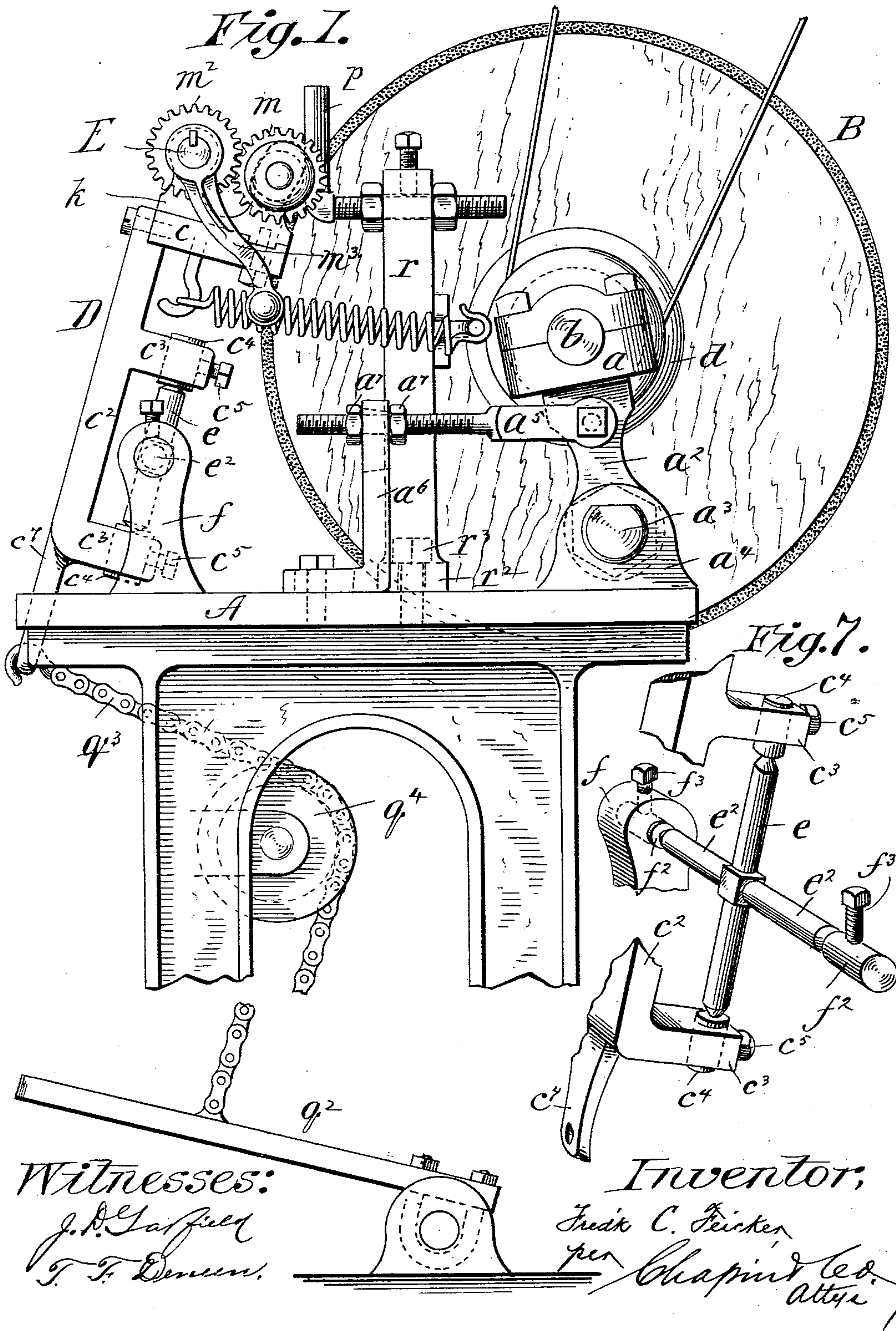


F. C. FEICKER.

MACHINE FOR GRINDING CUTLERY AND OTHER HANDLES.

No. 481,259.

Patented Aug. 23, 1892.



(No Model.)

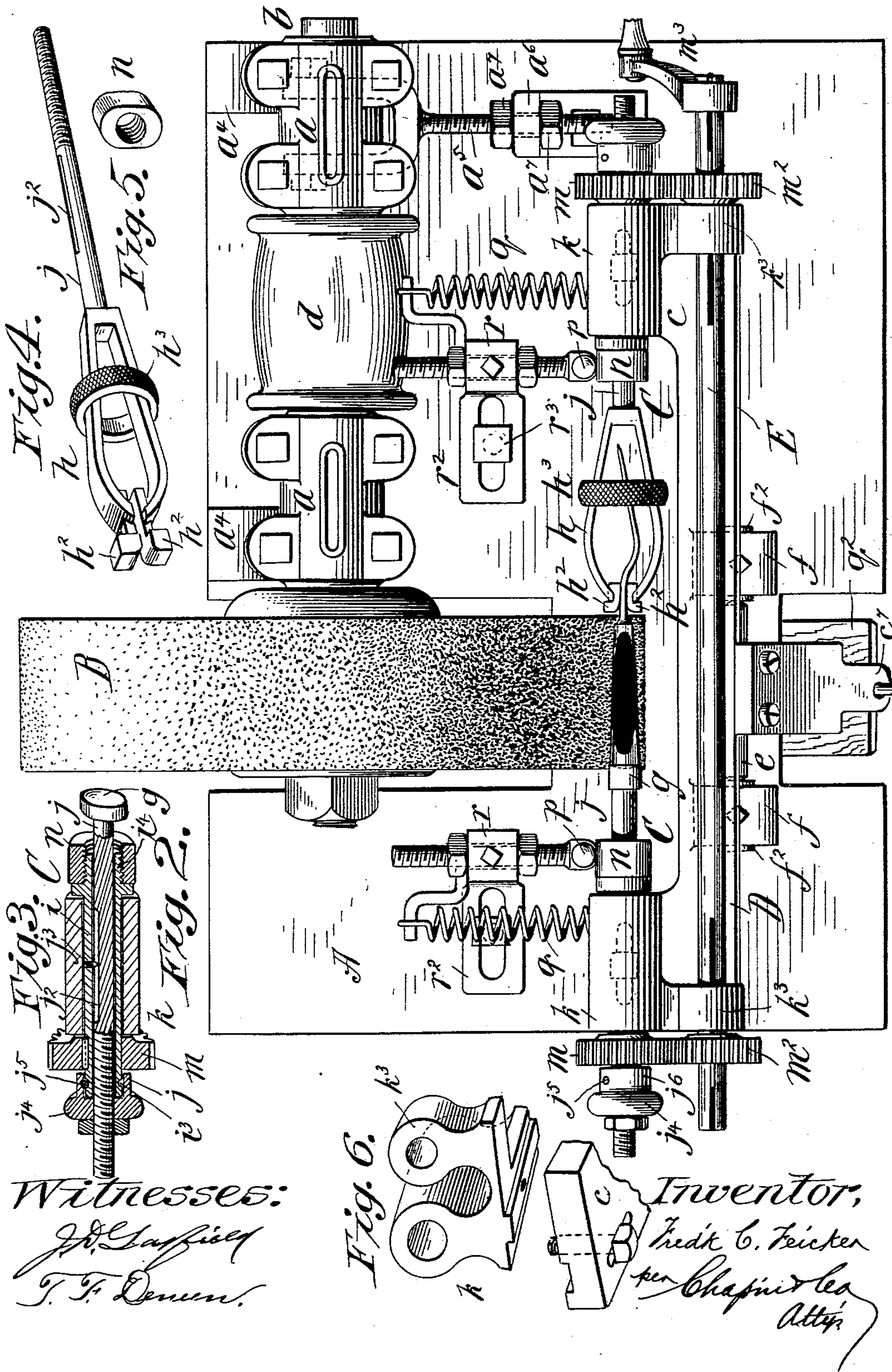
2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

FREDRICK C. FEICKER, OF NORTHAMPTON, MASSACHUSETTS, ASSIGNOR TO
THE NORTHAMPTON CUTLERY COMPANY, OF SAME PLACE.

MACHINE FOR GRINDING CUTLERY AND OTHER HANDLES.

SPECIFICATION forming part of Letters Patent No. 481,259, dated August 23, 1892.

Application filed February 3, 1892. Serial No. 420,598. (No model.)

To all whom it may concern:

Be it known that I, FREDRICK C. FEICKER, a citizen of the United States, residing at Northampton, in the county of Hampshire and State of Massachusetts, have invented new and useful Improvements in Machines for Grinding Cutlery and other Handles, of which the following is a specification.

This invention relates to improvements in machines for grinding cutlery and other handles, which, as well known, as provided for knives and forks, are composed of metal, or metal and bone, or other material or materials.

The purpose of the invention is to provide improved devices in a grinding-machine for grasping the knife or fork and for insuring rotary and bodily swinging movements thereof, whereby the handle may be properly and automatically presented to the grinding action of the wheel.

Another object of the invention is the provision of an improved adjustable tool-holder, which is adapted to receive and properly present to the grinding action handles of varying lengths.

The invention consists in the combination or arrangement of instrumentalities and the construction of parts, all substantially as will hereinafter more fully appear, and be pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is an end elevation of the machine. Fig. 2 is a plan thereof. Fig. 3 is in part a perspective and in part an axial section of an approved form of one of the work-holding devices. Fig. 4 is a perspective view of one of the work-holding devices, showing the separable clamping-jaws. Fig. 5 is a perspective view of one of the removable cams or formers. Fig. 6 is a view in perspective of supports and bearings for one of the work-holding devices and the shaft which is geared thereto, and Fig. 7 is a view in perspective of parts which constitute rocking devices for the work-holder support.

In the drawings, A represents the table or main support of the machine, and B the grinding-wheel, with the rim or grinding-surface thereof usually of a width as great as the length of the handle to be ground, the said wheel being supported on an arbor or shaft

b, mounted in journal-bearings a and driven by belt through the pulley d or otherwise.

C C represent work-holding devices, which are mounted in or substantially in longitudinal alignment upon the frame D, which constitutes the work-holder support. The said frame embodies the horizontal bar c, ranging in front of and across the face of the grinding-wheel, and the bar c², which is formed on or rigidly connected to the horizontal bar, the same standing in a more or less nearly-upright position and having the separated inwardly-extended lugs or bracket members c³ c³, suitably bored or socketed to receive the hardened blocks c⁴ c⁴, which are held in place by the set-screws c⁵, and having in the faces, which are toward each other, conical bearings for the extremities of the shaft e. The said shaft e has the rigid right-angularly-extended and axially-aligned members e², the extremities of which are formed conical and have bearings in the hardened pieces f², which are by the screws f³ held in sockets of the separated uprights f f, that are mounted on the table in front of the grinding-wheel. The supporting-frame for the work-holder therefore has a swinging or oscillating motion from the pivotal support, constituted by the upright f and members e² e², toward and from the grinding-face of the wheel, and also has a secondary swinging motion, so that the axis of the handle or part to be ground and supported longitudinally parallel with the top bar c may be maintained at a slight angle to the grinding-face of the wheel, which slight angle may correspond to the endwise taper of the handle, whereby the whole or greater portion of the length of the handle will be presented against the wheel. One of the work-holding members has its work-engaging extremity socketed or of cup form, as indicated at g, while the other has its extremity in the form of the separable jaws h. Each of the work-engaging portions is carried at the extremity of a spindle or shaft j, which passes loosely through and beyond a sleeve i, which sleeve has its intermediate portion fitted for rotation in the journal-bearing k, which is mounted upon an extremity of the upper bar c of the work-holder-supporting frame. The shaft or spindle has its end portion, which is

adjacent and also projected outwardly beyond the sleeve, screw-threaded, as shown, and while said spindle is capable of an endwise movement under the proper conditions through the sleeve it is constrained to rotate with the sleeve, and this capability is readily imparted by forming the spline-groove j^3 in the intermediate portion of the spindle and setting the screw or pin j^3 through the wall of the sleeve to have its point enter said groove. The sleeve is shouldered next to the inner end of the bearing k , whereby endwise motion in one direction is prevented, the gear-wheel m , which is keyed on the sleeve next to the other end of the bearing, preventing the endwise movement of the sleeve in the other direction. A nut j^4 has a screw engagement with the said spindle j , and while this nut may have a rotational movement independent of the sleeve it is confined against any endwise movement—this by reason of the pin j^5 , which passes laterally through the annular flange j^6 of the nut which surrounds the extremity of the sleeve engaging the annular groove j^3 in the sleeve extremity. Of course any rotational movement of the nut will force the spindle j longitudinally, and therefore the work-engaging appliances $g h$ may be adjusted in any extent of separation.

The separable jaws of the holder h have spring capabilities for outward distention and have their extremities provided with the members h^2 , suitably formed to effectively grasp the tang of the fork or the shank of the blade on the contraction of the spring-jaws, the outer surfaces of which are inclined or cam-formed, by the slide ring h^3 , the blade of the implement being permitted to extend within the said clamping-jaws. The shaft E is horizontally mounted above and along the top of the oscillating frame having bearings in the journals j^3 . Said shaft has the gears $m^2 m^2$ thereon, which are in mesh with the aforementioned gears $m m$, the crank arm and handle m^3 being also provided for said shaft for its convenient rotation. The springs $q q$ are applied for normally maintaining the work-holder support swung toward the grinding-wheel, there being provided for the withdrawal of said support the treadle q^2 and a flexible connection q^3 , connected thereto and to the pendling arm c^7 of the upright member of the support. The flexible connection has its intermediate portion passed over the guide-sheave q^4 . The swinging of the support for the work-holder is usually intended to be automatically controlled and regulated consequent upon the conjoint rotation with one or both of the work-holders of one or more cams or formers n , (which have cross-sectional contour corresponding to that of the handle to be ground,) in conjunction with studs or abutment-pieces p , which are adapted to be fixed in proper adjacent positions corresponding to the particular work in hand. Each former here shown is axially bored and tapped, having a screw engagement upon the screw-

threaded extremity i^4 of the sleeve i , embodied in the work-holder. Each abutment-stud p is constituted by the vertical member of an angle-piece, the horizontal members of the pair of which are screw-threaded and extended, in planes substantially parallel with the rotation of the grinding-wheel, adjustably through the separated posts r , which latter, as shown and as are preferably to be formed, have the slotted foot-pieces $r^2 r^2$ held in confinement upon the table by the said screws or bolts r^3 , all so that the posts may be adjusted toward and from each other and in a line parallel with the length of the article to be ground.

The journals $a a$, in which the arbor of the grinding-wheel is mounted, are supported at the upper portions of arms a^2 , which are pivotally connected, as at a^3 , to lugs a^4 of the table A . To an intermediate portion of one of said arms a^2 a bar a^5 is pivotally connected, which bar thence forwardly extends horizontally through an aperture in a standard a^6 , which is bolted upon the table. The nuts a^7 screw engage the said bar a^5 at either side of the upright. By loosening the outer nut the journals and grinding-wheel may be rearwardly swung clear from the mechanism at the front of the table to permit of the removal or substitution of the grinding-wheel, and again by loosening one and setting up the other of the nuts $a^7 a^7$ the grinding-wheel may have bodily a forward or rearward adjustment, as may be desirable, in addition to the capabilities for adjustment imparted by the described mounting of the frame D and the abutment-posts which are impinged upon by the former-cams.

The operation of the machine becomes manifest on a consideration of the construction and arrangement for conjoint action of the parts and appliances described; but it will be briefly mentioned that for grinding the handle of a knife or fork of given dimensions after the machine has been adjusted therefor the operative has merely to depress the treadle, withdrawing the work-holding devices from adjacent the grinding-wheel, to then place the butt-end of the handle in the cup-like socket and slide the tang laterally between the separable jaws, and then slide up the clamping-ring (which is understood as having been already slid into its disengaging position) and release the pressure on the treadle, when the handle will be properly presented against the grinding-face of the wheel. The shaft E is slowly turned by means of the hand-crank as the grinding progresses, presenting new surfaces of the handle to be ground. No skill or care is required in the operation of the machine, for it is apparent that the handle will be ground to a form as predetermined in the provision of the cam of the desired contour.

The machine is adaptable for utilization in the manner already rendered plain for the grinding of cutlery and other handles having a wide range of modification, so far as

concerns longitudinal and transversal dimensions and degree of taper.

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

5 1. In a grinding-machine, the combination, with the grinding-wheel, of a work-holder support pivotally mounted to have a swinging movement toward and from the face of
10 the grinding-wheel, the work-holder rotatably mounted thereon and means for imparting rotation thereto, a spring for forcing the said support toward the wheel, and a treadle having a flexible connection extended therefrom
15 to an engagement with the support for withdrawing the latter from the grinding-wheel, substantially as described.

2. In a grinding-machine, the combination, with a table having supports for the grinding-
20 wheel and a pair of separated uprights, of a work-holder support having parallel separated brackets, a bar or member having its extremities in engagement with said brackets, whereby there may be a rotational move-
25 ment of the bracketed holder relative to the bar and said bar being provided with rigid members extended therefrom at right angles to its length and mounted for a rocking movement in said separated uprights, and the work-
30 holder mounted on the said support, substantially as described.

3. In a machine for grinding cutlery and other handles, the combination, with a grinding-wheel and a work-holder support which
35 is movable toward and from the face of the

grinding-wheel, of separated work-holders mounted on said support thereof, comprising a bearing or journal, a sleeve therein constrained against endwise movement, a screw-shaft through the sleeve, having one extrem- 40 ity adapted to engage the article to be worked upon and free for an endwise movement relative to the sleeve, but constrained against rotation, a nut-screw engaging the said screw-shaft and having an engagement with said 45 sleeve, whereby there may be no movement axially of the one relative to the other, but whereby they may independently rotate, and means for imparting rotation to the sleeve, substantially as described. 50

4. In a machine for grinding cutlery and other handles, the combination, with a grinding-wheel and a movable support, of separated work-holders on said support, one comprising a journal-bearing, a sleeve rotatable 55 thereon, having a shoulder at one end of the bearing and a gear-wheel at the other, and the sleeve also having the peripherally-grooved extremity, the spline-grooved and screw-threaded shaft passed through the 60 sleeve and having at its one end a handle-engaging member, the nut engaging the shaft and provided with the annular flange, the pin j^5 , and the pin j^3 , all arranged as and for the purposes set forth.

FREDRICK C. FEICKER.

Witnesses:

WM. S. BELLOWES,
J. D. GARFIELD.