2 Sheets—Sheet 1.

G. J. CAPEWELL.

Cutlery-Grinding Machines.

No. 196,333. **Patented Oct. 23, 1877.**

Fig. 1.

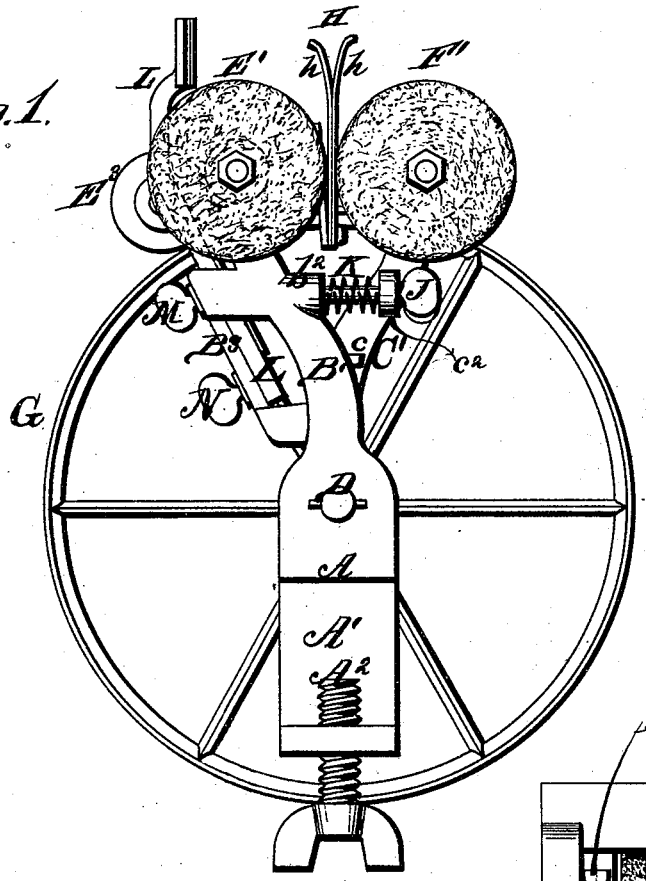
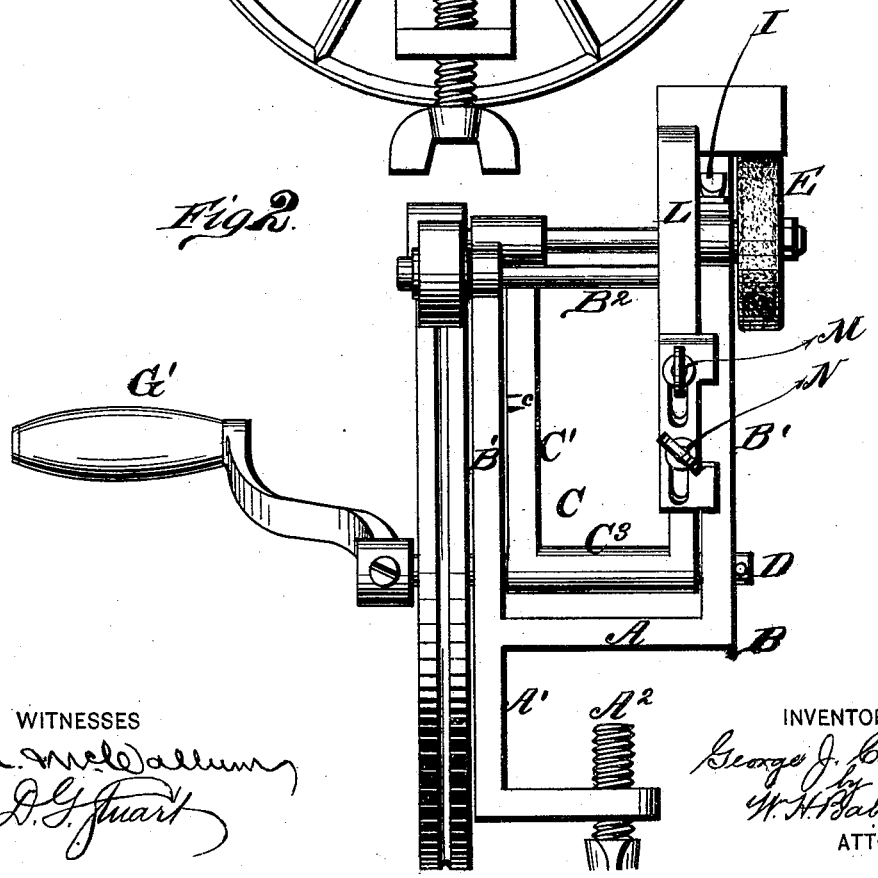


Fig. 2.



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2 Sheets—Sheet 2.

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Fig. 3.

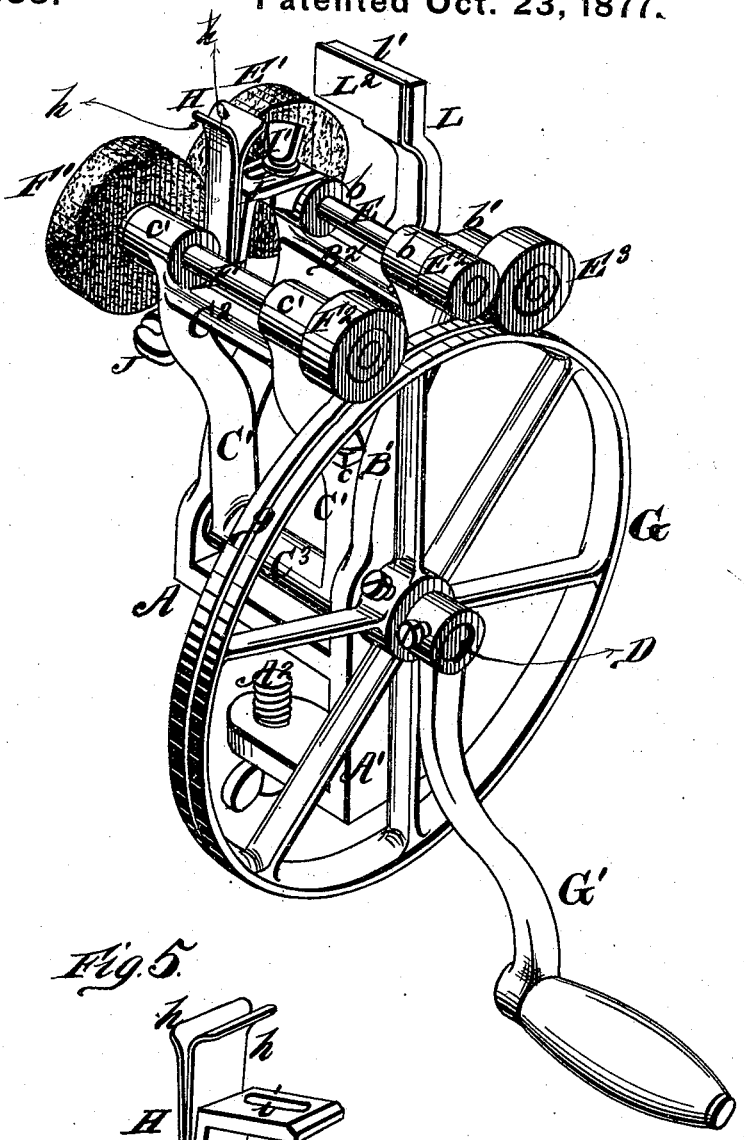

Fig. 4.

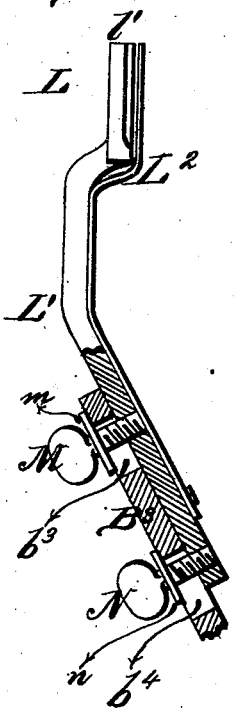

Fig. 5.

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GEORGE J. CAPEWELL, OF CHESHIRE, CONNECTICUT.

IMPROVEMENT IN CUTLERY-GRINDING MACHINES.

Specification forming part of Letters Patent No. **196,333**, dated October 23, 1877; application filed July 14, 1877.

To all whom it may concern:

Be it known that I, GEORGE J. CAPEWELL, of Cheshire, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Machines for Grinding Cutlery; and I do hereby declare that the following is a full, clear, and exact description thereof, which 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.

In the accompanying drawings, Figure 1 represents a rear elevation of my improved grinding-machine. Fig. 2 is a side elevation of the same. Fig. 3 is a perspective view of the same. Fig. 4 is a detail view of the scissors-holder, partly in section. Fig. 5 is a detail view, in perspective, of the knife-holder.

The object of this invention is to provide a grinding apparatus capable of being applied conveniently to a scissors-blade or a knife-blade, or to both at the same time, and provided with suitable adjusting devices for regulating the bevel of the edge or edges ground, and for other purposes.

The nature of said invention consists, first, in the combination of a fixed frame, supporting a grinding-wheel, with a movable frame journaled in the same, and supporting a second grinding-wheel, and suitable devices for adjusting said movable wheel toward or from said fixed wheel.

It also consists more particularly in the combination, with said frames and wheels, of an expansion-spring for forcing the same apart and an adjusting thumb-screw, working in a screw-tapped lug of the journaled frame, for drawing them together.

It also consists in the combination, with said frames and wheels, of a spring-clamp or knife-holder, consisting of two spring-leaves, for holding between them the blade of a knife or other piece of cutlery which is to be sharpened simultaneously on both of its edges.

It also consists in the combination, with said wheels, frames, and spring-clamp or knife-holder, of certain adjusting devices, hereinafter described, whereby the position of said clamp is made to conform to the adjustment of said wheels.

In the accompanying drawings, A designates the bed-piece of my grinding-machine, which is provided with a right-angled downward extension, A^1, the horizontal part of which is screw-tapped to receive an upward-working clamping-screw, A^2, whereby the machine is securely though detachably held to a table or other suitable support, and retained in an upright position.

B designates a rigid supporting-frame, consisting of two standards, B^1 B^1, at opposite ends of bed-piece A, and connected at their upper ends by cross-bar B^2. This frame is preferably cast or otherwise formed in one piece with the aforesaid parts A and A^1.

C designates a similar, though narrower, frame, having standards C^1 C^1, top cross-bar C^2, and tubular bottom cross-bar C^3, the latter being sleeved upon a shaft, D, that has its bearings in the lower parts of standards B^1 B^1. Thus frame C is adapted to be adjusted upon its axis away from or toward fixed frame B, thereby varying the interval between them at will. Stop-blocks *c c* on the outer sides of standards C^1 prevent the upper ends of said frames (which curve away from one another) from being brought too close together by engaging with the standards of the said fixed frame when said movable frame is rocked toward it.

The top of frame B is provided with bearings *b b*, in which turns a shaft, E, that carries at one end a grinding-wheel, E^1, and at the other a small friction-wheel, E^2. The top of frame C is provided with similar bearings c^1 c^1, in which turns a similar shaft, F, that carries at one end a similar grinding-wheel, F^1, and at the other a friction-wheel, F^2, larger than E^2. G designates the driving-wheel of the machine, which is keyed upon or clamped to shaft D, and operated by crank G^1, or by an endless chain or cord passing around circumferential groove *g*. Said driving-wheel operates wheel F^2 and shaft F directly; but operates wheel E^2 and shaft E through the medium of friction-wheel E^3, which turns on a short shaft extending from a lug, b^1, formed on the side of the upper end of one of said standards

B′. The interposition of this wheel E^3 causes shaft E and its grinding-wheel to turn in a direction opposite to that of shaft F and its grinding-wheel. The edge of any blade held between them when in operation will be correspondingly ground on its opposite sides. H designates a knife-holder or clamping device for holding the knife or other article of cutlery between said grinding-wheels. It consists of two spring leaves or jaws, *h h*, which gently clamp the blade between them, and which are fastened at their lower ends to the lower part of an angular bracket, I, distinctly shown in Fig. 5. The horizontal upper arm of said angular bracket is slotted longitudinally at *i*. A clamping-screw, I′, passes through said slot, and secures said bracket to the top of frame B. By means of said slot and clamping-screw said knife-holder is adapted to conform to the adjustment of frame C when the latter is moved relatively to frame B. These adjustments of said frame are affected by means of a screw-tapped lug, c^2, formed on the side thereof, a socket, b^2, on fixed frame B, an adjusting thumb-screw or screw-threaded rod, J, which engages with said socket and works through said lug, and an expansion-spring, K, surrounding said screw-threaded rod, and bearing at one end against socket b^2, and at the other against lug c^2. The tightening of said screw-rod brings the grinding-wheels together, so as to compensate for wear or adapt the interval to the shape and size of a smaller blade. When said screw-rod is turned in the opposite direction, spring K is left free to force the movable grinding-wheel away from the stationary one, producing the opposite results. The bevels of the opposites sides of the blade may thus, also, be made somewhat unequal, as the angles of presentation of the grinding-wheels will differ.

When it is desired to grind an article like a scissors-blade, which is to be sharpened on one side only, scissors-holder L^1 (shown in detail in Fig. 4) is employed. This consists of an inelastic inclined metal shank, L, having a laterally-extending head, *l′*, and a plate-spring, L^2, of similar shape, and fastened thereto at its lower end. Said scissors-holder is supported by an inclined bar, B^3, rigidly attached to or formed with frame B, and is adjustable up and down thereon by means of slots b^3 b^4 in said bar, and clamp-screws M and N, which pass through said slots. Said screws are respectively provided with washer *m* and washer *n*, and engage with screw-tapped shank L^1. By means of these devices the position of the blade to be sharpened may be varied so as to vary the bevel of the sharpened edge, or to compensate for the wear of grindstone E^1.

The above-described machine, though referred to especially in connection with knives and scissors, is applicable, also, to sharpening any article of cutlery.

In practice I generally prefer to substitute cog-gearing for the friction-gearing E^2, F^2, E^3, and G; but, as these are well-known mechanical equivalents, no further description thereof need be given.

Belt-gearing may also be employed, and the arrangement and number of the gear-wheels considerably varied, without departing from the spirit of my invention.

I do not wish to confine myself to the precise construction and arrangement (as shown) of the frames, adjusting devices, and other parts of the machine. Frame C may be journaled by trunnions to frame B; an exterior retracting-spring may be used instead of expanding-spring K; clamping-collars may be substituted for slots b^3 b^3, and various other changes may be made. The knife-holder and scissors-holder may be used simultaneously.

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

1. The combination of a fixed frame supporting a grinding-wheel with a movable frame journaled therein and supporting another grinding-wheel, and suitable devices for adjusting the latter toward or from said fixed frame and wheel, substantially as set forth.

2. The combination, with a fixed grinding-wheel frame and a movable grinding-wheel frame, of an expansion-spring and an adjusting-screw, arranged and operating substantially as set forth.

3. The combination, with a fixed grinding-wheel and a movable grinding-wheel, of spring-clamp H, consisting of flexible leaves *h h*, for holding an article of cutlery between said wheels, substantially as and for the purpose set forth.

4. In combination with a fixed grinding-wheel and a movable grinding-wheel of a spring-clamp or knife-holder, a slotted supporting-bracket and a thumb-screw, arranged and operating substantially as set forth.

5. The combination and arrangement of a fixed grinding-wheel frame, a movable grinding-wheel frame, adjustable about the axis of the driving-wheel, independent shafts for said grinding-wheels, friction or cog wheels E^2 E^3 F^2, and a driving-wheel adapted to operate the same, substantially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

GEORGE J. CAPEWELL.

Witnesses:
JAMES KELSEY,
GEORGE KEELER.