

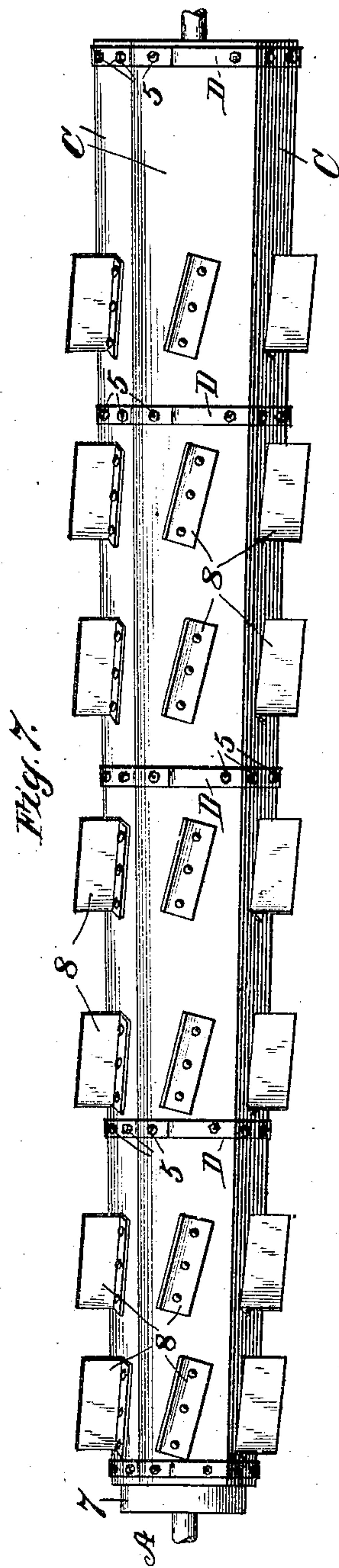
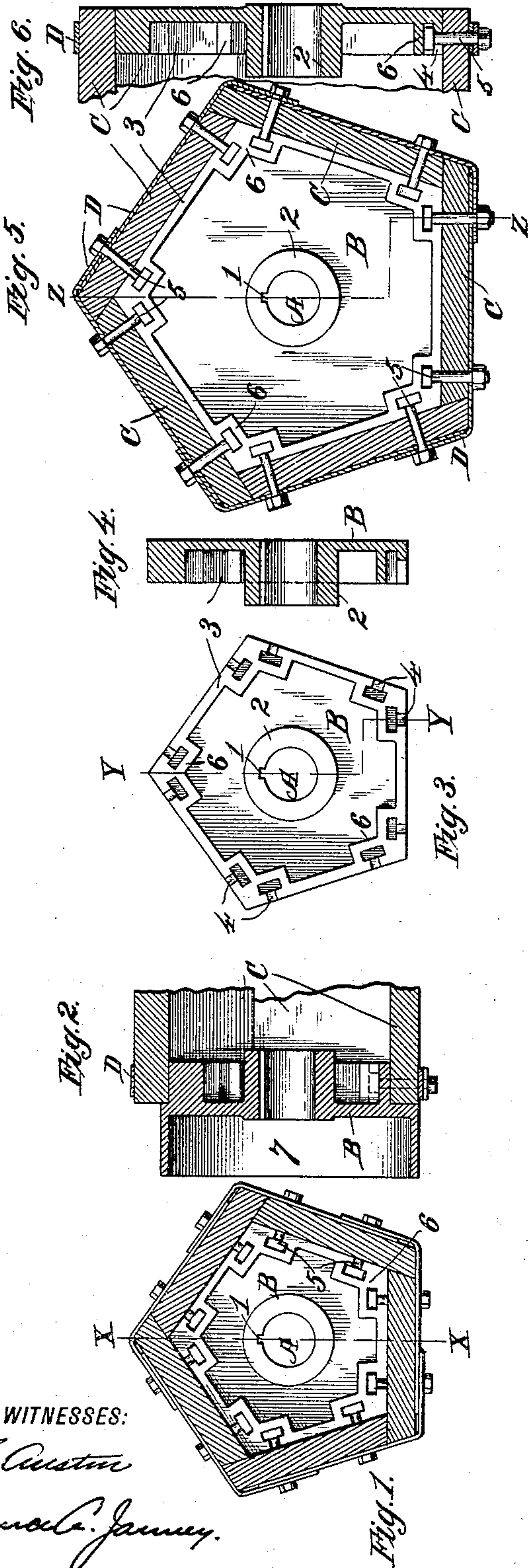
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PATENTED NOV. 1, 1904.

J. H. EMPSON.  
ROTATING DRUM FOR PEA SHELLING MACHINES.

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NO MODEL.



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# UNITED STATES PATENT OFFICE.

JOHN HOWARD EMPSON, OF LONGMONT, COLORADO.

## ROTATING DRUM FOR PEA-SHELLING MACHINES.

SPECIFICATION forming part of Letters Patent No. 773,859, dated November 1, 1904.

Application filed January 29, 1904. Serial No. 191,100. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN HOWARD EMPSON, a citizen of the United States, residing at Longmont, in the county of Boulder and State of Colorado, have invented certain new and useful Improvements in Rotating Drums for Pea-Shelling Machines, of which the following is a specification.

The construction of drum illustrated and described herewith as embodying my invention has been developed by long and careful experimentation, and it is found in practice to obviate to a very considerable extent the difficulties which have been encountered in the drums used heretofore.

Experience has demonstrated that a drum to be effective in a pea-shelling machine capable of operating upon green peas on the vine must possess certain qualities, viz:

First, rigidity. Vibration must be minimized, and the drum's rotation on its axis must be smooth if the coaction of parts in the pea-shelling machine is to be effectual.

Second, simplicity. If the drum be composed of many parts, it is constantly liable to disintegration brought about by the continual rapid rotation thereof.

The invention described herewith accomplishes the needed improvements along the lines indicated.

In the drawings, Figure 1 is a transverse vertical section of a preferred form of the drum, said section being taken adjacent to the spider at the smaller end of the drum. Fig. 2 is a partial longitudinal section at the smaller end of the drum along the line X X of Fig. 1. Fig. 3 is an end or face view of one of the intermediate spiders of the drum. Fig. 4 is a longitudinal sectional view of the said intermediate spider along the line Y Y of Fig. 3. Fig. 5 is a transverse vertical section corresponding to the view shown in Fig. 1 adjacent to the spider at the greater end of the drum. Fig. 6 is a partial longitudinal section at the greater end of the drum, taken along the line Z Z of Fig. 5. Fig. 7 is a side elevation of the complete drum.

The drum shown in the accompanying drawings is of less diameter at one end than at the

other; but this is merely a preferred form, it being entirely consistent with my invention to employ spiders of uniform size throughout the length of the drum.

In the figures, A is the shaft upon which the drum rotates, and A also represents the shaftways in the spiders when said spiders are shown separately from the rest of the drum.

1 1 are the keyways let into the shaftways of the spiders, by means of which said spiders are fixed to the shaft A.

B represents the spiders which form the framework of the drum. The spider at the smaller end of the drum has conveniently certain points of difference from the other spiders, which points of difference will be hereinafter explained with reasons for their existence. Each spider (with the exception of the said spider at the smaller end of the drum) has the following parts preferably formed integrally with the main or body portion thereof. 2 2 are sleeves or collars through which passes the cylindrical opening forming the shaftway A, in which are formed the keyways 1. 3 is the laterally-extending peripheral rim or flange of the spider B, affording support and points of attachment for the parts to be referred to later which form the surface of the drum. 4 4 are open-mouthed slots entering the rim or flange 3 at convenient intervals for the reception of the bolts 5, which secure to the spiders B the parts which form the surface of the drum. 6 6 are brackets adjacent to the open-mouthed slots 4, affording open-mouthed recesses which receive and secure from rotation the heads of the bolts 5 and which serve as braces to strengthen and support the rims or flanges 3. The relation between the open-mouthed slots and the brackets 6 6 is of importance, in that the surface plates of the drum may be readily withdrawn without necessitating dissociation from the through-bolts 5 by slightly loosening said bolts and moving said plates endwise, thereby drawing said bolts from their respective slots 4 and their respective open-mouthed recesses and permitting the removal of the said plates. The easy removal of the plates is desirable because



of the frequent necessity for shifting some of the beaters 8 or replacing worn or broken beaters by new ones. When it is desired to return a plate to the drum, it may be done by putting said plate in position displaced endwise a short distance and then thrusting said plate back from its endwise displacement, thereby sending the bolts into their proper slots and recesses. Said bolts thereupon being tightly screwed up are secured against rotation, and the parts of the drum are held rigidly in position. When the encircling bands D D are employed, they are conveniently loosened or removed when it is desired to withdraw the surface plates in the manner described above.

C C are plates of wood or other convenient material, preferably extending the entire length of the drum, which when in place form the outer surface of the drum. It has been found in practice to be desirable to have these plates C extend throughout the entire length of the drum; but if for any reason it were convenient or necessary to employ plates of less length such a step might be taken without in the least departing from the idea of this invention. It is further desirable to give the plates C C such width and shape that each of them will overlap the edge of an adjacent plate in the manner clearly shown in Figs. 1 and 5. It is apparent that this is not essential; but such an arrangement contributes to the unity and rigidity of the drum's construction and is of value for that reason.

D D are iron bands encircling the drum adjacent to the spiders and fixed in place by through-bolts 5 passing through the flanges or rims 3, the surface plates C, and the bands D, the nuts of said through-bolts 5 bearing upon the outer faces of the bands D. These bands are formed, preferably, in angular sections, so that an arm of each will overlap an arm of the section next adjacent. This arrangement gives great strength and stiffness to the drum. It is obvious that bands made of single plates might be employed in this connection without necessitating the least departure from the lines of this invention.

The spider hereinbefore mentioned at the smaller end of the drum is unlike the other spiders in regard to one feature. It is apparent that all the spiders might possess this feature, but it is deemed preferable to employ it upon this one spider only. This one feature of dissimilarity is the flange or rim 7, which being formed, preferably, integrally with the rest of the spider extends laterally in a direction opposite to the interior of the said drum. The purpose of this flange or rim 7 is to form easy frictional contact with such parts of the pea-shelling machine as must bear against the inner drum and form closure therewith.

8 8 are the paddles or beaters usually at-

tached to the inner drums of pea-shelling machines. They may be of any convenient design and attached in any convenient manner.

As has already been set forth herein, the purpose of this invention is twofold: first, to increase the rigidity of the drum, and, second, to reduce the number of parts necessary to be used in the construction of the drum. The peculiar construction of the spiders, with their laterally-extending parts 3 and the brackets 6, results in great rigidity. The spiders are rigidly fixed to the shaft A. The surface plates C, extending throughout the length of the drum, reinforced and stiffened by the bands D, give to the drum a unity and rigidity which is not to be found in the best of the drums hitherto used in this art. The parts of the drum are held together by the through-bolts 5 so securely—many parts being fastened by a single bolt—that the effect is to produce a drum of the greatest stiffness and stability.

Heretofore the surfaces of the drums of pea-shelling machines have been very largely composed of pluralities of short plates extending between adjacent spiders. This construction presented great difficulties. Firm fixation was found to be impossible, and the plates did not in the least contribute to the rigidity of the drum. There was a constant tendency of the plates to slip from their necessarily-insecure fastenings; and thereby very greatly to interfere with the use of the entire machine. In the construction presented as embodying this invention, however, these faults are not to be found. The plates C contribute very greatly to the drum's stiffness. The parts of the drum, and especially the surface plates, are fixed in position with the utmost security, and the drum as a whole, having its parts so well combined and bound together, is a unit which aids most satisfactorily in the operation of the pea-shelling machine.

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

1. A drum having, in combination, a plurality of spiders; laterally-extending rims on said spiders; open-mouthed slots in said rims; brackets on said spiders; open-mouthed recesses within the rims and communicating with said slots; surface plates extending throughout the length of and completely around the drum; bands encircling the drum outside said plates, and in the planes of said spiders respectively; through-bolts passing through said slots, plates and bands, with their heads located in and prevented from rotation by said recesses; and means outside of the bands for retaining said through-bolts in position.

2. A drum having, in combination, a plurality of spiders; laterally-extending rims on said spiders; open-mouthed slots in said rims; surface plates; bands encircling the drum out-



side said plates, and in the planes of said spiders respectively; through-bolts passing through said slots, plates and bands; and means for retaining said through-bolts in position.

3. A drum having, in combination, a plurality of spiders; brackets on said spiders; open-mouthed recesses in said brackets; surface plates; bands encircling the drum outside said plates, and in the planes of said spiders respectively; through-bolts passing through said plates and bands, with their heads located in and prevented from rotation by said recesses; and means for retaining said through-bolts in position.

4. A pea-shelling machine provided with a rotary polyhedral hulling-drum having, in combination, a central longitudinal through-shaft; a plurality of spaced polygonal spiders, including end and intermediate spiders fixed upon said shaft; a laterally-extending peripheral rim on each spider; surface plates extending the length of the drum, each forming a lateral face of the drum, each bearing upon external homologous sides of all said spiders, and each in succession overlapping the edge of an adjoining plate; a band encircling said plates outside of and in the plane of the peripheral rim of each of said spiders, said band being polygonal in form to correspond with the cross-section of the drum; through-bolts traversing said bands, plates and rims, there being a bolt near each lateral edge of a plate in the plane of each spider-rim; and means for securing said through-bolts in position.

5. A pea-shelling machine provided with a rotary polyhedral hulling-drum having, in combination, a central longitudinal through-shaft; a plurality of spaced polygonal spiders, including end and intermediate spiders fixed upon said shaft; surface plates, each forming a lateral face of the drum, each bearing upon external homologous sides of all said spiders, and each in succession overlapping the edge of an adjoining plate; a band encircling said plates outside of and in the plane of each spider, said band being polygonal in form to correspond with the cross-section of the drum; through-bolts traversing said bands, plates and spiders; and means for securing said through-bolts in position.

6. A pea-shelling machine provided with a rotary polyhedral hulling-drum having, in combination, a central longitudinal through-

shaft; a plurality of spaced polygonal spiders, including end and intermediate spiders fixed upon said shaft; surface plates, each forming a lateral face of the drum, each bearing upon external homologous sides of all said spiders, and each in succession overlapping the edge of an adjoining plate; a band encircling said plates outside of and in the plane of each spider, said band being polygonal in form to correspond with the cross-section of the drum; and means for securing said spiders, bands and plates together.

7. A pea-shelling machine provided with a rotary polyhedral hulling-drum having, in combination, a central longitudinal through-shaft; a plurality of spaced polygonal spiders, including end and intermediate spiders fixed upon said shaft; surface plates, each forming a lateral face of the drum, each bearing upon external homologous sides of all said spiders; a band encircling said plates outside of and in the plane of each spider, said band being polygonal in form to correspond with the cross-section of the drum; through-bolts traversing said bands, plates and spiders, there being a bolt near each lateral edge of a plate in the plane of each spider; and means for securing said through-bolts in position.

8. A drum having, in combination, a plurality of spiders; laterally-extending rims on said spiders; open-mouthed slots in said rims; surface plates; through-bolts passing through said slots and plates; and means for retaining said through-bolts in position.

9. A drum having, in combination, a plurality of spiders; brackets on said spiders; open-mouthed recesses in said brackets; surface plates; through-bolts passing through said plates, with their heads retained in and prevented from rotation by said recesses; and means for retaining said through-bolts in position.

10. A drum having, in combination, a plurality of spiders; overlapping surface plates; bands encircling said drum; and means for retaining the several parts in position.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN HOWARD EMPSON.

Witnesses:

H. J. CANIS,  
RUTH M. WALLIHAN.