June 7, 1932. J. H. FLATLEY 1,861,626

WHEELED HARROW FRAME

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Fig. 1

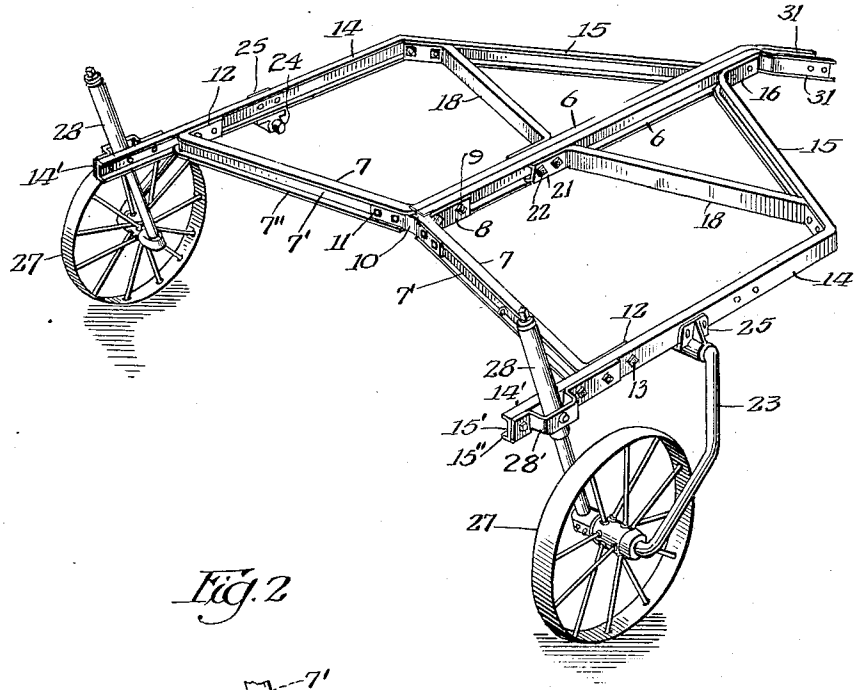
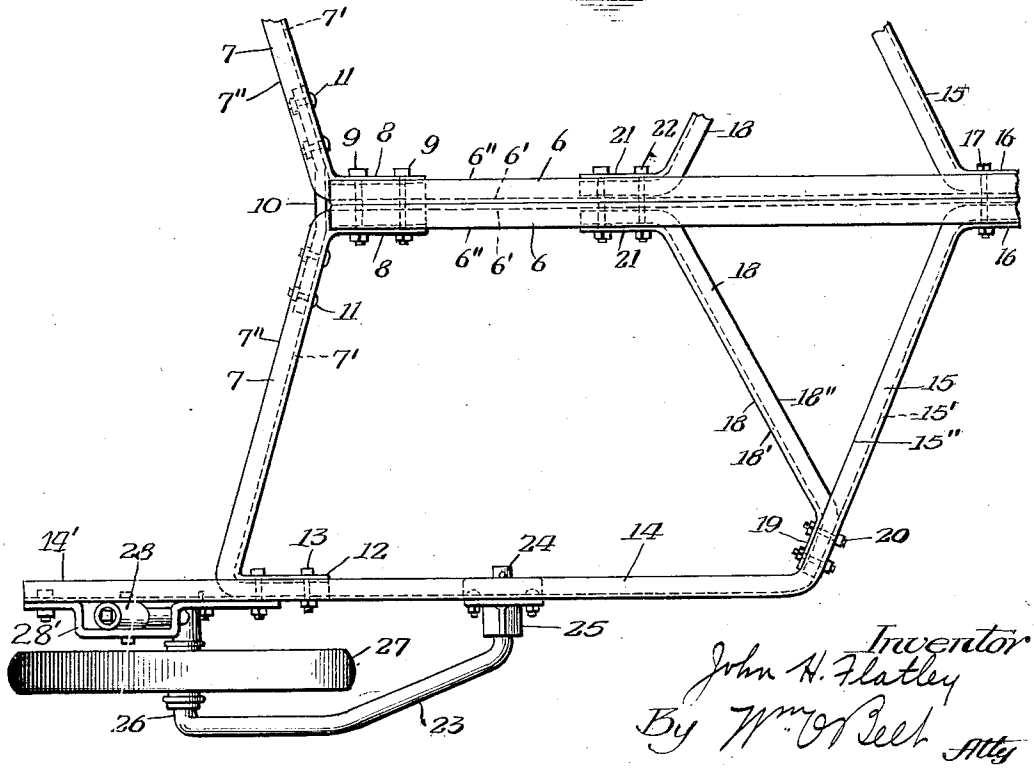


Fig. 2



Inventor
John H. Flatley
By Wm. O'Neil Atty

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Fig. 3

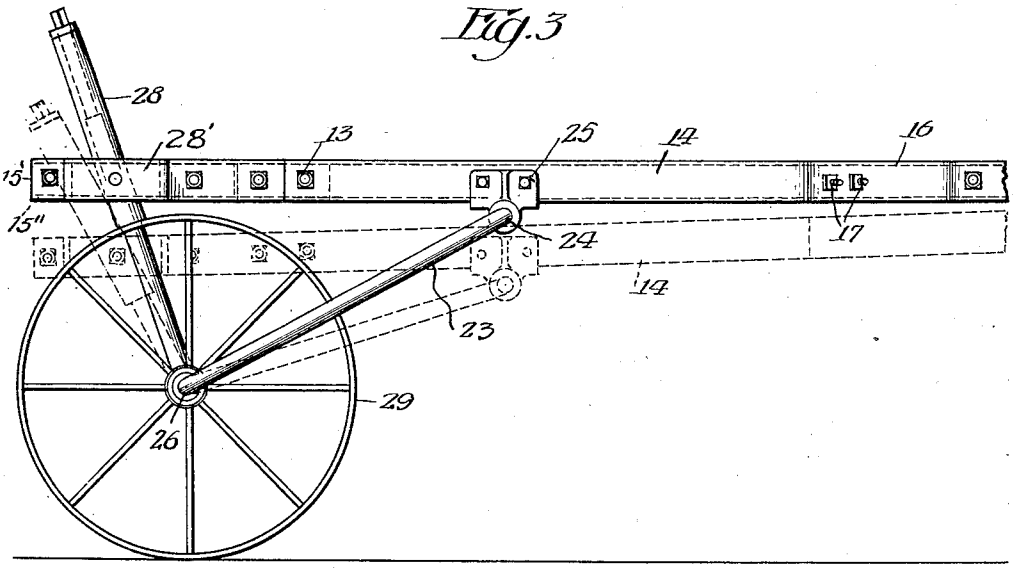


Fig. 4

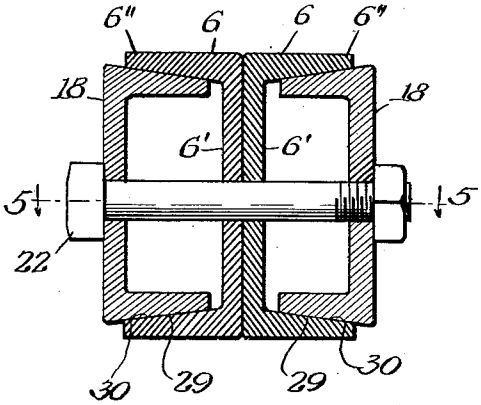
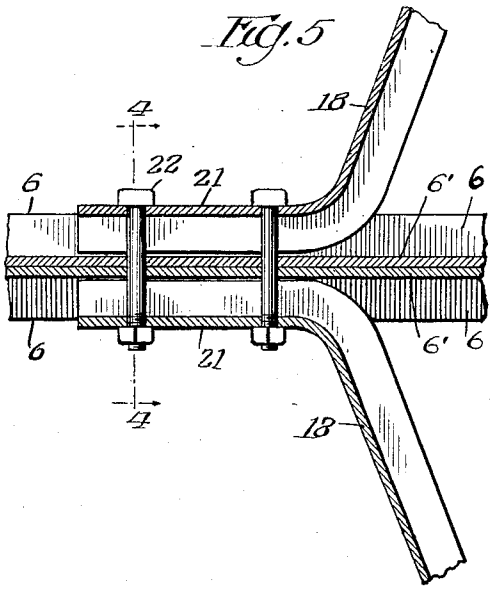


Fig. 5



Inventor:
John H. Flatley
By Wm. O. Belt Atty.

Patented June 7, 1932

1,861,626

UNITED STATES PATENT OFFICE

JOHN H. FLATLEY, OF LITTLE YORK, ILLINOIS, ASSIGNOR TO BROWN LYNCH SCOTT CO., OF MONMOUTH, ILLINOIS, A CORPORATION OF ILLINOIS

WHEELED HARROW FRAME

Application filed January 26, 1928. Serial No. 249,581.

This invention relates to wheeled harrows and its object is to improve the frame of the disk harrow of my Patent No. 1,531,278 patented March 31, 1925.

Since tractor power has come to farming operations it makes it necessary to greatly strengthen the frames of tractor drawn implements and at the same time it is very necessary not to add more weight to such implements or frames, as more weight will cause them to sink their transport wheels deeper in soft soil, making deep marks in the field which are very undesirable and which also increases fuel consumption, and this is a big item with tractor farmers.

With these points in view I have designed a new and different style of frame—using channel iron construction (or channel iron and I-beams) throughout with exceptions of one small flat gusset brace fitted in the channels at rear of frame.

The object of the invention is to provide a strong, substantial and rigid frame, light in weight and simple in construction adapted to carry disk gangs substantially as shown in my former patent and adjustably mounted on wheels so that the frame may be easily raised or lowered as required for regulating the depth of cut and for transportation purposes.

The most important feature of the frame construction is the joint, which is joined together on compression; that is, the flanges of the cross channels are beveled to accurately fit in the channel of the I-beam (or channels) in the center of the frame and in the channels on the outside of the frame, but these flanges do not extend to the bottom of the channel or web of the I-beam, thus leaving space to draw the joint tighter with bolts shown when wear comes, and at all times using the telescopic effect of the beveled edges of the channels and I-beams and making a joint that will not sag.

In the accompanying drawings, illustrating a selected embodiment of the invention.

Fig. 1 is a perspective view of the frame.

Fig. 2 is a plan view of a portion of the frame.

Fig. 3 is a side elevation of the frame.

Fig. 4 is a sectional view on the line 4—4 of Fig. 5.

Fig. 5 is a detail sectional view indicated on the line 5—5 of Fig. 4.

Referring to the drawings the frame comprises two substantially L-shaped members consisting of the two centrally disposed forwardly extending bars 6, 6 arranged side by side, and the laterally and oppositely projecting rear bars 7, 7 which have their adjacent ends 8, 8 bent forwardly and arranged on opposite sides of the central forwardly extending bars 6, 6 and parallel therewith and with each other. Bolts 9 extend through the ends 8, 8 and the bars 6, 6 for securing the bars 7, 7 to the bars 6, 6 and a brace 10 overlaps the bars 7, 7 back of the ends 8, 8 and is secured to said bars by bolts 11 to form a rigid joint between the bars 7, 7 and the bars 6, 6. The outer ends 12, 12 of the rear bars 7, 7 are also bent forwardly parallel with the ends 8, 8 and they are secured by bolts 13 to the rearwardly extending side bars 14, 14 which connect with the laterally and inwardly extending front bars 15, 15. Each pair of bars 6, 7 constitute an inside frame member and each pair of bars 14, 15 constitutes an outside frame member and each pair of said frame members constitutes one of the two sections of which the whole frame is composed. All of the bars 6 and 14 are parallel and extend between front and rear of the frame; the bars 7 and 15 of each section are parallel and extend between the center bars 6 and the outside bars 14. The rear bars 7 extend outwardly and rearwardly from the center bars and so also do the front bars 15 which are substantially parallel with the rear bars. Each section of the frame is in the form, substantially, of a parallelogram comprising two members 6, 7 and 14, 15. The inner ends 16, 16 of the front bars 15, 15 are bent forwardly and are arranged on opposite sides of the bars 6, 6 parallel therewith and with each other and are secured to the bars 6, 6 by bolts 17. The cross bar 18 is arranged in each frame section and extends diagonally from the outer end of the front bar 15 to the center bar 6 substantially midway between the rear bar 7 and the front bar 15. The outer end 19 of the

cross bar 18 is bent outwardly to lie substantially parallel with the bar 15 adjacent its juncture with the bar 14 and is secured thereto by bolts 20. The inner end 21 of the cross bar is bent to lie parallel with the center bar 6 and is secured thereto by bolts 22 whereby the outer forward corner of each frame section is braced from the center of the frame to form a strong and substantial structure.

Arms 23 are arranged alongside and on the outside of the side bars 14, 14, adjacent the rear ends thereof and these arms have inwardly bent ends 24 which are pivoted in bearings 25 on the side bars 14. The rear ends 26 of the arms 23 are also bent inwardly, parallel with the bent ends 24, and they form axles for the carrying wheels 27 and are engaged with adjusting devices 28 pivotally mounted in brackets 28′ on the rear end portions 14′ of the side bars 14 which are preferably extended beyond the rear bars 7 for this purpose. The adjusting devices may be made as described in the patent to Edward M. Smith, No. 1,740,841, patented December 24, 1929. The arms 23 not only provide axles for the carrying wheels 27, but they also constitute guards for the wheels since they are located outside of and in front of the wheels and protect them against damage from engagement with trees, stumps, fences and other obstructions. The adjusting devices are located between the wheels and the frame and they are connected directly to the axles which are on the rear ends of the arms. This arrangement enables the adjustment of wheels and frame with comparatively little power.

The bars of the frame sections are made of channel iron. The webs 6′, 6′ of the bars 6, 6 lie flat against each other and they are rigidly held in this position by the bolts 9, 17 and 22, Fig. 4. The flanges 6″, 6″ of these bars 6, 6 project outwardly and oppositely from the contacting webs 6′, 6′. The web 7′ of each rear bar 7 is at the inside of the bar and the flanges 7″ of the bars project rearwardly from the rear portion of the bars, but project laterally and outwardly in opposite directions at the forwardly bent parallel ends 8, 12 of the bars. The side bar 14 and the front bar 15 of each section of the frame are integral and the web 15′ is on the outside thereof and the flanges 15″ project inwardly. The web 18′ of each of the cross bars 18 is at the rear of the bar and the flanges 18″ project forwardly. The flanges 7″ of the ends 8 of the rear bar 7, the flanges 18″ of the end 21 of the cross bar 18 and the flanges 15″ of the end 16 of the front bar 15 fit within the flanges 6″ of the bar 6; the flanges 7″ of the end 12 of the bar 7 and the flanges 18″ of the cross bar 18 fit within the flanges 15″ of the bars 14 and 15 respectively. By reason of this construction and arrangement of the bars of each section of the frame I am enabled to utilize the flanges for producing a rigid frame construction which will not only be securely fastened together, but which will be free from skewing, twisting or weaving. The inside faces 29 of the enclosing flanges are beveled to receive the inclined outer faces of the enclosed flanges so that the flanges will fit smoothly and flatly upon each other and provide a rigid engagement. This also facilitates securing the bars of the frame together by means of the bolts because the bolts can be easily tightened to provide an effective clamping engagement of the bars.

The center bars 6, 6 of the frame extend forwardly beyond the front bars 15, 15 and have downturned ends 31 which are spaced apart to receive devices for connecting the harrow to a tractor and for adjusting the front end of the harrow.

The invention provides a strong and substantial frame of simple construction, light in weight, which can be easily manufactured and secured together firmly and rigidly and maintained in this condition throughout service. Utilizing channel bars in the special form, construction and arrangement set forth enables the provision of a strong and rigid frame made of comparatively light material and few parts and without the necessity of many braces. The invention is especially desirable for wheeled harrows which require a strong and rigid frame to stand the shocks and strains and rough usage to which they are subjected, and which should be relatively light in weight. I have shown and described the invention in a selected embodiment which has been found satisfactory in service, but I reserve the right to make all such changes in the form, construction and arrangement of parts as fall within the scope of the following claims.

I claim:

1. A rigid frame for wheeled harrows comprising two channeled center bars, two rear bars, two channeled side bars, and two channeled front bars, the rear bars having their ends bent to engage between the flanges of the center bars and the side bars, the front bars being integral with the side bars and having their inner ends bent to engage the flanges thereof with the flanges of the center bars, means securing the center bars and the adjacent bent ends of the rear bars together, means securing each side bar to the adjacent bent end of a rear bar, and means securing the center bars and the adjacent bent ends of the front bars.

2. A rigid frame for wheeled harrows comprising two center bars, two rear bars, two side bars, and two front bars, the rear bars having their ends bent to engage the center bars and the side bars, the front bars being integral with the side bars and having their inner ends bent to engage the center bars, cross bars having their ends bent to engage

the center bars and the front bars, means securing the center bars and the adjacent bent ends of the rear bars together, means securing each side bar to the adjacent bent end of a rear bar, means securing the center bars and the adjacent bent ends of the front bars, means securing the inner bent ends of the cross bars to the center bars, and means securing the outer ends of each cross bar to a front bar.

3. A rigid frame for wheeled harrows comprising two channel iron center bars arranged with their webs in contact and their flanges outwardly projecting, and two channel iron rear bars having their inner ends bent substantially parallel with the center bars, said rear bars having their inner ends bent forwardly with their flanges projecting outwardly and engaged with the flanges of the center bars, and means securing the center bars and the bent ends of the rear bars together.

4. A rigid frame for wheeled harrows comprising two channel iron center bars arranged with their webs in contact and their flanges outwardly projecting, two channel iron side bars with their flanges inwardly projecting, two channel iron rear bars with their flanges outwardly projecting and having their ends bent forwardly and the flanges of the said ends engaged with the flanges of the center bars and with the flanges of the side bars, and means for securing the inner ends of the rear bars to the center bars and the outer ends of the rear bars to the side bars.

5. A rigid frame for wheeled harrows comprising two channel iron center bars arranged with their webs in contact and their flanges outwardly projecting, two channel iron side bars, two channel iron front bars integral with the side bars, the flanges of the side bars and the front bars being inwardly directed, two channel iron rear bars the ends of the rear bars being bent forwardly and the flanges of said ends being engaged with the flanges of the center bars and side bars, the inner ends of the front bars being bent and the flanges thereof engaged with the flanges of the center bars, and means securing the bent ends of the rear bars to the center bars and side bars and the bent ends of the front bars to the center bars.

6. A rigid frame for wheeled harrows comprising center bars, rear bars, side bars and front bars all made of channel iron, the rear bars having bent ends and with the flanges of said ends engaged with the flanges of the center bars and side bars, and the front bars having their inner ends bent and with their flanges engaged with the flanges of the center bars, some of said flanges having inclined inner faces and others having inclined outer faces to make telescopic engagement.

7. A rigid frame for wheeled harrows comprising a plurality of bars disposed to define the frame, some of said bars having their ends bent to parallel other bars, all of said bars being made of channel iron and the flanges of the bent ends arranged to engage the flanges of the bars with which they contact, the contacting flanges of the bent ends and the bars being beveled to telescope, and bolts passing through the webs of said ends and bars to secure the parts together.

JOHN H. FLATLEY.