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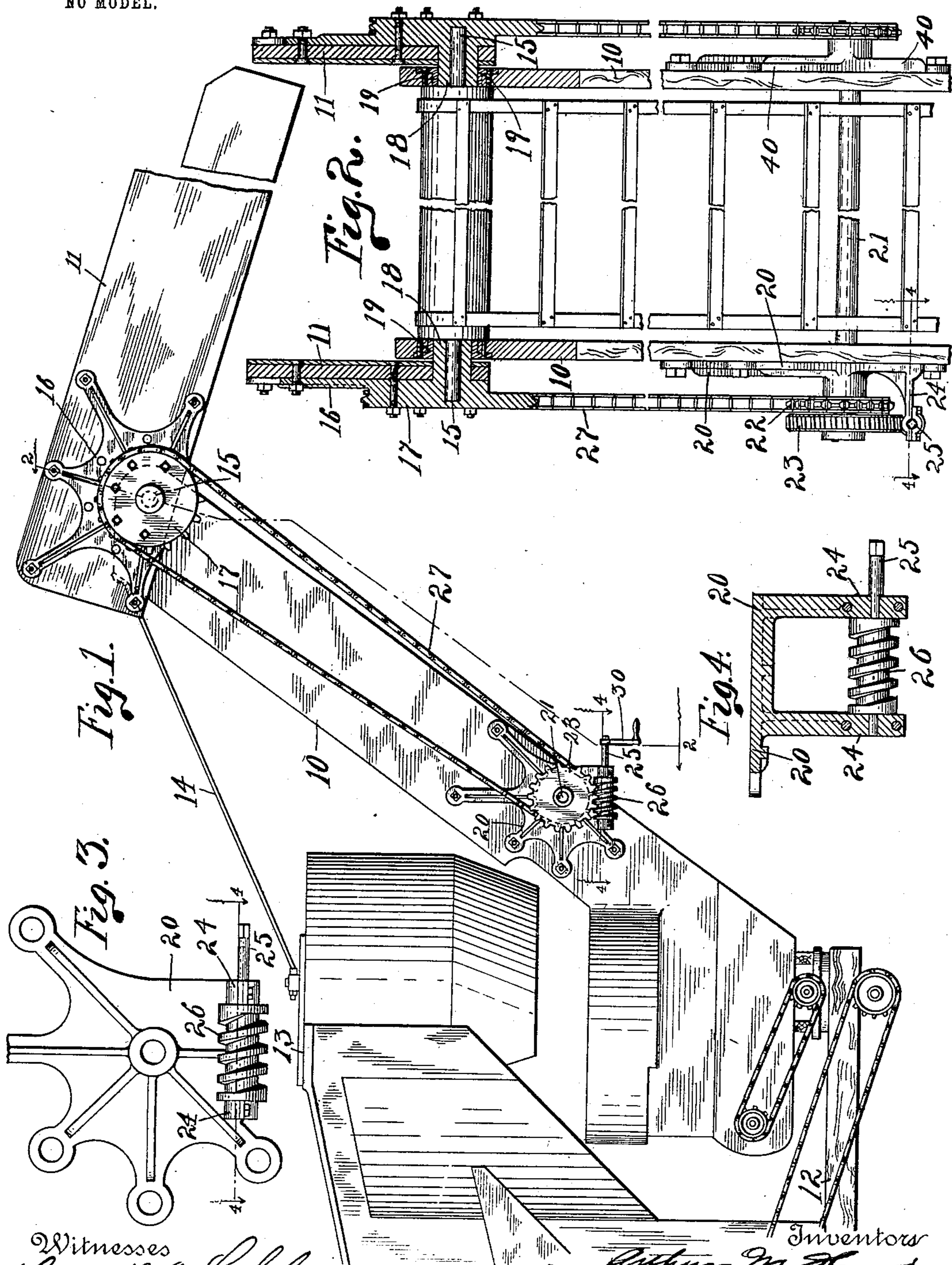
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A. M. HOOD. & C. BRADFORD.

STRAW STACKER.

APPLICATION FILED SEPT. 17, 1902.

NO MODEL.



Witnesses
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UNITED STATES PATENT OFFICE.

ARTHUR M. HOOD AND CHESTER BRADFORD, OF INDIANAPOLIS, INDIANA.

STRAW-STACKER.

SPECIFICATION forming part of Letters Patent No. 730,825, dated June 9, 1903.

Application filed September 17, 1902. Serial No. 123,698. (No model.)

To all whom it may concern:

Be it known that we, ARTHUR M. HOOD and CHESTER BRADFORD, citizens of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Straw-Stackers, of which the following is a specification.

In the development of the art of stacking straw and the like as it comes from threshing and similar machines many varieties of "stackers" have been produced. Among the latest of such stackers of the mechanical carrier type those having a comparatively long outer carrier-section have met with most favor on account of the comparatively small departure from a perpendicular line of the delivery end during the lowering and raising incident to the building of stacks, this feature contributing largely to the building of good stacks of straw with a minimum of labor. The use of these longer sections, however, calls for better and more powerful means for manipulating said sections in the necessary lowering and raising thereof as the work of building the stack progresses and in the folding of the same over onto the top of the separator in making ready to transport the machine from place to place and in unfolding and extending it again in making ready for work. It is also important to provide secure and reliable safeguards against accidental escape of the elevating and lowering mechanism from control, so that the long outer swinging carrier-section in question shall be securely held at all points of elevation and guarded from danger of falling at any time, especially as it passes over the pivot in folding or unfolding, at which point the direction of strain on said mechanism suddenly shifts.

Our invention therefore consists in an improved lowering, raising, and folding mechanism for stackers of the class described, designed to secure the advantages and obviate the disadvantages indicated. We have chosen to illustrate it as applied to that form or variety of such straw-stackers known as "Sattley" stackers and shown and described in Letters Patent of the United States No. 618,092, issued January 24, 1899, upon the application of Martin Heinecke, although it

is applicable to other stackers having hinged or pivoted foldable outer sections, as will be readily understood.

Referring to the accompanying drawings, which are made a part hereof and on which similar reference characters indicate similar parts, Figure 1 is a side elevation of so much of a straw-stacker of the variety in question as is necessary to illustrate our said invention, the same being shown in position as when attached to the rear end of a threshing-machine or separator; Fig. 2, a detail view, partly in elevation and partly in section, as seen when looking in the direction indicated by the arrows from the dotted lines 2 2 in Fig. 1; Fig. 3, a view of the spider or bearing-plate at the lower end of our said elevating, lowering, and folding apparatus, on an enlarged scale, with the worm-gear mounted therein; and Fig. 4, a horizontal sectional view as seen when looking downwardly from the dotted line 4 4 in the other figures.

The two sections 10 and 11 of the stacker are, as above stated, shown in position, and said stacker is mounted on the sill 12 of the separator at the bottom and supported from the top portion 13 of said separator by suitable stay-rods 14. Said stacker-sections 10 and 11 are pivotally secured to each other by a suitable pivotal construction, the axis of which is preferably coincident with that of the shaft 15, as hereinafter explained, and the upper section 11 is adapted to swing on said shaft or pivots, and thus be lowered or raised in operation or folded over for transportation, as may be desired. Secured to the side of the inner end of the long outer foldable section 11 is a plate or spider 16, which carries a sprocket-wheel 17, said wheel being in the construction shown in the drawings formed integrally with the plate or spider, and this sprocket-wheel is concentric with the shaft 15. We prefer to have the shaft 15 extend entirely through the machine from side to side, as shown, and have one of these spiders and sprocket-wheels at each end for purposes which will be presently stated. We provide hub-like extensions 18 on the inner sides of the plates or spiders, and these extend through the carrier sides, to which said plates or spiders are attached, and enter bearings 19 in the adjacent portions of the sides of the carrier-sections.

tions 10, thus forming pivot-gudgeons on which the main carrier-section swings. These gudgeons are preferably formed hollow, as shown, (see Fig. 2,) and thus form efficient and substantially dust-proof bearings for the ends of the shaft 15, which carries the drum or roller over which the raddle or carrier-belt runs at this point. The axial lines of the pivots and this shaft are thus coincident, while the shaft is not required to sustain any portion of the weight of the carrier-section, nor is it subjected to any of the pivotal strains. The sides of the straw-carrier section 11 are preferably made of comparatively thin boards, and therefore in order to secure a strong and durable fastening the spider is made quite large and its arms extend out quite a distance and to various points and are there fastened to said sides, as is best shown in Fig. 1, and several bolts and screws are used to secure it in place, so that the long heavy carrier-section 11 may be moved by the means in question without danger of racking or twisting said sides.

At a suitable point on the lower carrier-section 10 we mount another spider 20, which has a central bearing for a shaft 21, which, as in the case of the shaft 15, preferably extends through to the other side of the machine, where there is a corresponding structure 40. This shaft bears a sprocket-wheel 22, and alongside said sprocket-wheel is a screw gear-wheel 23. Bracket-like projections 24 extend out to below the screw gear-wheel 23 and form bearings for a crank-shaft 25, upon which is a worm-gear 26, which engages with the screw gear-wheel 23. There are two of the projecting portions 24, one at each end, and the worm-gear 26 is placed between them, so that the thrust incident to its operation is received by one or the other of said bearings, according to the direction from which the strain comes in operation. The spider 20 (like the spider 16) preferably has several arms extending out to various points on the side of the carrier-section 10 of the straw-stacker in order that it may be secured thereon strongly and firmly. A sprocket-chain 27 is mounted on the sprocket-wheels 17 and 22 and operates to drive the former from the latter, as will be readily understood.

As hereinbefore stated, the shafts 15 and 21 are preferably extended through the machine from side to side and bear corresponding sprocket-wheels upon their opposite ends, and a second sprocket-chain is also provided, connecting said sprocket-wheels at the opposite side of the machine, as is shown in Fig. 2. This arrangement distributes the strain of operation equally upon both sides of the straw-carrier sections, thus enabling the outer section to be raised evenly and squarely without binding or undue strain on the parts.

By means of our bearing-plates we have secured the necessary rigidity and strength, and a sprocket-chain of suitable size possesses advantages over ropes or other connections in

that it is less subject to stretching or distortion than ropes or similar means, and positive non-slipping connection is secured. By means of the screw-gear described, where the worm or driver is mounted between two bearings capable of withstanding the thrust in both directions, we are able to easily apply sufficient power to operate the device, and in the use of such a gear there is no danger of slipping or running back. It is most conveniently located, as in the arrangement shown, the crank-handle 30 extending out under the upwardly-extending stacker-section, where it can be easily reached and in a position where it is not in the way. In operation merely turning the shaft 25 by means of this crank operates the whole winding apparatus with certainty, and there is no point during any one manipulation of the stacker-section by this means where said means needs to be reversed, nor are any clutches or pawls employed as a means of preventing the stacker-section from falling and becoming broken. The danger of accidents and breakage is therefore reduced to a minimum.

It may be said that the structure 16 17 may be easily and quickly removed and replaced by the use of bolts, as shown, so that notwithstanding it is not separable it serves well the purpose of a bearing for the raddle-drum shaft 15.

Having thus fully described our said invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a stacker embodying two carrier-sections one of which is foldable in respect to the other, of a sprocket-wheel rigidly secured to the foldable section, a second sprocket-wheel revolubly mounted on the other section, a chain belt passing over said sprocket-wheels, a worm-wheel mounted to revolve with the revoluble sprocket-wheel, and a worm engaging with said worm-wheel for driving the same.

2. The combination, in a stacker embodying two carrier-sections one of which is foldable in respect to the other, of combined brackets and rigid sprocket-wheels secured to the sides of the lower end of the foldable section and provided with hub-like extensions which enter bearings on the other carrier-section and serve as gudgeons or pivots uniting said sections, a second sprocket-wheel revolubly mounted on the other section, a chain belt passing over said sprocket-wheels, and means for driving the same, whereby the foldable carrier-section may be propelled around said gudgeons or pivots.

3. The combination, in a stacker embodying two carrier-sections one of which is foldable in respect to the other, of combined brackets and rigid sprocket-wheels secured to the sides of the lower end of the foldable section and provided with hollow hub-like extensions which enter bearings on the other carrier-section and serve as gudgeons or pivots uniting said sections and also as bearings for a shaft

of the carrier, a second sprocket-wheel revolvably mounted on the other section, a chain belt passing over said sprocket-wheels, means for driving the same, whereby the foldable carrier-section may be propelled around said gudgeons or pivots, and a carrier-shaft the ends of which are mounted in the bearings formed by the hollow hub-like extensions.

4. The combination, in a stacker embodying two carrier-sections one of which is foldable in respect to the other, a sprocket-wheel rigidly secured to the foldable section concentric with its pivot-axis, a bearing-plate or spider secured to the other carrier-section and provided with a shaft-bearing parallel with the pivot-axis of the foldable section and also with two bracket-arms carrying bearings for a crank-shaft disposed at right angles with the shaft of the first-named shaft-bearing, said shaft, a sprocket-wheel and a worm gear-wheel mounted thereon, said crank-shaft, and a worm mounted thereon and disposed between the bearings on said two bracket-arms in which it is mounted and which serve to receive the thrusting strains in each direction which come against said worm when the direction of such strain shifts as the foldable carrier-section passes the center of gravity.

5. The combination, in a stacker embody-

ing two carrier-sections one of which is foldable in respect to the other, a wheel rigidly secured to the foldable section, a second wheel revolvably mounted on the other section, a flexible non-slipping driving connection between the two wheels, a worm-wheel mounted to revolve with the revoluble wheel, a worm engaging said worm-wheel for driving the same in either direction, and a pair of bearings for receiving the thrust of said worm in opposite directions.

6. The combination, in a stacker embodying two carrier-sections one of which is foldable in respect to the other, a pair of wheels rigidly mounted on opposite sides of the foldable section and each having a hub forming the pivot for said foldable section, a second wheel revolvably mounted on the other section and a flexible non-slipping driving connection between the two wheels.

In witness whereof we have hereunto set our hands and seals, at Indianapolis, Indiana, this 15th day of September, A. D. 1902.

ARTHUR M. HOOD. [L. S.]
CHESTER BRADFORD. [L. S.]

Witnesses:

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