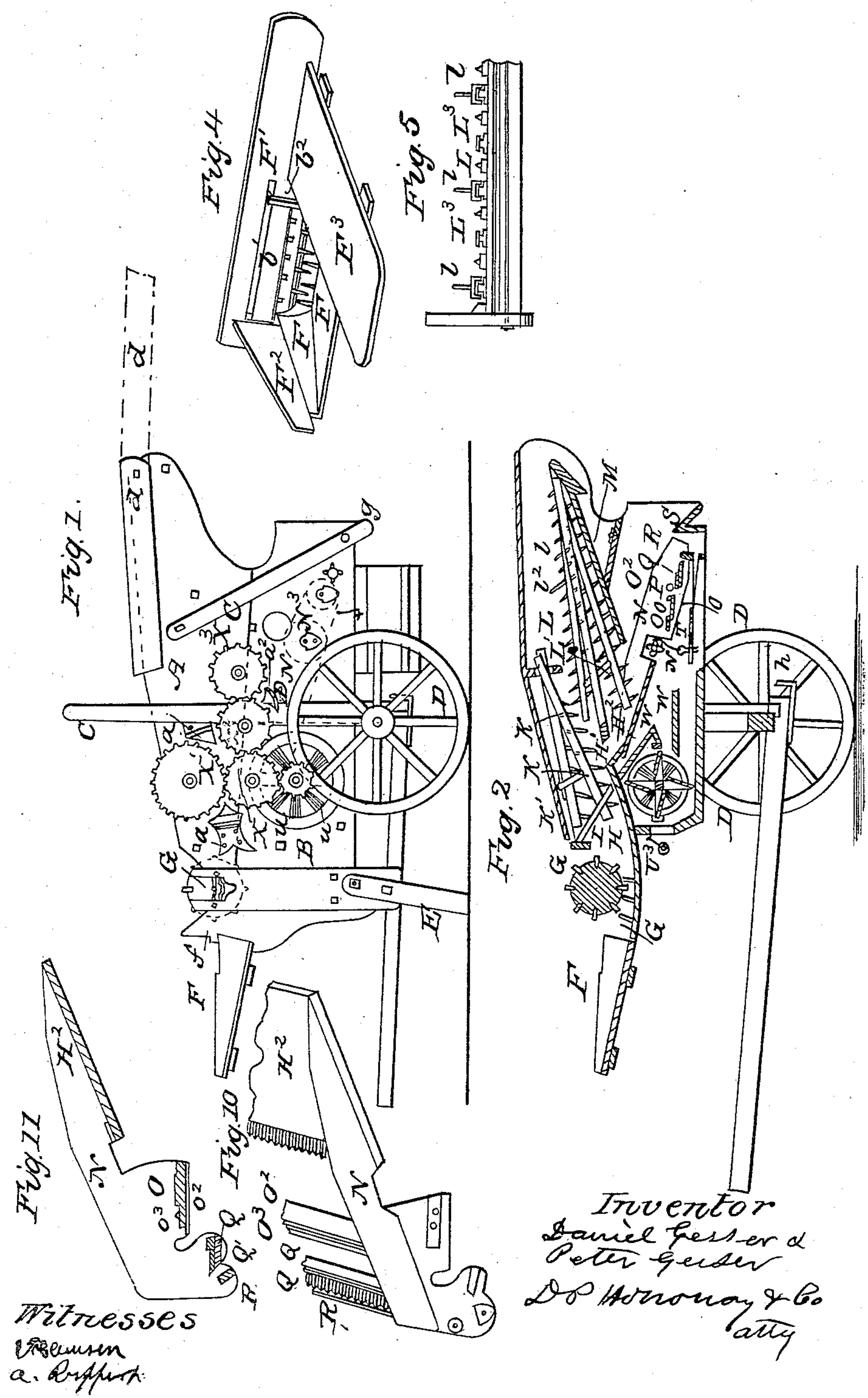


D. & P. GEISER.
Thrashing Machine.

No. 84,105.

Patented Nov. 17, 1868.



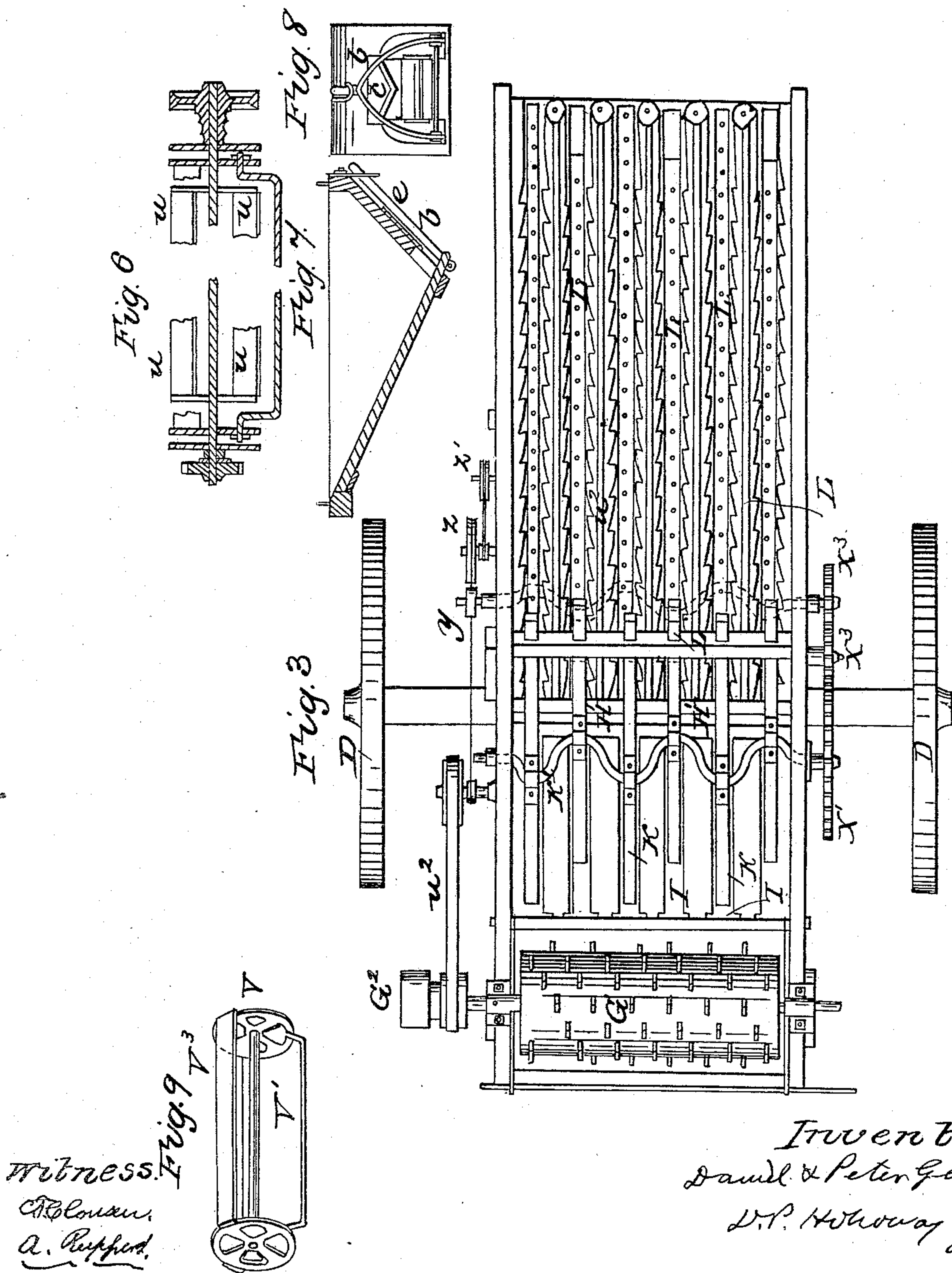
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PETER GEISER AND DANIEL GEISER, OF WAYNESBOROUGH, PENNSYLVANIA.

Letters Patent No. 84,105, dated November 17, 1868.

IMPROVEMENT IN THRESHING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that we, PETER GEISER and DANIEL GEISER, of Waynesborough, in the county of Franklin, and State of Pennsylvania, have invented a new and useful Improvement in Threshing-Machines and Grain-Separators; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a side elevation.

Figure 2 is a vertical longitudinal section.

Figure 3 is a plan.

Figure 4 is a perspective view of the feed-board or apron.

Figure 5 is an end view of the guides of the reciprocating bars.

Figure 6 is a section of the wind-fan.

Figure 7 is a longitudinal section of the grain-board.

Figure 8 is an elevation of the bag-holder.

Figure 9 is a perspective view of the register for regulating the supply of air to the fan.

Figure 10 is a perspective view of the shoe.

Figure 11 is a section of the same.

The same letters are used in all the figures to indicate identical parts.

Our improvements relate to machines for threshing and separating grain, and their nature will be made apparent in the following specification and claims.

The machinery is composed of two distinct parts, viz, that used in threshing the grain from the straw, and, secondly, that used for separating the grain.

The frame is constructed in two parts, A and B, with portions of the machinery attached to each.

The frames are united by stay-bars or braces, C C', &c., and by suitable tie-rods. The longer of these stay-braces, C', placed on each side, serve not only to unite the parts of the trunk, but also to connect the same with the truck.

The machine is designed to be carried upon the wheels D, centrally placed, and the hinged legs E are folded up when the machine is being moved, or extended, when it is in operation.

The apron or feed-board F is an inclined platform, upon which the grain-sheaves are fed to the threshing-cylinder. It is fastened to the trunk A in such manner that it may be detached, when desired, by means of the hooks f, which catch in corresponding notches in the ends of the trunk.

The board F¹ is formed as shown in fig. 4, and slides into metallic eyes, f², attached to the top of the front end of the frame, and the side-board F² is fastened thereto, resting upon one side of the feed-board. The sheaf-table F³ is fastened upon the other side, by tenons and mortises, to the board F¹, and to the front end of the feed-board by an extended cross-brace lapping under the said feed-board, while a corresponding cross-

brace, projecting from under the feed-board, catches under the sheaf-table, to hold it firmly in place.

This part of the mechanism is constructed in such a manner that the sheaf-table may be attached on either side of the feed-board, making it, with the feed-board, self-supporting.

The sheaves, on entering the threshing-machine, are carried under the cylinder G, and the grain is threshed by the teeth of the cylinder and stationary teeth G', attached to the concave. The mingled straw and grain are then carried back along the bottom, H, where they are seized by the teeth of the reciprocating rakes K, and carried back, passing under the hinged bars L, which, inclining downwards, are hinged to the front of the frame, having their lower and rear ends resting upon the bottom, H, loosely, so that they may rise to permit the straw to pass under them, but preventing it from rising above the rakes K, and also to prevent the cylinder from throwing the grain too far back. The rakes are alternately moved in each direction by the cranks K', formed opposite to one another, or at varying angles in a single rod.

An opening is left between the bottom, H, and bar L¹, through which the grain, already threshed from the heads, may fall upon the inclined board H², by which it is conducted into the winnow. The straw, passing over this opening, is taken upon the reciprocating toothed bars L, and carried back to the straw-slide by their alternate action, which is produced by the compound cranks L', constructed like the cranks K, but having pins l in both their upper and lower faces. At intervals among the upper teeth we place longer teeth, l', which are intended to prevent the straw from being thrown too rapidly towards the straw-slide, detaining it in its progress, so that, by the agitation caused by the action of the reciprocating rakes, the grain may be entirely separated from the straw.

The reciprocating rakes are placed between notched stationary bars L², the notches forming an opening through which the grain may fall upon the slide M, down which the grain and chaff are carried by the action of the lower set of teeth.

The rakes L have their front ends attached to the crank L¹, and their rear ends attached by double-grooved slides to the T-formed guides L³, which are bolted to the upper and rear end of the slide-board M.

The board H² is part of the shoe N, (indicated by dotted lines in fig. 1.) The shoe is hinged at its lower end, and is given a slight vertical motion by means of the knockers N¹, which are attached to a revolving roller, N². This roller is formed either smooth, or with a series of ribs, and is intended to aid in feeding the mingled grain and chaff to the blast of air passing under the shoe; also, to vibrate the same, and also to vibrate the riddle; also, as a graduating feeder to the first dividing-shelf or apron; and, finally, in connection

with the comb, to separate the straw and other coarse materials from the finer, thus, in some degree, performing the functions of a riddle.

The knockers N^1 are plates of cast-iron, having four (more or less) rounded projections or cams, which alternately raise the shoe and then allow it to fall, and run in bearings in the bottom of the sides of the shoe.

The grain, passing over the roller N , falls upon the first dividing-shelf or apron O , which slides into grooved ways formed in the metallic sides of the shoe. This apron has along the front edge a narrow shifting strip attached thereto. This strip is bevelled upon one side, so that, by reversing it, the shelf may be made narrower or wider, the grain falling off in one case sooner than in the other, in the direction towards the blast proceeding from the fan.

A rib, O^2 , is placed along the rear edge of the adjustable slide-board O^3 , for the purpose of catching the grains, and preventing the mass of grain, which accumulates upon the shelf O , from running off the shelf too quickly.

The adjustable slide-board O^3 is placed under the apron O , and is attached thereto by a set-screw or bolt passing through a slot, so that the slide-board may be adjusted to regulate the capacity of the apron, the object being to retain a bank of grain upon the apron, so that, with the jarring motion of the shoe, the heavier portion of the clean grain shall fall over the front edge of the apron, the chaff being blown back by the action of the blast, and the lighter portion of the grain falling over the rear edge of the apron.

The grain, passing over the rear edge of the apron O , passes over another roller, P , made like the roller N , then falling on the second dividing-shelf, Q , which is also constructed with an adjustable sliding board Q' , which may be attached in the same manner, and for the same purpose as already described. The mass of grain accumulated upon this apron is also subjected to the action of the blast, the heavier grains falling over the front edge of the apron, while the lighter portion falls over the rear edge, which is constructed with a metallic comb, which is a corrugated plate with projecting teeth, a similar comb being placed upon the rear edge of the board H^2 .

By means of the adjustable boards O^3 , and Q' , the openings between the successive shelves or aprons may be regulated as may be required for different kinds of grain.

The filth-board R is placed in such relation to the apron Q , that the grain may fall through the space left between them, while the lighter portions are carried back by the blast, the chaff being carried over the chaff-board S , while the tailings fall on the inside on to the floor.

The riddle T is placed under the aprons, and catches the grain passing through the spaces between the board H^2 and the first apron, also, that between the first and second aprons, and that between the second apron and the filth-board. The front end of the riddle is suspended by hooked levers T , which, being pivoted at the middle, have their upper ends bearing against the points of the knockers N^1 , so that, by the revolution of the latter, the riddle is shaken. A spiral spring, resting on a shoulder, formed in a bar extending from the riddle to the fan-case, which it surrounds, bears against the front end of the riddle, pressing it backwards.

The sides of the shoe are formed, partly of wood, and partly of cast-iron plates, bolted to the wooden portion. These plates have on their inner faces grooved ways to receive the aprons, and are made thinner than the wooden portions, so as to leave spaces on each side between the trunk and the plates, through which currents of air may pass from the blast to prevent the accumulation of straw on the corners of the tail-board. They have, at their rear ends, sockets made to receive pins passing through the sides of the frame B , upon which

the shoe is supported and vibrated. The second roller-shaft is received in notches or recesses formed in the edge of the cast plates, so that the shoe may be lifted out without removing either of the rollers.

The blast is derived from a fan in the ordinary manner. The air enters the fan through registers placed in the sides of the case. The inner plates of the register V are connected by rods V^1 , and also by a tie, V^2 , which, having a broad surface, is so placed, in relation to the currents of air generated by the fan, that when the action of the fan is increased, the pressure of the currents against the ties V^2 shall cause the register to close partially, thereby reducing the supply of air until such time as, the speed of the fan being reduced, the registers will be opened by gravity. A hook, V^3 , is extended through the wind-case from the tie V^2 , passing through a narrow vertical slot in the case, so that, by putting a weight upon said hook, the action of the register may be regulated according to the degree of strength it is designed to give to the blast. The weight of the parts of the register is so adjusted, that when relieved from the pressure of the blast, the register shall stand wide open.

The blast passes out through the spaces above and below the blast-board W . This blast-board is so formed as to make the wind-space wider towards the sides of the machine, than in the middle above the blast-board, in the space between it and the part of the casing W' . This may be done by placing on it a strip, tapering from the middle towards each side.

The threshing-cylinder derives its motion from the power. It has upon its shaft a pulley, G^2 , which, by means of a band, communicates a reduced motion to a pulley, U^2 , on the fan-shaft. The fan-shaft has, on its opposite end, a spur-pinion, U^3 , which drives the intermediate pinion X , which gives a reduced motion to the spur-wheel X^1 on the first crank-shaft K' , and, also, through the intermediate pinion X^2 , and pinion X^3 , to the second crank-shaft L^1 , a reduced motion, but a more rapid revolution than that given to the first crank. The pinions X and X^2 are attached by wrist-pins projecting from a cast gear-bracket bolted to the frame.

A pulley, Y , on the end of the second crank-shaft, may be used to drive the gearing of a stacker, if one is used.

The first roller N^2 is driven by a band from the fan-shaft, giving it a reduced motion in passing around the pulley Z , on the shaft of the roller, and a further reduced motion is given to the second roller, P , by a band passing around the pulley Z' , and a sheave on the sleeve of the pulley Z .

Instead of driving the rollers from the fan-shaft, power may be derived from a pulley on the first crank-shaft.

Shields $a^1 a^2$ are bolted to the frame, and so formed and placed in relation to the gear-wheels as to prevent the straw or other substances from becoming entangled with the wheels and interfering with their operation.

It should be observed, that, by the arrangement of the driving-mechanism, all the successive parts are driven at a regularly-reduced speed, so as to economize power.

The grain being thoroughly cleaned after leaving the riddle, drops into the discharge-hopper, which is so constructed that the end with the discharge-slide, being the lowest part of its inclined bottom, draws all the grain towards it for delivery into the bag. The bag is attached to a bag-holder made in the form of a triangular clamp, b , fig. 8, turning upon a hinge, by means of which the open mouth of the bag is pressed against the end of the hopper, when, by raising the slide c , the contents can be run into the bag which lies in an inclined position upon a bag-board hooked on to the rod to which the clamp b is hinged.

The hopper is so constructed and attached, that it can conveniently be reversed so as to bring the bag-holder on either side of the machine.

A tool-box is formed between the top of the shoe and the bottom of the grain-board M.

The straw-slide *d* is hinged, so that it may be used either for carrying away the straw, or it may be turned back to form a cover for the rear part of the machine above the rake L.

The first set of rakes also has a cover, with a door arranged to give access to the interior mechanism, and a door should also be placed in the grain-bottom, under the first set of rakes, for the purpose of permitting that part of the machine to be cleaned.

The chaff-board *g* is hooked on to the tail-board, and when the machine is in use, forms a division between the chaff and tailings; at other times it is turned up to close the opening out of the winnow. Thus the machine may be entirely enclosed for its protection in being shipped.

A hook, *h*, is attached to the end of the tongue, to afford the means of attaching the tongue to the truck which carries the horse-power when being transported.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. A threshing-machine and separator, combining in its construction the following elements, viz, an adjustable feed-board, a cylinder and concave, two sets of reciprocating rakes, and a series of spur-wheels and intermediate pinions for driving both rakes from the fan-shaft, substantially as set forth.

2. The combination of the fan-shaft, the two sets of reciprocating rakes, and the pinions U^2 , X , X^1 , X^2 , and X^3 , and arm, with wrists supporting the intermediate pinions X and X^2 , substantially as set forth.

3. The arrangement of the shields in relation to the gearing for driving the rakes, substantially as and for the purpose set forth.

4. In combination with the reciprocating rakes, the intermediate notched bars, the slides and guides, the

cranks, and the system of driving-gearing, substantially as set forth.

5. So arranging the parts of the driving-mechanism, that the motion of the several parts shall be communicated from one to another at a regularly-reduced speed from the cylinder to which the power is first applied, substantially in the manner set forth.

6. The cast shoe, side plates with pivot or joint bearings, shelf or apron-recesses, adjustable slide-board flanges, and with notched recesses to receive the second roller-shaft, substantially as set forth.

7. The shoe, when constructed with combined metallic and wooden sides, and so arranged, in relation to the case of the separator, that blasts of air may pass between the shoe and the case, substantially as and for the purpose set forth.

8. In combination with the fixed register-plates, the oscillating inner plates V^1 , connected by a tie, V^2 , and having one side loaded so as to open the register by gravity, and a regulating-weight attached to the hook V^3 , said parts being so arranged in relation to the blast as to operate substantially as and for the purpose set forth.

9. The dividing-apron O , in combination with the graduating rib O^2 , substantially as and for the purpose set forth.

10. The chaff-board *g* for separating the tailings and the chaff, when constructed and arranged so as to be applicable, also, for the purpose of closing the rear end of the winnow, substantially as set forth.

In testimony whereof, we have signed our names to this specification, in the presence of two subscribing witnesses.

PETER GEISER.
DANIEL GEISER.

Witnesses:

GEO. W. WELSH,
GEORGE BENDER.