No. 786,933. PATENTED APR. 11, 1905.

E. WOODBURY.

PENCIL SHARPENER.

APPLICATION FILED JULY 16, 1904.

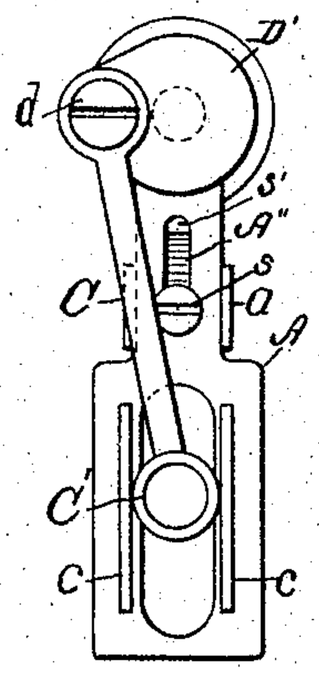

Fig. 2.

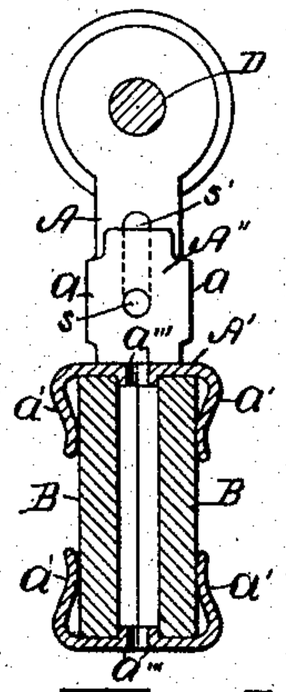

Fig. 3.

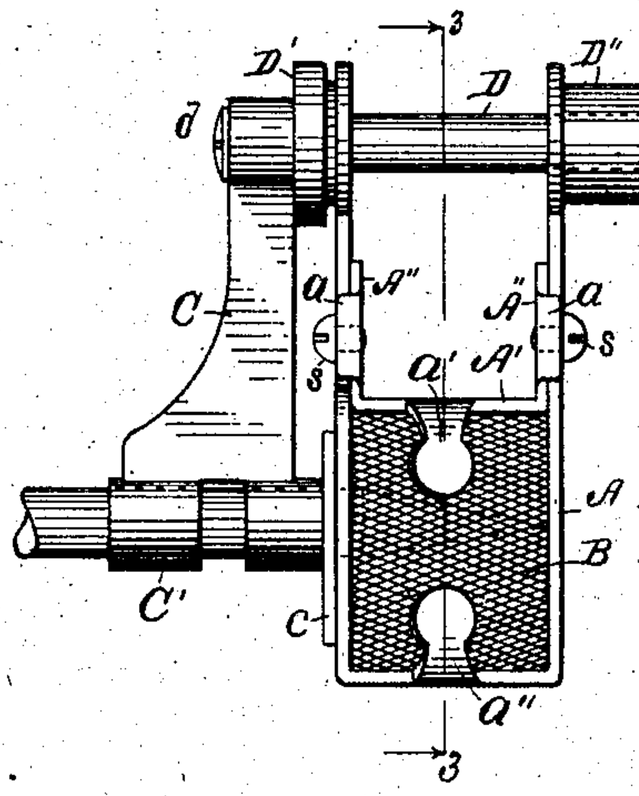

Fig. 1.

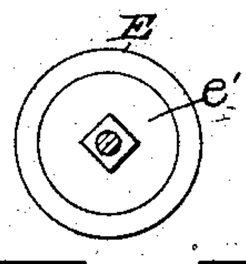

Fig. 5.

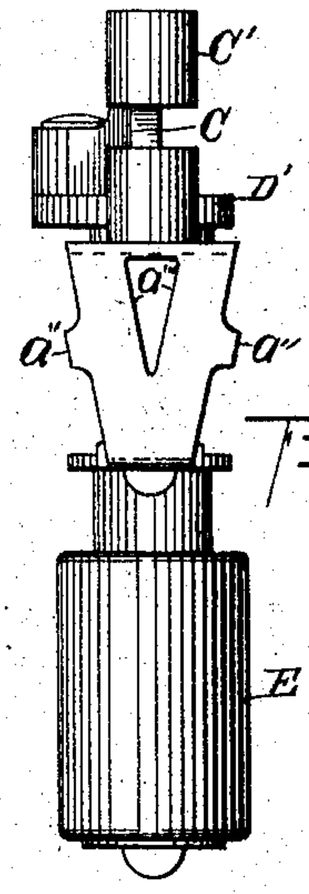

Fig. 4.

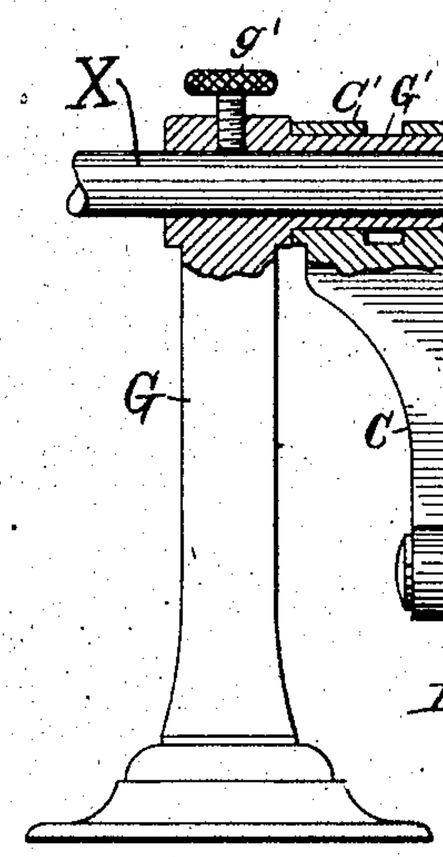

Fig. 6.

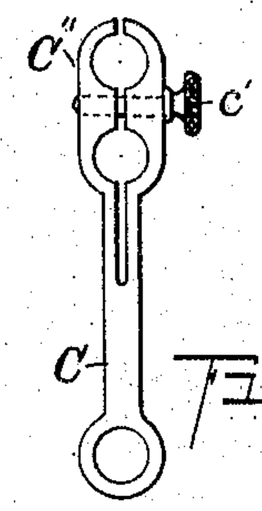

Fig. 7.

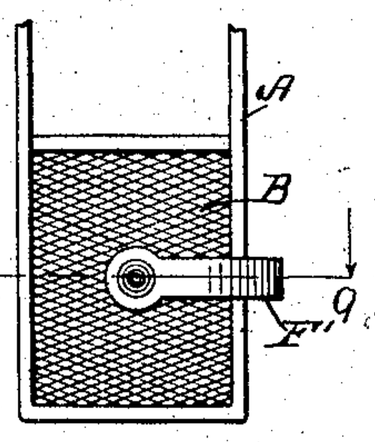

Fig. 8.

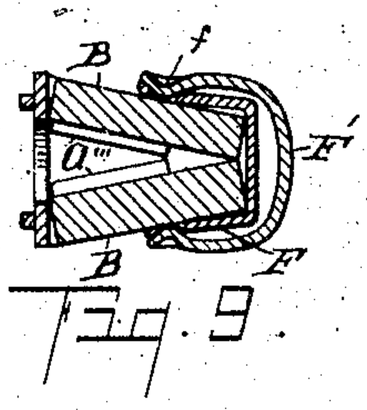

Fig. 9.

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No. 786,933. Patented April 11, 1905.

UNITED STATES PATENT OFFICE.

EDWARD WOODBURY, OF KALAMAZOO, MICHIGAN.

PENCIL-SHARPENER.

SPECIFICATION forming part of Letters Patent No. 786,933, dated April 11, 1905.

Application filed July 16, 1904. Serial No. 216,843.

To all whom it may concern:

Be it known that I, EDWARD WOODBURY, a citizen of the United States, residing at the city of Kalamazoo, county of Kalamazoo, State of Michigan, 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 objects of this invention are, first, to provide an improved pencil-sharpener by which an even and perfectly-centered point may be produced; second, to provide an improved pencil-sharpener by which an even and sharp point may be produced which is not likely to break or fracture the pencil during the sharpening process; third, to provide an improved pencil-sharpener in which pieces of an ordinary flat file may be used for the cutting or abrading portion of the sharpener; fourth, to provide an improved pencil-sharpener which is convenient to use and economical and durable in structure.

Further objects and objects relating to structural details will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined, and pointed out in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawings, forming a part of this specification, in which—.

Figure 1 is a detail side elevation view of a structure embodying the features of my invention, the handle E being shown in longitudinal section to show its structural details. Fig. 2 is an end elevation view looking from the left of Fig. 1. Fig. 3 is a vertical sectional view taken on a line corresponding to line 3 3 of Fig. 1. Fig. 4 is a plan view of my improved pencil-sharpener. Fig. 5 is a transverse sectional view of the handle, taken on line 5 5 of Fig. 1. Fig. 6 is a side elevation view of my improved pencil-sharpener attached to a standard or supporting-base, the same being shown partially in section to show the arrangement of the parts. Fig. 7 is an elevation view of a modified form of pencil-holder having a plurality of apertures for different sizes of pencils and being also made adjustable. Fig. 8 is a detail side elevation view showing a modified form of holder for the files or rasps. Fig. 9 is a sectional view taken on line 9 9 of Fig. 8.

In the drawings the sectional views are taken looking in the direction of the little arrows at the ends of the section-lines, and similar letters of reference refer to similar parts throughout the several views.

Referring to the drawings, the holder A for the cutting files or rasps B is journaled on the shaft D. The file-holder A is preferably formed of sheet metal, which is formed into loops or arms, the loops being perforated to receive the shaft D. The files or rasps D are retained in the holder A by the inwardly-projecting fingers a' a''. The fingers a'' are preferably formed integral with the end piece of the holder A, and the fingers a' are preferably formed integral with the cross-piece A′ of the holder. This cross-piece A′ is adjustably secured to the arms of the holder, so that it may be clamped against the ends of the files or released therefrom when it is desired to remove the files.

The cross-piece A′ is provided with a pair of rearwardly-projecting arms A″, which fit within the arms of the holder A. These arms A″ are provided with outwardly-projecting flanges or lugs a, which overlap the edges of the arms of the holder. The cross-piece A′ is clamped in its adjusted position by set-screws s, which are arranged in suitable longitudinal slots s' in the holder. The fingers a' a'', which are preferably spring-fingers, engage the outer faces of the files and hold them against the inwardly-projecting lugs or flanges a''' on the end and cross-piece A′ of the file-holder. These lugs or flanges are preferably struck up from the body of the holder, leaving an opening between them for the discharge of the debris. The lugs a''' are arranged in V shape, so that the files are supported to form a V-shaped trough.

The shaft D is provided with a crank D′. Secured to this crank by a suitable pin, as d, is a pitman or arm C, by which the tubular

pencil-holder C′ is carried. The pencil-holder C′ is adapted to reciprocate between the guides *c* on the rasp or file holder. A handle or finger-piece E is provided for the shaft D.

In sharpening a pencil the pencil is inserted through the tubular holder C′, as shown in Fig. 1, the end of the pencil to be sharpened extending between the files or rasps B. The pencil is held securely in the hand, and the handle E is swung around it like a crank or the handle is held and the pencil swung around it like a crank. This, owing to the connection of the pencil-holder to the crank D, which is, in effect, a crank connection, causes a reciprocatory movement of the files across the pencil as well as a rotary movement around it. This quickly cuts away the pencil, bringing the same to a perfect point.

To relieve the pencil of any undue strain and also to provide means so that the relative position to the files or rasps will be constantly changing, the handle is provided with a friction device, so that when the strain passes a predetermined point the handle slips on the crank, thereby changing the relative position of the parts. This is accomplished by means of the friction-disks *e″*, which are arranged in the ends of the handle, which is bored to receive them. The end of the shaft D is squared to prevent the friction-disks *e″* from turning thereon. The inner friction-disk *e″* is held in position by a shoulder on the shaft. A coiled spring *e* is provided. This spring is arranged upon the shaft D and is held in position by the disk *e′* at the outer end of the handle. Tension is applied to the spring by the set-screw *d′*, which engages a suitable longitudinal thread in the end of the shaft. By adjusting this set-screw the friction of the handle is regulated. A washer D″ is arranged between the inner disk *e″* and the file-holder A.

In the modified construction shown in Fig. 6 a standard or base G is provided. The standard G has a laterally-projecting tubular arm G′, the top or head of the standard being perforated in line therewith to receive a pencil, as X. (See Fig. 6.) The pencil-holder C′ is in this structure mounted upon the tubular arm G′, so that it revolves about the pencil in the same manner as in the structure heretofore described. A set-screw *g′* is provided for clamping the pencil in the holder. The remaining parts are the same as those described, and the operation of the parts will readily appear.

In the modification shown in Fig. 7 different-sized apertures are provided in the pencil-holder C″. This holder is divided longitudinally and a transversely-arranged set-screw *c′* is provided, so that the size of the apertures may be adjusted.

In the modified structure shown in Figs. 8 and 9 the files or rasps B are retained in the holder by a U-shaped spring F′, which slips over the holder F from the rear, as clearly appears from the drawings. The holder F is provided with perforations through which the inwardly-kinked ends *f* of the spring F′ engage the files.

With the parts arranged as described the files are held in position, so that they may be quickly turned over, thereby utilizing their entire cutting-surface or renewed, as desired.

By my improved pencil-sharpener I am enabled to secure very fine and sharp points and without danger of breaking or fracturing the pencil. The same are also perfectly centered. While the spring retaining-fingers *a′ a″* are desirable, as they permit the file to yield somewhat, which is of advantage in sharpening pencils of uneven hardness or toughness of wood, very satisfactory results may be secured if they are not spring-fingers. The frictional connection of the handle E to the shaft D may also be dispensed with and still satisfactory results be secured.

I have illustrated and described my improved pencil-sharpener in detail in the form preferred by me on account of its structural simplicity and convenience in use. I am, however, aware that it is capable of very great modifications in structural details without departing from my invention, and I desire to claim the same broadly as well as specifically. As the structural variations will readily appear to those skilled in the art to which my invention relates, they will not be pointed out herein.

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

1. In a pencil-sharpener, the combination of a file or rasp holder having inwardly-projecting file-retaining fingers thereon; an adjustable cross-piece for said holder having inwardly-projecting file-retaining fingers thereon; files or rasps carried by said holder; inwardly-projecting V-shaped lugs on said holder and cross-piece against which said files are clamped by said retaining-fingers; a shaft on which said file or rasp holder is journaled; a crank on said shaft; a tubular pencil-holder pivotally secured to said crank; guides on said file-holder for said pencil-holder; a handle on said shaft; a friction-disk arranged in said handle; a coiled spring arranged on said shaft for applying friction to said disk; and a set-screw for adjusting the tension of said spring, coacting for the purpose specified.

2. In a pencil-sharpener, the combination of a file or rasp holder having inwardly-projecting file-retaining fingers thereon; an adjustable cross-piece for said holder having inwardly-projecting file-retaining fingers thereon; files or rasps carried by said holder; inwardly-projecting V-shaped lugs on said holder and cross-piece against which said files are clamped by said retaining-fingers; a shaft on which said file or rasp holder is journaled; a crank on said shaft; a tubular pencil-holder

pivotally secured to said crank; a handle on said shaft; a friction-disk arranged in said handle; a coiled spring arranged on said shaft for applying friction to said disk; and a set-screw for adjusting the tension of said spring, coacting for the purpose specified.

3. In a pencil-sharpener, the combination of a file or rasp holder having inwardly-projecting file-retaining fingers thereon; an adjustable cross-piece for said holder having inwardly-projecting file-retaining fingers thereon; files or rasps carried by said holder; inwardly-projecting V-shaped lugs on said holder and cross-piece against which said files are clamped by said retaining-fingers; a shaft on which said file or rasp holder is journaled; a crank on said shaft; a tubular pencil-holder pivotally secured to said crank; guides on said file-holder for said pencil-holder; a handle on said shaft; a friction-disk arranged in said handle; and a coiled spring arranged on said shaft for applying tension to said disk, coacting for the purpose specified.

4. In a pencil-sharpener, the combination of a file or rasp holder having inwardly-projecting file-retaining fingers thereon; an adjustable cross-piece for said holder having inwardly-projecting file-retaining fingers thereon; files or rasps carried by said holder; inwardly-projecting V-shaped lugs on said holder and cross-piece against which said files are clamped by said retaining-fingers; a shaft on which said file or rasp holder is journaled; a crank on said shaft; a tubular pencil-holder pivotally secured to said crank; a handle on said shaft; a friction-disk arranged in said handle; and a coiled spring arranged on said shaft for applying tension to said disk, coacting for the purpose specified.

5. In a pencil-sharpener, the combination of a file or rasp holder having inwardly-projecting file-retaining fingers thereon; an adjustable cross-piece for said holder having inwardly-projecting file-retaining fingers thereon; files or rasps carried by said holder; inwardly-projecting V-shaped lugs on said holder and cross-piece against which said files are clamped by said retaining-fingers; a shaft on which said file or rasp holder is journaled; a crank on said shaft; a tubular pencil-holder pivotally secured to said crank; guides on said file-holder for said pencil-holder; and a handle on said shaft, coacting for the purpose specified.

6. In a pencil-sharpener, the combination of a file or rasp holder having inwardly-projecting file-retaining fingers thereon; an adjustable cross-piece for said holder having inwardly-projecting file-retaining fingers thereon; files or rasps carried by said holder; inwardly-projecting V-shaped lugs on said holder and cross-piece against which said files are clamped by said retaining-fingers; a shaft on which said file or rasp holder is journaled; a crank on said shaft; a tubular pencil-holder pivotally secured to said crank; and a handle on said shaft, coacting for the purpose specified.

7. In a pencil-sharpener, the combination of a file or rasp holder; files or rasps arranged to form a trough; a spring-retainer therefor; a shaft on which said file or rasp holder is journaled; a crank on said shaft; a tubular pencil-holder pivotally secured to said crank; guides on said file-holder for said pencil-holder; a handle on said shaft; and a friction device arranged in said handle, coacting for the purpose specified.

8. In a pencil-sharpener, the combination of a file or rasp holder; files or rasps arranged to form a trough; a spring-retainer therefor; a shaft on which said file or rasp holder is journaled; a crank on said shaft; a tubular pencil-holder pivotally secured to said crank; a handle on said shaft; and a friction device arranged in said handle, coacting for the purpose specified.

9. In a pencil-sharpener, the combination of a file or rasp holder; files or rasps arranged to form a trough; a shaft on which said file or rasp holder is journaled; a crank on said shaft; a tubular pencil-holder pivotally secured to said crank; guides on said file-holder for said pencil-holder; a handle on said shaft; and a friction device arranged in said handle, coacting for the purpose specified.

10. In a pencil-sharpener, the combination of a file or rasp holder; files or rasps arranged to form a trough; a shaft on which said file or rasp holder is journaled; a crank on said shaft; a tubular pencil-holder pivotally secured to said crank; a handle on said shaft; and a friction device arranged in said handle, coacting for the purpose specified.

11. In a pencil-sharpener, the combination of a file or rasp holder; files or rasps arranged to form a trough; a spring-retainer therefor; a shaft on which said file or rasp holder is journaled; a crank on said shaft; a tubular pencil-holder pivotally secured to said crank; guides on said file-holder for said pencil-holder; and a handle on said shaft, coacting for the purpose specified.

12. In a pencil-sharpener, the combination of a file or rasp holder; files or rasps arranged to form a trough; a spring-retainer therefor; a shaft on which said file or rasp holder is journaled; a crank on said shaft; a tubular pencil-holder pivotally secured to said crank; and a handle on said shaft, coacting for the purpose specified.

13. In a pencil-sharpener, the combination of a file or rasp holder; files or rasps arranged to form a trough; a shaft on which said file or rasp holder is journaled; a crank on said shaft; a tubular pencil-holder pivotally secured to said crank; guides on said file-holder for said pencil-holder; and a handle on said shaft, coacting for the purpose specified.

14. In a pencil-sharpener, the combination

of a file or rasp holder; files or rasps arranged to form a trough; a shaft on which said file or rasp holder is journaled; a crank on said shaft; a tubular pencil-holder pivotally secured to said crank; and a handle on said shaft, coacting for the purpose specified.

15. In a pencil-sharpener, the combination of a suitable holder; files supported within the holder, separated at one side and brought into proximity to each other at the opposite side, forming an angular trough; a tubular pencil-holder; a crank to which said pencil-holder and file-holder are pivotally secured; a handle; and a friction connection for said handle to said crank, for the purpose specified.

16. In a pencil-sharpener, the combination of a suitable holder; files supported within the holder, separated at one side and brought into proximity to each other at the opposite side, forming an angular trough; a tubular pencil-holder; a crank to which said pencil-holder and file-holder are pivotally secured; and a handle, for the purpose specified.

17. In a pencil-sharpener, the combination of a handle; a holder journaled on said handle; files arranged within said holder to form a trough; a yielding retainer for said files; a crank on said handle; an arm journaled on said crank, having a socket adapted to receive a pencil to be acted upon by said files, for the purpose specified.

18. In a pencil-sharpener, the combination of a handle; a holder journaled on said handle; files arranged within said holder to form a trough; a crank on said handle; an arm journaled on said crank, having a socket adapted to receive a pencil to be acted upon by said files, for the purpose specified.

19. In a pencil-sharpener, the combination of a handle; a filing-trough pivotally secured thereto; a crank on said handle; an arm pivoted to said crank, having a socket adapted to receive a pencil so arranged that the point of the pencil extends into the filing-trough, for the purpose specified.

20. In a pencil-sharpener, the combination of a crank; a handle therefor; a friction connection for said handle to said crank; a filing-trough pivotally secured to said crank; an arm pivotally secured to said crank, having a socket therein adapted to receive a pencil so arranged that the point of the pencil extends into the filing-trough, for the purpose specified.

21. In a pencil-sharpener, the combination of a crank; a filing-trough pivotally secured thereto; an arm pivotally secured to said crank, having a socket therein adapted to receive a pencil so arranged that the point of the pencil extends into the filing-trough, for the purpose specified.

22. In a pencil-sharpener, the combination of a crank; a filing-trough pivotally secured thereto; a pencil-holder pivotally secured to said crank, so arranged that the point of the pencil extends into the filing-trough, for the purpose specified.

23. In a pencil-sharpener, the combination of a crank; an abrading device pivotally secured thereto; an arm pivotally secured to said crank, having a socket therein adapted to receive a pencil so arranged that the point of the pencil arranged therethrough is brought into contact with said abrading device, for the purpose specified.

24. In a pencil-sharpener, the combination of a crank; an abrading device pivotally secured thereto; a holder adapted to receive a pencil pivoted to said crank, so arranged that the point of the pencil arranged therethrough is brought into contact with said abrading device, for the purpose specified.

25. In a pencil-sharpener, the combination of a filing-trough; a pencil-holder; and means for imparting a rotary and reciprocatory movement to said filing-trough, for the purpose specified.

26. In a pencil-sharpener, the combination of an abrading device; a pencil-holder; and means for imparting a rotary and reciprocatory movement to said abrading device, for the purpose specified.

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

EDWARD WOODBURY. [L. S.]

Witnesses:
A. J. ALBER,
OTIS A. EARL.