

(Model.)

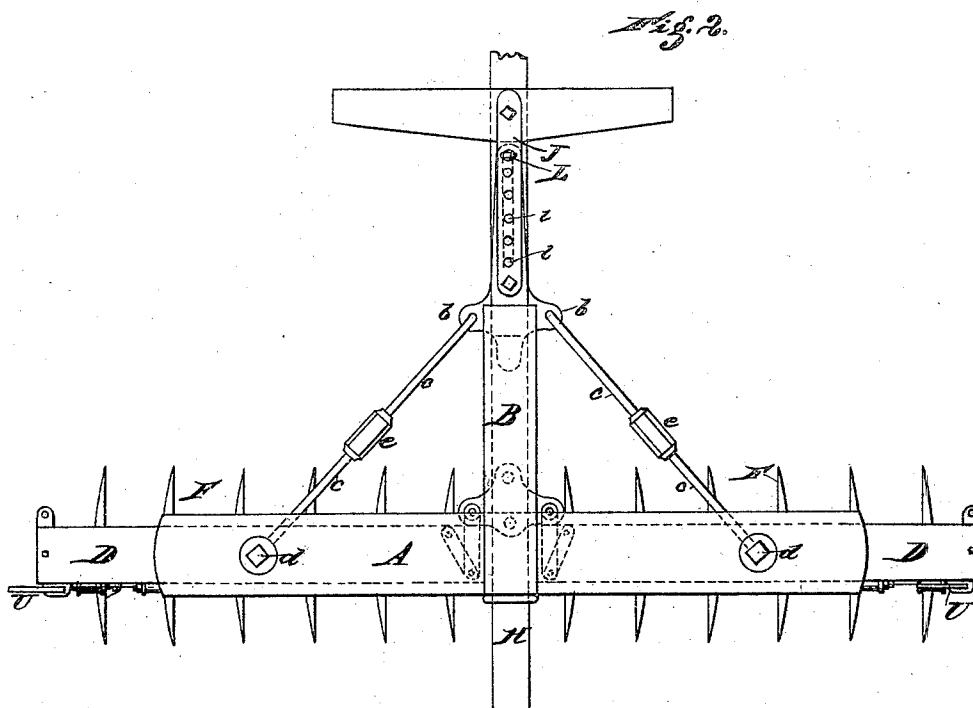
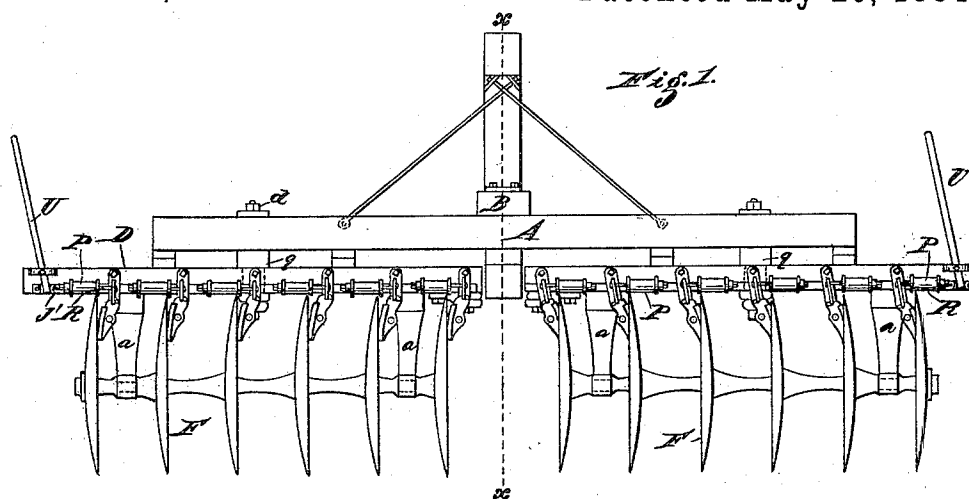
4 Sheets—Sheet 1.

E. F. STODDARD.

WHEEL HARROW.

No. 298,911.

Patented May 20, 1884.



Attest

John C. Miles
Ed. M. Rector

Inventor

E. F. Stoddard
by *Steno C. Cress*
his atty.

(Model.)

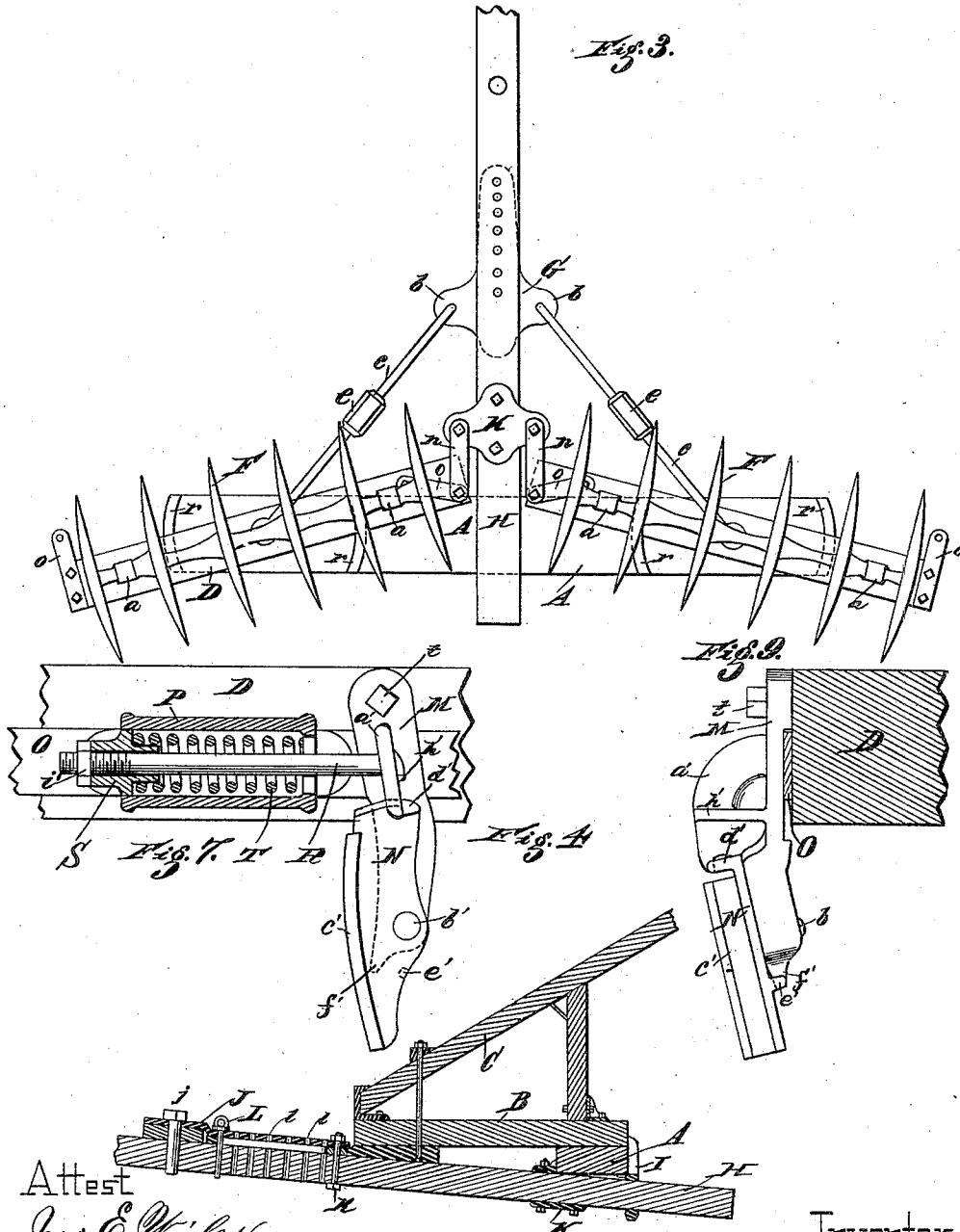
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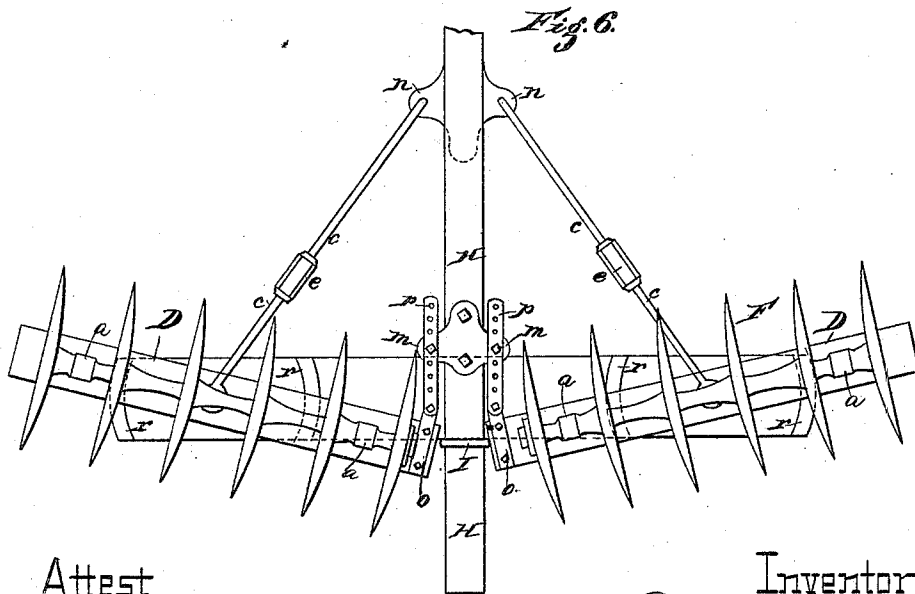
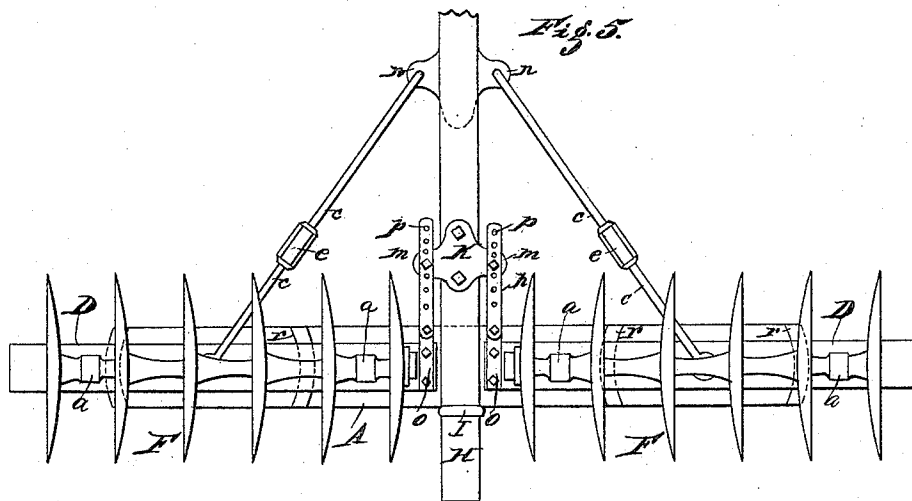
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Attest

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(Model.)

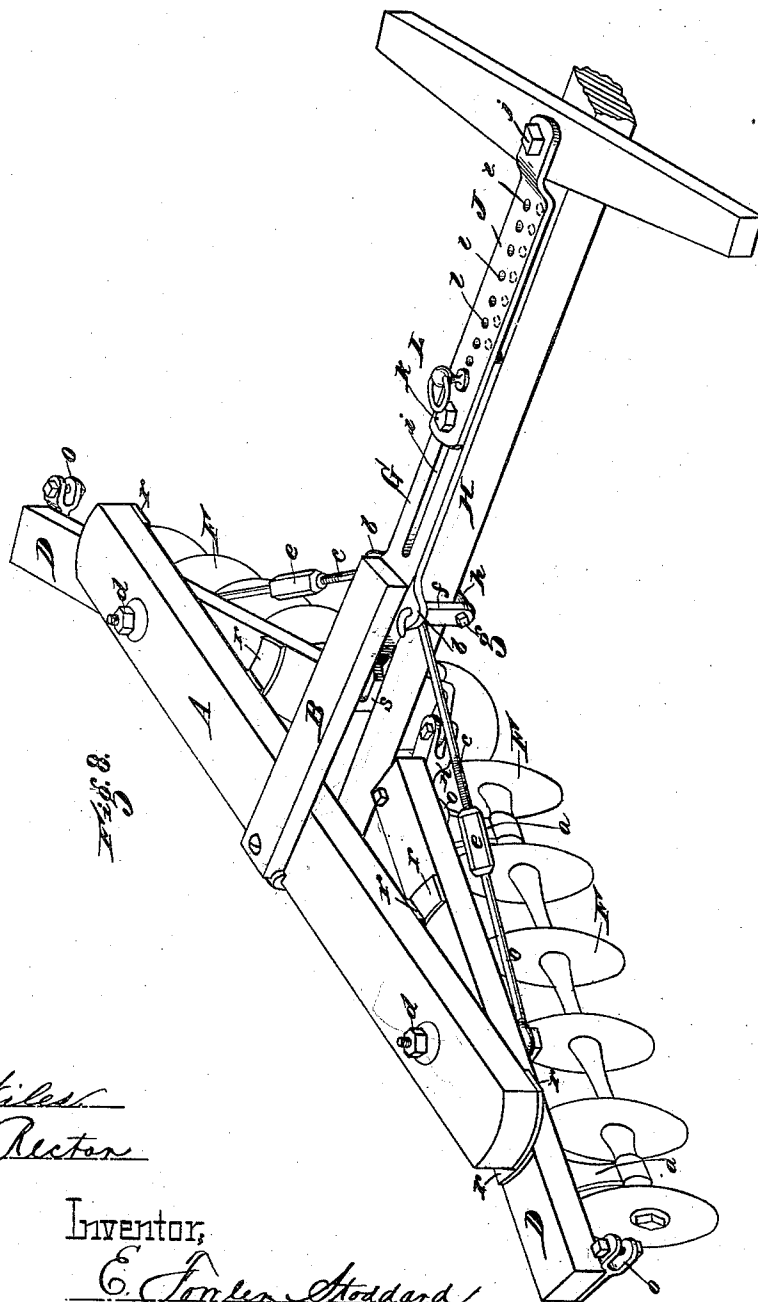
4 Sheets—Sheet 4.

E. F. STODDARD.

WHEEL HARROW.

No. 298,911.

Patented May 20, 1884.



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his attys.

UNITED STATES PATENT OFFICE.

E. FOWLER STODDARD, OF DAYTON, OHIO.

WHEEL-HARROW.

SPECIFICATION forming part of Letters Patent No. 298,911, dated May 20, 1884.

Application filed September 6, 1883. (Model.)

To all whom it may concern:

Be it known that I, E. FOWLER STODDARD, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Wheel-Harrows, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to that class of harrows or cultivators having gangs of disks, preferably concavo-convex disks, adjustably connected to the draft-frame and arranged on each side of the tongue for the purpose of changing the angles of the gangs relatively to each other; and the novelty of my invention consists, first, in so connecting the draft-frame, disk-gangs, and tongue, that the sliding of the tongue forward or back will cause the oscillation of the disk-gangs and enable them both to be brought in a straight line or angling to each other, and to be locked in any of their adjusted positions by the operator from his seat on the machine without loss of time and with no expenditure of labor; secondly, in the construction and application to each gang of disks of a series of simultaneously-operated self-adjusting scrapers controlled by the driver in his seat while the machine is in operation, if desired, for cleaning the disks or wheels; thirdly, in the construction, combination, and arrangement of the parts, as will be herewith set forth and specifically claimed.

In the accompanying drawings, Figure 1, Sheet 1, is a rear elevation of my improved harrow. Fig. 2, Sheet 1, is a plan view of the same. Fig. 3, Sheet 2, is a bottom plan view of the same. Fig. 4, Sheet 2, is a sectional side elevation through the line *xx* of Fig. 1. Fig. 7, Sheet 2, is an enlarged detailed view in rear elevation of one of my improved scrapers. Fig. 9, Sheet 2, is a corresponding view in side elevation. Figs. 5 and 6, Sheet 3, are bottom plan views of the harrow, showing a modification in the construction. Fig. 8, Sheet 4, is a perspective view of the harrow.

The same letters of reference are used to indicate corresponding parts in all the figures.

The draft-frame of the harrow consists, essentially, of a stout transverse beam or bar,

A, on the upper side of which is bolted or otherwise secured at or about its middle a forwardly-projecting beam, B, upon which and the beam A is suitably secured and properly 55
braced the seat-beam C, carrying the driver's seat, (not here shown,) but which may be of any suitable construction.

To the under side of the beam A are suitably pivoted at their middles the two gang- 60
beams, D, in pendent hanger-brackets *a*, of which the disk-shafts E, carrying the disks F, are properly journaled, as shown.

To the under front end of the beam B is securely bolted or otherwise fastened the forwardly-projecting metal coupling G, having 65
lateral perforated ears *b*, from which brace-rods *c* extend, and at their rear ends embrace or are connected to the pivot-bolts *d* of the gang-beams, as shown. The brace-rods are 70
preferably divided and provided with coupling or tension nuts *e*, for regulating their tension. From the under side of the coupling G are pendent lugs *f*, between which the tongue H of the harrow passes, and is held by a bolt, 75
g, uniting the lower ends of the lugs and carrying a friction sleeve or roller, *h*, which bears upon the under side of the tongue. The tongue, as it extends back under the harrow-frame, passes between the adjacent ends of the gang- 80
beams and through a guide bracket, staple, or equivalent device, I, secured to the rear edge of the beam A. From this construction it will be seen that the flat under face of the coupling G rests upon the tongue, and that the latter 85
is free to slide backward and forward in its guides above described. The forward end of the coupling G has a vertical slot, *i*, through it in the line of draft of the machine. Fitted over the coupling G is a perforated plate, J, 90
which at its forward end is bolted to the tongue by the double-tree bolt *j*, and at its rear end by a bolt, *k*, which passes down through the slot in the coupling G and through the tongue, as shown more particularly in 95
Fig. 4. Perforations are made through the tongue to correspond with the perforations *l* in the plate J and with the slot *i*. On the under side of the tongue, in the rear of the coupling G, is bolted or otherwise securely fastened 100
a metal casting, K, with lateral perforated ears *m*, through which are pivoted links *n*,

whose rear ends in turn are pivoted in any suitable manner, as by couplings *o*, to the inner ends of the gang-beams. These links may be of the construction shown in Fig. 3, or of that shown in Figs. 5 and 6, or they may be of any suitable construction, and both ends of the gang-beams should be provided with couplings to enable the gangs to be changed from one side to the other, according as it is desired to have the concavities of the disks facing each other, or the reverse, as shown in Figs. 1, 2, and 3 for the former position, and Figs. 5 and 6 for the latter. The links *n*, furthermore, should be provided with a series of perforations, *p*, as shown in Figs. 5 and 6, for the purpose of enabling such adjustment of the gang-beams to be made as to enable the disks to be angled either backward or forward of the beam A, as will be presently described.

For the better wearing of the machine, metal bushings *q* should be provided in the gang-beams for the passage of their pivoted bolts, and metal bearing-ways *r*, Fig. 8, should be applied to the under side of the beam A and to the upper sides of the gang-beams, as shown. Upon the upper side of the tongue, in rear of the coupling G, is fastened, adjustably, if desired, a stop-bracket, *s*, which, by coming in contact with the front side of the beam A, limits the backward movement of the tongue.

Inserted through any one of the perforations *l*, the slot in the coupling G, and the corresponding perforations in the tongue is a removable coupling-pin, L.

From the above construction it will be readily understood that with the parts adjusted as shown in Fig. 2, where the disk-gangs are in line and the coupling-pin is inserted through the perforations *l* of the plate J nearest the double-tree, if the driver desires to set the disks angling he merely has to stop the machine, withdraw the pin L, and set it through the rear perforation, *l*, of the plate J, and start his team again. The starting of the team would, of course, draw forward the pole, and with it, through the medium of the links *n* and their connections, the adjacent ends of the disk-gangs, until the forward wall of the slot *i* of the coupling G comes in contact with the pin L, whereupon a lock would be effected and the whole machine would advance with the disks angling forward, as shown in Fig. 8. By setting the pin L in any of the intermediate perforations, different degrees of angling may be obtained, as will be at once seen. Should the driver desire to reset the disks in straight line, he has only to stop and back his team until the stop *s* comes in contact with the front side of the beam A, which will limit the further backward movement of the pole and bring the disks in line, and by replacing the pin L in the front perforation so as to bear against the inner wall of the slot *i*, a lock is effected, and he can again start his team with the disks in line. Should it be desired to have the disks angle back of the beam A, (the posi-

tion shown in Fig. 6,) it is only necessary to adjust the links *n* to bring the disks into that position when the stop *s* is against the front face of the beam A, and the pin L is through the foremost hole of the plate J. In this adjusted position the forward movement of the tongue will draw the adjacent ends of the disk-beams forward, and at its extreme forward position with the pin L in the rear perforation of the plate J the disk will again be in a straight line. By this simple construction I produce a harrow which is exceedingly strong and well braced, and which, by means of the rods *c*, throws the draft-strain to the center of the disk-gangs, which is an important feature, and which can be adjusted by the power of the team without the necessity of the driver leaving his seat, so that both gangs may be brought into a straight line or in any desired position angling to each other, whether in front or in rear of the beam A; and, furthermore, with very little disarrangement, upon merely removing the pivotal bolts *d*, the gangs may be interchanged or shifted from one side to the other, so as to have the concavities of one set facing those of the other, or the reverse.

I am aware that prior to my invention disk-gangs have been connected at their adjacent ends to lever mechanism upon the pole or frame of the machine, which enabled the driver to change the relative position of the gangs by the operation of said lever mechanism, as shown, for instance, in the patent of F. Bramer, No. 225,331, dated March 9, 1880; but my present invention differs from such arrangement in that the power of the team acting upon the sliding pole or tongue is made use of to change the position of the disk-gangs, thereby relieving the driver from the manual labor of effecting the adjustment.

I would thus describe the disk-scrapers and their connections, reference being had particularly to Figs. 1 and 2, Sheet 1, and Figs. 7 and 9, Sheet 2. Upon the rear side of each of the gang-beams D are pivoted, as at *t*, a series of pendent arms, M, one for each scraper, with substantially vertical projecting lugs or ears *a'* on their outer faces. To the lower ends of these arms are pivoted, as at *b'*, the scrapers proper, N, of the shape shown in Figs. 7 and 9, and having a curved scraping-edge, *c'*, to conform to the concavity of the disk against which it is made to bear. The upper ends of the scrapers are confined in slots in the lower side of the lugs *a'*, and a detent or stop, *d'*, limits the oscillation of the scraper in one direction. A similar detent or stop, *e'*, near the lower ends of the inner sides of the scrapers, by coming in contact with a projecting toe, *f*, at the lower ends of the arms M, limits the oscillation of the scrapers in the opposite direction. These stops serve to hold the scrapers always in proper position to be brought in contact with the disks, while at the same time they are so relatively adjusted as to give the scrapers all the necessary play or oscillation upon their

pivots *V* to enable them at all times to adhere closely to the concave surfaces of the disks from one end to the other of their scraping-surfaces, which is a very material point.

5 Lying along the rear side of each of the gang-beams between the arms *M* and said beams, and supported upon shoulders on said arms, is a flat metal bar, *O*, extending the length of each beam *D*, and provided on its
10 outer face with a series of equidistant tubular casings, *P*, secured in any suitable manner to the bar *O*, so as to move therewith, and extending lengthwise of said bar. There is one of these casings for each of the arms *M*, and
15 each contains a rod or bolt, *R*, which is passed through the perforation in the lug *a'* until its head with squared shoulders comes in contact with the face of the lug *a'* and rests upon the rib *h'*, by which means said bolt is prevented
20 from turning. Instead of this construction, any other may be employed to unite the bolts to the arms *M* in such manner as to prevent their turning. The opposite end of each bolt is threaded and passed through a follower-head, *S*, which in turn fits into the open end
25 of the drum or casing *P*. Surrounding the bolt within the casing is a spiral spring, *T*, whose one end bears against the inner side of the follower-head *S*, and its other end against the slotted wall of the casing. A nut, *i'*,
30 screwed upon the end of the bolt *R*, serves to unite the parts and to adjust the arms *M*, so as to cause each separate scraper to bear with any desired pressure on its corresponding disk.

Pivoted upon each outer end of the beams *D* in any suitable way is an upright lever, *U*, whose lower end is confined between lugs or detents *j'*, secured in any suitable way to
40 the bar *O*. At the left side of Fig. 1 the lever *U* is shown in its normal position with the scrapers out of contact with the disks. By drawing the lever inward in the position shown at the right side of Fig. 1, the bar *O* is
45 shifted longitudinally, and all of the scrapers attached to said bar are brought into working contact with their respective disks with any desired degree of pressure, and by connecting
50 both levers with a cord or chain the driver can operate both simultaneously from his seat to bring all of the scrapers of both gangs into play whenever it is desired to free the scrapers from accumulated dirt or trash.

From the above construction, and by the employment of independently-oscillating scrapers and spring-connections, it will be seen that all the scrapers can be brought to bear on their disks and work effectively at the same time, whether one or more may be held off from
60 actual contact with the surface of the disks by reason of any accumulated and hard-caked earth adhering thereto, as is often the case. Furthermore, in the construction of these harrow-disks their concavities are not all perfectly true, and in setting them upon their spindles they may wobble more or less, in either of

which cases, by reason of the independent pivoting of each scraper to its arm, the scraper would at all times adhere to and follow the face of the disk from one end of its scraping-sur- 70 face to the other.

I do not limit myself to the precise construction of the scrapers and their connecting and operating parts, as various modifications in the details of construction might be made with- 75 out departing from the spirit of my invention, and,

Having thus fully described my invention, I claim—

1. In a wheel or disk harrow, the combination, with the main frame and the wheel-gangs independently pivoted thereto, of the pole or tongue with connecting mechanism, whereby the sliding of said pole or tongue backward or forward carries the wheel-gangs and shifts 85 their relative position from a straight line to any angle desired, or vice versa.

2. In a wheel or disk harrow, the combination, with the main frame and the wheel-gangs independently pivoted thereto, of the back- 90 wardly and forwardly sliding pole or tongue extending back between the adjacent ends of the gang-beams, and united thereto by adjustable connections, whereby the sliding of the pole in one direction will cause the wheel- 95 gangs to be shifted from a straight line to a forward angle, or from a rearward angle to a straight line, and vice versa, as desired.

3. In a wheel or disk harrow having a main frame with independently-pivoted wheel 100 gangs, the tongue or pole working through fixed guides secured to the main frame and adjustably connected to the adjacent ends of the gang-beams, and provided with a series of perforations, in combination with a slotted 105 plate or coupling secured to the main frame, a superimposed perforated plate, and a removable coupling-pin adapted to pass through said perforations and the slot in the coupling-plate, whereby the forward adjustment or play 110 of the pole can be regulated at will to shift the wheel-gangs by the driver from his seat on the machine, as set forth.

4. In a wheel or disk harrow having a sliding pole or tongue for adjusting the wheel- 115 gangs simultaneously from a straight to an angling position, or vice versa, the combination, with said pole, of a stop for limiting the backward play of said pole, substantially as described. 120

5. In a disk-harrow having a sliding pole or tongue for adjusting the wheel-gang simultaneously from a straight to an angling position, or vice versa, the main frame of the machine consisting, essentially, of the draft- 125 beam *A*, cross-beam *B*, and brace-rods *C*, extending from the forward end of the beam *B* to the pivotal axes of the gang-beams, substantially as described.

6. In a wheel or disk harrow, the combination, with one or more series or gangs of har- 130 row-disks, of a corresponding series of simul-

taneously - operated self - adjusting spring-scrapers, substantially as described.

7. In a wheel or disk harrow, the combination, with the rotating disk or disks, of a scraper-blade for each disk pivoted at a point between the axis and periphery of said disk, whereby said blade can adjust itself to the surface of the disk at all points of its scraping-surface from one end to the other.

8. In a wheel or disk harrow, the combination, with a series of rotating harrow-disks, of a series of pivoted rocking arms carrying self-adjusting scrapers, which said arms are connected to and operated by a bar or rod, so as to be vibrated simultaneously through the medium of a lever or equivalent device.

9. In a wheel or disk harrow, the combination, with a series of rotating harrow-disks,

of a series of scrapers adjustably united to a reciprocating bar by spring-connections.

10. In a wheel or disk harrow, the combination, with a series of rotating harrow-disks, of a series of pivoted arms carrying pivoted self-adjusting scrapers, and united to a reciprocating bar by spring-connections.

11. In a wheel or disk harrow, the combination, with a series of rotating harrow-disks, of a series of pivoted arms carrying pivoted self-adjusting scrapers, and united to a reciprocating bar by an adjustable spring-connection.

E. FOWLER STODDARD. [L. S.]

Witnesses:

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ED W. RECTOR.