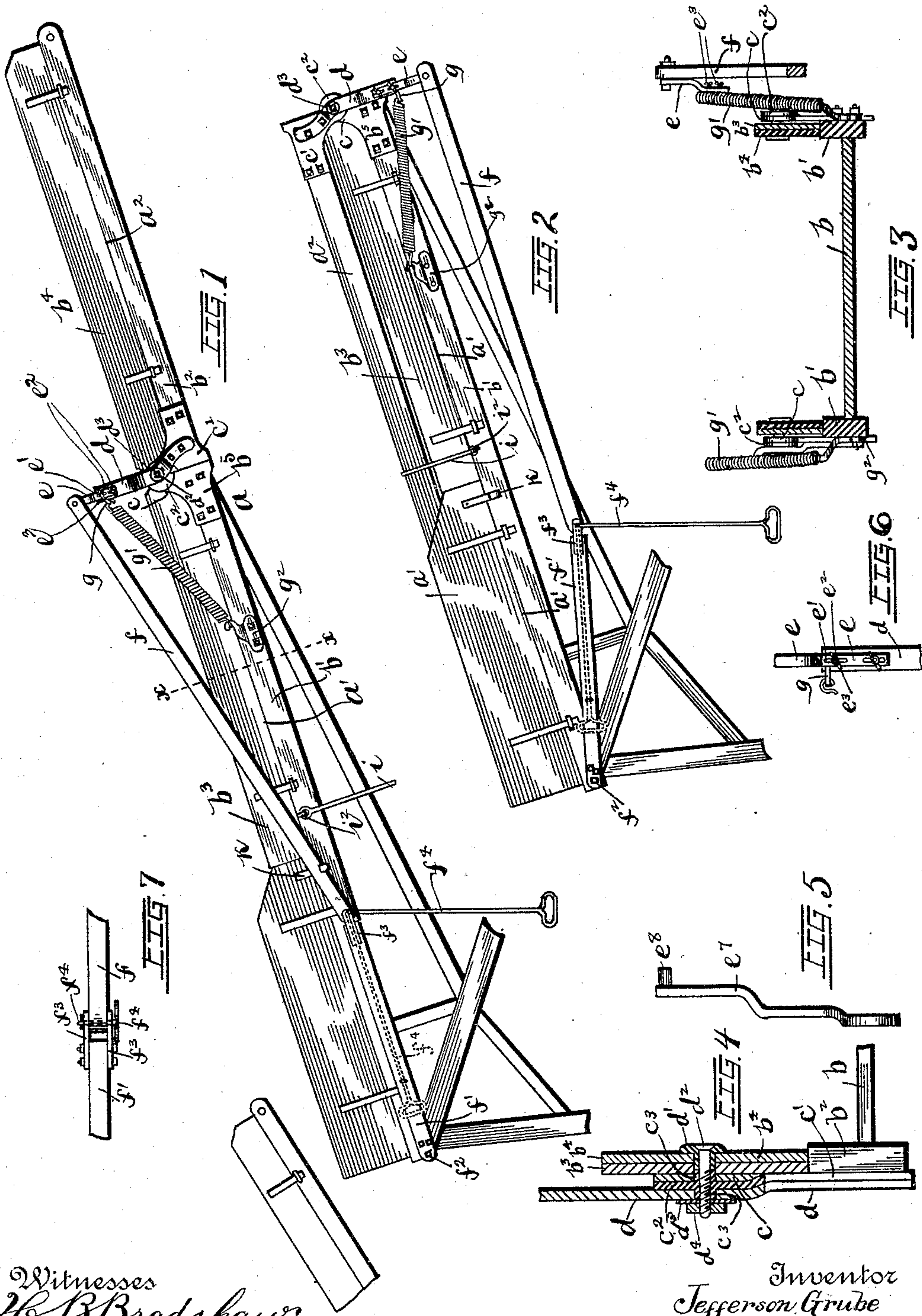


(No Model.)

J. GRUBE.
STRAW STACKER.

No. 474,010.

Patented May 3, 1892.



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STRAW-STACKER.

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To all whom it may concern:

Be it known that I, JEFFERSON GRUBE, a citizen of the United States, residing at Auburn, in the county of De Kalb and State of Indiana, have invented a certain new and useful Improvement in Straw-Stackers, of which the following is a specification.

My invention relates to the improvement of straw-stackers, such as are adapted to be used in connection with clover-hulling or thrashing machines. Said invention has particular relation, however, to the folding and unfolding mechanism of the sections forming said stacker.

The objects of my invention are to provide an improved folding stacker of this class of such construction as to facilitate the folding and unfolding of the stacker-sections; to so construct and arrange the parts thereof as to insure the retention of the outer stacker in its proper position during the stacking operation; to provide simple and convenient means for folding the outer section upon the inner when the sections are extended without the necessity of pulling or moving the machine from the stack, swinging the stacker to one side, or lowering the carrier-frame; to so construct my improved stacker as to permit the folding operation with the side boards in place thereon; to so hinge or join the sections of the carrier as to prevent the binding or undue friction of the parts; to so construct and arrange the parts which will interfere or come into contact with the stack; to provide improved means for locking the rear part of the carrier when unfolded, and to otherwise produce an improved stacker of a construction and arrangement which will be convenient to operate and by the use of which much time and expense will be saved. These objects I accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved stacker, showing the sections of the carrier thereof unfolded and the outer section locked against folding. Fig. 2 is a similar view showing the sections folded. Fig. 3 is a transverse section on line $x x$ of Fig. 1. Fig. 4 is an enlarged sectional view through the hinge-point. Fig. 5 is a view in elevation of a modified form of standard bar or lever employed, as herein-

after described, at the folding-point. Fig. 6 is an enlarged outer side view of one of the standard-bars shown in Fig. 1 of the drawings; and Fig. 7 is an enlarged detail plan view of portions of the operating-bar sections, taken at their joints.

Similar letters refer to similar parts throughout the several views.

a represents my improved stacker, which is constructed, as is usual, of two frame-work carriers or sections $a' a^2$. Each of the sections $a' a^2$ consists of a suitable flooring b , to the longer sides of which are secured upwardly-projecting side frame-pieces $b' b^2$. Supported upon these frame-pieces b' are upwardly-projecting side boards $b^3 b^4$, which at the hinge or joining point overlap each other. To the side of each of the frame-pieces $b' b^2$, adjoining the outer end of the former, is affixed by bolts or otherwise a hinge-plate b^5 , said hinge-plate being provided at its forward or outer end with an upwardly-extending ear c . To the inner end of each side of the section b^3 is affixed, as prescribed for the plate b^5 , a hinge-plate c' , the end of which is provided with an upwardly and rearwardly extending ear c^2 , which corresponds in form with the ear c and which is adapted to overlap the latter. The ear c^2 is provided about a central opening therein with hub-extensions or hollow bosses c^3 , which project from opposite sides of said ear. The inwardly-projecting hub c^3 passes loosely through a central opening in the ear c and projects slightly within a corresponding opening formed in the inner side board b^3 .

d represents standard bars or levers, the corresponding ends of which are affixed to the plates c' , from which they extend upwardly, being bent to pass over the central portions of the ears c^2 . Each of these standards or levers d project beyond the upper or outer edges of the side boards, and is pivotally connected with one of the ears c^2 by having passing therethrough the outer hub c^3 of the ear c^2 .

The overlapping portions of the side boards $b^3 b^4$ on each side of the stacker or carrier frame are, as shown in Fig. 4 of the drawings, pivoted or journaled about the tubular stem of a short pin d' , which meets the inner end of the ear hub or boss c^3 and forms a continu-

ation of the hollow thereof. This tubular pin d' is provided with an enlarged head, which is adapted to bear against the inner side of the side board b^4 . The adjoining parts thus described are connected by a bolt d^2 , which extends through the tubular pin d' , through the hub c^3 , and projects on the outer side of the standard-bar d . The outer end of each of these bolts d^2 has slipped thereon a suitable washer d^3 , which bears against the outer face of the standard d and which serves as a bearing for the inner face of a suitable nut d^4 , which is screwed on the outer end of said bolt d^2 .

One of the standard-bars d is provided, as shown in the drawings, with an upward extension-piece or attachment-bar e . The lower portion of this extension-piece is provided with one or more openings e' , through which are adapted to project the ends of suitable bolts e^2 , which pass through said standards d from the inner side thereof. Upon the projecting ends of these bolts e^2 are suitable nuts e^3 , by means of which said extension-piece e is adapted to be clamped firmly against the bar d .

f represents the rear section of the operating-bar, the rear end of which is adapted to be fulcrumed to the outer end of the extension-piece e . This bar f extends forwardly to a point preferably in front of the center of the length of the front section a' of the stacker or carrier and one side of the framework thereof.

f' represents the front section of the operating-bar, the front end of which is pivoted, as shown at f^2 , to the side frame-pieces b' at the heel of the stacker. The rear end of this operating-bar section f' is provided, as shown, with two rearwardly-projecting plates f^3 , one on each face thereof, between the projecting end of which fits the front end of the bar-section f .

f^4 represents a handle-rod, one end of which is provided with an angular bend, which passes loosely through the projecting portions of the plates f^3 and the forward end of the bar-section f and serves to jointly connect the bar-section f f' .

To a suitable loop or clevis g on the rear side of the standard-bars d , near its outer end, is hooked or otherwise engaged the rear end of a coiled spring g' , the forward end of which is connected with a suitable bracket-hook g^2 , which is secured to the outer side of the side frame-pieces b' at the desired location in front of the hinge-point of the stacker or carrier sections.

i represents a hook, which swings from a staple i^2 in the side of the front section of the stacker-frame.

k represents a hook, which projects from the front section of the stacker on that side thereof on which are located the operating-bars, said hook being at a point in rear of the joint of the two sections of the operating-bar.

The method of operating my improved

stacker is as follows: Assuming that the sections of the stacker or carrier are unfolded or extended and are in alignment with each other, it will be seen that those portions of the hinge-plates b^5 c' which are beneath the ears thereof will abut one against the other. In this position the rear section a^2 of the stacker or carrier is prevented from being folded by tension of the springs upon the forward section, owing to the previous elevation of the front of the bar-section f and the seating of the same within the hook-shaped keeper k . In this position the rear end of the bar-section f' and front end of the section f are so made to abut against each other as to prevent any forward movement of said bar-section f , while the hook k prevents any downward movement thereof. Thus said operating-bar sections provide a substantial brace against the forward movement of the upper portion of the standard d and against the folding movement of the outer section. Supposing that the outer section of the stacker is upon the stack and it being desired to fold said outer stacker-section upon the inner section thereof to the position shown in Fig. 2 of the drawings, the bar f may be lifted from its seat in the hook k and the jointed ends of the operating-bar sections drawn downward by pulling upon the handle-rod f^4 . This movement, in conjunction with the springs g' , will result in the outer stacker or carrier section being turned over upon the inner section. The stacker-sections having thus been folded together, the hook i may be turned upward and made to engage with the then upper side of the outer stacker-section, as shown in Fig. 2 of the drawings, thus locking the sections against unfolding. When the stacker-sections are folded, the disengagement of the hook i and upward pressure upon the rod f^4 will, in conjunction with the springs g' , enable the operator to readily extend or unfold the outer section of the stacker or carrier. During the folding and unfolding movement of the stacker-sections it will be seen that the overlapping side boards will be fulcrumed upon the hollow pin d' and that the hinge-plates b^5 and standard-bars d will be fulcrumed upon the hubs or bosses c^3 of the ear c^2 , thus relieving the hinge or pivot bolt d^2 from frictional contact with the moving parts. It will also be seen that by effecting an inward or outward adjustment of these hinged or fulcrumed parts the meeting of the hollow pin d' and inner hub c^3 and the bearing of the washer d^3 against the outer hub c^3 will serve to prevent any binding of the side boards, ears, or standards, or levers.

The construction herein shown and described admits of the extending and folding of the stacker by means which are in a convenient position for operation and at all times in reach of the operator. By this means any necessity of pulling or drawing the machine or moving the stacker laterally from the stack in order to fold the outer section upon the

inner is obviated. It is evident that the tension of the springs g' may be regulated so as to exert the desired influence in the folding or unfolding movement, said springs greatly adding to the ease of operation. The means herein shown for locking the sections against movement when not desired operate to prevent any tendency of the outer section being folded or partially folded through the influence of strong winds or pressure from the under side thereof.

The manner herein shown and described of hinging the side boards at high points and arranging the same to overlap each other admits of the side boards of one section being folded within the side boards of the other, and thus obviates any necessity of removing said side boards or hinging the same for the purpose of moving the machine from one point to the other. The common method employed of removing the side boards when moving the machine not only results in the loss of a great deal of time, but often results in the loss or displacement of one or more of the side boards, thus greatly delaying operation and increasing expenses.

As shown in Fig. 5 of the drawings, I may substitute for one of the standards or levers d and its extension-piece e the standard indicated at e^7 , the pin e^8 , which projects from the outer end thereof, being designed to form a pivot for the outer end of the operating-bar section f .

From the construction herein shown and described it will be seen that my improved stacker may be produced at a reasonable cost of manufacture and that much labor and expense can be saved by its use.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a stacker for clover-hulling or thrashing machines, the combination, with the jointed stacker-sections $a' a^2$ and standard bars or levers d , fulcrumed at the hinge-point of said sections and rising therefrom, of springs g' , affixed to the outer ends of said standard-bars and to the sides of the forward stacker-section, substantially as and for the purpose specified.

2. In a stacker for clover-hulling or thrashing machines, the combination, with the jointed sections $a' a^2$ and standard bars or levers d , connecting with the rear section and rising from the hinge-point of said sections, of the jointed locking and operating bar sections $f f'$, the latter being fulcrumed to the front section and the former to one of the standard-bars, substantially as and for the purpose specified.

3. In a stacker for clover-hulling or thrashing machines, the combination, with the jointed sections $a' a^2$ and standard-bar d , connecting with the rear section and rising from the hinge-point of said section, of the locking and operating bar sections $f f'$, the latter fulcrumed to the front stacker-section and the

former to one of the bars d , and a handle-rod f^4 , one end of which jointedly connects said operating-bar sections, substantially as and for the purpose specified.

4. In a stacker for clover-hulling or thrashing machines, the combination, with the jointed sections $a' a^2$ and standard-bars d , connected with the rear section and rising from the hinge-point of said sections, of springs g' , affixed to the outer end portions of said standard-bars and to the sides of the front stacker-section, and jointed locking and operating bar sections $f f'$, one of said operating-bar sections being fulcrumed to one of the standard-bars d and the remaining section thereof fulcrumed to the front stacker-section, substantially as and for the purpose specified.

5. In a stacker for clover-hulling and thrashing machines, the combination of the jointed sections $a' a^2$, and standard bars or levers d , connected with the rear section and rising from the hinge-point of said sections, springs g' , connecting the outer ends of said standard bars or levers and the sides of the front stacker-section, locking and operating bar sections $f f'$, the former fulcrumed to one of the bars d or an extension thereof and the latter fulcrumed to the front stacker-section, a handle-rod f^4 , one end of which jointedly connects said operating-bar sections, and a hook-shaped lever k , projecting from the side of the front stacker-section and adapted to form a locking-rest, as described, for the operating-bar, substantially as and for the purpose specified.

6. In a stacker for clover-hulling or thrashing machines, the combination of the sections $a' a^2$, hinge-plates $b^5 c'$ on said sections, said plates $b^5 c'$ jointedly connected at points above the side frame-pieces of said sections, and side boards $b^3 b^4$, attached to each of said stacker-sections, said side boards having overlapping ends, substantially as and for the purpose specified.

7. In a stacker for clover-hulling or thrashing machines, the combination, with the stacker-sections $a' a^2$, hinge-plates $b^5 c'$, affixed thereto, standards or levers d , rising from said hinge-plate c' , springs g' , connecting the outer end portions of said standards and the side of the front stacker-section, overlapping ears $c c^2$, formed with said hinge-plates, hubs c^3 , projecting from said ears c^2 , upon which said standard bars or levers and ears c are fulcrumed, and the hinge-bolts d^2 , passing through said hubs, and nuts on the outer ends thereof adapted to be clamped against the standards d or a washer d^3 , substantially as and for the purpose specified.

8. In a stacker for clover-hulling or thrashing machines, the combination, with the stacker-sections $a' a^2$, hinge-plates $b^5 c'$, secured thereto, ears $c c^2$, formed with said hinge-plates, standards d , rising from said hinge-plates c' , side boards $b^3 b^4$, supported, as described, on said stacker-sections and hav-

ing overlapping ends, hubs c^3 on said ears c^2 ,
hollow pins d' , having enlarged heads, the
stem ends of said pins forming inward con-
tinuations of the inner hub c^3 , the standards
5 or levers d and ears c fulcrumed on said hub-
pins, bolts c^2 , passing through said hollow pins
and nuts, and nuts on the outer ends of said

bolts adapted to be turned against the outer
sides of the standards d or intervening washer
 d^3 , substantially as and for purpose specified.
JEFFERSON GRUBE.

In presence of—
C. C. SHEPHERD,
BARTON GRIFFITH.