

F. H. SMITH.
PENCIL SHARPENER.
APPLICATION FILED MAY 24, 1905.

Fig. 1.

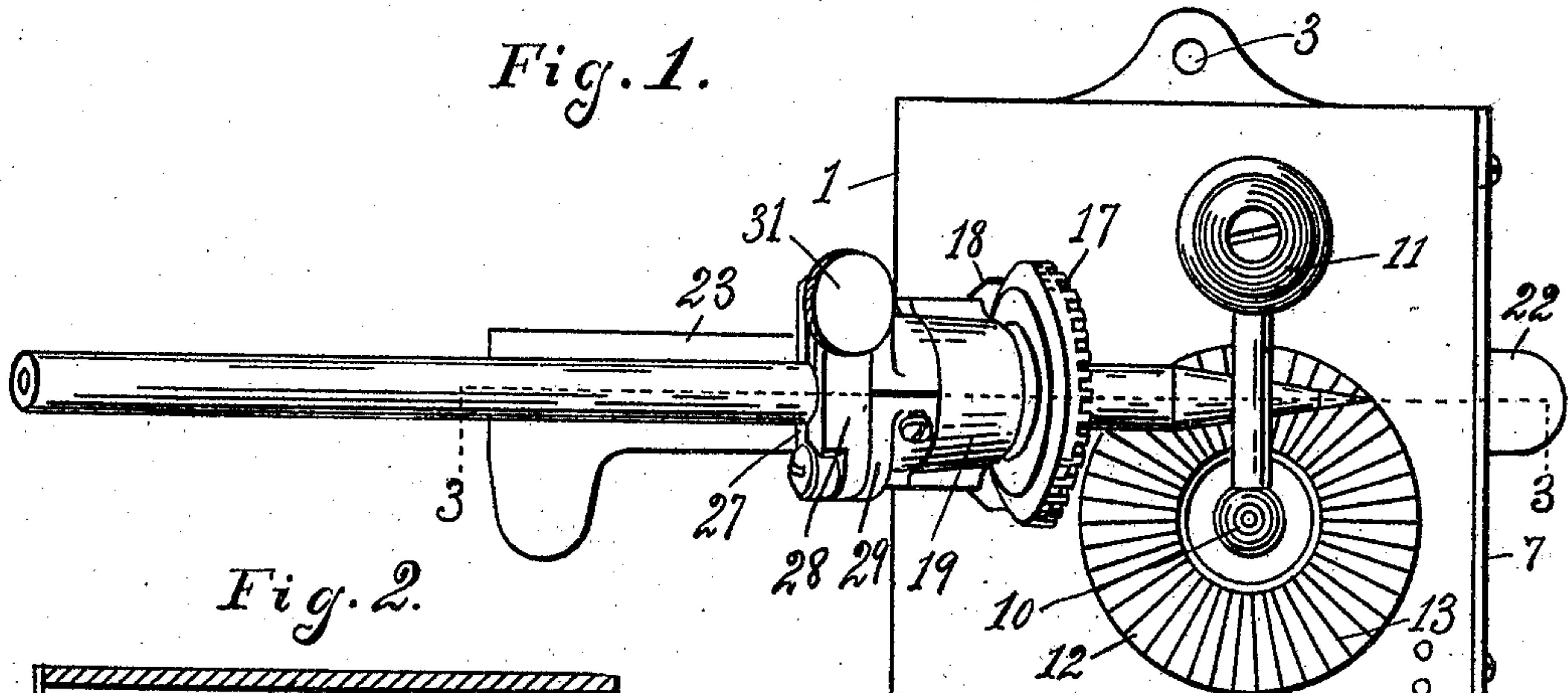


Fig. 2.

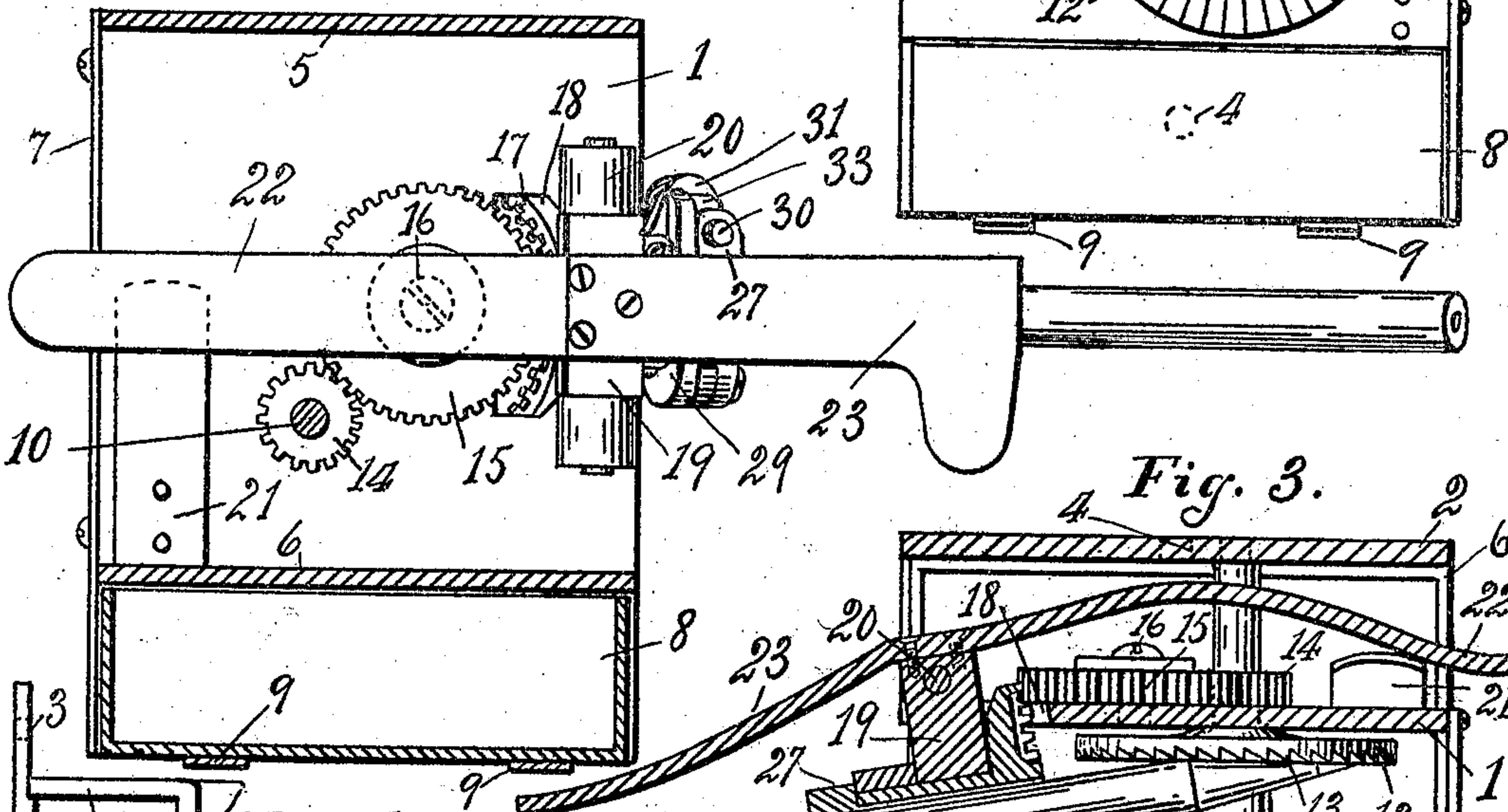


Fig. 3.

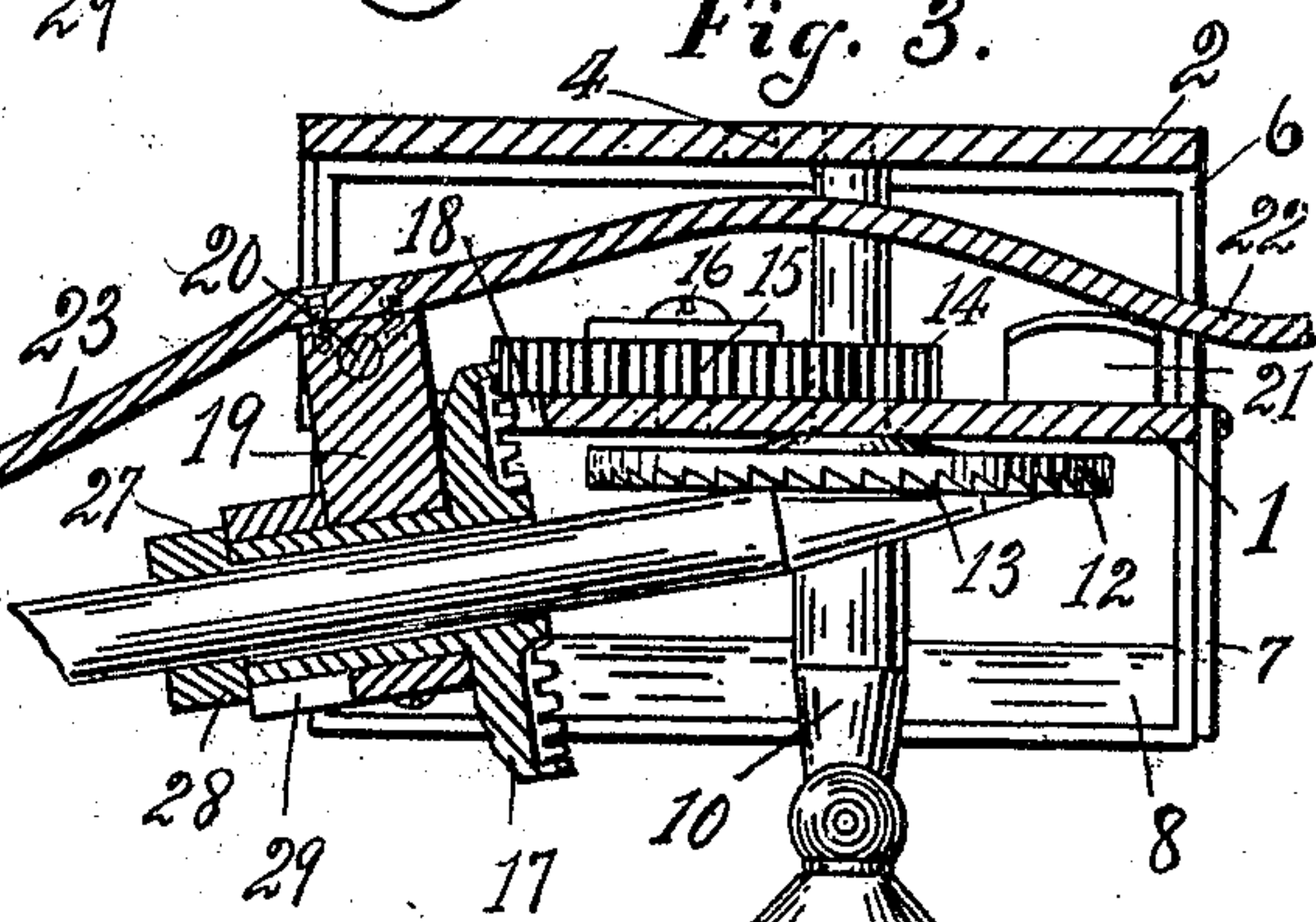


Fig. 4.

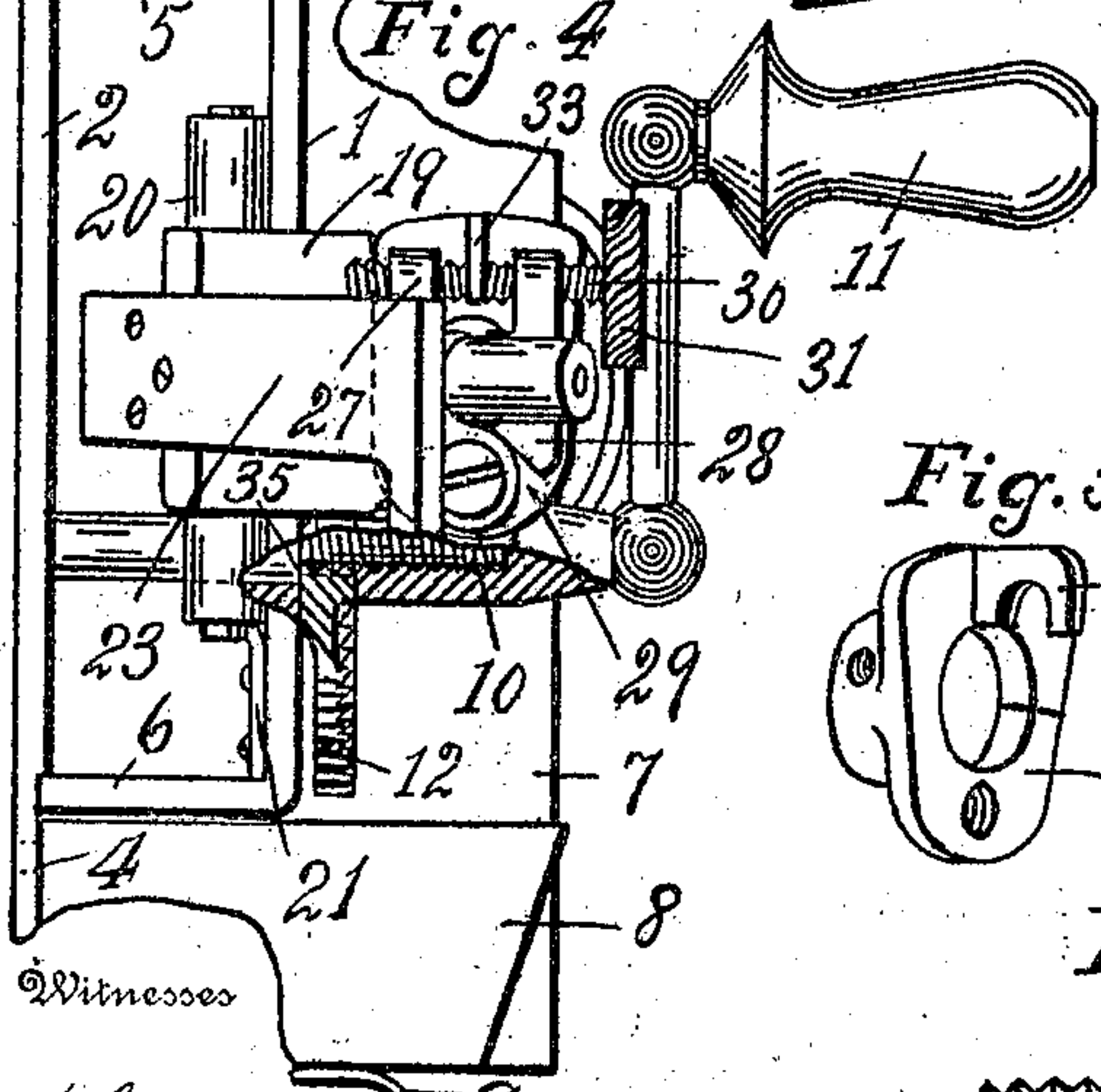


Fig. 5.

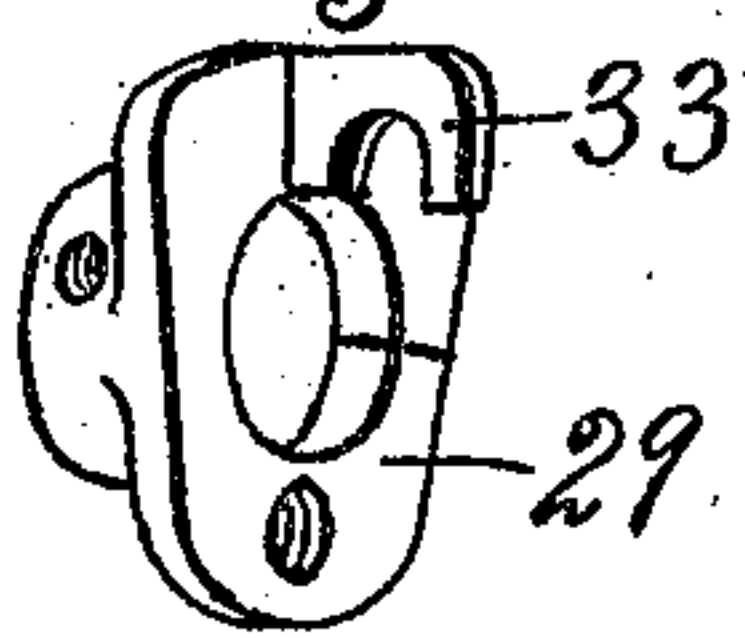


Fig. 6.

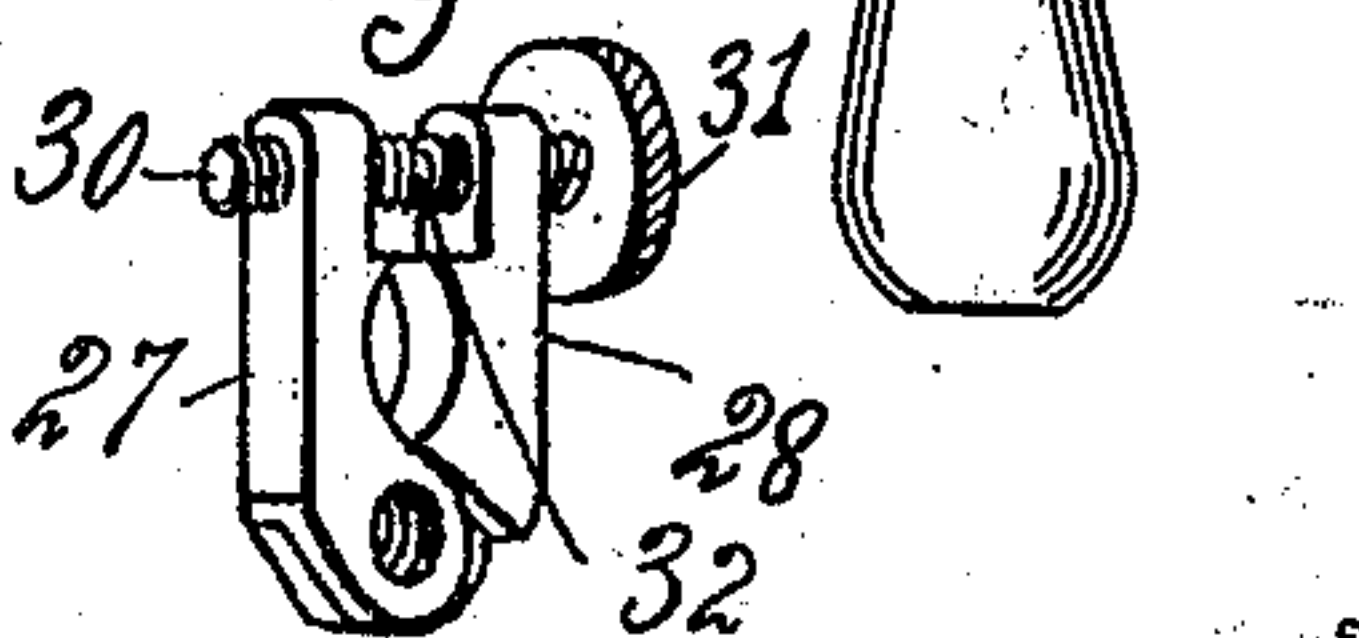
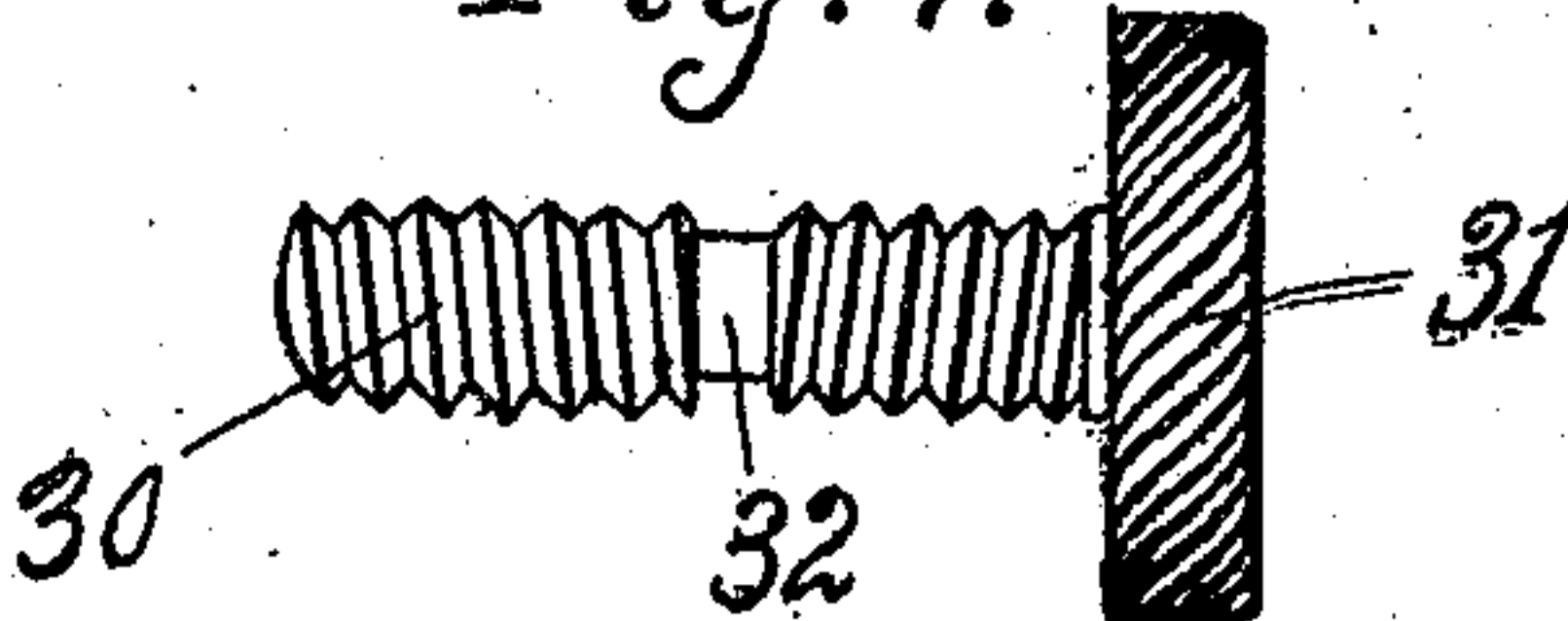


Fig. 7.



Witnesses
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UNITED STATES PATENT OFFICE.

FREDERICK H. SMITH, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF
ONE-HALF TO JOHN L. LISDALE, OF SAN FRANCISCO, CALIFORNIA.

PENCIL-SHARPENER.

No. 805,886.

Specification of Letters Patent.

Patented Nov. 28, 1905.

Application filed May 24, 1905. Serial No. 262,021.

To all whom it may concern:

Be it known that I, FREDERICK H. SMITH, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Pencil-Sharpeners, of which the following is a specification.

This invention relates to improvements in pencil-sharpeners, the object of the invention being to provide a pencil-sharpener of such construction that a taper of variable length or pitch may be given to the point of the pencil; that a full and unobstructed view may be obtained of the end of the pencil while being sharpened; that the device may be self-feeding and capable of being operated with one hand and may also have simple and effective means for increasing or decreasing the pressure of the pencil against the cutter with the free hand while the device is in motion; that the rotary disk-cutter may be made small and cheap and may be quickly attached or detached without the use of a screw-driver or other tool; further, to provide a construction by which a rapid motion can be given to the disk or cutter and a comparatively slow motion to the pencil, thus causing a minimum of side scraping, which has a tendency to break the lead of the pencil and cause roughness of the wood thereof; one by which the device may be fastened to the side of a desk or wall at any desired height and with which the whole device may be made of compact form, permitting of its being secured in any desired place where it will occupy but little space; further, to provide a construction by which the crank-handle may actuate the rotary disk or cutter direct without intermediate gearing or parts of any kind, thereby preventing any loss of power or motion; finally, to provide a construction such that a different part of the cutter will be brought into contact with each part of the circumference of the pencil with each revolution of the latter, thereby preventing any irregularity in the cut or taper which would be occasioned by the dullness of any part of the cutter.

The invention also resides in the novel construction, combination, and arrangement of parts for the above ends hereinafter fully specified, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a front elevation of the device. Fig. 2 is a

vertical section of the same looking from the rear. Fig. 3 is a horizontal section taken on the line 3 3 of Fig. 1. Fig. 4 is a side view of a portion of the device, parts being broken away. Figs. 5 and 6 are perspective views of the collar and clamp. Fig. 7 is an enlarged side view of the clamping-screw.

Referring to the drawings, 1 represents the front wall, and 2 the rear wall, of the frame of the device, said rear wall being formed with holes 3 4, (the latter shown in dotted lines in Figs. 1 and 3,) by which it may be secured by screws or otherwise to the side of a desk, a wall, or any other suitable support. The front wall is bent back at the top and bottom, as shown at 5 6, to abut against the rear wall and to form a space to receive gearing, as hereinafter described. Said front wall also has a forwardly-extending side wall 7 on the side opposite to that at which the pencil is held, said side wall preventing the shavings and dust being thrown outward by the action of the cutter and also forming an abutment for the end of a box 8, which is supported beneath the lower rearward extension 6 and above two spring-supports 9, extending forwardly from the lower edge of the rear wall 2. This box serves to receive the shavings and graphite-dust arising from the sharpening of the pencil and may be removed and emptied from time to time as desired.

In bearings in the front and rear walls of the frame is a main shaft 10, having a crank-handle 11 and carrying on the front side of the wall 1 a rotary cutter 12, having a circular series of radial cutting edges 13. On the rear side of said wall said shaft carries a pinion 14, which meshes with a gear 15 on a stud 16, extending rearwardly from the front wall, said gear 15 meshing loosely to permit of swinging movement with a crown-wheel 17, located in front of the front wall 1, which is formed with a slot 18 to permit said crown-wheel to mesh with said gear-wheel. Said crown-wheel 17 is formed with a hollow shaft mounted in a block 19, hinged vertically, as shown at 20, to the edge of the front wall. Through this hollow shaft is passed the pencil, and on account of the direction of said shaft being normally inward or toward the face of the front wall the end of the pencil then rests against the rotating cutter. Said end is pressed against said cutter by means of a spring 21, secured upon the rear of the front

wall, the free end of which presses against an arm 22, secured to said hinged block. This will in general provide sufficient pressure to hold the pencil against the cutter. However, this pressure may be increased by force applied by the finger of the operator either rearwardly to the end of the arm 22, extending out beyond the edge of the front wall, or forwardly against the end of an arm 23, extending from said block to the left or in the opposite direction to the arm 22. When the crank is operated by the right hand of the operator, it will generally be more convenient to exert this forward pressure by means of the left hand upon the arm 23. It will be seen that these arms 22 23 may be also utilized to reduce when necessary the pressure upon the pencil exerted by the spring 21 and that the arm 22 is more convenient to the right hand in lifting the holder to place the pencil in position on the cutter with the left hand.

The taper given to the point of the pencil will depend upon the position of the end of the pencil over the cutter. If only a short portion of the pencil extends over the rotary cutter, a blunt point will be formed. If the end of the pencil extends considerably over the rotary cutter, a more tapering point will be formed. The pencil is clamped in position in the hollow shaft by means of a clamping device consisting of two jaws 27 28, pivoted upon a collar 29, secured upon the hollow shaft, said jaws having coregistering half-round sockets adapted to engage the sides of the pencil, the ends of said jaws being threaded right and left handed to receive the right and left handed threaded portions of a screw 30, having a milled head 31 and having an unthreaded central portion 32, passing underneath a hook 33, formed on the collar 29. This clamping device permits the pencil to be firmly clamped and held in position with a very short turn of the screw. Thus the pencil may be adjusted in position for sharpening or may be withdrawn very quickly.

As shown in Fig. 4, the crank-handle 11 is screwed onto the end of the shaft 10, thereby clamping the rotary cutter 12 against a shoulder 35 on said shaft. When it is desired to change the cutter, all that is necessary is to rotate the crank-handle backward, which unscrews it from the shaft, remove the cutter, and substitute it by another. It will be seen that with this construction the crank-handle actuates the rotary cutter direct without any intermediate gearing, thereby preventing loss of power.

From the foregoing description it will readily be seen that the principal objects of the invention have been accomplished. It may be added that by providing a pinion 14 and crown-wheel 17, having a number of teeth such that the number of teeth on the pinion does not divide exactly into the number of teeth on the crown-wheel a different part of

the cutter is brought into contact with the circumference of the pencil at each revolution of the latter, thereby preventing any irregularity in the cut due to an imperfection of any part of the cutter.

The word "cutter" in the claims is to be understood as of sufficient breadth to include not only a metallic cutter having sharp cutting edges, but any device having a surface for reducing the end of the pencil to a point, either by cutting, abrasion, or otherwise.

I claim—

1. A pencil-sharpener comprising a frame having front and rear walls and provided with means for securing it to any suitable support, a shaft having bearings in said walls, a rotary cutter and a handle upon the front end of the shaft, a pinion upon the shaft between the walls, means for holding a pencil so that its end rests upon the face of the cutter, and an operative connection between said pinion and pencil-holding means to rotate the latter from the movement of the pinion, substantially as described.

2. A pencil-sharpener comprising a frame having front and rear walls and provided with means for securing it to any suitable support, a shaft having bearings in said walls, a rotary cutter and a handle upon the front end of the shaft, a pinion upon the shaft between the walls, means for holding a pencil so that its end rests upon the face of the cutter, a toothed wheel carried by said pencil-holding means, and an intermediate toothed wheel meshing with the former toothed wheel and the pinion, substantially as described.

3. A pencil-sharpener comprising a frame having front and rear walls and provided with means for securing it to any suitable support, a shaft having bearings in said walls, a rotary cutter and a handle upon the front end of the shaft, a pinion upon the shaft between the walls, means for holding a pencil so that its end rests upon the face of the cutter, a movable support for the pencil-holding means permitting the pencil to be moved to and from the cutter, and an operative connection between said pencil-holding means and pinion, unaffected by the to-and-fro movement of the support, substantially as described.

4. A pencil-sharpener comprising a frame having front and rear walls, and provided with means for securing it to any suitable support, a shaft having bearings in said walls, a rotary cutter and a handle upon the front end of the shaft, a pinion upon the shaft between the walls, means for holding a pencil so that its end rests upon the face of the cutter, a toothed wheel carried by said pencil-holding means, an intermediate toothed wheel meshing with the former toothed wheel and the pinion, the front wall having a slot through which the toothed wheel attached to the wall passes, to engage said intermediate wheel, substantially as described.

5. A pencil-sharpener comprising a frame having front and rear walls, and provided with means for securing it to any suitable support, a shaft having bearings in said walls, a rotary cutter and a handle upon the front end of the shaft, a pinion upon the shaft between the walls, means for holding a pencil so that its end rests upon the face of the cutter, said means carrying a crown-wheel, and an intermediate toothed wheel engaging said pinion and crown-wheel, the front wall having a slot through which the crown-wheel passes, substantially as described.

6. A pencil-sharpener comprising a frame having front and rear walls, and provided with means for securing it to any suitable support, the front wall being bent back at the top and bottom to abut against the rear wall and having also a forwardly-extending side wall, a box removably held beneath the lower rearward extension and abutting against said side wall, said box extending forwardly beyond the front wall, a rotary cutter on the front side of the front wall, means for turning said cutter, means for holding a pencil so that its end rests upon said cutter, and gearing operatively connecting the cutter-shaft with the pencil-holding means and located between the walls, substantially as described.

7. A pencil-sharpener comprising a wall, a shaft passing therethrough, a rotary cutter and a handle upon the front end of the shaft, a pinion on the shaft behind the wall, means for holding a pencil so that its end rests upon

the face of the cutter, a toothed wheel carried by said pencil-holding means, and an operative connection between said toothed wheel and the rotary cutter-shaft, and located behind said wall, substantially as described.

8. A pencil-sharpener comprising a wall, a shaft passing entirely therethrough, a rotary cutter and a handle upon the front end of the shaft, a swinging support for a pencil to hold the same so that its end rests upon the face of the cutter, means for rotating the pencil, an operative connection between said cutter and means an arm extending from said pencil-holding means, and a spring engaging said arm to hold the pencil against the cutter, substantially as described.

9. A pencil-sharpener comprising a wall, a shaft passing entirely therethrough, a rotary cutter and a handle upon the front end of the shaft, a swinging support for a pencil to hold the same so that its end rests upon the face of the cutter, means for rotating the pencil, an operative connection between said cutter and means arms extending in both directions from the pencil-holder, and a spring operating upon said holder to hold the pencil against the cutter, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FREDERICK H. SMITH.

Witnesses:

FRANCIS M. WRIGHT,
BESSIE GORFINKEL.