(No Model.)

T. MAXON.

DISK HARROW.

No. 472,710. Patented Apr. 12, 1892.

Fig. 1.

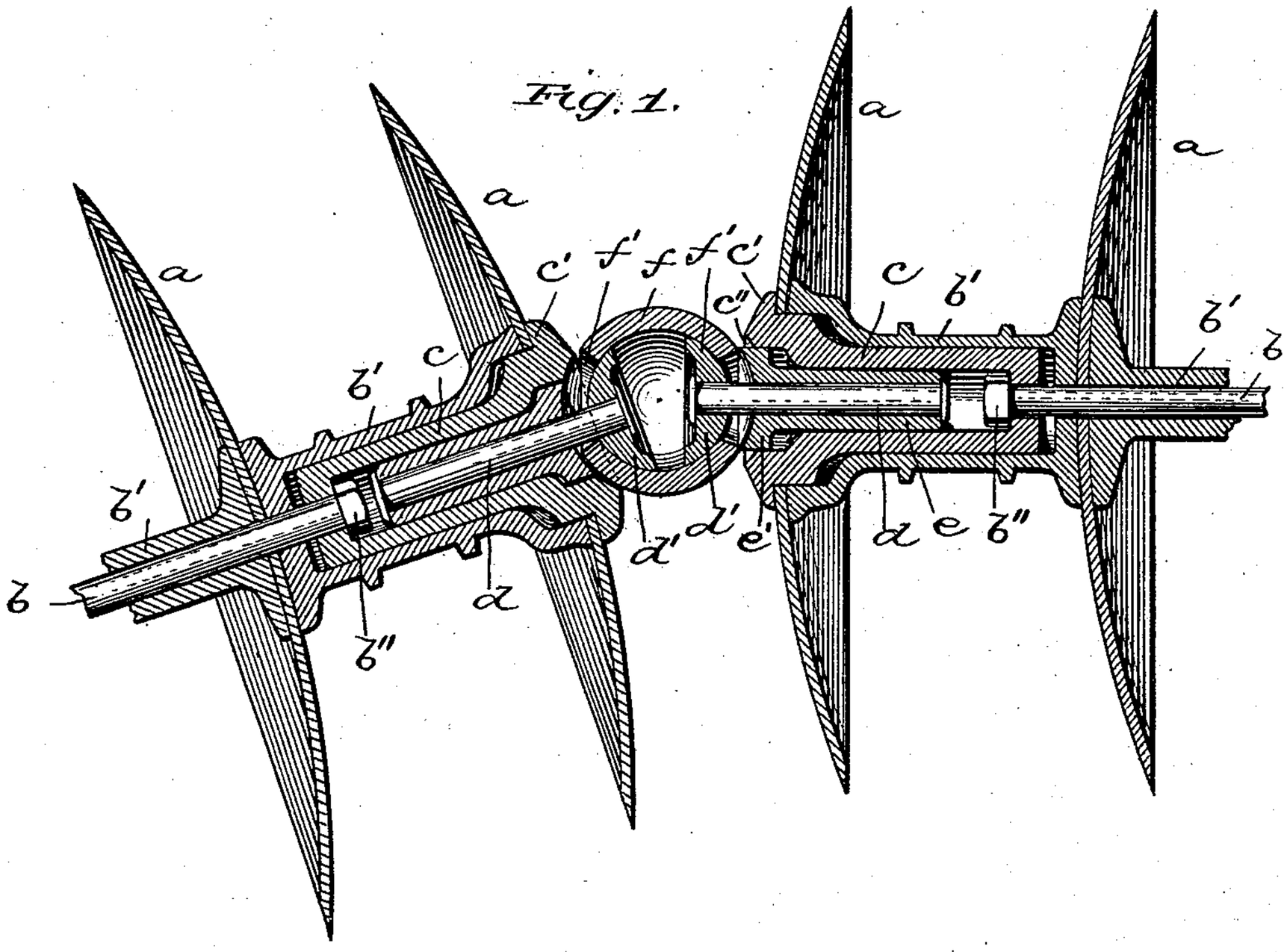
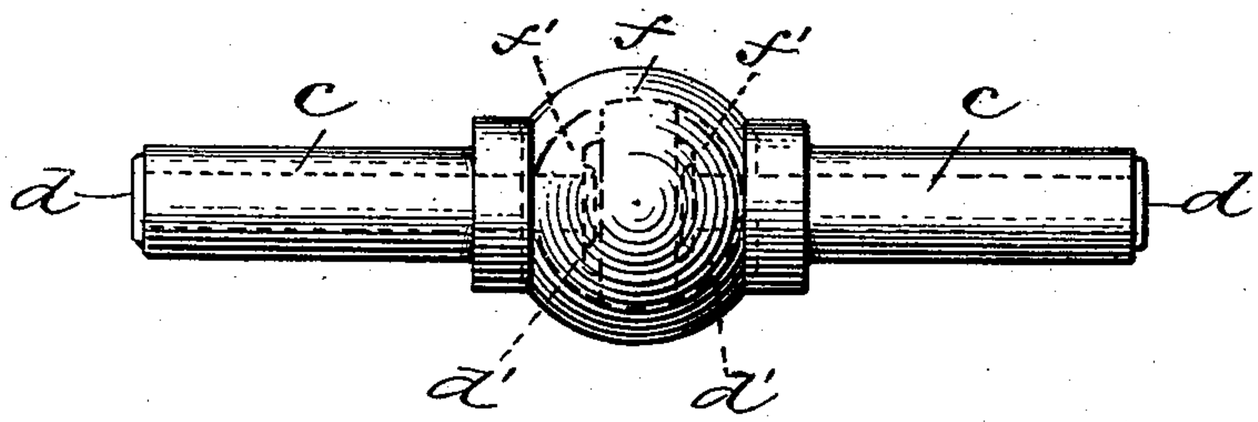


Fig 2



Witnesses
Wm. R. Davis
E. J. Cussens

Inventor
Thomas Maxon
By his Attorneys
Alexander & Davis

UNITED STATES PATENT OFFICE.

THOMAS MAXON, OF DAYTON, OHIO.

DISK HARROW.

SPECIFICATION forming part of Letters Patent No. 472,710, dated April 12, 1892.

Application filed September 14, 1891. Serial No. 405,646. (No model.)

To all whom it may concern:

Be it known that I, THOMAS MAXON, 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 Disk Harrows, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 represents a horizontal sectional view through the inner ends of a pair of disk gangs provided with my improvement, and Fig. 2 a detail plan of the device interposed between the gangs to take up the end-thrust of the same.

This invention relates to that class of harrows known as "disk harrows," wherein the concave disks are mounted upon a pair of adjustable rotary gangs, one gang being arranged on either side of the line of draft, as usual.

This invention has for its object the production of improved means for loosely connecting the inner ends of the gangs, whereby the end-thrust of the same will be taken up with the least possible friction, and also whereby the gangs will be permitted to freely revolve in unison or independently of each other, as appears hereinafter.

In the drawings I have not considered it necessary to show the gang-beams and shifting and draft devices, as such devices are well known and my present invention relates only to the devices for taking up or receiving the end-thrust of the gangs.

In the drawings, *a* designates the usual disks strung upon the usual long bolts *b* and properly spaced upon the same by means of the usual sleeves *b'*. The inner spacing-sleeves *b'* are hollowed out axially from their inner ends outwardly a suitable distance, and in each of these longitudinal recesses is snugly fitted a socket-tube *c*, whose outer ends are flanged, as at *c'*, in order to clamp the innermost disks of each against the inner ends of the respective inner sleeves or spools *b'*. The inner ends of the inner spools and the inner ends of the socket-tubes are preferably enlarged, as shown, for a purpose which hereinafter is made apparent. The socket-tubes are clamped in place by the long axial bolts *b*, the inner headed ends of which pass through and engage the outer closed ends of the tubes, whereby when the nuts on the outer ends of said bolts are drawn up tight the socket-tubes will be drawn into place and securely held.

A hollow ball or sphere *f* is suspended between the inner ends of the gangs and is adapted to receive the inner end-thrust of the two gangs, the inner ends of the socket-tubes being provided with circular depressions *c''* for the reception of the ball when the gangs are thrust inwardly. To suspend the ball, it is provided at diametrical points with circular openings *f'*, whose edges are preferably beveled outwardly, as shown, and into these openings are extended the respective inner ends of a pair of short rods or bolts *d*, the inner inclosed ends of these rods having secured upon them heads *d'*, whose outer surfaces are convex, so as to fit and work upon the interior surface of the hollow ball. The convexed heads of these bolts work freely within the interior of the ball, so as to form therewith substantially a swivel universal joint, the openings *f'* being sufficiently large to permit a limited universal movement of the bolts *d*. The outer ends of the bolts *d* are also headed, and between these heads and the exterior of the ball are secured the tubes *e*, whose inner ends are concaved to loosely fit and work against the exterior of the ball. The inner ends of these tubes *e* are enlarged or headed, so that the suspended ball may have a broader bearing against them, and also whereby the openings in the ball may be covered and protected from wear. The inner ends of the socket-tubes are also enlarged for these purposes.

The tubes *e* are made to fit loosely the axial recesses in the socket-tubes so placed in position between the gangs. These tubes *e* extend into the sockets in the respective gangs, and thereby serve to suspend the ball in position to work in the sockets in the ends of the socket-tubes when the gangs are forced inwardly. This construction or its mechanical equivalent possesses important advantages. The ball and tubes connected to it form, practically, a flexible or universal joint

between the gangs, whereby they may be readily shifted with respect to each other and may also revolve in unison or independently of each other. The ball is so suspended that it is effectually guided to the sockets in the ends of the gangs every time the gangs are forced together, while the tubes connected to the ball are free to revolve and slide in the socket-tubes, thus enabling the gangs to readily move in and out, as occasion may require. The ball and connected tubes are free to revolve with or independently of the gangs, as the exigencies of the case may require.

The ball may be made of two sections brazed or welded or otherwise secured together, but is preferably cast by means of a core integral around the heads of the bolts.

Having thus fully described my invention, what I claim is—

1. The combination of two gangs of disks provided with concave sockets and axial recesses in their inner ends, a ball suspended between said gangs and adapted to fit within said sockets, and tubes swivelly or flexibly connected to said ball at diametrically-opposite points, said tubes fitting and revolving within the axial recesses in the gangs, substantially as described.

2. The combination of two disk gangs provided with axial recesses in their adjacent ends, a revoluble hollow ball suspended between the ends of the gangs and adapted to receive the inward thrust of the same, and tubes swivelly connected to the ball at diametrically-opposite points, said tubes fitting and working loosely in the axial recesses in the gangs, whereby the gangs will be free to move independently in an endwise direction and also revolve independently of each other, substantially as described.

3. The combination of the gangs having cylindrical recesses in their inner ends, a ball suspended between the inner ends of the gangs, and tubes connected to said ball at diametrically-opposite points by a swivel connection, said tubes sliding and turning in the recesses in the ends of the gangs and having their outer ends concaved to fit against the ball, substantially as described.

4. The combination of the gangs consisting each of a series of disks mounted upon a bolt and clamped between spacing-sleeves, the inner spacing-sleeves being provided with axial recesses extending outwardly, flanged socket-tubes *c*, fitting in said recesses and secured therein by the gang bolts, the inner ends of these socket-tubes being provided with concave depressions *c''*, and a hollow ball *f*, suspended between the gangs and carrying tubes working freely in the socket-tubes, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS MAXON.

Witnesses:
JOHN L. H. FRANK,
J. A. SINNETT.