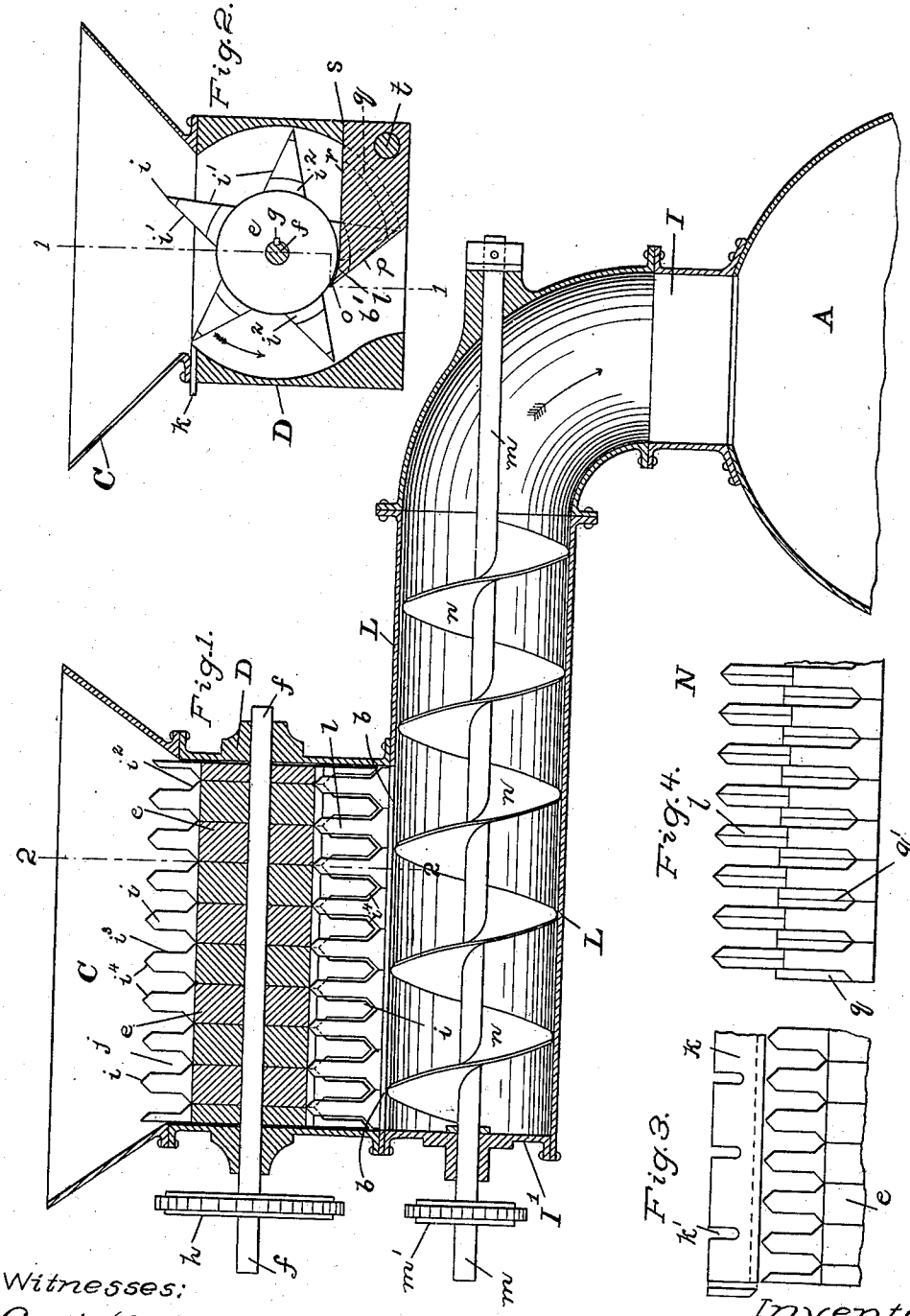
No. 662,350. Patented Nov. 20, 1900.

J. F. BUSSELLS.

FEEDING AND DISINTEGRATING APPARATUS FOR FERTILIZERS.

(Application filed May 2, 1899.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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FEEDING AND DISINTEGRATING APPARATUS FOR FERTILIZERS.

SPECIFICATION forming part of Letters Patent No. 662,350, dated November 20, 1900.

Application filed May 2, 1899. Serial No. 715,292. (No model.)

To all whom it may concern:

Be it known that I, JOSEPHUS F. BUSSELLS, a citizen of the United States, residing at Irvington, in the county of Lancaster and State of Virginia, have invented certain new and useful Improvements in Force-Feed Devices for Presses and other Apparatus, of which the following is a specification.

This invention relates to an improved device for feeding, charging, or supplying material to pressing apparatus, cooking apparatus, or processing apparatus.

The object of the invention is to combine with a force-feed device for the several classes of apparatus named a preparatory crusher or disintegrator, so that any kind of vegetable or animal matter—such as garbage, slaughter-house refuse, and fish—may be handled on a large scale and fed in uniform and regular quantity to the apparatus for the manufacture of commercial fertilizers.

Referring to the drawings, Figure 1 is a vertical section of the apparatus. Fig. 2 is a vertical cross-section of the crusher or disintegrator. Fig. 3 is a view showing the relation of the stationary knife-plate to the revoluble prongs of the crusher. Fig. 4 shows a top view of the comb or clearer-blades of the crusher.

The letter A designates the main cylinder of the apparatus, which may be a spiral flanged press or a combined cooking and pressing apparatus, such as that shown in United States Letters Patent granted me May 17, 1898, No. 604,348, or a processing apparatus.

The object of the invention is to provide for such apparatus an improved force-feed device which will supply or convey the material to be treated in proper condition and in uniform and regular quantity.

The device for feeding in the substance to be dried is constructed and arranged to permit the entrance to the cylinder of a continuous supply of fish or other material to be treated and at the same time to prevent the escape at such device of any steam or hot air from the cylinder. This device consists of a horizontally-placed tube L, whose end connects with an opening I in the cylinder-wall. The other end of the feed-tube is closed by a head I′, and a shaft *m* extends horizontally within the feed-tube and projects through the head I′ and on the outside has a pulley *m′* to be driven by a belt or chain. A compressing-screw *n* is on the shaft *m*. This construction of horizontal tube with one end closed and its other end connecting with the cylinder on the side or top insures that a supply of the matter may be continuously fed into the cylinder under conditions that will keep the feed-tube so choked or jammed full of matter as to prevent escape of steam-pressure or hot air from the cylinder and enable considerable pressure to be maintained within the cylinder. Mounted upon and combined with this feed-neck is an improved disintegrator. The upper side of the feed-neck has an opening *b*, and the feed-passage *b′* in the bottom of the disintegrator registers with said opening. A hopper C is mounted on a case D, containing a pronged cylinder revolving in a vertical plane. Said cylinder is made up of a series of pronged disks *e*. The disks are bored centrally and all mounted on a shaft *f*, to which they are made fast by a key *g*. The shaft has bearings in the walls of the case D, and on the exterior of the case one end of the shaft has a suitable pulley or sprocket-wheel *h*. Each disk has prongs *i*, which are preferably integral with the rim. These prongs are tapered on two sides *i′* to a point, as shown in Fig. 2, and on the other two sides parallel with the flat faces of the disk the prongs have a beveled base i^2, parallel sides i^3, and a beveled end i^4. The thickness of the prongs at a cross-section through the said parallel sides i^3 is less than the thickness of the disk, and an open space *j* is left between the prongs of two adjoining disks.

At the base of the hopper C, at one side and between it and the top of the case D, is a knife-plate *k*, with its edge of hard steel presented to the points or ends i^4 of the prongs as they revolve past. This knife-plate *k* has cross-slots or elongated openings *k′* for screws, by which it is firmly confined to its position, and these enable the blade to be adjusted relative to the path of the said revoluble points or ends i^4. A down-curved feed-passage *b′* extends below the knife-plate, and below the pronged cylinder is a comb N, made up of separate toothed plates *l*. Each of these

comprises a tooth projecting horizontally and having a top with a beveled edge and an extremity or beveled end *o* slightly curved upward. The under side of each tooth recedes at *p* from the point end and inclines down and forms one side of the feed-passage *b'*. The vertical sides of each toothed plate *l* are routed out on a curved line, as at *q*, so that when two plates are close together, as seen in Fig. 4, there is formed between them a channel or passage *q'*, through which the prongs *i* of the cylinder sweep after crossing the feed-passage *b'* and when on their up movement. The slightly up-curved ends *o* of the comb-teeth take close up under the circular part of the disks *e*, and thus a comb of this construction serves to scrape and remove from the cylinder-prongs all adhering material. Each tooth at its heel end has on top a flat seat *r*, which fits close under the bottom edge *s* of the wall of the case, and a bolt *t* extends transversely through the heel end of all the teeth and secures them firmly to their position in the case.

The matter that is to be treated is supplied by any suitable means to the hopper C, where it is acted on by the prongs *i* of the cylinder and the knife-plate *k* and disintegrated and put into the condition of a uniformly broken-up mass suitable to enter the force-feed device. This broken-up mass passes down the feed-passage *b'* and through the opening *b* into the horizontal feed-neck L. The matter will fill the horizontal tube L and become choked or jammed therein, as already described, to such a degree as to prevent back escape of steam, hot air, or whatever pressure may be in the cylinder A.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a feed-tube having an opening in its upper side, a case mounted over said feed-tube and having a feed-passage registering with said opening, a revoluble pronged cylinder mounted in said case and whose prongs have a path of revolution through said feed-passage, and a comb provided with horizontally-projecting teeth each having a slightly-upwardly-curved end, and a receding and downwardly-inclined under side forming one side of the said feed-passage as set forth.

2. The combination of a feed-tube having an opening in its upper side, a case mounted over said feed-tube and having a feed-passage registering with said opening, a revoluble pronged cylinder mounted in said case and whose prongs have a path of revolution through said feed-passage, and a comb N made up of separate toothed plates *l* each of which consists of a tooth projecting horizontally and having a top with a beveled edge whose extremity is slightly curved upward and takes close under the body-surface of the cylinder, the under side of each tooth receding and inclining downwardly from such extremity and forming a side of the said feed-passage, and a bolt *t* extending transversely through the teeth and securing them in the case, as and for the purpose set forth.

3. The combination of a horizontally-placed feed-tube having in its upper side an opening; a case mounted over the feed-tube and having a down-curved feed-passage registering with said opening; a shaft extending horizontally through said case; a cylinder made up of a series of pronged disks centrally mounted on said shaft and keyed thereto and the prongs having a path of revolution through said down-curved feed-passage; a comb whose heel end is secured at the case-wall and whose teeth project horizontally toward the said feed-passage—said comb having curved channels through which the disk-prongs sweep upward after crossing the feed-passage; and a hopper on the said case, as set forth.

4. The combination of a horizontally-placed feed-tube having in its upper side an opening; a case mounted over the feed-tube and having a down-curved feed-passage registering with said opening; a pronged cylinder mounted in said case—the prongs moving in a path through said down-curved feed-passage; a hopper mounted upon the said case; and a knife-plate seated between the hopper-base and top of case and presenting its edge to the points of the prongs as they sweep past, said knife-plate being formed with elongated openings adapted to receive fastening devices by which it may be adjustably held, as set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

JOSEPHUS F. BUSSELLS.

Witnesses:
GEORGE KOETHER,
CHARLES B. MANN, Jr.