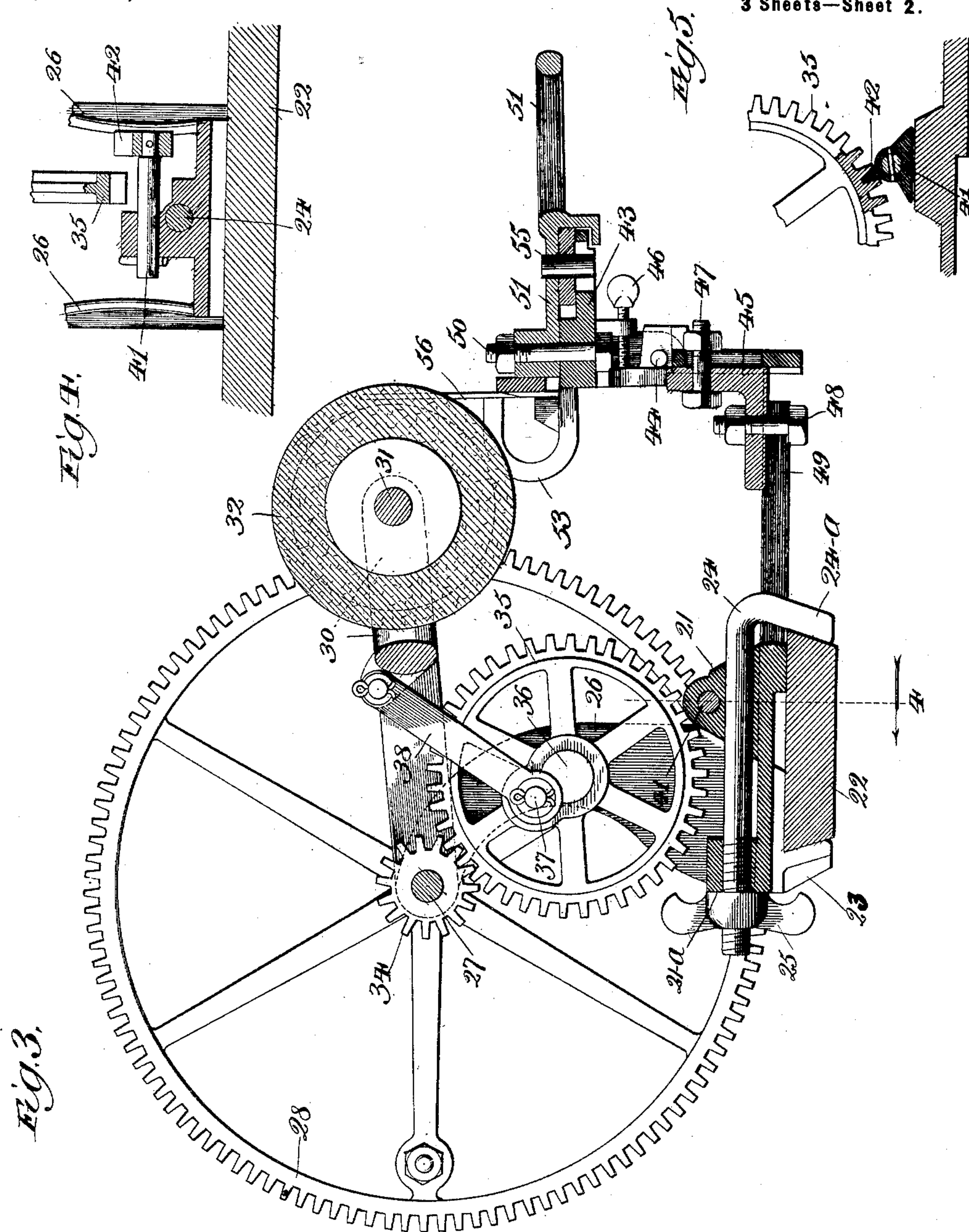
Patented June 4, 1901.

H. J. MARTIN & H. S. CAMPBELL.
MOWER KNIFE GRINDER.

(Application filed June 28, 1899.)

(No Model.)

3 Sheets—Sheet 2.



Witnesses:
Edw. Gaylord,
Lute S. Patten

Inventors
Henry S. Campbell
Henry J. Martin
By *Dwight B. Cheever*
A. T. W.

No. 675,446.

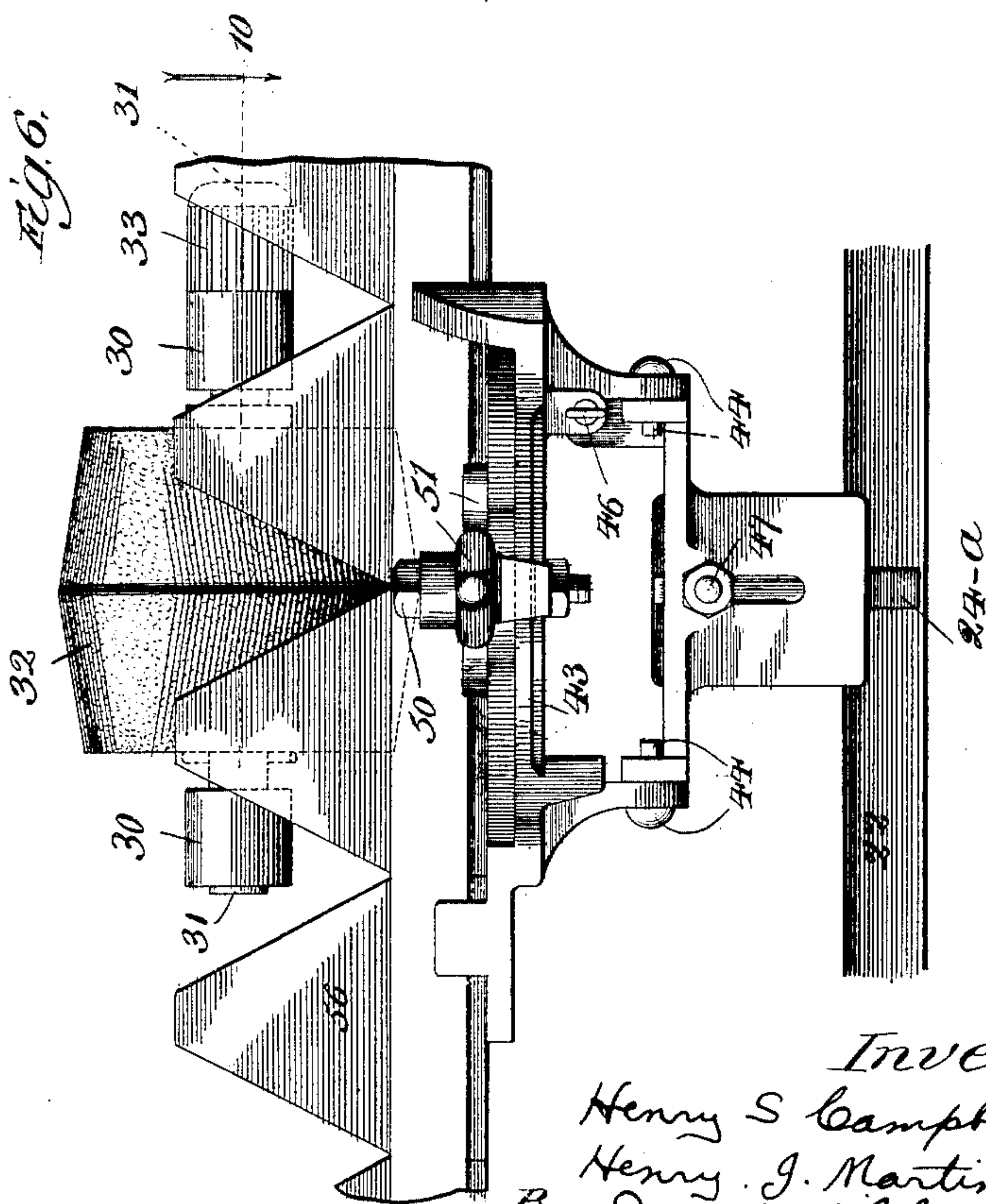
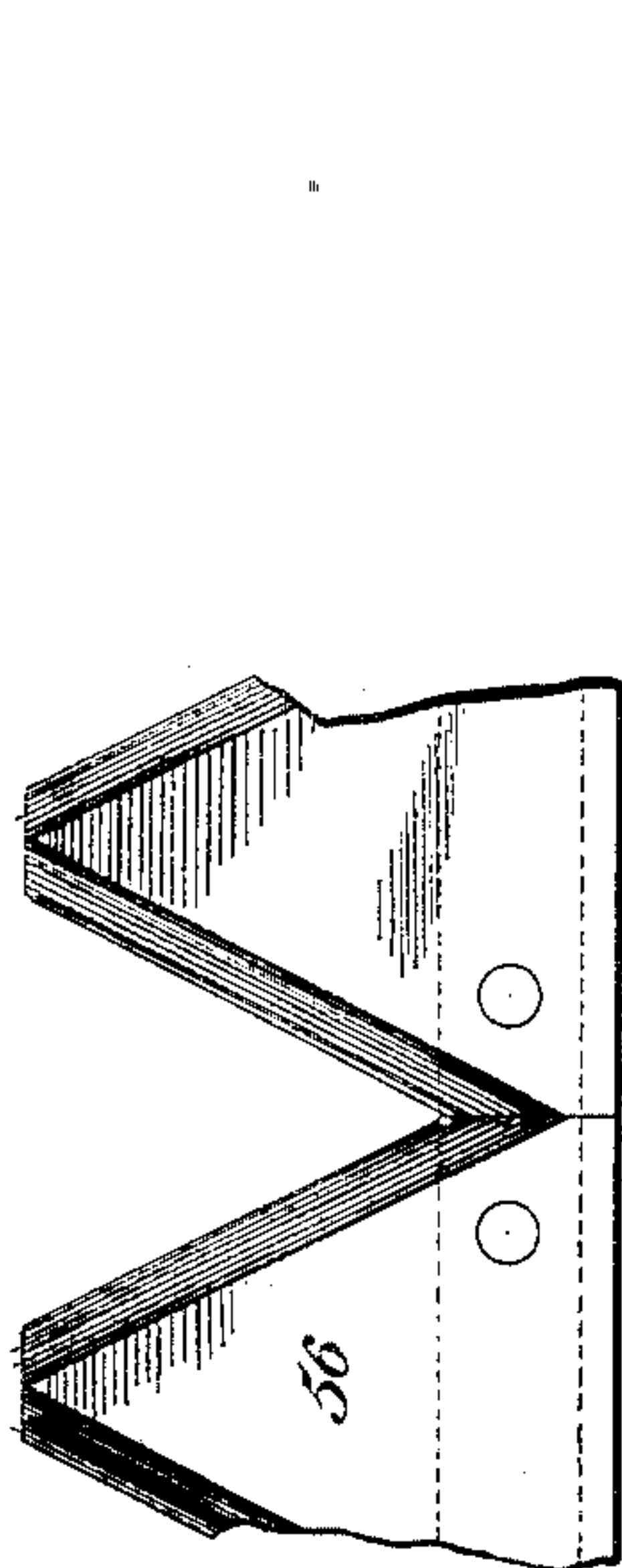
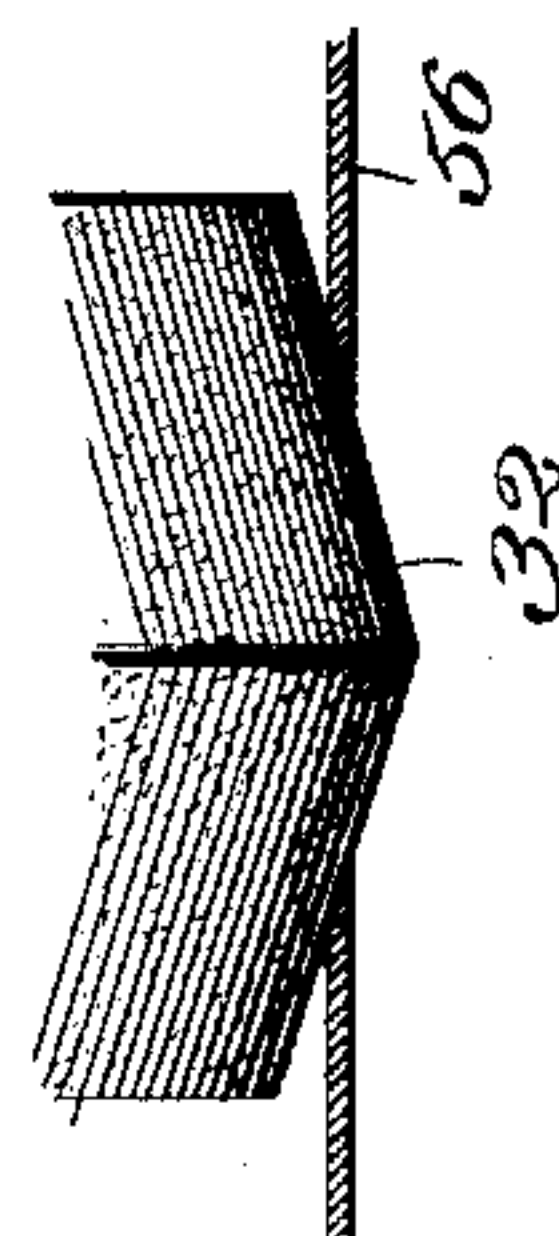
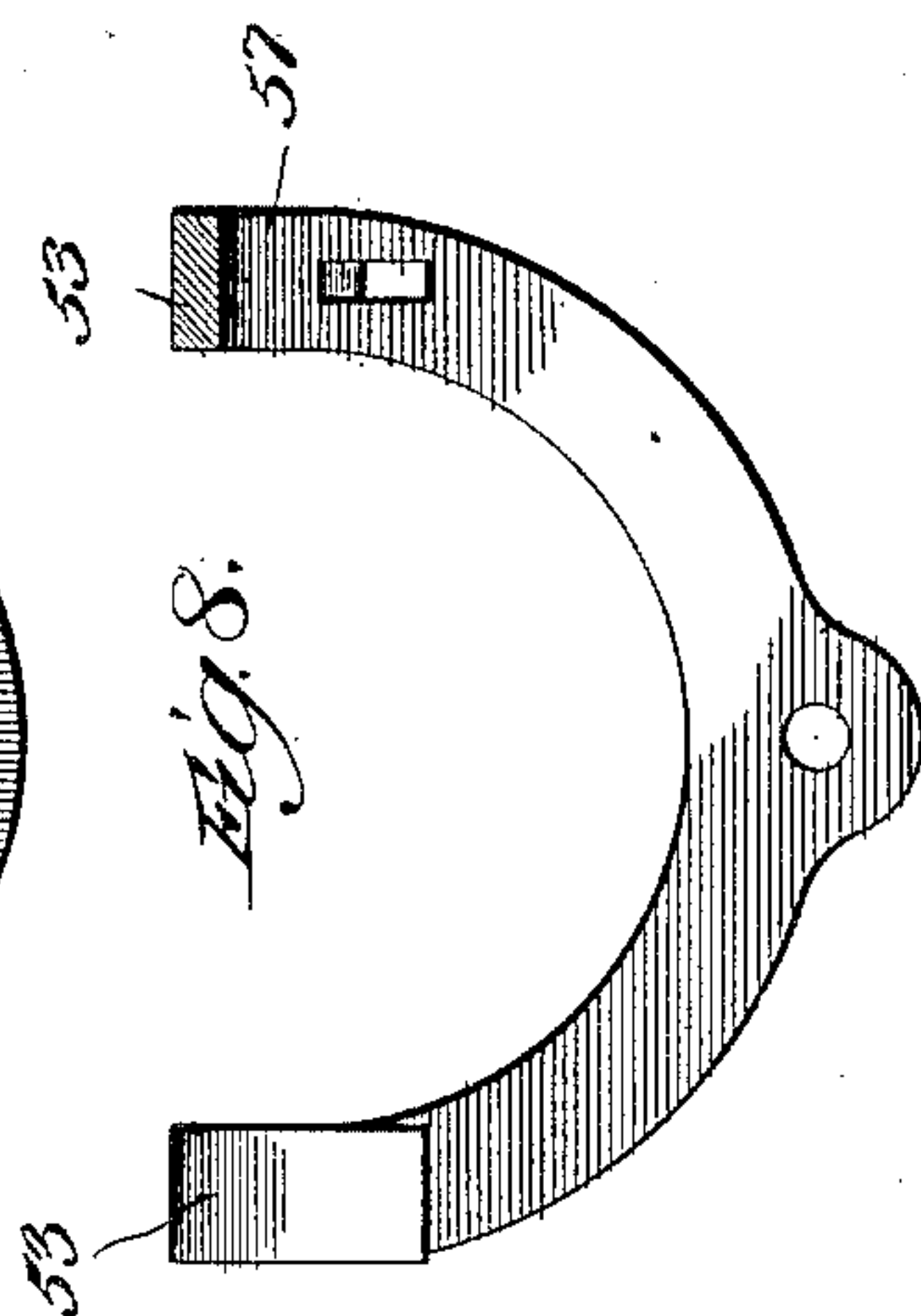
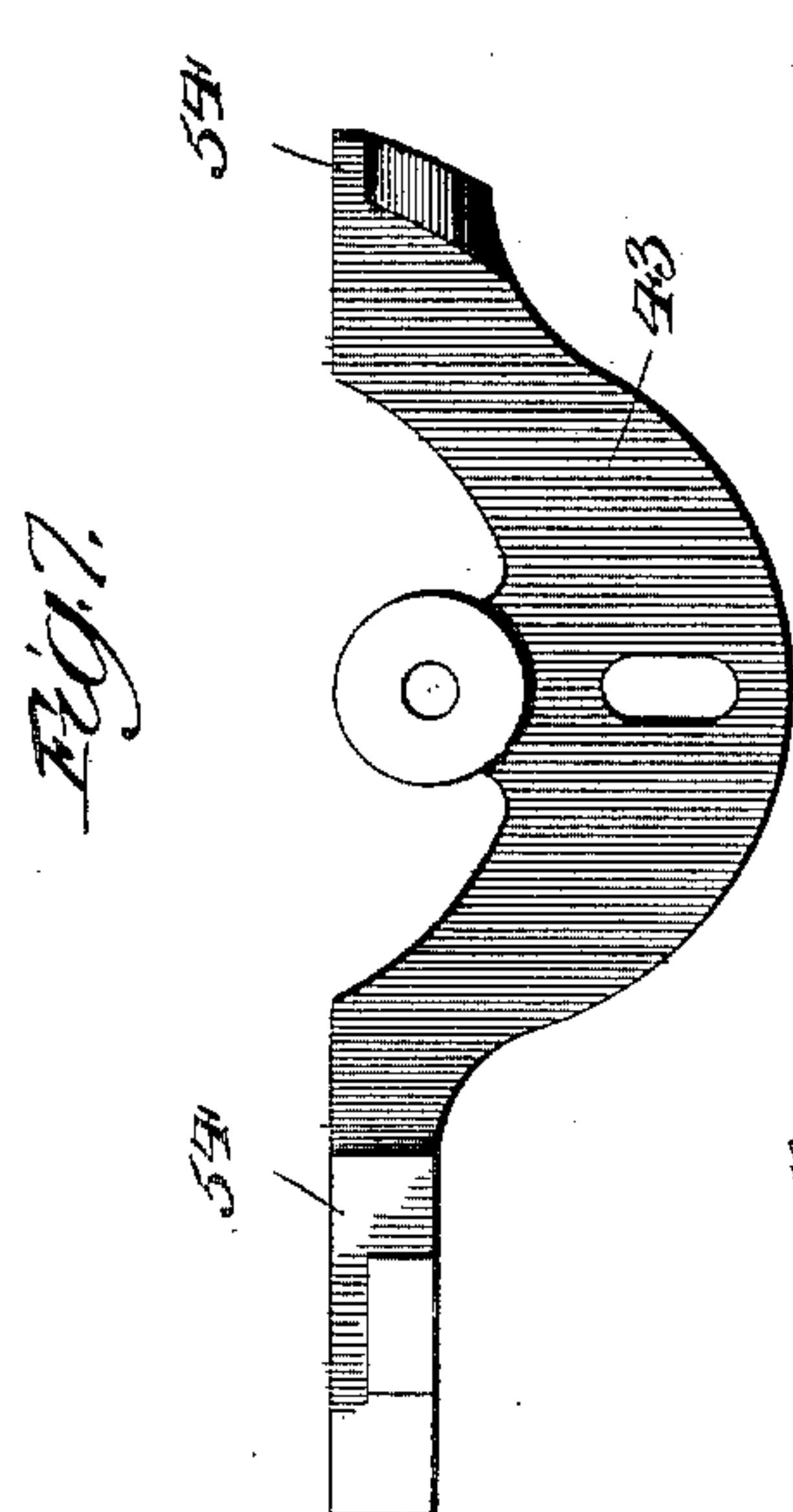
Patented June 4, 1901.

H. J. MARTIN & H. S. CAMPBELL.
MOWER KNIFE GRINDER.

(Application filed June 28, 1899.)

(No Model.)

3 Sheets—Sheet 3.



Witnesses:
Jas. C. Gaylord,
Lute S. Allen.

Inventors
Henry S. Campbell
Henry J. Martin
By Dwight Blechman
Att'y

UNITED STATES PATENT OFFICE.

HENRY J. MARTIN AND HENRY S. CAMPBELL, OF CHICAGO, ILLINOIS,
ASSIGNORS TO THE WHITMAN & BARNES MANUFACTURING CO., OF
AKRON, OHIO.

MOWER-KNIFE GRINDER.

SPECIFICATION forming part of Letters Patent No. 675,446, dated June 4, 1901.

Application filed June 28, 1899. Serial No. 722,165. (No model.)

To all whom it may concern:

Be it known that we, HENRY J. MARTIN and HENRY S. CAMPBELL, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Mower-Knife Grinder, of which the following is a full specification in its best form now known to us, reference being had to the accompanying drawings.

Our invention relates to mower-knife grinders, and particularly to those adapted to be used in the field.

It consists of a neat, compact, cheaply-constructed, and easily-operated machine adapted to be used for grinding the knives of mowers and reapers in the field.

It also consists in means for securing the knife in the machine, in means for causing the rotating grindstone to move up and down the knives, in means for locking it at any desired point, and in other features and details of construction hereinafter described and claimed.

In the drawings, Figure 1 is a plan view of a machine embodying our invention. Fig. 2 is a sectional detail view of a clutch on the main shaft. Fig. 3 is a central sectional view on line 3 of Fig. 1. Figs. 4 and 5 are sectional detail views of the lock for fastening the grinding-wheel at a fixed elevation. Fig. 6 is an end view of the machine with the knife in position for work. Figs. 7 and 8 are details of the clamp for holding the knives. Fig. 9 is a detail view of the knives. Fig. 10 is a plan view on line 10 of Fig. 6, showing the grinding-wheel and knives in operative relation to each other.

The base 21 of the machine consists of a clamp adapted to secure the machine to any suitable support, such as the wheel of the mower or the top of the fence, (as board 22.) The clamp has a rear heel 23, integral with the base-casting 21, and through the casting is passed a rod 24, bent at the end to form the toe 24^a of the clamp. On the opposite end of this rod is a thumb-screw 25, bearing on a shoulder 21^a, and by tightening the thumb-screw the heel 23 and toe 24^a of the clamp

are drawn together and the clamp and machine (whose base it is) are fastened to the fixed support 22.

Rising from the base-clamp is a forked standard 26, having journaled therein the main shaft 27. On this shaft is journaled the drive-wheel 28, which is operated by the handle 29. Pivoted to the shaft 27 is a yoke-arm 30, having journaled therein the shaft 31, which has the grinding-wheel 32 keyed to it. This grinding-wheel 32 is driven by the gear-wheel 33, which is secured to the end of shaft 31 and meshes in the drive-wheel 28.

Keyed to driving-shaft 27 is a small gear or pinion 34, meshing into a large gear 35, having its shaft 36 journaled to one fork of the main standard 26 of the machine. On the opposite side of this wheel 35 is a crank-pin 37, (rigidly secured to the wheel at a fixed distance from its center.) This crank-pin and yoke 30 are connected together by the connecting-rod 38, as shown in Fig. 3.

On the hub of wheel 28 is a pin 58, (which may be a lug cast on the hub,) and on the shaft 27 is another pin 39. Fitted over these two pins 58 and 39 is a clutch or lock 40, which locks the two pins (and consequently the wheel and shaft together) when in the position shown in Fig. 1. By pulling this clutch out (away from wheel 28) it is pulled entirely off from the pin 58, so that the wheel 28 is entirely free to rotate on the shaft 27. It will be instantly seen from an inspection of the drawings that when drive-wheel 28 is thus locked to shaft 27 the rotation of the wheel will rotate both the grinding-wheel 32 and the wheel 35 and that when the latter wheel is rotated the yoke 30, bearing the grinding-wheel, is rocked (by means of connecting-rod 38) about the shaft 27, thereby automatically giving the grinding-wheel both a rotary and a vertically-reciprocating motion. It will also be seen that by unlocking the clutch 40 the drive-wheel 28 will rotate freely on shaft 27 and the grinding-wheel will be given a rotary motion only.

Slidably mounted in the base-casting of the machine is a rod 41, Fig. 1, having a catch

or stop 42, adapted to slide between the teeth of gear 35 and lock it and its connecting mechanism in any desired position.

Secured to the front of the machine is the knife-holder. It consists of a fixed jaw 43, pivoted at 44 to the fixed frame 45 of the machine and adjustable backward and forward by the thumb-screw 46. This fixed jaw, with its attached mechanism, may be adjusted up and down by means of the bolt 47 and backward and forward by the bolt 48, there being slots for this purpose in the base-piece 49 and the standard, which bears the pivoted joint 44.

Rigidly secured to the fixed jaw 43 is a pivot 50, which is the center for the handle-piece 51, having therein the curved cam-shaped slot 52. Intermediate between the fixed jaw 43 and the handle 51 is the movable jaw 53, Fig. 8, adapted to slide backward and forward between the lugs 54 on the fixed jaw 43 and having rigidly secured to it the post 55, fitting into the slot 52. It will be seen that by moving the handle 51 the movable jaw 53 will be moved backward or forward by the motion of the pin 55 in slot 52, and consequently clamped upon the knives 56 in the manner shown in Fig. 1.

In the operation of our machine it is first clamped to any suitable support where it is to be used. The knife to be sharpened is clamped in the machine so that the grinder-wheel fits into the middle of the knife-section. The clutch 40 on the end of the main shaft is then locked, so as to fasten the drive-wheel to the main shaft. The handle is then turned, thereby causing the grinder-wheel to rotate and be simultaneously moved up and down the knives. If it is desired to grind continuously at one point to take out a nick or other defect in the knives, the clutch 40 is thrown out and the dog 42 thrown in, so that the grinding-wheel is locked in the desired position. By turning the crank the grinding-wheel is now rotated in the fixed position as long as desired, when the dog is drawn out and the clutch thrown in and the continuous grinding resumed. When the first knife-section is sharpened sufficiently, the handle 51 is turned so as to release the clamp upon the knives, and they are moved along until the next section is opposite the wheel, when the clamp is again tightened and the operation repeated.

We do not limit ourselves to the form or details of construction shown. A cam might be substituted for the gearing for reciprocating the grinder-wheel, and different forms of clutches, stops, clamps, and gearing and other parts might be substituted without departing from our invention.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a grinding-machine, the combination of the frame of the machine, a main shaft, a pinion on said shaft, a gear journaled to the main frame, meshing with said pinion, an arm having a grinding-wheel journaled at its outer end, pivoted to said main shaft, a connecting-rod attached to said gear-wheel and to said arm, whereby as said main shaft is rotated said arm (and grinding-wheel) are rocked up and down, and means for simultaneously rotating said main shaft and grinder-wheel, substantially as described and for the purposes set forth.

2. In a grinding-machine, the combination of a main shaft, an arm pivoted thereto, a grinding-wheel journaled at the opposite end of said arm, means connected to said shaft for rocking said arm (and grinding-wheel) as said shaft rotates, a driving-wheel normally journaled upon said shaft adapted to rotate said grinding-wheel, a projection on the hub of said driving-wheel, another projection on said shaft, a cap or clutch over the end of said shaft, slots in said cap, so arranged that when said cap is on one position said slots will engage both of said projections and lock said shaft and wheel together, and when said cap is withdrawn to the reverse position, said wheel will be free to rotate independently of said shaft, substantially as described.

3. In a grinding-machine, a grinding-wheel, a shaft having mechanism attached thereto for giving the grinding-wheel a reciprocating motion, a drive-wheel journaled on said shaft adapted to give said grinding-wheel a rotating motion, and a clutch mechanism adapted to detachably connect said drive-wheel to said shaft.

HENRY J. MARTIN.
HENRY S. CAMPBELL.

Witnesses:

L. R. BROWNE,
GUY CASTLE.