

(No Model.)

3 Sheets—Sheet 1.

C. F. WILLE.

AUTOMATIC DROPPER FOR HARVESTERS AND BINDERS.

No. 505,739

Patented Sept. 26, 1893.

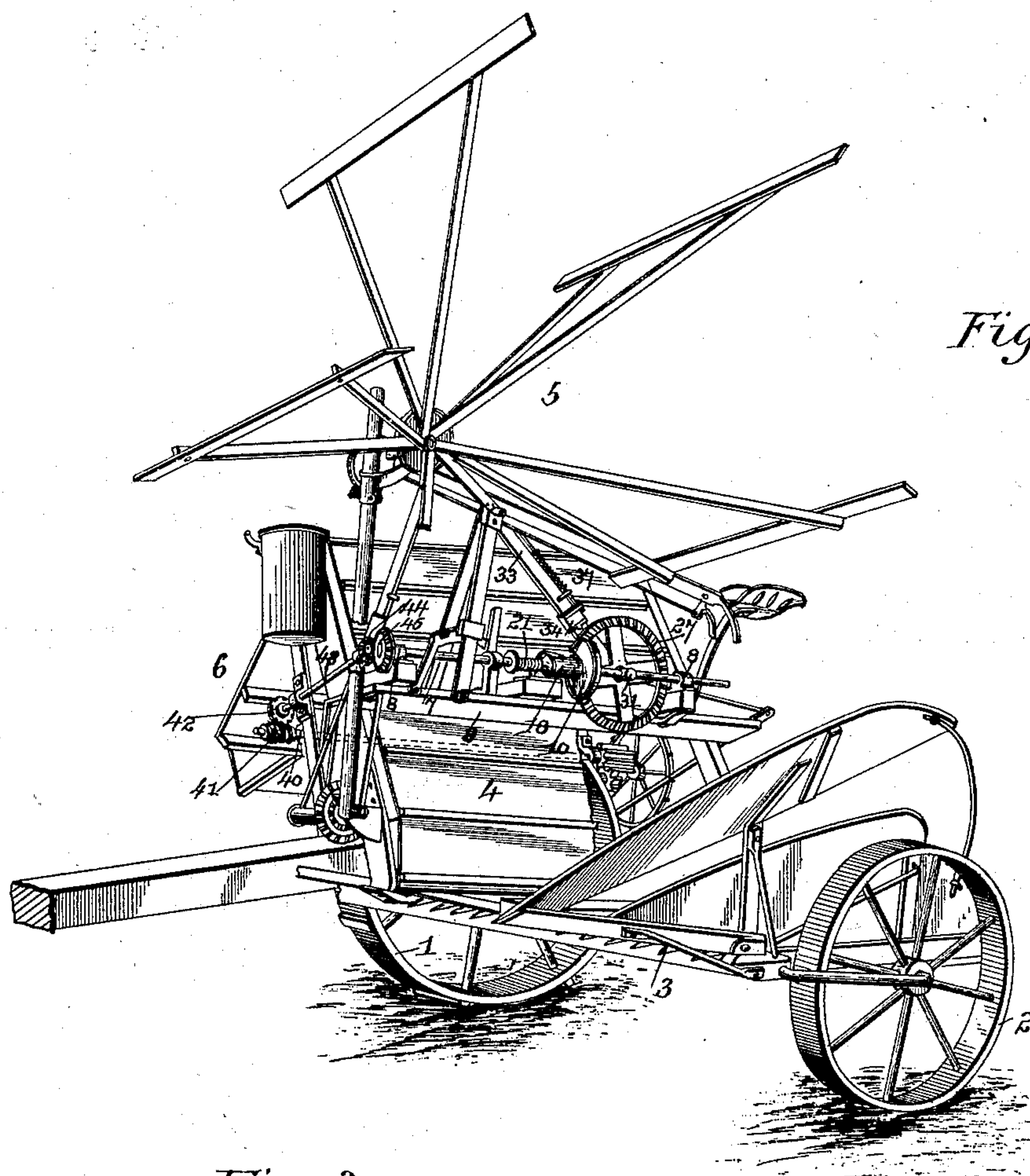
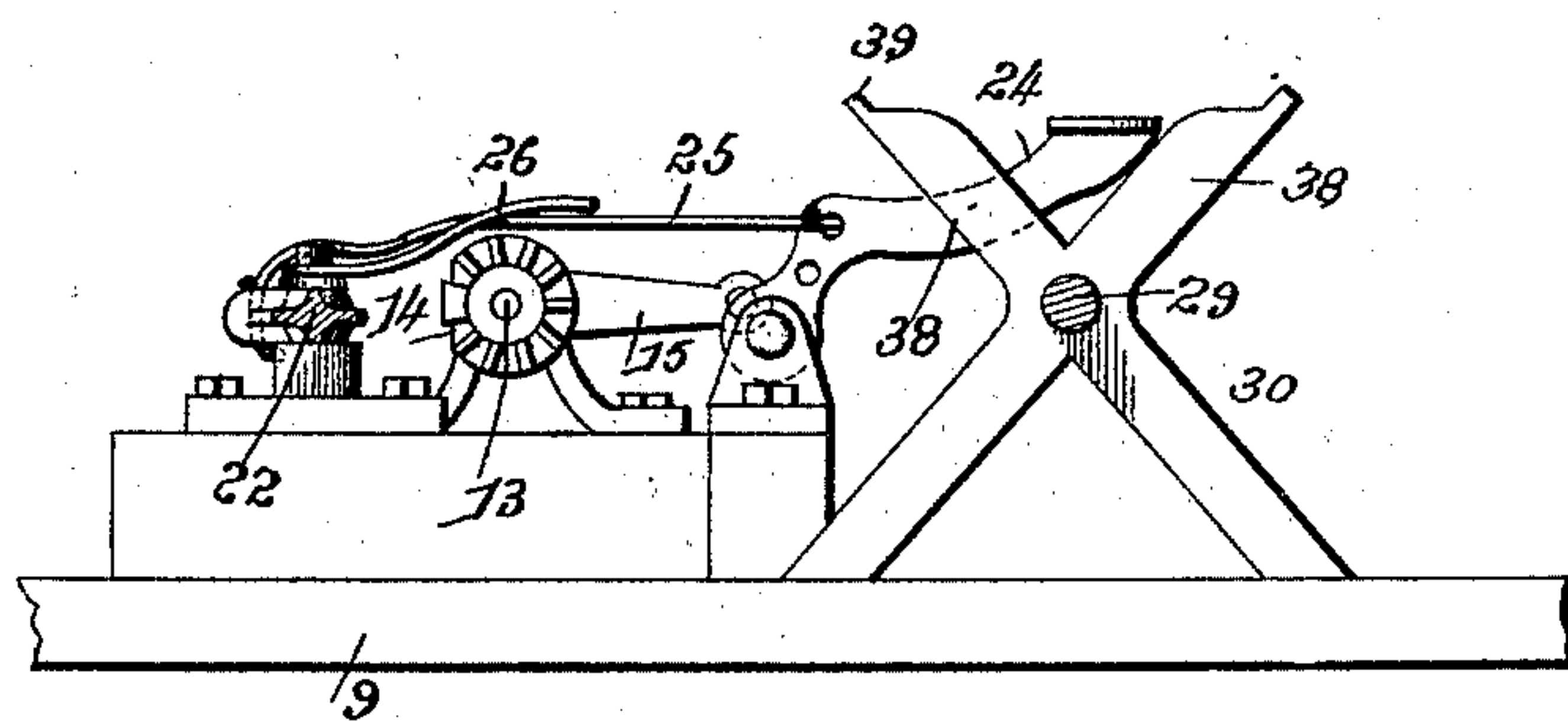


Fig. 1.

Fig. 3.



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Witnesses

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(No Model.)

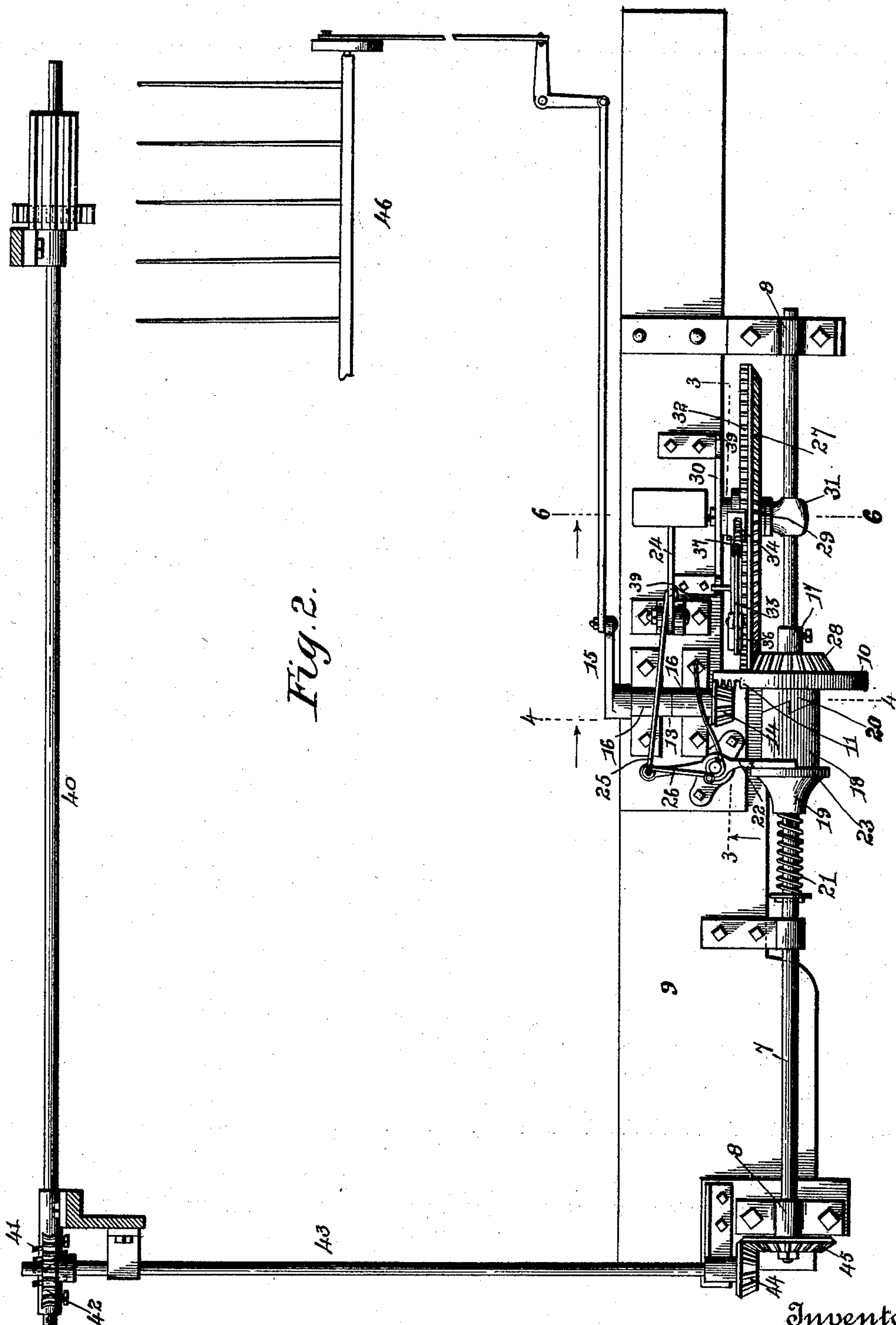
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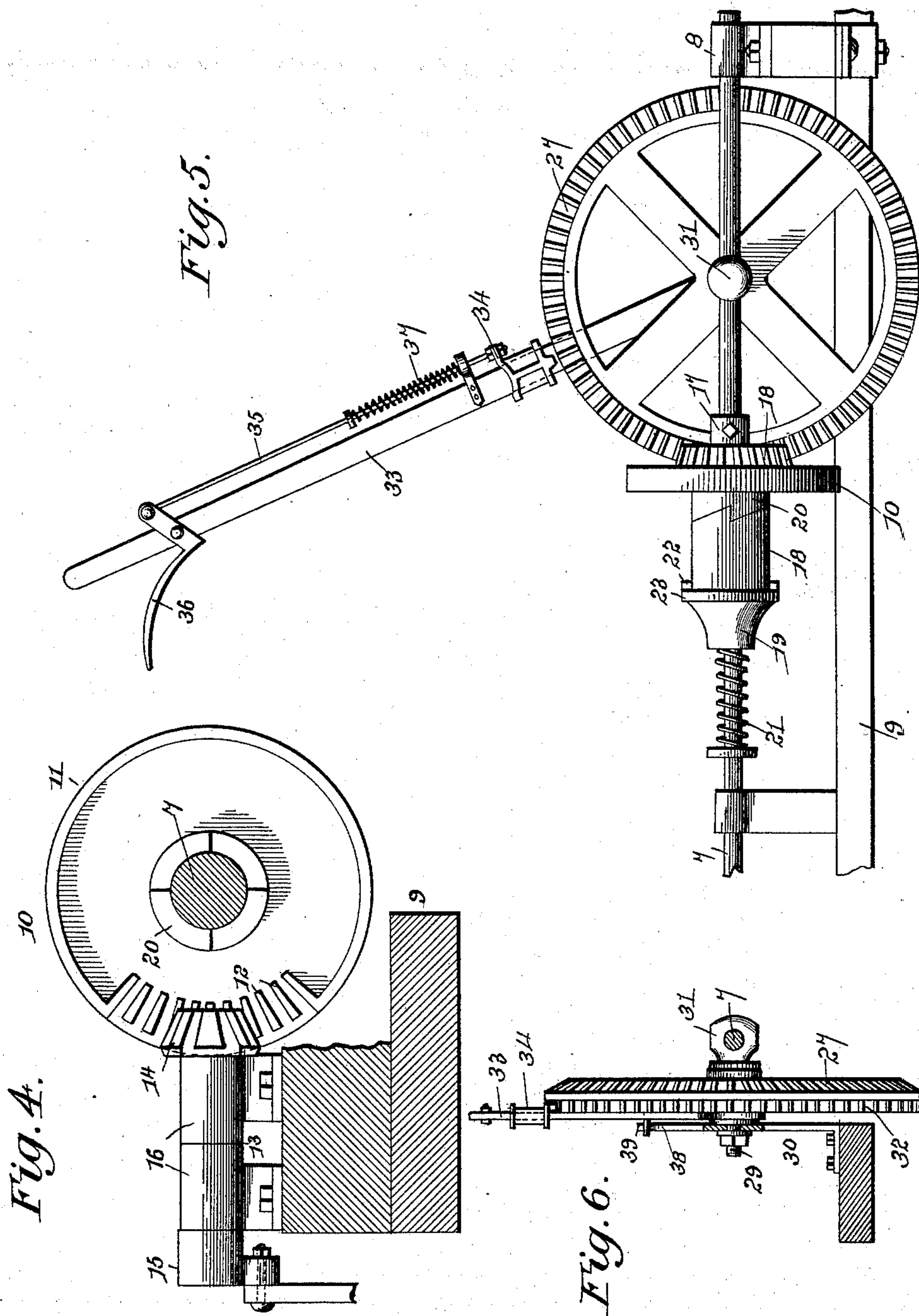
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Witnesses
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UNITED STATES PATENT OFFICE.

CHRISTIAN F. WILLE, OF EDWARDSVILLE, ILLINOIS.

AUTOMATIC DROPPER FOR HARVESTERS AND BINDERS.

SPECIFICATION forming part of Letters Patent No. 505,739, dated September 26, 1893.

Application filed May 15, 1893. Serial No. 474,316. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN F. WILLE, a citizen of the United States, residing at Ed-
wardsville, in the county of Madison and
5 State of Illinois, have invented a new and
useful Automatic Dropper for Harvesters and
Binders, of which the following is a specifica-
tion.

The object of my invention is to provide a
10 self-acting dropper for use in connection with
a harvester and binder, whereby the bundle
or sheaf carrier is operated to discharge or
drop the bundles or sheaves at intervals with-
out the particular manipulation of the driver;
15 and to provide means whereby the number of
bundles or sheaves which are dropped at each
movement of the carrier may be regulated by
the operator.

Further objects and advantages of my in-
20 vention will appear in the following descrip-
tion, and the novel features thereof will be
particularly pointed out in the claims.

In the drawings—Figure 1 is a perspective
view of a harvester and binder with a drop-
ping attachment embodying my invention ap-
25 plied thereto in the operative position. Fig.
2 is a plan view of the attachment removed
from the machine. Fig. 3 is a front view
partly in section on line 3—3 of Fig. 2, show-
ing the foot lever, mutilated pinion, and con-
30 nections. Fig. 4 is a detail section on line
4—4 of Fig. 2, showing the segment gear, mu-
tilated pinion, and connections. Fig. 5 is a
front view of the controlling gear, segment
35 gear, operating lever, and connections. Fig.
6 is a sectional view on line 6—6 of Fig. 2,
showing the controlling gear, and connections.

Similar numerals of reference indicate cor-
responding parts in all the figures of the draw-
40 ings.

The harvester and binder in connection
with which I have shown my attachment is of
the ordinary and well known construction in
which, 1 represents the traction-wheel, 2 the
45 grain-wheel, 3 the cutting-mechanism, 4 the
apron, 5 the gathering arms, and 6 the binder
deck. In the perspective view, Fig. 1, the
sheaf carrier is not visible owing to the posi-
tion of the machine, but the location of such
50 carrier with relation to the parts of the drop-
per mechanism is illustrated in diagram in
connection with Fig. 2.

7 represents a shaft which is disposed hori-
zontally in bearings 8 which are carried by
the seat platform 9 of the machine, said shaft 55
being continuously rotated by suitable gear-
ing and connections hereinafter described.

Loosely mounted upon the shaft at an in-
termediate point is a segment gear 10 of pe-
culiar construction being provided with a pe-
ripheral, lateral rim 11, as shown clearly in
Fig. 4, and teeth or spurs 12 which extend
around one-fourth of the periphery. The rim
11 is cut away at the part adjacent to the said
teeth or spurs. Rotatably mounted at right 65
angles to the shaft 7 is a stub-shaft 13, bear-
ing at one end a mutilated pinion 14, which
I have for convenience termed an intermit-
tently moving pinion because of its intermit-
tent movement when the machine is in opera- 70
tion, and at the other end a crank arm 15.
The pinion 14 is beveled to agree with the
teeth of the segment gear 10 and at one side
is flattened for the distance of two teeth,
whereby, as the segment gear rotates, its 75
teeth 12 will mesh with the teeth of the pin-
ion 14 and turn the latter through a complete
revolution until the flat side of the pinion is
arranged opposite the surface of the segment
80 gear, when the latter will rotate independ-
ently of the pinion until the teeth 12 return
to engaging position with the teeth of the
pinion. The shaft 13 is suitably mounted in
bearing-boxes 16 upon the seat platform.

As above described, the segment gear is 85
loosely mounted upon the shaft 7, being held
in place by means of a collar 17, and in or-
der to enable said gear to be locked to the
shaft to rotate therewith, I provide a clutch
18, which may be of any approved construc- 90
tion, but is preferably of simple form, as
shown in the drawings, in which the sleeve 19
is feathered upon the shaft 7 and is provided
with a ratchet terminal to engage a ratchet
hub 20 upon the segment gear, a spring 21 to 95
hold said slidable sleeve normally in its op-
erative position in engagement with the hub
of the segment gear, and a bifurcated or
forked lever 22 which engages a shoulder 23
upon the sleeve 19 to enable the clutch mem- 100
bers to be disengaged to release the segment
gear. Any suitable means may be provided
for operating this clutch, such as a foot-lever
24 which is operatively connected by means

of a rod 25 to the rear or free end of the bifurcated lever, and a spring 26 to normally hold said foot-lever in its elevated or operative position.

5 27 represents a controlling-gear which is beveled to mesh with a bevel pinion 28 carried by the segment gear upon the opposite side from the clutch mechanism, above described; said controlling-gear being mounted
10 upon a spindle 29, one end of which is fixed in an X-shaped standard 30 which is secured to the said platform 9, and the other end of which is provided with a yoke 31 which fits upon the shaft 7 without interfering with the
15 free rotation of the latter. The gear 27 is provided with a peripheral rack 32, and fulcrumed upon the hub of the gear is an operating lever 33 bearing a slidable tongue 34 which is connected by a suitable rod 35 to a
20 bell-crank lever 36. A retraction spring 37 is arranged in connection with the tongue 34 to normally hold the latter out of engagement with the rack teeth of the controlling-gear, and by pressing the bell-crank lever to-
25 ward the upper end of the operating lever said tongue may be engaged with the rack teeth, thus enabling the operator to turn the said gear as desired to adjust the position of the segment-gear with which, as above de-
30 scribed, it is operatively connected. The upper divergent arms 38 of the standard 30 are provided with terminal stops 39 to limit the movement of the operating lever 33. Motion may be communicated to the shaft 7 from the
35 traction-wheel or from any other continuously operating part of the machine by any well known or approved construction of gearing, the particular form of such connections being non-essential to my invention. In the
40 construction illustrated I have shown a longitudinally-disposed shaft 40, which is connected by suitable gearing with the traction-wheel and provided at its front end with a worm 41 which meshes with a worm-gear 42
45 carried by a shaft 43 which is arranged near the front end of the machine and is connected by suitable bevel gears 44 and 45 with the shaft 7.

Obviously, the gearing by which the drop-
50 per receives its motion must be proportioned to agree with the operation of the harvesting and binding mechanism to cause four sheaves or bundles to be prepared and deposited upon the sheaf carrier, which is shown in diagram
55 at 46 in Fig. 2, during one complete revolution of the segment gear 10, or one complete revolution of the shaft 7, this being accomplished by intermeshing gears of different sizes, and being a common expedient with
60 this class of machinery a detail description thereof is deemed unnecessary.

This being the construction of my attachment the operation thereof, briefly stated, is as follows: The shaft 7 rotates continuously, as
65 above described, and when the parts are in their operative position, as shown in Fig. 2 in

which the clutch is in position to lock the segment gear firmly to the shaft, the mutilated pinion or gear 14 will move through one
70 complete revolution at each complete revolution of the segment gear, said gear revolving during one-fourth of the revolution of the segment-gear and being at rest during the remaining three-fourths of the revolution of the segment-gear. At each revolution of
75 the gear 14 the crank arm 15 is similarly operated, and by means of the connections 47 (which may be of any approved construction and which need no specific description herein) motion is communicated to the sheaf carrier 48, whereby the latter is dropped or with-
80 drawn to deposit the sheaves and is immediately elevated to its operative position. With the parts arranged as described four sheaves will be deposited upon the sheaf carrier be-
85 fore the latter will be operated to discharge the same, but if it is desired to deposit one, two or three sheaves it can be accomplished by the proper manipulation of the controlling gear through the agency of the operating le-
90 ver 33. If it is desired to deposit a less number of bundles than four the said operating lever is grasped and its tongue engaged with the teeth of the peripheral rack of the controlling-gear, and the latter turned, thereby
95 causing a corresponding rotation of the segment-gear and bringing the teeth 12 of the latter into operative relation with the teeth of the mutilated gear sooner than would occur if the machine were allowed to operate
100 without interference. In this way any desired number of sheaves may be deposited at one time. To disconnect the drop mechanism, temporarily, the foot-lever is depressed to disengage the members of the clutch.
105

It will be understood that various changes in the form, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of my invention.
110

Having described my invention, what I claim is—

1. In a device of the class described, the combination with a shaft, and means for operating the same, of a segment-gear carried
115 by said shaft, clutch devices connecting said segment gear and the shaft, an intermittently moving gear meshing with the segment gear and flattened to remain at rest during a portion of a revolution of the segment gear, and
120 connections between the intermittently moving gear and a sheaf carrier, substantially as specified.

2. The combination with a shaft, and means for operating the same, of a segment gear
125 loosely mounted upon the shaft, a clutch for locking the segment gear to the shaft, an intermittently moving gear meshing with the segment gear, connections between said intermittently moving gear and a sheaf carrier,
130 a controlling-gear meshing with a pinion carried by the segment gear, and means for op-

erating the controlling-gear to adjust the same with relation to the intermittently moving gear, substantially as specified.

3. The combination with a shaft, and means
5 for operating the same, of a segment gear, a clutch mechanism for connecting said gear to the shaft, an intermittently moving gear meshing with the segment gear, connections
10 between the intermittently moving gear and a sheaf carrier, a controlling-gear provided with peripheral rack teeth, connections between said controlling gear and the segment gear, and an operating lever arranged in operative relation to the controlling gear, where-
15 by the latter may be rotated to adjust the segment gear with relation to the intermittently moving gear, substantially as specified.

4. The combination with a shaft, and means
20 for operating the same, of a segment gear, a clutch mechanism for connecting the segment gear to the shaft, an intermittently moving gear meshing with the segment gear, connections between the intermittently moving gear and a sheaf carrier, a controlling gear, and
25 connections between the same and the segment gear, an operating lever carrying a normally retracted tongue to engage peripheral rack teeth upon the controlling gear, and stops

for limiting the movement of the operating lever, substantially as specified.

5. The combination with a shaft, and means
30 for operating the same, of a segment gear loosely mounted upon said shaft, a clutch to lock said segment gear to the shaft, means for operating said clutch, an intermittently
35 moving gear meshing with the segment gear and operatively connected to a sheaf carrier, a standard 30, a spindle secured at one end in said standard and provided at the other
40 end with a yoke to engage said shaft, a controlling gear rotatably mounted upon said spindle and connected to the segment gear, stops 39 carried by said standard, and an operating lever fulcrumed upon the hub of the
45 controlling gear and provided with a normally retracted tongue to engage peripheral rack teeth upon the controlling gear, substantially as specified.

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

CHRISTIAN F. WILLE.

Witnesses:

W. F. L. HADLEY,
CHARLES H. BURTON.