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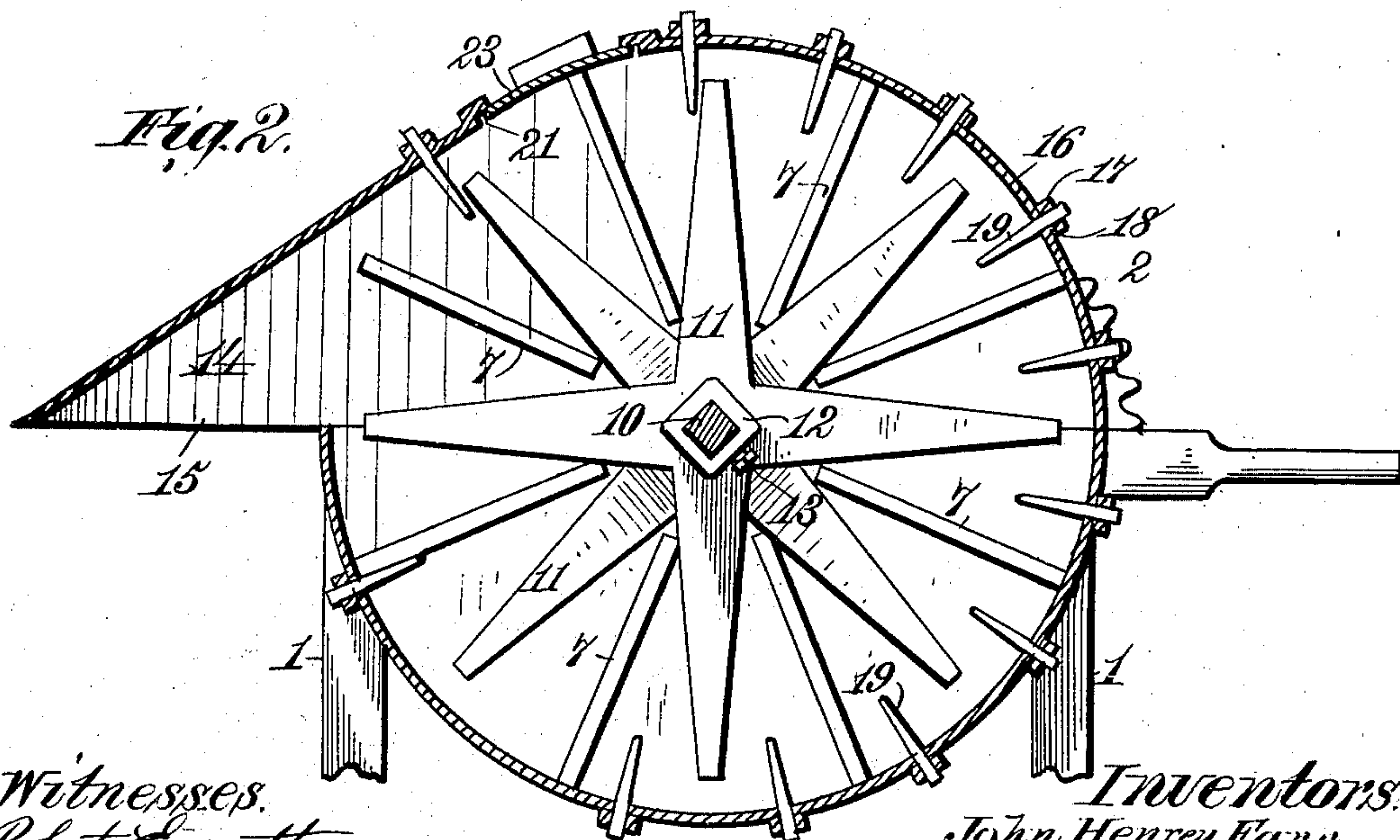
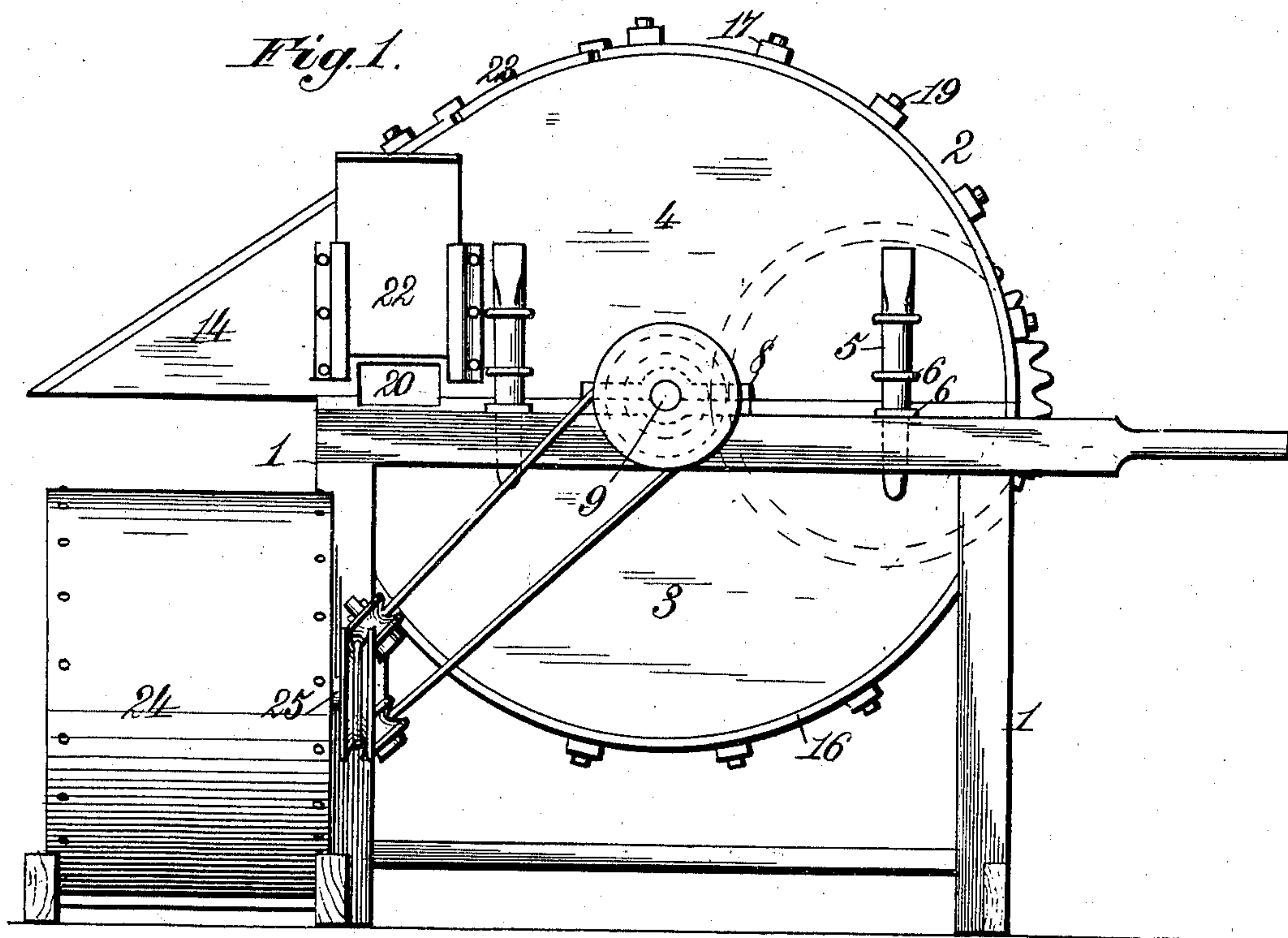
Patented Aug. 21, 1900.

J. H. FARR & J. S. EVANS.
PEA SHELLER AND THRESHER.

(Application filed Dec. 13, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses.
Robert Everett,
F. B. Keeler

Inventors:
John Henrey Farr.
James Stanton Evans.
By James L. Norris.
Att'y

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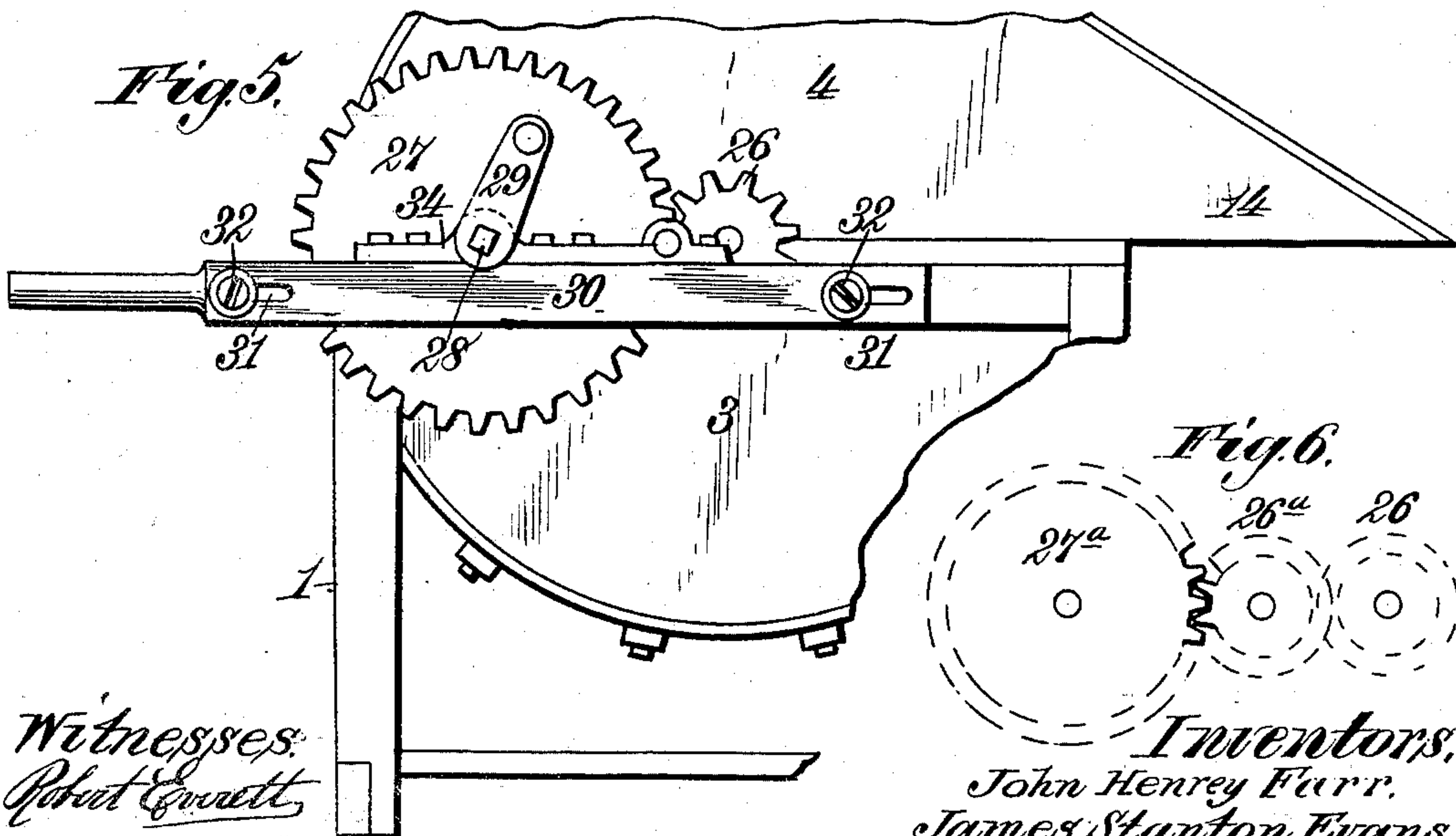
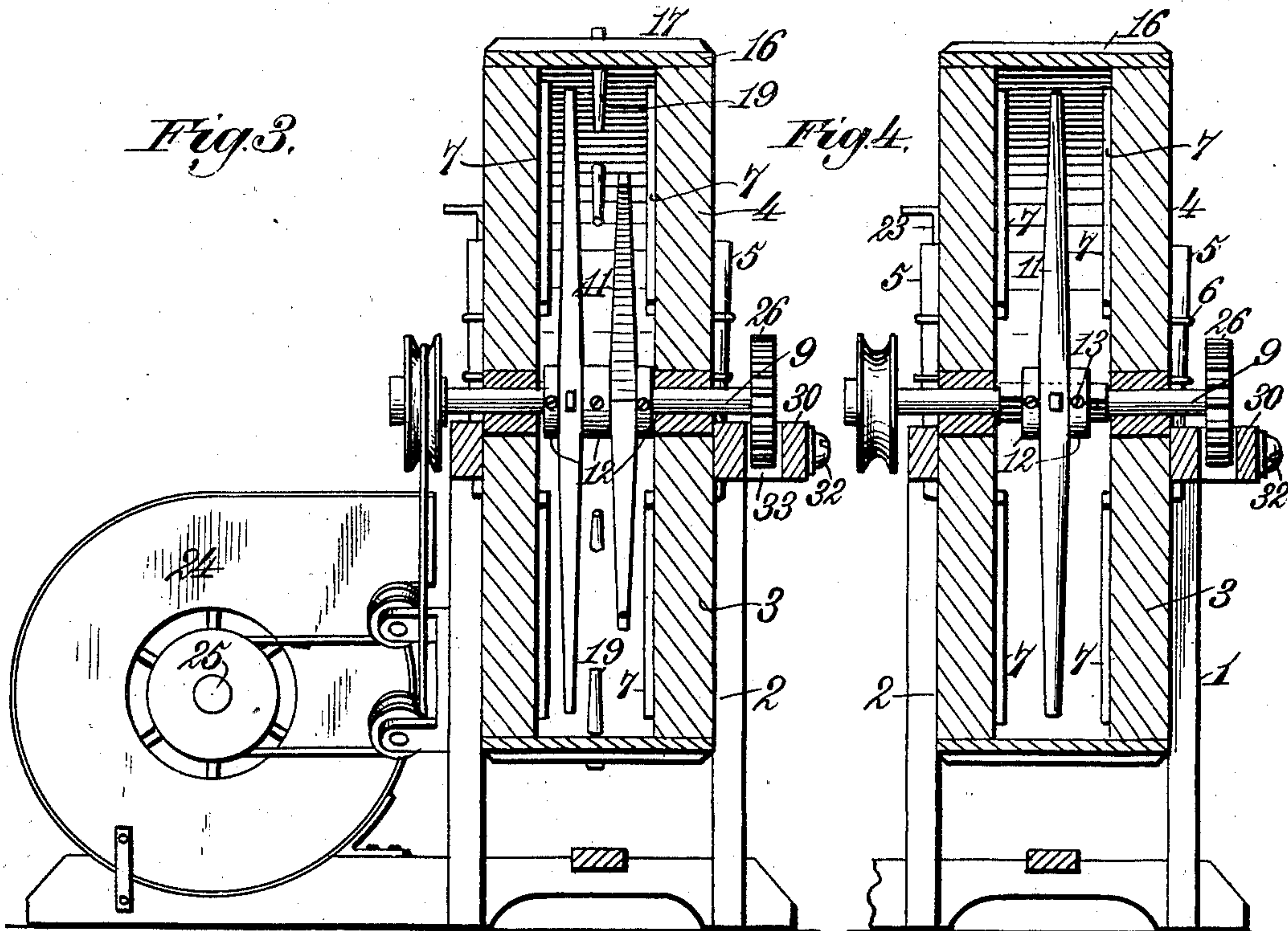
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2 Sheets—Sheet 2.



Witnesses:
Robert Everett

J. B. Keefe

Inventors,
John Henry Farr,
James Stanton Evans,
By James L. Norris
Att'y.

UNITED STATES PATENT OFFICE.

JOHN HENREY FARR AND JAMES S. EVANS, OF DETROIT, ALABAMA.

PEA-SHELLER AND THRESHER.

SPECIFICATION forming part of Letters Patent No. 656,533, dated August 21, 1900.

Application filed December 13, 1899. Serial No. 740,189. (No model.)

To all whom it may concern:

Be it known that we, JOHN HENREY FARR and JAMES S. EVANS, citizens of the United States, residing at Detroit, in the county of Lamar and State of Alabama, have invented new and useful Improvements in a Combined Pea-Sheller and Threshing-Machine, of which the following is a specification.

This invention relates to a combined pea-sheller and threshing-machine, and has for its object to provide an improved machine of simple and inexpensive construction by means of which peas may be rapidly and efficiently shelled and small grain threshed; and to this end our invention consists in the features and in the construction, combination, and arrangement of parts hereinafter described, and particularly pointed out in the claims following the description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a view in elevation of one side of our machine. Fig. 2 is a vertical longitudinal sectional view of the same. Fig. 3 is a transverse vertical sectional view illustrating the machine adjusted for shelling peas. Fig. 4 is a similar view showing the machine adjusted for threshing small grain. Fig. 5 is a detail view of the gearing for driving the machine. Fig. 6 is a similar view of a modified form of gearing, showing the arrangement used when hulling peas and feeding through the side opening.

Referring to the drawings, the numeral 1 indicates the frame of the machine, and 2 the cylindrical casing supported thereon and inclosing the shelling and threshing mechanisms. The casing comprises two semicylindrical sections 3 and 4, the lower section 3 being supported in the frame 1 and the upper section 4 being removably seated on the lower section and detachably secured thereto by stakes or standards 5, which fit in staples or sockets 6, attached to the sides of the upper and lower sections. Slats or ribs 7 are attached to the inner sides of the cylindrical casing and extend radially from the center to the periphery thereof. Half-bearings 8 are fitted centrally in the meeting edges of the two sections 3 and 4 and form journal-bearings for a shaft 9, which may be readily removed and replaced when the upper section

4 is taken off. Intermediate its ends the shaft is made square in cross-section, as indicated at 10, and on said squared portion are mounted two or more sets of flails, each set comprising a plurality of radial beater-arms 11, rigidly connected together at the center and provided with a square aperture to correspond to the squared portion of the shaft on which the flails are mounted. Also fitted on the squared portion of the shaft on each side of and between the sets of flails are collars 12, which are held fixed on the shaft by set-screws 13. Said collars operate to properly space the flails apart and prevent endwise movement of the same on the shaft. As shown, the sets of flails are so arranged on the shaft that the arms of one set alternate with those of the other set.

The sides of the upper section 4 are projected horizontally in front of the machine, as indicated at 14, to form a discharge-opening 15, and the perimeter of the cylindrical casing is closed by a circumferential rim 16, that extends from the inner edge of the discharge-opening 15 around the cylindrical casing to the outer edge of said opening. Attached to the exterior of the rim 16, at suitable distances apart, are transverse slats 17, and formed centrally in each of said slats and in the rim are perforations 18, in which perforations are adapted to be removably fitted wooden teeth 19, that project radially within the cylindrical casing between the two sets of flails. When the teeth 19 are removed for the purpose hereinafter explained, the perforations 18 are closed by plugs provided for the purpose. A feed-opening 20 is formed in one side of the cylindrical casing, near the front of the latter, and a similar feed-opening 21 may also be provided in the top of the rim 16. Sliding covers 22 and 23 are provided for closing the respective feed-openings.

A fan 24 is arranged at the front of and to one side of the machine, and its shaft 25 is geared to one end of the flail-shaft 9, which operates to drive the fan. The fan delivers a constant air-blast beneath the discharge-opening 15, whereby the hulls, chaff, and the like are separated from the peas and grain and blown off to one side of the machine. On the opposite end of the flail-shaft is fixed a gear-wheel 26, which gears with a relatively-

large gear-wheel 27, mounted on a shaft 28, on which is fixed a crank 29 to enable the machine to be driven by hand.

In order to permit the ready removal of the flail-shaft and facilitate the changing of the gearing, we provide the following means: The numeral 30 indicates a side bar or beam slotted at its opposite ends, as at 31, and secured to the side of the frame 1 by bolts 32. The bolts 32 pass through the slots 31 and through spacer-blocks 33, disposed between the side bar and the frame and screw into the latter. The shaft 28, carrying the large gear-wheel 27, is journaled in a journal-box 34, fixed to the side bar, while the end of the flail-shaft 9 is journaled in the half-bearings 8, before referred to, and most clearly shown in Figs. 1 and 4 of the drawings. When it becomes necessary to remove the flail-shaft or to substitute different-sized gears, the bolts 32 are first loosened, when the slotted side bar may be moved endwise to throw the gear 27 out of gear with the gear 26, after which the flail-shaft may be removed by lifting off the upper section 4 or the gear 27 removed from its shaft and a different-sized gear substituted. As shown, the relative sizes of the gears 26 and 27 is such that at each revolution of the gear 27 the gear 26, and with it the flail-shaft, will be rotated approximately seven times. At times, however, as will be hereinafter explained, it becomes desirable to change the speed at which the flails are driven, and to accomplish this result a gear 27^a (see Fig. 6) may be substituted for the gear 27 and the shaft 28 adjusted away from the flail-shaft, after which an intermediate gear-wheel 26^a may be journaled in a bearing 35, preferably formed integral with the bearing 34 and geared up with the gear-wheels 27^a and 26, the relative sizes of such gears being such that at each rotation of the gear 27^a the gear 26 and the flails will be rotated approximately three times.

The operation of our improved machine is as follows: If the machine is to be used for shelling peas, the wooden teeth 19 are inserted in the perforations 18, so as to project between the two sets of flails, and the gear-wheel 26^a is journaled in the bearing 35, that will so operate in conjunction with the gear-wheel 27^a, which is smaller than the gear-wheel 27, that when the gear-wheel 27^a is rotated it will at each rotation communicate approximately three revolutions to the flails. The peas may be fed into the cylindrical casing through either the feed-opening 20 or 21, but preferably through the opening 20 in hulling peas, and as the flails revolve they carry with them the pods and, acting in concert with the wooden pins and the radial ribs on the inner sides of the cylindrical casing, operate to break open the pods or shells and thresh out the peas. The peas and pods are discharged together through the discharge-opening 15, and as they drop by gravity the air-blast from the fan blows the pods, dirt, and dust to one

side of the machine, while the peas, owing to their greater weight, drop into a suitable receptacle provided for the purpose. If it be desired to thresh out small grain, the upper section 4 is first removed, the wooden pins 19 withdrawn, and the perforations 18 plugged up. One of the collars 12 and one of the sets of flails are next removed from the flail-shaft and the remaining set of flails shifted endwise on the shaft, so that said flails will revolve centrally between the sides of the cylindrical casing. The gear-wheels 27^a and 26^a, before referred to, are next removed and the larger gear-wheel 27 substituted and the side bars adjusted to cause said gear-wheel to properly gear with the gear-wheel 26, after which the upper section 4 is replaced and secured in position. In practice the gear-wheel substituted for the gear-wheels 27^a and 26^a should be of such a size relatively to the gear-wheel 26 that at each rotation of the latter the flails will be rotated approximately seven times. The grain is fed to the machine, threshed out, and discharged and separated in the manner before described. In threshing out cereals in the machine one set of flails only is employed, as such single set, in connection with the radial ribs, is amply sufficient, and the straw would be apt to clog the machine should two sets of flails and the wooden pins or teeth be employed. So, also, in adjusting the machine to change it from a sheller to a thresher it is necessary to change the speed of rotation of the flails, as a high speed will crack and split the peas, while for cereals a high speed is necessary for efficient and thorough work and at the same time will not crack the small grain.

By means of the improved construction and arrangement of parts above described the machine may be quickly converted from a pea-sheller to a grain-thresher, and vice versa, and without the employment of skilled labor, thus enabling a farmer to do all the work of shelling peas, beans, and the like and threshing out small grain of all kinds on a single machine of simple and inexpensive construction.

Having now described our invention, what we claim is—

1. In a combined shelling and threshing machine, the combination with a cylindrical casing having radial ribs fixed to its opposite inner sides, of a horizontal shaft journaled centrally in said casing, and two sets of flails removably mounted on said shaft in parallel planes, and adjustable on said shaft toward and from the center of the casing, substantially as described.

2. In a combined shelling and threshing machine, the combination with a cylindrical casing having radial ribs fixed to its opposite inner sides, of a horizontal shaft journaled centrally in said casing, two sets of flails removably mounted on said shaft in parallel planes, and adjustable on said shaft toward and from the center of the casing, and teeth

removably fitted in the rim of the cylindrical casing and projecting radially into the casing between the two sets of flails, substantially as described.

5 3. In a combined shelling and threshing machine, the combination with a frame and a two-part cylindrical casing supported in said frame and comprising two semicylin-
10 drical sections, the upper half of said casing being removably secured on the lower half thereof, of a horizontal shaft removably jour-
naled in half-bearings centrally fixed in the meeting edges of the two halves of the cas-
ing, and two sets of flails removably and ad-
15 justably mounted on said shaft, substantially as described.

4. In a combined shelling and threshing machine, the combination with a frame and a two-part cylindrical casing supported in
20 said frame and comprising two semicylin- drical sections, the upper half of said casing being removably seated on the lower half thereof, of standards fitted in sockets attached to the sides of the two halves of the casing, a
25 horizontal shaft removably journaled in half-bearings centrally fixed in the meeting edges of the casing-sections, and flails removably and adjustably mounted on said shaft, sub-
stantially as described.

30 5. In a combined shelling and threshing machine, the combination with a frame and a two-part cylindrical casing supported in said frame, the upper half of said casing project-
ing horizontally at one edge beyond the corresponding edge of the lower half thereof
35 to form a discharge-opening, a horizontal shaft journaled centrally between the meet- ing edges of the two halves of the said casing, and flails removably and adjustably mounted
40 on said shaft, substantially as described.

6. In a combined shelling and threshing machine, the combination with a frame and a cylindrical casing supported therein, of a horizontal shaft journaled centrally in said
45 casing, flails removably and adjustably mounted on said shaft, transverse slats at- tached to the perimeter of said casing and

each centrally perforated, the perforations ex-
tending through the perimeter of the casing, and pins fitted in said perforations and ex- 50
tending radially between the flails, substan- tially as described.

7. In a combined shelling and threshing machine, the combination with a frame and a two-part cylindrical casing supported in the 55
frame, the upper half of said casing project- ing horizontally at one edge beyond the cor- responding edge of the lower half thereof to form a discharge-opening, and provided with feed-openings, a horizontal shaft journaled 60
centrally in the casing, flails mounted on said shaft, means for driving the shaft, a fan ar- ranged at one side of the machine beneath the discharge-opening and arranged to deliver a blast of air beneath said opening transversely 65
to the machine, and means for driving the fan from the flail-shaft, substantially as de- scribed.

8. In a combined shelling and threshing machine, the combination with a frame and 70
a two-part cylindrical casing supported in the frame, of a horizontal shaft journaled cen- trally between the meeting edges of the sides of the two halves of the casing, flails mount-
ed on said shaft, a longitudinally-movable 75 side bar fixed to one side of the frame, two bearings carried by said side bar, a driving- shaft journaled in one of said bearings, gear- wheels of unequal size adapted to be inter- changeably fixed on the driving-shaft, a gear- 80
wheel fixed on the flail-shaft, and an inter- mediate gear-wheel adapted to be removably journaled in the other bearing carried by the side bar, substantially as described and for the purpose specified. 85

In testimony whereof we have hereunto set our hands in presence of two subscribing wit- nesses.

JOHN HENREY FARR.
JAMES S. EVANS.

Witnesses:

F. L. LOCKRIDGE,
W. R. ARMSTRONG.