

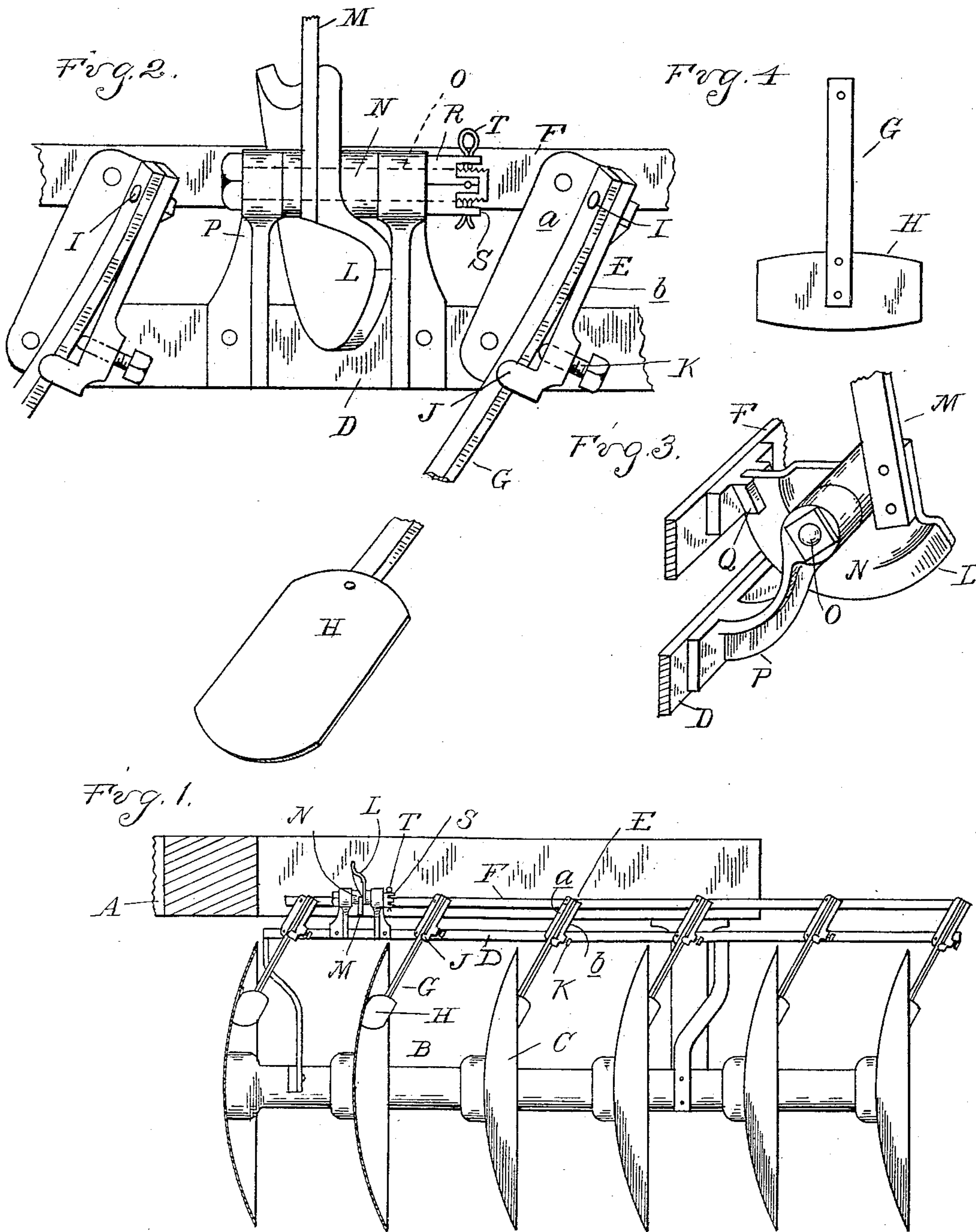
No. 616,530.

Patented Dec. 27, 1898.

S. H. & D. GARST.  
HARROW.

(Application filed Mar. 10, 1898.)

(No Model.)



Witnesses  
*Otto H. Buehler*  
A. L. Kobby

Inventors  
Stephen H. Garst  
Dudley Garst  
By *W. B. Maquet* Son  
Attys.



# UNITED STATES PATENT OFFICE.

STEPHEN H. GARST AND DUDLEY GARST, OF DETROIT, MICHIGAN, ASSIGN-  
ORS TO THE AMERICAN HARROW COMPANY, OF SAME PLACE.

## HARROW.

SPECIFICATION forming part of Letters Patent No. 616,530, dated December 27, 1898.

Application filed March 10, 1898. Serial No. 673,338. (No model.)

*To all whom it may concern:*

Be it known that we, STEPHEN H. GARST and DUDLEY GARST, citizens of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Harrows, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The invention consists in the construction of an improved scraper device for harrows, and comprises a series of scraper-arms connected together with a single spiral cam for actuating the connecting-bar; further, in the  
15 construction of the scraper-bars of spring metal, so that any slight inequalities in the adjustment of the scrapers to the disk will be overcome by the bending of the scraper-arms.

The invention further consists in the construction, arrangement, and combination of the various parts, whereby the device is simplified and cheapened and rendered less liable to breakage, all as more fully hereinafter described.

25 In the drawings, Figure 1 is a rear elevation of a harrow-gang, showing our improvement applied thereto. Fig. 2 is an enlarged elevation of the left-hand end of the scraper device, showing the detail construction of one  
30 of the scrapers and the actuating device for them all. Fig. 3 is a sectional perspective view illustrating the construction of the actuating device. Fig. 4 is an elevation of one of the scraper-arms and scraper-blades detached.

35 A represents the harrow-frame, and B one of the disk-gangs, connected thereto in any desired manner and comprising, as shown, a series of concavo-convex disks C, connected together and turning in a suitable bearing or bearings. It is necessary in such harrows to scrape out the dirt which may cling to the inner faces of the disk, and our invention consists in the construction of the scraper device therefor.

45 D is a bar or frame supported in any desired manner in fixed relation to the disk-gang and comprising what we call for convenience of description the "scraper-frame." On the scraper-frame are a number of brack-

ets E, preferably of cast metal and consisting of two plates *a b*, arranged at an angle to each other. The plate *a* is pivotally connected at bottom and top with the frame D and the connecting-bar F, respectively, and the plate  
55 *b* extends out therefrom at such an angle as will support the scraper-blade in the proper relation to the disks, as will more fully hereinafter appear.

The scrapers comprise the scraper-arms G, preferably formed by taking a flat spring-bar and cutting it off to the desired lengths and securing at their lower ends the scraper-blades H and at their upper ends detachably  
60 connecting them to the plates *b* of the brackets E, the angle of the bearing-faces of these plates *b* being such as will hold the scraper-blades in the proper relation to bear against the inner faces of the disks.

The means which we have shown for detach-  
70 ably securing the scraper-arm to the bracket consists of a bolt I, passing through the upper end of the plate *b* of the bracket, having a suitable nut, which may be removed, and thereby permitting of detaching the blade and  
75 reversing it. As but one edge of the scraper-blade works at a time, it is evident that with this ability to reverse it we are enabled practically to double the life thereof. We preferably form on the plate *b*, near the lower end,  
80 a lug or ear J, which acts as a guide for the scraper H and prevents its turning about the bolt I as a pivot.

We preferably provide means for adjusting each scraper arm or blade in relation to its  
85 disk, although the device can be constructed so that this adjustment can be taken up by the spring of the scraper-arms themselves. The adjustment we have shown consists of a set-screw K, passing through the lower por-  
90 tion of the plate *b* and bearing against the under side of the scraper-arm G, so that by bending the scraper-arm itself by means of this screw we are enabled to effect the most accurate adjustment of each scraper in relation  
95 to its disk. As the twist which would be required in such an arm as the arm G is provided for by the angle at which the plate *b* stands, we are enabled to make this scraper-arm by simply cutting off a piece of spring-bar  
100



to the desired length, fastening the scraper-blade to one end, and making a hole at the other end for the bolt I. The brackets E, also, are very simple in construction, as they may  
5 be simply castings.

As the connecting-bar F connects the upper ends of all the brackets E, we apply a single actuating device to that connecting-bar for all the scrapers. That actuating device  
10 we form as follows: L is a worm or worm-segment having an actuating arm or lever M and a hub N. The hub is apertured, and through it passes a suitable bolt or pin O, which likewise passes through apertures in  
15 the upper ends of the arms P, forming a U-shaped bracket, which in turn is connected to the bar or frame D. The worm L engages between lugs or bearings Q on the connecting-bar F. While it is evident that by the  
20 use of the worm the device actuated thereby is in effect locked at any point of adjustment, still, owing to the jolting which the device gets, we deem it desirable to apply a brake to the worm or worm-segment to pre-  
25 vent its accidental movement, which would throw the scrapers in when not desired. This brake we form by clamping the arms P against the hub N by means of a suitable nut R on the end of the pin or bolt O. This  
30 nut we have shown provided with apertured fingers S, through which a split pin T passes to lock it against accidental movement. The pin also passes through an aperture in the end of the bolt.

35 The operation of the device may be effected by hand or by foot. We preferably arrange it with a short lever M in such a position that the operator can move it with his foot either into or out of operative position.

40 It is evident that a movement of the lever M in one direction will engage the scrapers with their disks with the connections described and lock them in that position without the necessity of the operator holding his  
45 foot on the lever and that the spring of the scraper-bars themselves will take care of the inequalities in the individual disks.

It is evident that if it is desired to arrange the scraper-bars at any desired point near to  
50 the disks by the construction shown it may be effected and that the actuating device will be automatically locked at whatever point it is moved to.

What we claim as our invention is—

55 1. In a harrow, a series of scraper-arms (one for each disk), a connecting-rod between the arms and a single spiral cam for actuating the connecting-rod.

60 2. In a disk harrow, a scraper mechanism comprising the bar or frame D, the brackets E pivoted at one end thereto, the connecting-bar F to which the opposite ends of the brackets are pivoted, plates b on the brackets standing at such an angle to the supporting por-

tion thereof as will hold the scraper-blades in 65 the desired position to the disks and the straight spring-bars G secured upon a plate b and the scraper-blade at the end thereof.

3. In a disk harrow, a scraper device therefor, comprising a bar D supported in prox- 70 imity to the disks, the actuating connecting-bar F, a bracket secured to the frame D, the arms P on the bracket, a worm pivoted between these arms and engaging a bearing on the connecting-bar F, and means for clamp- 75 ing the arms P against the worm to act as a brake therefor, substantially as and for the purpose described.

4. In a disk harrow, the combination with a supporting-bar, brackets pivoted thereto 80 and comprising each plates a and b extending at right angles to each other, a lug or ear J projecting from the plate b in a direction parallel with the plate a and overhanging the same, substantially as described. 85

5. In a disk harrow, the combination with two supporting-bars, means for moving one of said bars laterally with relation to the other, brackets pivoted to both of said bars, and comprising the plates a and b arranged 90 at right angles to each other, and means for securing and adjusting scraper-arms to said brackets, substantially as described.

6. In a disk harrow, the combination with two supporting-bars, scraper-arms secured to 95 said bars, and means for moving one of said bars laterally with relation to the other, comprising the bearings Q on one of the bars, the worm L on the opposite bar and adapted to engage said bearings and means for actuat- 100 ing the worm, substantially as described.

7. In a disk harrow a series of scraper-arms, a worm for actuating the scraper-arms with relation to their disks, and means for locking the said worm in adjusted positions, 105 comprising a bolt on which the worm is pivoted, a jam-nut engaging the end of the bolt, perforated ears projecting outwardly from the nut, and a spring-pin adapted to pass through the said ears and bolt, substantially 110 as described.

8. In combination with a supporting-bar, a bracket secured thereto comprising plates a and b extending at right angles to each other, a spring-arm attached to the inner upper face 115 of the portion b and extending downward therefrom, and a screw passing from the outside through said portion b near its lower end and adapted to bear against the spring-arm to force the same inward, substantially as 120 described.

In testimony whereof we affix our signatures in presence of two witnesses.

STEPHEN H. GARST.  
DUDLEY GARST.

Witnesses:

R. H. LOGAN,  
F. G. BEACH.