

No. 695,931.

Patented Mar. 25, 1902.

B. HEYWOOD.

KNIFE GRINDING ATTACHMENT FOR PLANING MACHINES.

(Application filed June 12, 1901.)

(No Model.)

2 Sheets—Sheet 1.

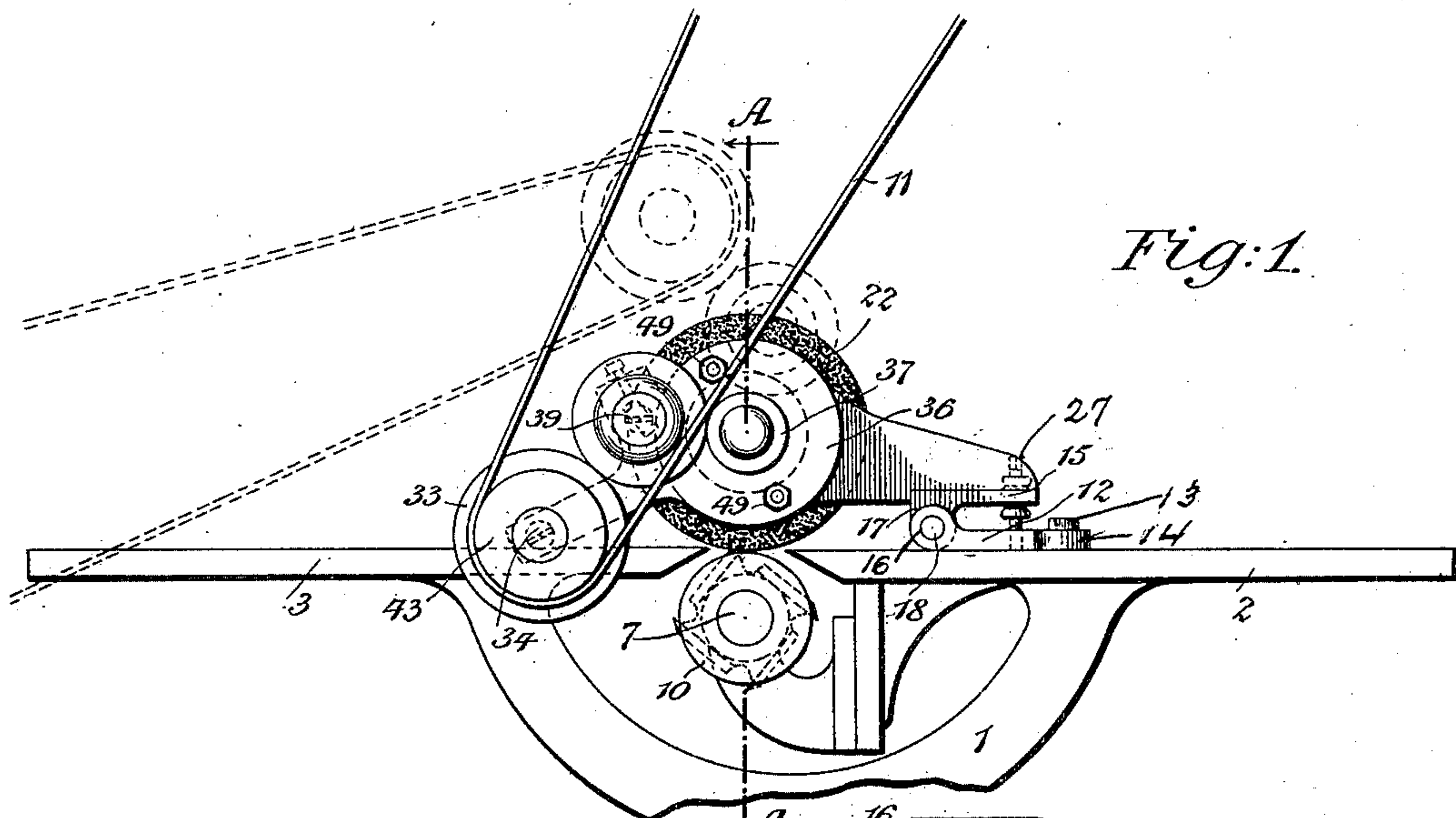


Fig: 1.

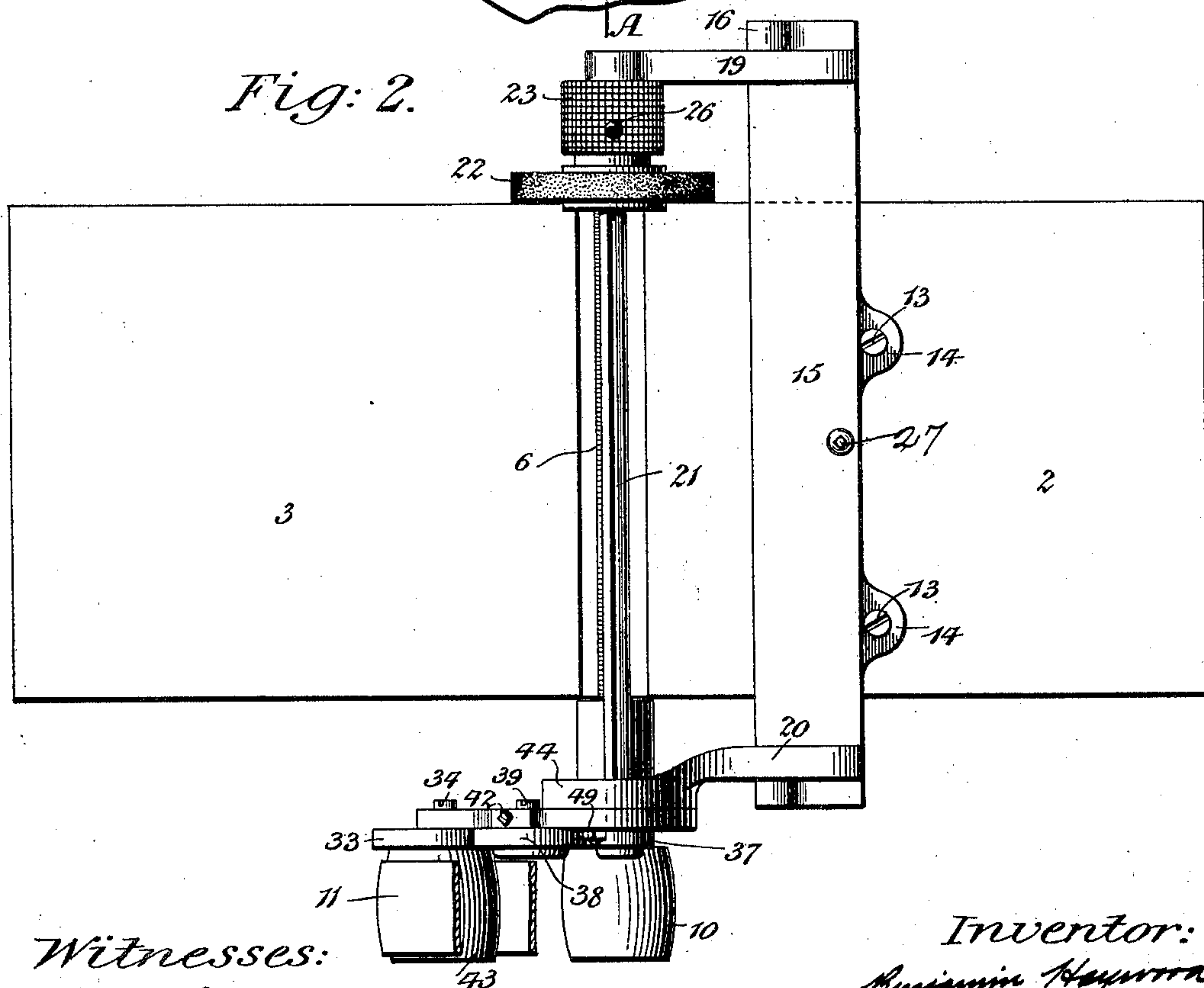


Fig: 2.

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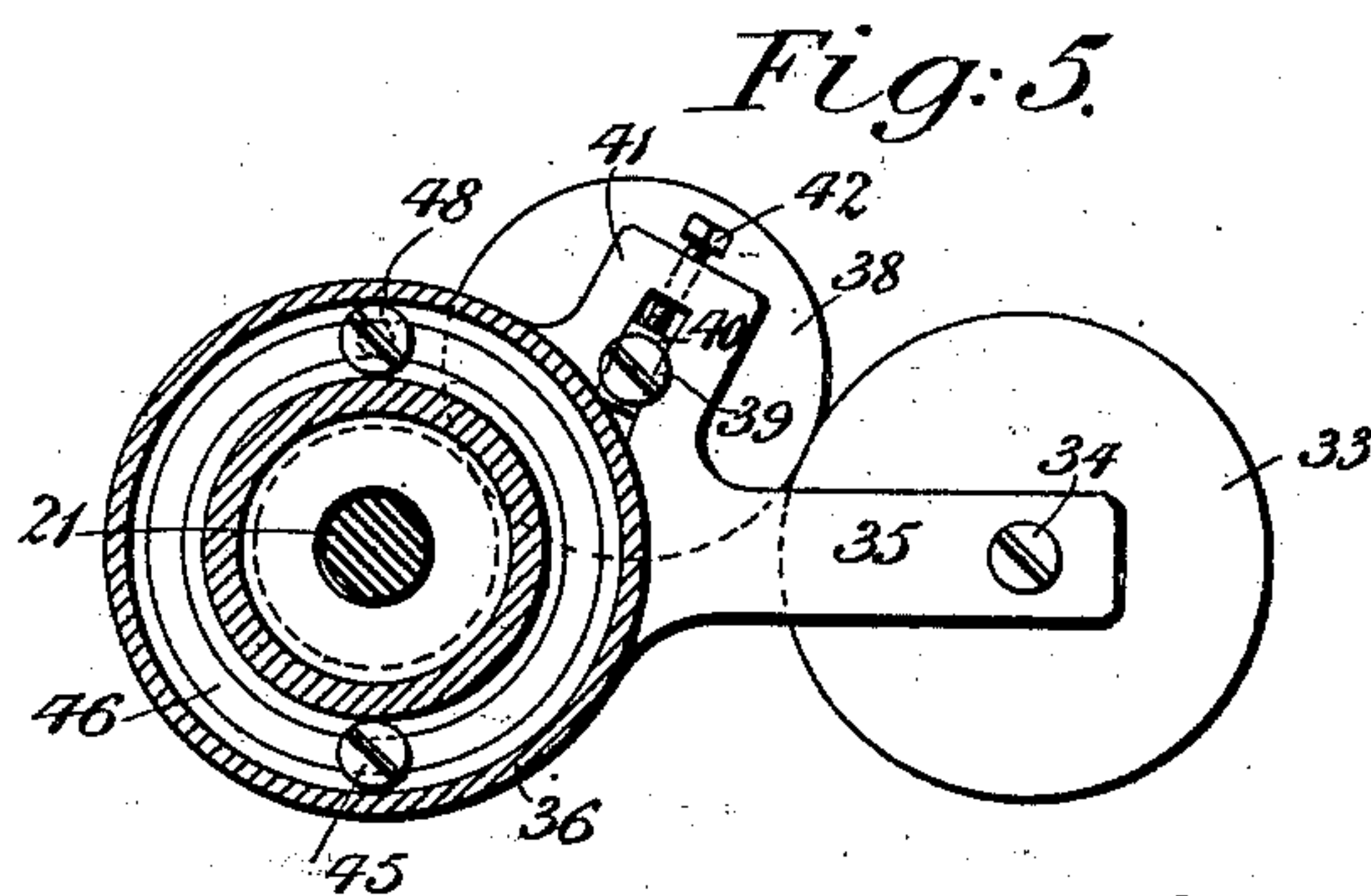
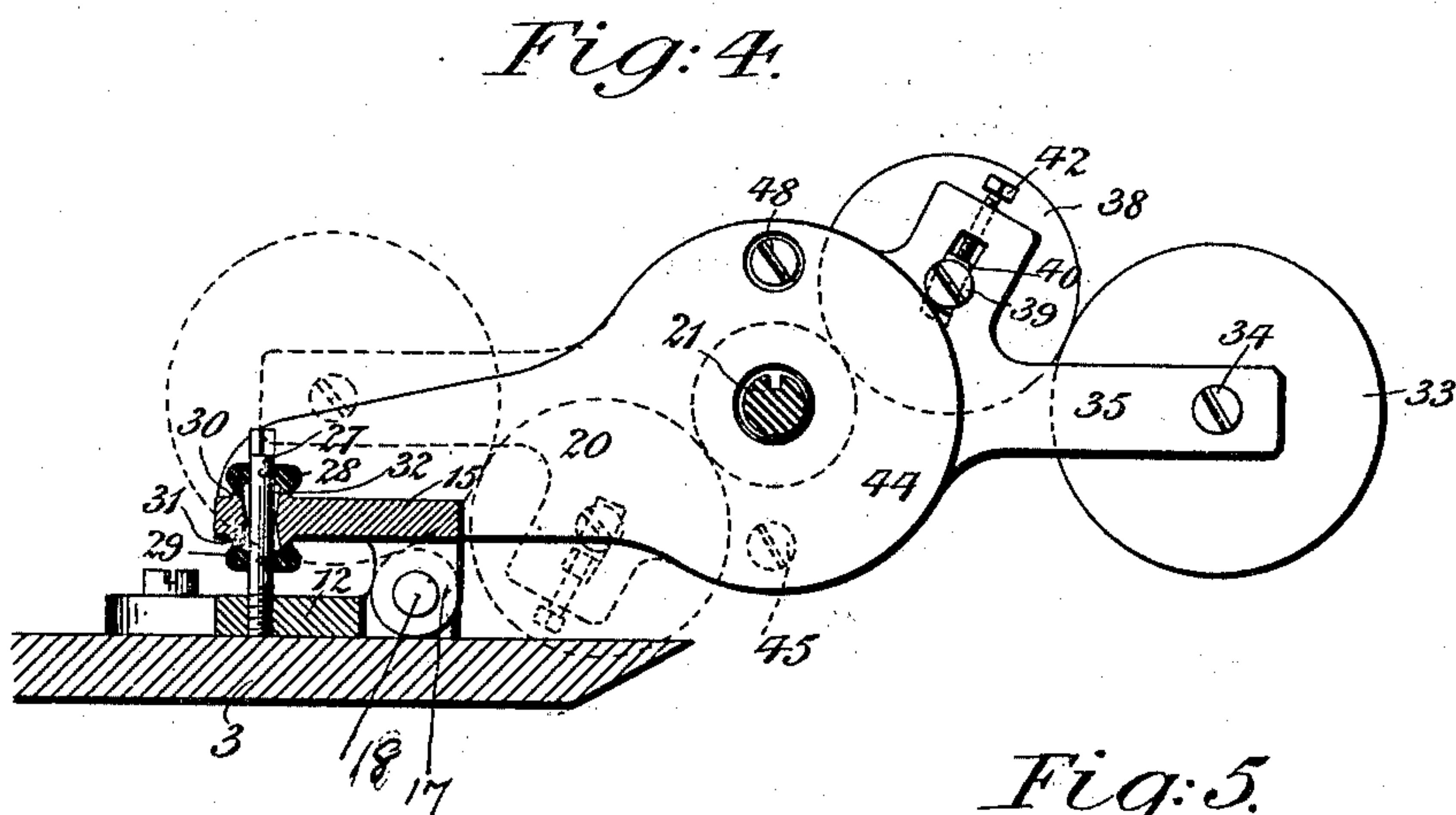
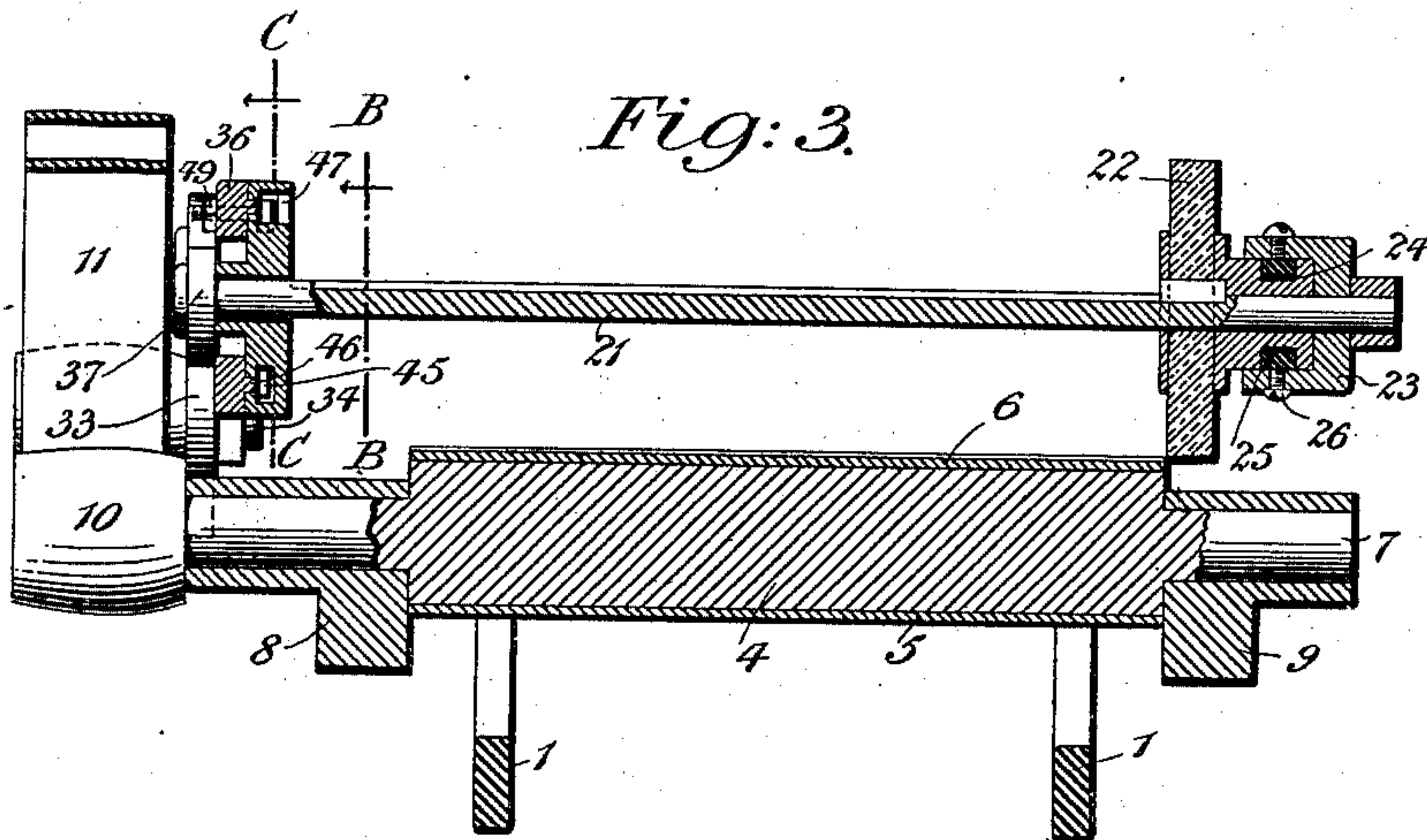
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# UNITED STATES PATENT OFFICE.

BENJAMIN HEYWOOD, OF EAST ORANGE, NEW JERSEY.

## KNIFE-GRINDING ATTACHMENT FOR PLANING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 695,931, dated March 25, 1902.

Application filed June 12, 1901. Serial No. 64,226. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN HEYWOOD, a citizen of the United States, and a resident of East Orange, in the county of Essex and State  
5 of New Jersey, have invented a new and useful Improvement in Knife-Grinding Attachments for Planing-Machines, of which the following is a specification.

My invention relates to an improvement in  
10 knife-grinding attachments for planing-machines, and has for its object to provide a device which may be attached to the machine in position to grind the knives without removing them from the cutter-head or the cut-  
15 ter-head from the machine.

A further object is to provide a device of the above character in which the attachment is readily adjustable, so that the driving-belt of the machine may be shifted onto the driv-  
20 ing-pulley, which drives the grinding-wheel without lengthening or shortening the said driving-belt.

A still further object is to provide a device in which the grinding-wheel, may be accu-  
25 rately adjusted with respect to the edge of the cutter-blade, so that as the wheel is passed back and forth along the same the cutter-blade will be exactly ground with respect to the work-supporting tables.

30 A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 represents my improved grinding attachment in position upon a planing-ma-  
35 chine, the driving-pulley for the grinding-wheel being shown in full lines in position to receive the driving-belt of the machine when it leads from a point above the machine and in dotted lines in the position which it would  
40 assume when it engages the driving-belt when the driving-belt leads from a point at or near the horizontal plane of the machine. Fig. 2 is a top plan view of the same. Fig. 3 is a  
45 transverse vertical section in the plane of the line A A of Fig. 1. Fig. 4 is a longitudinal vertical section taken in the plane of the line B B of Fig. 3 looking in the direction of the arrow, and Fig. 5 is a vertical longitudinal  
50 section taken in the plane of the line C C of Fig. 3 looking in the direction of the arrow.

In the accompanying drawings I have shown only so much of a planing-machine as will serve to give a clear understanding of the operation of my improved grinding attachment.

The frame of the machine is denoted by 1 55 and the two tables by 2 and 3.

The cutter-head is denoted by 4, upon which are suitably secured the blades or knives 5 and 6.

The cutter-head shaft is denoted by 7 and 60 is mounted in suitable bearings 8 and 9 in the frame 1.

The cutter-head-driving pulley is denoted by 10 and is driven by the usual driving-belt 11, which is shown in the present instance 65 leading from a point above the machine.

The base-plate of the knife-grinding attachment is denoted by 12, and it may be removably secured in position upon the top of the table 2 by means of screws 13, which pass 70 through lugs 14, projecting from the rear edge of the base-plate 12. A rocking plate 15 is hinged at the forward edge of the base-plate 12, in the present instance by providing up-  
75 wardly-extended ears 16 on the base-plate 12 and downwardly-extended ears 17 on the rocking plate 15, through which ears pass hinge-pintles 18. A pair of forwardly-extended arms 19 and 20 project from the oppo-  
80 site ends of the rocking plate 15, the ends of the said arms forming bearings for the rotary grinding-wheel shaft 21.

The knife-grinding wheel 22 has a tongue-and-groove connection with the shaft 21, so that the said wheel may be moved freely 85 along the said shaft for passing the wheel over the edge of the cutter upon the cutter-head when brought into position between the adjacent ends of the tables 2 and 3 of the machine. 90

The grinding-wheel 22 is provided with a suitable handle 23, by means of which the grinding-wheel may be fed back and forth by hand over the edge of the cutter, the said wheel having a free rotary movement within 95 the handle by providing the hub of the wheel with a circumferential groove 24, within which is loosely fitted a split ring 25, which split ring is secured to the handle 23 by means of set-screws 26.



The means which I have shown for accurately adjusting the grinding-wheel is constructed and arranged as follows: A bolt 27 passes downwardly through the rocking plate 5 15 and has a screw-threaded engagement with the base-plate 12. Collars 28 and 29 are fixed to the screw-bolt 27 upon the opposite sides of the rocking plate 15, the inner faces of the collars 28 and 29 having concave faces 10 fitted to convex projections 30 31 on the opposite faces of the rocking plate 15. The hole 32 in the rocking plate 15, through which the bolt 27 passes, is made of sufficient size to permit the slight rocking of the plate 15 15 as the bolt is adjusted for swinging the grinding-wheel toward and away from the cutter-blade.

The main friction driving-pulley 33 for driving the grinding-wheel is mounted on a 20 stud-axle 34, fixed to one arm 35 of a rocking disk 36, concentric with the grinding-wheel shaft 21. The said grinding-wheel shaft 21 is provided with a friction driving-pulley 37, exterior to the concentric rocking disk 36, 25 which driving-pulley is connected with the main friction driving-pulley 33 through an intermediate friction driving-pulley 38, mounted on a stud-axle 39, carried by a sliding bearing 40 in an arm 41, projecting from 30 the rocking disk 36.

The sliding bearing 40 is preferably mounted to move concentric to the axis of one of the friction driving-pulleys 33 or 37, in the present instance with the axis of the driving- 35 pulley 33, so that the friction driving-pulley 38 may be accurately brought into contact with the friction driving-pulley 37.

I have shown an adjusting-screw 42 for adjusting the bearing 40.

40 A belt-driving pulley 43 is also mounted on the stud-axle 34, upon which the friction driving-pulley 33 is mounted, which belt-driving pulley 43 is fixed to rotate with the pulley 33.

45 The means which I have shown for adjusting the belt-driving pulley 43 with respect to the cutter-head-driving pulley 10, so that the driving-belt can be shifted from the pulley 10 onto the pulley 43 irrespective of the 50 direction from which the belt is led without lengthening or shortening the plate, is constructed and arranged as follows: The free end of the arm 20 of the rocking plate 15 is enlarged, as shown at 44, and it is there provided on its outer face with a dovetailed an- 55 nular groove 45, concentric with the shaft 21.

The rocking disk 36 is provided with an annular rib or tongue 46, which is fitted to the contracted portions of the dovetailed grooves 60 45 in the outer end of the enlarged portion 44 of the arm 20, so that the said disk 36 is guided in its rocking movement with the shaft 21 as an axis.

65 An opening 47 leads from the inner face of the enlarged portion of the arm 20 into communication with the enlarged portion of the

dovetailed groove 45 therein, through which opening the bolts 48, which serve to hold the rocking disk 36 to the arm, may pass.

The heads of the bolts 48 are loosely fitted 70 within the enlarged portion of the annular dovetailed groove 45, while their shanks pass freely through the contracted portion of the said slot and also through the rocking disk 36.

Lock-nuts 49 engage the ends of the bolts 75 48, which project through the outer face of the disk 36. When the nuts 49 are loosened, the disk may be rocked to the desired position. The nuts 49 are then screwed up for clamping the disk rigidly in its desired adjustment. 80

By the use of the attachment herein above described I am enabled to accurately grind the cutting edges of the cutter-blades without removing the blades from the cutter-heads or removing the cutter-heads from the machine. 85 This is very important, as it insures the accurate grinding of the cutter-blades with respect to the tables.

What I claim is—

1. A knife-grinding attachment comprising 90 a base-plate fitted to be removably secured to the top of the table of a planing-machine in proximity to its cutter-head, a rocking plate hinged to the base-plate, arms projecting from the rocking plate, a shaft mounted to rotate 95 in the arms, a grinding-wheel mounted to rotate with the shaft and free to slide along the same in position to grind the knives in the cutter-head, and means for adjusting the rocking plate and thereby the grinding-wheel to- 100 ward and away from the cutter-head, substantially as set forth.

2. A knife-grinding attachment comprising a base-plate, a rocking plate hinged thereto, a grinding-wheel, a grinding-wheel shaft 105 mounted in the rocking plate, a rocking disk mounted concentric with the shaft, a driving-pulley carried by the disk and connected with the shaft for driving it and means for clamping the disk in its different positions; substan- 110 tially as set forth.

3. A knife-grinding attachment comprising a base-plate, a rocking plate hinged thereto, arms projecting therefrom, a grinding-wheel, a grinding-wheel shaft mounted to rotate in 115 said arms, a rocking disk concentric to the said shaft and having an annular tongue-and-groove connection therewith, a driving-pulley carried by said disk connected with the shaft and means for locking the disk in its different 120 positions, substantially as set forth.

4. A knife-grinding attachment comprising a base-plate, a rocking plate, arms projecting therefrom, a grinding-wheel, a grinding-wheel shaft mounted to rotate in said arms, one of 125 the said arms having a dovetailed annular groove therein concentric with the shaft, a rocking disk having an annular tongue fitted to the narrowed portion of the annular dovetailed groove in the arm and guide-bolts hav- 130 ing their heads located in said dovetailed groove and their shanks projected through



the disk, clamp-nuts engaging the shanks for  
clamping the rocking disk to the arm in its  
several positions and a driving-pulley carried  
by the disk connectd with the shaft for driv-  
5 ing it, substantially as set forth.

In testimony that I claim the foregoing as  
my invention I have signed my name, in pres-

ence of two witnesses, this 6th day of June,  
1901.

BENJAMIN HEYWOOD.

Witnesses:

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