Feb. 21, 1956 P. A. DLUGOSCH 2,735,251

SECTIONAL HINGE CONNECTED DRAWBARS

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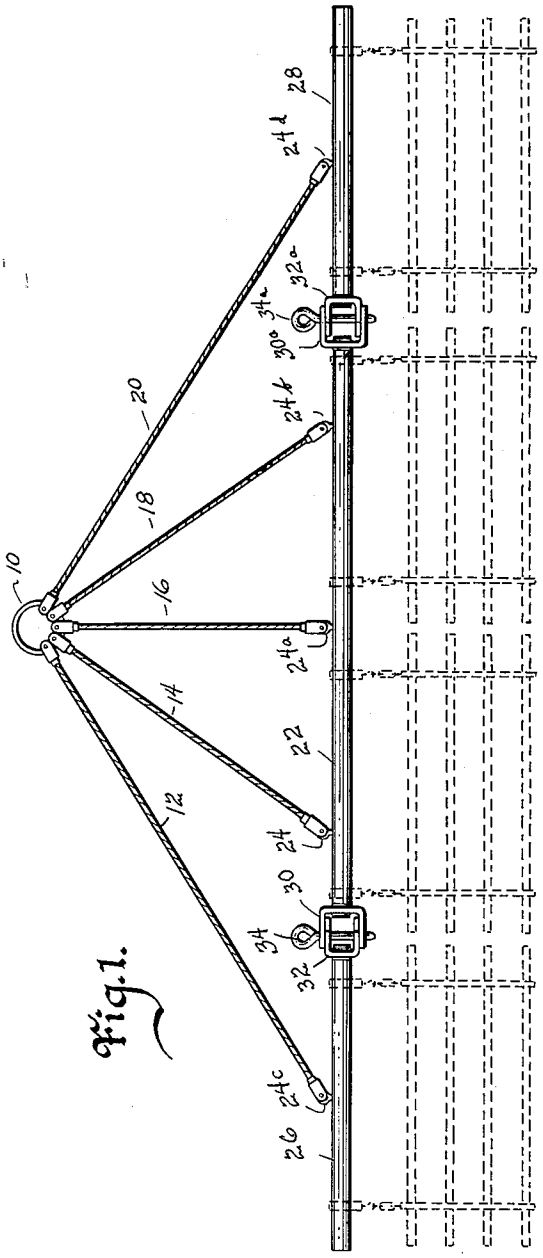


Fig. 1.

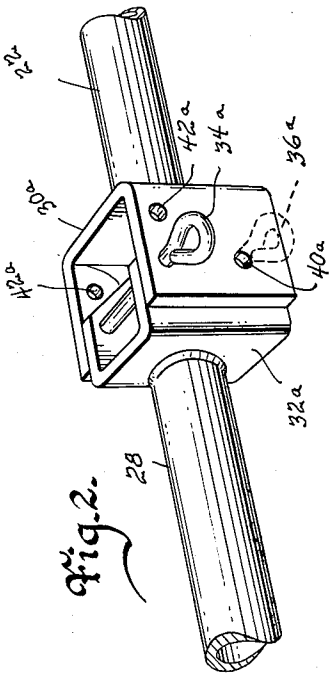


Fig. 2.

Witness
Edward P. Seeley

Inventor
Paul A. Dlugosch
by Talbert Dick & Adler
Attorneys

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Fig. 3.

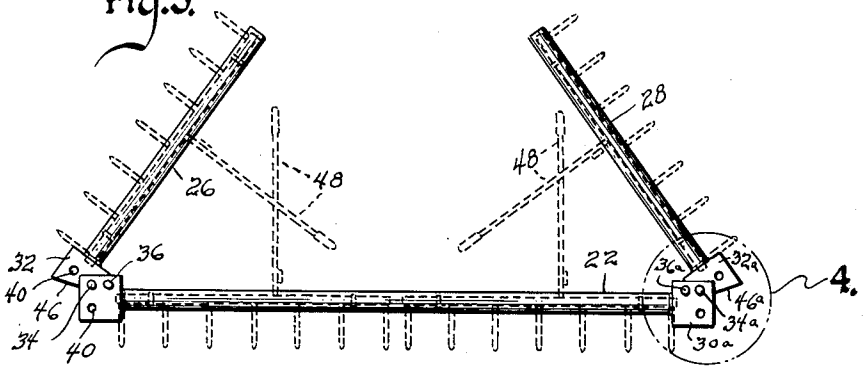


Fig. 4.

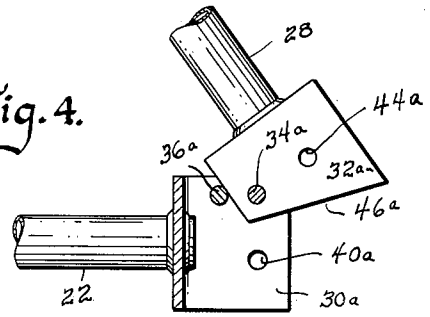


Fig. 5.

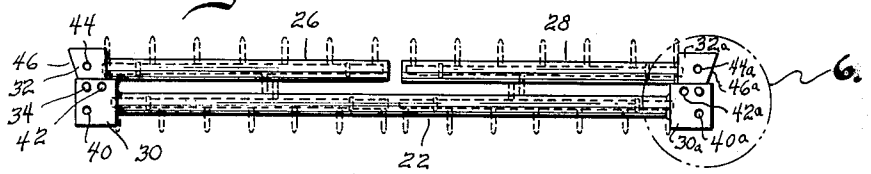
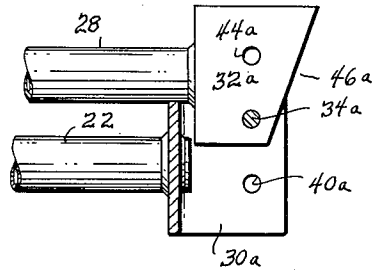


Fig. 6.



Witness
Edward P. Seeley

Inventor
Paul A. Dlugosch
by Talbert Dick & Adler
Attorneys

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SECTIONAL HINGE CONNECTED DRAWBARS

Paul A. Dlugosch, Sac City, Iowa, assignor to Noble Manufacturing Company, Sac City, Iowa

Application February 26, 1953, Serial No. 338,971

1 Claim. (Cl. 55—150)

My invention relates to drawbars for harrows and similar farm implements and specifically I have invented a hinge for folding drawbars that can be hinged completely, partially or locked against hinging movement.

Many harrow drawbars have been devised that hinge to permit moving gang harrows through gates and other narrow openings by folding the outer harrow sections onto a center section that is of a width which permits drawing the section through a gate opening. The known hinges used for this purpose, however, are of a construction that permits only one form of hinging. They are devised either to hinge completely or they are provided with stops that limit the hinging movement. Those hinges which permit complete folding are preferable on equipment having control handles that will fold flat against the harrow section. Some equipment, however, is provided with a control handle which will not fold completely against the harrow section. With equipment of this type a hinge must be provided that will stop hinging movement at a point that holds the outer harrow sections at an acute angle relative to the center sections in order to provide clearance for these extending control handles. Obviously, the use of these different forms of hinges can cause difficulties. For example, a farmer who first purchases the hinge drawbar when he is equipped with folding handle harrows would undoubtedly be led to purchase the flat folding type of hinge drawbar. If at a later date he purchases harrows having extending control handles he must either provide himself with a new harrow drawbar or modify the old drawbar to limit the hinging movement. While the old drawbar might be modified, there is always the possibility that modification will not be adequate which can result in failure of the hinge and damage to an extended control handle harrow.

In view of these shortcomings of the prior art, therefore, it is the principal object of my invention to provide a hinging drawbar that will fold completely or that can be stopped in a position of partial fold.

It is a further object of my invention to provide a hinged drawbar that can be locked in a rigid position.

It is a further object of my invention to provide a hinged drawbar that permits disconnecting the drawbar at the hinge.

It is also an object of the invention to provide U-form interfitting hinge-providing members carried by adjacent ends of drawbar sections and which cooperate to limit movement of end bar sections below the horizontal while permitting free movement in an upward direction, such members also adapted to support the end bar sections in a position at least partially overlying the next inner bar section.

It is a further object of my invention to provide a hinged drawbar having limited flexibility.

It is a further object of my invention to provide a hinged drawbar that is extremly simple in construction, and, therefore, economical to manufacture, durable in use and requiring no special skill or knowledge on the part of the user.

These and other objects will be apparent to those skilled in the art.

My invention consists in the construction, arrangement, and combination of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, and specifically pointed out in my claims, and illustrated in the accompanying drawings, in which:

Fig. 1 is a plan view of my drawbar with harrow sections shown in broken lines connected thereto,

Fig. 2 is an enlarged perspective view of one hinge with broken lines illustrating the position of the locking pin,

Fig. 3 is a back elevation view of my drawbar shown in the partially hinged position. Harrows provided with non-folding control handles are illustrated with broken lines and shown connected to the drawbar,

Fig. 4 is an enlarged detail view taken at the circle 4 on Fig. 3 and with a portion of the structure broken away to illustrate its action more clearly,

Fig. 5 is a rear elevation view of my hinge drawbar in a completely folded position and with harrow sections indicated by broken lines, and

Fig. 6 is an enlarged detail view taken at the circle 6 on Fig. 5 and with a portion of the structure broken away to illustrate its action more clearly.

I have used the numeral 10 to designate the usual clevis ring to which the drawbar cables designated from left to right in Fig. 1, 12, 14, 16, 18 and 20 are secured in a conventional manner. Cables 14, 16 and 18 are connected to the center drawbar section designated 22 and these connections are made in any suitable manner as shown in the drawing by rings 24, 24*a* and 24*b* which are rigidly secured to the center section 22. Cable 12 is connected to an outer section designated 26 and the cable 20 is connected to an outer section 28 in the same manner that the center cables are connected to the center section. Rings 24*c* and 24*d* are substantially identical to the three center rings. At each end of section 22 are U-shaped hinge members having side members and a bight portion which since they are substantially identical are designated 30 and 30*a*. To the inner end of each of the sections 26 and 28 is secured a complementary U-shaped hinge element and they are designated 32 and 32*a* respectively. For the complete functioning of each hinge two pins are required, the first of which, will be referred to as a hinge pin and designated 34 for the hinge connecting the sections 26 and 22, while its corresponding mating pin in the opposite hinge is designated 34*a*. A second pin which will be referred to as the blocking pin is designated by the numeral 36 for the hinge using hinge pin 34. The numeral 36*a* designates the blocking pin for the other hinge. Each leg of each hinge element 30 and 30*a* is provided with three holes of a size that will slidably receive the pins 34, 34*a*, 36 and 36*a*. One pair of these holes is the primary hinge point and is the one through which the pins 34 and 34*a* are shown extending in all of the drawings. Below the primary hinge pin pair of holes is a pair of holes that will be called the locking holes and designated by the numerals 40 and 40*a* for the left and right hinges respectively as shown in Fig. 3 or in Fig. 5. A third set of holes in each of the two hinges I have named the blocking holes and they are designated by the numeral 42*a* in Figs. 2, 4 and 6, and by the numerals 42 and 42*a* for the left and right hinges respectively in Fig. 5. In the hinge members secured to the elements 26 and 28 and designated 32 and 32*a* respectively are two pairs of holes, one of which, also receives the hinge pin and can be identified in Figs. 4 and 6 by the fact that the hinge pin 34*a* extends through them. These hinge members 32 and 32*a* are also provided with a pair of auxiliary

locking holes so referred to to distinguish them from the locking holes and these auxiliary locking holes are designated by the numerals 44 and 44*a* for the left and right hinges as shown in Fig. 5 and by being correspondingly designated in the other figures.

I have placed the locking holes 42, 42*a*, 44 and 44*a* nearer to the vertical center of the hinge members than is true of the hinge holes through which the hinge pins 34 and 34*a* extend. This placement of the locking holes was not accidental. The reason for so placing the locking holes was to prevent shearing of the locking pin as a result of stresses placed on it when the harrow is used with the drawbar is a locked or rigid position.

The operation of my hinge drawbar is very simple. If a rigid drawbar is desired, the pins are inserted in both the hinge holes and in locking holes which provides a substantially rigid drawbar. If partial hinging is desired, as shown in Fig. 3, pin 36*a* or 36, as the case may be, is withdrawn from the locking holes and inserted in blocking holes 42 and 42*a*. The operation of the blocking pin is clearly shown in Fig. 4 where the hinge element 32*a* is shown bearing on the pin 36*a*. If it is desired to hinge the drawbar completely locking pin 36 or 36*a* is withdrawn and with only the hinge pin in place the harrow drawbar is folded as shown in Fig. 5. If a flexible harrow section is desired the pin 36 or 36*a* is removed and the harrow setction is then permitted considerable flexibility. The free ends of the legs of the hinge elements 32 and 32*a* are slanted from the top downwardly and outwardly as indicated at the numeral 46*a* in Figs. 4 and 6 which permits hinging upwardly of the sections 26 and 28 but limits downward hinging thereof by engaging the bight wall of the related U-shaped hinge member 30 or 30*a*. The pins 36 and 36*a* are used to hold the harrow drawbar in a partially hinged position in order to protect the control handles, all of which are designated 48 in Fig. 3. Also, as shown in Fig. 6, it will be noted that the bight wall of the U-shaped hinge members 30, 30*a* which are carried by the center drawbar section 22 are functionally integral with such bar section and are secured thereto without necessitating the use of bolts or the like. Also, as shown in Fig. 6, when the end sections are in the Fig. 5 position the upper edges of the bight portions of the members 30, 30*a* support the related end bar section 28 or 26. Obviously I have invented a hinge drawbar that accomplishes the objects of my invention.

Some changes may be made in the construction and

arrangement of my drawbar hinge without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim:

In a sectional drawbar for harrows and the like including a mid-section and end sections, opposed ends of said sections hingedly connected whereby the end sections will be vertically swingable when the bar is in use; the combination of a U-member carried by each of the opposed bar section ends as a hinge element-providing extension of the latter and having side walls and a bight wall, each bight wall transversely secured to and functionally integral with the end portion of the related bar section and projecting above the plane of the latter when the drawbar is in use, the side walls of opposed U-members being longitudinally overlapped, a transverse pivot means operatively connecting each set of overlapped side walls and pivotally connecting the respective end bar setions to the mid-bar section for vertical swinging movement when the drawbar is in use, each pivot means positioned closer to the top side wall edges and free ends of the related mid-section-carried U-member than to the bottom edges and bight wall thereof, whereby when the drawbar is in use to permit the end sections to be swung upwardly to mid-section-overlying position and in supported engagement with the top bight wall edge of the adjacent mid-section-carried U-member, and at least one of the free side wall ends of one of each pair of related U-members engaging the bight wall of the adjacent U-member whereby to limit downward swinging movement of the end sections when the bar is in use.

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