

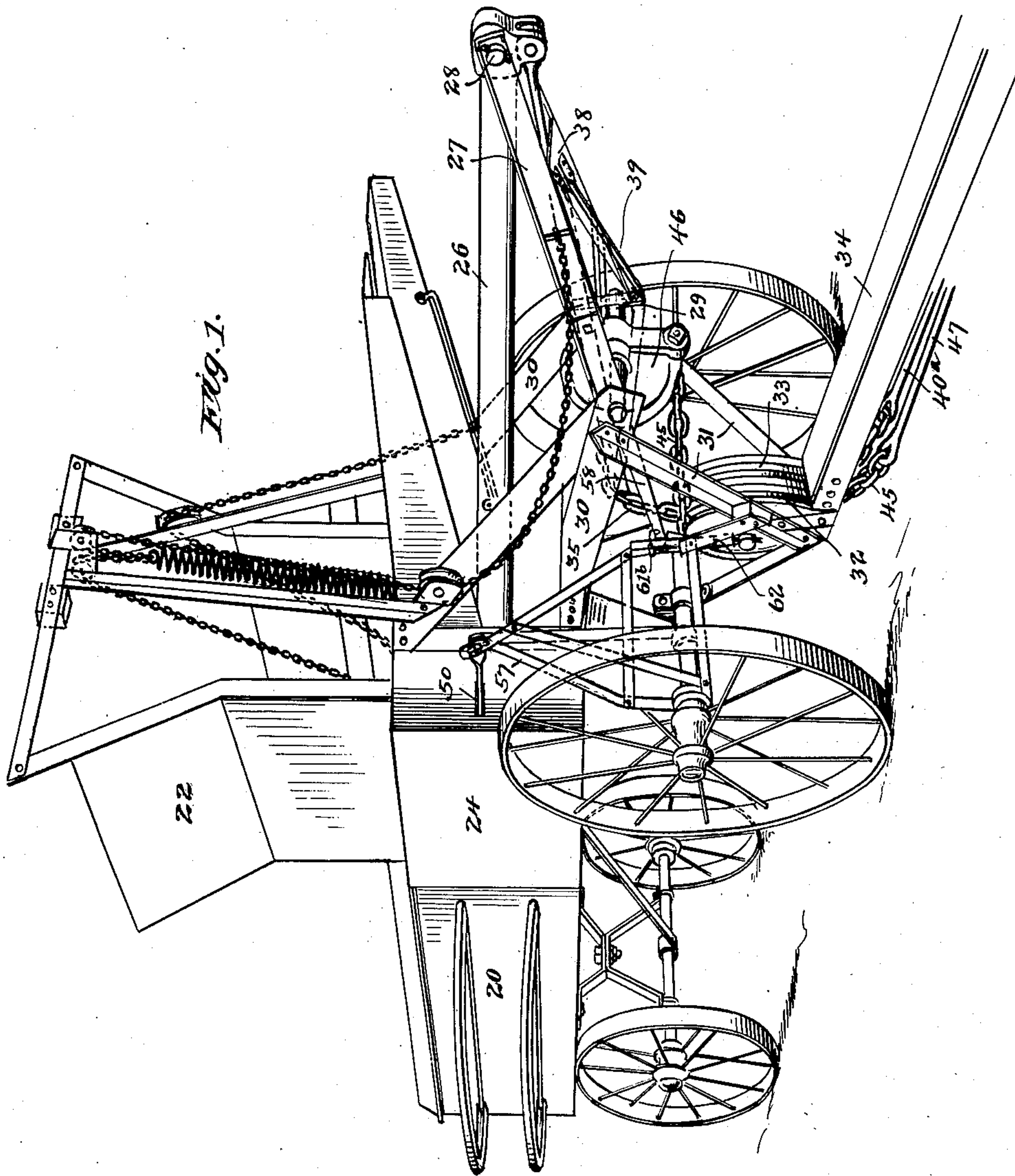
No. 819,319.

PATENTED MAY 1, 1906.

J. A. SPENCER.
BALING PRESS.

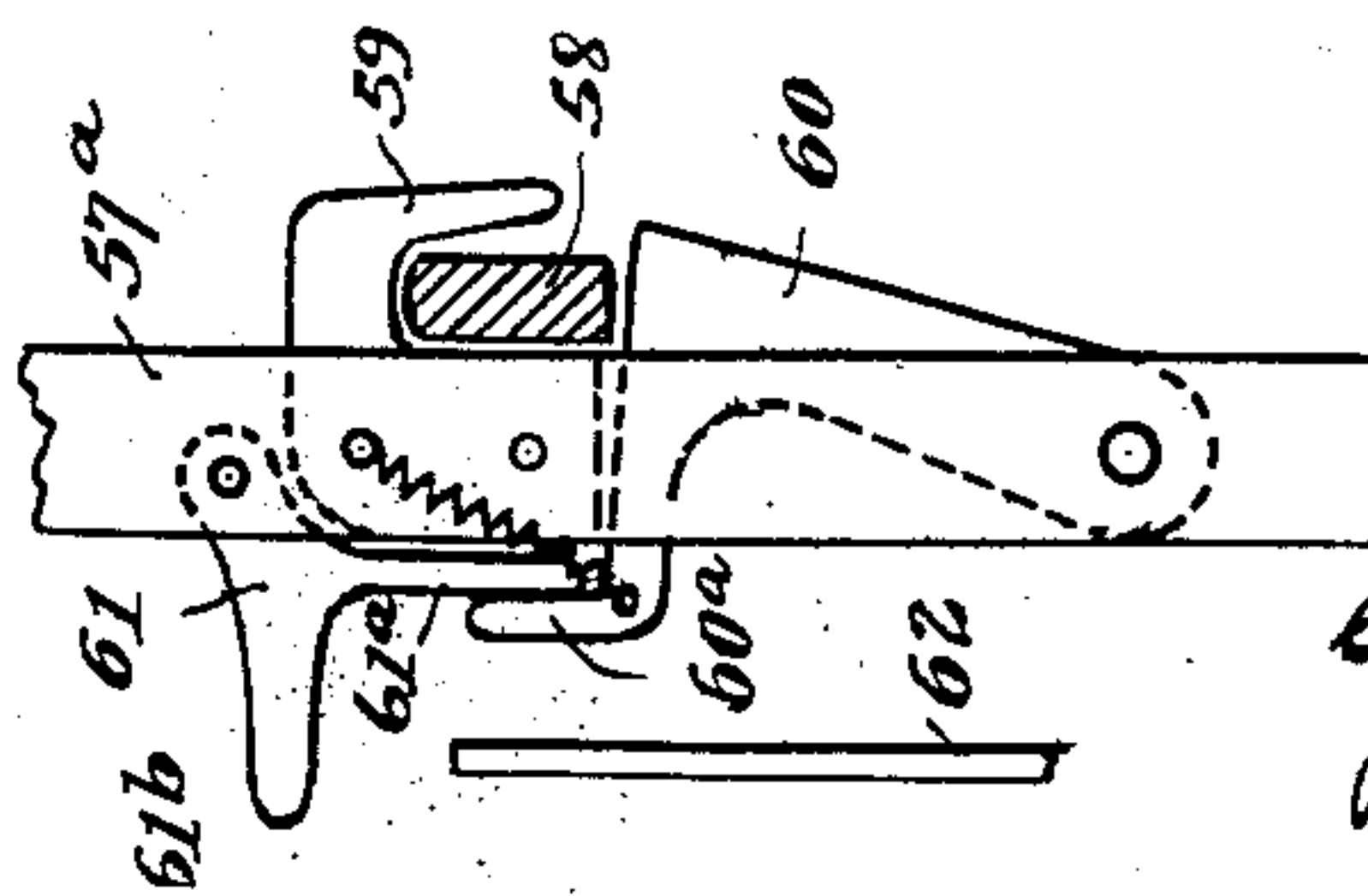
APPLICATION FILED JUNE 24, 1905.

3 SHEETS—SHEET 1.



Witnesses,
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Fig. 6.



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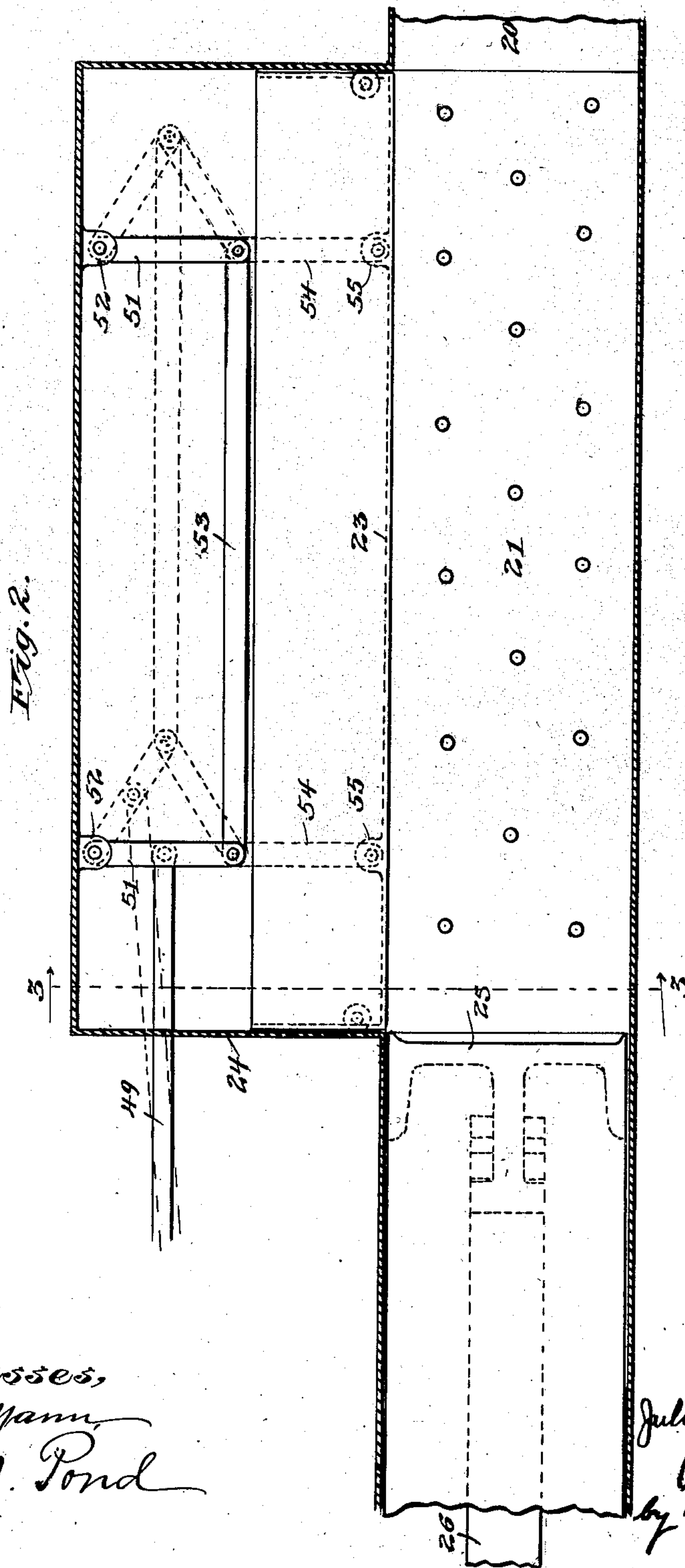
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3 SHEETS—SHEET 2.



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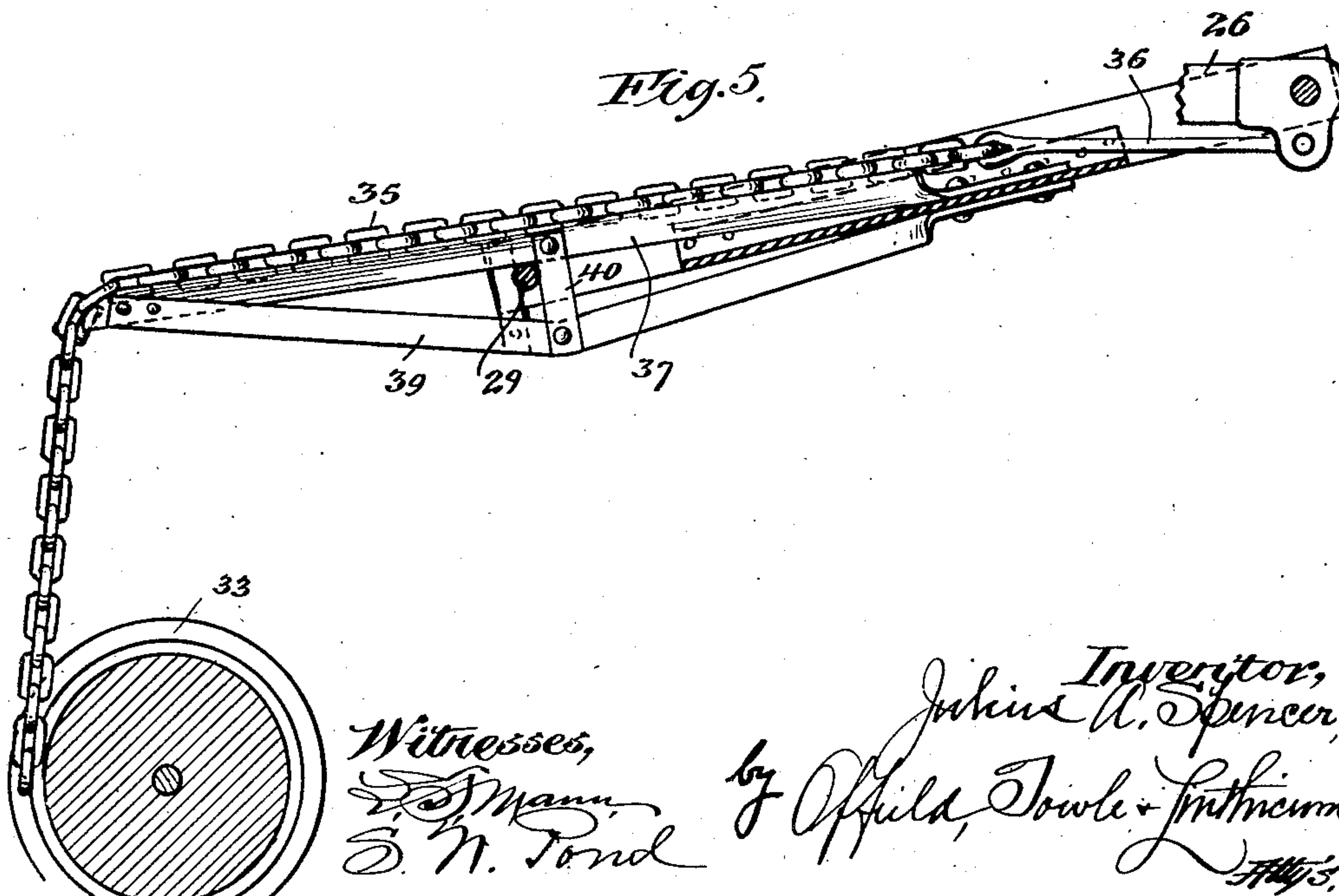
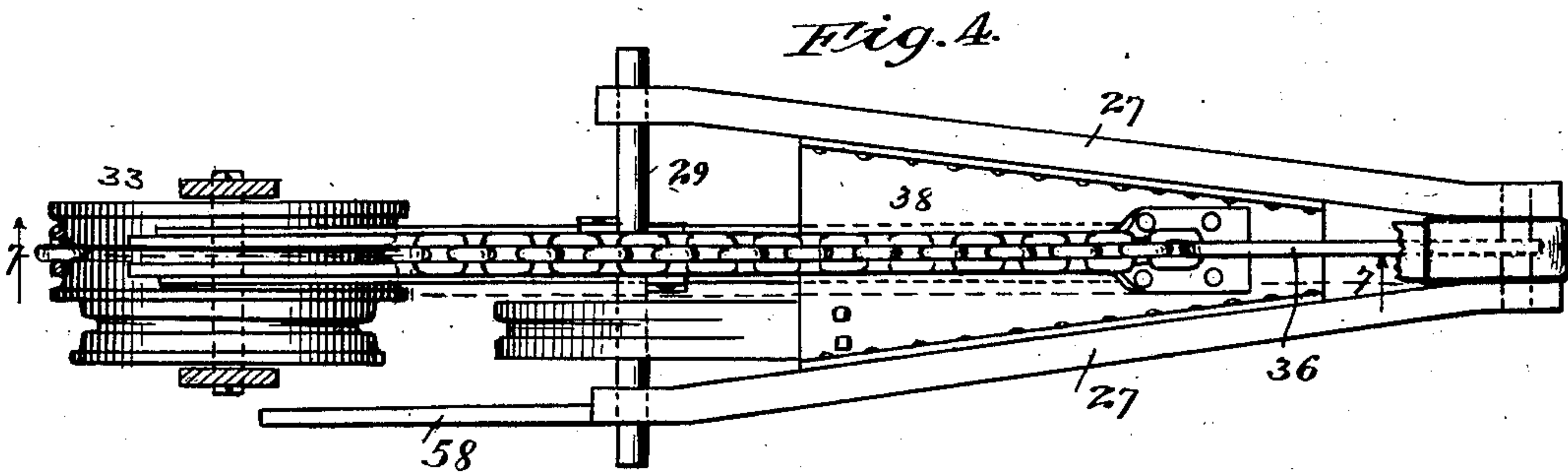
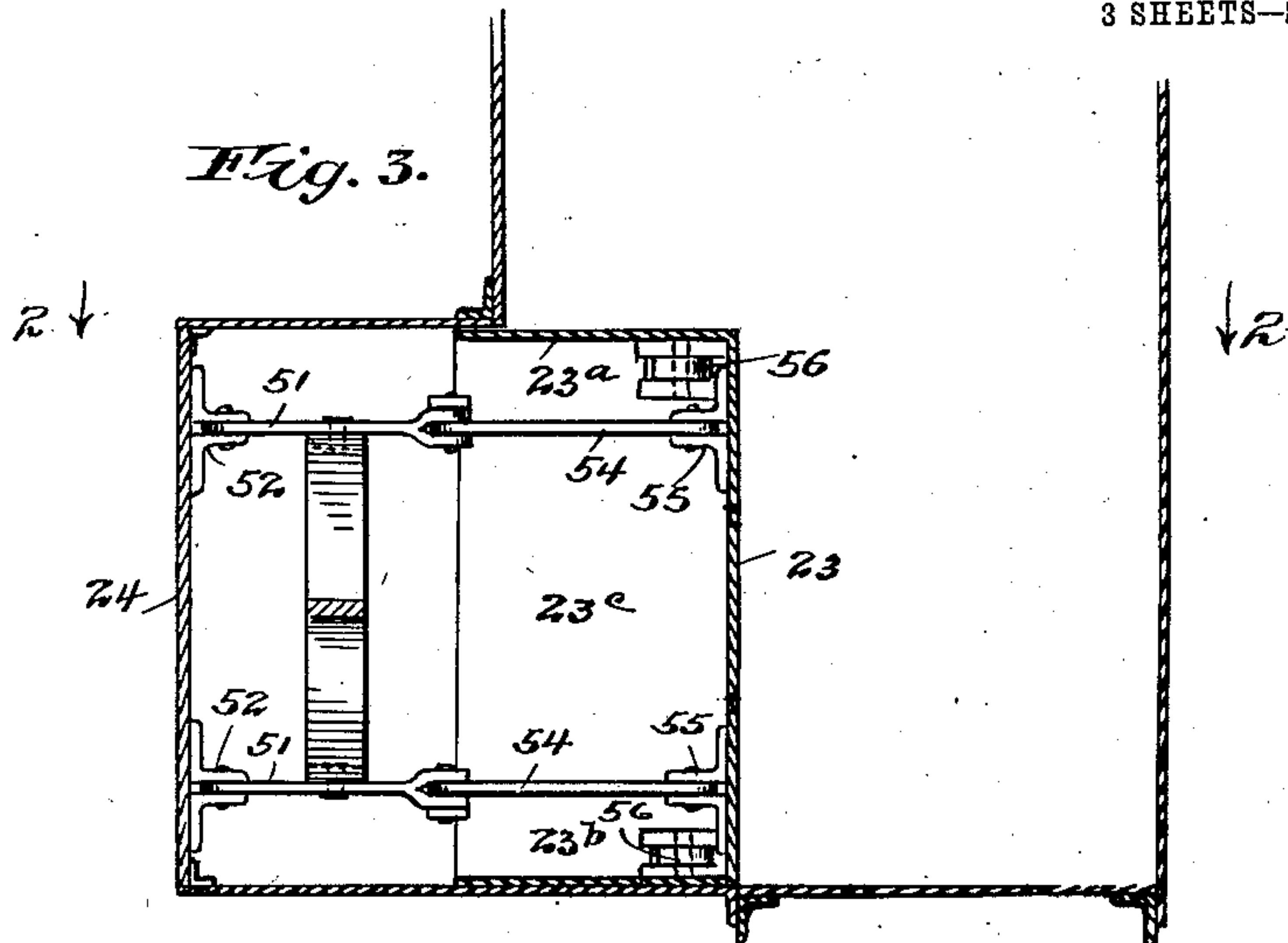
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

JULIUS A. SPENCER, OF DWIGHT, ILLINOIS.

BALING-PRESS.

No. 819,319.

Specification of Letters Patent.

Patented May 1, 1906.

Application filed June 24, 1905. Serial No. 266,895.

To all whom it may concern:

Be it known that I, JULIUS A. SPENCER, a citizen of the United States, residing at Dwight, in the county of Livingston and State of Illinois, have invented certain new and useful Improvements in Baling-Presses, of which the following is a specification.

My invention relates to baling-presses such as are used for compressing and baling hay, staw, cotton, and the like to reduce the same to a form and size convenient for economical storage or shipment; and my improvements relate more specifically to that class of baling-presses known as "toggle-presses," a type whereof is illustrated in my former patent, No. 708,269, granted September 2, 1902, upon which to a certain extent my present invention bears the relation of an improvement.

The object of my invention is to improve baling-presses of this type, more particularly in the direction of providing an improved feeding-in chamber, with novel mechanism for operating the extensible side thereof from the movement of the fulcrumed shorter arm of the plunger-actuating toggle, another object of the invention being to provide means, in combination with the feeding-in chamber and its actuating mechanism, whereby by the initial inward movement of the compressing-plunger (during which movement the extensible side of the feeding-in chamber is actuated) may be rendered easier on the team.

In the accompanying drawings, Figure 1 is a perspective elevational view of the portable press and plunger-operating mechanism. Fig. 2 is a horizontal sectional view through the feeding-in chamber on the line 2 2 of Fig. 3. Fig. 3 is a cross-sectional view of the same parts on the line 3 3 of Fig. 2. Fig. 4 is a top plan view, and Fig. 5 a longitudinal section on line 7 7 of Fig. 4, of the mechanism for increasing the leverage or arm of power through which the power is applied to the plunger at the beginning of its inward stroke. Fig. 6 is a detail of the mechanism for actuating the extensible side wall of the feeding-in chamber from the oscillating movement of the plunger-toggle.

Mentioning first the principal parts of the apparatus, 20 may designate as an entirety the baling or compression chamber, in rear of which is a feeding-in chamber 21, Fig. 2,

surmounted by a hopper 22 and having an extensible side 23, working in a laterally-extended housing 24 on one side of the feeding-in chamber.

25 designates the compressing-plunger, pivotally connected to the end of a plunger stem or rod 26, this latter constituting one arm of a toggle, the other arm whereof is composed of a pair of channel or other beams 27, pivotally connected by a pin 28 to the free end of the plunger-rod 26 and at their opposite ends rotatably mounted upon a transverse shaft 29, supported in and between a pair of rigid brackets 30, projecting rearwardly of the main frame of the machine, as clearly shown in Fig. 1. A suitable depending frame 31 carries a pair of grooved pulleys 32 and 33 and also supports the inner end of a hollow strut-bar 34, to the opposite or outer end of which is applied the mechanism through which the power of the team is applied to actuate the compressing-plunger. A chain 35 transmits the power of the team to the plunger on its inward or compressing movement. One end of this chain is connected, through a link 36, Figs. 4 and 5, with the free or outer end of the plunger 26, and said chain overlies and overrides a rigid guide secured to the divergent members 27 of the toggle-arm constituting an extension of the latter, said guide oscillating with the short arm of the toggle about the shaft 29. This rigid guide is a trussed member, herein shown as comprising a pair of parallel bars 37, twisted through a right angle at one end and riveted to a plate 38, connecting the bars 27, said bars 37 overlying the pivoted shaft 29 and at their opposite ends extending to a position above the pulleys 32 and 33, said bars being reinforced by truss-bars 39 and struts 40. The bars 37 are separated sufficiently to allow the vertical links of the chain to be guided therein, while the alternate links ride thereover. The chain 35 passes down around the pulley 33 and is connected, through a suitable link 40^a and chain, to a traveler operating on a cam-block actuated by the sweep in the manner fully described in my aforesaid patent, No. 708,269. Another chain 45, connected to a segment-block 46, fast on the shaft 29, is connected, through a link 47, to another traveler on the cam-block and operates to retract the plunger in the manner clearly set forth in my aforesaid patent.

From the foregoing, and especially by reference to Fig. 5, it will be seen that when the plunger is fully retracted and the load in the feeding-in chamber is to be forced into the compression-chamber and compressed there-
 5 in on the initial movement of the plunger the chain 35, by reason of passing over the inwardly-projecting end of the lower toggle-arm, obtains a leverage nearly equal to the
 10 length of said inward projection in effecting the initial inward movement of the plunger, thus lessening the severe strain upon the team resulting from the acute angle at which the toggle-arms stand at the beginning of the
 15 straightening movement of the toggle.

Referring next to my improved mechanism for actuating the extensible side wall of the feeding-in chamber, and referring more particularly to Figs. 1, 2, and 3, 49 designates
 20 a pitman that passes loosely through a slot 50 in the rear wall of the casing 24, its inner end being connected to one of two pairs of links 51, that are pivoted to lugs 52 on the inner side of the side wall of the casing, the free ends
 25 of the upper and lower of said links 51 being connected by bars 53, whereby they are caused to move in unison. The pivoted ends of the links 51 and bars 53 are pivotally connected to the meeting ends of two pairs of companion links 54, which latter are pivotally con-
 30 nected to lugs 55 on the outer face of the extensible side wall 23. This latter has formed on all four margins broad top, bottom, and end flanges 23^a, 23^b, and 23^c, respectively,
 35 whereby it is guided in the casing 24, the end walls being preferably provided with anti-friction-rollers 56. For reciprocating the pitman 49 sufficiently to effect, through the described mechanism, the inward and out-
 40 ward movements of the extensible side 23 the outer end of said pitman is connected by a lost-motion pin-and-slot joint, Fig. 1, to the upper end of a rocking frame 57, that is pivoted at its lower end on one of the axles, said
 45 frame at its rear end preferably being engaged, so as to rock the same, by the free end of an arm 58, connected to and forming an extension of one of the arms 27, the engage-
 50 ment and disengagement of the arm 58 being effected at the proper times by the mechanism shown in detail in Fig. 6, wherein it will be seen that the vertical rear frame-bar 57^a of the oscillating frame has a rigid hook 59,
 55 projecting to one side thereof, beneath which the arm 58 lies when raising the frame and actuating the pitman 49 on its inward movement, said bar also having beneath the rigid hook 59 a spring-latch 60, adapted to under-
 60 lie the arm 58 and be engaged thereby to rock the frame in the opposite direction for the outward movement of the pitman 49. In order to release the arm 58 from the actuating connection 57 of the pitman 49 when the latter has been retracted to or nearly to its
 65 limit, I provide means for retracting the

latch 60, the same comprising a pawl 61, pivoted to the frame-bar 57^a opposite the rigid hook 59, said pawl having a depending finger 61^a, normally lying behind an upstanding finger 60^a on the latch 60, and a horizontal
 70 finger 61^b, overlying a rigid contact-bar 62, secured to one of the stationary frame members of the apparatus. From this it follows that when the rocking frame 57 is swung downwardly to a point where the finger 61^b
 75 strikes and overrides the stationary bar 62 the latch 60 will be thereby retracted from beneath the arm 58, whereby the continued swing of the latter will be without effect upon the actuating mechanism of the extensible
 80 side. The relation of the parts is such that the extensible side 23 will be fully moved to its inner position by the time the plunger 25 has reached on its inward movement the rear end of the feeding-in chamber. The actua-
 85 tion of the extensible side of the feeding-in chamber on its inward or compressing movement takes place during the initial part of the inward movement of the plunger just prior to the travel of the plunger through the feeding-
 90 in chamber, this movement occurring while the arms of the plunger-actuating toggle form a very acute angle. The purpose of the forward extension of the toggle-arm on which the toggle-actuating chain acts during the
 95 initial part of the opening movement of the toggle is to secure a mechanical advantage sufficient to overcome the resistance to the inward movement of the plunger represented by the actuation of the movable side of the
 100 feeding-in chamber. In baling-presses lacking a feeding-in chamber with a movable or compressing side the provision of the auxiliary leverage for starting the opening movement of the toggle is unnecessary, since dur-
 105 ing the final compressing stage when the toggle is undergoing the last part of its straightening movement a greater amount of power is required than is necessary to start the inward movement of the plunger in the absence
 110 of the auxiliary leverage; but in presses such as that shown herein, wherein the preliminary condensation of the hay or other material is effected in a feeding-in chamber by means of a laterally-moving side or plunger
 115 in the latter, where the actuation of such laterally-moving side or plunger is effected by and from the toggle-actuating means of the main plunger, the provision of the auxiliary leverage is necessary to reduce the amount of
 120 power otherwise required to effect the initial part of the opening movement of the toggle arms.

It is evident that the particular forms and constructions herein shown and described
 125 might be varied to some extent by those skilled in the art without departing from the substantial principles of operation or sacrificing any of the advantages attained by the invention. Hence I do not limit the latter
 130

to the particular details shown and described except to the extent indicated in specific claims.

I claim—

5 1. In a baling-press, the combination with
a compression-chamber, a plunger, and a
plunger-operating mechanism, of a feeding-
in chamber having an extensible side, and
means independent of said plunger for actu-
10 ating said extensible side from the plunger-
operating mechanism, substantially as de-
scribed.

2. In a baling-press, the combination with
a compression-chamber, a plunger, and a
15 plunger-operating mechanism, of a feeding-
in chamber having an extensible side, a tog-
gle connected to said extensible side, a pit-
man connected to said toggle, an arm con-
nected to and oscillated by said plunger-op-
20 erating mechanism, power-transmitting con-
nections between said arm and said pitman,
and means for automatically establishing
and breaking said connections near the outer
limit of travel of said pitman, substantially
25 as described.

3. In a baling-press, the combination with
a compression-chamber, a plunger, and a
plunger-operating mechanism, of a feeding-
in chamber having an extensible side, a tog-
30 gle connected to said extensible side, a pit-
man connected to said toggle, a rocking frame
connected to said pitman, an arm connected
to and oscillated by said plunger-operating
mechanism, and a hook-and-latch mechanism
35 carried by said rocking frame, whereby its
connection with said oscillating arm is auto-
matically established and broken near the
outer limit of travel of said pitman, substan-
tially as described.

40 4. In a baling-press, the combination with
a compression-chamber, a plunger, a plun-

ger-operating toggle, a fulcrum-shaft, and a
power-transmitting cable connected to the
knuckle of said toggle, of a feeding-in cham-
ber having an extensible side, means for ac- 45
tuating the latter from said plunger-operat-
ing toggle, and an arm projecting forwardly
of said fulcrum-shaft and engaged by said
power-transmitting cable to effect the initial
part of the opening movement of the toggle 50
and, synchronously therewith, the actuation
of said extensible side of the feeding-in cham-
ber, substantially as described

5. In a baling-press, the combination with
a compression-chamber, a plunger, a plun- 55
ger-operating toggle, a fulcrum-shaft for said
toggle, and a power-transmitting cable con-
nected to the knuckle of said toggle, of a feed-
ing-in chamber having an extensible side, a
toggle connected to said extensible side, a 60
pitman connected to said toggle, an arm
rigid with and oscillated by the short arm of
said plunger-operating toggle, power-trans-
mitting connections between said arm and
pitman, and another arm projecting forwardly 65
of said fulcrum-shaft and engaged by said
power-transmitting cable to effect the initial
part of the opening movement of the toggle
and, synchronously therewith, the actuation
of said extensible side of the feeding-in cham- 70
ber, substantially as described.

6. In a baling-press, the combination with
a feeding-in chamber having an extensible
side, of a fulcrum-shaft and a leverage-arm
thereon, a power-transmitting cable engag- 75
ing said leverage-arm, and actuating con-
nections between the latter and said extensi-
ble side, substantially as described.

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