

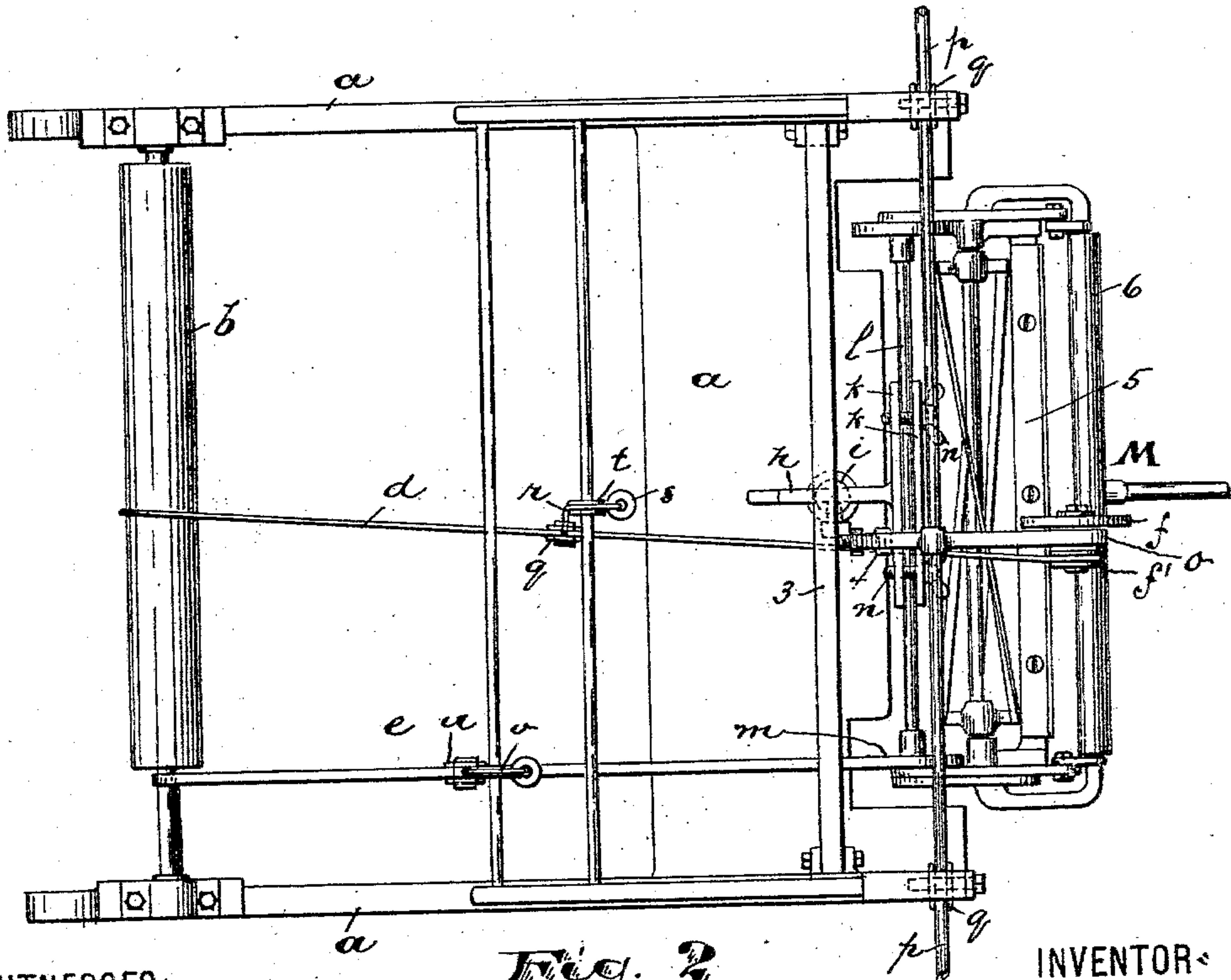
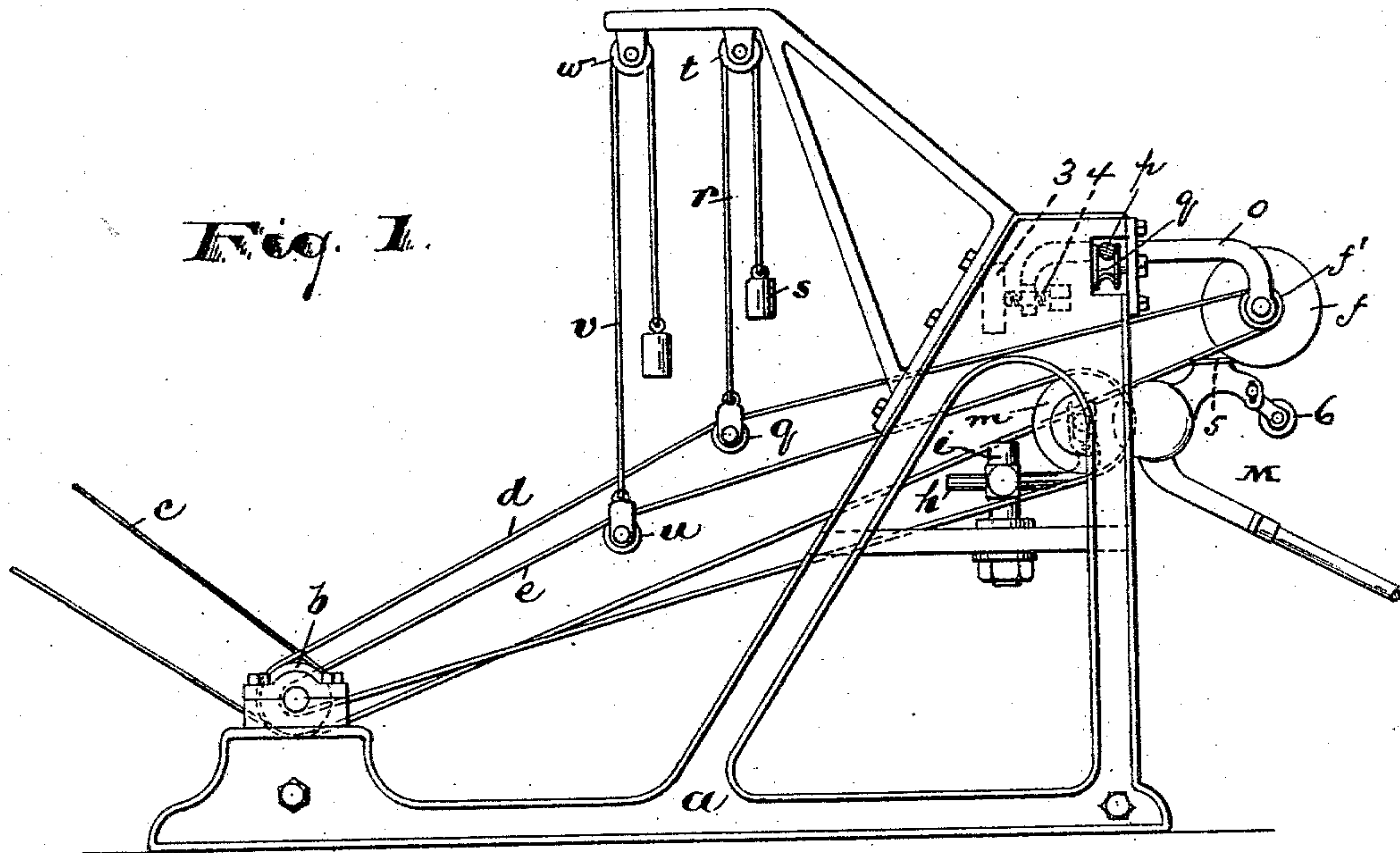
(No Model.)

2 Sheets—Sheet 1.

H. B. SCHUREMAN.
GRINDING MACHINE.

No. 556,868.

Patented Mar. 24, 1896.



WITNESSES:

Robert Lullberg
C. E. Pitzner

Fig. 2.

INVENTOR.

Howard B. Schureman,

BY *Drake & Co.* ATTY'S.

(No Model.)

2 Sheets—Sheet 2.

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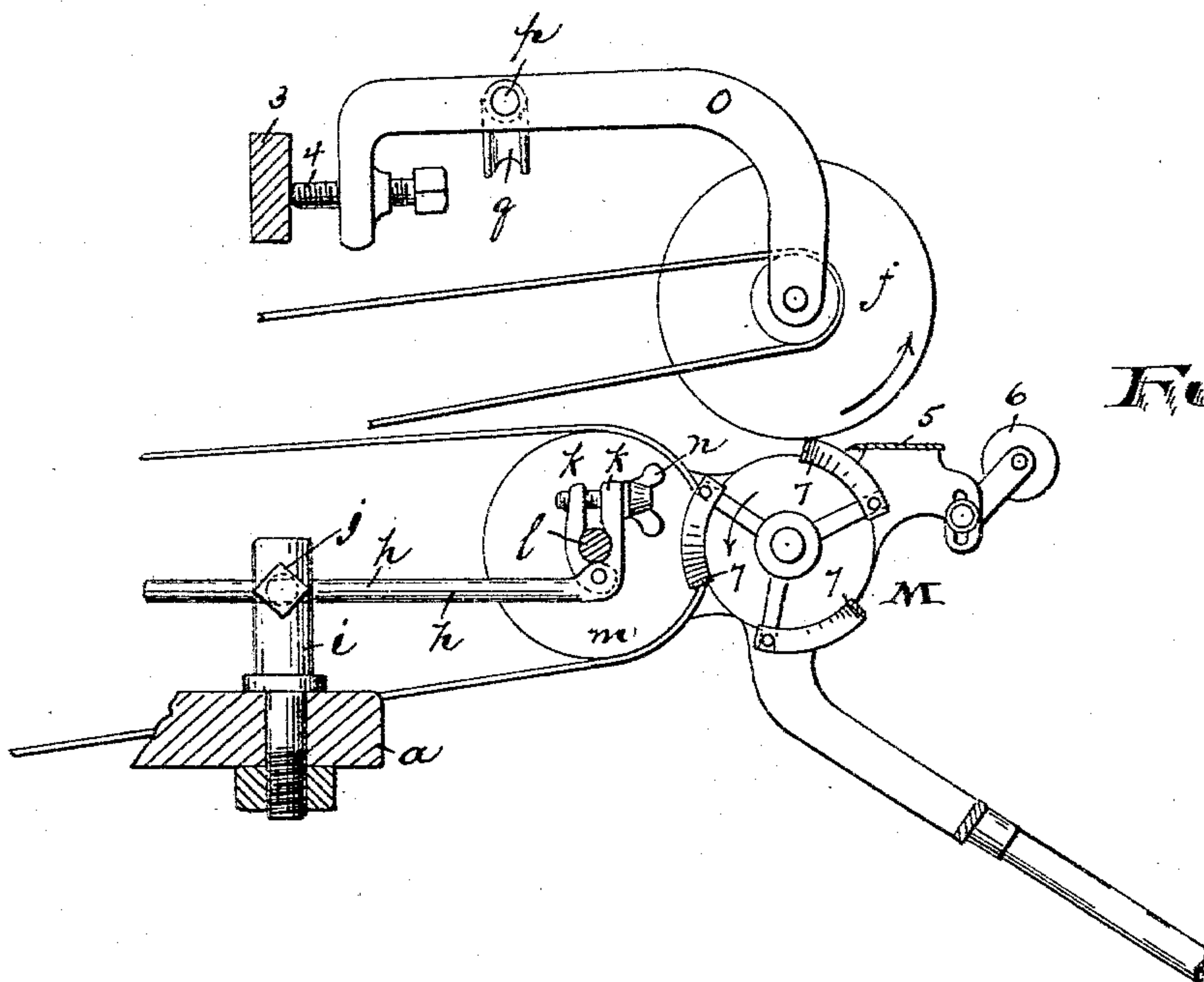


Fig. 3.

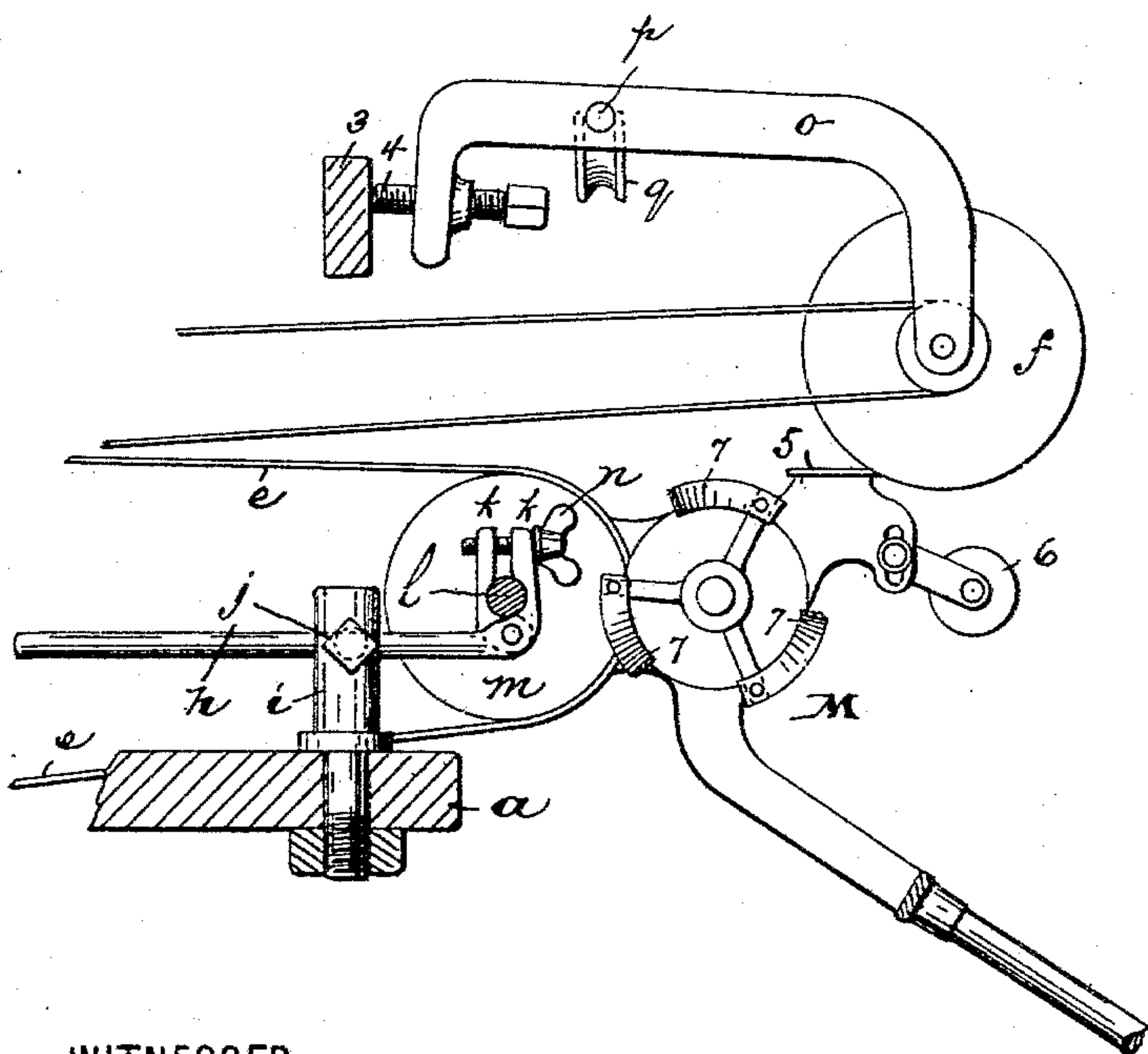


Fig. 4.

WITNESSES:

Robert Fallberg
L. B. Pitney

INVENTOR

Howard B. Schureman,

BY *Drake & Co* ATTYS.

UNITED STATES PATENT OFFICE.

HOWARD B. SCHUREMAN, OF NEWARK, NEW JERSEY.

GRINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 556,868, dated March 24, 1896.

Application filed September 5, 1895. Serial No. 561,498. (No model.)

To all whom it may concern:

Be it known that I, HOWARD B. SCHUREMAN, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Grinding-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, reference being had to the accompanying drawings, and to letters and numerals of reference marked thereon, which form a part of this specification.

The object of this invention is to enable the cutting-knives of lawn-mowers to be reground or sharpened with great facility and perfection; and it consists in the improved sharpening-machine and in the arrangements and combinations of parts, all substantially as will be hereinafter set forth and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like letters and numerals indicate corresponding parts in each of the several views, Figure 1 is a side elevation of the improved machine. Fig. 2 is a plan of the same, and Figs. 3 and 4 are details showing the relations of the means for holding the lawn-mower and grinding the knives thereof to said lawn-mower more clearly.

In said drawings, *a* indicates a suitable frame, providing bearings for the operating parts. *b* is a power pulley or pulleys adapted to receive power through a belt *c* or other means from any motor adapted for the purpose, and *d* and *e* are belts receiving power from said pulley or pulleys *b* and transmitting the same to a grinding-wheel *f* and pulley *g* of the mower, respectively, to produce the rotary motion desired.

To hold the mowing-machine in position while the knives thereof are being ground, I have provided a bracket or support *h*, arranged in connection with a binding post or stud *i*, the said support being adjustably but rigidly and securely held in position by a set-screw *j* or other suitable means in any manner convenient or desirable. Said support *h* is preferably provided with clamping-jaws *k*, one of which is pivoted and the other rigid

upon the support. Said jaws receive the shaft *l* on which the power-wheel *m* of the mower *M* revolves, and said shaft is rigidly held therebetween by a clamping screw or screws *n*. By these means the knives of the lawn-mower are held up to the grinding-wheel and the power-pulley *m* is secured in proper position to receive the belt *e*; but any other means may be provided to secure these results without departing from the invention.

The grinding-wheel is preferably a narrow one and is arranged on a transversely-movable carrier *o*, fixed upon a longitudinally-movable shaft *p*, arranged on rollers *q*, the latter having bearings at the opposite sides of the machine. By pushing or pulling this shaft by hand or otherwise the carrier *o*, and its grinding-wheel, is moved lengthwise of the knife-blade on which it is operating, as will be understood upon reference to Fig. 2.

It may be noted that the pulley *b* is stationed at quite a distance from the grinding-wheel *f* or the grooved pulley *f'* thereof, so as to admit of the desired lateral or transverse movements referred to. To take up the slack or looseness in the belt *d*, due to the said lateral movements or to the differences in the arrangements of the knives in the various mowing-machines operated upon, I have provided a weighted pulley *q*, arranged on a cord *r*, with the weight *s* suspended from a pulley *t* on the upper part of the frame. The weight *s* is sufficient to keep the belt *d* tight or in proper frictional relation to its pulleys, as will be understood. A similarly-weighted pulley *u* is employed in connection with the belt *e* to take up any slack occasioned by differences in the sizes or locations of the wheels *m* of various lawn-mowers. Said pulley *u* is also suspended from a cord *v* arranged over a pulley *w* of the frame *a*.

To hold the horizontally and laterally movable grinding-wheel in proper relation to the knife as it moves thereover, I have provided the frame with a transverse bearing *3*, on which the carrier *o* or an adjusting-screw *4* thereof slides. The rear end of said carrier is preferably bent down, so that the screw *4* may pass through the same to the bearing horizontally, and thus said screw is rendered more convenient of manipulation. By turn-

ing the screw 4 the relation of the grinding-wheel to the knife will be changed, as will be apparent.

In operating the invention the mowing-machine is turned over and the forward horizontal bar 1 thereof is rigidly and firmly fastened, so as to hold the mowing-machine rigidly in position. Should I wish to first grind the stationary knife 5, I adjust the parts so that said knife is presented to the grinding-wheel, as shown in Figs. 1 and 4, the rear roller 6 of the mowing-machine being turned down out of the way. Motion is then applied to the grinding-wheel, and as it revolves it is forced lengthwise of the knives by the hand pushing or pulling on the rod or shaft *p*. After this knife is sharpened the rotary knives 7 may then be adjusted to the grinding-wheel by loosening the support *h* in its binding-post *i* and sliding it forward to a position of engagement with the wheel *f*, where it is set by tightening the screw *j*. The belt *e* is then arranged over the pulley or friction-wheel *m* of the mowing-machine. The parts are then set in motion and movement is transmitted to the rotary knives by means of the ordinary gearing (not shown) within the mowing-machine, so that said knives move in the direction indicated by the arrow in Fig. 3. At the same time the grinding-wheel revolves in the reverse direction, as indicated by the arrow thereon, and the transverse movement is imparted by pushing on the rod or shaft *p*, as before.

By this construction and operation the mowing-machine may be quickly and very perfectly and accurately ground at a very small expenditure of skill and labor.

The machine may be utilized for grinding skates, &c.

Having thus described the invention, what I claim as new is—

1. The mowing-machine-regrinding machine herein described comprising a frame having a clamp for holding the frame of the mowing-machine rigidly in place, means for rotating the knife-carrier and knives of said mowing-machine while they remain assembled in their normal operative relations to each other, a grinding-wheel and a carrier for the same movable laterally and in a line parallel with the axis of rotation of said carrier and knives, and a hand rod or shaft *p*, supporting said grinding-wheel carrier, said shaft being arranged in sliding bearing of the frame first referred to, and means for rotating said grinding-wheel, all said parts being arranged and combined, substantially as set forth.

2. In a grinding-machine, the combination with the frame having the bearing 3, and means for holding the mowing-machine, of a grinding-wheel, its carrier *o*, rod *p*, wheels *q* of the frame, adjusting-screw 4, engaging said

bearing 3, and means for operating the grinding-wheel, all substantially as set forth.

3. In a machine for grinding mowing-machines, the combination with the frame having a transverse bearing 3, means for holding the mowing-machine rigidly in place, and means for turning the friction-wheel or power-pulley *m*, of the mower, of a horizontal and transverse shaft or rod *p*, a carrier *o*, fixed thereon, and engaging at one end, the said transverse bearing, and at the other having a grinding-wheel, and means for operating the grinding-wheel, said shaft or rod *p* being movable longitudinally by hand to move the grinding-wheel lengthwise of the blade, substantially as set forth.

4. In a machine for grinding mowing-machines, the combination with the frame having a transverse bearing 3, and binding-post *i*, of an adjustable support or bracket adapted to slide in said binding-post, and provided with clamping-jaws *k*, *k*, and screw *n*, means for turning the friction-wheel or power-pulley *m*, when the mower is clamped by said jaws, a horizontally-movable grinding-wheel, and its carrier sliding on said bearing 3, and means for moving said wheel horizontally, and rotating the same, all said parts being arranged and operating substantially as set forth.

5. In a machine for grinding mowing-machines, the combination with the frame having the transversely-movable grinding-wheel, and means for giving rotary and transverse movement to the same, of the clamps *k* on the support *w*, a binding-post *i*, and set-screw *j*, all arranged and operating, as set forth.

6. The combination with the frame *a*, having the transverse bearing 3, wheels *q*, pulley *b*, and means for operating the same, of an adjustable clamping-support *h*, a horizontally-movable grinding-wheel, a belt *d*, for operating the same, and a belt extending from said pulley *e*, to engage the pulley *m*, of the mowing-machine when the latter is fastened in said clamping-support, substantially as set forth.

7. In a grinding-machine, the combination with the frame having a transverse bearing, and a pulley, *t*, of a shaft *p*, carrier *o*, held by said shaft, and sliding on said bearing, a grinding-wheel on said carrier, a belt for rotating said wheel, and a weight and pulley arranged on a cord *r*, and suspended from said pulley *t*, to automatically tighten the belt first referred to, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 31st day of August, 1895.

HOWARD B. SCHUREMAN.

Witnesses:

CHARLES H. PELL,
C. B. PITNEY.