

(No Model.)

2 Sheets—Sheet 1.

G. C. FLAGG & E. T. GUYMON.

GRAIN ELEVATOR.

No. 495,698.

Patented Apr. 18, 1893.

FIG. 1.

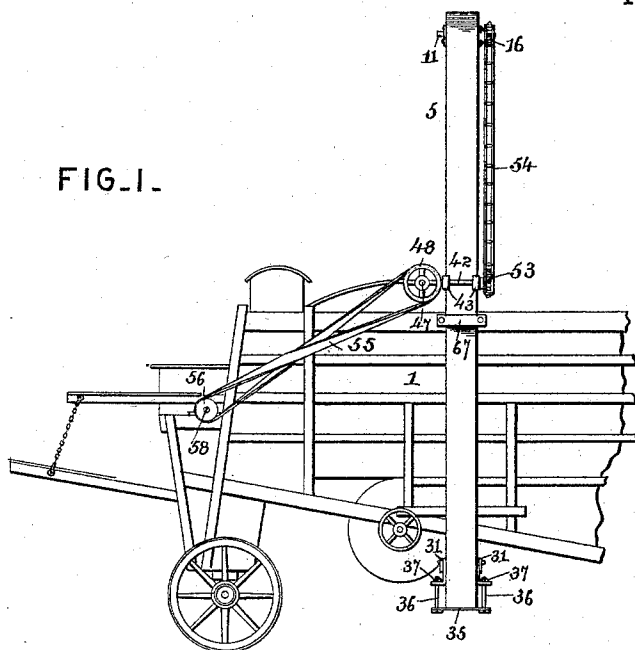


FIG. 5.

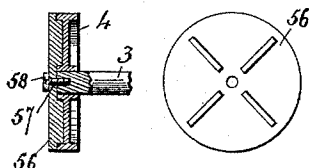


FIG. 6.

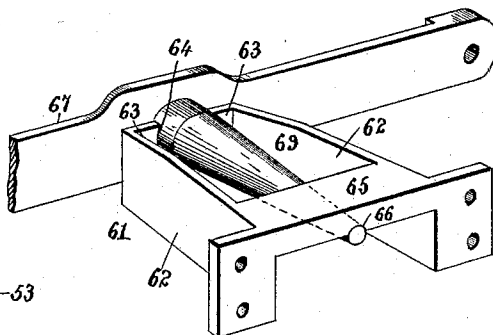
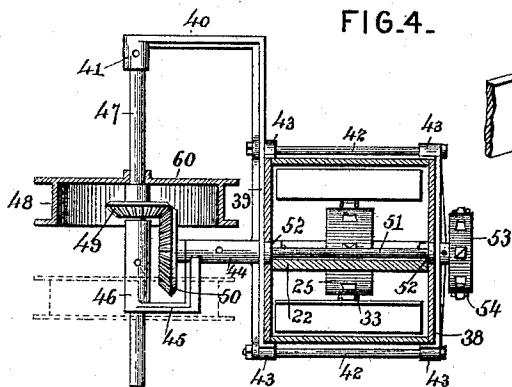


FIG. 4.



Witnesses

Jas. H. McArthur
C. E. S. S. S.

By their Attorneys,

C. A. Snow & Co.

Inventors

G. C. Flagg
E. T. Guymon

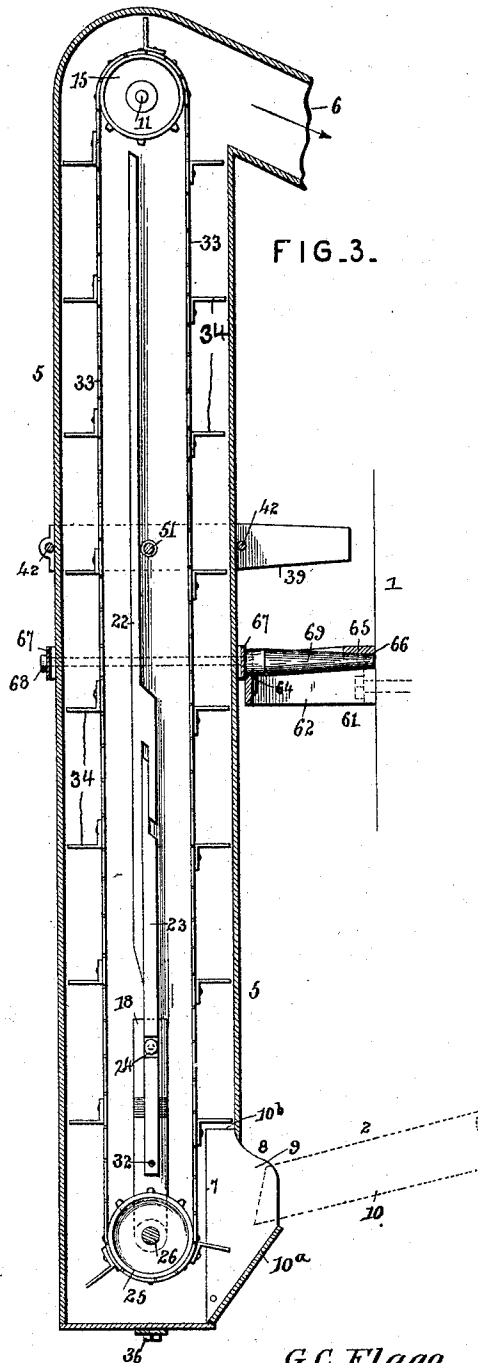
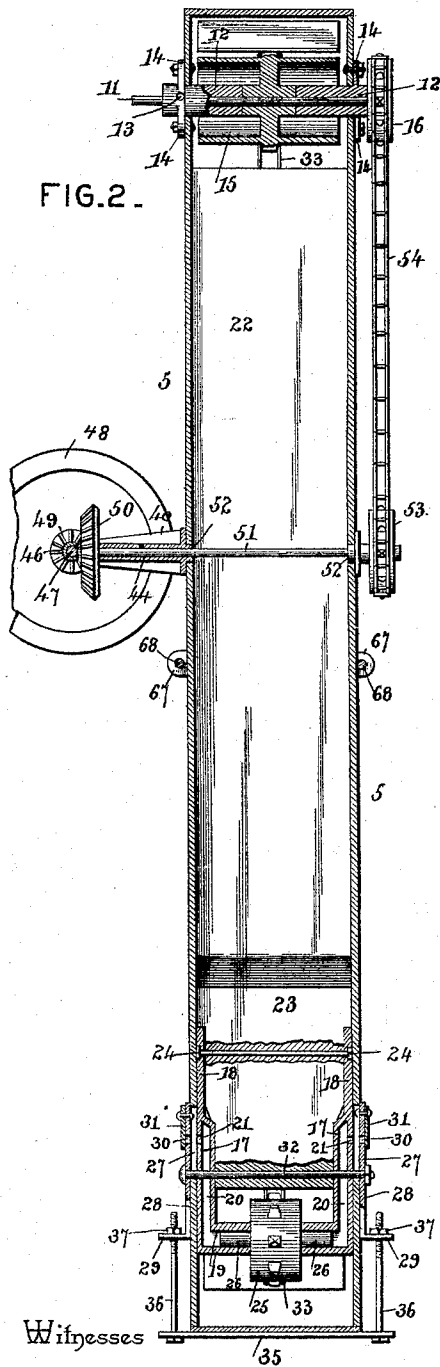
(No Model.)

2 Sheets—Sheet 2.

G. C. FLAGG & E. T. GUYMON.
GRAIN ELEVATOR.

No. 495,698.

Patented Apr. 18, 1893.



Witnesses

Jas. K. McArthur
D. E. Deffe

By their Attorneys,

C. A. Snow & Co.

Inventors

G. C. Flagg
E. T. Guymon

UNITED STATES PATENT OFFICE.

GEORGE CORNER FLAGG AND EDWARD T. GUYMON, OF LEWISTOWN,
ILLINOIS.

GRAIN-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 495,698, dated April 18, 1893.

Application filed August 16, 1892. Serial No. 443,260. (No model.)

To all whom it may concern:

Be it known that we, GEORGE CORNER FLAGG and EDWARD T. GUYMON, citizens of the United States, residing at Lewistown, in the county of Fulton and State of Illinois, have invented a new and useful Grain-Elevator, of which the following is a specification.

Our invention relates to an elevator attachment for thrashing machines, the objects in view being to provide a cheap and durable elevator mechanism adapted to be applied to the discharge of a thrashing machine, to be conveniently carried thereby in a compact position when not in use, to be driven from the cylinder shaft of the machine, and to provide for an easy oiling of the parts and adjustment of the elevator belt.

Various other objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings: Figure 1 is a side view of the elevator, and shows a portion of the adjacent end of the separator to which the elevator is attached. Fig. 2 is a vertical sectional view of the same. Fig. 3 is a similar view at right angles to Fig. 2. Fig. 4 is a plan view of the operating mechanism showing the casing or box in transverse section. Fig. 5 is a face view and section of the main-cylinder pulley and bracing disk. Fig. 6 is a detail perspective view of the pivoting mechanism for the elevator.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 designates the rear portion of a thrashing machine, 2 the shaker or discharge spout, 3 the cylinder-shaft, and 4 a pulley which we apply to the end of the shaft where practicable. If in case the shaft should terminate in bearings and not provide for an application of the pulley, the pulley may be applied to some other rotatable driving-shaft of the machine, though we prefer the cylinder-shaft for this purpose, inasmuch as the remaining shafts are usually proportioned together with the belts, so as to adapt them to withstand simply the strain to which they are ordinarily subjected.

5 designates an elevator casing or box, and

the same is provided at its upper end with an inclined discharge 6, adapted to deliver grain therefrom upon the scales or weighing mechanism, which is preferably located at the center of the rear end of the separator.

At the lower end of the box or casing, in an opening, 7, is mounted the hopper 8, having side-walls 9 which extend above the plane of the lower end of the spout 10 of the separator, and an outer wall 10^a which is inclined (when the hopper is in its operative position) and terminates slightly below the plane of the lower end of said spout, whereby the hopper may be withdrawn from beneath the spout, when desired, by swinging it to the rear. The hopper is pivoted at its bottom to the sides of the casing or box and is held from opening or projecting beyond a certain point by stops 10^b, which engage the top of the opening 7.

When the elevator casing or box is arranged for transportation it is turned to a horizontal position, and in order to enable it to be arranged readily and quickly in this position we have provided the following means for mounting the casing upon the separator frame.

61 represents a bracket, which is bolted to the separator frame, and is provided with convergent sides 62, end-piece 63 provided with a bearing 64, and a cross-bar 65 provided in its under side with a groove 66.

Clip-plates 67 are arranged respectively in contact with the front and rear sides of the casing or box at any convenient intermediate point, as shown, and are held in place by bolts 68. One of these clip-plates bears a pivot-pin 69, which is adapted to rest in bearing 64 and engage at its free end under cross-bar 65 in the groove 66. To apply the casing or box to the separator, the former is inclined toward the separator and the pivot-pin inserted in the bracket.

When it is desired to turn the elevator to a horizontal position for transportation, the lower end thereof is swung outward, slightly, to enable the hopper to be closed or folded into the casing or box, the object of thus closing or folding the hopper being to prevent its interference, while turning the elevator upon its pivot, with any projecting parts of the separator.

Journalled in the opposite walls of the casing is a transverse shaft 11, for the reception of which cast-metal boxes are provided. These boxes consist of a central bored body-portion 12, provided with an internal oil-groove 13, and, near their middles, have securing flanges 14, cast integral therewith. The inner ends of the bored body-portions 12 extend through opposite openings formed in the elevator side walls, and the perforated flanges or securing plates lie on the outside of the elevator casing and are bolted to position. Upon the shaft 11, between the inner ends of the said boxes, a cylinder 15 is journalled, the hub of the cylinder being located upon the shaft 11 and fitting between the two boxes, while the periphery of the cylinder being greater in length than the hub extends over the inner ends of the boxes close to the side walls of the elevator casing. This cylinder is provided, at its center, with an external annular series of sprocket-teeth. The shaft 11 projects beyond the boxes at opposite sides of the elevator casing, and is adapted at either end to receive a sprocket-wheel 16, driven in a manner hereinafter described and serving as the means for giving movement to the elevator mechanism.

A pair of cast-metal L-shaped bearing-hangers are located at the inner sides, near the lower ends of the side walls of the elevator casing, and said hangers consist of an upper hollow arm or leg 17; above the same is a metal strap-portion 18, and at its lower end in a bearing-portion 19, which extends inwardly, is provided with an internal oil-groove 20, which communicates with the hollow arm 17. The arm 17 is provided at its back with a perforation or oil-port 21.

22 and 23 designate the upper and lower sections, respectively, of a vertical transverse partition located in the elevator casing, said sections being slidably connected or spliced loosely by the bifurcating of the lower end of the upper section and introduction therein of the upper end of the lower section, so that, as will be obvious, the partition may be lengthened or shortened. The lower end of the partition is reduced to fit between the metal straps 18, and a bolt 24 passes through each of the straps and through said lower end.

25 designates a sprocket-wheel, having opposite axial stub-shafts 26, whose ends take into the bearing-portions 19 of the cast-metal hangers. The opposite side-walls of the elevator casing are longitudinally slotted, at 27, and, upon the outer side of each side wall, an L-shaped metal strap 28, terminating at their lower ends in outwardly disposed or bent feet 29, which are perforated. The slots 27 occur opposite the perforations in the backs of the hollow arms 17, and the metal plates 28, opposite said perforations, are provided with oil-holes 30, normally covered by a pivoted closure 31, with which each of the straps is provided. A transverse bolt 32 extends through the two straps, the hollow arms, and

the lower end of the partition sections, so that these parts all move together as the bolt 32 moves in the slots 27 of the elevator casing. An endless chain 33 passes over the upper and lower sprockets, and said chain is provided with a series of flights 34. A transverse bar 35 is located at the lower end of the elevator, the extremities of the bar projecting beyond the sides of the elevator, where they are perforated, and adjusting-bolts 36 are passed upwardly through the perforations of the bar and the outwardly-bent feet 29, of the straps 28, and above the latter are provided with nuts 37. It will be obvious that by manipulating these nuts upon the aforesaid bolts 36, the straps will be raised and lowered and being connected by the bolt 32 with the cast-iron hangers in which is journalled the lower sprocket, said lower sprocket and the lower partition section will be raised or lowered, and with them the endless chain or belt will be loosened or tightened.

It will thus be seen that the adjustment of the belt is rendered easy and may be accomplished with facility, and furthermore, that the boxes at the upper end of the elevator casing, and those at the lower end thereof, may be oiled from the outside.

Just above the hinge-point the elevator box is embraced by a pair of transverse metal bars, designated as 38 and 39, the latter being longer than the former and provided with a branch arm 40, arranged at a right angle to its main body-portion, and terminating at its outer end in a "step-box" or socket 41. The bars 38 and 39 embrace the elevator casing and extend beyond the sides of the same, where they are perforated and connected by a pair of tie-bolts 42. The bars are also provided with inwardly-turned flanges, whereby they become more securely fixed upon the casing, said flanges being indicated at 43. The bar 39, between its ends, is provided with an outwardly-disposed bored stud 44, and the stud, at one side, is provided with a U-shaped arm or extension 45, the outer end of which is bored to form a bearing 46, which is in longitudinal alignment with the bearing 41. A counter-shaft 47 is journalled loosely in the bearings 41 and 46, and is provided with a small pulley 48. A beveled gear 49 is likewise mounted on the shaft 47, and it engages and drives a bevel-gear 50, which is mounted on the outer end of a shaft 51, one end of which is journalled in the bearing-stud 44, and the opposite end of which is journalled in the bearing-opening 52, with which the bar 38 is provided. That end of the shaft 51 which extends beyond the bearing 52, carries a sprocket-wheel 53, and an endless chain 54 passes over said sprocket-wheel and over the sprocket-wheel 16 upon the shaft 11, whereby motion is communicated to the shaft 11. The pulley 48 derives its motion through the medium of a belt 55, which connects the same with the before-mentioned pulley described as being preferably mounted upon the cylinder-

shaft. It will be understood that each of the bearings 40, 44, 46, and 53 are provided with internal oil-grooves which communicate with the exterior by the usual ports.

5 From the above it will be seen that the U-shaped extension 45 enables the bearing 46 to be arranged out of the way of the bevel gear 49, and the pulley 48, which is cup-shaped, or hollow at one side, the web 60 being arranged
10 close to one side of the periphery or rim, is adapted to be arranged at any part of the counter-shaft. Thus, it may be arranged close to either side of the stud 44 or close to the arm 40. It may be arranged either upon the
15 main portion of shaft 47 between the bevel-gear and the box 41, as shown in full lines in the drawings, in which case the hollow side thereof will fit over said bevel-gear and allow the rim to be brought close to the stud 44, or
20 it may be arranged upon the extension of the shaft 47, beyond the bearing 46, as shown in dotted lines in Fig. 4, in which case the hollow side is turned in the opposite direction and fits over the U-shaped arm 45.

25 56 designates a cast-metal disk, provided with a central perforation and, upon its inner side, with a series of radial ribs which terminate at their outer ends short of the periphery of the disk. A threaded opening is formed
30 in the end of the cylinder-shaft, as designated at 57, and a screw 58 passed through the perforation in the disk and into the threaded opening formed in the shaft, whereby the disk is drawn snugly against the face of the pulley, located on the cylinder-shaft, and the
35 ribs taking against the inner periphery of the pulley-rim strengthen the latter.

The "step-box" or socket 41 receives the thrust of the counter-shaft and prevents the
40 bevel-gear 49 from being crowded out of engagement with bevel-gear 50.

From the above description it will be obvious, that the mechanism which is located at or near the pivotal point of the elevator casing, and by means of which the power of the belt operated by the shaft of the separator is communicated to the elevator, is so disposed in order to relieve the extremities of the casing of excessive weight and enable the same
50 to be manipulated with facility. Furthermore, by this arrangement of the gearing at or near the pivotal point of the casing, the elevator may be turned to its horizontal position without removing or detaching the belt
55 by which the motion of the shaft of the separator is conveyed to such gearing. It will be noted, furthermore, that the elevator, as herein-described, is detachable from the separator without the removal of any securing devices, inasmuch as the spindle is loosely stepped in the bracket and held in operative position by the weight of the elevator. Furthermore, the
60 hopper is arranged, pivotally, in an opening in the inner side of the casing, or the side toward or adjacent to the separator, whereby our improved elevator may be attached to an ordinary separator having a side discharge,

even if such discharge is through the wheel. Furthermore, by the described arrangement of the hopper, the spout of the separator discharges squarely against the flights of the elevator, thus enabling the latter to operate more effectively. By arranging the hopper so as to swing or close into an opening in the side of the elevator casing it is held out of the way
70 when turning the casing from one position to the other, and furthermore, if the spout of the separator extends well thereinto, the hopper may be disengaged therefrom without tipping the casing.
75

Having described our invention, what we claim is—

1. The combination with a thrashing machine, a shaft thereof and its discharge spout, of an elevator, the casing of which is pivotally
80 mounted upon the thrashing machine and is provided at one end in its inner side, or side adjacent to said thrashing machine, with an opening, a hopper pivotally mounted in said opening and capable of being extended to its
85 operative position or folded within the opening, elevating mechanism, and means for communicating motion from the shaft of the machine to the elevating mechanism, substantially as specified.
90

2. The combination with a thrashing machine, a shaft thereof and its discharge spout, of an elevator, the casing of which is pivotally
95 mounted at a point adjacent to and above its center upon the frame of the machine, gearing arranged at or above the pivotal point of the elevator casing and connected by belting to the elevator, a belt connecting said gearing to the shaft of the machine, and a hopper pivotally mounted in an opening at the lower end
100 of the elevator, such opening being in the side of the elevator casing adjacent to the machine, substantially as specified.
105

3. In a grain elevator, the combination with the casing, the upper transverse shaft, and a
110 sprocket-wheel thereon, of a lower transverse shaft, a sprocket-wheel thereon, an intermediate transverse partition consisting of two overlapping sections, the upper section being stationary and the lower section connected to and movable with the lower transverse shaft,
115 an elevator chain having flights connecting the two sprockets, and means for raising and lowering the lower shaft, substantially as specified.
120

4. In a grain elevator, the combination with the casing provided at its lower ends with slots, a pair of L-shaped hangers mounted for movement within and near the lower end of the casing, bolts passing through the hangers
125 and into the slots of the casing, of a sprocket-wheel supported by the hangers, an upper transverse shaft with a sprocket-wheel thereon, an endless belt carrying flights connecting the sprocket-wheels, and means for raising and lowering the lower hangers in the
130 slots, substantially as specified.

5. In a grain elevator, the combination with the casing provided at its lower ends with

the slots and below the same with a transverse bar having perforations and extending beyond the sides of the casing, the upper sprocket-wheel, the shaft for the same, the lower L-shaped hangers comprising the upper perforated straps, the central hollow arms, the backs of which are provided with ports communicating with the slots, and the lower ends of which form lateral bearings having oil-grooves communicating with the arms, the lower sprocket-wheels supported in the bearings, of the external L-shaped plates connected with the L-shaped hangers and provided with perforations opposite the oil-ports of the hangers, the adjusting bolts passed through the perforations of the transverse bar at the lower end of the casing, and through the perforations of the L-shaped straps, and nuts mounted upon the bolts, substantially as specified.

6. The combination with the elevator casing, the elevator mechanism mounted therein and comprising at its upper end a transverse shaft having a sprocket-wheel, of the opposite side-bars 38 and 39 embracing the casing, the latter bar being extended to form the arm 40, terminating in the bearing 41, and also provided with the bearing-stud 44, located opposite a bearing-opening 53, formed in the side-bar 38, the tie-rods 42, the bearing-arm 45 extending from the stud 44, and having the bearing 46 in longitudinal alignment with the bearing 41, the shaft 47 mounted in the bearings 41 and 46, the pulley mounted on the shaft and adapted to be connected with any of the moving parts of a thrashing machine, a miter-gear mounted on said shaft, a transverse shaft mounted in the bearings 34 and 53, a miter-gear 50 mounted on the end of the shaft and engaging the gear 49, the sprocket-wheel 53 on the opposite end of the shaft 51, and the endless chain 54 connecting the same with the sprocket-wheel of the transverse shaft of the elevating mechanism, substantially as specified.

7. In a grain elevator, the combination with the casing, and a lower supported sprocket-wheel, of opposite cast-metal boxes mounted in the sides and at the upper end of the cas-

ing, said boxes having inwardly-extending bored body-portions and annular securing plates formed integral with the body-portion between the ends of the latter, said plates being secured to the external surfaces of the side walls of the casing and the body-portion inwardly-extending through said side walls, the cylinder approximating the width of the casing and extending beyond the inner ends of the bearing-boxes, said cylinder being provided with peripheral sprocket-teeth and with a hub fitting between the ends of the boxes, a sprocket-chain passed over the cylinder and the lower sprocket-wheel, and flights mounted on the chain, substantially as specified.

8. In combination with a separator-frame, and an elevator casing or box, the bracket secured to the separator-frame and having a bearing 64, and cross-bar 65, and the clip-plates secured to the elevator casing or box, one of which is provided with a pivot-pin to engage said bearing and cross-bar, substantially as specified.

9. In combination with an elevator casing or box, the pivot-pin carried thereby, and a bearing-bracket attached to a separator-frame and having a notch-bearing at its outer end and a grooved bar to engage the free end of the pivot-pin, substantially as specified.

10. The combination with a separator frame, of a bracket attached thereto and having parallel bars provided, respectively, with upper and lower bearings, and an elevator having a casing provided with a fixed pivotal pin stepped in such bracket with its inner and outer ends engaged, respectively, in said bearings, whereby the elevator may be detached from the separator frame, substantially as specified.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

GEORGE CORNER FLAGG.
EDWARD T. GUYMON.

Witnesses:

AARON E. SCOTT,
EDWARD C. MILES.