

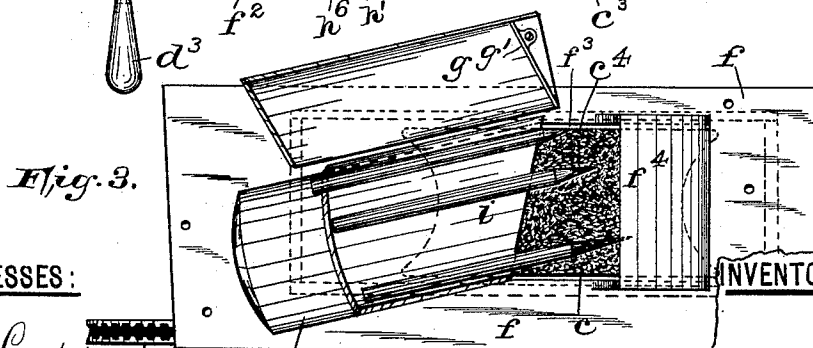
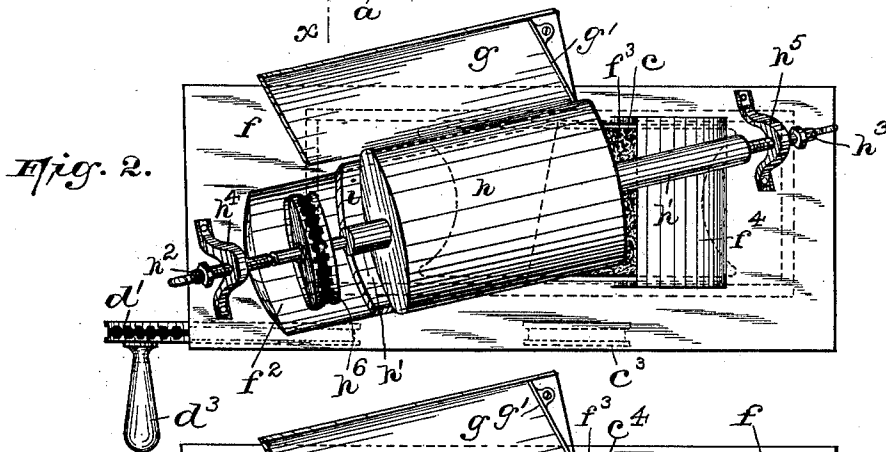
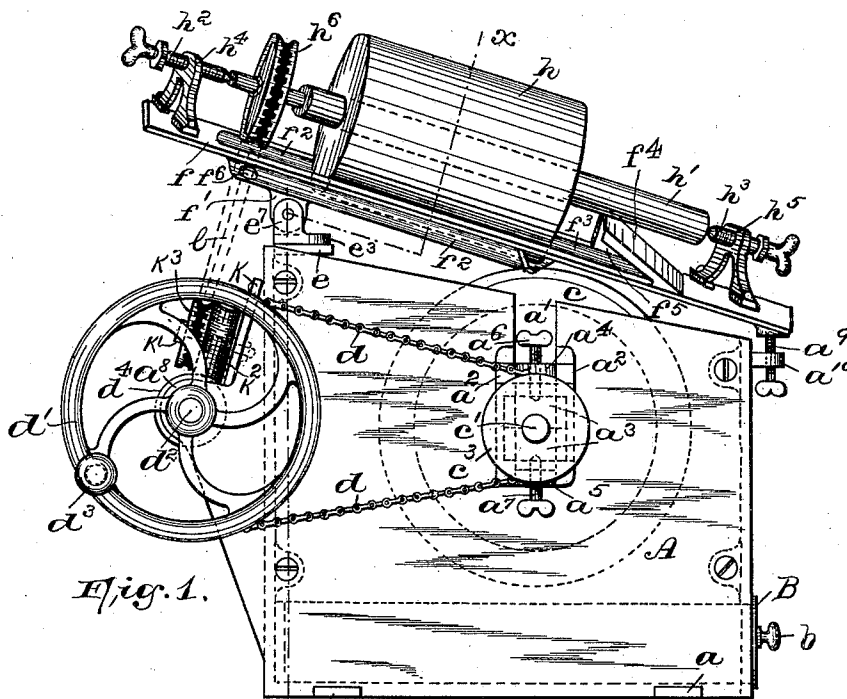
(No Model.)

2 Sheets—Sheet 1.

D. SWEENEY.
GRINDING MACHINE.

No. 466,729.

Patented Jan. 5, 1892.



WITNESSES:

Wm. B. Campfield
Arthur Cresse

INVENTOR:

Daniel Sweeney,
BY Chas. C. Fraentzel, ATT'Y.

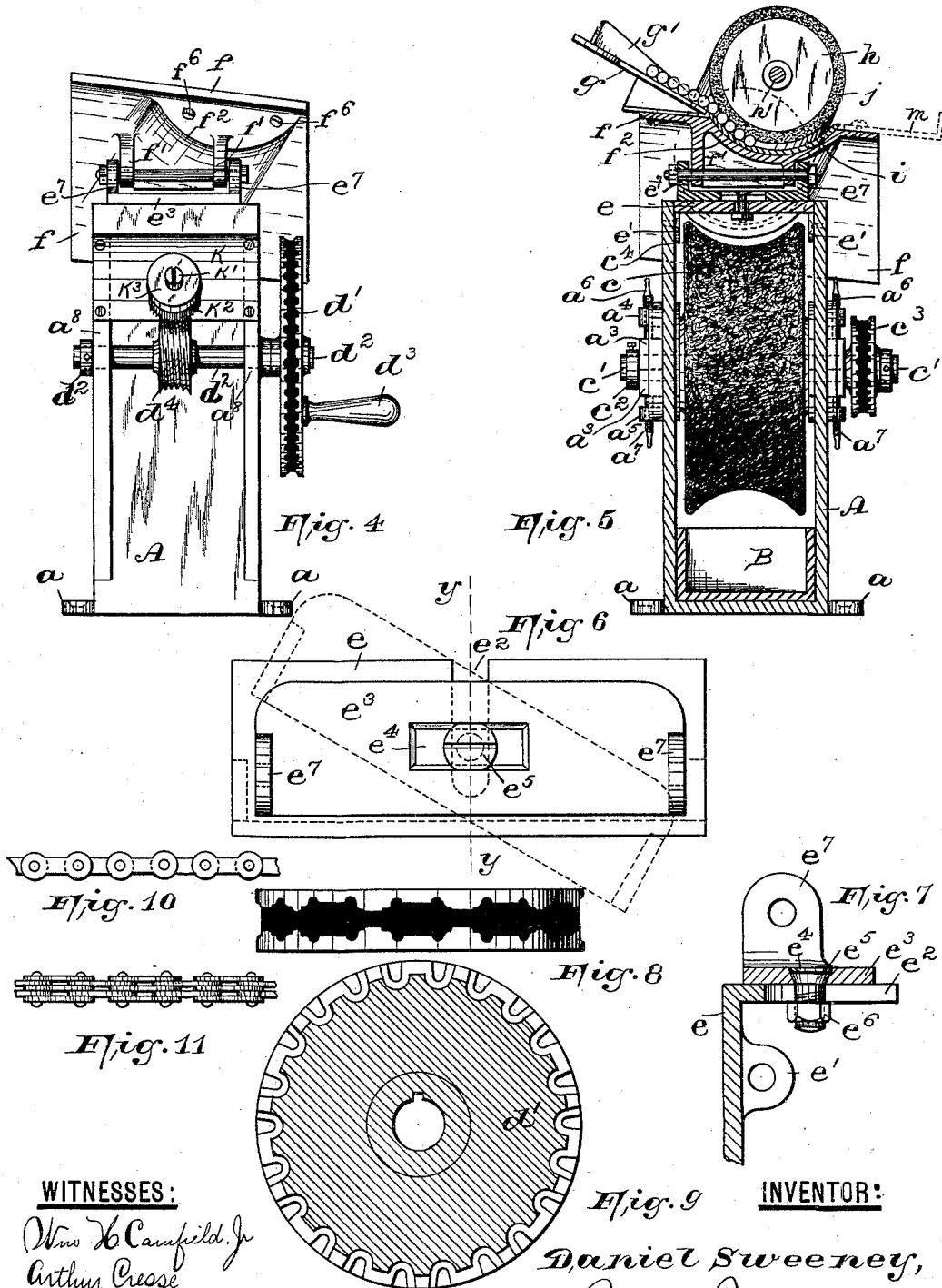
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D. SWEENEY.
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Wm. H. Canfield, Jr.
Arthur Cresse

INVENTOR:

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BY Fred C. Frantz, ATT'Y.

UNITED STATES PATENT OFFICE.

DANIEL SWEENEY, OF NEWARK, NEW JERSEY, ASSIGNOR OF ONE-HALF TO
EDWIN SHEPARD, OF SAME PLACE.

GRINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 466,729, dated January 5, 1892.

Application filed February 28, 1891. Serial No. 383,239. (No model.)

To all whom it may concern:

Be it known that I, DANIEL SWEENEY, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Grinding-Machines; 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to provide a machine for the pointing or sharpening of slate or lead pencils or tools, the construction of the machine being illustrated in the accompanying sheets of drawings, and the following description indicating the mode of operation thereof, while the claims appended specify those features in said machine which are new.

One of the main features of the machine is its simplicity of construction and its adaptability for sharpening at one time a large number of pencils, the latter rolling from an inclined shelf at one side of the grinding-wheel beneath a roller, which conveys the pencils over the said grinding-wheel and delivers them sharpened upon the other side of the machine.

In said drawings, Figure 1 is a side elevation of the improved machine. Fig. 2 is a plan of the same; and Fig. 3 is a like view with certain parts removed to illustrate more clearly the arrangement of the shelf from which the pencils are fed upon the grinding-wheel and clearly indicating the manner in which the pencils pass along the curved pencil-conveying bed of the machine with one end of the pencil against the periphery of the grinding-wheel, whereby the proper and perfect point is produced. On Sheet 2, Fig. 4, is an end view of the machine with the roller and the pencil-shelf removed. Fig. 5 is a vertical section taken on line *x* in Fig. 1, clearly showing the arrangement and construction of the grinding-wheel and also the manner of pivoting the curved pencil-conveying bed to the frame or casing of the machine and the man-

ner of feeding the pencils through the machine. Fig. 6 is a detail view of that part of the machine to which said pencil-conveying bed is pivoted, and Fig. 7 is a vertical section taken on line *y* in said Fig. 6. Figs. 8 and 9 show an end elevation and a vertical section of the drive-wheel employed, said drive-wheel being provided with peculiarly-shaped cavities in its periphery, into which fit the links of a chain, of which Fig. 10 is a side view and Fig. 11 is a top view.

In said views, A designates a casing, preferably made of iron, provided at its bottom with lugs *a* for firmly securing said casing to a table or other object. Said casing is provided in the bottom thereof with a drawer B, having a knob *b* for pulling the same out of the casing, said drawer being placed directly beneath the grinding-wheel *c* to receive the dust and chips ground off from the end of the pencils. As will be seen from Fig. 1, the opposite sides of said casing are provided with the openings *a'* and the guides *a''* on their edges, in which are made to slide the upper and lower journal-bearings *a'''*, ribs *a''''* and *a'''''* being formed across the openings *a'* above and below said bearings, provided with threaded perforations, in which can be made to turn the threaded thumb or wing screws *a''''''* and *a'''''''*, by means of which the bearings can be raised or lowered and made to slide in their guides to adjust the grinding-wheel *c* to the proper height. Said wheel is firmly secured on a spindle or shaft *c'*, which extends through the said bearings, being provided on one end with a collar *c''* or its equivalent and on the other end with a small wheel *c'''*, connected by means of a belt or link chain *d* with the driving-wheel *d'*, the axle *d''* of which rotates in bearings *a''''*, formed on one end of the casing A, and which is provided with a handle *d'''* for operating the wheel. As will be seen, more especially from Fig. 5, said wheel *c* is provided with a concave periphery and is coated with a thick layer of emery or other like grinding material, the same being secured thereto in any convenient manner. When the driving-wheel *d'*, which is of a greater diameter than the wheel *c'''*, is rotated by means of its handle, said chain or belt *d* operates the wheel *c'''*, causing the

grinding-wheel *c* to rotate in its bearings with great speed. As will be noticed from Fig. 1, the upper edge of the casing *A* is inclined toward one end, being provided at or near the upper end with a bearing-plate *e*, secured by means of screws through ears *e'* to the sides of the casing. Said plate *e* is also provided with a centrally-arranged and open slot *e²*, extending in the longitudinal direction of the casing. Upon this bearing-plate *e* I have placed a second plate *e³*, provided with a rectangular opening or hole *e⁴*, in which slides the head of a screw or pivotal pin *e⁵*, the threaded portion of which extends down into the slot *e²* and is provided with a nut *e⁶*, whereby said plate can be swung in either direction upon the plate *e*, as indicated in dotted lines in said Fig. 6, and whereby said plate *e³* is adjustable in the direction of the slot *e²* in the bearing-plate *e*. Said swing-plate *e³* is provided with two upwardly-projecting ears or lugs *e⁷*, provided with holes, and to said ears is hinged the pencil-conveying bed *f* by means of the ears *f'*, whereby said bed can be rotated upon its ears or hinges when necessary in order to get at the grinding-wheel, as will be evident. Said bed *f*, as will be seen from Figs. 1, 2, and 3, is supported at its lower end on an adjusting-screw *a⁹*, adapted to be raised and lowered in the perforated lug *a¹⁰* on the end of the casing, in order to adjust said plate at the proper angle to the upper surface of the grinding-wheel, whereby the pencils are caused to receive a point either long or short, according to such adjustment. The bed-plate is also of such construction that one of its sides is much higher than the other, as will be seen from Figs. 4 and 5, being provided upon its higher edge with an upwardly-inclined shelf *g*, adapted to receive the pencils and causing them by their own weight to roll down against the edge of a feed-roller *h*, supported on a shaft *h'*, rotating in adjusting-screws *h²* and *h³*, turning in bearings *h⁴* and *h⁵*, secured on the inclined bed *f*. An adjustable guide or shoulder *g'* is formed on the shelf *g* to properly direct the pencils in front of the feed-roller *h*. Said bed-plate *f* is formed with a downwardly-curved guiding-surface *f²*, provided with a cushion *i*, of rubber or felt or other soft material, and the feed-roller *h* has a layer of soft rubber or felt *j* on its peripheral surface, (see Fig. 5,) which, when the first pencil strikes said roller, as soon as the roller is rotated causes said pencil to be forced between the two soft cushions and guided along the curved part of the bed-plate, the one end of the pencil projecting through an opening *f³* in said plate and bringing said end of the pencil in contact with the grinding-surface of the wheel *c*, across which it is fed and ground, as will be described further on. A shield *f⁴* may be formed directly above said opening to prevent the dust from passing up into the room and provided with an opening *f⁵* in the side thereof to allow the pencils to be rotated across the machine.

As will be seen more especially from Figs. 1 and 4, I have provided the outwardly-projecting portion directly above the bearings *a⁸* with a plate *k*, to which is secured, by means of a pin *k'*, a serrated or toothed wheel *k²*, which is operated by means of a worm *d⁴* on the axle *d²*, as will be clearly understood from Fig. 4, said pin *k'* being provided with a wheel *k³* in holding operation with the serrated wheel *k²*, from which it receives its motion, which is transmitted by means of a belt or link chain *l*, passing through perforations *f⁶* in the bed *f* and around a pulley-wheel *h⁴* on the shaft *h'*, the pulley-wheel being preferably of a larger diameter, so as to give a very slow movement to the feed-roller.

The operation of the machine is as follows: Any number of slate or lead pencils or any other objects to be pointed—such as carbons—are placed upon the shelf *g*, the lower pencil bearing directly against the cushioned surfaces of the feed-roller and the curved bed-plate *f*. As soon as the drive-wheel *d'* is operated the grinding-wheel *c* rotates with great rapidity, while the shaft or axle *d²* causes its worm and serrated wheel to slowly revolve the feed-roller *h* in a direction at an angle to that of the grinding-wheel. When the feed-roller is thus set in operation, it causes the pencil to be forced down between the soft cushions *i* and *j* in such a manner that they rotate about their central axes in planes parallel to the central axis of the feed-roller and at an angle to the plane of rotation of the grinding-wheel. As soon as the pencil strikes the edge *e⁴* of the grinding-wheel (see Figs. 3 and 5) the edge of the pencil is being ground, and as the pencils pass down along the curve in the bed-plate *f* the point becomes longer and sharper, moving along the concave periphery of the grinding-wheel until the pencils are finally discharged, completely sharpened, on the opposite side of the machine, and roll upon a shelf *m*. (Shown in dotted lines in Fig. 5.)

In order to prevent any slipping of the belts, I contemplate using a link chain substantially of the construction illustrated in Figs. 10 and 11, and I provide the circumference of each wheel with cavities, such as are shown more especially in Figs. 8 and 9, the widths of the successive cavities varying alternately so as to conform to the arrangement of the links comprising the chain.

Of course it will be seen that the machine is well adapted for the grinding of certain kinds of tools, and that I do not wish to limit myself to the exact sizes of the several parts herein shown—as, for instance, in grinding certain kinds of tools or perhaps carbons for electric-light purposes the driving-wheel can be driven by power instead of by hand.

Having thus described my invention, what I claim is—

1. In a machine for sharpening pencils, carbons, &c., the combination, with the grinding-wheel arranged in bearings in a casing, and means for rotating the same, of a feed-roller

adjustably arranged above said grinding-wheel, its central vertical plane being at an angle less than a right angle to the plane of motion of the feed-roller, whereby said roller is adapted to rotate the pencils or carbons at an angle across the periphery of the grinding-wheel, substantially as set forth.

2. In a machine for sharpening pencils, carbons, &c., the combination, with the grinding-wheel arranged in bearings in a casing and provided with a concave periphery, and means for rotating the same, of a feed-roller adapted to rotate the pencils or carbons at an angle across the periphery of the grinding-wheel, substantially as set forth.

3. In a machine for sharpening pencils, carbons, &c., the combination, with the grinding-wheel arranged in bearings in a casing adjustable in guides therein and provided with a concave periphery, set-screws for adjusting said bearings, and means for operating said grinding-wheel, of a feed-roller adapted to rotate the pencils or carbons at an angle across the periphery of the grinding-wheel, substantially as set forth.

4. In a machine for sharpening pencils, carbons, &c., the combination, with the casing and a grinding-wheel arranged therein, of an adjustable bed-plate, and a feed-roller adapted to rotate the pencils or carbons at an angle across the periphery of the grinding-wheel, substantially as set forth.

5. In a machine for sharpening pencils, carbons, &c., the combination, with the casing and a grinding-wheel arranged therein, of a bed-plate hinged to said casing, and a feed-roller adapted to rotate the pencils or carbons at an angle across the periphery of the grinding-wheel, substantially as set forth.

6. In a machine for sharpening pencils, carbons, &c., the combination, with the casing and a grinding-wheel provided with a concave periphery, of an adjustable bed-plate provided with a curved guiding-surface and an opening therein directly in front of the grinding-wheel, and a feed-roller adapted to rotate the pencils or carbons at an angle across the periphery of the grinding-wheel, substantially as set forth.

7. In a machine for grinding pencils, carbons, &c., the combination, with the casing and a grinding-wheel provided with a concave periphery, of a bed-plate arranged above said grinding-wheel, inclined longitudinally and transversely to the axis of the grinding-wheel, and a feed-roller adapted to rotate said pencils across the periphery of the wheel, substantially as set forth.

8. In a machine for grinding pencils, carbons, &c., the combination, with the casing and the grinding-wheel arranged on a shaft in bearings in said casing and provided with a wheel on one of its free ends, of a bed-plate hinged to said casing, provided with a guiding-surface and an opening directly in front of the grinding-wheel, bearings on said bed-plate, a shaft therein, and a feed-roller there-

on, and means for rotating said grinding-wheel and the feed-roller at an angle to each other, whereby the pencil is fed across the periphery of the grinding-wheel, substantially as set forth.

9. In a machine for grinding pencils, carbons, &c., the combination of the casing, a grinding-wheel arranged on a shaft in bearings in said casing and provided on one end with a wheel, a drive-wheel arranged on an axle in bearings in one end of the casing and a link chain or belt connecting said wheels, a worm on said axle carrying the drive-wheel, and a serrated wheel gearing with said worm, a pulley-wheel secured to said serrated wheel, a bed-plate hinged on said casing, provided with bearings, a shaft in said bearings, a wheel thereon, and a link chain or belt connecting said wheel with the pulley-wheel connected with the serrated wheel, and a feed-roller on said shaft above the bed-plate, all of said parts being operated from said drive-wheel, whereby the pencils are rotated at an angle across the periphery of the wheel, substantially as set forth.

10. In a machine for grinding pencils, carbons, &c., the combination, with the casing, the pencil-carrying bed-plate, and a grinding-wheel, of the bearing-plate *e*, secured to said casing, and a pivoted and slotted journal-carrying plate adjustably secured to said plate *e*, substantially as set forth.

11. In a machine for grinding pencils, carbons, &c., the combination, with the casing, a grinding-wheel, and a pencil-carrying bed, of a bearing-plate *e*, secured to said casing and provided with a slot extending in the longitudinal direction of the casing, and a pivoted and slotted journal-carrying plate secured to said plate *e*, and means at the opposite end of the casing for adjusting the bed-plate vertically, substantially as set forth.

12. In a machine for sharpening pencils, carbons, &c., the combination, with the casing and the grinding-wheel, of a pencil-carrying bed-plate provided with ears, said plate being adjustable in a longitudinal and transverse direction on a bearing-plate secured to the casing, and means for operating said grinding-wheel, substantially as set forth.

13. In a machine for sharpening pencils, carbons, &c., the combination, with the grinding-wheel and a casing, of a pencil-carrying bed-plate provided with ears, said plate being adjustable in a longitudinal and transverse direction on a bearing-plate secured to the casing, and means for operating said grinding-wheel, and a feed-roller arranged in bearings on said bed-plate, adapted to rotate at an angle to the plane of rotation of the grinding-wheel, whereby the pencils are fed across the periphery of the grinding-wheel, substantially as set forth.

14. In a machine for sharpening pencils, carbons &c., the combination, with the grinding-wheel arranged in bearings in a casing adjustable in guides therein and provided

with a concave surface, of a pencil-carrying bed-plate provided with a curved guiding-surface and a rubber or other like cushion on said surface, and a feed-roller provided on its periphery with a similar cushion, whereby said pencils are forced across the periphery of the grinding-wheel, substantially as set forth.

15. In a machine for sharpening pencils, carbons, &c., the combination, with the grinding-wheel arranged in bearings in a casing adjustable in guides therein and provided with a concave surface, of a pencil-carrying bed-plate provided with a curved guiding-surface and a rubber or other like cushion on said surface, and a feed-roller provided on its periphery with a similar cushion, whereby said pencils are forced across the periphery of the grinding-wheel, and a pencil-carrying shelf on said bed-plate for feeding the pencils in front of the feed-roller, substantially as set forth.

16. The combination, in a machine for sharpening pencils, carbons, &c., of an inclined and curved pencil-guiding bed-plate and a grinding-wheel provided with a concave periphery arranged and adapted to sharpen the pencil, substantially as set forth.

17. In a machine for sharpening pencils, carbons, &c., the revolving grinding-wheel and a curved and inclined supporting-bed for the pencils, substantially as set forth.

18. In a machine for sharpening pencils, carbons, &c., a revolving grinding-wheel and adjustable bearings in which said wheel is supported and a curved and inclined and adjustable supporting-bed for the pencils, substantially as set forth.

19. In a machine for sharpening pencils, carbons, &c., a casing and a revolving grinding-wheel therein, a curved and inclined and adjustable supporting-bed for the pencils, and a drawer in said casing, substantially as set forth.

20. The herein-described pencil-sharpening machine, consisting of a casing provided with a drawer, a grinding-wheel arranged in adjustable bearings in said casing, a hand-wheel arranged on an axle in bearings in one end of the casing, a pulley-wheel on the end of the shaft, on which said grinding-wheel is arranged, and a belt or its equivalent connecting said wheel with the driving-wheel, a worm on the driving-wheel axle, and a serrated wheel engaging therewith, provided with a pulley-wheel, a curved and inclined and adjustable pencil-guiding bed-plate, bearings

on said bed-plate, a shaft therein and pins for adjusting said shaft, a feed-roller and a pulley on said shaft, a belt or its equivalent connecting said pulley with the pulley-wheel on the serrated wheel, and a pencil-carrying plate or shelf on the bed-plate, provided with an adjustable guide, all of said parts being arranged and operating substantially as and for the purposes set forth.

21. In a machine for sharpening pencils, carbons, &c., the combination of a guiding-bed, a cushion of soft material on said plate, a grinding-wheel, and means for operating the same, substantially as set forth.

22. In a machine for sharpening pencils, carbons, &c., the combination of an inclined and curved pencil-guiding bed, a cushion of soft material on said plate, a grinding-wheel, and means for operating the same, substantially as and for the purposes set forth.

23. In a machine for sharpening pencils, carbons, &c., the combination of an inclined and curved pencil-guiding bed, a cushion of soft material in the curved portion of said bed, and a grinding-wheel provided with a concave periphery arranged and adapted to sharpen the pencil, substantially as and for the purposes set forth.

24. In a machine for sharpening pencils, carbons, &c., the combination of a grinding-wheel and means for rotating the same, a feed-roller provided on its peripheral surface with a soft cushion, and a pencil-guiding bed having a soft cushion, whereby the pencils or carbons are rotated across the periphery of the grinding-wheel, substantially as and for the purposes set forth.

25. In a machine for sharpening pencils, carbons, &c., the combination of a grinding-wheel provided with a concave periphery, a feed-roller provided on its peripheral surface with a soft cushion, and a pencil-guiding bed provided with a curved surface concentric with the peripheral curve of the surface of the feed-roller, and a soft cushion on said curved surface in the guiding-bed, whereby the pencils or carbons are rotated across the periphery of the grinding-wheel, substantially as set forth.

In testimony that I claim the invention set forth above I have hereunto set my hand this 25th day of February, 1891.

DANIEL SWEENEY.

Witnesses.

FREDK. C. FRAENTZEL,
W. B. FRAENTZEL.