

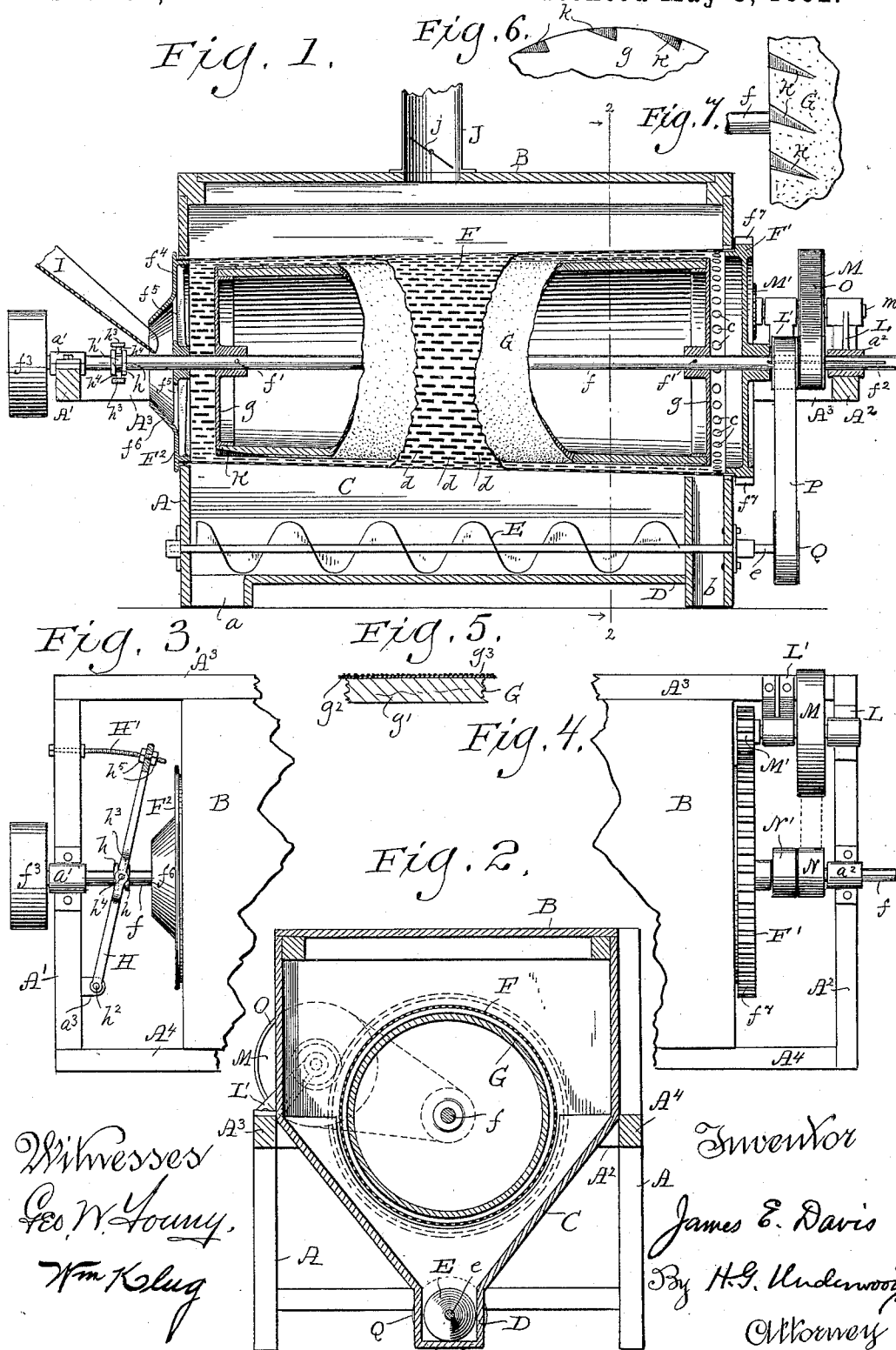
(No Model.)

J. E. DAVIS.

MACHINE FOR HULLING OATS, BARLEY, AND OTHER GRAINS.

No. 474,164.

Patented May 3, 1892.



# UNITED STATES PATENT OFFICE.

JAMES E. DAVIS, OF MILWAUKEE, WISCONSIN.

## MACHINE FOR HULLING OATS, BARLEY, AND OTHER GRAINS.

SPECIFICATION forming part of Letters Patent No. 474,164, dated May 3, 1892.

Application filed February 16, 1891. Serial No. 381,668. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES E. DAVIS, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Machines for Hulling Oats, Barley, and other Grain; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to machines for hulling grain, especially oats and barley; and it consists in certain peculiarities of construction, as will be fully set forth hereinafter and subsequently claimed.

In the drawings, Figure 1 is a sectional side elevation of my machine, partly broken away to illustrate details of construction. Fig. 2 is a vertical transverse section on the line 2 2 of Fig. 1. Fig. 3 is a detail plan view showing the regulating-lever at one end of the machine. Fig. 4 is a detail plan view showing the gearing at the other end of the machine. Fig. 5 is a detail sectional view illustrating the construction of the inner drum. Figs. 6 and 7 are enlarged detail views of the exterior surface of the drum at the feed end.

A represents the supporting-frame of my machine, and B the closed upper part thereof.

C is the lower hopper-shaped portion of the frame, made closed and continuous with the upper part B and terminating in a closed trough D for the conveyer E, said trough having a spout *a* at one end thereof. At the other end of said trough, but not communicating therewith, is another spout *b*, which extends up above said trough D to a point just below the large end of the tapered revolving perforated shell F and in line with the large openings *c c* in said shell end, the other openings *d d* in said shell being much smaller than the openings *c* and preferably elongated slits disposed as best shown in Fig. 1.

Within the shell F is a drum G of less diameter, but similarly tapered and having closed ends or heads *g g*, through which passes a shaft *f*. This drum may be made of any suitable material, such as wood or metal, the one illustrated being made of wood *g'*, covered with leather *g''*, and this leather is first coated with glue or other suitable adhesive substance and then with a layer of sand,

emery, or other suitable substance to make a roughened abrading-surface *g'''*, all as shown in detail in Fig. 5; but it will be understood that this sand or other abrading substance may be applied directly to the wood or other surface of the drum G, if preferred. The shaft *f* is secured, as shown at *f' f'*, to the hubs of the heads *g g* of said drum and has its bearings in boxes *a' a''* on the end timbers *A' A''* of the frame *A' A'' A''' A''*, which surrounds the main frame of my machine at about midway of its height. The end of the shaft *f*, which passes through the box *a''*, is provided with a longitudinal groove *f''* for a purpose to be hereinafter described, while the other end of said shaft carries a driving-pulley *f'''*, which is connected with the source of power. (Not shown.)

The described shell F, which surrounds the drum G, is formed with a closed head *F'* at its large end and an open head *F''* at its small end, both heads having perforated hubs, through which the shaft *f* passes, and the head *F''* being preferably formed with an annular plate or ring *f''* and spokes *f'''*, connecting the same with its hub, the said plate *f''* being extended out into a truncated cone *f''''*, while the closed head *F'* has cogs or teeth *f''''* formed on its periphery, making it in effect a gear-wheel. Two rings or collars *h h* are preferably cast on or secured to the shaft *f* so as to leave or form an annular groove *h'* between them, these collars *h h* being preferably located between the bearing *a'* and truncated cone *f''''*.

H is an adjusting-lever, one end of which is pivoted, as shown at *h''*, to a lug *a'''* on the part *A'* of the surrounding frame. This lever has a central ring *h'''*, from which project inwardly-opposing pins *h'''' h''''*, fitting in the described groove *h'* between the collars *h h*. The other end of the lever H is perforated to receive a screw-bolt *H'*, radially projecting from the part *A'* of said frame, which bolt is provided with adjusting-nuts *h'''' h''''* or analogous devices, whereby the said lever H may be secured in any desired adjustment.

I is a spout for the grain to be hulled, leading into the feed end of the machine past the opening in the truncated cone *f''''*.

J is a suction outlet-opening into the closed

top B of the machine and provided with a damper or cut-off *j* and communicating with any suitable suction-fan. (Not shown.)

The feed end of the drum G and its adjacent head *g* are formed with a series of feeding channels or recesses *k k*, of generally triangular shape, cut therein, as best shown in the detail views, Figs. 6 and 7. These feeding-channels extend all around the periphery of the drum at this end and are of uniform length and distance apart, but must be of just sufficient length to start the grain in its proper travel, so that, practically, the entire surface of the drum may be utilized for hulling.

L L' are brackets rising from the parts A<sup>2</sup> A<sup>3</sup> of the surrounding frame and provided with boxes or openings for a shaft *m*, which carries a pulley M between said brackets and a pinion M' at its inner end, which pinion is in mesh with the teeth *f*<sup>7</sup> on the gear-wheel or shell-head F'. The shaft *f* is provided with two pulleys N N' between the hub of the gear-wheel or shell-head F' and the box *a*<sup>2</sup>. These pulleys are not rigidly secured to said shaft, but are each provided with an internal feather (not shown) in engagement with the described longitudinal groove *f*<sup>2</sup> in said shaft *f*, so that this shaft may be moved endwise without disturbing said pulleys. The pulley N is connected by a belt O with the pulley M on the shaft *m*, and the pulley N' is connected by a belt P with a pulley Q, which is fast on the adjacent end of the shaft *e* of the conveyer E.

The operation of my machine will be readily understood from the foregoing description of its construction. The machine is adjusted to the size or kind of grain to be hulled by means of the adjusting-lever H, which draws the inner drum G toward the feed end or pushes it toward the other end, as required, the securing nuts or device *h*<sup>3</sup> *h*<sup>3</sup> being loosened and then retightened after the adjustment has been made. Power is then applied to the machine and the oats (for instance) fed in through the spout I, the truncated cone *f*<sup>6</sup> preventing them from being thrown out of the opening in the shell end, and said oats passing through the openings between the spokes *f*<sup>5</sup> of the shell-head F<sup>2</sup> into the space between this shell-head and the end of the inner drum G, where said oats encounter the channels *k k* in the adjacent edge of said drum and are thereby fed along between the outer surface of the drum G and the inner surface of the perforated shell F, the roughened surface of said drum serving to strip off the outer husks of the oats, and the said oats and the larger portions of the husks, being car-

ried along to the end of the machine, fall down through the openings *c c* in the shell F into the spout *b*. The finer portions of the husk, together with dust and dirt, fall out through the finer openings or slits *d d* in the shell F and drop into the trough D, from where the conveyer E carries this material out to the spout *a*, while such of the dust and other fine particles as escape through the openings *d d* into the upper part of the machine is drawn out by suction through the described outlet J. Other grain is treated in precisely the same manner, the roughened surface *g*<sup>3</sup> of the drum G serving to effectually hull it or remove the outer coating of the same in the described journey of the grain between the two cylinders G F, which, as shown, are geared to revolve in opposite directions and at different rates of speed, and hence furnish the required resistance or partial stoppage of the grain in its travel long enough to thoroughly hull the same. This hulling is accomplished by reason of the described different rates of speed at which the two cylinders revolve. The slowly-revolving cylinder holds the oats or other grain and tails or straightens them up, the heavy end of the grain falling back or down, and the light end (which is the open end of the grain) is thereby brought up in proper position to encounter the swiftly-revolving cylinder, which thereby strips off the hulls. If both these cylinders revolved at the same rate of speed and in opposite directions, the grain would simply be ground between them, and therefore the just-described construction is of vital importance.

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

In a machine for hulling grain, the combination, with a horizontally-disposed tapered revolving perforated shell, of an inner longitudinally-adjustable tapered drum having a rough-coated exterior surface and a series of short triangular recesses or guiding-channels of a uniform length and distance apart extending from the edge of the feeding end of said drum all around the periphery thereof, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

JAMES E. DAVIS.

Witnesses:

H. G. UNDERWOOD,  
N. E. OLIPHANT.