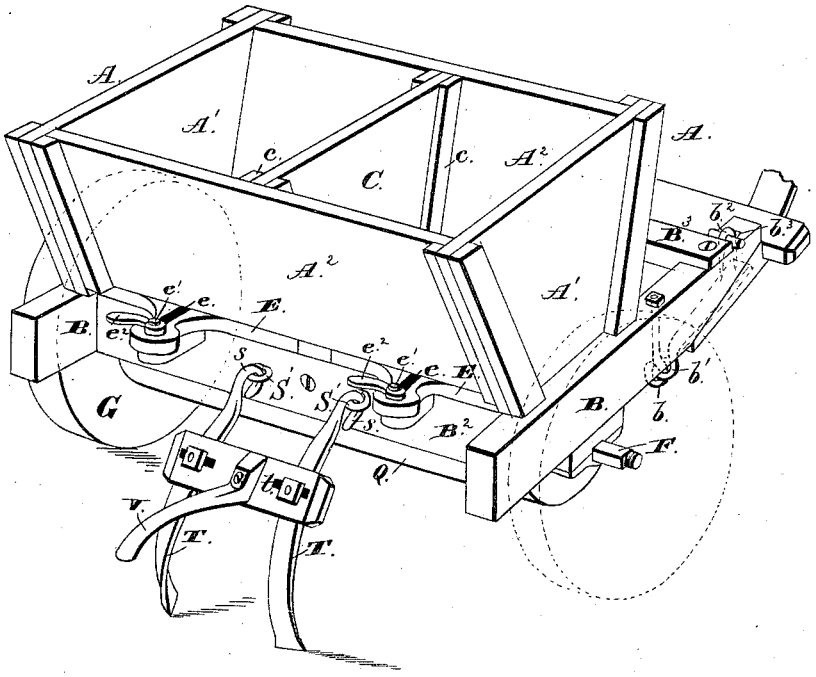
(No Model.) 3 Sheets—Sheet 1.

H. L. SPENCER.

COMPOST AND COTTON SEED DISTRIBUTER, CORN AND PEA PLANTER, AND DUMP CART.

No. 302,789. Patented July 29, 1884.

Fig. 1.



Witnesses:
Jas. E. Hutchinson.
James W. Graydon

Inventor.
H. L. Spencer, by
Pindle & Russell, his Attys

(No Model.) 3 Sheets—Sheet 2.

H. L. SPENCER.

COMPOST AND COTTON SEED DISTRIBUTER, CORN AND PEA PLANTER, AND DUMP CART.

No. 302,789. Patented July 29, 1884.

Fig. 2.

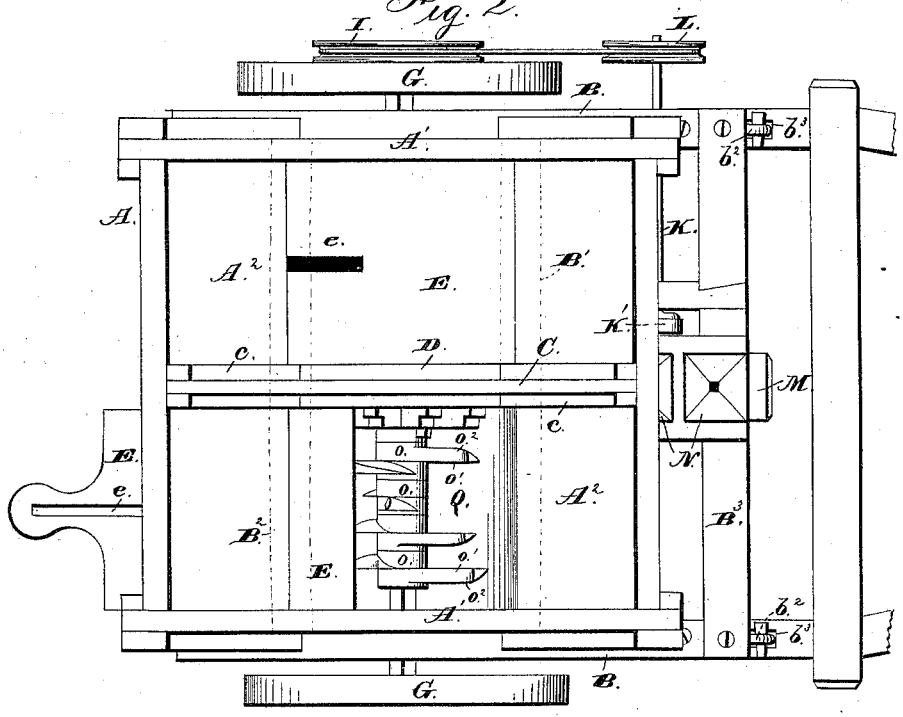
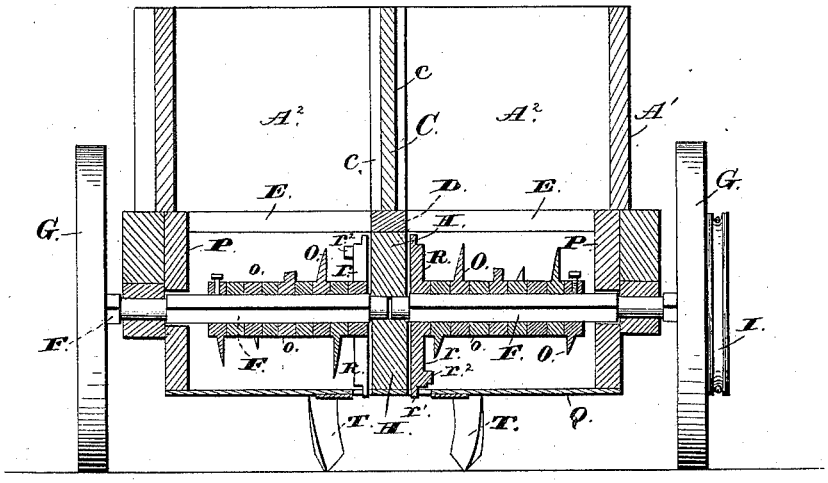


Fig. 3.



Witnesses.
Jas. E. Hutchinson.
James W. Graydon

Inventor.
H. L. Spencer, by
Prindle & Russell, his Attys.

(No Model.)

3 Sheets—Sheet 3.

H. L. SPENCER.

COMPOST AND COTTON SEED DISTRIBUTER, CORN AND PEA PLANTER, AND DUMP CART.

No. 302,789. Patented July 29, 1884.

Fig. 4.

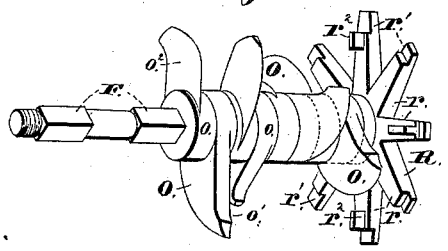


Fig. 5.

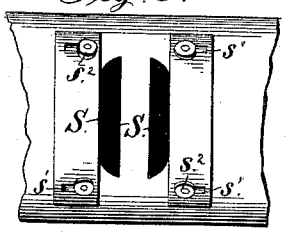


Fig. 6.

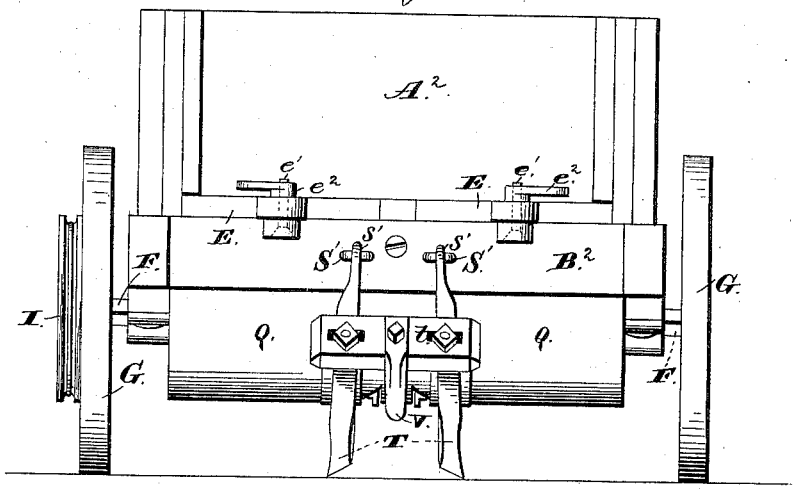


Fig. 7.

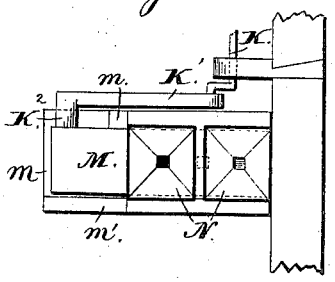
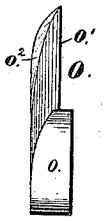


Fig. 8.



Witnesses:
Jas. E. Hutchinson.
James W. Graydon

Inventor.
H. L. Spencer, by
Brindle & Russell, his Attys

UNITED STATES PATENT OFFICE.

HEDGES LINZEY SPENCER, OF SOCIAL CIRCLE, GEORGIA.

COMPOST AND COTTON-SEED DISTRIBUTER, CORN AND PEA PLANTER, AND DUMP-CART.

SPECIFICATION forming part of Letters Patent No. 302,789, dated July 29, 1884.

Application filed August 24, 1883. (No model.)

To all whom it may concern:

Be it known that I, HEDGES L. SPENCER, of Social Circle, in the county of Walton, and in the State of Georgia, have invented certain new and useful Improvements in Compost, Cotton-Seed, and Guano Distributer, Cotton, Corn, and Pea Planter, and Dump-Cart; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 shows a perspective view of my combination machine; Fig. 2, a plan view of the same with the bottom slides drawn back and out; Fig. 3, a transverse vertical section on a plane passing through the axles; Fig. 4, a detail view of one-half of the divided axle with the cutting and conveying knives and the feeding-wheel in position thereon; Fig. 5, a bottom plan view of a portion of the drum or casing below the main body of the machine; Fig. 6, a rear elevation showing the coverer and the means of fastening the bottom slides of the hoppers; Fig. 7, a detail view of the corn and pea planter; Fig. 8, a detail view of a modified form of conveyer-knife.

The object of my invention is to provide an improved combination machine which shall be capable of use as a compost, cotton-seed, and guano distributer, a cotton, corn, and pea planter, and a dump-cart, as desired; and to this end my invention consists in the arrangement, construction, and combination of parts, all as hereinafter described, and specifically pointed out in the claims.

In the drawings, A designates the cart-body proper, which, as shown, has vertical sides A′ A′, and its front and back boards, A^2 A^2, inclined outward. This body is firmly fastened upon the frame or running-gear, which is formed of the fore and aft beams, B B, and the transverse ones B′ B^2. At some distance in front of the cross-beam B′ is another lighter bar or beam, B^3. The cart-body has a middle removable partition, C, which is guided and held between cleats *c c*, fastened to the inside of the front and back boards. Instead of this construction, suitable grooves could be cut in these boards to receive and hold the edges of the center-board. The open bottom of the cart-body is, as shown, divided in two by a short narrow beam or bar, D. The rear board of the cart does not extend down to the frame-beam B^2. The bar D extends under its lower edge and through that of the front board, and is fastened upon the tops of beams B′ and B^2.

In the spaces between the lower edge of the back board and the beam B^2, which spaces extend on each side of bar D to the side boards, fit and slide the movable cart-bottoms E E. These, as shown, when slid in, entirely close the bottom of the cart and cover the mechanism below, to be hereinafter described. These slides are formed with rearward extensions reduced in size to serve as handles, and with slots *e e*, up through which pass the screw-threaded studs *e′ e′*, upon which are the thumb or hand nuts e^2 e^2. These studs are fastened in lugs extending back from beam B^2, and serve to guide the slides, and, in connection with the nuts, to fasten the slides when pulled out or pushed in, or at any desired point of their travel.

Fastened to the bottom faces of the two side bars or beams, B B, are journal-bearings for the axles F F of the drive or supporting wheels G G.

As shown, instead of having one continuous axle extending from side to side of my machine, I use two independent axles, upon the outer end of each one of which is fastened one of the wheels G G, so that the wheel and axle must turn together. The inner end of each short axle is journaled in the center board, D, attached to and extending down from beams B′ B^2 and bar D. Upon the outer face of one of the wheels is fastened a pulley, I. Upon the corresponding side frame-beam is a journal-bearing, in which, and in a lug or projection from the beam, is journaled a short shaft, K. On the outer end of this shaft is a pulley L, smaller than pulley I, driven by a band or cord passing around both pulleys. Just beyond the lug in which the shaft K is journaled, the latter is bent twice at right angles to form a crank-arm and crank-pin, as shown in Fig. 7. Upon this crank or wrist pin is pivotally hung one end of a link, K, the other end of which receives the pivot-pin K′, attached to the slide M. This slide is sup-

ported in its forward and back movement upon a board, *m*, attached to and supported on beams B^2 and B^3, and is guided between the cleats *m' m'*, attached to and rising above the sides of the board *m* a sufficient distance, so that when the double hopper N is fastened in place upon their upper edges there will be just room between the lower face of the hopper-board and board *m* for the slide M to move freely. The hopper is represented as being a double one. The board *m* is formed with an opening, which is situated just below a point midway between the two discharge-openings of the hopper. The slide M is provided with two openings, one of which will come under one hopper-opening when the slide reaches the limit of its forward throw, and the other below the other hopper-opening when the slide has been carried back. With my arrangement, then, when one opening in the slide is below the discharge-opening and receiving a portion of the contents of one hopper, the other will be over the opening in the board *m*, so that what has been received from the other hopper will be dropped through onto the ground. By means of the connection with the driving or supporting wheel, this slide will be continuously operated while the machine is being drawn along. By making the pulleys of any desired sizes the rapidity of the movement of the slide can be regulated.

I design the mechanism and arrangement just described to be a corn or pea planter. Both hoppers can be filled with peas or corn, or one with peas and the other with corn, so as to plant them alternately.

When it is not desirable to use this planter, it can readily be disconnected from the driving-pulley by removing the band.

In the under side of the side bars, B B, and just in front of cross-bar B', are fastened eyes or staples *b b*. With these engage the hooks *b' b'* on the rear ends of the shaft or tongue hounds. Upon the upper faces of these hounds, and near their front ends, are staples b^2 b^2, which are adapted to pass up through slots b^3 b^3 in the front ends of beams B B. Pins are then inserted into these staples above the beams. When these pins are drawn out, it is evident that the cart can be tilted back, turning upon the axles so as to dump its load as an ordinary dump-cart. Upon the squared portions of these axles, which are between their bearings and below the opening in the large hoppers forming the cart-body, are placed a series of knives of a peculiar shape. Upon the inner ends of the axles, and close up against the center board or bearing, is a feed-wheel, R, also of a peculiar construction. Each knife O O is attached to a sleeve or hub, *o o*, which has a square opening to fit upon one of the squared shafts. The edge of each knife is curved in a spiral line, starting from the sleeve or hub, so that in revolving it will cut anything with which it comes in contact with a drawing cut, so as to act to the best advantage.

Attached to the front and back beams, B' and B^2, and to the properly-curved edges of the center board, D, and two side boards, H H, attached to the frame, is the curved sheet-metal hood Q. The trough formed by this hood is of such a depth that the knives on the axles just clear its bottom in their revolution. The curvature of this trough is such that while the knives do not touch its inner face the arms of feed-wheels R R will necessarily, in their revolution, pass within the hood until they come around below and near the bottom thereof, where they project through slots S S, provided therein. One side of each of these slots is close to and parallel with a face of the center board, in which the axle ends are journaled. The other side of each slot is parallel with the first side through most of its length, but near the ends of the slot turns in at a considerable angle, so as to make the slot a long narrow one with sharp ends. Along the shorter side of each slot is a strip of metal, curved to fit close against the outer and under surface of the hood, and with its edge toward the slot parallel with the longer side of the latter. Each strip is at each end transversely slotted, as shown at *s' s'*. Through these slots project short bolts, fastened in the hood or drum, and upon these bolts are the screw thumb-nuts s^2 s^2. With this construction the strips can evidently be moved to make the slots in the hood or drum narrower, and fastened at any desired point of adjustment.

Each of the knives O O referred to and partially described above is made in one piece with or fastened to its hub. As hereinbefore described, the line of the edge is a spiral starting from the hub. The shape of the whole blade is peculiar. One side, *o'*, which is a plane surface, is inclined from the back of the knife downward and inward at an angle to a plane at right angles to the axis of the hub. The other side or face, o^2, is at a right angle to the hub-axis throughout most of its extent, but near the outer end of the knife is curved inward toward the other face, so as to make a good cutting-edge.

As will be seen by reference to the drawings, the cutting-edges of the knives, while starting from the hubs and curving outward therefrom in a spiral line, are also in spiral planes passing around the axes of the hubs. The knives are all set upon their particular axle-shaft, so that the inclined sides *o' o'* will be on the side toward the inner end of the axle, and so that as the wheels revolve during the forward motion of the machine the edges of the knives will strike into any material which may be placed in the drum or hood Q. With the knives so revolving with their inclined faces *o' o'* on the side toward the center of the machine, the action of the series of knives will evidently be to force the material in the drum toward the slots in said drum alongside the center board. I prefer to make these knives double, either by attaching the

hubs of two of them together or by forming the knives upon the same broad hub. In either case they are to be so arranged that they are situated diametrically opposite each other and on different sides of a plane at right angles to the axis of the double hub, and through the central point thereof, so that as the axle turns one will not follow the other in exactly the same track. With this arrangement the conveying action of the knives will obviously be more rapid than if the knives were set in the same plane. If desired, each knife with its hub can be made separate from the others.

As it is my design that the knives shall be set upon the axles in spiral lines, as shown, to make a spiral conveyer, some of them are arranged upon their hubs so as to stand out from one of the corners of the squared openings therein, and others so as to stand out from the flat sides thereof. Upon the inner end of each axle is a feed-wheel, R, having eight arms, *r*. Each arm, as shown, is partially cut away or shouldered at its outer end, so that a reduced portion, *r'*, is left on the side toward the center partition. In the revolution of the wheel these reduced end portions pass down through the slots in the hood or drum and force out therethrough the material in the drum, which is forced along toward the wheels by the conveyer-knives. Alternate arms are provided near their extremities with side extensions or lugs, r^2 r^2, which serve to carry along over and away from the slots any sticks, stones, or the like which are too large to pass down through them. The slots are thus cleared of any clogging matter. If desired, the feeding-wheels could be arranged upon the axles at the other or outer ends of the drum over slots provided in the latter, and the knives upon one axle changed to the other, so as to convey the contents of the drum outward instead of inward.

I prefer the shape of conveyer-knife above described; but in Fig. 8 I show a modified form of the same, in which the flat side of the blade is in a plane at right angles to the axis of the knife-hub, and the curved face is at an angle to such plane. This is the reverse of the arrangement in the other knives, as shown and described. The edge in the modification extends from the hub outward in a spiral line; but it is in a plane at right angles to the axis of said hub. The curved face then serves to convey along the material in the drum. As the conveying action of the first-described knife is more complete, I prefer it to the modified form thereof.

Upon the rear beam of the frame are fastened two eyes or staples, S' S'. These are to receive the hooks *s s* on the ends of the bars T T of the coverer. This coverer consists, as is shown, of two metal spring-steel bars T T, hooked at their upper front ends. Near these ends they are attached to a cross-bar, *t*, which serves to hold them in proper relative position. The holes in the bar *t*, through which pass the bolts for fastening the cover-bars thereto, are made larger than the bolts, or in the form of slots, so as to allow said bars to be adjusted as to their distance from each other. To this bar is bolted a handle, V, which, as the coverer is hooked in place upon the frame, extends rearward in reach of one following the machine, and affords ready means for lifting from or pressing down into the earth the lower rear ends of the coverer-bar. These bars are curved downward from their cross-bar *t*, and near their lower ends are twisted, so that their faces are no longer in the same plane, but incline rearward and inward toward each other. The lower ends are sharpened to form edges. It will be seen from the form and position of the bars that their lower ends, which are in contact with the ground, will tend to turn or force the earth inward between them. As the discharge-slots in the bottom of the drum and the opening in the corn and pea planter are between the vertical planes through the operative ends of the cover, it is obvious that whatever is dropped from planter or drum will be covered with earth by the coverer as the machine passes along. As the bars are fastened to their cross-bar by screw bolts and nuts, their angles relative to each other and to the said cross-bar can be slightly changed, as desired. The whole machine can of course be made as broad as desired, the axles being increased accordingly. The knives and star-wheels are placed upon these axles, so that the several lines of knives will pass around the axles in spiral lines. The outer knife is then clamped in position by means of a set-screw passing through its hub and bearing on its axle.

The handle above described is attached to the cross-bar *t* by means of a screw-bolt passing through it and the bar and a nut thereon. With this form of attaching means the handle can evidently be swung to one side or the other to suit. The inner ends of the axles can be journaled in suitable holes therefor in the center-board of the machine, or in journal-boxes set into such board. The bars of the covering-plow are preferably of spring-steel.

The operation of my machine is as follows: As the wheels are fixed on independent axles, the whole machine can be turned easily about without the use of any backing-ratchets or equivalent devices, to allow one wheel to turn back, while the other turns forward, which are necessary where a single axle is used. The slides in the bottoms of the large hoppers forming the cart-body are pushed in, and any material desired to be carried is placed in the hoppers as in a common cart. When said material is carried to its destination, the load can be dumped as from a dump-cart upon removing the pins passing through the staple on the tongue-hounds. The middle partition of the cart-body can be used or not, as desired. My machine is then capable of use as an ordinary dump-cart. If the cart-body has been filled with manure or other fertilizer to be distributed,

the slides are left, as before, pushed in until the field is reached and it is desired to distribute the fertilizer. The slides are then pulled out to any desired degree and fastened by means of the thumb nuts or screws. The conveyer-knives and feed-wheels will then act upon the material falling into the drum or hood below the cart-body or hoppers, and will feed it out through the slots in the drum or hood. If there are any sticks, cobs, and the like among the material, the knives will cut and break them into pieces while conveying them along, so that they can pass out through the discharge-slots. As already herein described, alternate arms of the star-wheels are provided with side lugs, which serve to clear away from the slots any stones or sticks too large to pass through them. The spiral shape of the knives aids greatly in making their breaking and crushing action upon sticks, cobs, &c., most effectual.

The rate of feed of the fertilizer or other material from the machine is regulated by means of the adjustable slides M under the drum, which serve to regulate the width of the slots.

The covering-plow can be used or not, as desired, being easily detached from or attached to the staples or eyes provided therefor on the frame. It is, however, to be ordinarily a part of my machine when used as a fertilizer to cover with earth the material dropped by the machine.

My machine can be also used as a planter, for, if the seed to be planted be put into the hoppers or cart-body and the slides pulled out, said seed will be fed through the slots in the hood at a rate determined by the positions of the regulating-slides, and will be properly covered up by the coverer-plow.

My machine, so far as its operation has just been described, is, then, a combined dump-cart, fertilizer-distributer, and planter. I wish also to adapt it to planting certain kinds of seed which are not to be planted in a continuous row, but dropped at intervals. The planter in front of the cart-body is for this purpose. The action of it has been sufficiently described already hereinbefore. The seeds dropped by it are also covered by the coverer-plow at the rear.

My invention, then, as described, is a combined compost, cotton-seed, and guano-distributer, cotton, corn, and pea planter, and dump-cart.

Having thus fully set forth the nature of my invention, what I claim is—

1. In a fertilizer-distributer, the body or receptacle provided with means for partially or entirely closing its bottom and covering the distributing mechanism below without removal of any parts of the machine, in combination with the supporting-frame therefor supported upon the axles of the wheels, the tongue-hounds attached by a hinge-connection to the lower side frame-beams, and removable means for holding the tongue-hounds and beams together, substantially as and for the purpose set forth.

2. The coverer-plow for attachment to a fertilizer-distributer or planter, consisting of the spring steel bars adjustably attached to a suitable cross-bar and twisted at their lower ends, so that the edges in contact with the ground shall converge toward each other to the rear, substantially as and for the purpose described.

3. The coverer-plow for attachment to a fertilizer-distributer or planter, consisting of the metal bars hooked at their front ends to engage eyes on the distributer and planter-frame, twisted at or near their lower ends, so that the edges resting upon the ground converge to the rear toward each other, and attached to the cross-bar by bolts passing up through slots in said bar, and provided with suitable nuts, so that the bars can be set at a greater or less distance apart or at an angle to each other, as desired, substantially as and for the purpose shown and described.

4. In combination with the hopper or receptacle, the independent axle-shafts journaled in the frame and having the supporting-wheels attached to their outer ends, so as to turn the axles in their revolution, the hood or drum below the hopper and partially surrounding the axles, and conveying-knives fixed upon the axles and adapted, during the forward motion of the machine and the consequent revolution of the axles, to convey the material in the drum toward the discharge-openings therein, substantially as shown and described.

5. The combination of the hopper, drum, dividing partition or head, the driving-wheels fixed upon the outer ends of the two independent axles journaled in the frame and dividing-head, the discharge-slots in the drum or hood, the conveying-knives on the shafts, and the feed-wheels also thereon, substantially as shown and described.

6. The hood or drum provided with a discharge or feed slot having slides parallel throughout most of their length, but near each end one side turned in at an angle toward the other to make a sharp-ended slot, in combination with a suitable feed-wheel revolving above and projecting slightly through the slot, substantially as shown and described.

7. In a fertilizer-distributer, in combination with the short axle passing through one of the divisions of the drum, the knives on said shaft, constructed with their edges curved in a spiral line starting from their attaching-hub, and with one side or face in a spiral plane about the axle, substantially as and for the purpose set forth.

8. In a fertilizer-distributer, in combination with the conveyer hood or drum, the shaft revolving therein, provided with series of knives set in spiral lines about the axle, each one of which knives is made with an edge curved outward in a spiral line starting from the attaching-hub, and has one of its faces inclined in spiral plane about the axle, all substantially

as shown and described, so that the material in the hood will be conveyed toward the discharge-opening in the hood.

9. In a fertilizer-distributer, the conveyer-knife, with its edge formed in a spiral line starting from the shank or attaching portion of the knife and curving outward, and also in a spiral plane about the axle, substantially as and for the purpose set forth.

10. In a fertilizer-distributer, the conveyer-knife, constructed with its edge curving outward from the shank or attaching portion of the knife in a spiral line, and also in a spiral plane about the axle, and with one of its side faces also in the same spiral plane as the edge, substantially as shown and described.

11. The feed-wheel provided with a number of arms having their ends cut away or reduced in thickness, so as to easily pass down through the discharge-slots in the drum or hood, substantially as shown and described.

12. The feed-wheel having a series of arms with a portion of their ends cut away or reduced in thickness, so as to easily pass down through the feed-slots in the drum or hood, and every alternate arm provided near its end with a side projection or lug just passing over but not through the feed-slots as the wheel revolves, so as to clear away from said slots any clogging material too large to pass through them, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 4th day of August, A. D. 1883.

HEDGES LINZEY SPENCER.

Witnesses:
ELISHA GRESHAM,
GEO. J. HURST.