

No. 663,481.

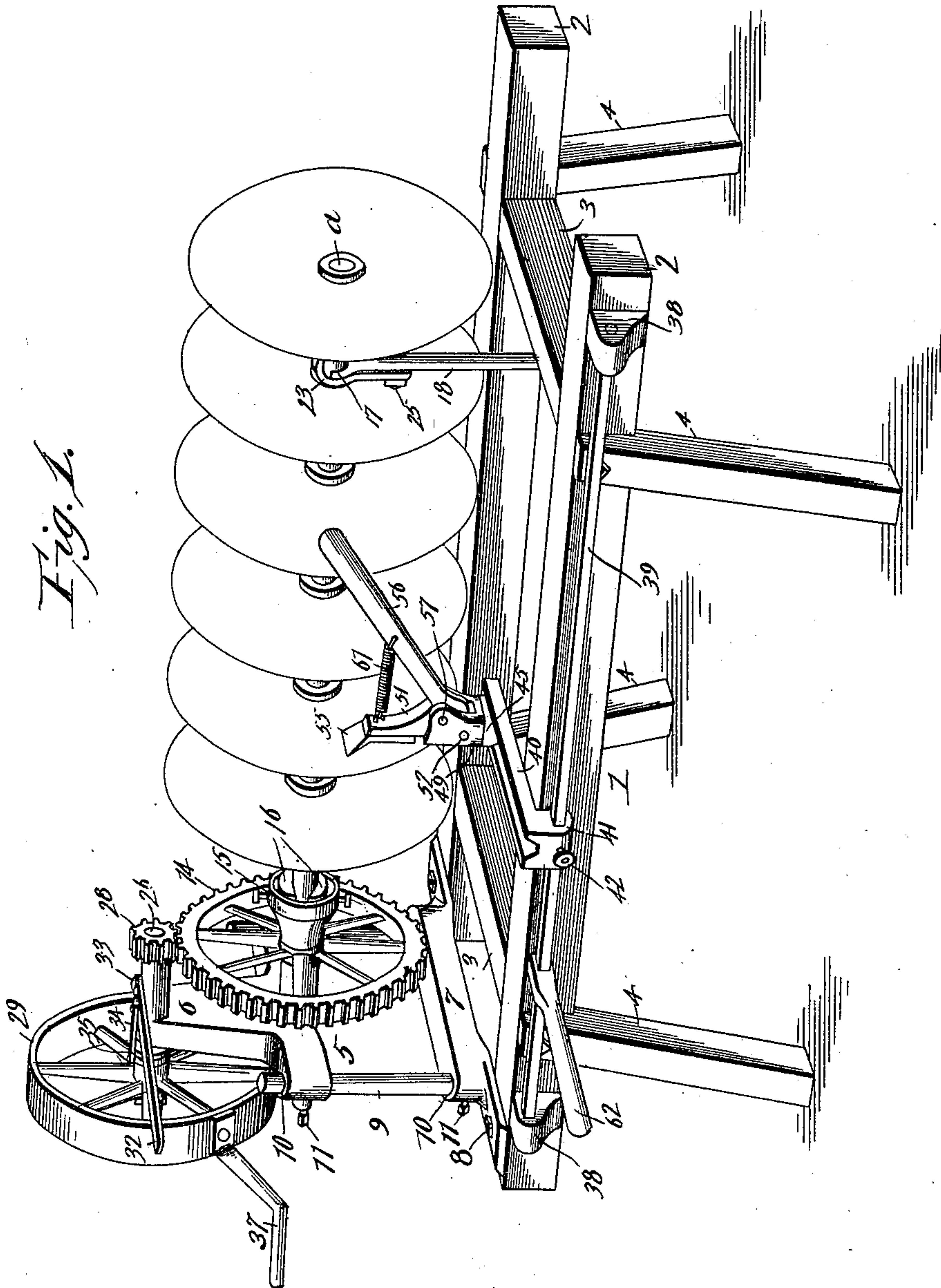
Patented Dec. 11, 1900.

J. H. & C. H. ALLEN.
HARROW DISK SHARPENER.

(Application filed May 12, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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Fig. 4.

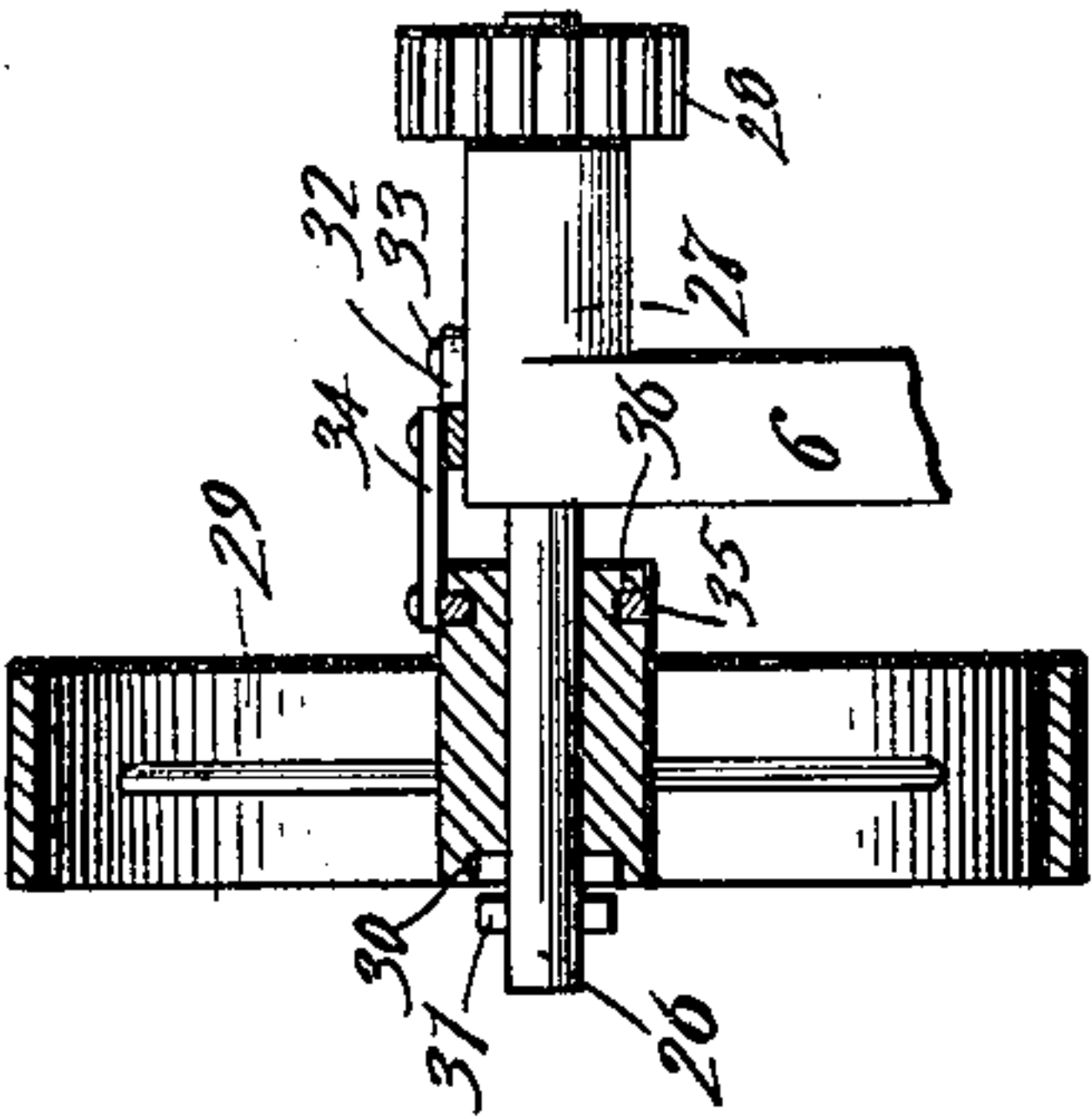


Fig. 3.

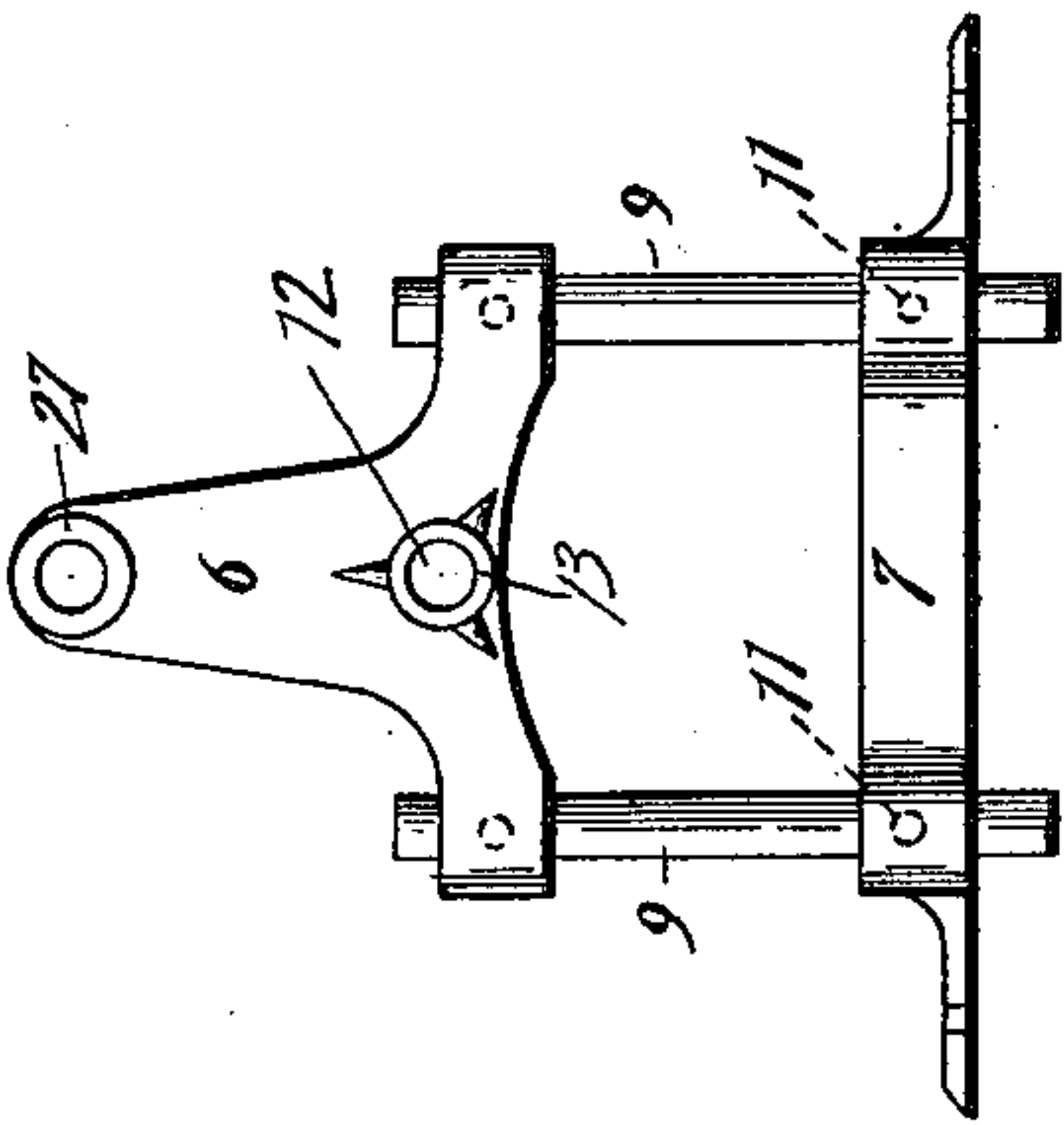


Fig. 5.

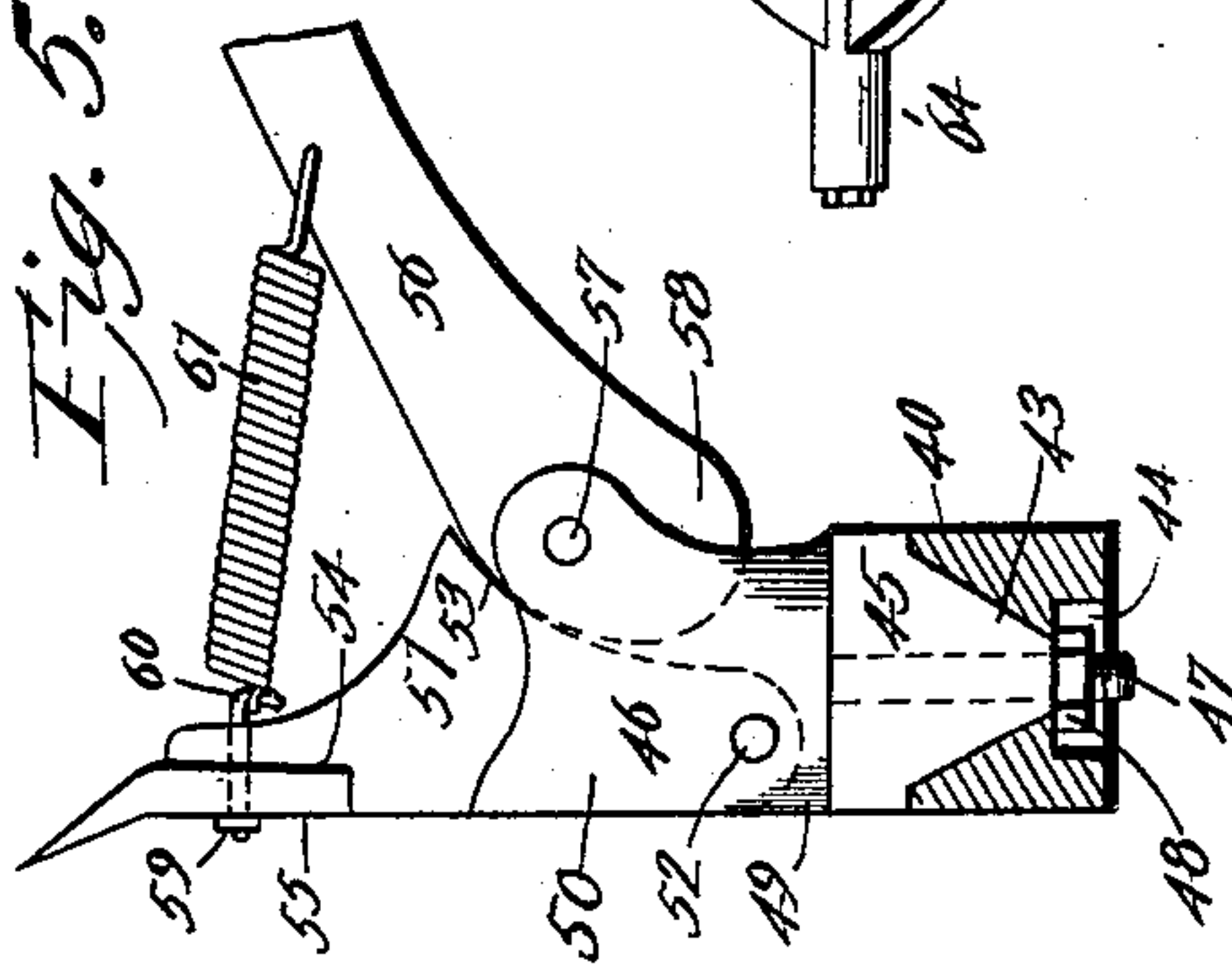


Fig. 6.

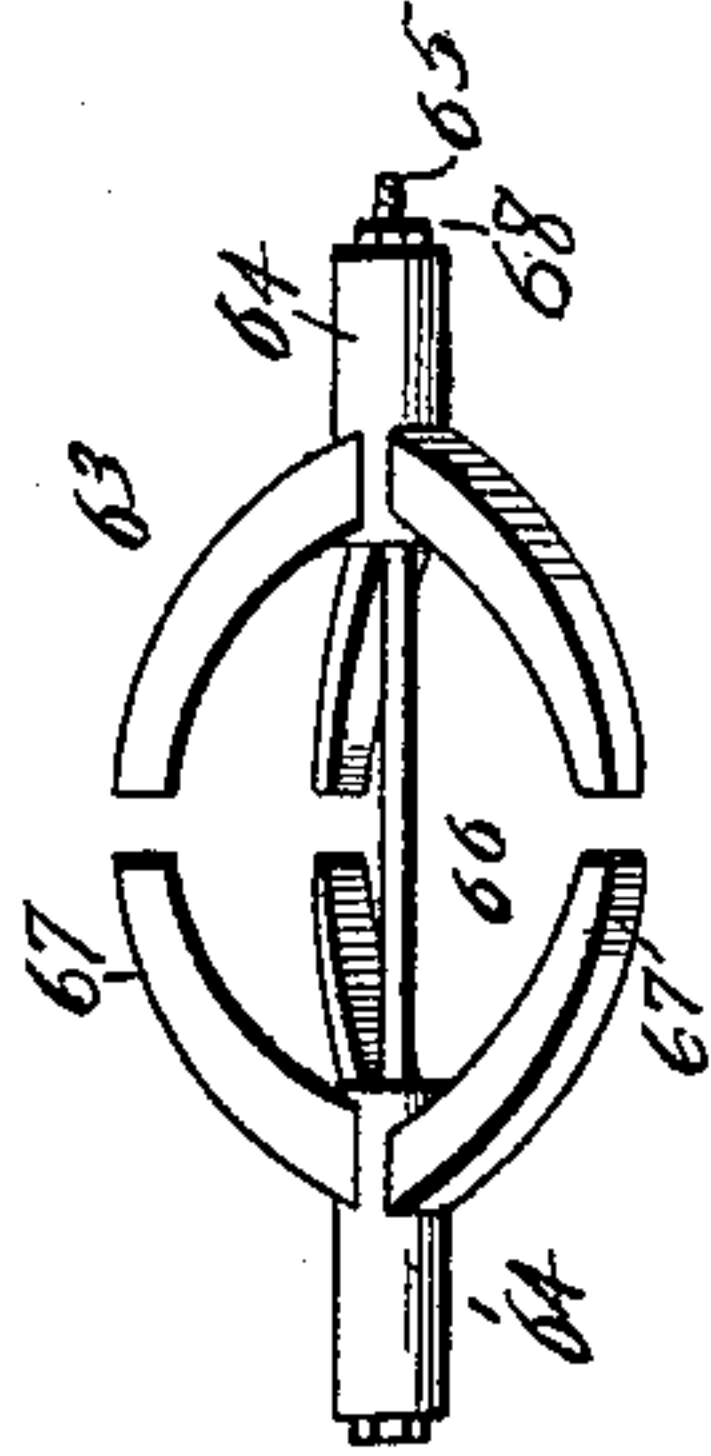
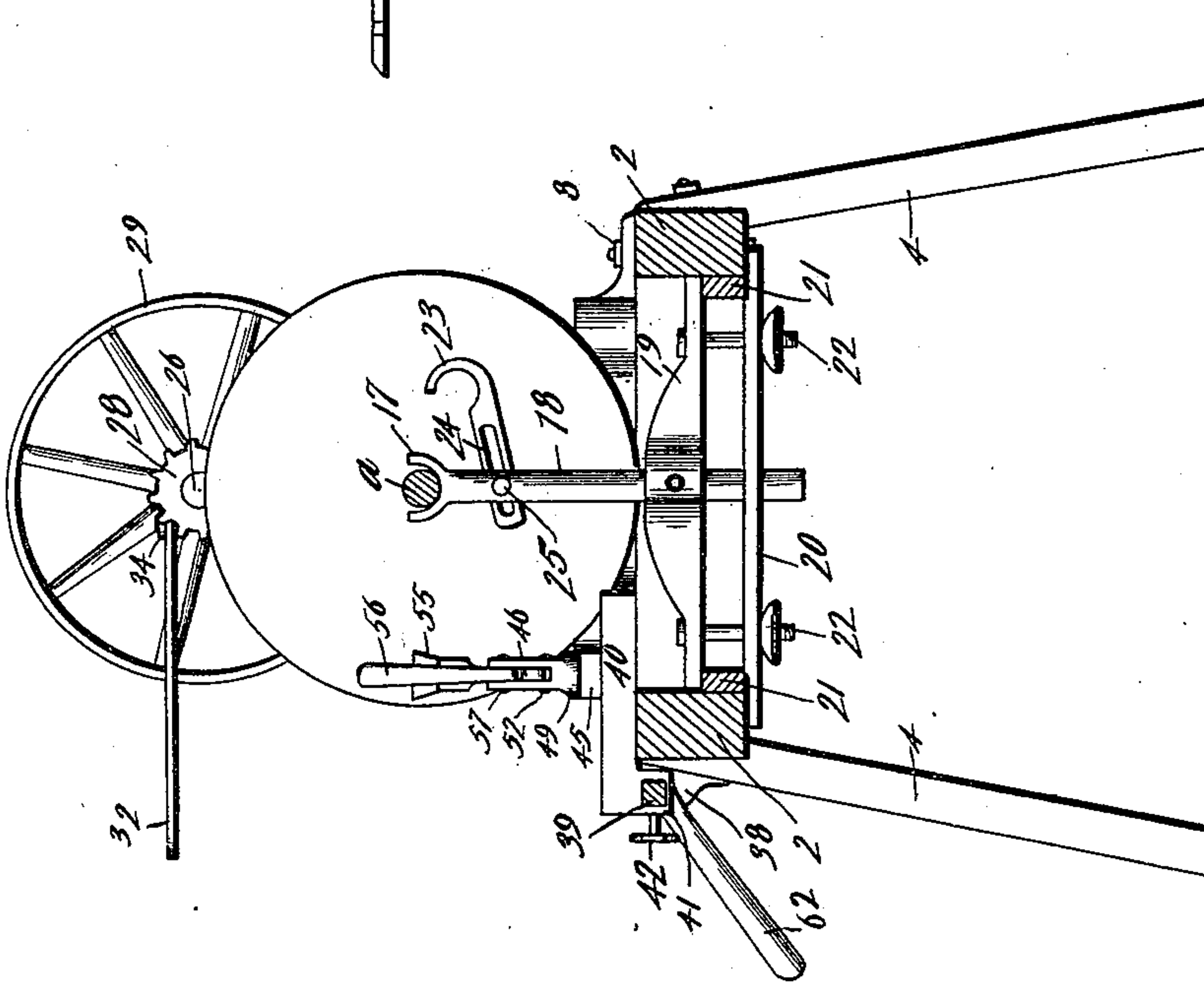


Fig. 2.



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UNITED STATES PATENT OFFICE

JAMES H. ALLEN AND CHARLES H. ALLEN, OF SENECA, ILLINOIS.

HARROW-DISK SHARPENER.

SPECIFICATION forming part of Letters Patent No. 663,481, dated December 11, 1900.

Application filed May 12, 1900. Serial No. 16,508. (No model.)

To all whom it may concern:

Be it known that we, JAMES H. ALLEN and CHARLES H. ALLEN, citizens of the United States, residing at Seneca, in the county of La Salle and State of Illinois, have invented a new and useful Harrow-Disk Sharpener, of which the following is a specification.

Our invention is an improved harrow-disk sharpener, one object of our invention being to provide a machine which is adapted to sharpen the disks on a harrow-section or a single disk detached from its shaft, as may be required.

A further object of our invention is to provide means whereby the sharpening-knife may be adjusted as may be required to operate efficiently on a harrow-disk.

A further object of our invention is to provide means whereby the friction of the knife against the harrow-disk may be increased or diminished, as may be required, and whereby the knife may be swayed when in operation to compensate for any eccentricity of obliquity of the disk on its shaft.

A further object of our invention is to provide means for moving the knife beyond the supporting frame or bed out of the way when placing a harrow-section on the machine or removing the same therefrom.

Our invention consists in the peculiar construction and combination of devices, which will be more fully hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of a harrow-disk sharpener embodying our improvements. Fig. 2 is a vertical transverse sectional view of the same. Fig. 3 is a detail elevation of the adjustable head. Fig. 4 is a detail sectional view of the driving-wheel and its support and connections whereby the machine may be thrown into or out of gear. Fig. 5 is an elevation, partly in section, illustrating the construction of the supporting-arm, the adjustable block, the knife-holder pivoted on the block, the knife-rest, the lever, and the knife. Fig. 6 is a detail elevation of a clamp or chuck by means of which a single harrow-disk may be held and rotated in our improved machine and adapted to be sharpened thereon.

In the embodiment of our invention we provide a suitable supporting frame or bed, which is here shown as comprising a pair of

side bars 2, connected near their ends by cross-bars 3 and supported upon suitable legs 4. At one end of the frame is a head 5, which comprises a vertically-adjustable block 6, a transversely-disposed plate or spanner 7, which is bolted on one end of the frame, as at 8, and vertical adjusting-standards 9, which pass through openings 10, formed in the block 6 and plate or spanner 7, the latter being provided with adjusting screws or bolts 11, adapted to clamp the said standards at any desired adjustment of the block 6.

A spindle-shaft 12 is journaled in a bearing 13, formed centrally in the lower side of the block, and on said spindle-shaft is a spur-wheel 14 and a clutch 15, the latter being provided with jaws 16, adapted to engage one end of the shaft of the harrow-section, such as indicated at *a* in Figs. 1 and 2. The opposite end of the shaft *a* is supported in an open bearing 17, formed in the upper end of a standard or rest 18, which is vertically adjustable in a pair of plates 19 20, which engage the upper and lower sides of track-bars 21 on the inner sides of the bars 2 and are clamped to said track-bars by bolts 22. A hook 23 is adapted to engage the upper side of the shaft *a* to secure the same in the bearing 17 and is provided with a slot 24, in which is a bolt 25, that secures said hook to the standard 18. The plates 19 20 are adjustable on the track-bars 21, thereby adapting the standard 18 to be adjusted according to the length of the shaft *a*.

A shaft 26 is journaled in a bearing 27 in the upper portion of the block 6. A pinion 28 is fast on the said shaft and engages the spur-wheel 15, and a driving-pulley 29 is loose on the said shaft and is provided on its outer side with a clutch member 30, which is adapted to engage studs 31, that project from the said shaft, and thereby lock the said pulley to the said shaft, when the said pulley is moved outwardly thereon, and to disengage said pulley from said studs, and thereby adapt said pulley to rotate idly on said shaft when said pulley is moved inwardly on said shaft. To effect this adjustment of the driving-pulley, we provide a lever 32, which is fulcrumed above the bearing 27, as at 33, and is connected by a link 34 with a collar 35, said collar being loose in an annular groove

36, with which the hub of said driving-pulley is provided. Usually the driving-pulley is actuated by an endless belt driven by a suitable engine; but as herein shown the said pulley is provided with a crank 37, by which it may be manually rotated.

It will be understood from the foregoing description that by means of the said pulley or cranked wheel and the connections between the latter and the clutch the harrow-section may be readily rotated to adapt the disks to be sharpened by the means presently described.

It will be further understood that by means of the vertically-adjustable block 6 and the vertically-adjustable standard 18 the machine is adapted to support and rotate a harrow-section having disks of any size.

On the front side of the frame or bed 1, at the ends thereof, are a pair of bearing-brackets 38, in which the rounded ends of a bar 39 are journaled. Said bar is angular in cross-section, as shown, and passes through an opening in the heel 41 of a supporting-arm 40, the said supporting-arm being adjustable longitudinally on the said rod 39 and adapted to be turned outward from the frame or bed or to be turned inward over one side thereof, as shown in Figs. 1 and 2, in which position said arm is supported by the proximate side bar of the frame or bed 1. A set-screw 42 is provided at the outer end of the arm 40, which is adapted to engage the rod 39 and clamp the said arm at any desired adjustment on the said rod. The said arm 40 is provided with a longitudinal groove 43, which extends from end to end thereof and communicates on its lower side with a slot 44, which is nearly co-extensive in length with that of the said arm. The sides of the said groove 43 are inclined and converge downwardly, as shown in detail in Fig. 5. A block 45 is fitted in the said groove 43 and adapted to be adjusted longitudinally therein on the arm 40, and on the upper side of the said block is pivotally mounted a knife-holder 46, by means of a bolt 47, the said bolt extending downward through said block 45 and through the slot 44 and being provided at its lower end with a nut 48, by means of which the block 45 may be secured at any desired adjustment on the arm 40, as will be readily understood. The knife-holder comprises a base 49 and a pair of vertical ears which rise from the said base. A knife-rest 51 is pivoted at its lower end between the ears 50, as at 52, and is provided on its rear side with a curved face 53. The free upper portion of the said knife-rest is provided with a rabbet 54, in which the stock of a sharpening-knife 55 is seated, as shown in Fig. 5. A lever 56 is also pivoted between the ears 50, as at 57, and is provided at its inner end with a cam 58, which is adapted to engage the curved face 53 of the knife-rest 51 as said lever 56 is depressed, and thereby move the said knife-rest outward, as will be understood. The knife 55 is secured in the seat or

rabbet of the knife-rest 51 by the bolt 59, the inner end of which is provided with a hook 60. A coiled retractile spring 61 has one end attached to this hook and the other end attached to the lever 56, as shown, and said spring exerts inward tension on the knife-rest and serves normally to retract the latter toward the lever 56.

It will be understood that by means of the block 45, which is adjustable on the supporting-arm 40, and the knife-rest, which is pivotally mounted on said block, the knife may be disposed at any required angle, and hence adapted to the contour of the harrow-disk on which it is to be used, and, furthermore, that by means of said adjustable block, pivoted rest, and adjustable supporting-arm the knife may be caused to bear against either the concave or convex side of any of the harrow-disks of the harrow-section. It will be further understood that by means of the rod 39, to which said adjustable supporting-arm 40 is attached and which serves as a pivot for said supporting-arm, the latter may be turned outwardly, so as to carry the knife and its connections beyond the frame or bed 1, so as to leave the same entirely unobstructed, and thus facilitate the placing of a harrow-section on the machine or the removal of the same therefrom. To enable the said rod 39 to be readily turned so as to thus move the knife and its support and its connections from the machine bed or frame, we provide a lever 62, which is attached to said rod 39, as shown.

The lever 56, which moves the knife-rest, is adapted to be manually operated, and thereby the knife may be caused to bear upon the harrow-disk in the process of sharpening, as may be required to effect the best result.

It is of importance to enable the machine to be used in sharpening a harrow-disk when the latter is detached from its shaft, and to adapt our disk-sharpening machine to be thus used we have devised a disk-holder 63. (Shown in Fig. 6.) The said disk-holder comprises, essentially, a pair of heads 64, connected by an adjusting and supporting bolt-rod 65. Each of the said heads 64 comprises a central cylindrical portion 66, through which the bolt-rod extends, and a series (three or more) of radially-disposed arms 67, which project from the central portion of the cylindrical portions 66 and extend slightly beyond the inner ends thereof or in line with the inner ends thereof, as may be desirable. Said heads 64 may be readily separated and one of them removed to adapt a harrow-disk to be placed on the bolt-rod and clamped between them by means of the tightening-nut 68, with which the bolt-rod is provided, and the said holder may be supported and rotated by the machine by clamping the outer projecting cylindrical portion of one of the heads in the chuck 15, as will be readily understood.

Having thus described our invention, we claim—

1. In a harrow-disk sharpener, the combination with a bed-frame and means to support and rotate the work, of a longitudinally-disposed rod in bearings on one side of the bed-frame, said rod having a hand-lever whereby it may be partly rotated in its bearings, a supporting-arm attached to and adjustable longitudinally on said rod, whereby said supporting-arm may be turned inward, toward the work, to bear on one side of the bed-frame, or turned outward therefrom, said arm having a longitudinal groove and a longitudinal slot communicating therewith, a block fitted in said groove and adjustable longitudinally on said arm, a knife-holder, a bolt pivoting the same on said block, said bolt working in said slot of said supporting-arm, a knife-rest pivoted to said knife-holder, a hand-lever, also pivoted to said knife-holder and having a cam engaging the rear side of said knife-rest, means to attach a sharpening-knife to said knife-rest, and a spring connecting said hand-lever and said knife-rest, and tending to disengage the cam of said lever from said knife-rest and to retract the

latter from the work, substantially as described.

2. In a harrow-disk sharpener, the combination with means for supporting and rotating a harrow shaft and disks, of an adjustable supporting-arm, an adjustable block on said arm, movable thereon toward and from the work, a knife-holder pivoted on said adjustable block, a knife-rest pivotally mounted on said holder, a lever, also pivotally mounted on said holder and having a cam engaging said knife-rest, and a spring connecting said knife-rest and said lever, said spring tending to disengage the cam of said lever from said knife-rest and to retract the latter from the work, substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

JAMES H. ALLEN.

CHARLES H. ALLEN.

Witnesses:

P. D. HOWE,

ELMER E. CONKLIN.