

(No Model.)

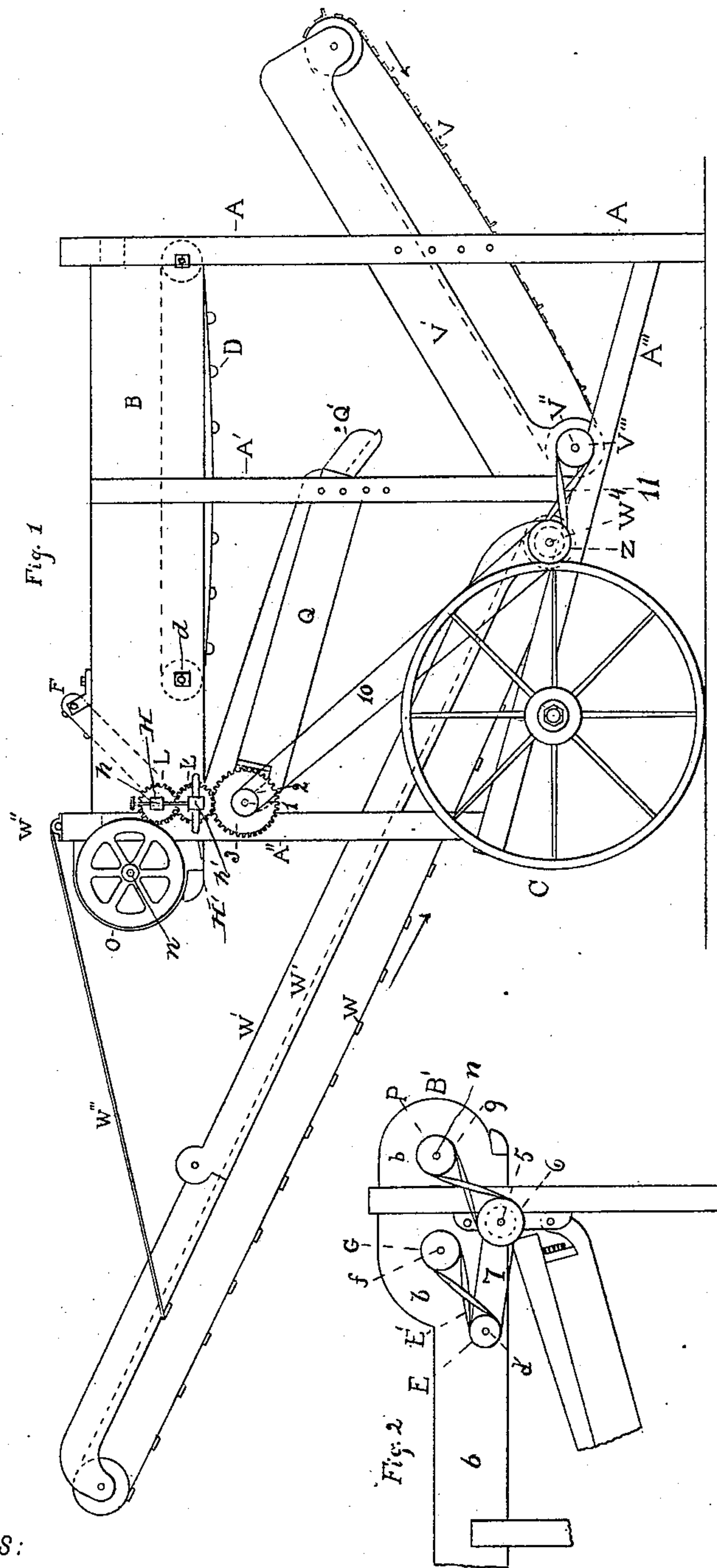
3 Sheets—Sheet 1.

J. F. HURD.

CORN HUSKING AND FODDER PREPARING MACHINE.

No. 436,136.

Patented Sept. 9, 1890.



WITNESSES:

J. C. Sterling
Emma F. Elmore

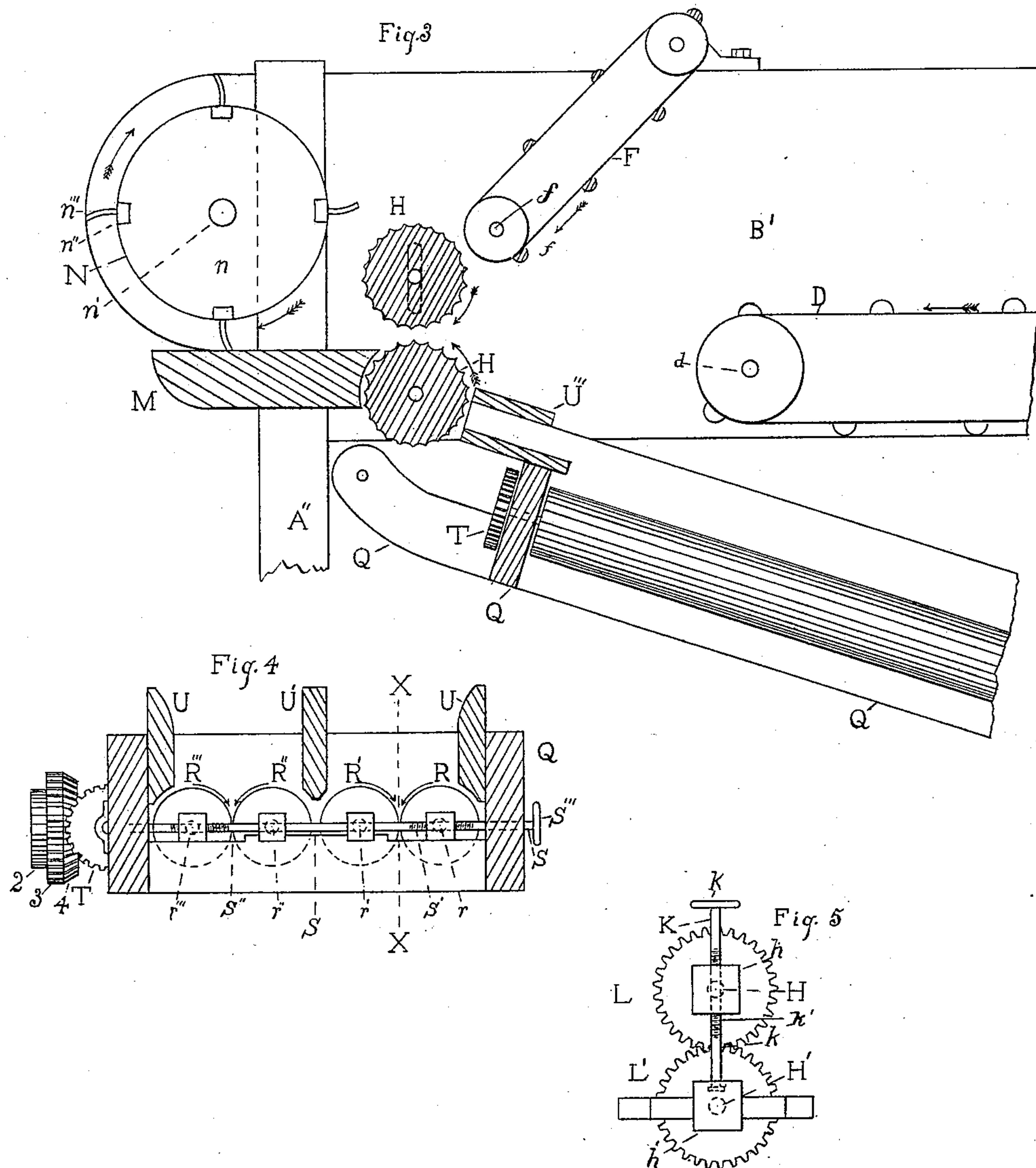
INVENTOR

James F. Hurd
BY *Jas. P. Williams*
ATTORNEY

(No Model.)

3 Sheets—Sheet 2.

J. F. HURD.
CORN HUSKING AND FODDER PREPARING MACHINE.
No. 436,136. Patented Sept. 9, 1890.



WITNESSES:

J. C. Sterling
Emma F. Chace

INVENTOR

James F. Hurd
BY *James F. Williamson*
ATTORNEY

(No Model.)

3 Sheets—Sheet 3.

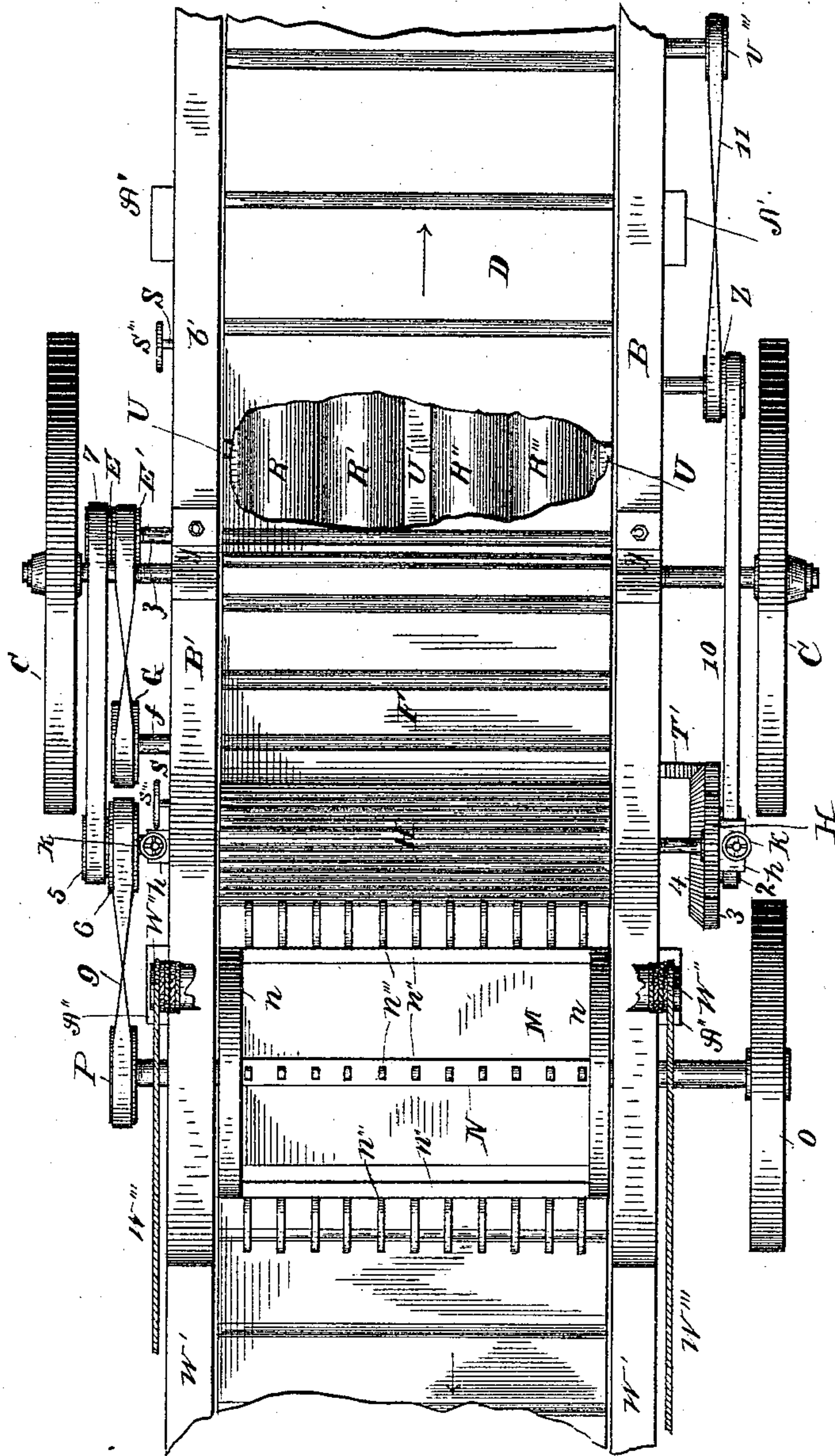
J. F. HURD.

CORN HUSKING AND FODDER PREPARING MACHINE.

No. 436,136.

Patented Sept. 9, 1890.

Fig. 6.



Witnesses.

G. A. Tauberschmidt,

L. B. Whitaker

Inventor.

James F. Hurd
By his attys.

Whitaker & Brewster

UNITED STATES PATENT OFFICE.

JAMES F. HURD, OF CLEAR LAKE, MINNESOTA.

CORN-HUSKING AND FODDER-PREPARING MACHINE.

SPECIFICATION forming part of Letters Patent No. 436,136, dated September 9, 1890.

Application filed March 28, 1887. Serial No. 232,671. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. HURD, a citizen of the United States, and a resident of Clear Lake, county of Sherburne, State of Minnesota, have invented certain new and useful Improvements in Corn-Husking and Fodder-Preparing Machines, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to corn-husking machines; and it has for its object to snap the ear from the stalk, take the husks and silk from the ear, and put the fodder into the most favorable condition for feeding stock.

My invention consists in the mechanism hereinafter described and particularly claimed.

In the drawings, like letters and figures referring to like parts throughout, Figure 1 is a side elevation of my entire working-machine. Fig. 2 is a side elevation of a portion of the other side of the machine, showing the gearing for operating the macerating-cylinder and the stalk-feeding mechanism. Fig. 3 is a vertical longitudinal section of the feeding, husking, and macerating mechanism on the line X X of Fig. 4. Fig. 4 is an end view of the husking-rollers and their tension mechanism. Fig. 5 is an end view of the snapping-rollers and their tension mechanism; and Fig. 6 is a plan view of my machine.

A A' A'' are a series of upright posts. A''' is a diagonal longitudinal bottom girder, and B B' are wide heavy top girders, which together form the main frame of the machine.

C is a pair of trucks under the rear of the main frame to facilitate removing the machine from one place to another, the forward end being lifted up and coupled to a tongue-bearing truck of any suitable kind. (Not shown.)

The top girder or side plank B is mortised into the tops of the vertical posts A and A'' and is firmly secured to all the vertical posts, with its interior face flush with the interior face of the end posts. The corresponding top girder B' on the other side of the machine is of the same width as B in its forward part b, but is cut down directly back of the diagonally-set feeding-carrier, leaving its rearward

extension b' narrower than the front portion. This is to make it easier for the attendant to place the unhusked corn on the feeding-carrier.

D is a feeding endless carrier traveling around the drums or rollers of the ordinary kind, which are journaled in boxes set in the opposite faces of the top girders B B', near the lower edge of the same. This endless carrier D is of sufficient length to extend from the vertical post A or front of the machine to within a short distance of the snapping-rollers, terminating directly over a clear space leading to the upper ends of the inclined husking-rollers. On the extended shaft of the forward drum d (see Fig. 2) is placed a pulley E, to which motion is communicated through suitable gearing, as hereinafter described. This endless carrier D travels toward the snapping-rollers.

F is a shorter endless carrier, which travels around rollers set, respectively, in the forward inner faces of the sides or top girders B B' and in the inner faces of projection yy' from the same. This carrier F is set at an acute angle to the horizontal plane of the carrier D, terminating below in close proximity to the median line of the upper snapping-roller. This carrier travels toward the carrier D and co-operates with the same to feed the unhusked corn to the snapping-rollers. On the journal f of the lower driving-roller of carrier F is placed a pulley G, to which motion is imparted by suitable gearing, hereinafter described.

H H' are what I call the "snapping-rollers," from the fact that their function is to "snap" or separate the unhusked ear from the stalk. They also serve to feed the stalks to the macerating-cylinder. These rollers are made of iron and are fluted finely. They are set, the one directly over the other, in the rear end of the main frame, the periphery of the lower roller being slightly below the level of the feeding-carrier D, and they revolve toward each other.

The journals of the rollers H H' rest in suitable boxes, one of which is fixed to the main frame, preferably the lower box, and the other of which is vertically adjustable in order to

permit the rollers to be placed nearer together or wider apart. There is a vertical slot in the main frame, through which the shaft of the adjustable roller passes.

5 As shown in the drawings, H is the adjustable and H' is the fixed roller. The box *h*' of the fixed roller is attached to the main frame in any suitable way. Through the box *h* of the adjustable roller passes a screw-
10 threaded rod K, provided with a hand-wheel *k*. This rod K is fast but free to rotate within the fixed box *h* at its lower extremity, and is provided with a male thread at *k*', and the box *h*, through which it passes, is provided
15 with a female thread. In this way the roller H may be adjusted nearer to or more remote from the roller H' at will.

On the outer extremities of the shafts of the rollers H and H' on one side of the machine are placed gear-wheels L and L', to which motion is imparted, as hereinafter described.

Rearward of the snapping rollers, on a level with the top of the lower roller, is placed a
25 guide and resistance plate M, which is rigidly secured between the opposite vertical posts A''. This plate M is preferably made of metal. Its functions are to guide the fodder outward and to act as a bed or resistance
30 plate to the stalk tearing or macerating cylinder. In the rearward extensions of the sides B and B', directly over said bed-plate M and in close proximity to the snapping rollers, is journaled in suitable boxes the spiked cylinder N, which I call the stalk tearing or
35 macerating cylinder. It is composed, preferably, of solid ends *n*, rigidly attached to a common shaft *n*', and a series of longitudinal slats *n*'', rigidly attached at their extremities
40 to said heads and provided each with a series of sharp-pointed spikes *n*''. These spikes are preferably bent upon themselves slightly at about their middle point, inclining or curving backward or away from the direction of
45 movement, in order to make them clear themselves the more readily from the stalks. This cylinder should be of considerable size and should be strong. It is so set that the points of the spikes barely pass the resistance-plate
50 M without striking, and it is made to revolve toward the snapping-rollers. Its functions are to catch the stalks as they come from the snapping-rollers, carry them rearward and tear them into shreds, also stripping the leaves
55 from the stalk, thus putting the fodder into such condition that the whole of it, stalk and all, will be eaten by cattle. On one extremity of the shaft *n*' is placed a fly-wheel O, and on the other extremity is attached a pulley P,
60 to which motion is imparted, as hereinafter described.

Directly under the clear space between the carrier D and the snapping-rollers H H' are placed in a suitable frame Q the husking-
65 rollers R R' R'' R''', in pairs, on an incline extending downward and forward toward the

bottom and front of the main frame. These husking-rollers are journaled in boxes set on the end cross-ties of the frame Q. They work in pairs, R R', as shown in the drawings, constituting one pair, and R'' R''' the other, each pair of rollers revolving toward each other. They are placed close together, and to provide for a suitable adjustment one of each pair of rollers, as R' and R'', is journaled in a fixed box, as *r*' *r*'', and the other in a laterally-adjustable box, as *r* *r*''.
75

Through coincident holes in all the boxes passes a tension or adjusting rod S, extending through the side plates of the frame Q, in which it is fixed from lateral displacement, but is free to revolve. This rod S, on the parts passing through the sliding boxes *r* and *r*'', is provided with right and left male screw-threads *s*' and *s*'', which engage with corresponding female screw-threads within the boxes *r* *r*'', respectively. It is also provided on one of its extremities outside the frame Q with a hand-wheel *s*''. By turning this rod the adjustment of the husking-rollers may be varied at will. Only slight variation will be required, as the pairs of rollers must be set and kept close together. The opposite ends of the husking-rollers are provided with suitable bearings, which permit of the adjustment, or similar mechanism may be employed, so that both ends of the rollers may be adjusted when desirable. On extensions of the upper ends of the journals or shafts of these husking-rollers are placed
100 gear-wheels T, meshing with each other and with an idler gear-wheel T' on a shaft fixed in the upper and outer corner of the frame Q. I preferably make these husking-rollers of hard wood, one of each pair being covered with canvas and the other being smooth or finely fluted, or I may cover them both with cloth or flute them both. Their peripheries should have a little elasticity.
105

Within the frame Q, I place the ear-guides W, with concave lower edges, adjacent to the side-boards of the frame and directly over the outside rollers, and between each pair of rollers I place the divider or central ear-guide U', provided with concave edges fitting down between the adjacent oppositely-revolving rollers. The function of these guides U and U' is to force the ears to fall and travel down the incline always between the pairs of husking-rollers. Otherwise some of the ears would slide down unhusked.
110 115 120

In order to insure more perfect action of the husking-rollers it is desirable to have said husking-rollers run at a high rate of speed and to be made of considerable length. The operation of husking is further controllable by varying the inclination of the rollers. In order to do this at will the roller-frame Q is pivotally attached to the main frame at its upper extremity, and the posts A' are provided with a series of holes, in which are placed removable pins, which form the bearing for the
125 130

lower extremity of the frame. The frame Q may be provided with a suitable spout or chute Q', adjacent to the lower end of the husking-rollers, for directing the husked ears wherever desired. Under the chute Q' is placed an ear-delivering endless carrier V, traveling around rollers or drums journaled in the adjustable frame V'. The frame V' is pivotally attached to the main frame at its lower extremity between the posts A' and extends upward and forward between the posts A. In the posts A are a series of holes, in which are placed pins, which serve as bearings for the forward end of the frame. Its delivery end may thus be adjusted to any desired height.

On one extremity of the lower roller-shaft V'' is placed a pulley V''', which communicates directly or indirectly with the main shaft of the machine.

The endless carrier V travels in the direction of the arrow and serves to catch the husked ear as it falls from the chute Q' and to deliver the same into a wagon-bed or elsewhere.

Directly under the husking-rollers is placed an endless carrier W, traveling in the direction of the arrow around drums or rollers journaled in a suitable frame W'. This frame W' is pivotally attached at its lower extremity to the main frame and extends upward and rearward between the posts A''. This frame is also vertically adjustable by means of a winding-drum W'', journaled on the top of the posts A'', and the stay or guy chains or ropes W'''.

On the lower drum-shaft w^{IV} is placed a pulley Z, to which motion is imparted from the main shaft.

In suitable bearing-boxes fixed on the main frame, preferably on the posts A'', adjacent to the husking-rollers, is placed a main driving-shaft 1, provided with a pulley 2, a spur gear-wheel 3, and a bevel gear-wheel 4, the latter engaging with the idler gear-wheel T', driving the husking-rollers, and the former engaging with the lower gear-wheel L', driving the snapping-rollers. The journal or shaft of the lower roller H' is extended beyond the frame on the side opposite to the gear-wheel L', and is there provided with a small pulley 5 and a large pulley 6. From the small pulley 5 a straight belt 7 communicates motion to the pulley E, driving the carrier D, and a crossed belt passes from a pulley E', placed on the same shaft d , but inside the pulley E, to the pulley G, driving the carrier F. From the large pulley 6 a crossed belt 9 extends to the pulley P, driving the macerating-cylinder N. From the small pulley 2 on the main driving-shaft 1 passes a straight belt 10 to the pulley Z, driving the carrier W, and from a small pulley on the same shaft as Z passes a crossed belt 11 to the pulley V''', driving the carrier V. Across the tops of the

ear-guides U U', in close proximity to the snapping-roller H', is placed a guard and guide U''' for preventing the stalks from falling down on the frame Q and for directing the same between the snapping-rollers.

Power may be applied to the main driving-shaft 1 in any suitable manner.

Instead of the pulleys 6 and P and the belt 9 for driving the macerating-cylinder, I may substitute suitable gear-wheels.

Instead of belts and pulleys, sprocket-chains and sprocket-wheels may be used, and other similar changes may be made in the arrangement of the gearing for communicating the motion to the various parts of the machine from the main driving-shaft.

Instead of two pairs of husking-rollers several pairs may be used. So the size and material may be varied as experience may suggest.

When in use, the machine will be supplied with a corn-receiving table, on which the bundles of corn will be placed, and a feeder's platform, on which the attendant will stand and feed the unhusked corn.

The operation of the machine is clear from the description already given. The unhusked corn is placed on the endless carrier D, butts toward the snapping-rollers. The two carriers D and F traveling toward each other cooperate to feed the stalks forward to the rollers H and H'. These rollers snap the ear from the stalk. The ear falls between the husking-rollers R R' R'' R''', and is there stripped of its husk and silk and delivered to the carrier V, by which it is conveyed to a wagon or other receptacle. The husks and silk fall below the husking-rollers onto the carrier W, which conveys them, along with the stalks received from the snapping-rollers, to the stack or elsewhere. The stalk as it comes from the snapping-rollers is caught and torn into shreds by the macerating-cylinder, putting the fodder into the best possible condition for feeding to stock.

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

1. In a corn-husking machine, the combination, with the snapping-rollers, of a rigid resistance-plate, a macerating-cylinder above the same located on one side of the snapping-rollers, and a pair of endless feeding-carriers on the opposite side of the snapping-rollers, substantially as described.

2. In a corn-husking machine, the combination, with the frame Q, of the rolls R R' R'' R''', mounted therein, movable bearings r r' r'' r''' , and the right and left handed screw S'', engaging the said movable bearings, substantially as described.

3. In a corn-husking machine, the combination, with the frame Q, of the rolls R R' R'' R''', mounted therein, bearings r r' r'' r''' , the said bearings r and r''' being movable, the right and left handed screw-rod S', passing through all said bearings and having

a screw portion engaging the bearing r , and a reversely screw-threaded portion engaging the bearing r''' , substantially as described.

4. A corn-husking machine organized with
5 snapping-rollers and husking-rollers operating in pairs and mounted on an adjustable inclined frame, means for adjusting said husking-rollers, and means for adjusting the in-

clination of said frame for directing and retaining the unhusked corn between the parts 10 of rollers, substantially as described.

JAMES F. HURD.

In presence of—

E. F. HURD,
NELLIE HURD.