No. 650,158. Patented May 22, 1900.

J. STUBCARE & R. F. BERNDT.

DISK SHARPENER.

(No Model.) (Application filed Mar. 28, 1899.) 2 Sheets—Sheet 1.

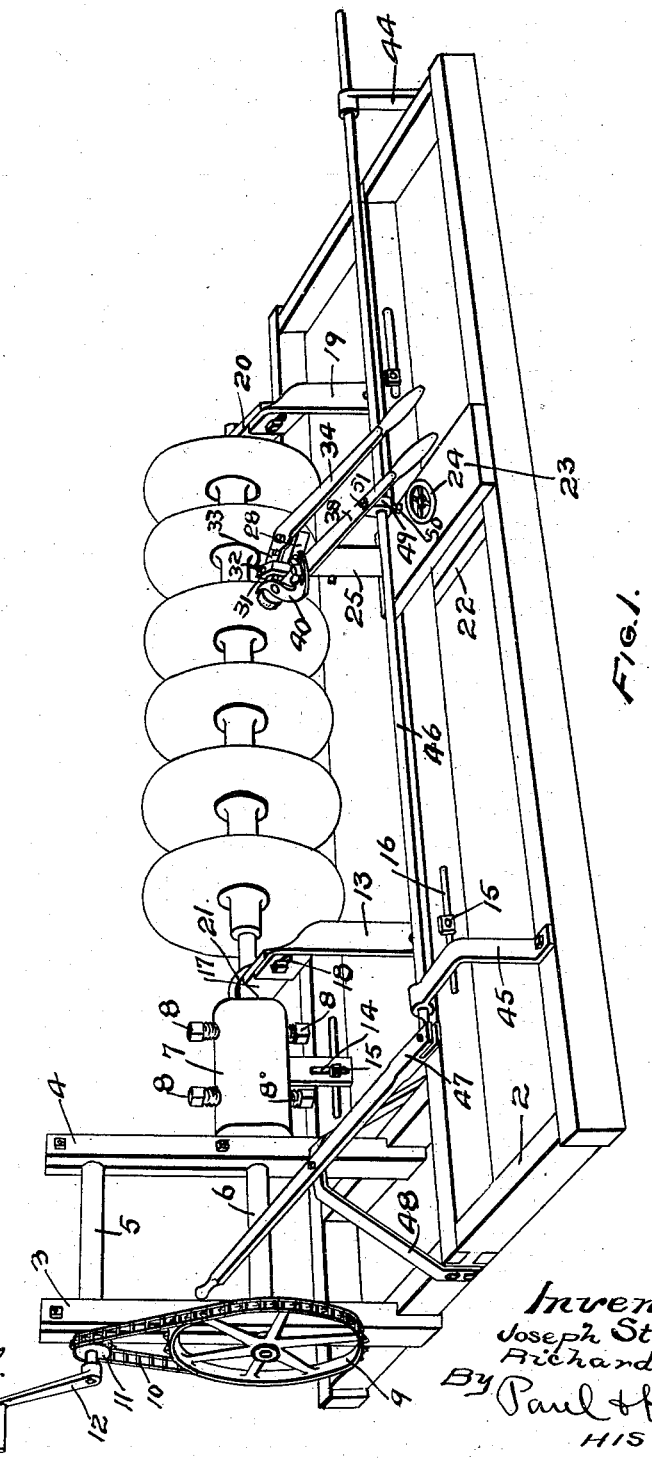

FIG. 1.

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His attorneys.

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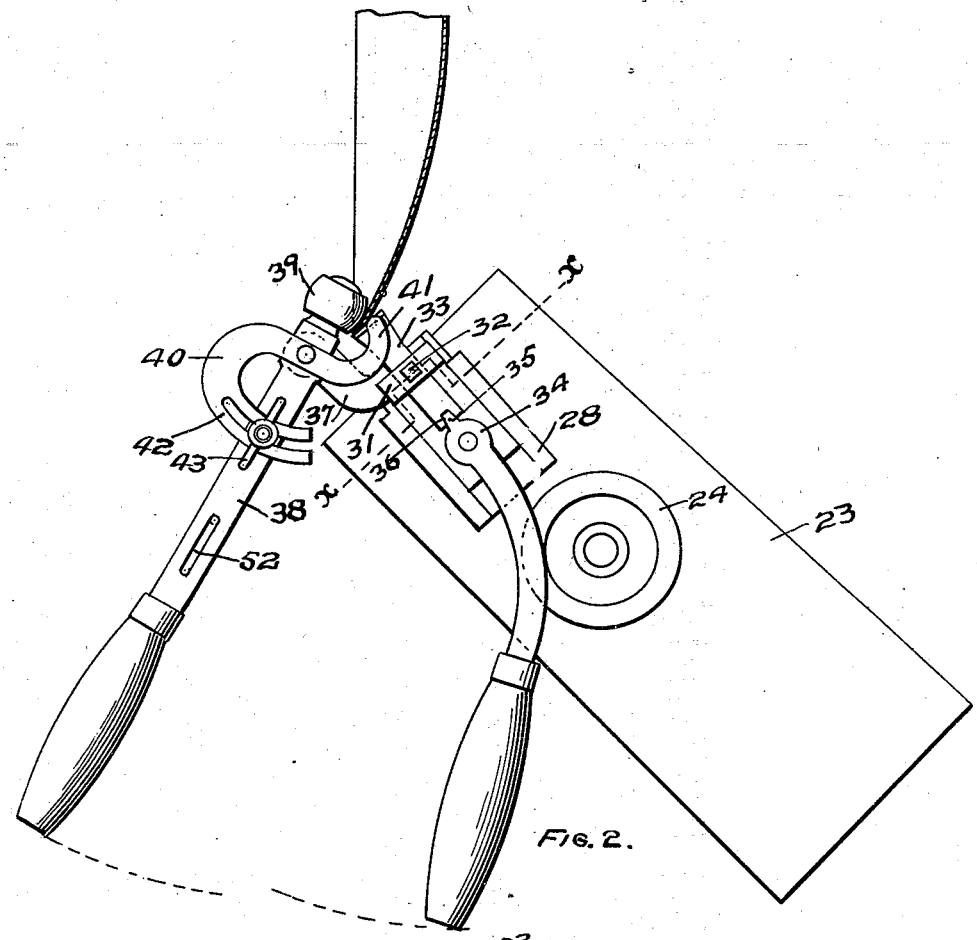

FIG. 2.

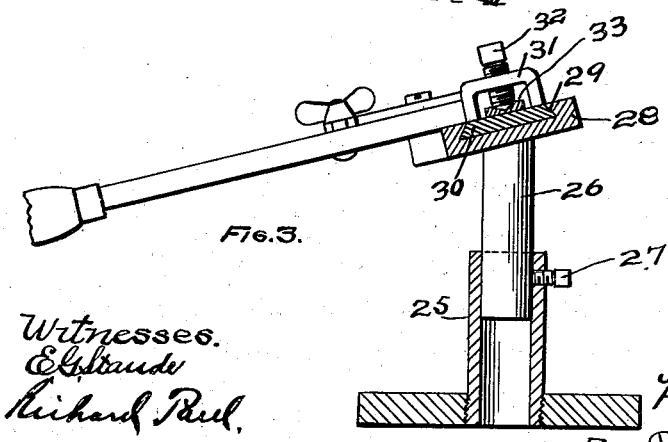

FIG. 3.

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UNITED STATES PATENT OFFICE.

JOSEPH STUBCARE AND RICHARD F. BERNDT, OF BOWDLE, SOUTH DAKOTA, ASSIGNORS TO WILLIAM EDWARDS, GREGORY SMITHBERGER, AND HERBERT SCHOLFIELD, OF SAME PLACE.

DISK-SHARPENER.

SPECIFICATION forming part of Letters Patent No. 650,158, dated May 22, 1900.

Application filed March 28, 1899. Serial No. 710,759. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH STUBCARE and RICHARD F. BERNDT, citizens of the United States, residing at Bowdle, county of Edmunds, State of South Dakota, have invented certain new and useful Improvements in Disk-Sharpeners, of which the following is a specification.

Our invention relates to machines for sharpening the edges of disks that are used in harrows; and the objects of the invention are, first, to provide a machine wherein the entire gang of disks may be placed and sharpened when they have become dull, bent, or twisted from use; second, to provide sharpening devices which can be readily adjusted to sharpen disks of different sizes; third, to provide means whereby one person may operate the machine by hand and at the same time control the movement of the sharpening devices, though at a distance therefrom, and fourth, to provide a disk-sharpener wherein any degree of bevel may be given to the edge of a disk without changing the cutting-knife, except when it is necessary to replace one that is worn out.

The invention consists generally in a suitable frame or base provided with a driving-head whereto the shaft or axle of a disk gang is connected, a crank-shaft and crank-lever for revolving said driving-head and axle, a block or rest arranged upon said frame, a knife carried by said block, a pressure-roll lever and roll carried thereby, between which and said knife the edge of the disk to be sharpened is held, and means within the control of the person operating the crank-shaft and driving-head for regulating the movement of said pressure-roll lever and roll.

Further, the invention consists in an adjustable block or rest arranged upon the frame of the machine, an adjustable knife arranged upon said block, a lever for operating the same, a pressure-roll lever, and a pressure-roll, between which and said knife the edge of the disk to be sharpened is held.

Further, the invention consists in an adjustable knife and means for operating the same, a pressure-roll lever and roll thereon, a cam device carried by said lever to engage the edge of the disk and between which and said roll the edge to be sharpened is held, and means in connection with the pressure-roll lever to permit the operator at a distance to disengage a disk from the knife or throw one into engagement therewith.

Further, the invention consists in various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a perspective of a disk-sharpening machine embodying our invention. Fig. 2 is a plan view of the pressure-roll device, the knife, and its support. Fig. 3 is a sectional view on the line *x x* of Fig. 2.

In the drawings, 2 represents the base or bed of the machine, preferably rectangular in form, of wood or metal, as preferred, having at one end upright standards 3 and 4, provided with bearings for the horizontal shafts 5 and 6. The inner end of the shaft 6 extends beyond the standard 4 and is provided with a driving head or block 7, having a longitudinal socket to receive the axle or shaft of the gang of disks and provided with set-screws 8, by means of which the axle may be clamped securely within the head. The outer end of said shaft 6 is provided with a large sprocket-wheel 9, over which a chain 10 passes to a small wheel 11 on the end of the shaft 5, and outside the wheel 11 is a crank 12, by means of which the machine may be operated, or instead of the crank a pulley may be placed thereon and the machine operated by power. At a point preferably near the end of the driving-head 7 are upright standards 13, having inwardly-turned upper ends and lower ends provided with longitudinal slots 14 to receive bolts 15, passing through horizontal or longitudinal slots 16 in the base or bed of the machine, thus permitting both horizontal and vertical adjustment of said standards. These standards are connected at their upper ends by a cross-bar or yoke 17, having a depression or recess in its upper side opposite the socket in the driving-head and wherein the axle of the gang of disks rests during the process of sharpening, the ends of said cross-bar being

slotted to receive bolts 18, passing through the inwardly-turned ends of the standards 13, thus permitting the cross-bar to be adjusted to fit closely against the axle of the disks. The opposite end of the gang of disks is supported upon standards 19 and a cross-bar 20, corresponding to those described. When the gang of disks has been placed in position and one end of its axle firmly locked in the driving-head, rods 21 are passed over the ends of the axle and suitably secured at each end, thus locking the axle upon said cross-bars, but permitting it to turn freely while the disks are being sharpened.

The sharpening device proper consists, preferably, of plates 22 and 23, arranged, respectively, above and below the frame or base and adjustable thereon to permit the knife to be set opposite the disk that it is desired to sharpen, and while various means may be provided for securing these plates in their proper position we prefer to provide a screw 24, having a threaded lower end to pass through a hole in the top plate and enter a threaded hole in the bottom plate. Upon the plate 23, preferably near its inner end, is a hollow upright standard 25, wherein a stud or shank 26 fits snugly and is preferably rendered vertically adjustable therein by a set-screw 27. On the upper end of the stud 26 is a plate-holder 28, preferably inclined, having preferably V-shaped grooves 29, forming guideways for the beveled edges of a plate 30, that is adapted to slide upon the top of the plate-holder 28, and upon said plate is a frame 31, carrying a set-screw 32, having its lower end fitting within a socket in the knife-blade 33, thus holding the knife in position upon the plate 30 and preventing its longitudinal movement independently of said plate, but permitting it to oscillate freely thereon, so that it can be readily adjusted at different angles to the disk upon which it is working to vary the degree of bevel that is made on the edge of the disk. At the outer end of the plate 30 a lever 34 is pivoted, having a lug 35 to enter a notch 36 in the end of the knife-blade, so that the operator by grasping the handle of said lever can move the knife toward or from the disk that is being sharpened and also oscillate the knife to produce the desired bevel on the edge of the disk. At the inner end of the plate 30 we prefer to provide an arm or bracket 37, to which a second lever 38 is preferably pivoted, having at its inner end a pressure-roll 39, adapted to bear upon the opposite side of the disk from which the knife is working to permit the operator to hold the edge of the disk firmly while the knife is operating upon its edge.

The machine above described will when it is operated by hand-power require two persons to operate it, one to revolve the disks and the other to control the knife and pressure-roll levers. It is therefore desirable to provide means permitting the person turning the crank and revolving the gang of disks to control the knife and pressure-roll levers, thus dispensing with the services of one man and cheapening the cost of operating the machine. We therefore provide a U-shaped lever 40, pivotally mounted on the lever 38, preferably near its inner end, and having a curved finger 41, between which and the pressure-roll 39 the edge of the disk that is to be sharpened is inserted. The outer end of the lever 40 is provided with a longitudinal slot 42, through which a thumb-screw 43 passes into the lever 38 and by means of which the distance between the end of the finger 41 and the pressure-roll 39 may be regulated. In order that the person operating the machine may control the pressure-roll lever, we provide upright supports or standards 44 and 45 upon the top of the frame or base, having sockets or bearings to receive a rod 46, longitudinally movable therein, said rod being provided at one end with a lever 47, supported on a standard 48 and having a handle within reach of the person operating the machine. The rod 46 is preferably connected with the pressure-roll lever by a block 49, held in position by a set-screw 50 and having a stud 51 to enter a longitudinal slot 52 in said lever, said slot permitting the connection between said lever and said rod 46 to be adjusted so that there will be no binding or twisting of the parts during the movement of the rod. By throwing the lever 47 in one direction the operator can press the edge of a disk up against the knife-blade and hold it there until the desired bevel has been obtained, and by throwing the lever in the opposite direction the finger 41 will engage the edge of the disk and spring it sufficiently to disengage the knife and suspend the operation of sharpening until the finger 41 is disengaged from the disk. With this construction any desired degree of bevel may be given to the edge of a disk without the necessity of substituting another knife every time the bevel is changed, and the adjustable block and standard whereon the knife is supported permits it to be used for sharpening disks of various sizes.

While we have shown our improved disk-sharpener mounted upon a frame and in position to engage the edges of disks that are revolved through the medium of a crank-shaft, we do not wish to confine ourselves to this method of using the device, as obviously a treadle mechanism may be substituted for that shown, or the machine may be run by power. Neither do we wish to be confined to the details of construction herein shown and described, as obviously the same may be varied without departing from our invention.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In a disk-sharpener, a pivoted knife, means for operating the same, a pressure-roll lever, a roll carried thereby and between which and said knife the disk to be sharpened

is held, and means in connection with said pressure-roll lever and engaging the face of the disk upon which said knife is working to permit the operator from a distance to disengage the disk from said knife, substantially as described.

2. In a disk-sharpener, the combination, with a frame or base, of a driving head or block wherein the axle of the gang of disks is secured, a knife mounted upon said frame, a lever for operating the same, a pressure-roll lever, a pressure-roll thereon, means connected with said pressure-roll lever to permit the same to be operated from a distance and means carried by said pressure-roll lever and between which and said pressure-roll the edge of the disk to be sharpened is held and whereby the disk may be disengaged from the knife when the pressure-roll lever is operated, substantially as described.

3. In a disk-sharpener, the combination, with a frame or base, of a driving-head wherein the gang of disks is secured, an adjustable knife mounted upon said frame, a lever therefor, a pressure-roll lever, a pressure-roll thereon, a longitudinally-movable rod connected to said pressure-roll lever, a lever 47 and means carried by said pressure-roll lever and engaging the edge of a disk to disengage the same from the knife when the lever 47 is operated, substantially as described.

4. In a disk-sharpener, an adjustable block or rest, a standard thereon, a stud or shank vertically adjustable in said standard, a plate-holder on said shank, a plate slidable in said holder, a knife pivotally supported upon said plate and a lever also supported upon said plate and whereby the angle of said knife may be changed at will, substantially as described.

5. In a disk-sharpener, a block or other support, a knife pivotally and slidably mounted thereon, a lever also pivotally and slidably mounted upon said support and connected with said knife for swinging the same in its pivotal support, a second pivoted lever, a pressure-roll mounted upon said second pivoted lever and between which and said knife the disk to be sharpened is held, substantially as described.

6. In a disk-sharpener, a knife slidably supported in position to engage the edge of the disk, a lever also slidably supported and whereby said knife is moved toward or from a disk, a pressure-roll between which and said knife the disk to be sharpened is inserted, and an independently-pivoted lever whereon the pressure-roll is supported and said pressure-roll lever being also slidably supported to permit said roll to be moved toward or from a disk, substantially as described.

7. In a disk-sharpener, a knife having a longitudinal and oscillating movement upon its support, a pivoted lever for sliding and oscillating said knife, a pivoted pressure-roll lever having a longitudinal movement and a pressure-roll carried by said lever and between which and said knife the disk to be sharpened is held, substantially as described.

8. In a disk-sharpener, a block or rest, a holder vertically adjustable on said block, a knife slidably and pivotally supported upon said holder, a lever for operating said knife, a pressure-roll lever pivotally and slidably supported and a pressure-roll carried by said pressure-roll lever and between which and said knife the disk to be sharpened is held, substantially as described.

9. A sharpening device for harrow-disks, comprising a support, an oscillating knife mounted thereon, a lever for operating said knife, a pressure-roll lever and a pressure-roll mounted on said pressure-roll lever and between which and said knife the disk to be sharpened is held, substantially as described.

10. A sharpening device for harrow-disks, comprising a support, an oscillating knife slidably mounted thereon, a pivoted lever slidably mounted on said support and whereby said knife is operated, a pressure-roll lever also pivotally and slidably mounted and a pressure-roll carried by said pressure-roll lever, substantially as described.

11. In a disk-sharpener, a pivoted knife having an oscillating or swinging movement on its pivot and a longitudinally-slidable movement toward or from the disk to be sharpened, a vertically-adjustable standard or support for said knife and independent means for operating said knife, substantially as described.

12. In a disk-sharpener, a knife having a longitudinal and an oscillating movement on its support, means for operating said knife, a pressure device to engage the face of the disk on the opposite side of said knife, and means for operating said pressure device from a distance, substantially as described.

13. In a disk-sharpener, a pivoted knife, a vertically-adjustable support or standard therefor, and means for operating said knife, substantially as described.

14. In a disk-sharpener, an oscillating knife, means supporting the same, means for operating said knife, a pressure-roll lever, a roll thereon to engage the face of a disk, means in connection with said pressure-roll lever to bear upon the face of the disk upon which the knife works, and means for operating said pressure-roll lever from a distance, substantially as described.

15. In a disk-sharpener, a knife having a longitudinal and oscillating movement on its support, means for operating said knife, a pressure device, means in connection with said pressure device engaging the edge of the disk upon which said knife operates, and means for operating said pressure device from a distance to disengage the disk from said knife, substantially as described.

16. In a disk-sharpener, a vertically-adjustable knife having both an oscillating and longitudinal movement on its support, means for

operating said knife, and a pressure device between which and said knife the disk to be sharpened is held, substantially as described.

17. In a disk-sharpener, a longitudinally-movable knife, means for operating the same, a pressure device between which and said knife the disk to be sharpened is held, a cam device carried by said pressure device and engaging the edge of the disk upon which the knife operates, and means for operating said pressure device from a distance to disengage the disk from said knife, substantially as described.

18. In a disk-sharpener, a knife having a longitudinal and oscillating movement on its support, means for operating said knife, and an independently-operable pressure device between which and said knife the disk to be sharpened is held, substantially as described.

19. In a disk-sharpener, a standard or support, a sliding plate thereon, a knife pivoted on said plate, and a lever also pivoted on said plate and engaging said knife, substantially as described.

20. In a disk-sharpener, a standard or support, a sliding plate thereon, a knife pivoted on said plate, a lever also pivoted on said plate and engaging said knife and an independently-operable pressure device, substantially as described.

21. In a disk-sharpener, a pivoted knife, a lever pivoted independently of said knife for operating the same, and an independently-pivoted pressure device, substantially as described.

22. In a disk-sharpener, an oscillating knife, an independently-pivoted lever for operating the same, and an independently-pivoted pressure device, substantially as described.

23. In a disk-sharpener, an oscillating knife, an independently-pivoted lever for operating the same, a pressure device and means carried by said pressure device for engaging the side of the disk upon which the knife works, substantially as described.

24. In a disk-sharpener, an oscillating knife, an independently-pivoted lever for operating the same, an independently-pivoted pressure device, and means carried by said pressure device to engage the side of the disk upon which the knife works, substantially as described.

25. In a disk-sharpener, a pivoted slidable knife, a lever pivoted independently of said knife but slidable therewith, and a pressure device also pivoted independently of said knife, substantially as described.

26. In a disk-sharpener, a pivoted slidable knife, a lever pivoted independently of said knife but slidable therewith, a pressure device also pivoted independently of said knife and slidable therewith toward or from the disk to be sharpened, substantially as described.

In witness whereof we have hereunto set our hands this 20th day of March, A. D. 1899.

JOSEPH STUBCARE.
RICHARD F. BERNDT.

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