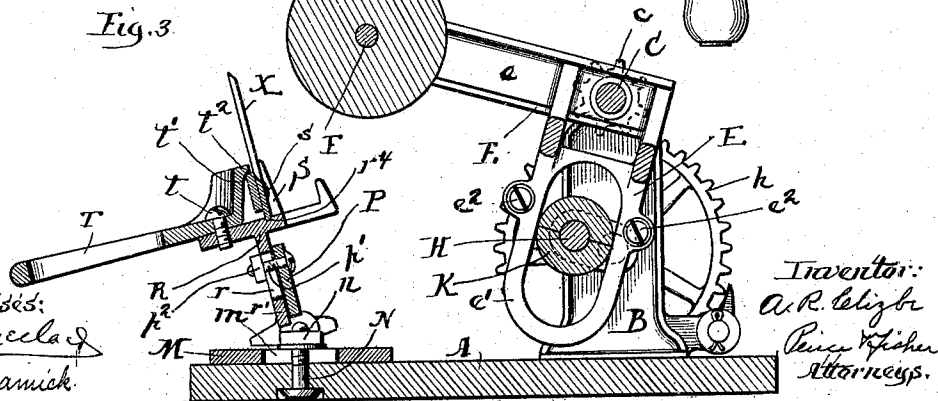
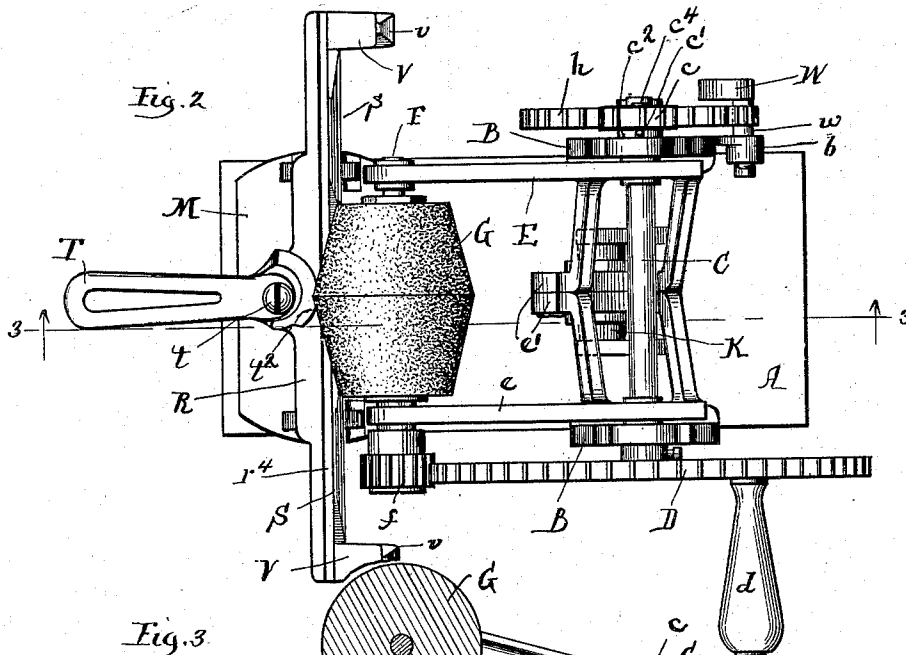
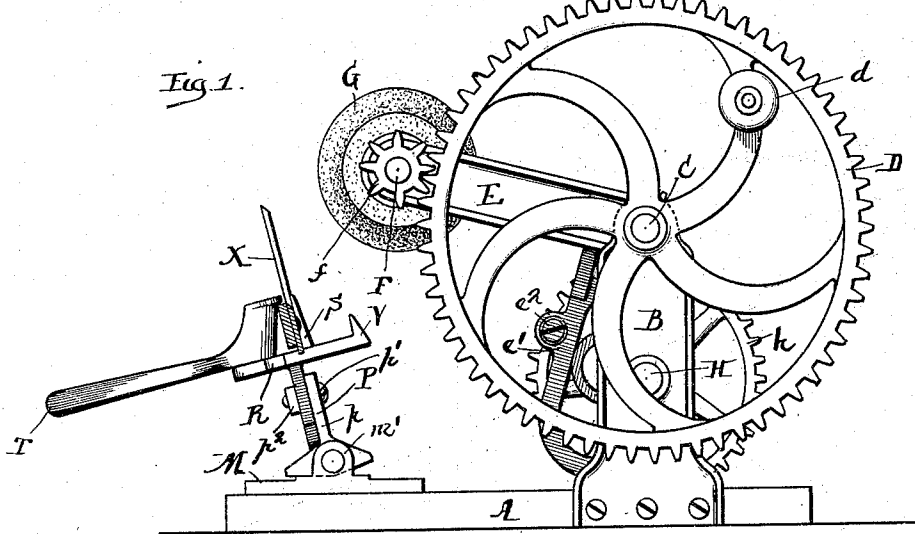


A. R. CLIZBE.
GRINDING MACHINE.

No. 567,638.

Patented Sept. 15, 1896.



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Fig. 4.

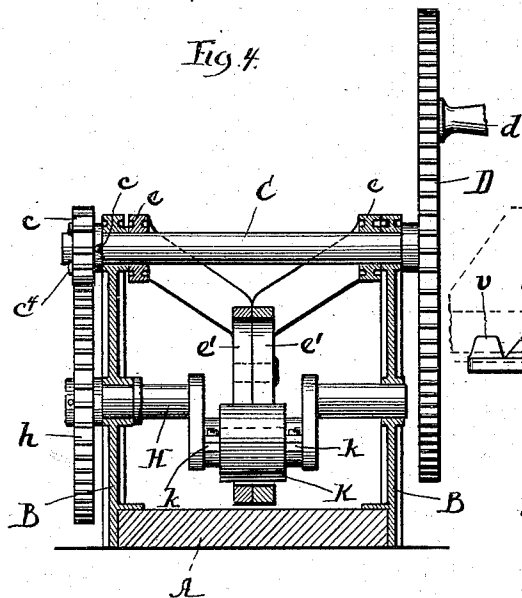


Fig. 5.

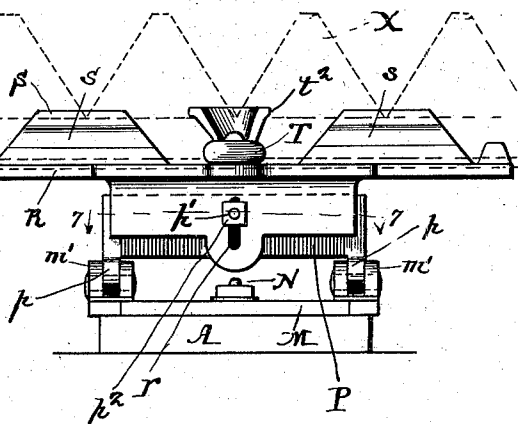


Fig. 6.

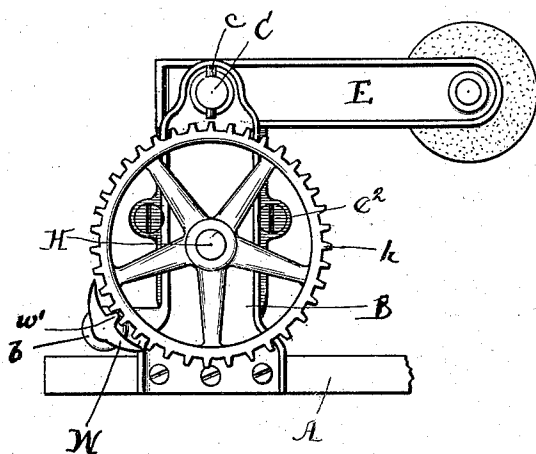
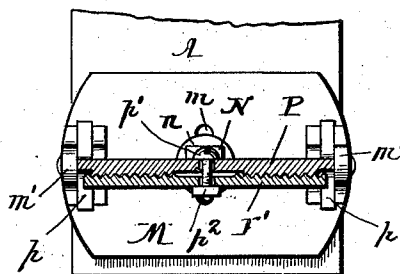


Fig. 7.



Witnesses:

Fred. G. ...
A. Adamick

Inventor:

A. R. Clizbe
By Reim & Fisher
Attorneys.

UNITED STATES PATENT OFFICE.

ADELBERT R. CLIZBE, OF CHICAGO, ILLINOIS.

GRINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 567,638, dated September 15, 1896.

Application filed February 29, 1896. Serial No. 581,275. (No model.)

To all whom it may concern:

Be it known that I, ADELBERT R. CLIZBE, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Grinding-Machines, of which I do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

The object of the present invention is to provide an improved construction of grinding-machine which, while capable of use for a variety of other purposes, is more especially designed for the grinding of harvester-knives and the like.

The invention consists of the various novel features of construction hereinafter described, illustrated in the accompanying drawings, and more particularly pointed out in claims at the end of this specification.

Figure 1 is a view in side elevation. Fig. 2 is a plan view. Fig. 3 is a view in vertical section on line 3 3 of Fig. 2. Fig. 4 is a view in vertical section through the main standards of the machine. Fig. 5 is a front view showing the knife-holder. Fig. 6 is a view in side elevation showing the swinging frame held in fixed position. Fig. 7 is a view in horizontal section on line 7 7 of Fig. 5.

A designates the base of the machine, from which rise the vertical standards B. In the top of the standards B is journaled the main shaft C, to one end of which is fixed the main drive-wheel D. Upon the main drive-shaft C is hung the swinging frame E. This frame is shown as formed of two sections, each comprising a forwardly-extending arm *e* and a downwardly-extending yoke *e'*, the yoke *e'* being preferably united to and cast in piece with the corresponding side arm *e* of the swinging frame, as shown. When the side arms *e* of the swinging frame are set upon the main shaft C, (see Fig. 2,) the yokes *e'* will abut against each other and will be united together by the screw-bolts *e²*. (See Fig. 3.) The outer ends of the arms *e* have journaled thereto the spindle F, that carries the grinding-wheel G, and to one end of the spindle F is fixed a pinion *f*, that gears with the drive-wheel D. A handle *d*, projecting from one of the spokes of the drive-wheel G, affords

a convenient means for operating the machine.

In the standards B and beneath the shaft C is journaled the crank-shaft H, to the outer end of which is fixed a gear-wheel *h*, that meshes with the pinion *c*, that is keyed to the corresponding end of the main shaft C. For a purpose to be presently stated the pinion *c* is preferably removably mounted upon the end of the shaft C, and to permit this pinion to be removed, and yet when in place to be driven by the shaft C, I prefer to provide the shaft C with one or more pins *c'*, that project into notches formed on the inner end of the hub *c²* of the pinion *c*. (See Figs. 2 and 4.) A cutter-pin *c⁴* temporarily retains the pinion *c* upon the shaft C. The central cranked portion of the crank-shaft H has loosely mounted thereon the sleeve K, this sleeve being formed of sections having the ears *k*, that are bolted or riveted together, as seen in Fig. 4. The crank portion of the shaft H and the sleeve K fit within the open space of the yokes *e'*. (See Fig. 3.)

From the construction of parts as thus far defined it will be seen that when revolution is imparted to the drive-wheel D corresponding revolution will be transmitted through the pinion *f* to the grinding-wheel G. It will be seen, also, that by means of the pinion *c* and the gear-wheel *h* revolution will be imparted from the shaft C to the crank-shaft H, and this crank-shaft will, by means of the yokes *e'*, impart a swinging movement to the frame E, that carries the grinding-wheel.

Upon the base A at its front is mounted the knife-holder, whereon the harvester-knife will rest during the grinding operation. This knife-holder comprises a base-plate M, through a central slot *m* of which passes the pivot and adjusting bolt N, the upper threaded end of this bolt N being furnished with a clamp-nut and washer *n*. (See Fig. 3.) By means of the bolt N and slot *m* the knife-holder can be readily adjusted in forward and backward direction, and as well also can be set at any desired angle. At the ends of the base-plate M rise the studs *m'*, to which are pivoted arms *p*, that depend from the lower plate P of the knife-holder, and these arms *p* project toward the front and rear in order to act as stops for limiting the rocking movement of the knife-

holder. Through the plate P passes a clamping-bolt p' , that passes through the long vertical slot r of a plate r' , depending from the knife-rest or table R, and this bolt p' is furnished with a nut p^2 , whereby the plates can be tightly clamped in any desired position. By reference to Figs. 5 and 7 it will be seen that the abutting faces of the plates P and r' are vertically corrugated, the purpose of this being to enable the plates to be tightly held together after they have been adjusted to the desired position. From the upper face of the knife-rest R rise the arms S, against which the harvester-knife will be firmly held by means of a clamp-handle T, that is pivoted, as at t , to the knife-rest R, the inner end of the clamp-handle T being provided with the eccentric raised portion t' , adapted to bear against the harvester-knife and being formed also with the overhanging rib t^2 , that will extend above the rib of the knife and thus better retain it in place. By preference the upper face of the knife-rest R is formed with a longitudinal groove r^4 , to receive and guide the lower edge of the harvester-knife, and preferably the uprights S have their faces formed with the grooves s , through which may pass the rivets that ordinarily project from the knife. It will thus be seen that when the harvester-knife X is placed upon the knife-rest R, as shown in Figs. 1, 3, and 5, the operator, by turning the clamp-handle T, can firmly hold the knife X in position after being ground, and by raising and lowering the handle T can swing the knife X to and from the grinding-wheel G as this frame vibrates in vertical direction. In order to enable the coupling ends of harvester-knives to be more readily ground, since such portions of the knives cannot be conveniently held by the clamp-handle T, I provide the knife-rest R with the rearwardly-projecting arms V, having the upturned ends v . (See Figs. 1, 2, and 3.) By placing the harvester-knife upon these arms V the operator can securely hold them in desired position while they are being subjected to the action of the grinding-wheel.

As it is frequently desirable to hold the grinding-wheel G in stationary position for the purpose of cutting a dent or nick from some particular part of the knife, I have mounted the pinion c upon the shaft C, so that such pinion can be readily removed after the grinding-wheel has been brought to the desired position, and when the pinion c has been thus removed I lock the swinging frame in fixed position, preferably by means of a sliding dog W, that is formed at the outer end of a shaft or stud w , that is carried by a perforated boss or bearing b , projecting from one of the standards B. The dog W, as shown in Fig. 6, has its inner face formed with a tooth w' , adapted to enter between the teeth of the gear-wheel c , and when the tooth w' is thus between the gear-teeth of the wheel h this wheel will be firmly locked against revolution, and consequently the swinging frame

E of the grinding-wheel G will be held in fixed position. When, however, the pinion c has been replaced upon the shaft C and the dog W by an outward movement of its stud or shaft w has been brought to the position seen in Fig. 2, the movement of the swinging frame will continue as hereinbefore described.

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

1. In a grinding-machine, the combination with suitable supports or standards, of a drive-shaft, a swinging frame carrying a grinding-wheel, said swinging frame being provided with a yoke, a crank-shaft mounted in said supports or standards and having its cranked portion extending through said yoke of the swinging frame and suitable gears connecting said drive-shaft with the shaft of the grinding-wheel and with said crank-shaft, substantially as described.

2. In a grinding-machine, the combination with suitable supports or standards, of a main drive-shaft, a swinging frame carrying a grinding-wheel, said swinging frame being formed of sections bolted together, a yoke extending downwardly from said swinging frame, a crank-shaft passing through said yoke and gear-wheels connecting said drive-shaft with said crank-shaft and also with the shaft of the grinding-wheel, substantially as described.

3. In a grinding-machine, the combination with suitable supports or standards, of a main drive-shaft journaled in the top of said supports or standards, a swinging frame carrying a grinding-wheel suspended from said drive-shaft and having a downwardly-extending yoke, a crank-shaft journaled in said standards beneath said main drive-shaft, said crank-shaft having its cranked portion within said yoke and gear-wheels connecting said drive-shaft and said crank-shaft and gear-wheels connecting said drive-shaft with the shaft of the grinding-wheel, substantially as described.

4. In a grinding-machine, the combination with suitable supports or standards and with a drive-shaft journaled therein, of a swinging frame carrying a grinding-wheel and provided with a yoke, a crank-shaft extending through said yoke, the portion of said crank-shaft within said yoke being provided with a sectional sleeve and suitable gear mechanism connecting said crank-shaft with said drive-shaft and gear mechanism connecting said drive-shaft with the shaft of the grinding-wheel, substantially as described.

5. In a grinding-machine, the combination with suitable supports or standards, of a swinging frame carrying a grinding-wheel, a drive-shaft in gear with the shaft of the grinding-wheel, a shaft for oscillating said swinging frame, a gear-wheel mounted upon said last-mentioned shaft, a shiftable pinion mounted upon the drive-shaft for engaging

said gear-wheel, and a movable lock or dog for engaging said gear-wheel in order to hold the swinging frame in fixed position, substantially as described.

5 6. In a grinding-machine, the combination with a suitable bottom plate, of a knife-holder comprising a base-plate having a transverse slot therein, an adjusting-bolt passing through said slot, and a vertically-adjustable knife-
10 rest provided with means for clamping the knife, and pivotally mounted upon said base, whereby the knife can be vibrated toward and from the grinding-wheel, substantially as described.

15 7. In a grinding-machine, a knife-holder comprising the combination with an adjusta-

ble base-plate, of the knife-rest R provided with the downwardly-extending plates r' and with the uprights S, a pivoted clamp-handle T, and a plate P adjustably connected to said
20 plates r' and pivotally mounted upon the base, substantially as described.

8. In a grinding-machine, a knife-holder comprising a knife-rest R having uprights S and a pivoted clamp-handle T, and having
25 also the supplemental arms V extending inwardly beyond the uprights S and serving to support the knife, substantially as described.

ADELBERT R. CLIZBE.

Witnesses:

FRED GERLACH,
ALBERTA ADAMICK.