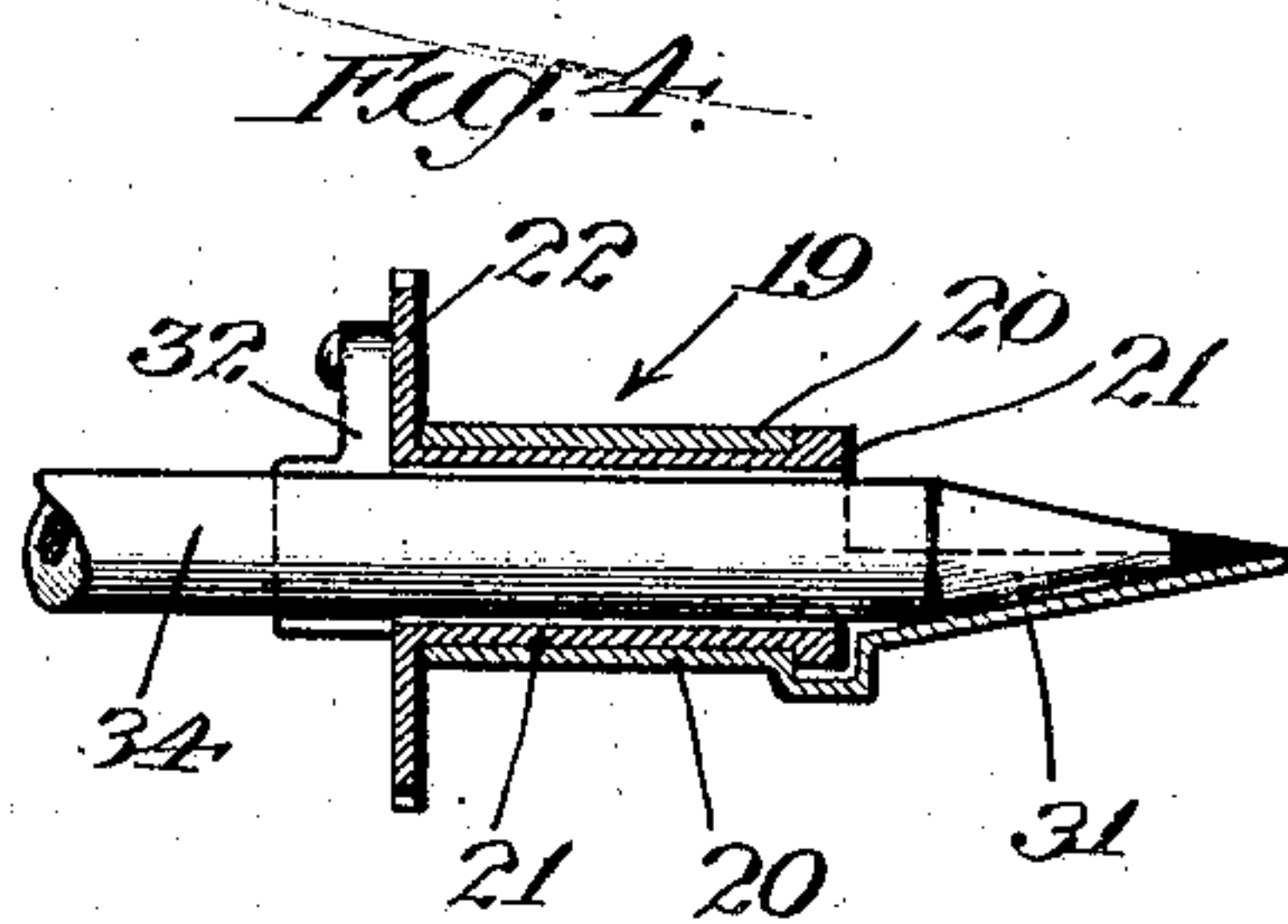
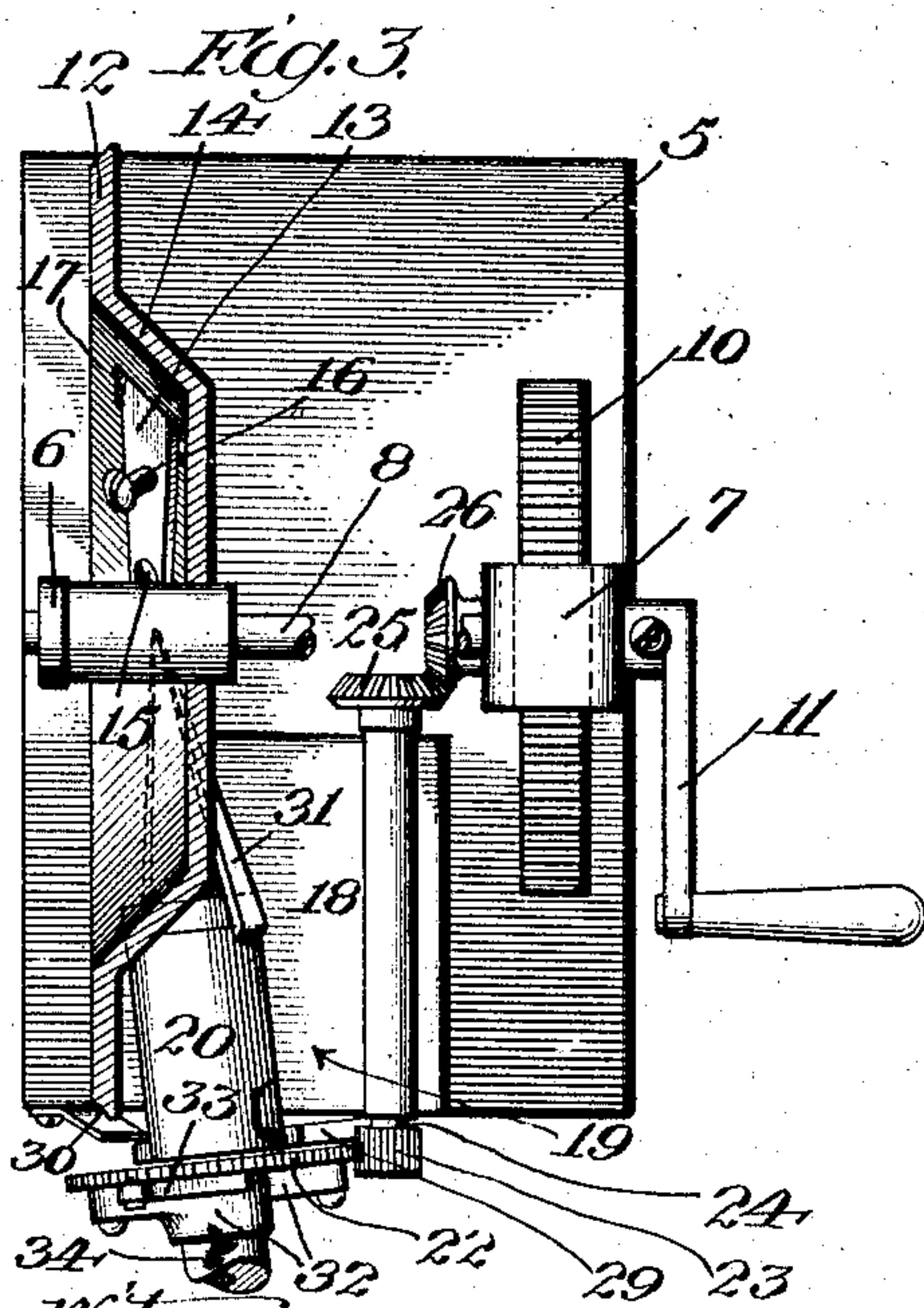
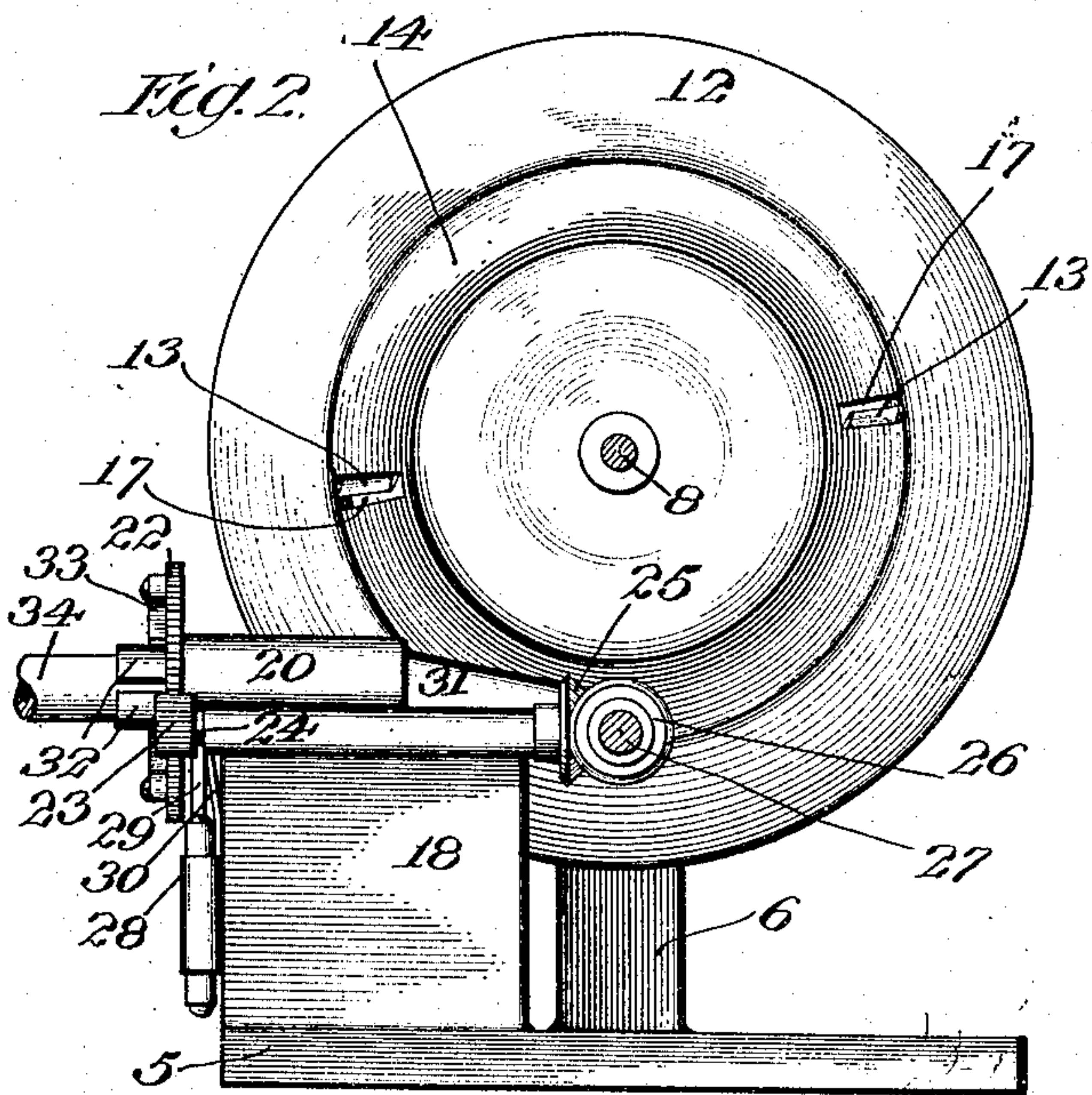
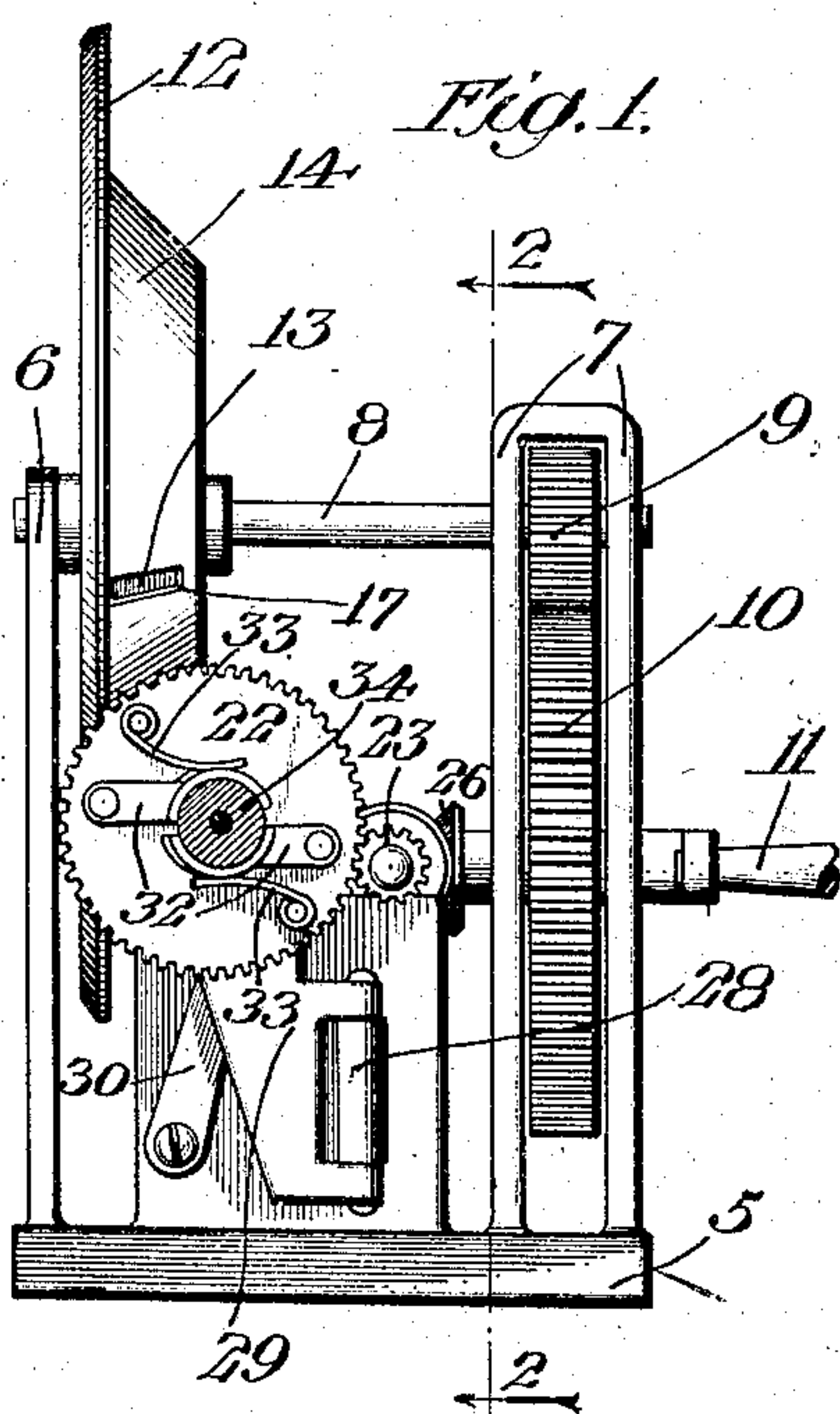


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PENCIL SHARPENER.
APPLICATION FILED SEPT. 24, 1907.

911,778.

Patented Feb. 9, 1909.



Witnesses:
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UNITED STATES PATENT OFFICE.

EMIL SUTHERLAND, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO WILLIAM E. PILE, OF LOS ANGELES, CALIFORNIA.

PENCIL-SHARPENER.

No. 911,778

Specification of Letters Patent.

Patented Feb. 9, 1909.

Application filed September 24, 1907. Serial No. 394,255.

To all whom it may concern:

Be it known that I, EMIL SUTHERLAND, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Pencil-Sharpener, of which the following is a specification.

The prime object of my invention is to provide a device which will automatically sharpen a pencil to any configuration desired and which will so hold the pencil point during the process of sharpening that it is impossible to break the point.

A further object is to provide a device which may be arranged to sharpen a pencil to a point of any degree of concavity so that a maximum amount of lead may be exposed by cutting away a minimum amount of pencil stock.

A further object is to provide a device which is simple in construction and operation and which may be cheaply manufactured for the trade.

I accomplish these objects by means of the device described herein and illustrated in the accompanying drawings in which:—

Figure 1 is an end elevation of my improved pencil sharpener with a pencil in place therein. Fig. 2 is a sectional elevation taken on line 2—2 of Fig. 1. Fig. 3 is a plan view of the device with the cutter disk in section. Fig. 4 is a sectional view of the pencil holder.

Referring to the drawings 5 designates a suitable base or frame upon which are mounted standards 6 and 7 which support cutter shaft 8 journaled therein. Shaft 8 carries a pinion 9 which meshes with a gear 10 journaled in standards 7 and provided with a crank 11 by means of which it may be rotated to rotate the shaft 8. Shaft 8 also carries a cutter disk 12 rigidly mounted thereon which is provided with a plurality of knives 13. Disk 12 is provided with a truncated conical portion 14 whose inclination to the body portion of disk 12 may vary to suit the needs of any particular usage. Knives 13 are mounted on the inside of this cone shaped portion, which is hollow, by means of screws 15 and adjusting screws 16, the end or cutting edge of the knife projecting through apertures 17 in the cone shaped portion of the disk. By means of adjusting screws 16 the amount by which the edge of the knife stands above the cone shaped sur-

face of the disk may be varied so as to take various sized cuts off the pencil which is inserted in the machine.

Mounted on an extension 18 of base 5 is a pencil holder 19 which consists primarily of an outer sleeve 20 secured to extension 18 and an inner sleeve 21 adapted to revolve within the sleeve 20. Inner sleeve 21 is provided with a gear 22 which meshes with pinion 23 mounted on shaft 24 which carries on its other end a beveled gear 25 meshing with a similar gear 26 on crank shaft 27 which carries large gear 10. Thus it will be seen that when crank 11 is turned sleeve 21 will be slowly rotated while cutter disk 12 will be rapidly rotated.

As hereinbefore mentioned sleeve 20 is mounted on extension 18 being secured thereto by means of a hinge 28 one of whose members is secured to extension 18 and the other being a frame 29 which is secured to sleeve 20 at one end thereof as shown in Fig. 3. A flat spring 30 is rigidly secured on extension 18 and presses outwardly against frame 29 so that the inner end of sleeve 20 is forced towards cutter disk 12. The inner end of sleeve 20 is provided with a pencil guard 31 which resembles a half cone in configuration as shown most clearly in Fig. 3. The outer end of sleeve 21 is provided with a pencil clamp which consists of two pivoted members 32 mounted on gear 22 and having jaws of a semi-circular configuration. Flat springs 33 press these jaws towards each other and into engagement with pencil 34 which is placed in position as shown in the drawings.

When a pencil has been placed in the machine crank 11 is rotated thereby rotating cutter disk 12 to force knives 13 against the pencil and to cut the stock of the same away. The pencil is meanwhile revolved so that the cutting action takes evenly around the same and is at the same time pressed into engagement with the knives by spring 30.

It is obvious that the pencil can move inwardly as fast as it is cut away as it is otherwise impossible for it to enter the cone shaped guard. Thus it will be seen that the point of the pencil will be always supported by the guard whether the same is fully sharpened or only partly so and all breakage will be avoided. It will further be manifest that the pencils will be sharpened to a concave point as knives 13 do not revolve in a plane

through their cutting edges and it will be seen that the concavity of the point may be varied by varying the angle which the cone shaped portion of disk 12 makes to the body thereof. Thus if the configuration of the cone shaped portion approaches that of a cylinder a maximum concavity of the pencil point will be obtained, the amount of this concavity depending upon the radius, at which the knife edges revolve. On the other hand if the cone shaped portion becomes flatter the concavity of the pencil point will approach a minimum. The object of having the pencil point concave is readily understood as it is possible to thus produce a pencil point which exposes the maximum amount of lead by cutting away the minimum amount of wood, thus making a point which may be used a long time without being re-sharpened and also providing a point which is strong on account of its shortness.

Having described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In a device of the class described, a frame; a conical cutter disk provided with a plurality of cutter knives rotatively mounted in said frame; a spring pressed pencil holder pivotally mounted on said frame and adapted to press a pencil against said cutter disk; and means to rotate said pencil comprising a revoluble sleeve mounted in said pencil holder, said revoluble sleeve provided with a plurality of spring pressed clamps adapted to engage with the pencil and hold the same in engagement with the sleeve.

2. In a pencil sharpener, a rotating member of hollow frusto-conical configuration, said member being provided with slots leading from its hollow interior to its frusto-

conical face, and knives mounted on the inner surface of said member, the cutting edges of said knives projecting through the slots in said member.

3. A pencil sharpener comprising a frame, a frusto-conical cutter member rotatively mounted in said frame, knives mounted on said member, a revoluble pencil holder pivotally mounted on said frame, the pivotal axis of said holder being at right angles to the pencil held therein, resilient means to press said holder towards said cutter member, and means to rotate said cutter member and said pencil holder.

4. A pencil sharpener comprising a frame, a hollow frusto-conical cutter member rotatively mounted in said frame, the axis of the frusto-conical surface coinciding with the axis of rotation thereof, said member being provided with slots leading from its hollow interior to its frusto-conical face, knives mounted on the interior of said member and projecting through the said slots, a revoluble pencil holder pivotally mounted on said frame, the pivotal axis of said holder being at right angles to the pencil held therein, said holder being provided with resilient pencil gripping means, a conical guard adapted to support the point of the pencil, the side of said guard toward said cutter member being removed, resilient means to press said holder towards said cutter member, and means to rotate said cutter member and said pencil holder.

In witness that I claim the foregoing I have hereunto subscribed my name this 17th day of September, 1907.

EMIL SUTHERLAND.

Witnesses:

TRIMBLE BARKELEW,
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