(No Model.) 2 Sheets—Sheet 1.

H. E. PRIDMORE.

WHEEL.

No. 558,519. Patented Apr. 21, 1896.

Fig. 1.

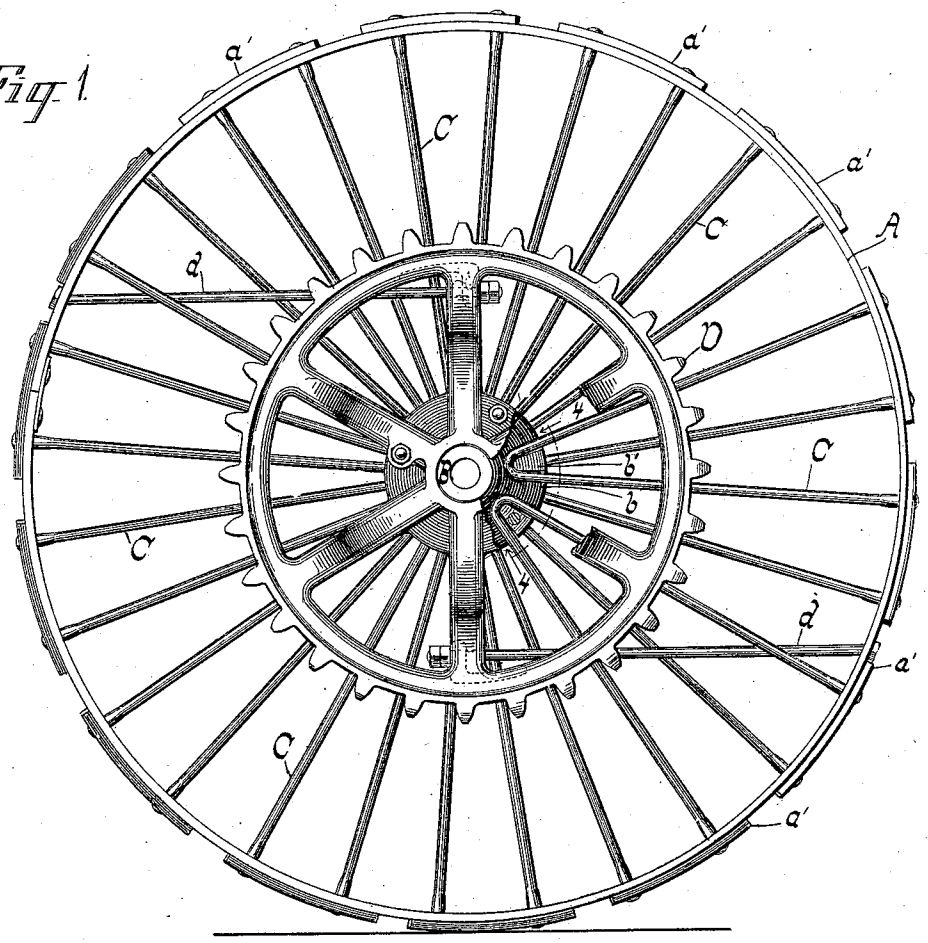
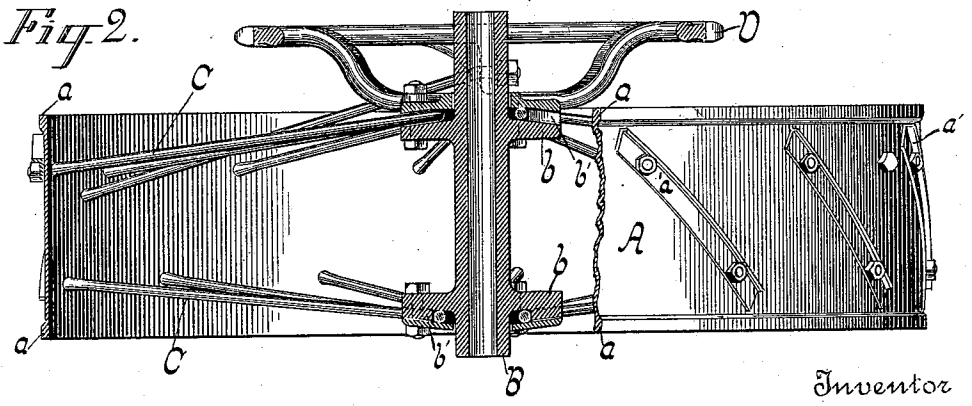


Fig. 2.



Witnesses
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Chas. Westcott

Inventor
Henry E. Pridmore.
By his Attorney R. B. Swift.

(No Model.) 2 Sheets—Sheet 2.

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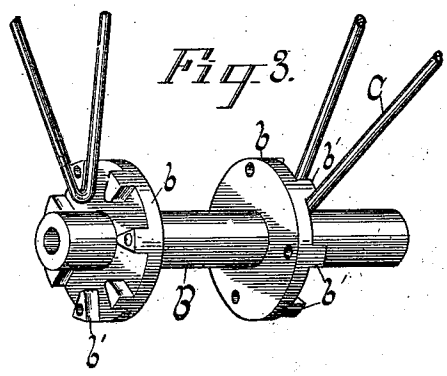
Fig. 3.



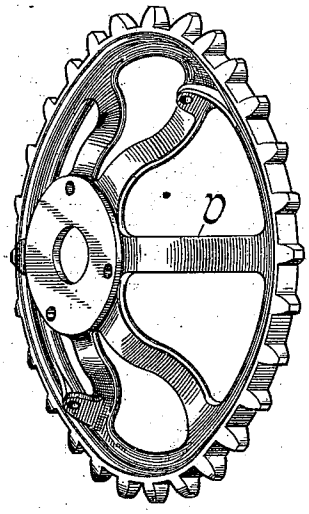


Fig. 5.

Fig. 6.

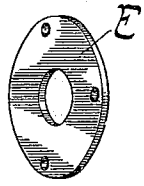


Fig. 4.

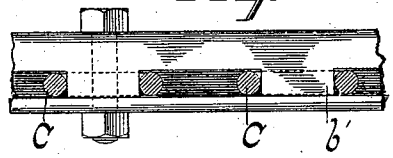


Fig. 8.

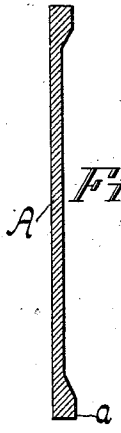
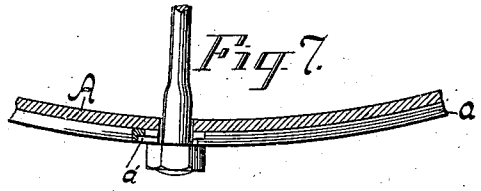


Fig. 7.



Witnesses
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UNITED STATES PATENT OFFICE.

HENRY E. PRIDMORE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE McCORMICK HARVESTING MACHINE COMPANY.

WHEEL.

SPECIFICATION forming part of Letters Patent No. 558,519, dated April 21, 1896.

Application filed December 1, 1890. Serial No. 373,135. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. PRIDMORE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Wheels, of which the following is a specification.

My invention relates more particularly to improvements in wheels adapted for use in self-binding harvesters, as a main or driving wheel, or to any analogous use where the ground over which the machine has to be drawn is unpacked or liable to be wet and soft in places and then again rough and stony.

It is necessary for the main wheel of the self-binding harvester not only to support the greater part of the weight of the machine, but it must also furnish the power which is necessary for the operation of the cutting and binding devices. Great strength is therefore required; but as the weight of the remainder of the machine is more than sufficient to furnish the necessary traction it is desirable that the wheel be as light as possible. To move over the soft and uneven ground, it must also have a wide tread face or rim, and, as it must often pass over rough ground filled with stones and obstructions, the rim must be of sufficient weight to stand the hard knocks which it must frequently encounter. It is to remedy the faults of the ordinary harvester-wheel in these and other particulars, which will be more fully set forth hereinafter, that I have constructed the wheel shown in the annexed drawings and described in the following specification, in which—

Figure 1 is a side view of a wheel constructed in accordance with my invention with part of the spokes and hub of the sprocket-wheel broken away in order to more clearly show its construction. Fig. 2 is a top view of the wheel, partly in cross-section. Fig. 3 is a perspective view of the hub, showing the disks attached thereto and the position of the lugs thereon, together with the apex or curved portion of a double spoke placed on a lug. Fig. 4 is a diagrammatic view on the line 4 4 of Fig. 1. Fig. 5 shows in perspective the sprocket gear-wheel, which is placed upon the hub and serves as a plate to hold the spokes in position on one end of the hub. Fig. 6 is the retaining-plate for the other end of the hub. Fig. 7 is a view of an end of one of the double spokes, showing the rim in section, while Fig. 8 is a view of the rim in cross-section.

A is the periphery or rim of the wheel. It is preferably made of metal and of sufficient weight to stand the required strains without the assistance of a felly. At its edges in the form shown it is thickened at *a*, so that when being drawn over the ground, which perhaps may be filled with stones, or along the highway with its beaten path the edges will have sufficient strength to stand the knocks they may encounter. This thickening of the edges is upon the tread-face of the wheel, as any thickening upon its inner face would form a depression into which any loose dirt carried up by the wheel would fall and be carried into the gearing. The tread-strips with which it is necessary to face all such wheels for agricultural purposes cause the machine to be jarred somewhat when the ground over which it is being drawn is very hard. The thickening of the edges of the rim, the tread-strips being placed between these edges, thus acts to support the machine and prevent jarring.

It is true that the rim might be rolled of the same thickness throughout its entire width, yet this would be a waste of material, as it has been found by experiment that the center of the rim, supported, as it is, by the tread-plates, will be of sufficient strength when rolled thinner than the edges. The rim so constructed, however, or even if rolled so thin as to require the support of a felly, would still, I consider, answer the purpose of other features of my improvement and be within the scope of my invention relating to those features.

The hub B has integral with it, or rigidly fastened to it near each extremity, disks *b*, having upon their outer faces the triangular lugs *b'*, which preferably radiate from the center. These lugs are equidistant upon each disk, the lugs upon one disk being intermediate to those on the other disk. These disks

are preferably sufficiently far apart on the hub, so that the spokes shall have a bracing pitch, and the lugs, being intermediate the spokes, enter the rim regularly from first one side and then the other, which allows the number of spokes to be lessened and braces the wheel against lateral strains.

The spokes shown are of the double kind—that is, they extend from the periphery or rim of the wheel to the hub and back again to the rim. Their apex, or bent portion, hooks over the triangular lug *b'* upon the hub-disk *b*, and their extremities pass through the holes in the rim A and tread-plate *a'* and tighten with nuts. The wheel can thus be made perfectly true, its tension regulated, and it can be drawn up perfectly tight. The sprocket driving-wheel D retains the spokes upon one of the disks and the plate E upon the other. Should the apex of the spoke rest upon the hub-center and nuts be placed upon spokes on the inner face of the wheel, they could be made to sustain part of the weight and the wheels still remain partly upon the tension plan. It has been found, however, that the spokes must be increased in weight if the wheel is so constructed, and that with the wheel-rim made as I have heretofore described, to stand hard use on rough ground, a light spoke will sustain a wheel on the tension plan that will be lighter and stronger than the wheel in which the spoke itself stands a direct resistance. In the tension plan also the wheel gives slightly under sudden shocks, and the operating parts of the machine do not receive the quick jars that are sometimes fatal to their operation. While this is true, however, the body of the spoke, which is of sufficient weight to support the wheel, is not heavy enough at its extremity where it is fastened to the rim. This is even more true if the fastening be a nut on the outside of the rim, as the threads weaken the spokes, and as the nut is often subjected to hard knocks the ends of the spokes would be broken off. The ends have therefore been upset and enlarged, as shown in Fig. 7. The rim of the wheel in the preferable form that I have shown could be supported by single spokes, or even by double spokes fastened in any of the many well-known ways. However, the combined use of the rim shown with the spokes and their method of fastening just described make a better wheel.

The driving-sprocket D is stayed to the periphery or rim A by a rod *d*, thus bringing the strain of operating the machine upon the rim as well as upon the hub. This sprocket also serves to hold the spokes in position upon its end of the hub.

I am aware that double spokes are old, and that wheels have been built with such spokes and with their ends riveted to the rim, but of the same weight throughout their length and tightened or put under tension by having the disks of the hubs loose thereon and pressed toward the end of the hub by suitable mechanism. With this plan, however, it is very difficult to keep the wheel true. The driving-sprocket is necessarily attached in a different way, and the spokes being riveted frequently bear the direct weight of the machine, and with a light unstrengthened tire the wheel is thrown out of shape and becomes loose. I do not, therefore, broadly claim the use of a double spoke taking over lugs on the hub and extending to the periphery; but

What I do claim, and desire to secure by Letters Patent, is—

1. In a wheel, the combination of a wide-faced rim with a plain, unobstructed, inner face, said rim being strengthened at the edges by thickening the metal on the outer face, and tread-plates secured to the rim between the thickened edges to strengthen the weaker center of the rim.

2. In a wheel, the combination of a wide-faced rim with a plain, unobstructed, inner face, the center of said rim being of uniform thickness and being strengthened at the edges by increasing the thickness of the metal on the outer face, and tread-plates secured to the rim between the thickened edges to strengthen its weaker center.

3. In a wheel, the combination of a wide-faced rim having its outer edges strengthened by increasing the thickness of the metal, and a relatively weaker center, and tread-plates secured to the center portion and spanning the space between the thickened edges on the outer face of the rim and serving to strengthen said central portion, said central portion being further strengthened by connecting the spokes thereto on two lines on opposite sides of the center.

4. In a wheel, the combination of a wide-faced rim, the metal of said rim being strengthened at the edges by forming raised, thickened, edge ribs around its outer face, and tread-plates secured to said rim and spanning the space between the thickened ribs, said plates extending diagonally across the rim-face, whereby the weaker central portion of the rim is strengthened, and the edge ribs and tread-plates form a raised tread-surface above and protecting the central portion of the rim.

5. In a wheel, the combination of a hub, a rim, tension-spokes extending from the hub to and through the rim with their outer ends threaded, and nuts screwed on said ends, the outer ends of the spokes being enlarged in diameter to compensate in strength for the cutting of the threads.

6. In a supporting and driving wheel, the combination of the rim, a hub having a spoke-securing flange near one end, double, continuous, tension-spokes secured at their ends to the rim and bent around the lugs on the flange, and a removable driving-gear having a central flange adapted to be secured against

the lugged side of the flange of the hub to hold the spokes on the lugs.

7. In a supporting and driving wheel, the combination of the rim, a hub having a flange, a driving-gear having a central flange by means of which it is secured to the flange of the hub, and a stay-rod connected at one end to the driving-wheel near its periphery and at its other end secured to the wheel-rim.

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A. A. BROCK.