

(No Model.)

2 Sheets—Sheet 1.

C. E. LIPE.
HULLING MACHINE.

No. 512,304.

Patented Jan. 9, 1894.

Fig. 1.

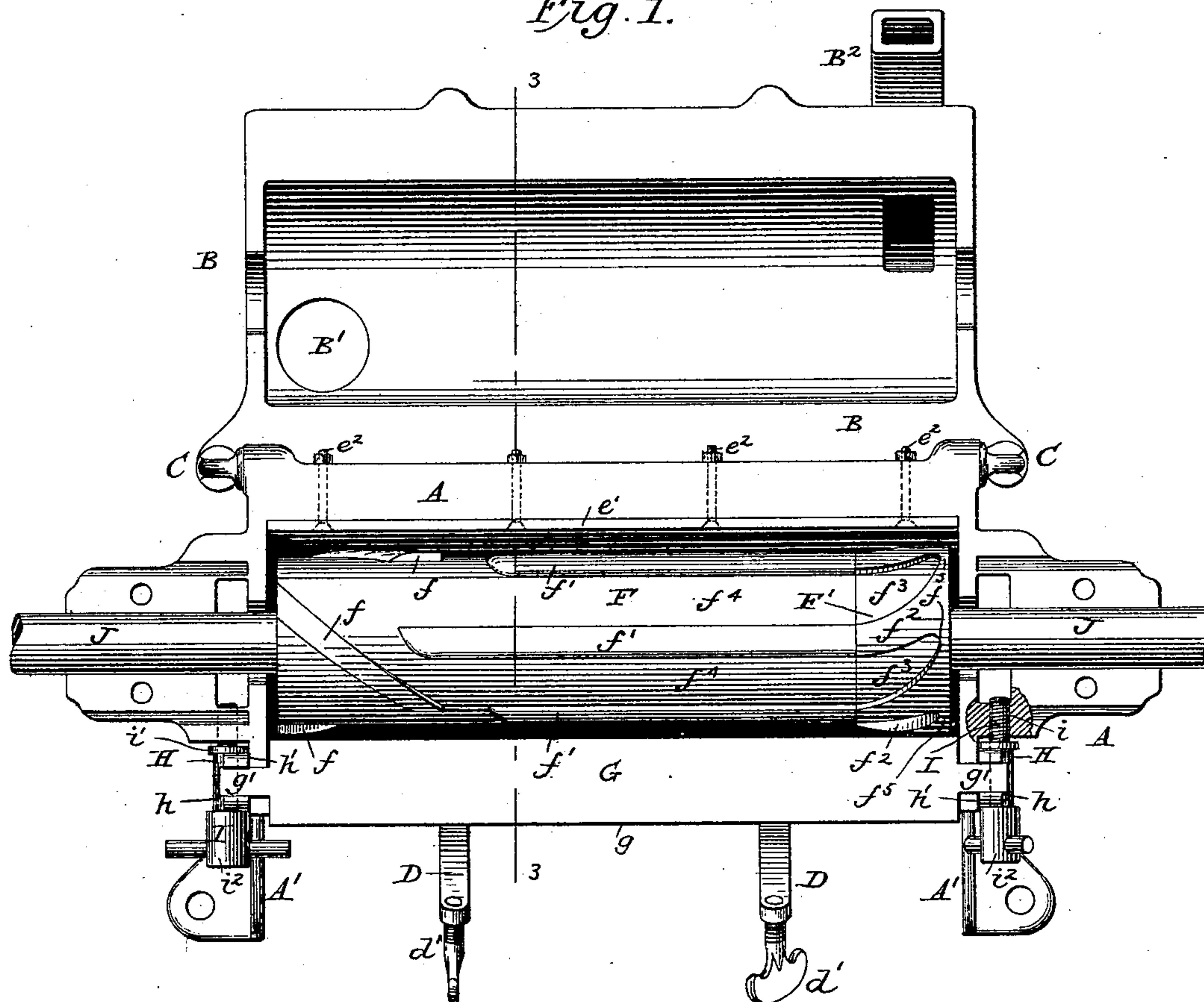
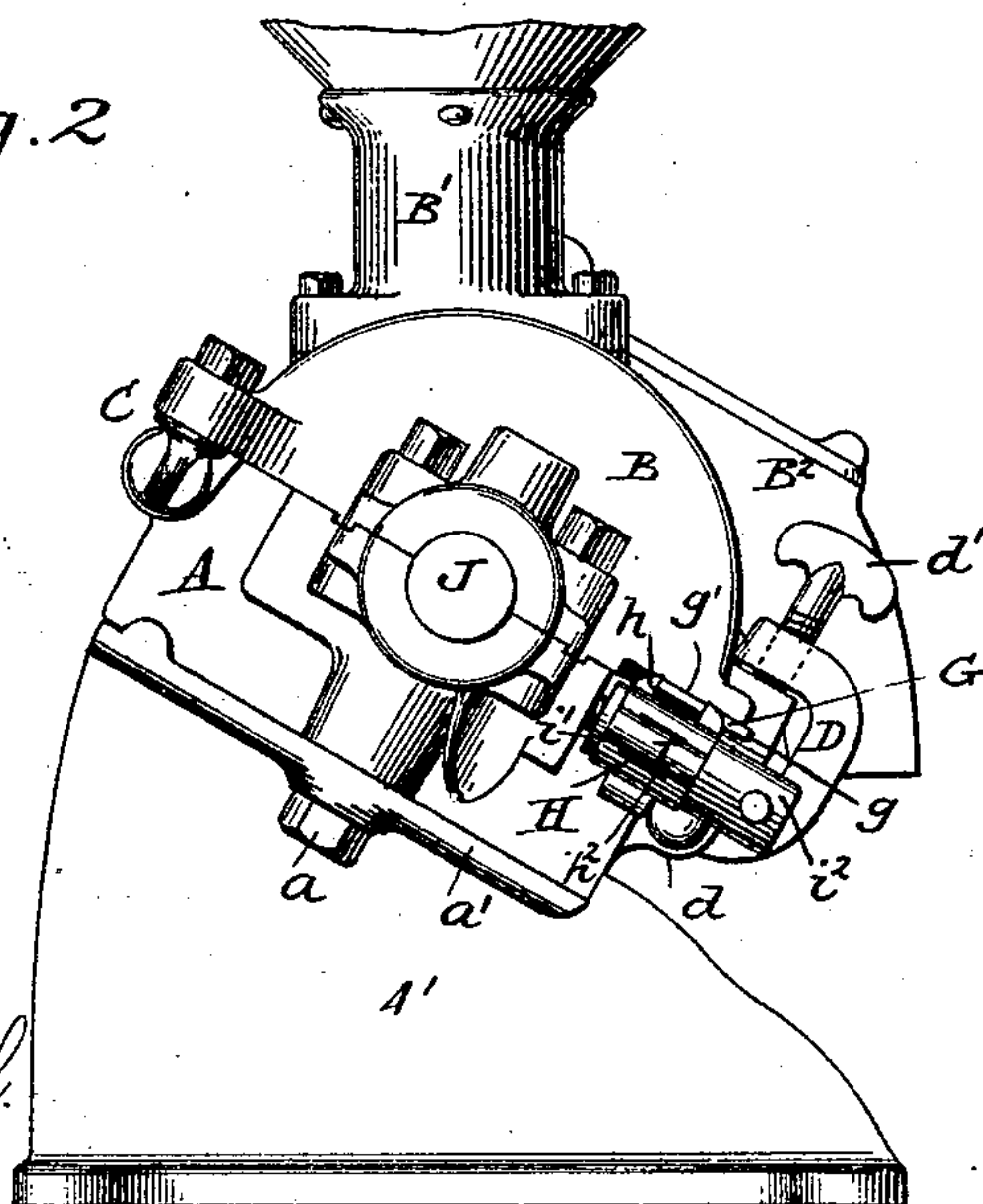


Fig. 2



Witnesses,

Henry T. Hensworth
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Inventor,

Charles E. Lipe.
by his attorneys

Edison Davidson Night.

(No Model.)

2 Sheets—Sheet 2.

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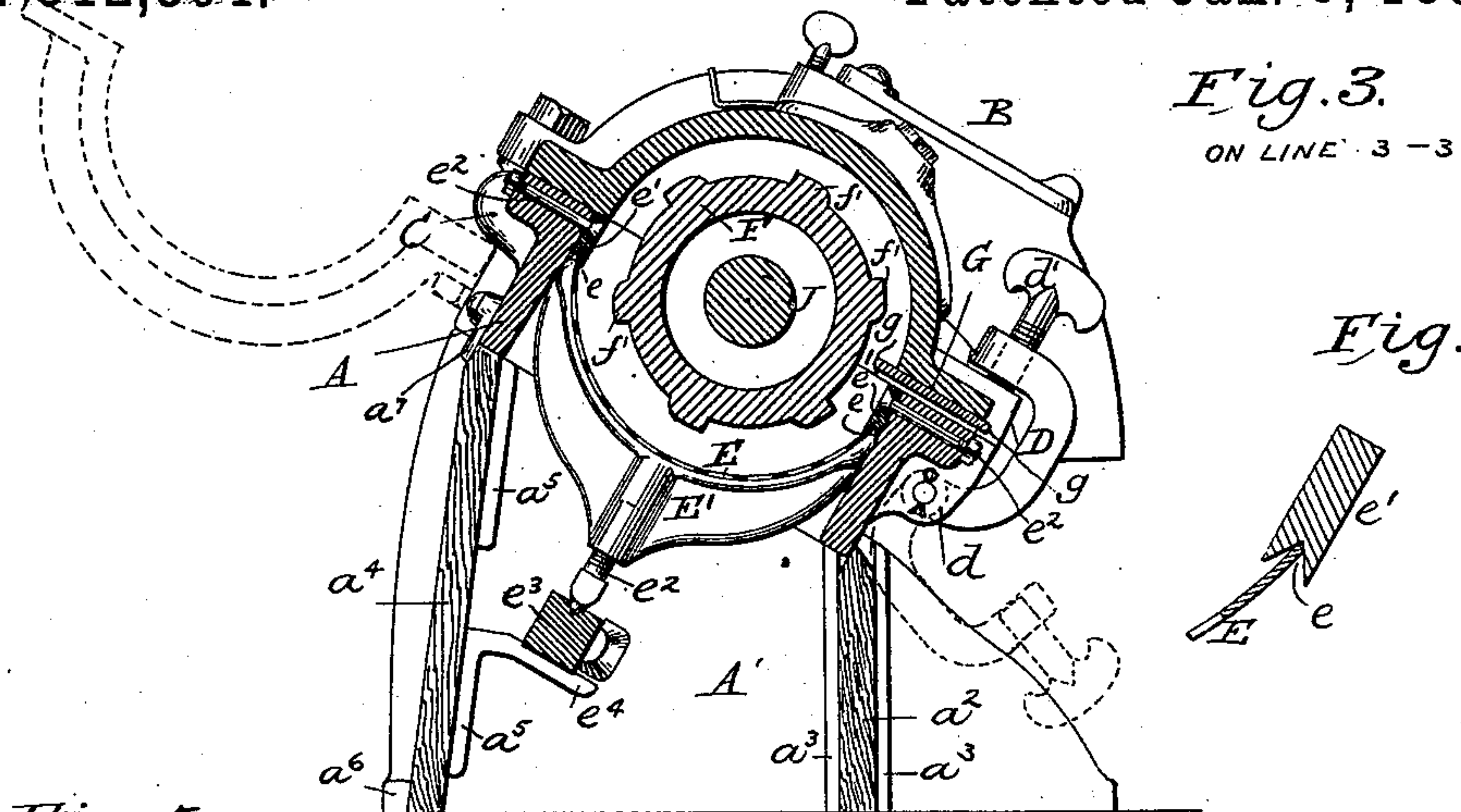


Fig. 3.
ON LINE 3-3

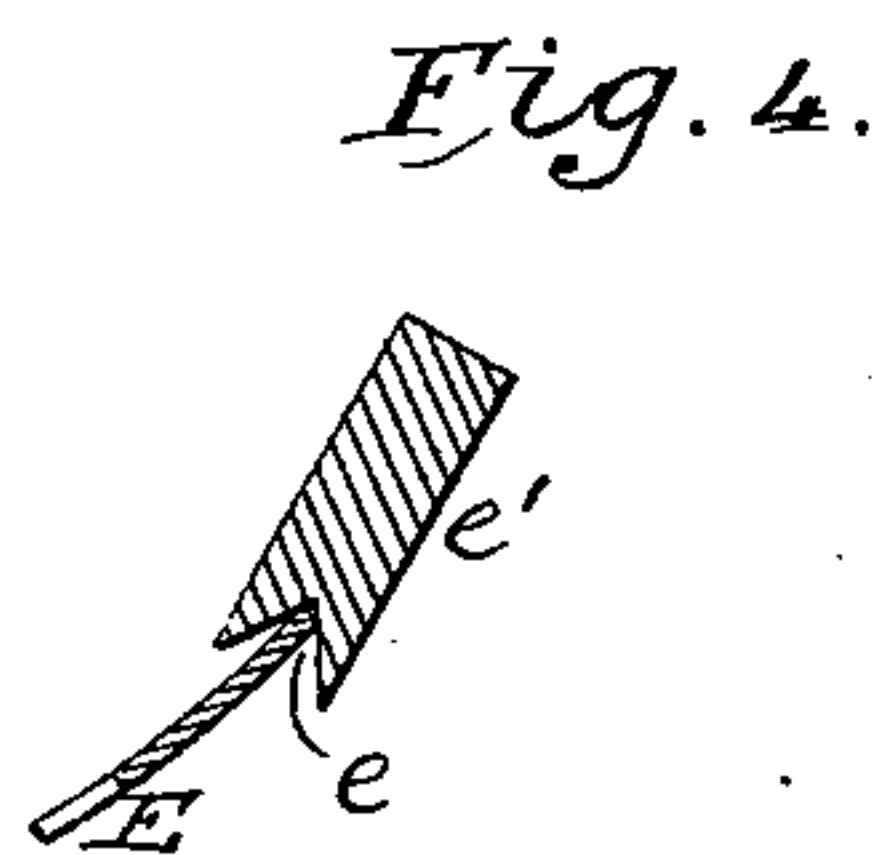


Fig. 4.

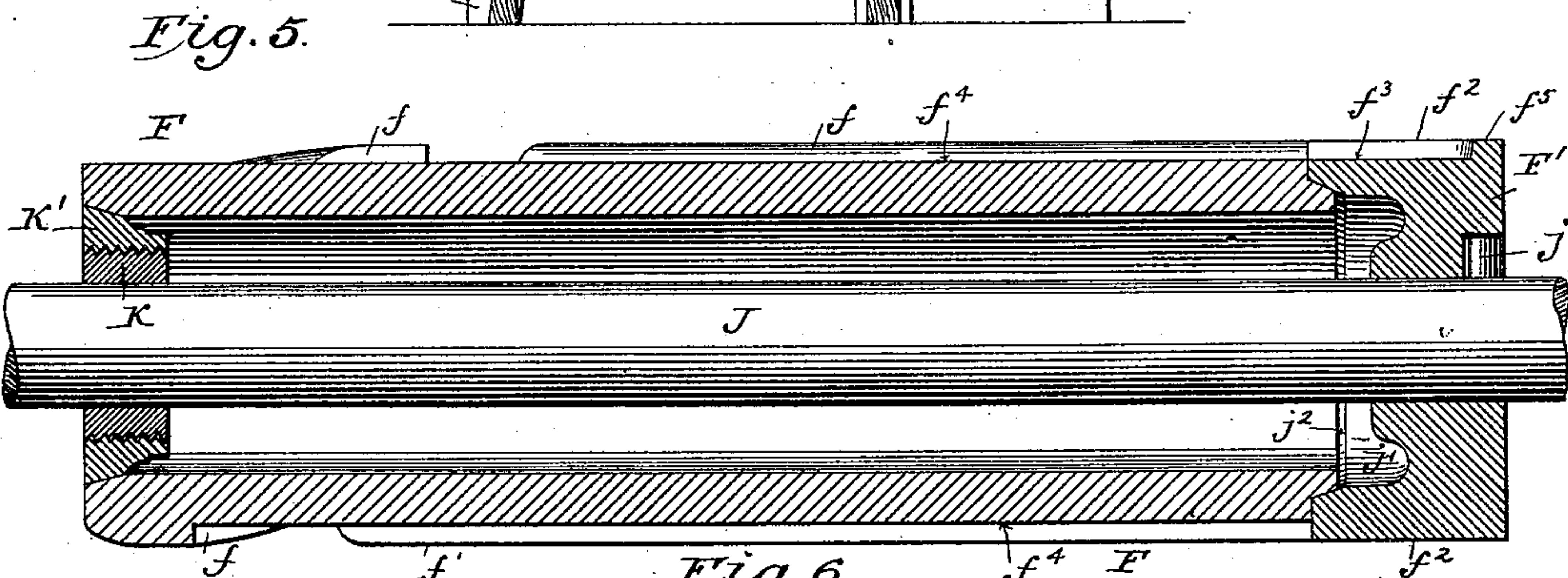


Fig. 5.

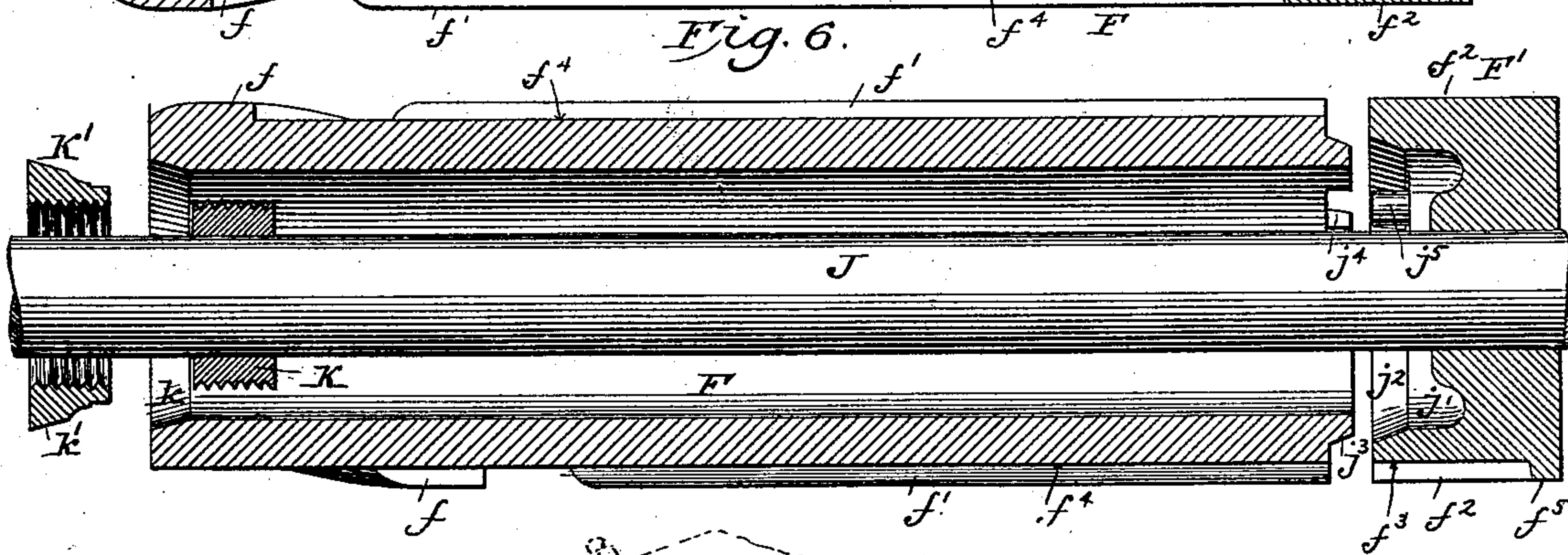


Fig. 6.

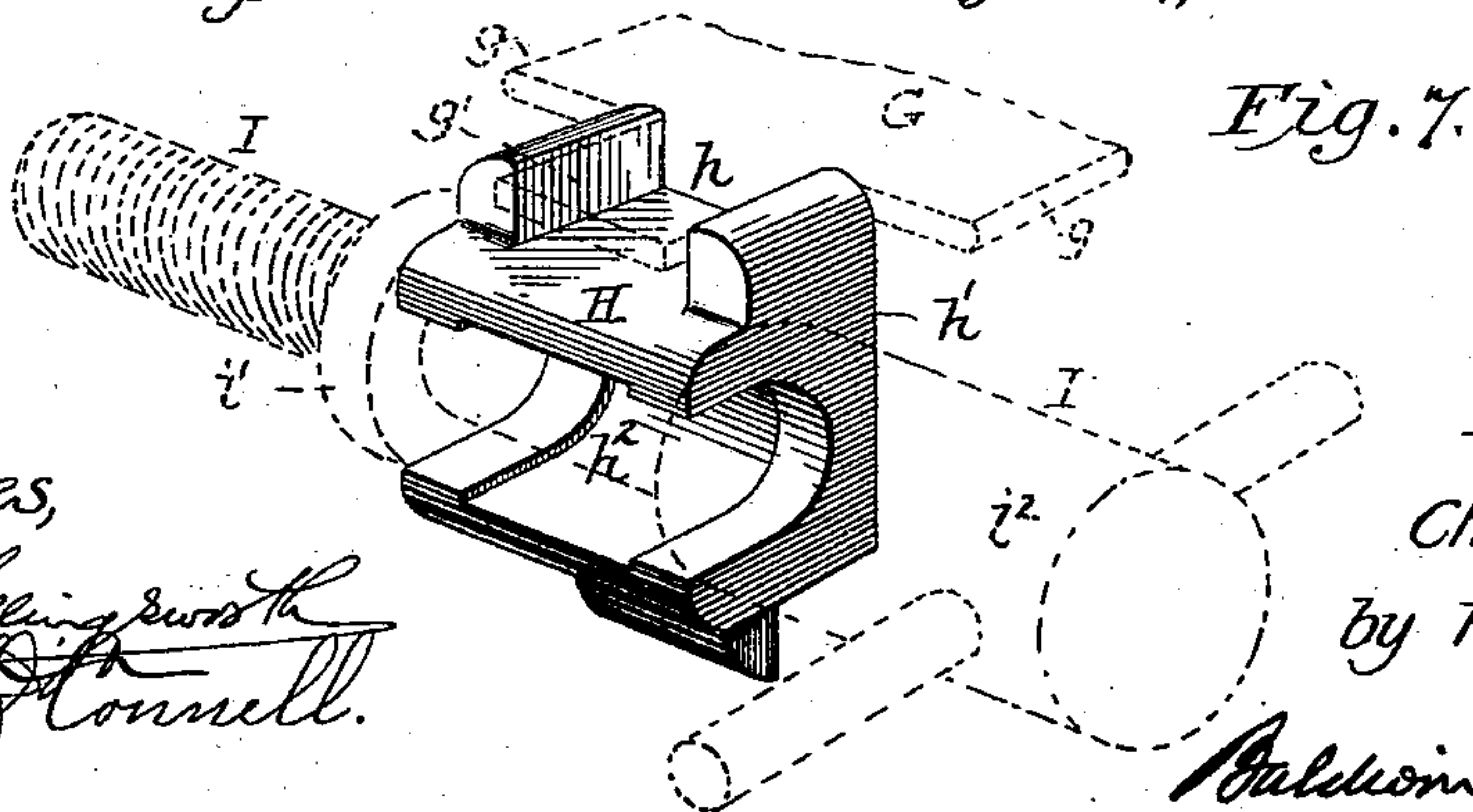


Fig. 7.

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Inventor,
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by his attorneys.

Baldern Davidson *Wright.*

UNITED STATES PATENT OFFICE.

CHARLES E. LIPE, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE ENGELBERG HULLER COMPANY, OF SAME PLACE.

HULLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 512,304, dated January 9, 1894.

Application filed March 22, 1893. Serial No. 467,164. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. LIPE, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Hulling-Machines, of which the following is a specification.

My invention constitutes certain improvements on the hulling machine shown in Letters Patent of the United States No. 424,602, granted E. C. Engelberg April 1, 1890. That patent shows a machine especially designed for hulling rice, in which an adjustable hulling blade co-operates with a ribbed hulling cylinder mounted to revolve in a casing over a screen through which the hulls are discharged. The casing is made in two sections bolted together, the upper section or cover being removable bodily from the lower section and the screen is permanently secured to the casing by bolts. The hulling blade is adjustable by means of bolts, the inner ends of which enter recesses in the rear edge of the blade. The cylinder is solid, and the ribs are secured thereto by bolts.

In my improved machine I hinge the cover to the lower part of the casing, and employ quickly operated swinging clamps engaging the cover opposite the hinges to hold it in place. The screen is seated at its edges in grooved bars, and is held in place by yokes carrying set screws supported by a bridge bar or abutment, by which arrangement, the screen may be quickly removed and replaced. The hulling blade is reversible end for end and edge for edge, and is operated by improved adjusting devices. The hulling cylinder is hollow and its ribs are formed integrally with it. Improved devices are employed for securing the cylinder to its shaft, and the ribs are disposed in an improved way.

The details of construction, and the subject-matter deemed novel are hereinafter designated.

In the accompanying drawings,—Figure 1 is a plan view of my improved hulling machine, with the cover thrown back. Fig. 2 is a side elevation thereof. Fig. 3 is a transverse section on the line 3—3 of Fig. 1. Figs. 4, 5, 6 and 7 are on an enlarged scale. Fig. 4

is a detail view showing the manner of seating the edge of the screen. Fig. 5 is a longitudinal, central section through the hulling cylinder, showing the manner of securing it to the shaft. Fig. 6 is a similar view with the securing devices separated from the cylinder. Fig. 7 is a detail view illustrating the blade adjusting devices.

The casing is preferably made in sections A, B, divided on a line coincident with the axis of the hulling cylinder, and inclined downwardly from rear to front at an angle to the horizon of, say, thirty degrees, as shown in Figs. 2 and 3. This same construction is shown in the Engelberg patent above referred to. By this arrangement, the hulling blade which is held between the upper and lower sections is supported in the most efficient position to co-operate with the hulling cylinder to clean the rice. The lower section A, of the casing is preferably cast from a single piece of metal, and is secured at each end to side pieces or standards A', by bolts a , engaging flanges a' on the section A. The front piece a^2 , may be of wood secured between vertical guides or flanges a^3 on the side piece, and the back piece a^4 , may also be of wood resting against vertical flanges a^5 on the side pieces, and at its lower end it is secured in rear by lugs a^6 . A turn button a^7 holds the back piece in place. The top section or cover B, is jointed at its rear end to the section A, by hinges C, of any suitable construction, and may be opened and closed to occupy the positions indicated by full and by dotted lines in Figs. 1, 2 and 3. The cover is provided with a feed opening B', and a discharge spout B², and is held in place, when closed, by one or more clamps D, two being shown. These clamps are C-shaped, and are hinged at their lower ends to lugs d , projecting from the lower section A, of the casing. At their upper ends, the clamps carry set screws d' . The arrangement is such that the clamps may be swung from the position shown in full lines in Fig. 3, to that shown in dotted lines in the same figure. When the clamps are in the position shown in dotted lines, Fig. 3, the cover may be swung back to the position shown in dotted lines in Fig. 3, and in full lines in Fig. 1.

When the cover is closed, the clamps bind together the lower section of the casing and the cover at their adjacent front ends. By hinging the clamps at their lower ends to the lower section of the casing, they will fall by gravity, into the position shown in dotted lines, when the set screws are released, and will remain in this position while the cover is being raised and lowered and until they are raised and secured, as above set forth. The hands of the workman are thus free to raise and lower the cover without holding the clamps out of engagement with the casing.

In the Engelberg patent above referred to, the cover was not hinged, and it was necessary to detach the securing bolts and remove the cover bodily. By my improvements, access may be had to the hulling cylinder, and hulling blade easily and quickly. The sheet metal screen E, arranged below the hulling cylinder F, has its edges arranged in seats e , which, as shown, are V-shaped grooves formed in longitudinal bars e' , secured by bolts e^2 to the casing section A. Yokes E' support the screen and hold it in the seats e . The yokes carry set screws e^2 , which bear against a bridge bar or abutment e^3 , supported on brackets e^4 on the side pieces A' . By this arrangement, the screen E, may be placed in position from below, and the set screws may be adjusted to hold the screen firmly in position, and they may be loosened to as readily remove the screen and replace it by a new one. This is an important feature of the invention, as the screen is rapidly worn and needs replacing often.

The metallic hulling blade G, is a hard, flat blade with convex edges g , and it co-operates with the ribbed hulling cylinder. It is provided at each end with an arm g' , of less width than the body of the blade resting in a seat h , in a blade-carrying block H. The arms are centrally located at the ends of the blade, so that it may be reversed end for end or edge for edge. Either edge may thus be used to co-operate with the hulling cylinder to clean the rice, and if the edge at one end wears more rapidly than at the other end, as is often the case, the life of the blade may be lengthened by reversing it end for end, as above stated. By making the arms g' of less width than the body of the blade, they may be made to enter a narrow seat in the blocks H, and thus undue endwise movement of the blade is prevented.

The blade-carrying blocks H, are supported on screw-bolts I, the threaded ends of which work in screw-threaded sockets i in the section A. The flat sides h' of the blocks rest against the sides of the section A, and the bolts extend through openings h^2 in the sides of the blocks. Each screw bolt has a collar i' , and a head i^2 , between which its block H, is arranged. The organization is such that by turning the bolts, the blocks H, and the blade carried thereby may be adjusted toward and from the hulling cylinder, and each of the

blocks may be suitably adjusted to give to the blade the desired angle relatively to the cylinder.

In the Engelberg patent above referred to, the hulling cylinder is solid and is permanently secured to its shaft. The ribs are secured to the cylinder by screws or bolts.

As there is great wear on the cylinder, it is necessary that it be chilled, and it is therefore desirable that it be made hollow or shell-like. I accordingly employ a hollow cylinder and form the ribs integrally therewith, and chill the main working portion of the cylinder to give it the desired hardness. The arrangement of the ribs f at the feed end of the cylinder and the longitudinal ribs f' is substantially the same, as in the patent above referred to. The discharge ribs f^2 at the tail end are, however, somewhat modified. The tail end of the cylinder I form of a separate piece of metal. The ribs f^2 , instead of overlapping the longitudinal ribs form continuations of them, and the grooves or spaces f^3 between the ribs f^2 form continuations of the grooves f^4 , between the longitudinal ribs f' , and these spaces f^3 are closed at their ends f^5 . The edges of the ribs are inclined preferably in curved lines. This arrangement, I find, insures the more efficient discharge of the hulled rice from the spout B^2 , and the rice is prevented from finding its way into the journal at the tail end of the cylinder. The tail piece F' , is keyed to the shaft J, at j , and it is provided with a recess j' , having a beveled edge j^2 , engaging a beveled edge or flange j^3 , on one end of the cylinder F. The beveled edge j^3 has a recess j^4 engaging a lug or stud j^5 , within the recess j' . By this means, the tail piece and end of the cylinder are firmly united to the driving shaft. The securing devices at the opposite end of the cylinder consist primarily of a threaded sleeve K, and a nut K' . The sleeve K, may be keyed or otherwise firmly secured to the shaft J, near the end of the cylinder F. The cylinder is beveled at k , to fit the beveled end k' of the nut K' . This nut is threaded to engage the threads of the sleeve K. By securing the cylinder to the tail piece in the manner above indicated, and by screwing home the nut K' , on to the sleeve K, the cylinder may be firmly secured to its shaft. By this arrangement, not only can I employ a hollow cylinder which may be suitably chilled or hardened, but I may readily remove and replace the cylinder when it becomes worn. There is comparatively little wear at the tail end of the cylinder, so that the tail piece need not be removed as often as the cylinder proper, and may therefore be made solid and retained on the shaft for a longer period than the working portion of the cylinder.

Other parts of the machine shown may be of usual well known construction, and form no part of my present invention.

I claim as my invention—

1. In a hulling machine, the combination of

the lower section of the casing, the cover hinged thereto, and the swinging clamps hinged at their lower ends to the lower section of the casing and carrying securing devices at their upper ends adapted to engage with the upper section of the casing.

2. The combination of the hulling cylinder, the casing within which it is arranged, the sheet metal screen having its edges arranged in V-shaped grooves in the casing, and means for pressing the edges of the screen into their seats.

3. The combination with the hulling cylinder and hulling blade, of the casing, the sheet metal screen having its edges arranged in grooves or seats in the casing, the supporting yokes for the screens, the adjusting screws carried by the yokes, and the bridge-bar or abutment against which the adjusting screws bear.

4. The combination of the hulling cylinder, the hulling blade, the casing, the screen, the grooved bars secured to the casing in which the edges of the screen are arranged, the yokes supporting the screen, the adjusting screws carried thereby, and the bridge bar or abutment against which the screws bear.

5. The combination of the casing, the ribbed hulling cylinder, the flat hulling blade having arms of less width than the body of the blade, projecting from its opposite ends and adjusting devices connected with said arms.

6. The combination of the casing, the ribbed hulling cylinder, the hulling blade having laterally projecting arms, the blade carrying blocks, and the screw bolts supported by the casing and engaging the blocks.

7. The combination with the driving shaft, of the hollow cylinder formed integrally with ribs on its surface, the separately formed tail piece, having inclined ribs and provided with means for securing it to one end of the cylinder, and devices for securing the other end of the cylinder to the shaft.

8. The combination of the hollow ribbed hulling cylinder, the detachable tail piece secured to the cylinder and to the shaft and having inclined ribs, the threaded sleeve secured to the shaft near the opposite end of the cylinder, and the nut engaging the sleeve and the cylinder.

9. The combination of the shaft, the hollow, chilled, ribbed hulling cylinder, the tail piece having inclined ribs and secured to the shaft and removably secured to the cylinder, the threaded sleeve secured to the shaft, and the nut engaging the cylinder and having a beveled edge engaging a beveled edge of the cylinder.

10. The herein-described hulling cylinder having arranged on its surface, the inclined feed ribs f , the longitudinally overlapping ribs f' , and the inclined ribs f'' at the tail end of the cylinder, forming continuations of the longitudinal ribs and having the spaces between them closed at their ends, substantially as described.

In testimony whereof I have hereunto subscribed my name.

CHARLES E. LIPE.

Witnesses:

A. A. SCHENCK,
K. F. CASSIDY.