

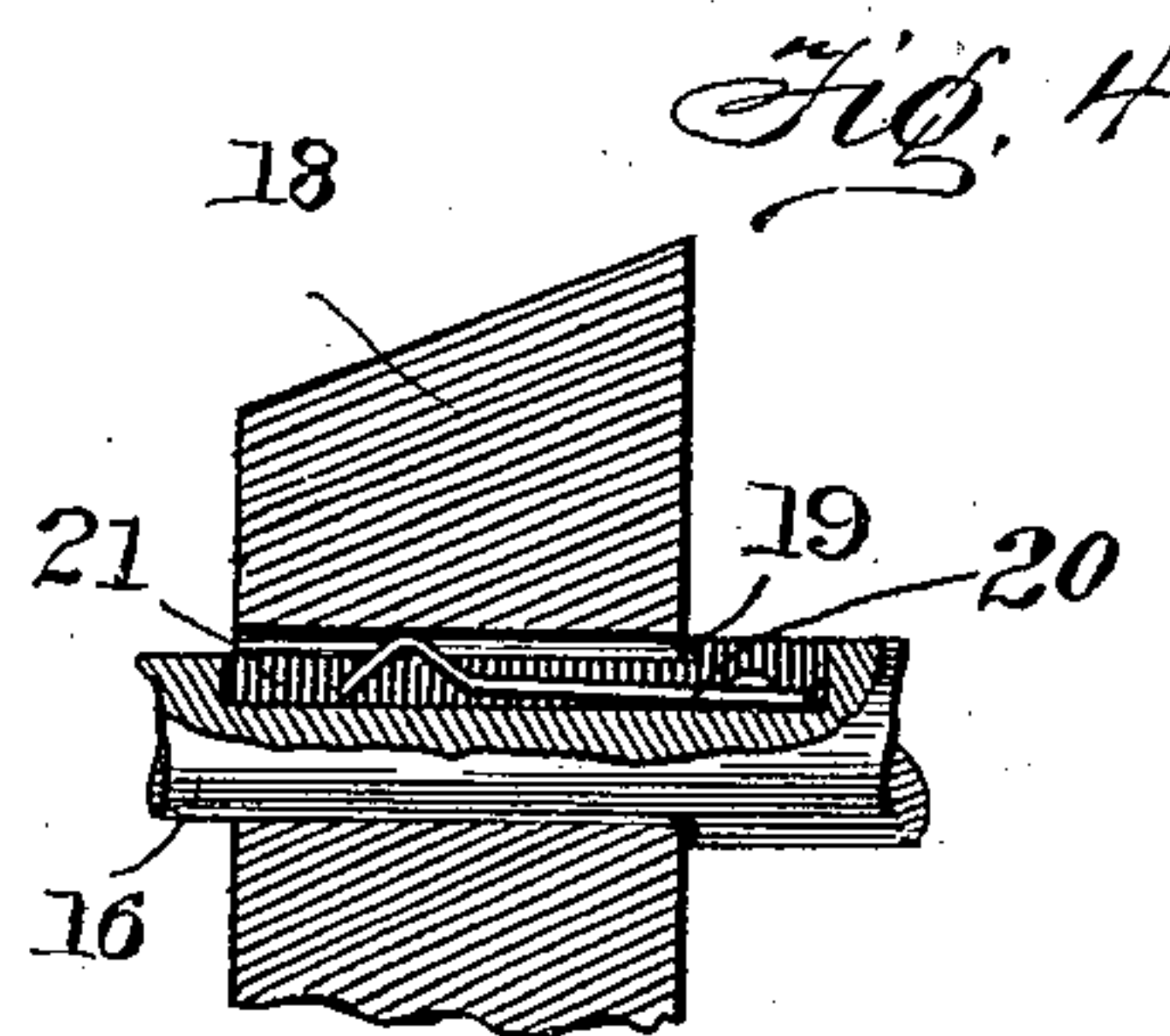
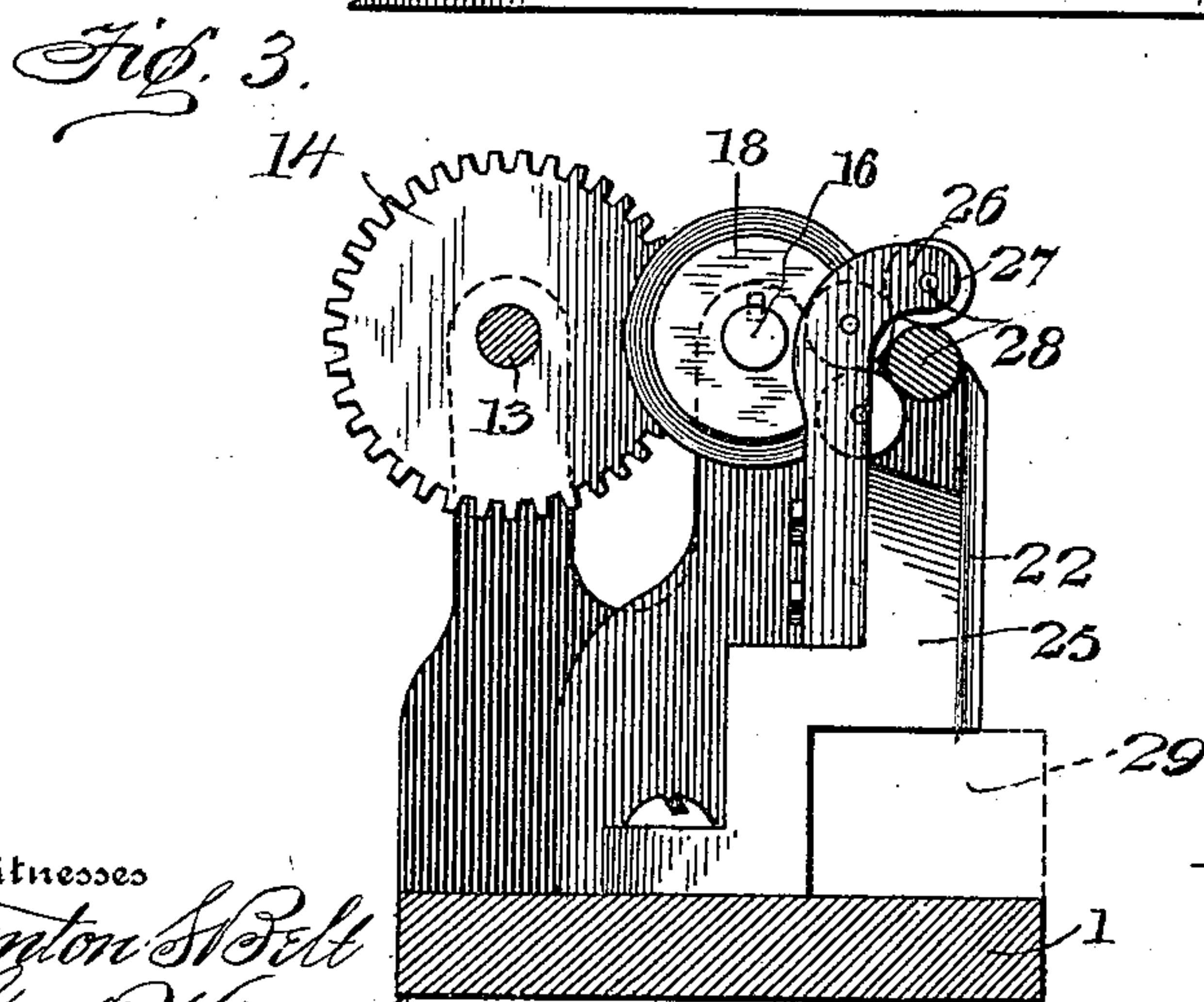
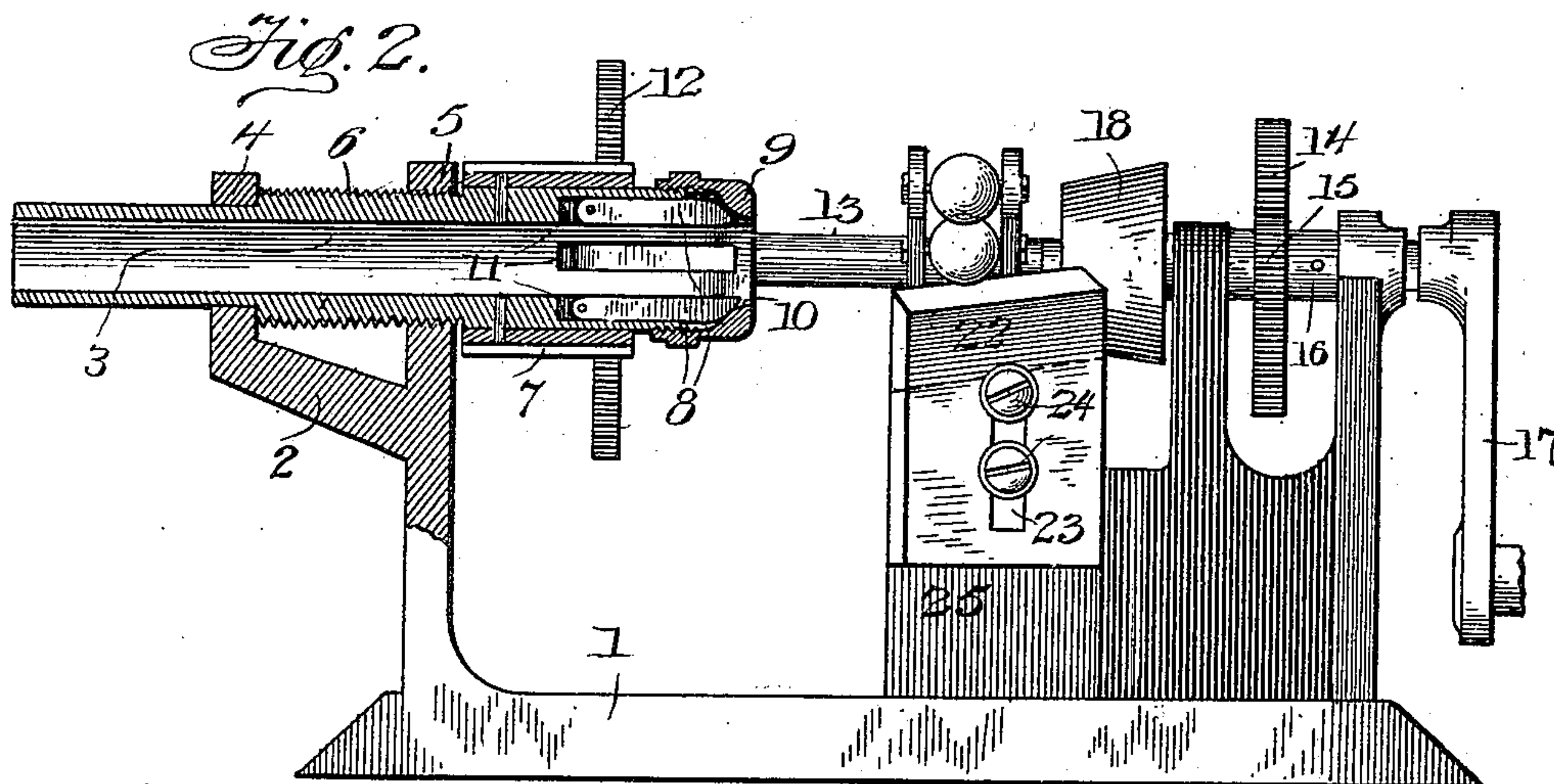
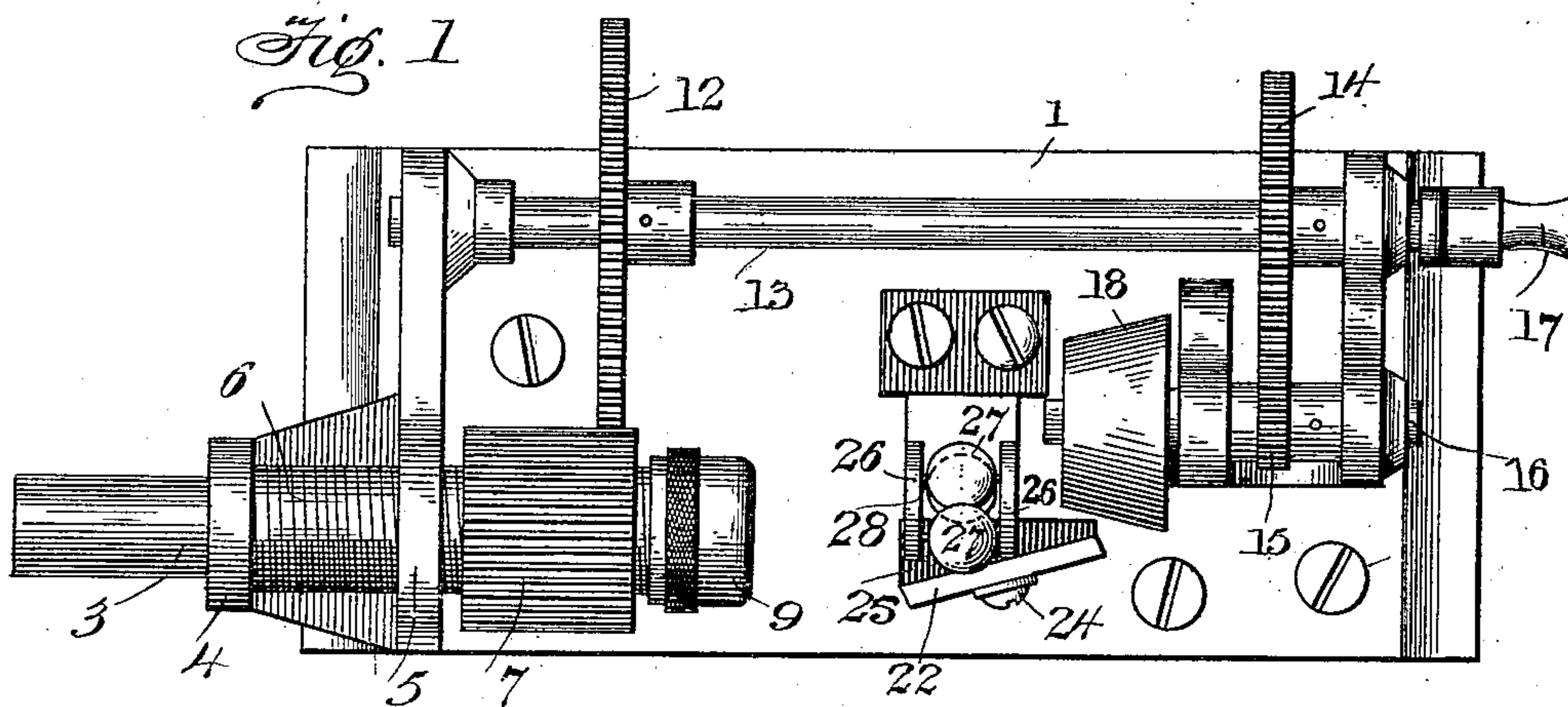
No. 666,482.

Patented Jan. 22, 1901.

R. T. SMITH.
PENCIL SHARPENER.

(Application filed Sept. 28, 1900.)

(No Model.)



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UNITED STATES PATENT OFFICE.

ROSWELL T. SMITH, OF NASHUA, NEW HAMPSHIRE.

PENCIL-SHARPENER.

SPECIFICATION forming part of Letters Patent No. 666,482, dated January 22, 1901.

Application filed September 28, 1900. Serial No. 31,439. (No model.)

To all whom it may concern:

Be it known that I, ROSWELL T. SMITH, a citizen of the United States, residing at Nashua, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Pencil-Sharpeners; 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.

My invention relates to improvements in pencil-sharpeners; and it consists in a machine having a hollow pencil-holder, gearing for feeding the said pencil forward and at the same time rotating it, antifriction means for applying the pencil to a knife, and means for operating the gearing.

It further consists in a machine provided with means for feeding a pencil forward to a knife while revolving the pencil, antifriction means for holding the pencil against the said knife, and an emery-wheel for sharpening the point of the pencil, whereby the wood and the lead of the pencil may be sharpened properly and simultaneously.

It further consists of certain other constructions, combinations, and arrangements of parts, as will be hereinafter more fully described and claimed.

In the accompanying drawings, Figure 1 represents a top plan view of a pencil-sharpener embodying my invention. Fig. 2 represents a side elevation of the same, the pencil-holding mechanism being shown in section. Fig. 3 is a detail vertical section through the machine, illustrating antifriction means for forcing the pencil against the knife-blade; and Fig. 4 is a detail view showing the adjustable means for holding the emery-wheel in position.

A pencil-sharpener such as I contemplate producing is provided with means for holding a pencil so as to revolve the same and at the same time feed it longitudinally toward a cutting mechanism, as well as having means for sharpening the point of the lead in the pencil. The device is preferably provided with a standard or frame 1, which has up- rights at each end, one of said uprights being provided with a bifurcated upper portion 2, which has bearings for supporting the revolving pencil-holder 3. The pencil-holder 3 is formed with a reduced outer end adapted

to engage one of said bearings, as at 4, while the other bearing 5 is larger and provided with internal threads adapted to engage external threads 6, formed upon the enlarged portion of the said pencil-holder 3. To the inner end of the holder 3 is secured an elongated pinion or gear wheel 7, which is riveted or otherwise rigidly secured to the holder 3, so as to turn the same. The inner end of the said holder is further provided with a series of pivoted jaws, as 8 8, which at their free ends are adapted to impinge upon a pencil and are forced against the said pencil by a nut 9, which screws upon the said holder 3 and is provided with an interior beveled surface 10 for engaging the beveled free end of the jaws 8. By screwing the nut 9 upon the holder 3 the jaws 8 can be forced tightly against the pencil to hold it in position. These jaws are pivoted at their fixed ends in slots or notches, as 11, formed in the holder 3. The holder 3 is rotated by means of the pinion 7, which engages and meshes with a gear-wheel 12, secured to a power-shaft 13. The said shaft finds bearings at its ends in the uprights of the frame 1 and carries a gear-wheel 14, which meshes with a gear-wheel 15, secured to the counter-shaft 16, the said counter-shaft 16 being much shorter than the shaft 13 and also finding bearings in the standards formed upon the frame 1. A handle 17 is employed to turn the shaft 13. The shaft 16 extends beyond its bearings at its inner end and is adapted to receive and carry a beveled emery-wheel, as 18, which is properly situated to engage the point of the pencil being sharpened. This emery-wheel 18 is preferably adjustably secured in position upon the said shaft 16 and is provided upon its inner surface with a notch, as at 19, which is adapted to be engaged by a spring 20, secured in the longitudinal groove 21, formed in the shaft 16. The emery-wheel is thus removably held in position upon the said shaft and when in position is forced to turn with the same. The movement of the shaft 13 communicates simultaneously a rotary movement to the pencil-holder 3 and to the emery-wheel 18. Situated upon the base 1 at a suitable point between the emery-wheel and the holder 3 is a cutting-knife 22. This knife is provided with a beveled cutting edge at its outer end and is also formed with a longitudinal slot 23, through which screws, as 24 24, may pass

to secure the said knife to a standard 25 on the frame 1. This slot 23 is of sufficient length to permit of a vertical adjustment of the said knife. Secured to the opposite side of the standard 25 and extending up to a point opposite the beveled cutting edge of the knife is an antifriction-bearing formed by brackets 26 26, which hold between them opposite the knife-edge a series of antifriction ball-rollers, as 27 27. These rollers are provided with journals or trunnions, as 28 28, upon each side, which engage bearings in one or more brackets 26. The upper ends of the brackets 26 are curved, as clearly seen in Fig. 3 of the drawings, so that the ball-rollers are held in a proper position to fit about half-way around the pencil and present the same to the cutting-knife. The knife 22 is preferably arranged at an angle with respect to the axis of the pencil-holder, so that the usual incline cut in sharpening a pencil will be produced. The pencil having its wooden sheathing or covering thus tapered is further presented to the emery-wheel, so that the lead or writing portion of the pencil will also receive a proper point. A box, as 29, to catch the chips or shavings is located beneath the cutting-knife and the emery-wheel, as is seen in Figs. 1 and 2 of the drawings.

In sharpening a pencil the pencil is inserted from the outer end into the holder 3, and its inner end is permitted to project a proper distance beyond the said holder to engage the knife and emery-wheel. The jaws 8 are then clamped upon the pencil by tightening the nut 9, after which the parts are in readiness for operation. By turning the shaft 13 the pencil-holder will be rotated through the agency of the gear-wheels 12 and 7, the said rotation also causing the pencil-holder to be fed toward the knife on account of the engagement of the screw-threads 6 with the threaded aperture 5. The elongated teeth upon the pinion 7 permit of the movement of the said pinion longitudinally with respect to the gear-wheel 12 without causing the said wheels to get out of mesh with each other. The antifriction-balls 27 27 will receive the end of the pencil and will hold the same against the cutting-knife, and the lead of the pencil will proceed toward the emery-wheel, which will engage the same in due course for putting a proper point upon it. The angle of the knife 22 and the bevel of the emery-wheel are suitable for properly tapering the sharpened end of the pencil. The shavings and chips will be caught in the box 29 and may be emptied at suitable periods of time, as will be found desirable.

My improved pencil-sharpener is simple in construction and yet very effective for sharpening pencils and will not get out of order readily.

The antifriction means for holding the pencil against the knife is an important feature of the invention and renders the sharpening of the pencil much easier than where other

means have been employed for such a purpose.

After a pencil has been sharpened it can be quickly and readily withdrawn from the knife by reversing the crank-shaft, when the pencil may be readily removed from its holder.

It will be seen that my pencil-holder is given a positive movement on account of the direct screw action brought to bear upon the same.

The device is so simple as to require no special mechanism for throwing the gear out of mesh or for disconnecting the feed mechanism, as in other devices heretofore used.

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

1. A pencil-sharpener, comprising a pencil-holder, a knife, means formed on the exterior of the holder for revolving the said holder and means for feeding the same longitudinally for presenting a pencil to the knife, and rollers for holding the pencil against the said knife, substantially as described.

2. A pencil-sharpener, comprising means for rotating a pencil, and means for feeding said pencil longitudinally, a knife for engaging the same, and antifriction means for holding the pencil against the said knife, comprising a series of ball-rollers for partially inclosing the pencil on one side to hold the same in proper position with respect to the said knife, substantially as described.

3. A pencil-sharpener, comprising a holder for revolving and feeding a pencil longitudinally, a knife adjustably mounted upon the frame of the machine and arranged at an angle to the axis of the pencil; a bracket arranged opposite the said knife, series of antifriction-rollers mounted in the said bracket and adapted to partially inclose the pencil for holding it firmly against the knife, a beveled emery-wheel for pointing the pencil, and means for turning the emery-wheel and pencil-holders simultaneously, substantially as described.

4. A pencil-sharpener, comprising a pencil-holder for feeding the pencil to be sharpened, a knife for engaging the same, a beveled emery-wheel for pointing the pencil, a shaft supporting the same, the said shaft having a longitudinal groove formed therein, a spring mounted in the said groove and adapted to engage a notched or grooved portion formed in the inner periphery of the emery-wheel, and means for turning the said shaft, whereby the emery-wheel will be rotated, the spring affording a means for holding the emery-wheel adjustably and removably upon the said shaft, substantially as described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

ROSWELL T. SMITH.

Witnesses:

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