(No Model.) 2 Sheets—Sheet 1.

D. N. NESTER.

PNEUMATIC STACKER.

No. 570,182. Patented Oct. 27, 1896.

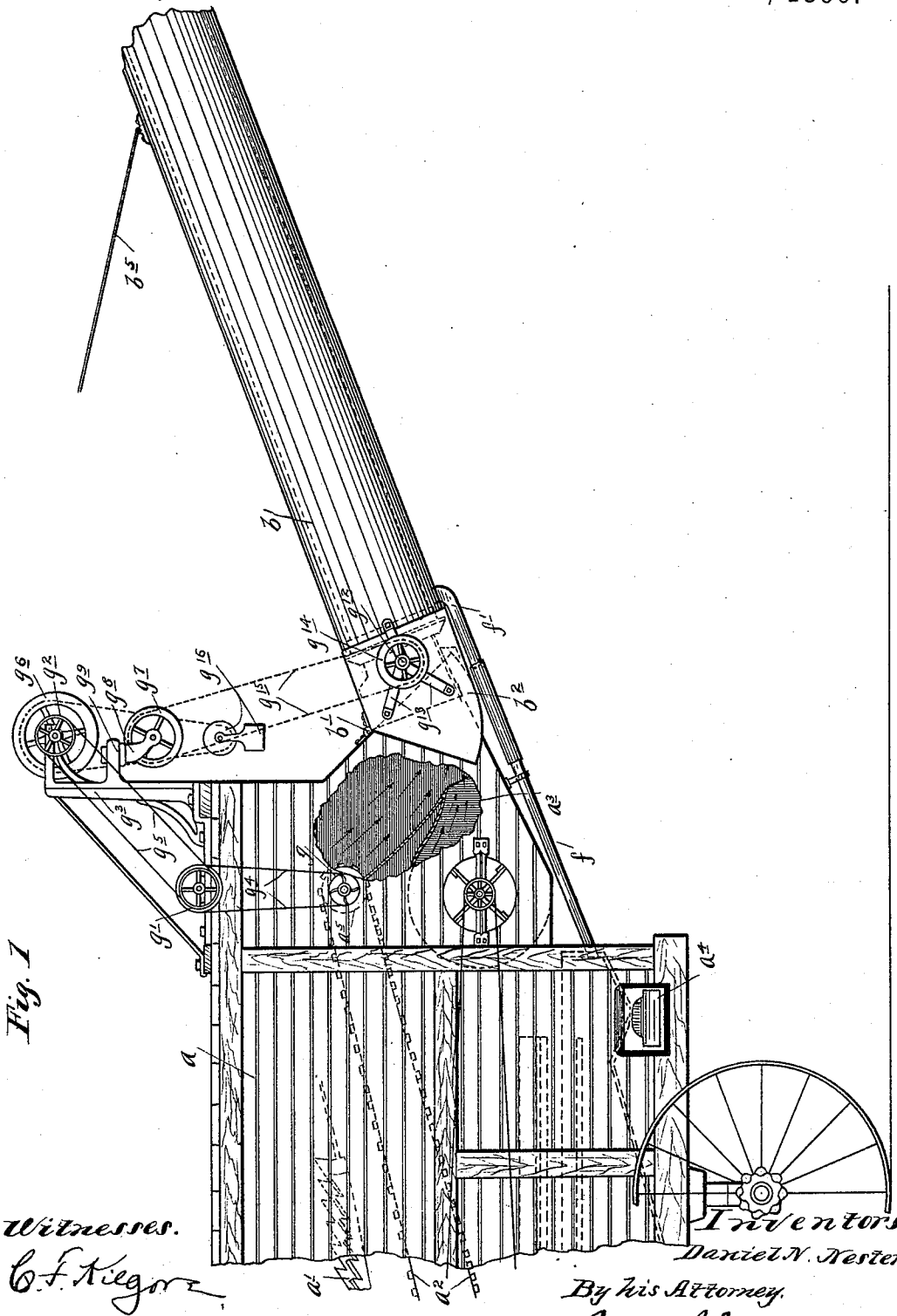

Fig. 1

Witnesses.
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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2

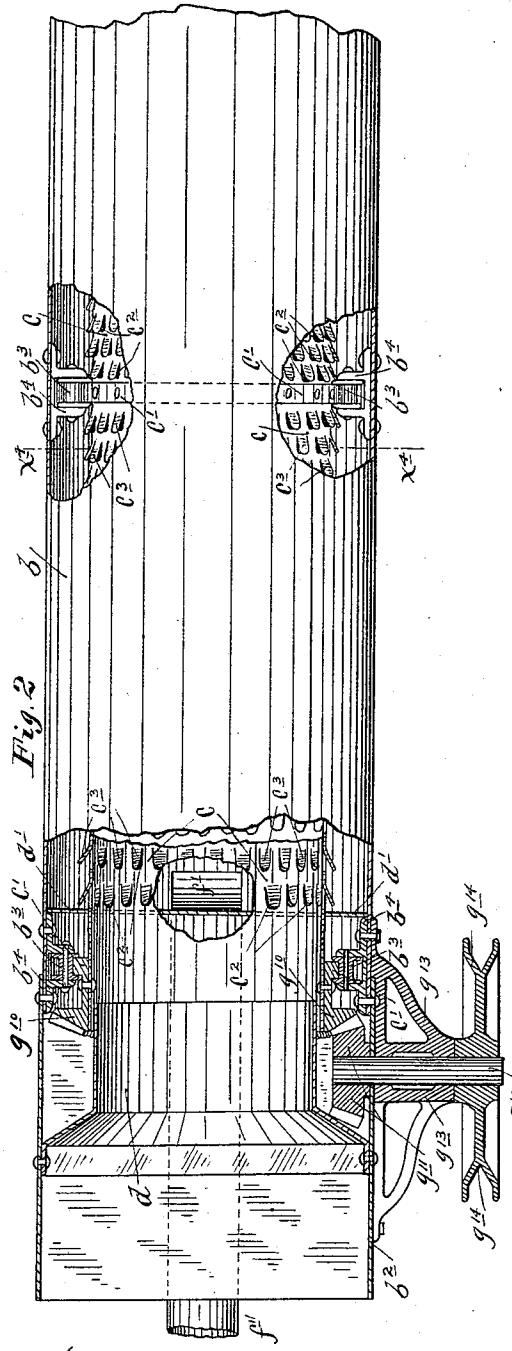


Fig. 4.

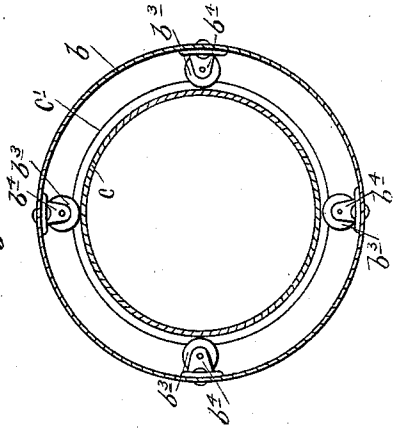
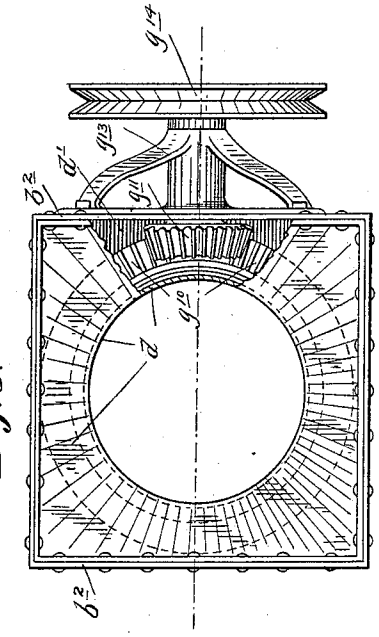


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

DANIEL N. NESTER, OF ST. PAUL, MINNESOTA, ASSIGNOR OF ONE-HALF TO ALICE M. VALLEE, OF SAME PLACE.

PNEUMATIC STACKER.

SPECIFICATION forming part of Letters Patent No. 570,182, dated October 27, 1896.

Application filed April 17, 1896. Serial No. 587,991. (No model.)

To all whom it may concern:

Be it known that I, DANIEL N. NESTER, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Pneumatic Stackers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to provide an improvement in pneumatic stackers. These pneumatic stackers as hitherto constructed are subject to a serious objection which arises from the fact that the strong forced draft which is essential to the operation of the stacker will inevitably draw in more or less of the threshed grain, which, being deposited with the straw, will of course be wasted.

It is the object of my invention to obviate the above defect by the provision of a device which will catch and return the grain which has been sucked into the stacker-tube.

The preferred form of my device whereby I accomplish this result is illustrated in the accompanying drawings, wherein, like letters referring to like parts throughout the several views—

Figure 1 is a side elevation showing my improved stacker applied to a threshing-machine or separator, some parts being broken away. Fig. 2 is a view, partly in plan and partly in horizontal section, showing my improved stacker tube or trunk removed from the separator, some parts of the same being broken away. Fig. 3 is an end view of my improved stacker-tube, looking from the receiving end of the same; and Fig. 4 is a transverse vertical section taken on the line X^4 X^4 of Fig. 2, looking from the receiving end of the tube.

a indicates the frame, *a'* the separating-table, a^2 the rattle-rake conveyer, a^3 the stacker-fan, and a^4 the tailings-spout, of an ordinary threshing-machine or separator.

b indicates the exterior member of a pair of concentrically-arranged stacker-tubes. This stacker-tube *b* is hinged at its receiving end to the delivery end of the separator or frame *a* by means of the hinge-joint *b'*, and is provided with side wings b^2, which telescope with the sides of said separator-frame *a* to form an overlapping joint therewith. The parts so far described would constitute substantially the ordinary pneumatic-stacker construction.

In the preferred form of my improved device I employ in connection with the stacker-tube *b* the following devices: *c* indicates an interior stacker-tube, which is of considerable less diameter than the tube *b*, is positioned longitudinally of said tube *b*, and is mounted for rotary motion therein by means of flanged antifriction-rollers b^3, journaled in brackets b^4, secured to said tube *b*, and by annular guide rings or flanges *c'*, secured on said tube *c* and working between the flanges of said antifriction-rollers b^3. Nearly the entire surface of this interior tube *c* is perforated by slits c^2. Preferably these slits c^2 are formed by lips c^3, which are cut from the body of the tube *c* at all but their outer ends, and are pressed outward so that they point in a direction reverse from the travel of the stock through said tube.

d indicates the fixed tube-section, the receiving or inner end of which is bell-mouthed and secured to the interior of the tube *b*, while its outer end works telescopically within the receiving end of the rotary tube *c*.

The annular compartment formed between the tubes *b* and *c* is closed by means of an annular bottom piece *d'*, which is secured at its outer edge to the tube *b* and works loosely against the tube *c*. *f f'* indicate a return-spout which opens from the bottom of the stacker-tube *b* at a point just outward of the annular bottom piece *d'*, and which extends to the tailings-spout a^4 of the separator. It will be noted that this return-tube *f f'* is formed by telescoping sections, so as to permit the vertical pivotal movement of the stacker-tube *b* on its pivot *b'*. This vertical movement of the stacker-tube *b* and parts carried thereby may be controlled by means of a connection b^5, which is secured at one end to the outer end of said tube *b* and extends to a windlass or some other suitable device (not shown) located on a separator-frame *a*.

As shown, motion is imparted to the interior stacker-tube *c* by means of the following driving devices: *g* indicates a small pulley located on the outer end of the shaft of the upper member of the rattle-rake rollers a^5.

g' indicates a double-faced pulley mounted in suitable bearings on top of the separator-frame *a*.

g^2 indicates a pulley mounted in the upper end of a bracket g^3, supported at its base from the top of the rear end of the separator-frame *a*.

g^4 indicates a belt passing over the pulleys *g* and *g'*, and g^5 indicates a belt passing over the pulleys *g'* and g^2.

g^6 indicates a relatively large driving-sheave secured on a common shaft with the pulley g^2.

g^7 indicates an idle sheave mounted in a pivoted bracket g^8, swiveled in a rearwardly-projecting arm g^9 of the bracket g^3.

g^{10} indicates an annular beveled gear which is secured to the receiving end of the rotary interior stacker-tube *c*.

g^{11} indicates a small beveled gear working in mesh with the annular beveled wheel g^{10}. The beveled gear g^{11} is secured on the inner end of a short shaft g^{12}, mounted in a bearing-bracket g^{13}, secured to the exterior tube *b*.

g^{14} indicates a sheave secured to the outer end of the shaft g^{12}. g^{15} indicates an endless cable which passes over the sheaves g^6, g^7, and g^{14} and also over a weighted floating sheave g^{16}. This floating sheave g^{16} serves as a belt-tightener and permits the endless driving-cable g^{15} to automatically lengthen and take up slack under the vertical pivotal movement of the stacker-tube.

By tracing the above connections it will become obvious that whenever the threshing-machine or separator is in operation motion will be imparted from the rattle-rake conveyer a^2 through said connections to the annular gear g^{10} on the interior tube-section *c*, and hence will cause said tube *c* to continually rotate within the exterior tube *b*. Under this rotary motion of the perforated interior drum *c* the straw as it passes therethrough will be stirred and shaken, so that any grain which has been sucked into the tube by the forced draft will be permitted to fall to the bottom portion of said perforate rotary tube. The grain when thus precipitated onto the perforate surface of the rotary tube *c* will be caught and lodged in the pockets formed by the depressed lips c^3, from whence it will be free to fall through the slots c^2 into the annular compartment formed between the stacker-tubes *b* and *c*. As already indicated, the grain which has been precipitated into this annular compartment will flow under the action of gravity through the return-spout *ff'* into the tailings-spout a^4, from whence it will be returned with the other tailings to the separating mechanism of the machine.

It is thought to be perfectly obvious that my above-described invention will be extremely efficient in its action and will effect a large saving in grain.

It will be understood, of course, that various alterations in the details of construction of the above-described invention may be made without departing from the spirit of the same. For instance, the rotary stacker-tube *c* might be provided with perforations differing from those above described. However, I much prefer the slot-and-lip perforations c^2 c^3 above described. Again, various forms of driving connections for causing the rotation of the stacker-tube *c* or equivalent device might be substituted for the driving connection shown.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. In a pneumatic stacker, the combination with the exterior stacker tube or trunk, of an interior sifting-surface spaced apart from and mounted for agitating motion within said stacker-tube and means for producing an air-current through said tube, substantially as and for the purposes set forth.

2. In a pneumatic stacker, the combination with the exterior stacker tube or trunk, of a perforated interior tube spaced apart from and mounted for rotary motion within said stacker-tube and means for producing an air-current through said tube, substantially as described.

3. The combination with a separator, of a pneumatic stacker comprising an exterior stacker-tube, a perforated interior tube spaced apart from and mounted for rotary motion within the stacker-tube, a bell-mouthed tubular section fixed at its mouth end to said exterior stacker-tube and telescoping at its other end with said interior rotary tube, substantially as described.

4. In a pneumatic stacker, the combination with the exterior tube of the interior perforated tube, spaced apart from and mounted for rotary motion within said exterior tube, annular rings or flanges carried by said interior tube, flanged rollers mounted in brackets secured to said exterior tube and engaging said annular flanges on said interior tube, and means for producing an air-current through said tube, substantially as described.

5. In a pneumatic stacker, the combination with the exterior tube, of the interior perforated tube, spaced apart from and mounted for rotary motion within said exterior tube, annular rings or flanges carried by said interior tube and resting on antifriction-rollers carried by said exterior tube, positive driving mechanism for imparting rotary motion to said interior tube, and means for producing an air-current through said tube, substantially as described.

6. The combination with the exterior tube *b* and the bell-mouthed fixed tube-section *d*, in the interior of the same, of the rotary perforated tube *c* provided with the annular flanges *c'* and the annular double gear b^{10},

the antifriction-rollers b^3 engaging the flanges c' and mounted, in brackets b^4 on the interior of the tube b, the annular bottom plate b' between the tube-sections b and c, the return feed-spout $f\,f'$ extending from the annular compartment between said tubes b and c, the beveled pinion g^{11} carried by shaft g^{12} and engaging said annular wheel b^{10} on the tube c, and intermediate driving mechanism between said shafts b^{12} and the thresher mechanism, substantially as described.

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

DANIEL N. NESTER.

Witnesses:
JAS. F. WILLIAMSON,
E. F. ELMORE.