

(No Model.)

2 Sheets—Sheet 1.

C. E. STUART.
SICKLE GRINDER.

No. 503,998.

Patented Aug. 29, 1893.

FIG. 1.

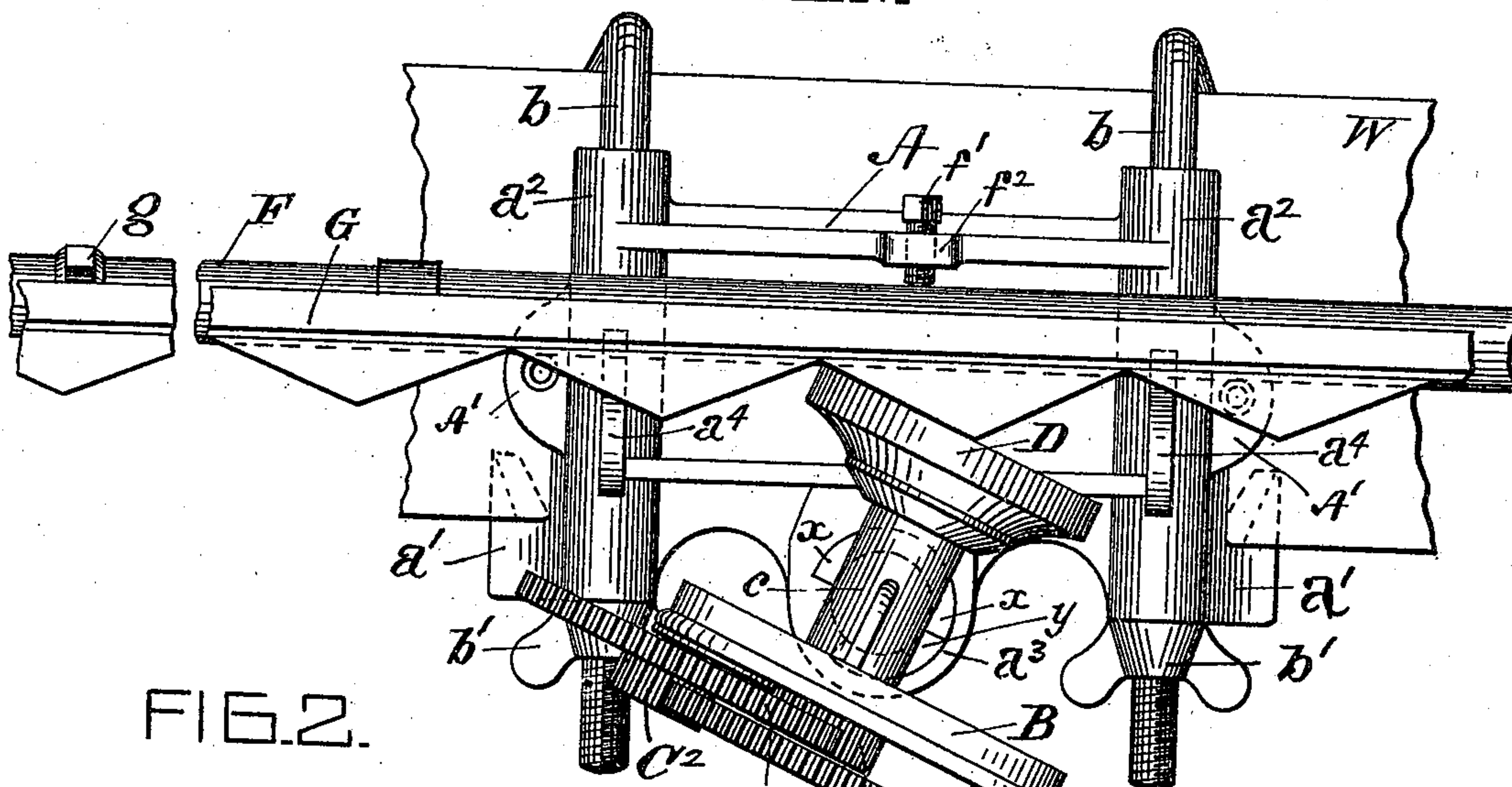
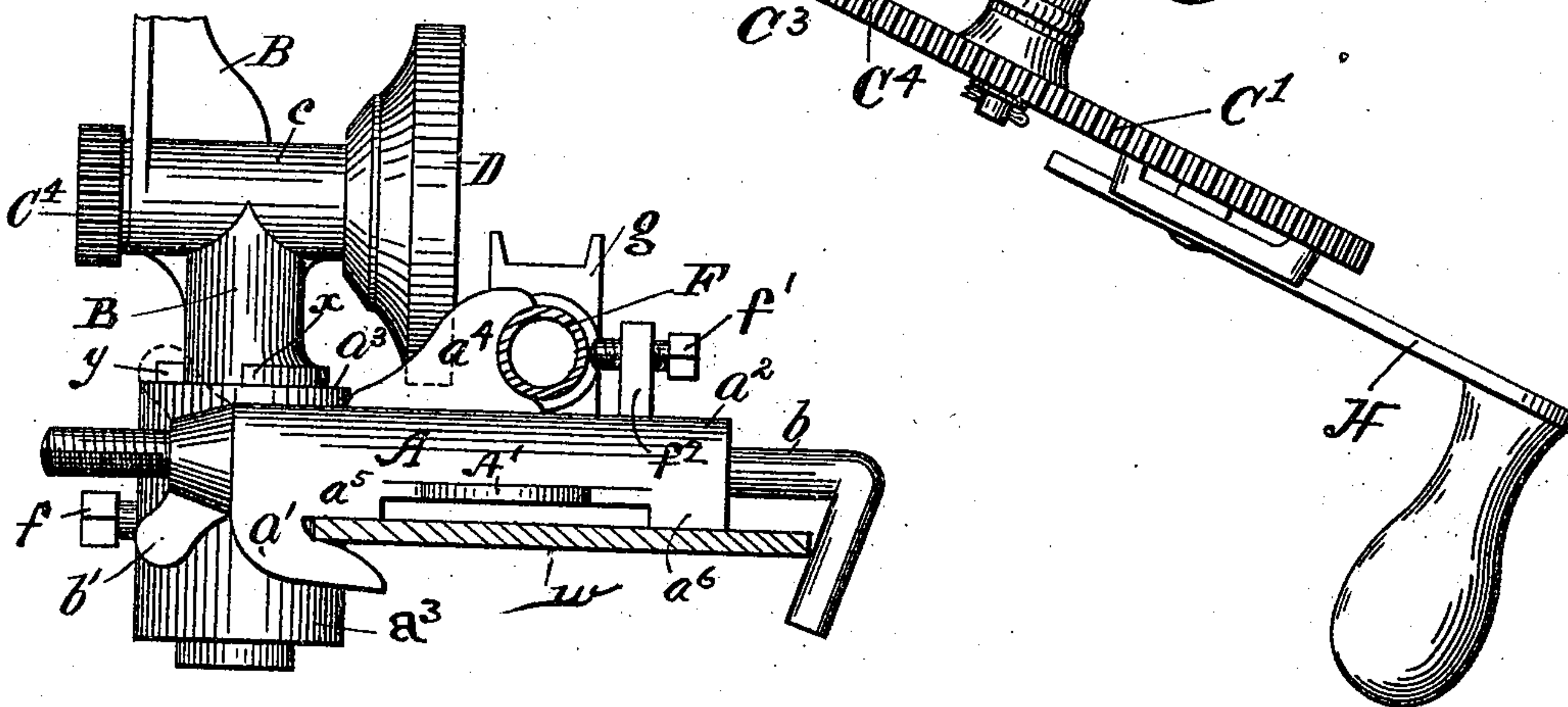


FIG. 2.



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(No Model.)

2 Sheets—Sheet 2.

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FIG. 3.

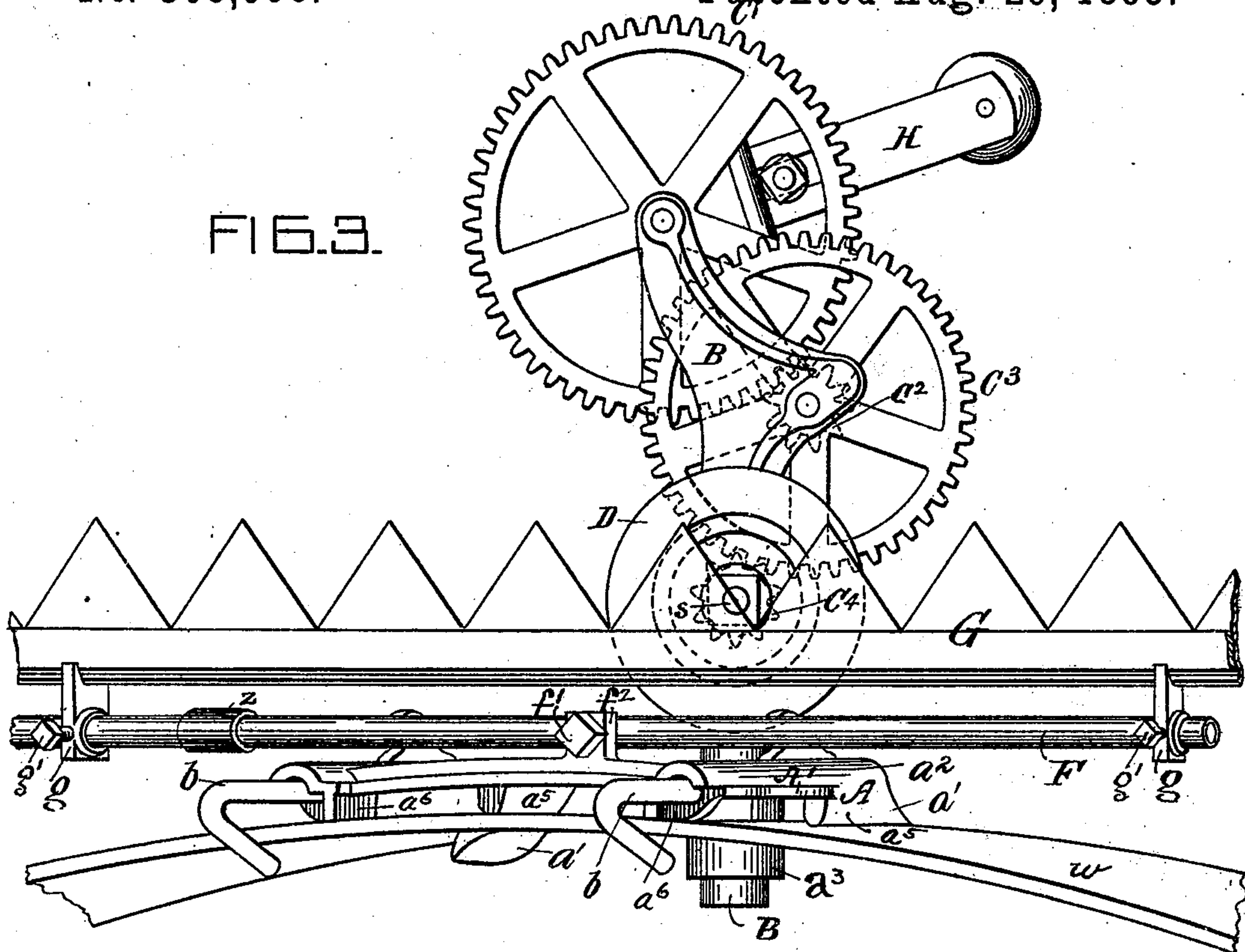
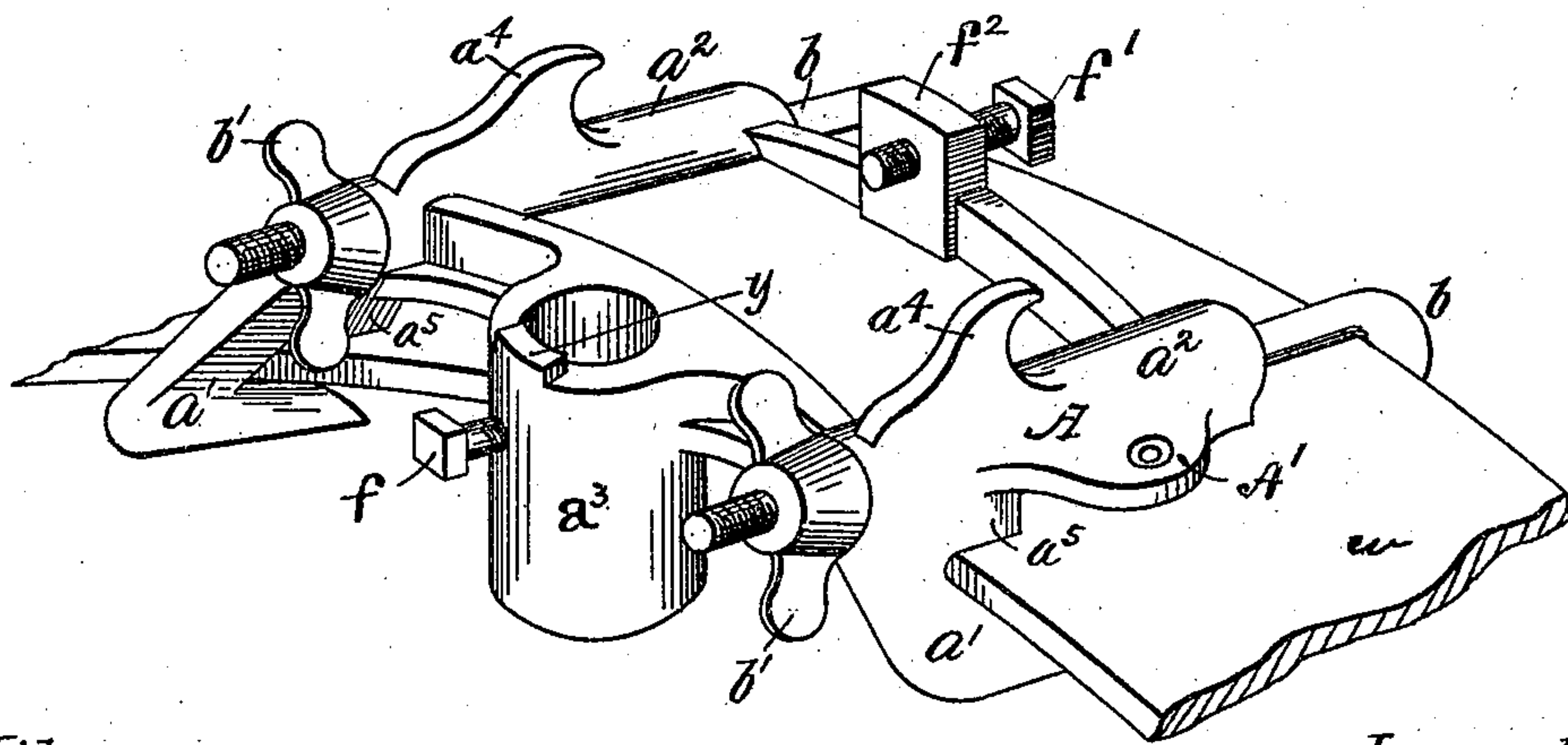


FIG. 4.



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UNITED STATES PATENT OFFICE.

CHARLES E. STUART, OF PIQUA, OHIO.

SICKLE-GRINDER.

SPECIFICATION forming part of Letters Patent No. 503,998, dated August 29, 1893.

Application filed March 20, 1893. Serial No. 466,842. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. STUART, a citizen of the United States, residing at Piqua, Miami county, Ohio, have invented new and useful Improvements in Sickle-Grinders, of which the following is a specification.

My invention relates to the class of implements known as sickle-grinders,—being a portable grinding machine, designed, primarily, for sharpening the cutting edges of the sickle-bar used in mowing machines, while in the field: its object being to produce a simple and effective implement for this purpose, useful also for all ordinary grinding purposes.

To this end, the invention consists in a base-plate of peculiar construction, adapted to rest upon, and be secured to, the wheel-rim of a mowing machine or any other convenient object, and carry the adjustable grinding apparatus and the sickle-holder and guides: and in the combination, therewith, of the various other parts of the apparatus, and their construction, as hereinafter set forth; whereby the action and manipulation of the instrument are facilitated, and whereby, also, the machine as a whole is adapted to be separated into its constituent elements, and packed within a relatively small compass for shipment.

The details of the various features of improvement will be more fully set forth herein.

Mechanism embodying my invention, is illustrated in the accompanying drawings, in which—

Figure 1, is a view of the device adjusted to operation upon a sickle-bar. Fig. 2, is a detail end view showing the relation of the parts to the wheel, to which the device is secured, and there, the position and relation of the guide stops. Fig. 3, is a side elevation perpendicular to the plane of the grinding wheel when in operation upon a sickle bar; and Fig. 4, is a perspective elevation of the base piece detached.

Referring now to the drawings:—A, designates a metal base piece constructed, as hereinafter set forth, with projections, a' , a' , extending downward at the side of, and under the rim, w , of one of the carrying wheels of a mowing machine; and b , b , two hook-bars with shanks extended through open-ended sockets, a^2 , a^2 , of the base, A, and provided

with screw-nuts b' , by which the wheel-rim is clamped at opposite edges between the hooked ends of the bars, b , and the projections, a' ; and the device firmly secured to the wheel-rim. The projections, a' , present a V-shaped opening for the edge of the wheel-rim, by which the fastening is made absolutely secure and rigid by the clamping action of the screw hook-bars. At one side of the base, A, a strong vertical socket piece, a^3 , is formed, adapted to receive the lower cylindrical end of a standard, B, carrying a bearing socket, c , for a horizontal shaft and extended thence upward and containing bearing studs for a train of spur gears, C' C^2 C^3 ; the last, meshing with a spur-pinion, C^4 , on the end of a shaft, S, at the opposite end of which, is carried the emery wheel, or grindstone, D.

The initial gear, C' , of the train, is provided with a hand crank, H, for the operation of the grinding apparatus which is all carried upon the standard B.

The standard, B, is adjustable radially in its socket piece a^3 , to ultimate positions, one of which is shown in Fig. 1: and to secure exactness, radial projections, x , (Fig. 2) are formed upon the standard, B, to engage against a limiting stop, y , at the upper edge of the socket-piece, the purpose of which will be more fully adverted to later. A set screw, f , is provided to retain the standard more fixedly in its ultimate positions of adjustment.

Rising from the socket pieces, a^2 , are clamping abutments a^4 , a^4 , curved, having curved faces to receive the bar, F, (Fig. 2) which is held in place by a set screw, f' , threaded through an opposite projection, f^2 , and bearing against the bar, F, which thus holds it to its seats in the abutment pieces, as a rigid part, for the time being, of the base piece, A. The bar, F, is preferably formed of metal tubing, in two parts, joined longitudinally by a suitable jointing collar as, z , in order to form a long support for the sickle bar, G, without having undue weight; and at the same time, be separable into comparatively short lengths for packing in shipment. The sickle bar, G, is supported upon the bar, F, in guide pieces, g , adjustable longitudinally upon the supporting bar, F. The guide pieces, g , are collars provided with set-screws, g' , and extended at the upper side into resting blocks with re-

cessed upper faces flanked by slight upward projections. The bar, F, when secured in position, stands sufficiently near the grinding wheel, D, so that the sickle bar, G, placed
 5 back downward in the guide pieces, g, may stand slightly inclined to the vertical, resting with the beveled side of one of its cutting edges against the face of the wheel, D; while the face of the latter stands vertical, but
 10 horizontally inclined, correspondingly to the longitudinal axis of the sickle-bar. The base, A, rests upon the reaper wheel, W, when clamped to position, upon ledges, a^5 , a^6 , by which it is raised above the face of the wheel
 15 sufficiently to clear the friction pieces usually attached to the face of the wheel, (not herein shown.)

For operation upon a sickle bar, the standard, B, is adjusted to, and secured in, one
 20 of ultimate radial positions, and the supporting bar, F, is then adjusted to, and secured in its proper position against its holding abutments with the guide pieces, g, vertical. The supporting bar, F, in beginning
 25 operations, extends wholly at one side, preferably to such a distance that the sickle-bar, G, (ordinarily about six feet in length,) will not be overbalanced outwardly. The two guide-blocks, y, hold it practically in the line of the
 30 supporting bar, F, with sufficient play for manipulation. The position of parts is then as indicated in Figs. 1 and 3. All the cutting faces of the sickle-bar that lie in the same relation to the grinding wheel, D, are then
 35 ground successively, by shifting the sickle-bar longitudinally after each face is ground, and readjusting to the next; and, when necessary, loosening the set-screw, f' , and shifting the supporting bar along with the sickle-bar.
 40 When all cutting edges in the same relation are ground, the standard, B, is turned to, and secured in, the opposite radial position, and the opposite cutting edges are ground in a similar manner. It will readily be seen, that,
 45 in shifting the sickle-bar, G, longitudinally in its guides, to grind successively the corresponding edges of the cutters, the sickle is moved along and the grinding wheel is cleared by turning the sickle-bar to a vertical position,
 50 while thus shifting its position, until the next cutter is opposite its proper position; when the new cutting edge is brought to position by canting the sickle-bar back toward the grinding wheel into the position shown.
 55 The movement and adjustment of the sickle-bar, are accomplished by one hand, while the other is free to manipulate the driving crank. On reaching the heel of the sickle-bar, where the usual straps (not shown) for
 60 attachment of the pitman, form projections preventing the proper action of the grinding wheel in ordinary positions, the standard, B, is elevated sufficiently to enable the wheel, D, to clear the strap and allow the lower edge of
 65 the wheel to operate in the angle between adjacent cutters. I also provide the base piece,

A, with horizontal side ears, A', with perforations, whereby the apparatus may be bolted to a fence top, or other convenient rest for use, in other grinding. For example, an ax,
 70 or similar implement, may be conveniently ground by adjusting the grinding wheel straight with the bar, F, or at right angles therewith, and then by resting the heel of the ax in one of the guide blocks suitably ad-
 75 justed to the wheel and canting the ax against the face of the wheel or against its periphery, and manipulating the ax by its handle, to bring successive portions of its cutting edge to the face of the grinding wheel, which may
 80 be easily sharpened. Other farm implements may be similarly ground.

I claim as my invention and desire to secure by Letters Patent of the United States—

1. In a portable sickle-grinder, a support-
 85 ing base for the grinding mechanism, consisting substantially of a plate adapted to extend over and rest upon the top of a wheel or similar supporting object, provided at one side with a vertical socket and hooked extensions
 90 at both sides of the same extending downward at and beyond one edge of the wheel-rim, and open ended sockets extending across the plate in line with such hooked extensions and adapted to receive a pair of adjustable
 95 hook-bolts through said sockets to engage the opposite edge of said wheel-rim, as set forth.

2. In a sickle-grinder, a metal base-piece adapted to extend over and rest upon the top
 100 of a mower wheel and be clamped to opposite sides thereof, provided with a fixed vertical socket for the retention of the grinding mechanism, and an independent longitudinally adjustable resting support for the sickle bar,
 105 substantially as set forth.

3. In a sickle-grinder, the metal base-piece as constructed, having open cross-sockets for the reception of the hooked clamping bolts,
 110 abutments with recesses for the sickle-supporting bar, and an opposite lug with set-screw for retaining the supporting bar against the abutments, substantially as set forth.

4. The metal support for a sickle grinder formed as a single casting, consisting of a base
 115 piece having hooked extensions at one side, cross sockets for the clamping bolts; a vertical socket for the grinding mechanism; backing lugs for the retention of the sickle-supporting-bar; and an oppositely arranged lug
 120 for the set-screw holding the sickle bar; substantially as set forth.

5. In a sickle-grinder, a metal base-piece adapted to rest upon and be clamped to opposite edges of the wheel-rim of a mowing
 125 machine, and provided with a fixed vertical socket extending downward at one side, in combination with a radially and vertically adjustable standard, held in said socket and carrying the grinding wheel and its driving
 130 mechanism, and with a longitudinally adjustable sickle-supporting bar secured upon the base piece horizontally, in co-operative rela-

tions with the grinding wheel, substantially as set forth.

6. In a sickle grinder of the character described, in combination with a base support,
5 grinding apparatus having a rotary and vertical adjustment thereon, and a sickle supporting bar horizontally supported and longitudinally adjustable and provided with guide blocks independently adjustable there-

on holding the sickle bar, for manual adjustment substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHAS. E. STUART.

Witnesses:

JOHN H. GIGAUDET,
WILLIAM VAN HORN.