

No. 657,287.

Patented Sept. 4, 1900.

C. J. JOHNSON.

BALING PRESS.

(Application filed Jan. 4, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

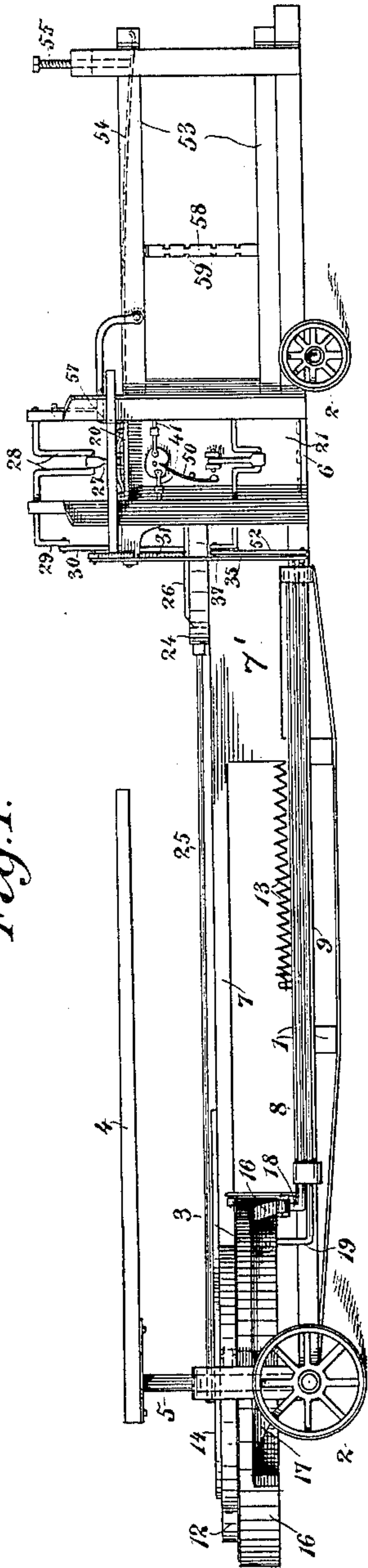
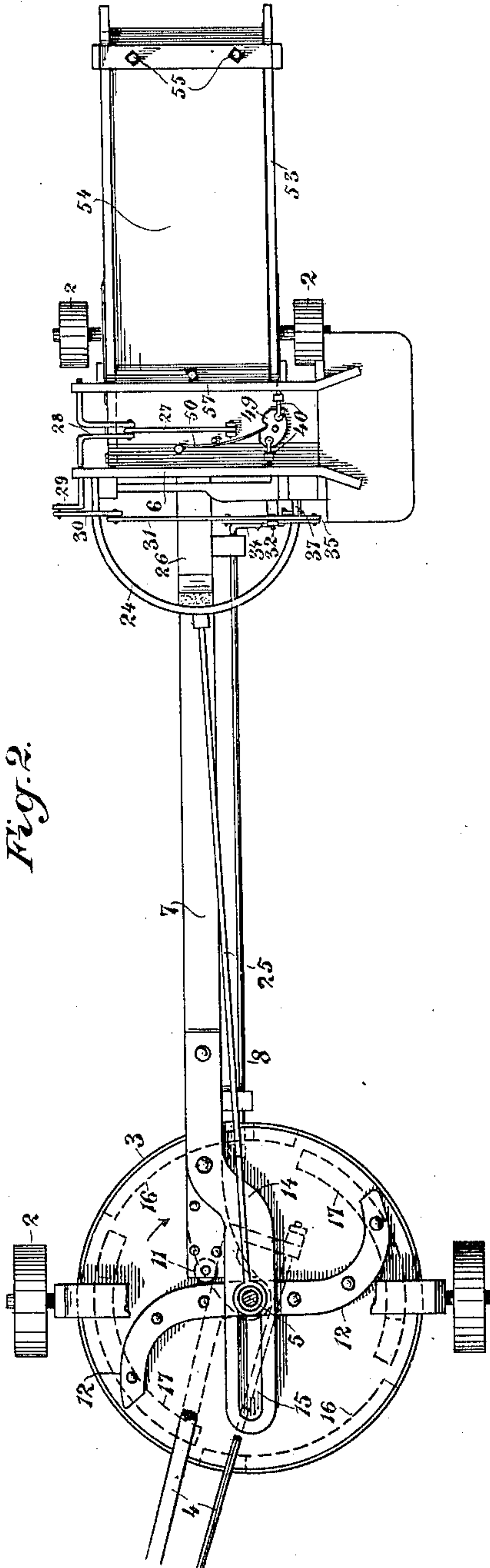


Fig. 2.



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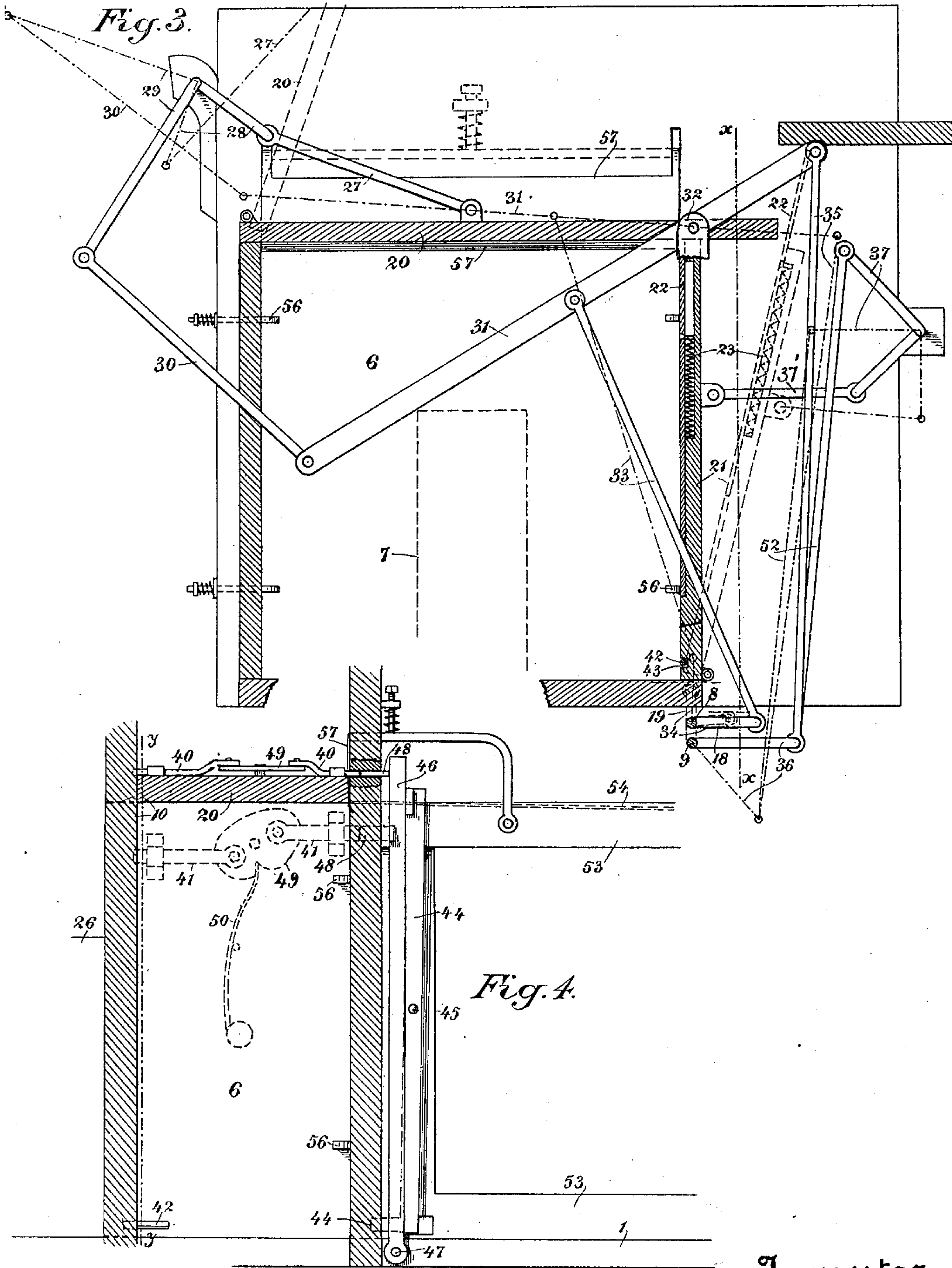
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2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

CHARLES J. JOHNSON, OF PASO ROBLES, CALIFORNIA.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 657,287, dated September 4, 1900.

Application filed January 4, 1900. Serial No. 352. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. JOHNSON, a citizen of the United States, residing at Paso Robles, county of San Luis Obispo, State of California, have invented an Improvement in Baling-Presses; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in baling-presses, and is especially applicable to that class known as "horizontal continuous presses."

The object of my invention is to provide for means by which the opening and closing of the doors and the various operations of the machine are performed mechanically and the hand-labor is reduced.

My invention consists in mechanism by which the various operations of opening and closing the press are performed by the continuous operation of the horse-power or other motor applied at the proper intervals to produce the required movements.

My invention also comprises details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of the press. Fig. 2 is a plan view. Fig. 3 is a transverse section through the baling-box on line *yy* of Fig. 4. Fig. 4 is a similar section on line *xx* of Fig. 3, the side door being removed.

The main frame 1 of my press is mounted upon wheels 2, which serve to conveniently transport it from place to place. Adjacent to or above the wheels at one end is mounted the circular plate or disk 3, to the shaft of which is connected the sweep 4, and to this sweep the team is attached for the purpose of communicating power to rotate the shaft 5 and with it the connected parts. It will be manifest that other and well-known forms of motors or drivers may be used instead of the sweep without departing from the spirit of my invention, the object in any case being to rotate the shaft at a rate of speed which will allow the material to be baled to be introduced when the press is opened, the doors to be closed, the follower to be advanced to press the charge of material, the doors opened, and the follower retracted to receive a new charge, the intervals between the various op-

erations being so regulated that they will follow each other with uniformity. The press-box 6 is situated at the opposite end of the supporting-frame, as shown, and the operations carried on therein are effected by a plunger-beam 7, which reciprocates the follower, and by shafts 8 and 9, which are actuated to alternately open and close the doors of the press.

The plunger-beam is connected at one end with the plunger or follower 10, and at the other end it has mounted upon it an antifric-tion roller or rollers 11, which are acted upon by cams 12, fixed to and carried by the circular disk 3, through which the power is transmitted to rotate the cams, so that they alternately push the beam 7 forward and move the follower through the press after a charge of material has been placed therein. When this movement has been completed, the ends of the cams passing the rollers 11 release the plunger-beam, and this is returned to its normal position by a spring or springs 13, suitably arranged and connected for the purpose. The plunger-beam forms a straight line between the point of application of power through the rollers 11 and the follower 10. A plate 14, fixed to the plunger-beam, curves out of line of the plunger-beam and then extends along parallel with the line of the plunger-beam. It is slotted as shown at 15, so that the slot fits over the shaft 5, and is slidable with relation to the shaft when the plunger-beam is reciprocated. This slotted plate serves as a guide to keep the plunger-beam in line when being actuated by the cams.

Projecting downwardly from the plate or disk 3 are lugs or projections 16 and 17, the lugs 16 being nearer to the periphery of the disk and the lugs 17 interior to the line of the projection 16. These lugs are at different distances from the shaft 5 and are so spaced that the lugs 17 stand between the lugs 16. The lugs 16 act upon a rocker-arm 18, fixed upon the end of a shaft 8, and the lugs 17 correspondingly act upon a rocker-arm 19 on the end of a shaft 9, so that during the rotation of the disk one of the lugs 16 will act upon the rocker-arm 18 and rotate the shaft 8 a partial revolution through mechanism connected with the opposite end

of this shaft and to be hereinafter described. This operation will close the doors of the press just previous to the action of the cam upon the plunger-beam, which advances the follower to compress the charge thus inclosed. As the driving-shaft and disk continue their rotations one of the lugs 17 will arrive at the point where it acts upon the rocker-arm 19 and rotates the shaft 9, and through mechanism upon the opposite end of said shaft the doors, having been previously released from their latches, will be opened in readiness for another charge. At or about the instant of opening the doors the plunger-beam will be released from the end of the cam and will be retracted by its spring 13, thus bringing the follower with it. These operations take place twice with each revolution of the disk.

The press-box 6 consists of a stout frame having a bottom and one side. The top is formed of a hinged door 20 and the other side by a door 21, hinged at the bottom, so as to open outwardly when the door 20, which is hinged at the opposite side, opens upwardly. The side door 21 has a slidable extension 22 movable upon its face, as shown, and this extension is forced outwardly when the door is released by means of a spring 23. This extension serves as a guide when the door has been opened and tilted outwardly for the reception of the material to be pressed, so that any considerable quantity of material placed in the press will be guided into the inner portion of the box, and when the top door closes down it first contacts with the end of the sliding extension 22 and forces it down to coincide in length with the main portion of the door 21. At the same time the door 21 is pushed inwardly and the action of the two doors would be to partially compress the loose mass of material which has been placed in the press in readiness to be further compressed by the action of the follower.

24 is a circular yoke, having its end fixed to the sides of the press-box above the plunger-beam 7, and a rod 25 connects the yoke with the shaft 5 above the cams 12, so as to unite the two and by its tension prevent their being pulled apart by the strains brought upon them. The plunger-beam 7 is made much deeper at the end adjacent to the press-box, as shown at 7', so as to provide a deep bearing against the follower. Upon the top it is extended upward, as shown at 26, and this part abuts against the inside of the yoke 24 when the plunger-beam is retracted by its spring, thus acting as a stop to limit the movement of the follower in this direction.

The movements for opening and closing the doors by the action of the shafts 8 and 9 will be as follows: The top door 20 is connected by a rod 27 with a crank 28. Upon the same shaft with this crank 28 is formed another crank 29, and this is connected by a rod 30 with a lever-arm 31, which is fulcrumed to some part of the press-frame, as shown at 32.

The lever 31 is connected by a rod 33 at one side of the fulcrum 32 with a rocker-arm 34 upon the shaft 8. From the other side of the fulcrum 32 of the lever 31 a rod 35 is connected with the rocker-arm 36 on the crank-arm 9. When one of the lugs 16 of the driving-disk 3 engages with the rocker-arm 18 of the shaft 8, it rocks this shaft and with it the rocker-arm 34 at the opposite end, which, acting through the connecting-rod 33, lever 31, rod 30, cranks 28 29, and rod 27, will close the top door 20. By a like movement the rocker-arm 36, which is connected with a crank-shaft 37, journaled upon the side of the press-frame, turns this crank-shaft, and by connection 37 between it and the door 21 the latter will also be closed. When these doors are thus closed, they are locked in place by spring-actuated bolts, the bolt 40 serving to lock the top door and the bolt 41 in a similar manner locking the side door, and they are thus held until the follower 10 has been advanced by the action of the cams upon its plunger-beam, as previously described. This follower carries a pin 42 upon one side and located beyond the edge of the follower, as shown in Figs. 3 and 4.

The door 21 has a channel 43 made along its inner face in the line of movement of the pin 42, so that the pin is carried along this channel when the follower is advanced and out of the line of the mass of material which is being compressed by the follower. This pin 42 acts to release the latches of the two doors when the follower has reached the end of its stroke as follows: The pin 42 contacts with the bottom of a centrally-fulcrumed lever 44, and thus pushes the bottom outwardly. The lever turning about its fulcrum at 45 the upper end will correspondingly move inwardly and acting against a second lever 46, which is fulcrumed at the bottom, as shown at 47, this lever 46 is moved inwardly.

In line with the latch-bolts 40 and 41 are pins 48, which fit and are slidable in corresponding holes in line with the latch-bolts 40. The lever 46 contacts with the outer ends of these pins when it is pushed inwardly, as before described, and through the pins the latches 40 and 41 are forced back until they are disengaged, and the doors can then be opened. The locking-pins 40 and 41 project from each side of their respective doors, and their inner or adjacent ends are connected with a rotary disk 49 in such a manner that when the disk is turned in one direction the locking-bolts will be advanced and when turned in the opposite direction they will be retracted. A spring 50 presses against this locking-disk in such a manner as to normally force the locking-bolts outward, and they are thus always in readiness to engage with their sockets when the doors have been closed; but when the push-pins 48 have been forced against the bolts to retract them they rotate the disk 49 against the pressure of the spring 50 until the bolts are released from their sock-

ets and the doors unlocked, so as to permit them to be opened when one of the lugs 17 of the disk 3 acts upon the rocker-arms 19 of shaft 9. When this occurs, the shaft 9 is rotated and through the rocker-arm 36 and the connecting-rod 35 it acts upon the lever 31, and through the connecting-cranks and rods the door 20 will be opened after its release. In the same manner by means of the connecting-rod 52 and the cranks and rods connecting with the side door 21 the latter will also be opened in readiness to receive another charge of material. As the material is thus placed in the press-box and advanced by the reciprocations of the follower it passes out into the extension portion beyond the press-box. This extension consists of a framework 53, having a permanent bottom plate and open sides to allow access for the purpose of tying or securing the bale-sections and an adjustable top 54. This top plate is made of metal sufficiently elastic, secured at the inner end, and at the outer end it is adjusted and movable by screws 55, passing through the top of the outer end of the frame, so that by turning these screws or by an equivalent actuating device this plate may be bent downwardly and thus contract the end opening through which the finished bales are discharged. The object of this contraction is to increase the pressure necessary to force the bales out through this opening, and this insures a tighter compression of each bale. The amount of pressure can be correspondingly reduced by retracting the screws 55 and allowing the plate 54 to move outwardly to open up the discharge. As the follower presses the material from the press-box into this extension the usual spring-pressed dogs or catches 56 are forced inwardly and engage the mass which has been pushed out by the follower, so as to prevent its returning by its own elasticity. These catches or holders being common to this class of press, I do not further illustrate or describe them at this point.

57 is a spring-pressed apron or plate extending downwardly at the upper part of the exit from the press-box.

In order to separate the pressed material to form bales of the proper size and to provide for tying or fastening these bales as they are completed, division-blocks 58 are inserted in front of the follower whenever a sufficient amount of material has been compressed to form a bale, and when the follower is again advanced this block is pushed along with it, and passing outside of the catches or holders, will be retained by them, and thus separate the exterior compressed material from the next charge which is placed in the press. These division-blocks have transverse grooves or channels 59 made in them for the reception of the tying cords or wires, which, being easily pushed through these channels, are afterward drawn tight around the sections between any two of the blocks and their ends secured to-

gether, so as to complete the bale. The continued reciprocations of the follower force each bale out through the contracted end previously described, and the operation is thus continued at will.

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

1. In a baling-press, the combination of a frame having a press-box mounted upon one end, a follower adapted to operate therein, a plunger-beam connected with the follower and having an extension from its other end arranged out of line but parallel with its main portion, and means including axially-mounted cams to operate the plunger-beam, and means for operating the cams, said extension of the beam being slotted and guided on the axis of said cams.

2. In a baling-press, a horizontal framework having a press-box mounted upon one end, turnable cams mounted at the opposite end, a plunger-beam with antifrictional roller adapted to contact with the cams which act in line with the beam, a slotted guide-plate extending to one side and parallel with the plunger-beam and slidable upon a guide-shaft and a follower carried by the opposite end of the plunger-beam and reciprocated within the press-box.

3. In a baling-press, the combination of a portable, horizontal framework having a press-box at one end, a vertical shaft at the opposite end and a horizontal disk mounted on said shaft, cams carried by the disk, a follower to operate in the press-box, a plunger-beam having one end connected with the follower and the opposite end to be engaged by said cams, an extension of the beam arranged out of line but parallel with its main portion and slotted to receive said shaft whereby the beam is guided to maintain its direction of travel, and a spring by which the beam is retracted when the cams have passed the plunger-beam.

4. In a baling-press, the combination with a press-box, a follower, a yoke on the box, a rebounding plunger-beam, and means including a vertical shaft and cams carried thereby and adapted to operate the beam, said beam having an extension from one end arranged out of line but parallel with its main portion, and slotted and guided on the shaft, and having at its opposite portion a shoulder adapted to contact with said yoke.

5. In a baling-press, a horizontal frame with press-box at one end, a revoluble cam-carrying disk at the opposite end, a follower reciprocable in the press-box and a plunger-beam intermediate between it and the cams, hinged doors upon the top and one side, mechanism for opening said doors to admit the charge of material to be compressed, and mechanism for closing the doors after the charge has been introduced, shafts and rocker-arms at one end connected with said mechanism, and rocker-

arms at the opposite end, and cams or lugs carried by the revoluble disk and engaging said rocker-arms.

6. In a baling-press, a framework having a
5 press-box mounted at one end, a revoluble
cam-carrying disk journaled at the opposite
end, a follower movable within the press-box,
a guided plunger-beam having one end con-
10 nected therewith, and the opposite end acted
upon by the cams to reciprocate the follower
top and side doors upon the press-box adapted
to be opened to receive charges of material,
and thereafter closed before the advance of
15 the follower, cranks and connecting-rods by
which said movements are effected, shafts ex-
tending from the press-box to the cam-disks,
lugs or cams carried by said disk and rocker-
arms upon the shafts whereby the shafts are
20 moved and the doors periodically opened and
closed.

7. In a baling-press, a horizontal framework
having a press-box upon one end, a power
mechanism at the opposite end and hinged
doors upon the top and one side of said box,
25 connections including shafts and rocker-arms
thereon between said power mechanism and
the press-box whereby the doors of the box are
automatically opened to receive the charge of
material and closed thereafter and the fol-
30 lower moved to compress the charge thus re-
ceived.

8. In a baling-press, a horizontal framework
having the press-box at one end, said box hav-
ing a hinged door upon the top and one side
35 a horizontal revoluble cam-carrying disk at
the opposite end through which power is ap-
plied to reciprocate the follower in the press-
box, a series of alternately-placed lugs or
cams carried by the disk, oscillating shafts
40 extending from the disk to the press-box hav-
ing rocker-arms at one end which are engaged
alternately by the lugs upon the disk and
rocker-arms at the opposite end, with con-
necting-rod and crank-shafts whereby power
45 is alternately transmitted through the shafts
and connected mechanism to open the doors
of the press-box to receive a charge of mate-
rial, and to close them after said charge has
been introduced.

9. In a baling-press, a horizontally-disposed
press-box, a follower movable therein and
mechanism whereby said follower is recipro-
cated, a door hinged at one side of the top, a
second door hinged at the bottom of one side
55 so as to open outwardly from each other, said
side door having a spring-pressed slidable ex-
tension which is projected when the door is
opened to form a guide for the introduction
of material, and mechanism by which said
60 doors are closed in unison whereby the top
door returns the extension of the side door in
the action of closing.

10. In a baling-press, a press-box having
a follower reciprocable therein, a top door

hinged near one side, a side door hinged at 65
the bottom so that the two open outwardly
from each other to receive charges of mate-
rial, mechanism including oscillating shafts,
rocker-arms thereon and a rotatable disk hav-
ing means engaging said arms, by which the 70
doors are automatically opened and closed;
and spring-pressed latch-bolts by which they
are retained when closed.

11. In a baling-press, a press-box, a follower
and mechanism by which it is reciprocated 75
horizontally within the box, doors hinged at
the top and bottom of one side respectively
so as to open outwardly to receive the charge
of material to be pressed, mechanism by which
the doors are closed, spring-pressed bolts by 80
which the doors are locked when closed, pins
slidable in the bolt-receiving sockets and in
line with the bolts, levers acting against said
pins, and a pin or lug carried by the follower
and contacting with said levers, when the 85
follower has reached the outward end of its
stroke, whereby the door-bolts are retracted
and the doors allowed to open.

12. In a baling-press, a press-box, a follower
and mechanism by which it is reciprocated 90
horizontally within the box, a top door hinged
to one side and a side door hinged to the bot-
tom of the box, and mechanism by which they
are alternately opened to receive material and
closed after the door has been introduced, 95
locking-bolts, sockets into which the outer
ends of said bolts pass to lock the doors, rota-
table spring-pressed disks with which the in-
ner ends of the bolts are connected, pins slid-
able in line with the outer ends of the bolts 100
and levers contacting with the outer ends of
said pins, a pin carried by the follower adapted
to contact with said lever when the forward
stroke of the follower is completed whereby
the levers act through the pins to retract the 105
locking-bolts and allow the doors to be opened.

13. In a baling-press, a frame having a
press-box mounted at one end, a revoluble
cam-carrying disk at the opposite end, a fol-
lower and a rebounding plunger-beam having 110
a slotted extension from one end adapted to
guide said beam in its movements, said beam
actuated by the cams whereby the follower is
reciprocated within the box, an extension
through which the compressed material is 115
forced to form the bale, said extension hav-
ing a movable top plate and screws by which
the outer end of said plate is adjusted to reg-
ulate the size of the discharge-opening and
determine the amount of compression of the 120
baled material.

In witness whereof I have hereunto set my
hand.

CHARLES J. JOHNSON.

Witnesses:

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