(No Model.)

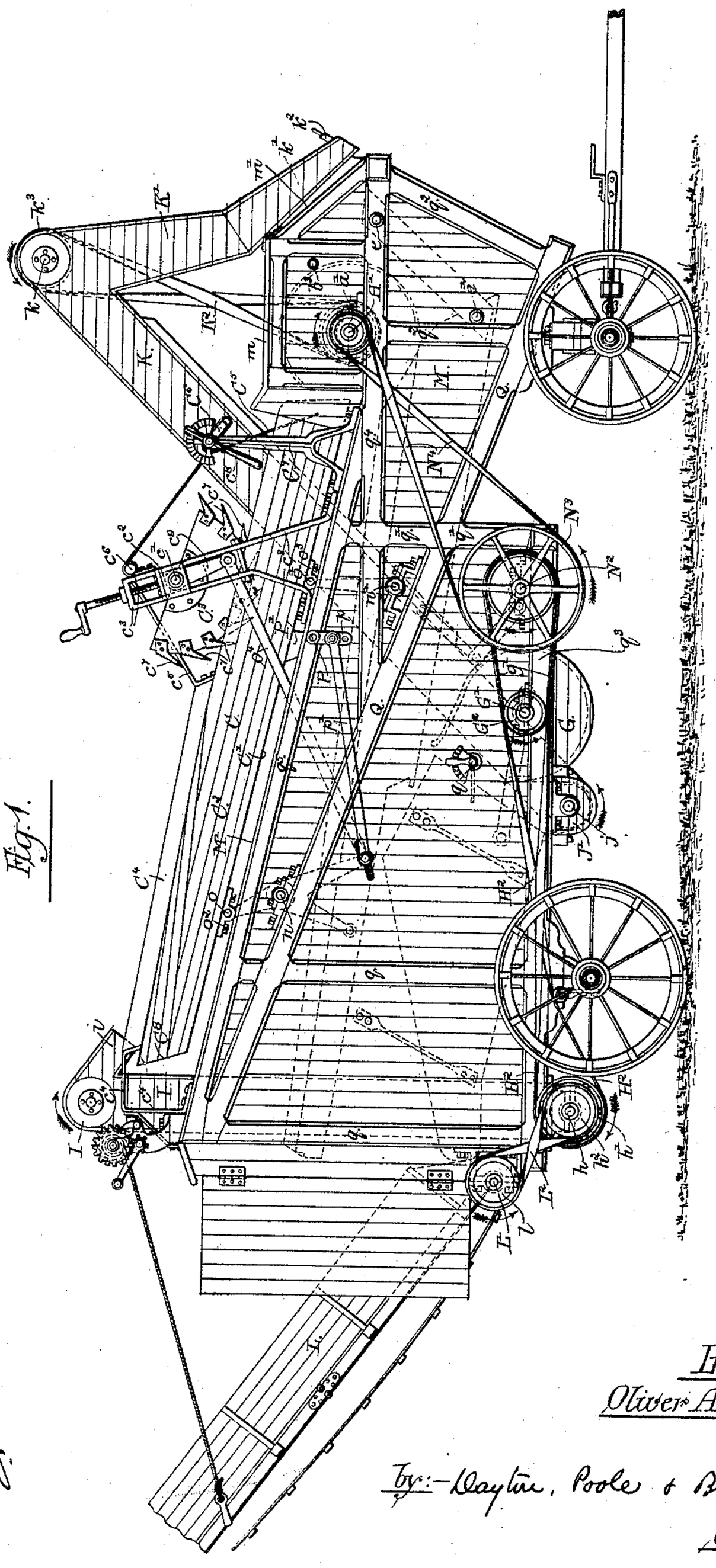
3 Sheets—Sheet 1.

O. ANDERSON.

THRASHING MACHINE.

No. 482,494. Patented Sept. 13, 1892.

Fig. 1.



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(No Model.)

3 Sheets—Sheet 2.

O. ANDERSON.

THRASHING MACHINE.

No. 482,494. Patented Sept. 13, 1892.

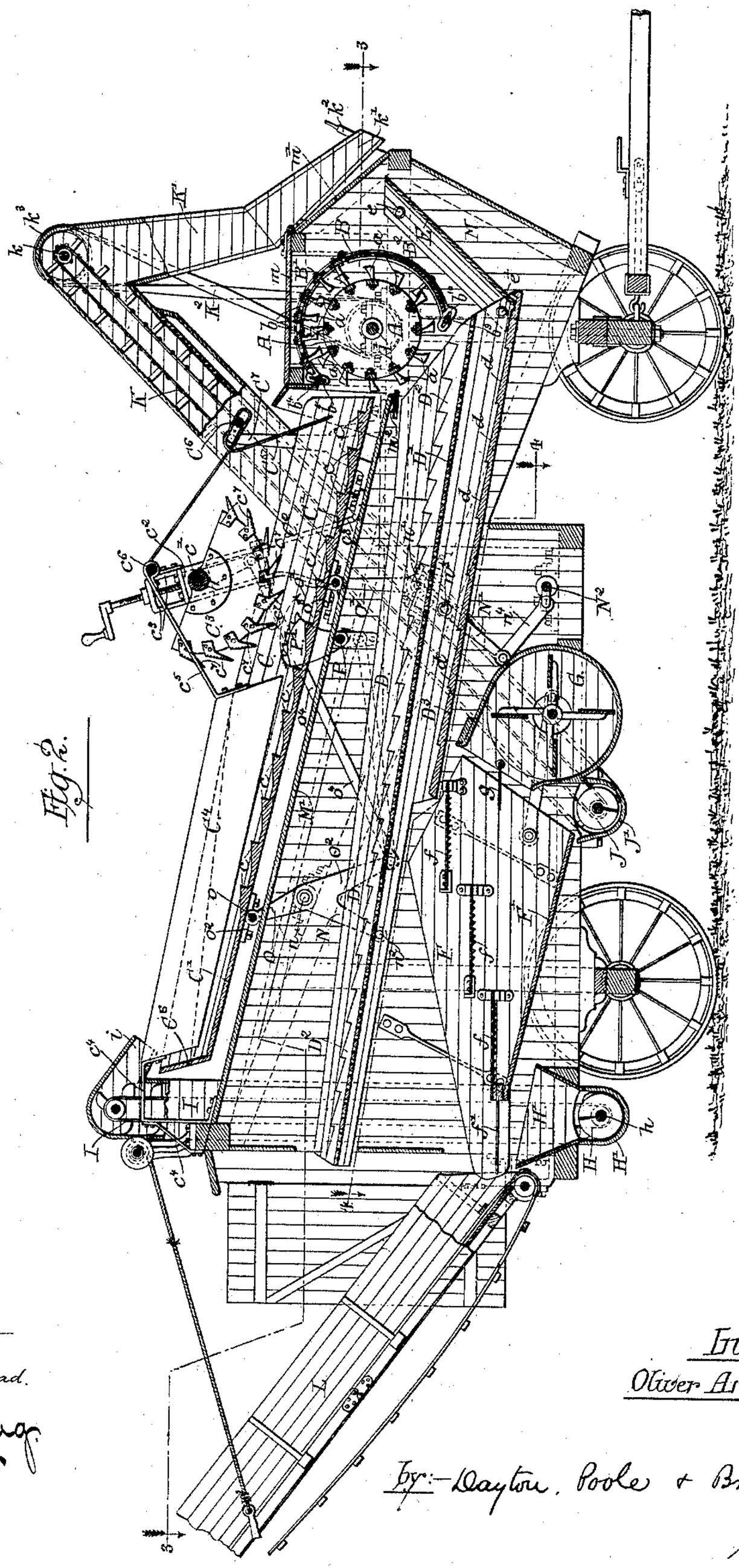

Fig. 2.

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(No Model.) 3 Sheets—Sheet 3.

O. ANDERSON.

THRASHING MACHINE.

No. 482,494. Patented Sept. 13, 1892.

Fig. 3.

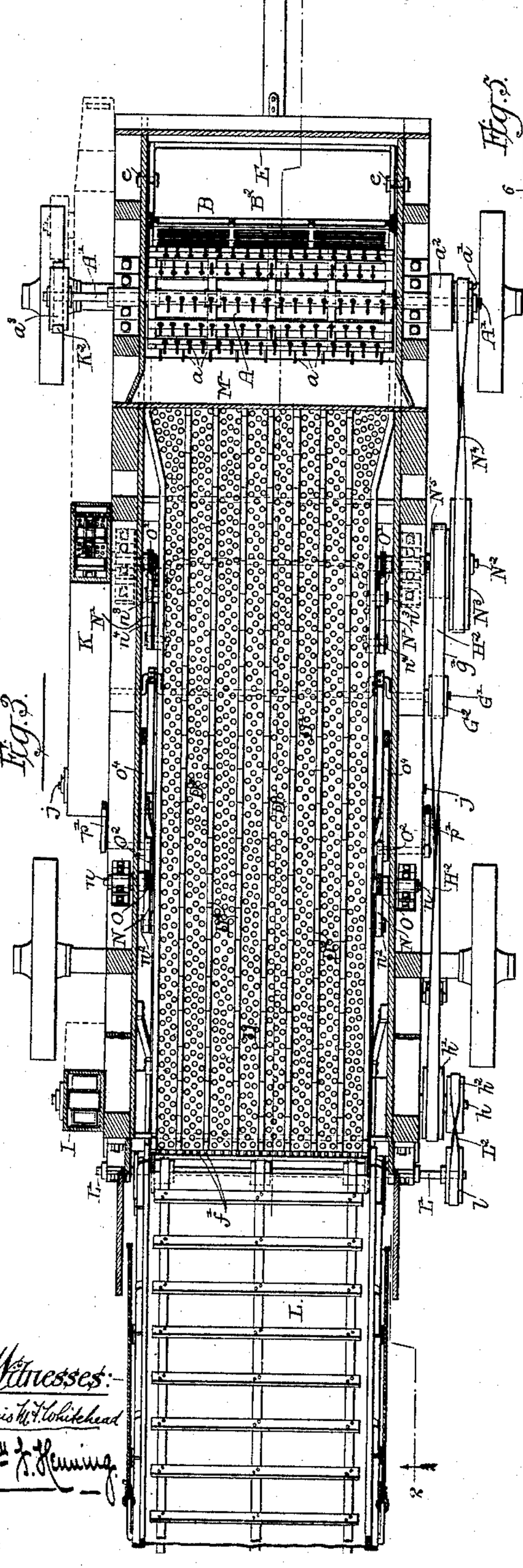


Fig. 5.

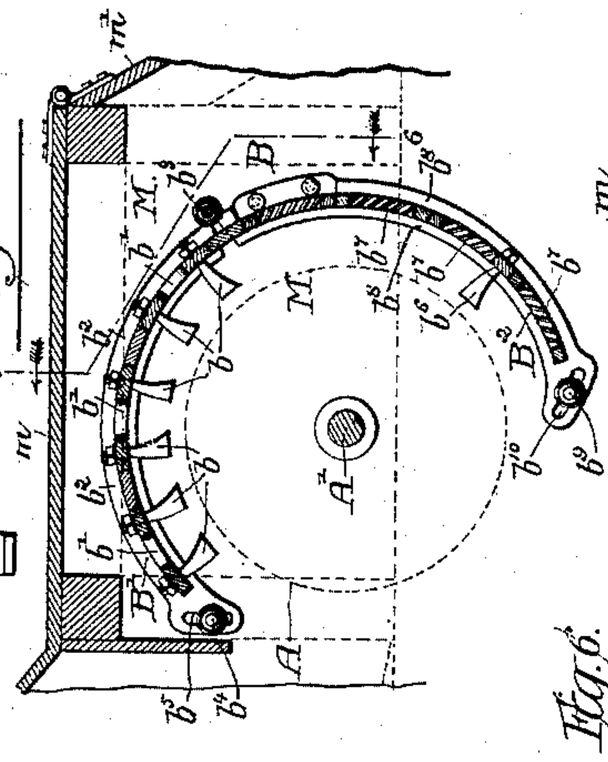


Fig. 6.

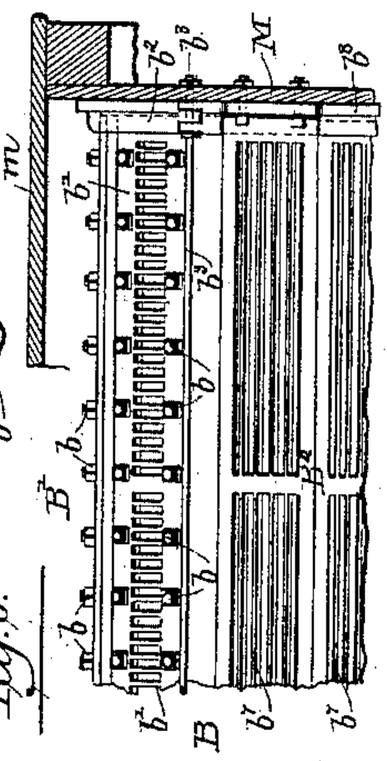
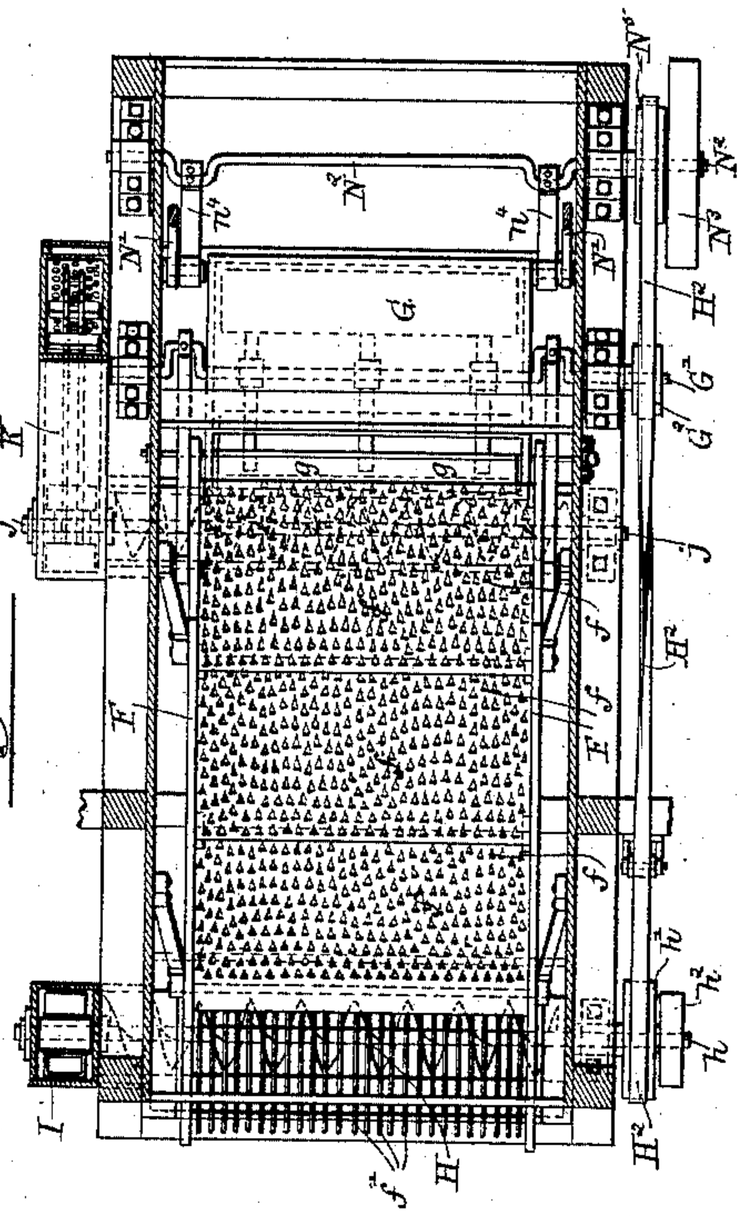


Fig. 4.



Witnesses:-
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Wm. F. Fleming.

Inventor:-
Oliver Anderson.-

By:- Dayton, Poole & Brown
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UNITED STATES PATENT OFFICE.

OLIVER ANDERSON, OF RACINE, WISCONSIN, ASSIGNOR OF ONE-HALF TO HENRY F. HERRICK, OF SAME PLACE.

THRASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 482,494, dated September 13, 1892.

Application filed April 17, 1890. Serial No. 348,361. (No model.)

To all whom it may concern.

Be it known that I, OLIVER ANDERSON, of Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Thrashing-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to an improvement in thrashing-machines, and more especially to thrashing-machines which embrace a straw-carrier and bundle-feeder forming part of the same structure with the thrashing-machine.

The invention consists in the matters hereinafter described, and pointed out in the appended claims.

In the accompanying drawings, illustrating my invention, Figure 1 is a side elevation of a thrashing-machine embodying the same. Fig. 2 is a central longitudinal section thereof, taken upon line 2 2 of Fig. 3. Fig. 3 is a plan section taken upon line 3 3 of Fig. 2. Fig. 4 is another plan section taken upon line 4 4 of Fig. 2. Fig. 5 is an enlarged detail section through the concave surrounding the thrashing-cylinder. Fig. 6 is a detail sectional elevation of the concave, taken upon line 6 6 of Fig. 5.

As shown in said drawings, A is a thrashing-cylinder, and B the concave surrounding the same.

C is the bundle-feeder and band-cutter located centrally at the top of the machine and supplying the grain to the upwardly-moving side of the thrashing-cylinder, and D is a straw-carrier located beneath the bundle-feeder with its end adjacent to the lower part of the thrashing-cylinder in position to receive the straw from the latter. The concave B extends from a point adjacent to the discharge end of the bundle-feeder around the thrashing-cylinder to a point near the receiving end of the straw-conveyer, said concave thus covering a greater part of the circumference of the thrashing-cylinder.

E is an inclined board placed beneath the lower part of the concave B and discharging at its lower end upon the straw-conveyer.

F is a vibrating shoe located in the lower part of the machine and provided with screens *f f f*, upon which the grain from the straw-carrier is delivered in the usual manner.

G is an exhaust fan or blower operating in connection with the shoe to clean the grain, said exhaust-fan being provided with a regulating-valve *g* at its exit-opening in a manner heretofore common.

H is a horizontally-arranged spiral conveyer located in a trough H′, which receives the tailings from the several screens *f f f* of the shoe. Said conveyer delivers the tailings to an endless-belt elevator I, which delivers the tailings to a spout *i*, discharging into the bundle-carrier at the receiving end of the latter.

J is a horizontal spiral conveyer operating in a trough J′, which receives the cleaned grain from the sloping bottom F′ of the shoe F. Said conveyer J delivers the grain at one end of the trough to an inclined endless-belt elevator K, which extends upwardly to a point near the front end of the machine and discharges into a hopper K′. Said hopper terminates at its lower end in a spout *k*′, having a valve k^2, through which grain is delivered at the front end of the machine.

L is an auxiliary horizontal straw-carrier of the usual construction attached to the rear end of the machine and adapted to receive the straw from the rear end of the straw-conveyer D and from the screens *f f f* of the shoe, the rearmost of said screens being provided with prongs *f*′, extending over the trough H to carry the straw to said auxiliary straw-carrier in a familiar manner.

The thrashing-cylinder A is of familiar construction, consisting of an open frame provided with teeth *a a a*, the same being mounted on a shaft A′, which is provided with a belt-pulley *a*′, over which is placed the belt which transmits motion to the machine. The concave B, which extends around the greater part of the circumference of the thrashing-cylinder, as hereinbefore described, preferably consists of two parts or sections B′ B^2. The part B′ is located over the thrashing-cylinder, is apertured for the passage of the grain, and contains a series of thrashing-teeth *b b*, which operate in connection with the teeth *a a* on the thrashing-cylinder. Said

concave section B′ preferably consists of a plurality of separate grates b' b', held at their ends in segmental castings b^2 b^2, which castings are adjustably secured to the opposite inner faces of the side walls M M of the machine-housing. As a convenient means of affording such adjustable connection, the segmental plates b^2 b^2 are pivoted at their inner ends to a horizontal pivot-rod b^3, Figs. 5 and 6, and at their ends adjacent to the bundle-feeder are held in place by bolts b^4, passing through curved slots b^5 in said plates, which slots are concentric with the pivotal rod b^3. The section B^2 of the concave is located at the side of the thrashing-cylinder remote from the bundle-feeder and will commonly be made without teeth, but may be provided with one or more rows, if found desirable, the one shown in the drawings having a single row of teeth b^6 located near its lower margin. The section B^2 is perforated or slotted to allow the escape through it of grain thrown outwardly by the action of the thrashing-cylinder, said section consisting, preferably, of a series of separate grates b^7 b^7, which are held at their lower ends in segmental plates b^8 b^8, which are secured to the side walls m of the housing. The slots in the grates b^7 b^7 are preferably inclined or ranged tangentially with reference to the surface of the thrashing-cylinder to facilitate the passage through the grates of the grain thrown outward and downward by the cylinder. The said segmental plates b^8 b^8 are conveniently supported by being pivoted at their upper ends on the pivot-rod b^3, and secured at their lower ends to the side walls of the housings by means of bolts b^9 passing through curved slots b^{10} in the plates, in the same manner as before described in connection with the top section B′ of the concave. By loosening the bolts b^4 b^9 the two parts or sections of the concave may be shifted toward or from the thrashing-cylinder, as may be found necessary or desirable for the perfect operation of the parts.

Grain thrown outwardly through the perforations in the concave is confined by the top and end walls m and m' of the housing, the walls m' preferably being hinged to form a door by which access may be had to the concave and thrashing-cylinder. The grain thus passing through the concave finally falls upon the inclined board E, by which it is delivered to the straw-conveyer. Said conveyer is shaken or reciprocated endwise for the purpose of separating from the straw any grain contained therein, in a manner heretofore common, and the board E is preferably hinged at its upper end to the sides of the housing by means of pivots e e, and at its lower end is pivoted to the said conveyer by means of pivots e' e', so that the lower end of said board E moves with the straw-conveyer as the latter is vibrated. Said straw-carrier is made in a familiar manner with a perforated bottom D′, which extends its entire length and has upon its upper surface longitudinal serrated strips D^2. Below the bottom D′ is placed the receiving-board D^3 to receive the grain which is shaken from the straw resting upon the strips and passes through the perforated bottom, said board D^3 being provided with transverse inclined ridges d d, by means of which the grain is carried rearwardly on the board through the medium of the longitudinal reciprocation of the conveyer. The inclined receiving-board E discharges upon the forward end of the board D^3, and at its rear end said board D^3 terminates over the uppermost screen f of the shoe F.

The straw-carrier is supported and given motion by the means as follows: N N′ are swinging arms, which are pivoted at their upper ends by pivots n n' to the machine-frame and at their lower ends by pivots n^2 n^3 to the sides of the straw-conveyer. Said arms N N′ sustain the weight of the conveyer while enabling the same to be moved or shifted endwise. One of the arms N′ is extended downwardly past the pivot n^3, and at its lower end is connected by means of a pitman n^4 with a crank-shaft N^2, said crank-shaft being located near the lower part of the machine-frame and driven by means of the belt-pulley N^3, over which passes a belt N^4, which is trained over a pulley a' on the cylinder-shaft A′.

Above the straw-conveyer D and beneath the bundle-feeder is located a top wall M′, which is attached to the top edges of the side walls of the housing and serves to confine the straw in its passage over the straw-conveyer. At the end of said top wall M′, adjacent to the thrashing-cylinder, is located an adjustable metal plate m^2, adapted to be shifted toward or from the thrashing-cylinder, said plate serving to separate the outgoing and incoming straw and to deflect the straw downwardly upon the conveyer as it issues from between the thrashing-cylinder and the concave.

The bundle-feeder and band-cutter illustrated is generally similar to that described in a prior application for patent, Serial No. 310,096, filed May 29, 1889, the same consisting in its main features of a longitudinally-reciprocating table C′, having transverse serrations c c on its top surface and vertical side boards C^2 C^2, and which operates in connection with oscillating band-cutters C^3 C^3, supported upon a rock-shaft c', which is sustained over the table in vertically-adjustable bearings c^3, mounted on brackets c^3 c^3, attached to the upper part of the main frame of the machine.

C^4 is a dividing-board arranged longitudinally at the middle of the reciprocating table and sustained immovably from the machine-frame conveniently by means of bars c^4 c^5 at its opposite ends, the bar c^4 being attached to the cross-piece of the main frame at the rear end of the same and the bar c^5 to a horizontal transverse rod c^6, attached at its ends to the brackets c^3. The band-cutters are shown as provided with cutter-plates c^7 c^7, at-

tached to the same in the same manner as shown in said prior application.

C^5 C^5 are feed-regulating rods, which are pivoted on the cross-piece c^6 and are engaged near their free ends with a transverse crank-shaft C^6, the eccentric part of which passes through loops upon said fingers, said crank-shaft being provided with a hand-lever c^8, by which the same may be placed at a desired angle. Said crank-shaft C^6 is herein shown as sustained upon standards C^7 C^7, attached to the upper part of the main frame of the machine. The said feed-regulating fingers operate in the same manner as those shown in said prior application.

The feed-table C′ of the bundle-feeding device is sustained upon arms O O′, which arms are rigidly attached to the arms N N′, by which the grain-conveyer D is supported and actuated. As herein shown, transverse rods *o o′* are attached to the upper ends of the arms O O′, and the table C′ is provided with bearings o^2 o^3, which engage with said rods *o o′*. It follows from this construction that the said reciprocating table of the bundle-feeder is reciprocated by the same mechanism which actuates the grain-conveyer D, the parts being so arranged that the grain-conveyer moves backwardly, while the table C′ moves forwardly during each reciprocation of the parts. This particular construction has the advantage of lessening or preventing the jarring or shaking of the machine, inasmuch as the movement of one part in one direction is opposed to the movement of the other part in the opposite direction.

Vibratory motion is given to the band-cutters C^3 by means of an arm c^9 on the rock-shaft *c′*, which arm is connected by means of a pitman o^4 with an arm O^2, which is rigidly attached to one of the arms O O, which sustain the rear end of the reciprocating table of the bundle-feeder.

The bundle-feeder and band-cutter constructed as above described operates in the same manner as that illustrated in said prior application for patent, the bundles being thrown upon the table C′ and being carried endwise thereon in the reciprocatory motion of the table by the inclined teeth or serrations *c c* thereon, which engage the bundle in their forward movement, but slide under the same as they move backward. Said tables carry the bundles beneath the vibrating band-cutters, by which the band is cut, after which the grain is carried to and discharged from the end of the table, the grain in the machine herein shown passing from the table of the bundle-feeder directly to the thrashing-cylinder.

P is a rock-shaft mounted in the upper part of the thrasher-frame and provided with toothed segments P′ P′, which extend upwardly through longitudinal slots in the table C′ of the bundle-carrier and are arranged beneath and opposite the band-cutters C^3 C^3. The rock-shaft P is actuated to give an oscillatory movement to the toothed segments P′ P′ by means of an arm *p* on the rock-shaft, which is connected by means of a pitman *p′* with the arm O^2, by which the band-cutters are actuated. The oscillating toothed segments P′ P′, arranged and actuated as described, aid the feeding of the bundles by carrying the same forward in their advance movement, and thereby preventing the band-cutters from carrying the upper part of the bundle backward as said band-cutters move rearwardly in their back-stroke. The table C′ of the band-cutter and feeder is inclined downwardly and forwardly toward the thrashing-cylinder to facilitate the feeding of the grain in the same manner as the similar table shown in said prior application is arranged. The spout *i*, by which the tailings elevated by the endless-belt elevator I are discharged, extends over the rear or receiving end of the table C′, so that such tailings are delivered to said table and pass downwardly over the same to be delivered with the straw to the thrashing-cylinder to be again thrashed. In order to properly confine the tailings, the said table C′ is provided with a transverse end board C^8 at its receiving end.

The several conveyers and elevators, as well as the blower G may be actuated by any suitable belt connection from the shaft A′; but as herein shown said parts are actuated as follows: Upon the crank-shaft N^2, which is driven from the shaft A′ by the belt N^4, as hereinbefore described, is placed a pulley N^5, and over said pulley is trained a belt *g′*, which passes over a pulley G^2 on the fan-shaft G′. The shaft *h* of the conveyer H at the rear end of the machine is provided with a belt-pulley *h′*, over which is trained a belt H^2, which also passes over the pulley N^5, above mentioned. The shaft L′ of the auxiliary straw-carrier L is driven by means of a crossed belt L^2, passing over a pulley *l* on said shaft and over another pulley h^2 on the shaft *h*. The shaft *j* of the conveyer J is actuated by means of the chain belt K′ of the grain-elevator K, said belt being actuated from the upper shaft *k* of the elevator, which shaft is driven by means of a pulley k^3, over which is trained a crossed belt K^2, passing over a pulley a^3 on the shaft A′.

As an improved construction in the frame of a thrashing-machine, I provide at each side thereof main longitudinal frame-pieces Q Q, which extend obliquely from the forward axle upwardly and rearwardly to the upper rear corner of the frame, combining with the same suitable uprights *q q q′* q^2 q^2 and longitudinal frame-pieces q^3 q^4 q^5 as are necessary for suitably sustaining the parts of the housing and the operative parts of the machine. The lower longitudinal frame pieces or sills q^3 at the rear part of the machine terminate at some distance from the front axle, where they are connected with an upright *q′*, thereby leaving a space through which the front wheels may pass in turning the machine. By this

construction I am enabled to provide such space by a simple construction in the frame and one which is less expensive than that heretofore employed for this purpose.

The employment of a band-cutter and feeder, combined with a thrashing-cylinder of the machine and arranged as hereinbefore set forth, is of great advantage for several reasons. One advantage is that the entire machine, including the band-cutter and feeder, may be constructed at a cost not materially greater than that required for building a thrashing-machine alone as heretofore made, inasmuch as the band-cutter and feeder are actuated by the same parts which operate the moving parts of the thrasher.

I claim as my invention—

1. In a thrashing-machine, the combination, with a thrashing-cylinder and concave, of a straw-conveyer, a bundle-feeder embracing a reciprocating table, rigidly-connected pivoted arms supporting both the straw-conveyer and the said table, and means for actuating said conveyer and table, substantially as described.

2. In a thrashing-machine, the combination, with a thrashing-cylinder and concave, of a straw-conveyer, a bundle-feeder and band-cutter comprising a reciprocating table and an oscillating band-cutter, rigidly-connected pivoted arms supporting both the straw-conveyer and the said table, means connected with one of said arms and giving vibratory motion thereto, and connections between said band-cutter and one of said arms by which oscillatory motion is given to the band-cutter, substantially as described.

3. In a thrashing-machine, the combination, with a thrashing-cylinder and concave, of a straw-conveyer, a feeder and band-cutter comprising a reciprocating table, oscillating band-cutter, and an oscillating toothed segment opposed to the cutter, rigidly-connected pivoted arms sustaining both the straw-conveyer and the said table, means connecting one of said arms with the oscillating band-cutter for actuating the latter, means connecting said toothed segment with one of said arms for actuating said segment, and means giving vibratory motion to said arms, substantially as described.

4. The combination, with a thrashing-cylinder and a concave extending over the downwardly-movable side of the cylinder, of a straw-conveyer and an inclined board located beneath the concave pivotally connected with the frame of the machine at its upper end and with the straw-conveyer at its lower end and forming a continuation of the straw-conveyer, substantially as described.

5. In a thrashing-machine frame, the combination, with the supporting-wheels and front and rear axles, of inclined longitudinal frame-pieces extending from the front axle upwardly and rearwardly the entire length of the machine, lower longitudinal frame-pieces extending forwardly from the rear axle and terminating in the rear of the front axle, and vertical frame-pieces crossing the inclined frame-pieces at a point at the rear of the front axle and attached to the front ends of the lower longitudinal frame-pieces, forming a space for the forward wheels, substantially as described.

6. In a thrashing-machine, the combination, with a thrashing-cylinder and a concave extending over the downwardly-moving side of the cylinder, of a bundle-feeder delivering the grain to the upwardly-moving side of the cylinder and discharge devices located at the said upwardly-moving side of the cylinder, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

OLIVER ANDERSON.

Witnesses:

J. E. DODGE,

C. L. LUKES.