H. Smith.
Thrashing Mach.

No. 6,452.

Patented May. 15, 1849.

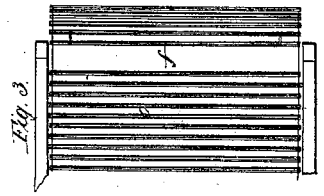

Fig. 3.

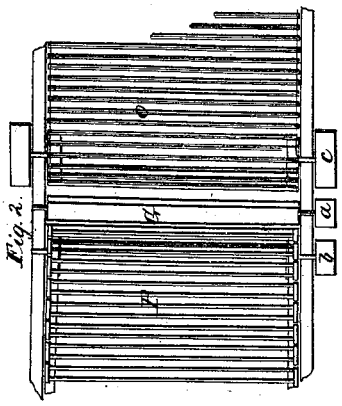

Fig. 2.

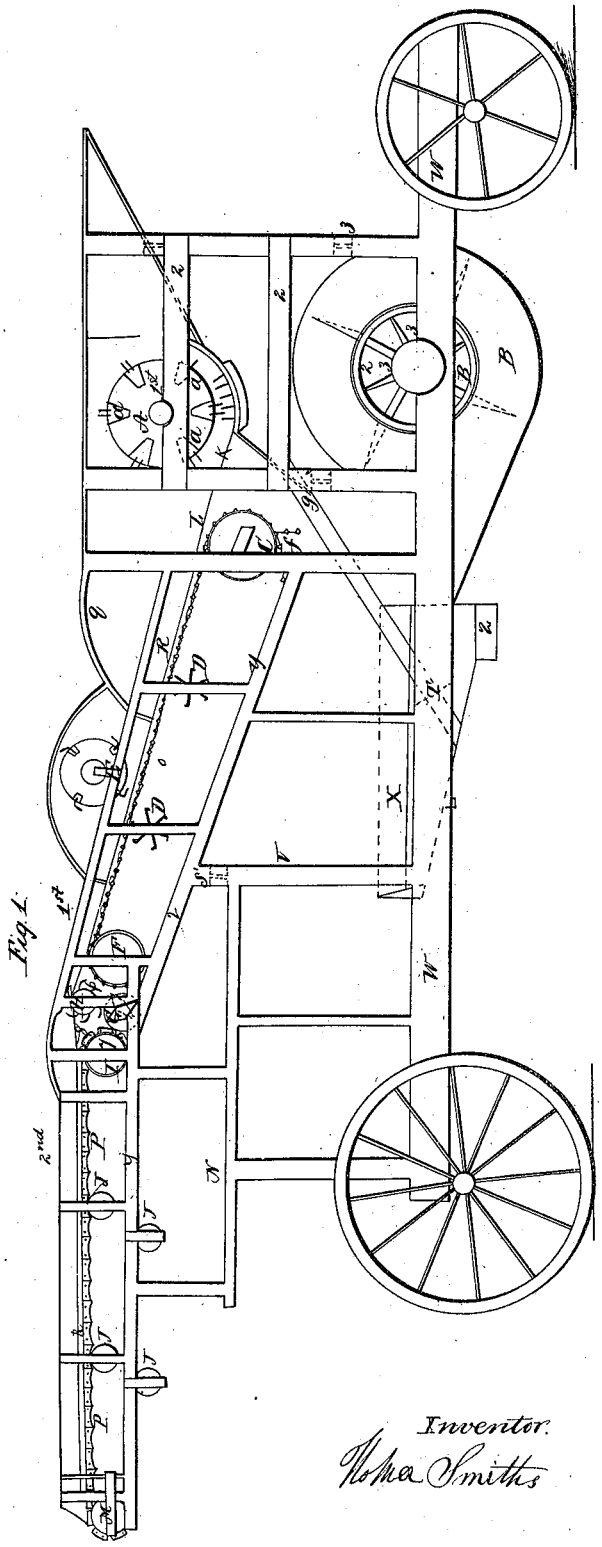

Fig. 1.

Inventor.
Horace Smiths

UNITED STATES PATENT OFFICE.

HOMER SMITH, OF HECTOR, NEW YORK.

GRAIN-SEPARATOR.

Specification of Letters Patent No. 6,452, dated May 15, 1849.

To all whom it may concern:

Be it known that I, HOMER SMITH, of Hector, in the county of Tompkins and State of New York, have invented a new and useful Improvement in Straw-Carriers and Grain-Separators for Threshing-Machines; and I do hereby declare that the following is a clear and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a longitudinal section, Fig. 2 horizontal section of the paddle wheel, Fig. 3 horizontal section of self cleaning carrier.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

I construct my machine by using two base pieces, four by six inches, fourteen feet long shown by W, I use three cross pieces, one at each end, the one at the hind end bolted under W, forming the axle for the hind wagon wheels the middle one crossing under front of thresher, shown by Fig. 3; my machine is made three feet in the clear inside; except thresher is two feet ten inches the length of cylinder; thresher legs or posts, three feet ten inches high four by four inches square, four side girths, three feet, shown by Fig. 2 on thresher; the top of cylinder girths eleven inches from top of posts to top of girths to be four inches square, the lower ones 3 by 4 inches, shown by Fig. 2, to be framed eighteen inches from the bottom of posts, the object of the lower ones being 3 by 4 is to have it outside of roundhouse or windmill; the side to be filled between girths with a panel one inch and a half thick, to receive bed or concave to cylinder; I use three cross girths, the two across front posts, over Fig. 3 shown by dots back from posts, the bottom one eight inches from bottom of posts, upper one four inches above cylinder girths; the one across back posts next to carrier, to cross four inches below lower side girths or Fig. 2, the top of back posts to be capped across the cap to be two by four inches square; cylinder A to be made fourteen inches in diameter; to be made in the following manner. Take two thicknesses of solid wood, two inch plank for each head crossing the grain of the wood, pin or screw them together; cut gains three inches on the surface or outside as shown at *a* three inches deep by two inches at the bottom; the side of beaters the heads to be placed in three inches from end of beaters, after beaters are fitted and pinned into heads banded with 3½ or 4 inch band iron, to be fastened on an iron shaft one inch and half square the cylinder beaters covered with sheet iron to be spiked with half inch round rods, one and three fourths of an inch out from the beaters and concave, the concave 10 inches wide by 3 in. thick slides in with half in. gore covered with sheet iron spiked with 5 half rows of spikes as described above. To clear three sixteenths of an inch in the mesh, to have a collar on each end of shaft on the inside of each bearing or journal, which is two feet ten inches apart or in the clear, the journal to be long enough to receive a pulley six inches long on each end; the supporting posts is shown at V two feet six inches long four by four inches square, framed at the bottom to W a cross piece five inches from the top 2 by 3 inches square shown by Fig. 3′, a short tenon on the top of posts for carrier to drop on, one inch long, all the short posts under bottom rail of carrier as shown by Y are to have tenons of one inch long for the purpose of taking carrier off at pleasure; the posts next to thresher that has pulley block, as shown by C is framed in loop at the bottom to be tied or hooked at the bottom; these posts are to be three feet ten inches long, two and a half by three inches square; the bottom rail of carrier shown by Y frames is fifteen inches up from the base shown by W, the top rail of the same seventeen inches up from the bottom, one inch and a half by two—length of bottom rail to 1st carrier is 4 feet long, shown by Y is seven feet; the posts of thresher and carrier is eight inches apart in order for chain to open to clear itself and to tighten endless chain O. Pulley shown at C is ten inches in diameter is made of two inch plank bolted on with a half inch bolt with a smooth flat head on the inside pulley block or tightener which may be done by a key block or screw; is ten inches up from rail Y in order to give

the drop or hinge room to open that all straw and grain that falls through from top of carrier inside of carrier may escape; upper pulleys in first carrier shown at F is made of two inch plank eight inches in diameter with collar or gear on the outside of the pulleys made by putting on a half inch board of bass wood or elm brought down on the edge to one fourth of an inch to project out half inch to serve as a guide to prevent chain from rubbing sides of carrier, these pullies to be hung on shafts or axles three fourths of an inch square to run across carrier and extend out at each side three inches to receive pulleys on each end outside of carrier; the paddle wheel shown at G between carriers is for the purpose of paddling back what grain drops through second carrier under first carrier chain where it is drawn back and falls on shoe of cleaners shown at X the paddle wheel G made of three inch plank six inches wide or any convenient size brought down to a half inch on each edge with a half inch gudgeon A each end the one left hand side marked *a* (Fig. 2) to be long enough to receive a pulley. Pulley marked *a* (Fig. 2) to be three inches long and four or, any convenient size in diameter, to be hung so as to clear the bottom half an inch and the first chain one inch; the picker or separating roller shown at H is hung in same post as paddle wheel is so that by drawing a horizontal line from the top of pulleys shown at F and I will lay one third above the line that straw on leaving first carrier will not run under picker. The picker is made of hard wood scantling 3 inches or any convenient size in diameter turned smooth with a gudgeon in each end five eighths of an inch, the one on left hand side to be long enough to receive a pulley three inches long two and a half inches in diameter, the roller to be filled with large wire as shown at H two inches long bent back so as to throw straw over without winding around roller.

The pulley shown at I is six inches or any convenient size in diameter hung on a shaft three-fourths of an inch square, the end on left hand side to be long enough to receive a pulley outside of carrier three inches by eight inches or any convenient size in diameter marked *b* (Fig. 2) the inside pulleys to be made of two inch plank with a thin guard on the outside of pulleys as described at F, the pulleys shown at M, the same size and made in the same manner without any outside pulleys, shaft is bent of round iron; the bonnet or cap shown over extends up the carrier from the thresher post two feet six inches the sides of one inch boards capped over with half inch boards in a circular form lined with sheet iron on the under side to turn straw and grain down on the carrier as soon as possible after leaving cylinder; the bonnet or cap over E made in the same manner only set on so as to be taken off at pleasure with a light tale board hung so as to play loose within one inch of chain, to prevent grain from flying from straw beater or picker shown at E; the straw beater or picker is ten inches in diameter, made by taking two pins for each end or head of one inch thick fasten these together, cut four gains in each one one inch and half wide by two inches deep or other convenient sizes which is of the beaters, heads to be hooped with inch iron the beaters to be filled with large wire teeth to project out two inches to be bent back in order to clear itself from straw, the teeth to come down within one inch and a half of the endless chain the shaft to be three fourths of an inch to project out on right hand of carrier far enough to receive a pulley not represented in the drawing three inches by six inches or any convenient size in diameter; the chain of first carrier shown at O is made of large wire or brazier rods the links one and a half inches long, the eye on one end turned one way, and the hook on the other half around the other way in order that it may hook over the slat or cross bars of carriers, which is half an inch square fasten twenty or may be more or less clinching the hooks over the slats as shown by Fig. 3 then leave out two to be hung on a hinge as shown at *f* (Figs. 1 and 3) made of large wire or hoop iron so as to open and shut easy that all the straw and grain may pass out, the carrier at *f* so as to clear before it passes over pulley at C where it closes the carrier, second carrier shown at P (Figs. 1 and 2) is made of bass wood or elm three fourths of an inch thick, by one and a half inch wide three inches long with a wire three eighths of an inch deep in the under egde that the carrier may have a quick shake in passing over supporting pulleys shown at *f*, two slats or cross bars three eighths of an inch thick by one and a fourth of an inch wide, fastened two in a head with tenons so that the slats stand edge up one and a half inch apart when done to be fastened on a leather strap or belt one and half inch wide, to be nailed on heads and bradded to slats, star or shake wheel in first carrier shown at D is cast iron with six arms or spokes seven inches in diameter, the hub one inch and a half long and the same in diameter with a half inch eye or bolt hole for the purpose of bolting on to side of carrier, spokes of star wheel half an inch thick by one inch except the outer end of arm, which is half an inch wider to prevent chain from dropping off star wheels the small pulleys or supporting rollers under upper and under chains of second carrier is made of two inch plank four and half inches, may be any other convenient size in diameter shown at *f*, bolted on with half inch bolts,

the under ones hung so that chain will clear the bottom, the round house or wind mill shown at B is three feet in diameter, the draft or guide of wind is to cover one fifth of the riddle as shown at X, the shaft or axle of wind mill to be one inch square passing through and projecting out on each side, the one on right hand side five inches to receive one pulley two inches thick eight inches in diameter and one eighteen inches in diameter the two fastened together and fastened on shaft, the eighteen inch one may be any other convenient size made with four arms and rim two by two and a half inches in order not to obstruct the wind shown at B; on the left hand side to project out two inches, and a cast iron wheel six inches in diameter by one inch thick keyed fast on the end of shaft with half inch holes drilled different distances from shaft in order to regulate shake of shoe, shown at X, side pieces of shoe made of inch boards fourteen inches wide at the inner end, and six inches at the out end, that the bottom may have pitch enough to carry the grain into the box where it is shook into the measure, which is shown at Z, the box seven inches wide by three inches deep one side bolted to shoe in center to tip either way, that grain may be taken out on either side of cleaner, bottom of shoe made tight from grain box back within eight inches of out end this left open for heading to go through without running in with grain.

The length of riddle is three feet six inches by two feet six inches wide, a groove in each side of shoe to receive riddle, groove three fourths of an inch by three eighths of an inch deep, shoe hung on cross girth of thresher shown at 9 between thresher and carrier and the out end by two straps on cross girth shown at 3, the elevating pin crossing sides of I have shown at 9, made of inch boards four inches wide crossing sides of shoe riveted fast out side; the bottom nailed cross ways under 9, from thresher post down to *x* then a piece wood two inches wide filled with wire teeth two inches apart, eight inches long, forming a rake head, to prevent straws falling on riddle; the piece shown at T made of half inch board six inches wide or any convenient size with a round tenon in the center of each end placed crossways in the straw to clear the bottom one and half inch, to be turned as needed to guide the wind on bottom or up through riddle; guide from concave to carrier shown at *k* is a cast iron grate two feet eleven inches long three pieces five inches wide each slide in gain each side of thresher half an inch deep the grate open for the purpose of taking most part of grain out of straw before going on to carrier; the grain is carried to shoe on a slanting board shown under *k;* the guide from grate shown at L is made of board covered with sheet iron to cover two thirds of out wheel at C to slide the straw on carrier above the turn of chain; the pin above chain shown by R is two inches and a half wide by one inch thick beveled on one edge and nailed one and a fourth inches above chain to guide straw in from edge of chain, the one in first carrier to extend up to E the one in second carrier to extend the whole length, to prevent grain from dropping onto strap; the piece shown at 8 between carriers is three inches wide by one thick fastened at each end to the circular pieces that slide in grooves to be fastened so as to clear chain one inch to prevent chaff from driving into second carrier from picker at H; the frame shown at N, the port over hind wheel four inches square, two feet one inch between shoulders all the rest of the timber two inches square, I think best as here laid down, or may be used with a bran alone, to be sided inside with inch boards.

The bottom rail of both carriers shown at *y*, are two by two and a half inches square all the studs or small posts in both carriers are two inches square, the second carrier has no top rail the said boards nailed firm to the small posts shown by I, J, F and M, the side board shown at G and H the circular part slides in with a groove at each end, the bottom of the first carrier is flared and sided with half inch boards inside, all made fast, cutting the bottom off ten inches from post shown by C pulley that all straw and grain may fall upon shoe before it gets too near the turn of the carrier; the shaft at upper end of first carrier shown at F′, has a pulley outside of carrier at each end marked C (Fig. 2) one on right hand side is ten inches (may be any other suitable size) in diameter the one on left hand side is eight inches or any proportionable size in diameter, the shake iron or elbow bolts on bases shown at W, with a half inch bolt, fourteen inches from the post shown at V, one arm of the elbow two inches from the turn, the other end three inches; a short rod sixteen inches long running under shoe and hook under bottom of shoe made of half inch round iron, the rod that hooks in the long arm of elbow runs from there to shake wheel on fan shaft shown at B; arms of fan one by two and a half inches square halved together and hung on shaft six inches in from each side fan or wings half inch thick by eleven inches wide; the cylinder shaft shown at A has a pulley on each end the one right side six inches long three inches and a half in diameter with a collar in the middle forming two pulleys; the one left side six inches in diameter to receive strap from horse power; to strap this machine commence first at A strap to B, then strap from inside of B to *c′*, then strap left hand side from *c* passing around *c*, H, *a*, *b*, then strap from A to E

that straps the machine throughout; the bottom second carrier is made of half inch boards nailed on the underside bottom rails cross ways.

What I claim as my invention and desire to secure by Letters Patent is—

The construction and use of a fly or paddle marked G, to carry the grain and chaff from carrier P to carrier O.

Dated at Hector May 29, 1848.

HOMER SMITH.

Attest:

HENRY SMITH,
CALEB SMITH.