B. F. CLARK.

SICKLE BAR HOLDING ATTACHMENT FOR GRINDING MACHINES.

APPLICATION FILED MAY 12, 1913.

1,107,033.

Patented Aug. 11, 1914.

3 SHEETS—SHEET 1.

Fig. 1.

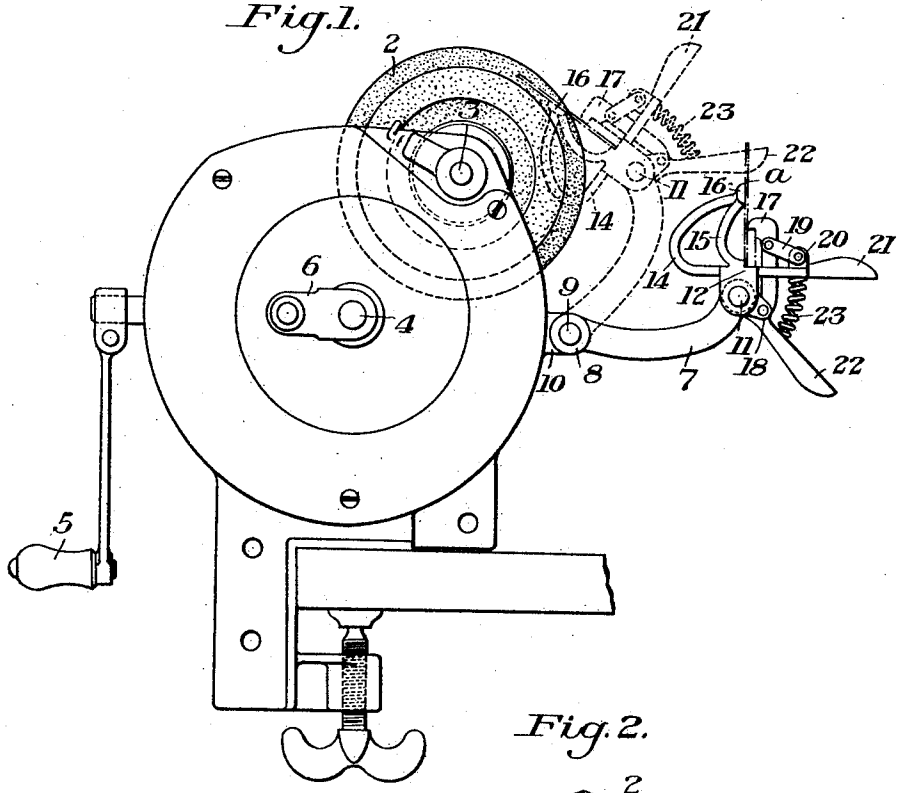
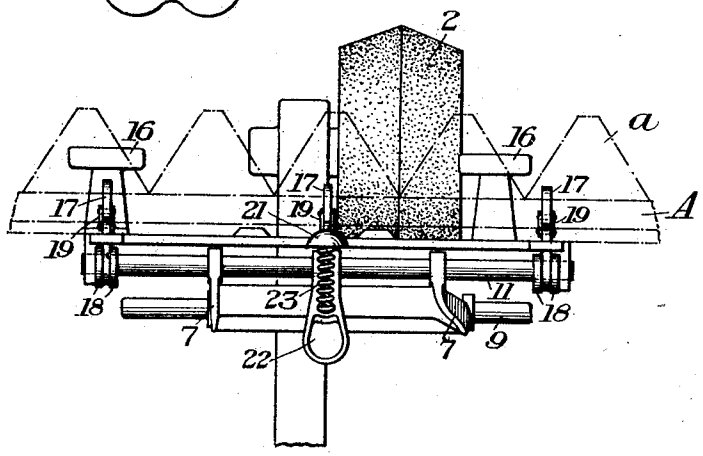


Fig. 2.



WITNESSES

R. A. Balderson

G. B. Fleming

INVENTOR

B. F. Clark,

by Bakewell, Byrnes & Parmelee.

Attys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

B. F. CLARK.

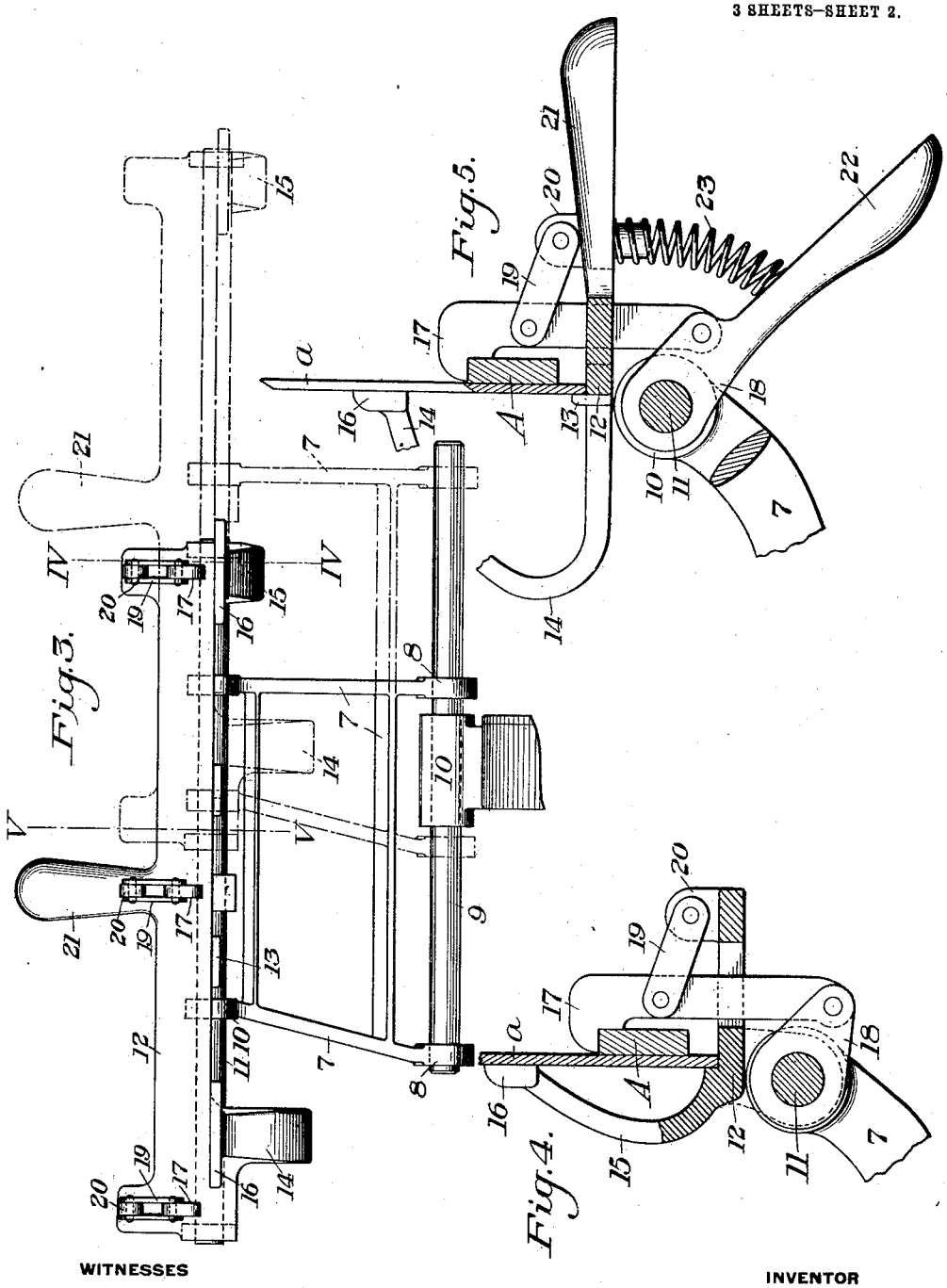
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3 SHEETS—SHEET 2.



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by Bakewell, Paynes & Parmelee,

Attys

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3 SHEETS—SHEET 3.

Fig. 6.

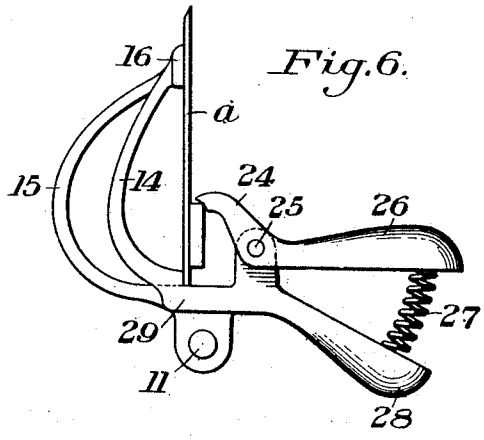


Fig. 7.

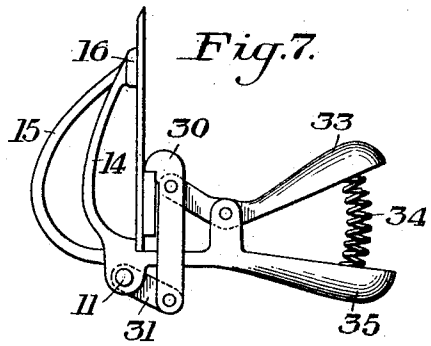


Fig. 9.

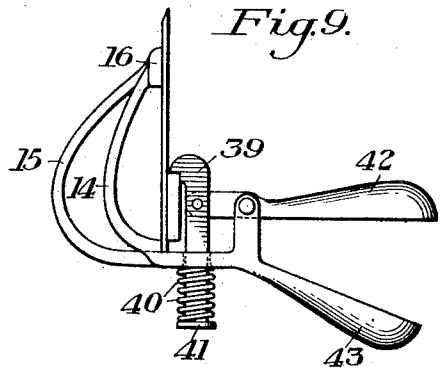


Fig. 8.

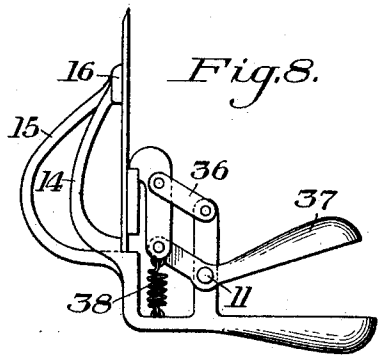
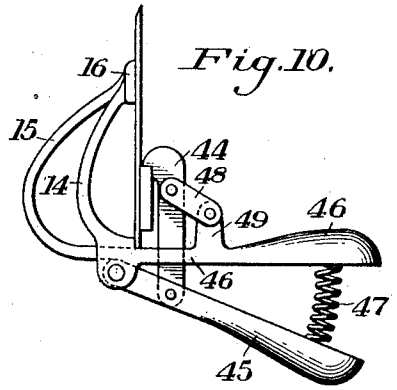


Fig. 10.



WITNESSES

R. A. Balderson

G. B. Fleming

INVENTOR

B. F. Clark,

by Bakewell, Byrnes & Parmelee.

Attys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

BENNETT F. CLARK, OF NIAGARA FALLS, NEW YORK, ASSIGNOR TO THE CARBORUNDUM COMPANY, OF NIAGARA FALLS, NEW YORK, A CORPORATION OF PENNSYLVANIA.

SICKLE-BAR-HOLDING ATTACHMENT FOR GRINDING-MACHINES.

1,107,033. Specification of Letters Patent. Patented Aug. 11, 1914.

Application filed May 12, 1913. Serial No. 766,960.

To all whom it may concern:

Be it known that I, BENNETT F. CLARK, a citizen of the United States, residing at Niagara Falls, Niagara county, New York, have invented a new and useful Sickle-Bar-Holding Attachment for Grinding-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an end view of a grinding machine having my attachment applied thereto, the parts being shown in grinding position in dotted lines and in non-grinding position in full lines; Fig. 2 is a plan view of the attachment showing a portion of a sickle-bar held therein and with the parts in grinding position; Fig. 3 is a plan view of the attachment with the parts in the position in which they are shown in full lines in Fig. 1; Figs. 4 and 5 are detail sectional views taken respectively on the lines IV—IV and V—V of Fig. 3, showing the clamping means; and Figs. 6, 7, 8, 9 and 10 are views similar to Fig. 5 but showing five different modifications.

My invention has relation to work-holding attachments for grinding machines, and more particularly to an attachment designed to hold the sickle or knife bars of a harvesting machine while the cutting edges of the blades are being ground.

The object of my invention is to provide an attachment for this purpose, of simple, convenient and efficient character.

The nature of my invention will be best understood by reference to the accompanying drawings, which will now be described.

In these drawings, the numeral 2 designates a grinding wheel. While my invention may be used in connection with any grinding wheel which will do the work, I prefer to employ a grinding wheel having double beveled grinding faces, as shown. This wheel is mounted on the shaft 3, and is driven by means of any suitable or usual gearing, not shown, from a shaft 4. This shaft 4 may be driven either by a hand crank 5 or by treadle levers attached to cranks on the ends of the shaft 4. One of these cranks is shown at 6. Inasmuch as the grinding machine itself forms no part of my present invention, which may be used in connection with various well known grinding machines, such machine need not be further described in detail.

7 designates a bracket arm having sleeve portions 8, which are pivotally mounted on a fixed rod or shaft 9 secured in suitable supports 10 projecting from the frame of the grinding machine below the wheel 2. The bracket 7 is not only mounted to move vertically about the axis of the rod or shaft 9, but is also adapted to have a longitudinal sliding transverse movement on said rod or shaft. In Fig. 3 I have indicated this, the full lines indicating one position of the bracket arm and the parts carried thereby, and the dotted lines indicating another position. The bracket arm 7 is formed at its outer end with the eye or sleeve portions 10, in which is pivotally and slidably supported a rod or shaft 11. Secured to this shaft is the work support. This support is shown as consisting of a longitudinal bar 12 having one or more lugs or ribs 13 at one of its edges to support the rear edge of the sickle-bar. The bar 12 also carries two or more bent arms 14 and 15, which terminate in flat supporting surfaces or pads 16 for the sickle-bar. The arm 14 is shown as curved downwardly to a considerably greater extent than the arm 15, this being for the purpose of giving sufficient room to permit the pitman connection on the cutter bar to pass in by the supporting surface or pad 16 and thus enable the operator to grind the last blade of the cutter or sickle-bar. The sickle-bar is held against the pad 16 by means of dogs 17. In the drawing I have shown three of these dogs. Each of them is pivoted at its lower end to a crank arm 18, rigidly secured to the shaft 11, which, as before stated, is pivotally mounted in its supports in the bracket 7. Each dog is also connected by a pair of links 19 with a lug 20 on the bar 12. The bar 12 is provided at its central portion with a rigid handle projection 21; and the central crank arm 18 adjacent thereto is extended to form a handle member 22. Interposed between these two handle members is a compression spring 23. It will be readily seen that the action of this spring is such as to hold the dogs in the engaging position shown in Figs. 4 and 5. When the handles 21 and 22 are pressed toward each other, the spring 23 is compressed and the series of dogs 17 are rocked outwardly so as to

permit the insertion, removal, or adjustment of the sickle-bar.

The operation will be readily understood. The cutter or sickle-bar whose blades are to be sharpened is inserted in the holder and held by the dogs in the manner shown and described. The bracket arm 7 is then swung upwardly into the position shown in dotted lines in Fig. 1, bringing the knives *a* of the sickle-bar into grinding relation with the bevel faces of the wheel 2. The traversing movement of the entire attachment on the rod or shaft 9, together with the traversing attachment of the work-support on the rod or shaft 11, not only permits the cutter blades to be brought into proper grinding relation with the wheel, but it also permits a number of adjacent blades to be ground without shifting the position of the cutter bar in its support.

It will be obvious that the work support may be provided with a great variety of different clamps which will be suitable for the purpose. A number of these different forms are shown in Figs. 6 to 10, inclusive. In the form shown in Fig. 6, the dogs 24 are secured to a rocker shaft 25. One of these dogs is extended to form the handle portion 26. A compression spring 27 is interposed between this handle portion and the handle grip 28 on the bar portion 29 of the support. In the form shown in Fig. 7, the dogs 30 are connected at their lower ends to links 31 fastened to the rocker shaft 11 journaled on the work support. Connected to one of the dogs is a pivoted handle member 33. A compression spring 34 is interposed between this handle member and the grip member 35 on the support. In the modification shown in Fig. 8, the dogs are mounted on parallel links 36, one of which links is extended to form a handle portion 37. In this form a tension spring 38 connects the dog with the frame of the support, which normally acts to hold them in engagement. Fig. 9 shows a form in which the dogs 39 are mounted to slide vertically in the support, a compression spring 40 surrounding the shank of each dog between its headed lower end 41 and the frame of the support. 42 and 43 designate the operating grips or handles. Fig. 10 shows another modification, in which a dog 44 is connected at its lower end to a handle member 45 placed below the frame 46 of the support. 47 is a compression spring interposed between the handle member 45 and the grip portion of the frame 46. The dog is also connected by link 48 with a lug 49 on the support 46. In all these different forms the action is substantially the same as in the form first described.

The advantages of my invention will be apparent, since it provides a simple and convenient attachment into and from which the sickle or cutter bars to be ground can be readily inserted and removed, and which can be readily manipulated to bring the blades into proper relation to the grinding surface of the grinding wheel.

What I claim is:—

1. A sickle or cutter bar holding attachment for grinding machines, comprising a support for the bar, said support having a plurality of clamping members, spring means for holding said members in clamping engagement with the bar, and a single releasing device for said members; substantially as described.

2. A cutter or sickle bar holding attachment for grinding machines, comprising a bracket pivoted to swing toward and away from the grinding wheel, and also mounted for movement in a direction substantially parallel to the axis of the wheel, and a work holder pivotally mounted on said bracket and also capable of movement longitudinally thereof in addition to its longitudinal movement with the bracket; substantially as described.

3. A cutter or sickle bar holding attachment for grinding machines, comprising a bracket pivoted to swing toward and away from the grinding wheel, and also mounted for movement in a direction substantially parallel to the axis of the wheel, and a work holder pivotally mounted on said bracket and also capable of movement longitudinally thereof in addition to its longitudinal movement with the bracket, said holder having a plurality of clamping devices for the bar; substantially as described.

4. A cutter or sickle bar holding attachment for grinding machines, comprising a bracket pivoted to swing toward and away from the grinding wheel, and also mounted for movement in a direction substantially parallel to the axis of the wheel, and a work holder pivotally mounted on said bracket and also capable of movement longitudinally thereof, said holder having a plurality of clamping devices for the bar, spring means for holding said clamping devices in clamping engagement with the bar, and a single releasing means for the clamping devices; substantially as described.

5. A sickle or cutter bar holding attachment for grinding machines having a holding device pivotally mounted to move toward and away from the grinding surface of the wheel, and also slidably mounted to move in a direction parallel to said axis, said device comprising a plurality of dogs fixed on a common shaft, springs for holding the dogs in clamping position, and a single grip or handle device connected to said shaft and providing means for releasing the dogs; substantially as described.

6. A cutter or sickle bar holding attachment for grinding machines, comprising a

bracket mounted to swing in a vertical plane toward and away from a grinding wheel, and also to slide longitudinally in a direction parallel with the axis of said wheel, a shaft rotatably mounted in said bracket and also adapted to slide in said bracket in a direction parallel to the axis of the wheel, and holding clamps carried by said shaft; substantially as described.

7. A cutter or sickle bar holding attachment for grinding machines, comprising a bracket pivoted to swing vertically toward and away from a grinding wheel and also to slide in a direction parallel to the axis of said wheel, a rod or shaft pivotally supported by said bracket and slidable thereon in a direction also parallel to the axis of said wheel, and a work-holder carried by said shaft, said work-holder comprising a plurality of supports and a plurality of clamping dogs for holding the work against said supports, one of said supports being curved away from the plane of the cutter or sickle bar to permit the pitman connection of the latter to pass said supporting surface; substantially as described.

8. A cutter or sickle bar holding attachment for grinding machines, comprising a bracket mounted to swing toward and away from a grinding wheel, a shaft supported by said bracket parallel to the pivotal axis thereof, said shaft also being mounted to slide in said bracket, and a holder for the cutter or sickle bar carried by said shaft, said holder having a plurality of supports for the bar, and a plurality of movable dogs for holding the bar against said supports; substantially as described.

In testimony whereof, I have hereunto set my hand.

BENNETT F. CLARK.

Witnesses:
JAS. H. REYNOLDS,
SANFORD MYERS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."