

No. 733,454.

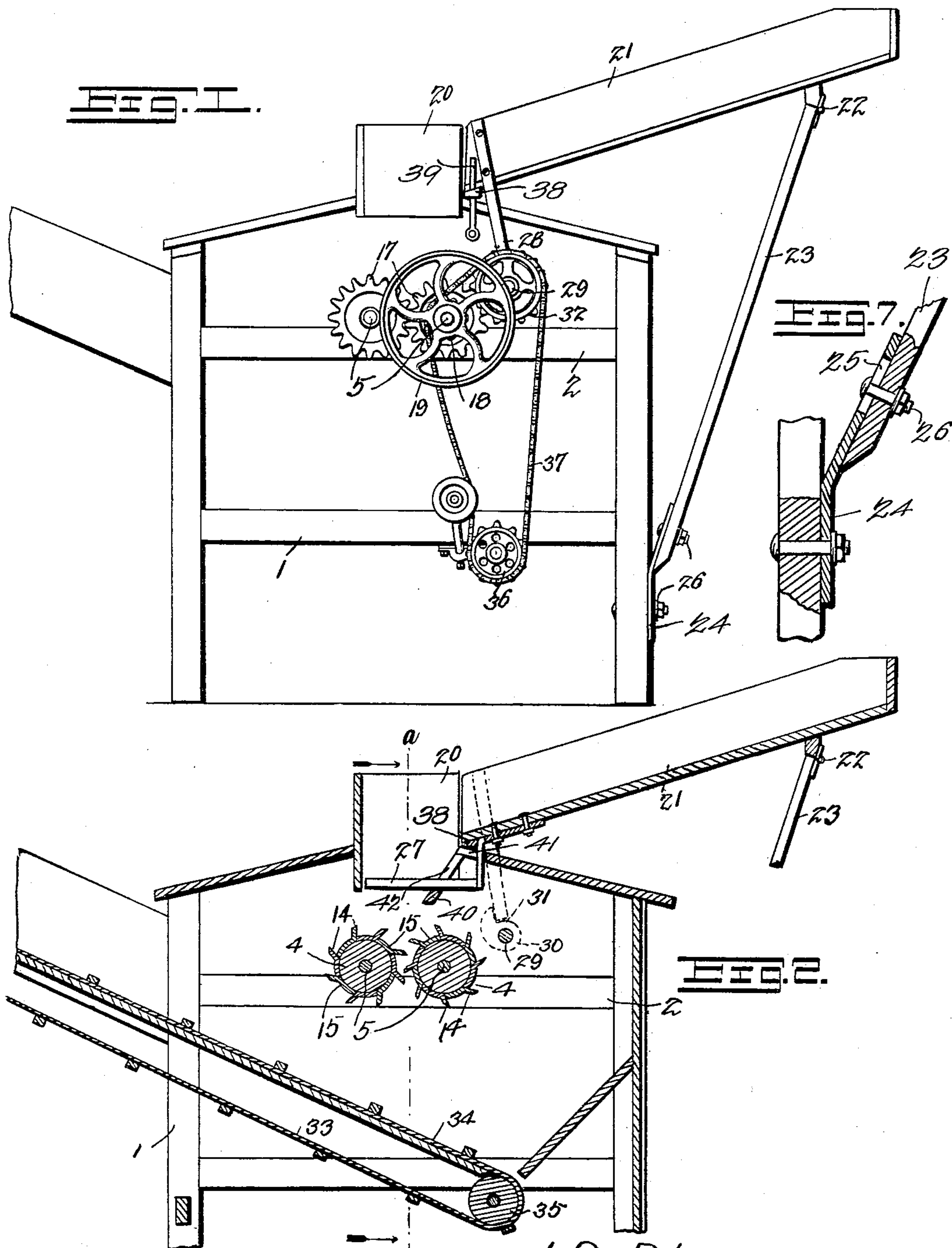
PATENTED JULY 14, 1903.

J. S. BLOOM.
MACHINE FOR CUTTING AND CRUSHING CORN.

APPLICATION FILED JAN. 22, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
E. C. Stewart
J. W. Garner

by

J. S. Bloom, Inventor.
C. A. Snow & Co.
Attorneys

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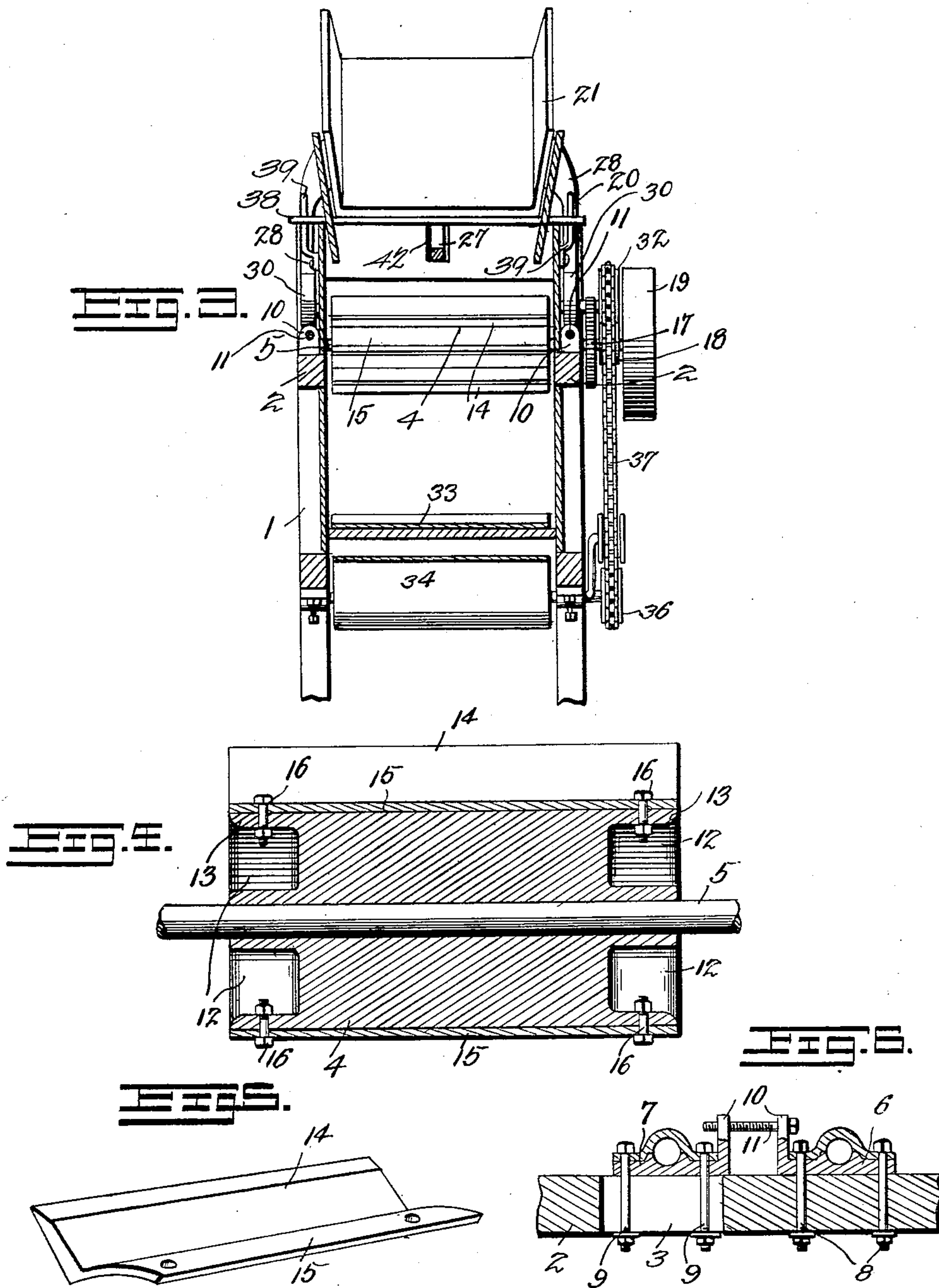
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UNITED STATES PATENT OFFICE.

JOHN S. BLOOM, OF WINTHROP, IOWA.

MACHINE FOR CUTTING AND CRUSHING CORN.

SPECIFICATION forming part of Letters Patent No. 733,454, dated July 14, 1903.

Application filed January 22, 1902. Serial No. 90,834. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. BLOOM, a citizen of the United States, residing at Winthrop, in the county of Buchanan and State of Iowa, have invented a new and useful Machine for Cutting and Crushing Corn, of which the following is a specification.

My invention is an improvement in machines for crushing and cutting corn, and particularly upon the corn crusher and cutter for which Letters Patent of the United States No. 680,755 were granted to me August 20, 1901.

One object of my present invention is to effect improvements in the means for adjusting the crushing and cutting cylinders toward and from each other.

A further object is to effect improvements in the construction of the crushing and cutting cylinders.

A further object is to effect improvements in the means for feeding the corn endwise to the crushing and cutting cylinders.

With these and other objects in view my invention consists in the peculiar construction and combination of devices hereinafter fully set forth and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a corn crushing and cutting machine embodying my improvements. Fig. 2 is a vertical longitudinal sectional view of the same. Fig. 3 is a vertical transverse sectional view of the same, taken on a plane indicated by the line *a a* of Fig. 2. Fig. 4 is a detail longitudinal sectional view of one of the crushing and cutting cylinders. Fig. 5 is a detail perspective view of one of the blades of said cylinders. Fig. 6 is a detail sectional view of one pair of the bearings in which the crushing and cutting cylinders are journaled. Fig. 7 is a similar view of the adjustable support for the outer end of the feed-trough.

The frame 1 may be of any suitable construction and is here shown as provided on opposite sides with a pair of bars 2. The said bars are provided with vertical longitudinal slots 3 of suitable length near the central portions of the said bars. The crushing and cutting cylinders 4 have their shafts 5 journaled, respectively, in bearings 6, 7, which are here shown as secured on the upper sides

of the bars 2 by bolts 8, 9, respectively. The bolts 9 of the bearings 7 pass through and operate in the slots 3, and it will be understood that the bearings 7 are adjustable, and hence the cylinder which is mounted in the said bearings may be adjusted toward or from the counter-cylinder. The said bearings 6, 7 are provided at their inner opposing ends with standards 10, and the said bearings are connected together in pairs on opposite sides of the machine by adjusting-bolts 11, as shown in Fig. 6. By turning the said adjusting-bolts the said adjustable standards 7 may be moved, as may be required, to dispose the crushing and cutting cylinders at any desired distance apart. It will be understood that prior to adjusting the bearings 7 the nuts on the bolts 9 must be loosened and that the same must be retightened after said bearings have been adjusted.

The crushing and cutting cylinders 4 are preferably made of iron or steel and are annularly chambered at their ends, as at 12, to form the end flanges 13. The blades 14 of the crushing and cutting cylinders are separable therefrom and from each other and are of the form shown in Fig. 5, each of the said blades being formed at its inner side with a segmental section 15, the inner side of which corresponds to the radius of the cylinder on which it is secured by the bolts 16, which are fitted in openings near the ends of the sections 15 and in the flanges 13 of the cylinder. The said blades 14 are disposed tangentially on the cylinders, and the blades of the respective cylinders are intercurrent.

The shafts 5 of the crushing and cutting cylinders are provided at one end with spur-wheels 17, which intermesh. The shaft of the relatively fixed non-adjustable cylinder is further provided with a sprocket-wheel 18 and with a power-pulley or other suitable device 19, by which power may be communicated thereto. It will be understood that the cylinders rotate in reverse directions, as indicated by the arrows in Fig. 2, and that the same serve to cut and crush ear-corn which is fed thereto and which passes between them.

On the upper side of the frame 1, above the crushing and cutting cylinders, is a bottomless hopper 20 of suitable construction. A feed-trough 21 has its outer portion hinged or

2
 pivotally connected, as at 22, to the upper end
 of a support 23. The said support has a de-
 pending shoe 24 at its lower end provided with
 a vertical slot 25. The said shoe is bolted to
 5 one side of the frame or casing of the machine
 and is secured to the support 23 by a bolt 26,
 which engages the slot 25. Hence the sup-
 port 23 is vertically adjustable to incline the
 feed-trough to any desired angle. The inner
 10 end of the feed-trough is free and is disposed
 in and discharges into one side of the hopper
 20. An ear-turning bar 27 is connected to
 the inner end of the feed-trough and extends
 transversely across the central portion of the
 15 bottomless hopper 20. The said ear-turning
 bar serves to turn the ears of corn as the same
 are fed to the machine in such manner as to
 cause them to be fed endwise to the coacting
 corn crushing and cutting cylinders, as will
 20 be understood. Tappets 28, one or more, are
 secured to the inner portion of the feed-
 trough and depend therefrom. A shaft 29 is
 journaled in bearings in the frame 1 and is
 provided with cams 30, which have shoulders
 25 or offsets 31. The said cams being rotated by
 the said shaft and the tappets 28 being in en-
 gagement with the said cams, it will be under-
 stood that the action of the cams and tappets
 is such as to alternately raise and drop the
 30 inner feed end of the trough, and thereby
 shake the corn in the trough and facilitate
 its passage therethrough. The shaft 29 has
 a sprocket-wheel 32 at one end.

As here shown, a conveyer 33 is employed
 35 in connection with the corn crushing and cut-
 ting machine to convey the product there-
 from as it is discharged by the crushing and
 cutting cylinders. The conveyer may be of
 any preferred type and is here shown as com-
 40 prising an endless traveling belt 34. The
 roller 35, which operates the said belt, has a
 sprocket-wheel 36 at one end of its shaft, and
 an endless sprocket-chain 37 connects and
 engages the sprocket-wheels 18, 32, and 36,
 45 and hence power is conveyed from the power-
 shaft to the cams which operate the feed-
 trough, and the conveyer which discharges
 the crushed and cut corn from the machine.

To the under side of the feed-trough 21 at
 50 its inner end is secured a transversely-dis-

posed guide-bar 38, the ends of which pro-
 ject beyond the sides of the feed-trough and
 are provided with openings. Guide-rods 39
 have their lower ends secured to the sides of
 the machine. The upper portions of said 55
 guide-rods are disposed in the openings in
 the guide-bar, and thereby the inner end
 of the feed-trough while permitted to move
 vertically by the operation of the cams and
 tappets is retained in the open side of the 60
 hopper. The latter has a laterally-inclined
 board 40, which is secured to and connects
 the ends of the hopper, is disposed under the
 vertically-movable inner end of the feed- 65
 trough, and contracts the throat of the hop-
 per, as shown in Fig. 2. The ear-turning bar
 operates in an opening 41, which is mortised
 in the top of the casing of the machine at the
 open side of the hopper and in a vertical slot
 42 in the board 40. 70

Having thus described my invention, I
 claim—

In a machine of the class described, the com-
 bination with a casing, of a feed-hopper dis-
 posed in the top of said casing and having an 75
 open side, crushing and cutting rollers dis-
 posed transversely beneath said hopper, a
 guide-board depending from the casing of the
 hopper between said rollers, an inclined feed- 80
 trough having its outer end pivotally and ad-
 justably supported outside of and independ-
 ently of the hopper and having its inner end
 disposed to discharge into the hopper through
 the open side of the latter and above the
 downwardly-extending feed-board, alined 85
 slots in the latter and in the top of the cas-
 ing, a bracket secured to the under side of
 the feed-trough and extending downwardly
 through the slot of the top casing, a dividing-
 bar extending forwardly from said bracket 90
 through the slot in the inclined feed-board,
 and means for imparting to the feed-trough
 a vibratory motion.

In testimony that I claim the foregoing as
 my own I have hereto affixed my signature in 95
 the presence of two witnesses.

JOHN S. BLOOM.

Witnesses:

W. B. MILLER,
 R. H. MEFFERT.