

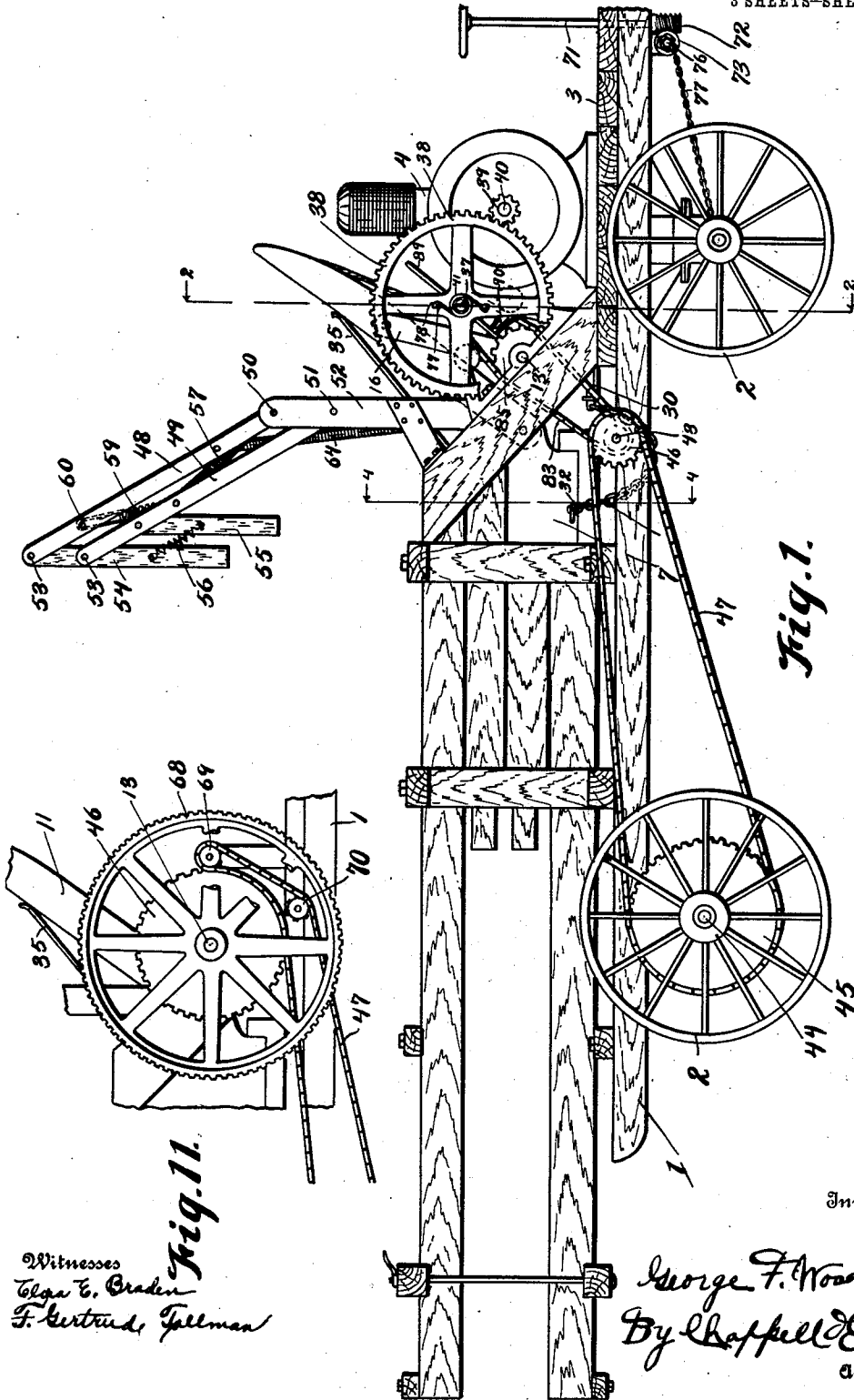
G. F. WOODARD.
BALING PRESS.

APPLICATION FILED MAR. 11, 1910.

1,012,042.

Patented Dec. 19, 1911.

3 SHEETS-SHEET 1.



Witnesses
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1,012,042.

Patented Dec. 19, 1911.

3 SHEETS—SHEET 2.

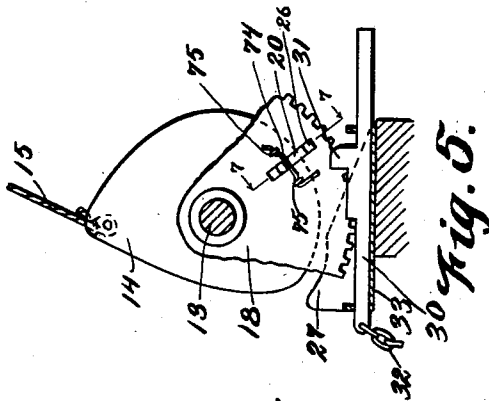


Fig. 5.

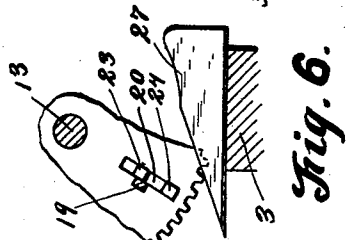


Fig. 6.

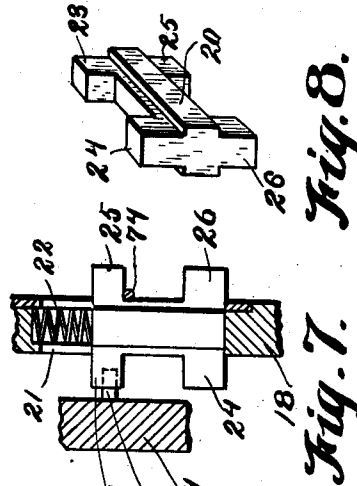


Fig. 7.

Fig. 8.

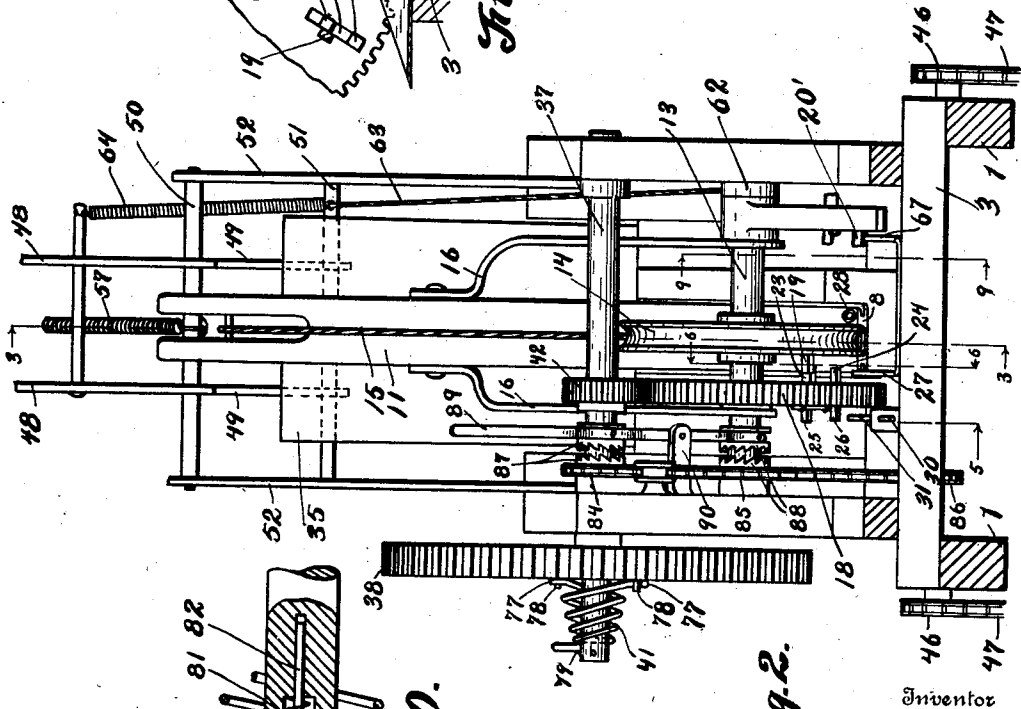


Fig. 2.

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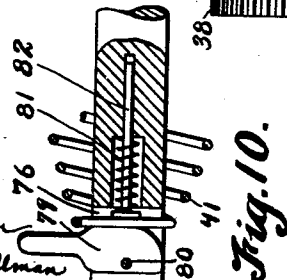


Fig. 10.

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3 SHEETS—SHEET 3.

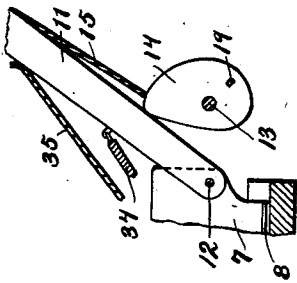


Fig. 12.

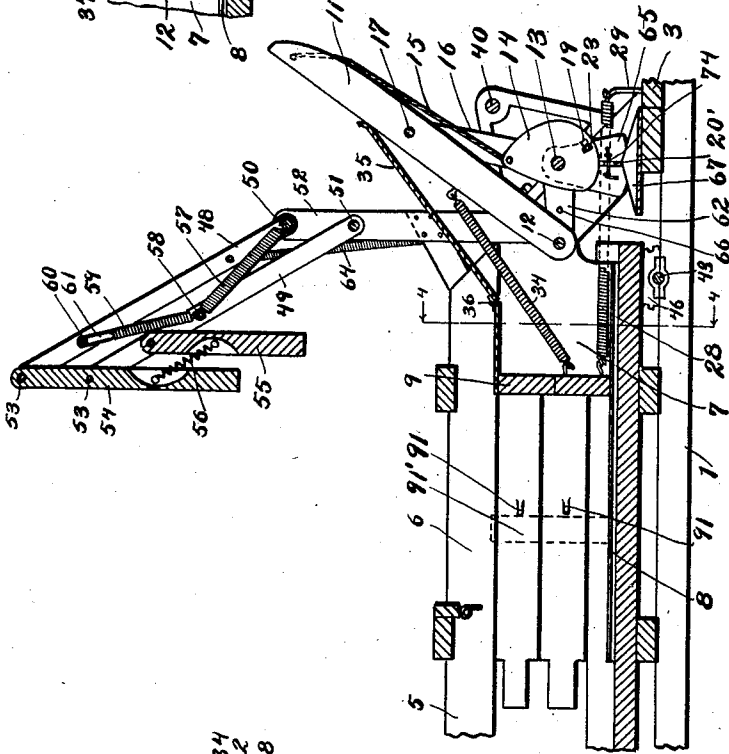


Fig. 3.

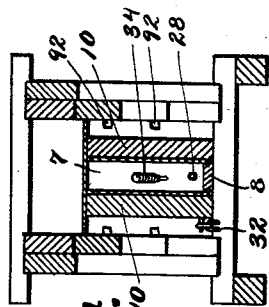


Fig. 4.

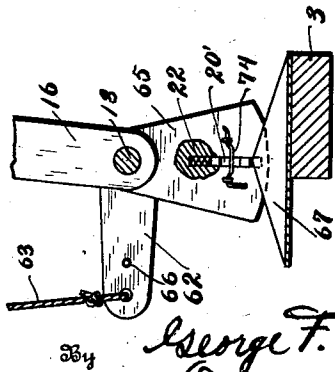


Fig. 9.

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UNITED STATES PATENT OFFICE.

GEORGE F. WOODARD, OF KALAMAZOO, MICHIGAN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO BUSINESS MEN'S PAPER PRESS COMPANY, OF WAYLAND, MICHIGAN, A CORPORATION.

BALING-PRESS.

1,012,042.

Specification of Letters Patent.

Patented Dec. 19, 1911.

Application filed March 11, 1910. Serial No. 548,768.

To all whom it may concern:

Be it known that I, GEORGE F. WOODARD, a citizen of the United States, residing at Kalamazoo, county of Kalamazoo, State of Michigan, have invented certain new and useful Improvements in Baling-Presses, of which the following is a specification.

This invention relates to improvements in baling presses.

The main objects of this invention are: First, to provide in a baling press an improved plunger actuating means. Second, to provide in a baling press an improved means for withdrawing the plunger. Third, to provide in a baling press an improved feed mechanism or device. Fourth, to provide in a baling press an improved driving connection. Fifth, to provide an improved portable baling press in which the operating power is derived from an engine, the engine being also adapted for use as traction power.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The structure described constitutes one effective embodiment of my invention. Other embodiments would be readily devised by those skilled in the art.

The invention is clearly defined and pointed out in the claims.

A structure constituting an effective and preferred embodiment of the features of my invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which:—

Figure 1 is a side elevation of a structure embodying the features of my invention. Fig. 2 is an enlarged detail vertical section, taken on a line corresponding to line 2—2 of Fig. 1. Fig. 3 is a detail longitudinal section, taken on a line corresponding to line 3—3 of Fig. 2. Fig. 4 is a vertical section taken on a line corresponding to line 4—4 of Fig. 3. Fig. 5 is an enlarged detail vertical section, taken on a line corresponding to line 5—5 of Fig. 2 showing details of the plunger actuating mechanism and the driving connections therefor. Fig. 6 is a detail vertical section taken on a line corresponding to line 6—6 of Fig. 2 showing further details of this mechanism. Fig. 7 is an enlarged detail section taken on a line corre-

sponding to line 7—7 of Fig. 5. Fig. 8 is a perspective view of the clutch member 20. Fig. 9 is a detail vertical section taken on a line corresponding to line 9—9 of Fig. 2, showing details of the feed device actuating mechanism. Fig. 10 is an enlarged detail showing the connections of the gear 38 to the shaft. Fig. 11 is a detail elevation showing a modified form of driving connection for the traction wheels. Fig. 12 is a sectional view showing a modified construction in which the links coacting with the plunger actuating lever are omitted.

In the drawing, the sectional views are taken looking in the direction of the little arrows at the ends of the section lines, and similar reference numerals refer to similar parts throughout the several views.

Referring to the drawing, the frame, which is designated generally by the numeral 1, is preferably supported upon traction and carrying wheels 2.

At the forward end of the frame or body 1 is a platform 3 on which the engine 4 is mounted.

The baling chamber 5 and feed chamber 6 are of the usual or any desired construction.

The plunger 7 is mounted to reciprocate on the track 8. This plunger preferably consists of the head 9 and the rearwardly-projecting pieces 10, secured thereto and adapted to serve as a shoe or support for the head.

The plunger actuating mechanism preferably consists of the lever 11, which is pivoted at 12 between the members 10 of the plunger. In front of the plunger is a transversely-arranged shaft 13, on which the eccentric 14 is revolvably mounted. This eccentric is connected to the upper end of the lever by means of the cable 15, the cable being adapted to be wound upon the eccentric, which is preferably provided with a peripheral groove for the cable,—see Fig. 2. The cable is connected to the eccentric at the point of its longest radii, so that the fastest movement is had on the starting movement, and the shortest where the greatest power is required at the end of the plunger stroke. The lever 11 is supported on the links 16. These links are preferably pivotally mounted on the shaft, as illustrated, and pivotally connected to the lever at 17. It is obvious that, when the plunger approaches the end of its stroke, this toggle is straightened out,

so that that is the point of the greatest power in the toggle. The eccentric is preferably actuated by providing a gear 18, which is secured to the shaft to revolve therewith, and connected to the eccentric through an automatically engaging and disengaging clutch connection. This, in the structure illustrated, consists of a laterally-projecting clutch member 19 on the eccentric and a coacting clutch member 20 on the gear. The clutch member 20 is arranged in a radially disposed slot 21, in the gear, to reciprocate therein, being held normally in its engaging position by means of the coiled spring 22,—see Fig. 7. This clutch member 20 is provided with lateral projections 23, 24, 25 and 26, the projection 23 being adapted to engage the clutch member 19 on the eccentric, while the projection 24 is disposed to engage the cam trip 27, which is arranged so as to release the clutch at the end of the stroke of the plunger, the clutch member 20 being returned to its engaging position by means of the spring 22. I preferably provide a bail-like member 74, which is pivoted on the side of the gear at 75, for holding the clutch member 20 in its inoperative position.

I preferably provide means for withdrawing the plunger, consisting of the spring 28, which is connected to the plunger and to the hook 29 on the frame,—see Fig. 3,—and means for positively starting the plunger on its return movement, consisting of the slidably supported member 30, having an upwardly-projecting catch 31 thereon, which is engaged by the projection 26 on the clutch, after the clutches have been disengaged and thus positively starting the plunger on its return movement. The slide member 30 is drawn into engaging position by the actuation of the plunger, it being connected thereto by the chain 32. The member 30 is supported in a suitable slide way 33,—see Fig. 5. To assist in returning the parts to their initial position, I preferably provide a coiled spring 34, one end of which is connected to the plunger and the other to the plunger actuating lever 11,—see Fig. 3.

To prevent the clogging of the mechanism in front of the plunger head, I provide a shield 35, which is pivoted to the plunger at 36, its rear edge being adapted to ride on the lever 11, as is illustrated in the drawing. As the plunger is advanced on its stroke, this shield collapses and passes into the feed chamber, preventing the introduction of the material into the feed chamber until the plunger returns to its initial position.

The driving connections for the gear 18 to the engine preferably consist of the shaft 37 on which is a gear 38, arranged to mesh with the gear 39 on the crank shaft 40 of the engine. The gear 38 is preferably yieldingly connected to the shaft 37 by means of

the coiled spring 41, which is preferably adapted to serve as a clutch. The spring shown is a reversely coiled spring slidably supported in the slot 76 in the shaft, the ends 77 of the spring being adapted to engage the pins 78 on the gear. The cam lever 79 is pivoted at 80 in the slot 76 to engage the spring and force it inwardly against the tension of the spring 81, which acts on the plunger 82. (See Fig. 10.) This connection relieves the parts of shock on the starting of the engine and in the operation of the device.

On the shaft 37 is the gear 42 arranged in mesh with the gear 18. The shaft 37 is preferably connected to the traction wheels by providing the axle 44 with a sprocket wheel 45, and the shaft 43 with a sprocket wheel 46, the sprocket wheels being connected by the sprocket chain 47. The shaft 43 is driven through the chain 83 and the sprocket wheels 84, 85 and 86 on the shafts 37, 13 and 43 respectively. The sprocket wheels 84 and 85 are connected to their respective shafts by clutches 87 and 88. These clutches are actuated by the lever 89 which is pivoted on the bracket 90 so that the clutches may be alternately engaged and thus reverse the drive to the traction wheels. I preferably provide in this connection a feed device consisting of the parallel bars 48 and 49, arranged in pairs. These bars are pivoted at 50 and 51, respectively, on the standards or uprights 52. Secured to the outer ends of these arms by means of the pivots 53 is a feed arm 54, and pivotally secured to the lower arm 49 is a coacting feed arm 55. The pivots are arranged to permit the movement of the bars to swing the feed arms down into the feed chamber with a tamping-like stroke. The arms 54 and 55 are preferably provided with a spring 56, which is adapted to hold them normally spaced,—that is, while it permits the yielding of the bar 55, to enable the plunger to force the arms 54 and 55 upward in case they fail to rise by the regular means, thus avoiding breakage and accident, it holds this bar in a normally spaced relation to the bar 54.

The return spring 57 is connected to the pivot 50 and to the cross rod 58 carried by the bars 49. A cushioning or rebound spring 59 is preferably provided, one end of the spring being connected to the rod 58, and the other to the cross rod 60, carried by the bars 48. The spring 59 is preferably provided with a slotted connecting device 61.

The feed device is preferably actuated through the mechanism shown in Fig. 9, consisting of an actuated arm 62, pivotally mounted on the shaft 13, the arm being connected to the bar 48 by means of the cable 63 and the spring 64. An actuating arm 65 is provided for the arm 62, the arm 65 being

secured to the shaft and being connected to the arm 62 through a clutch connection. This connection shown is substantially the same as that illustrated in Figs. 7 and 8 for the eccentric 14 and the gear 18, and consists of the clutch member 20' on the arm 65 and the coacting clutch member 66 on the actuated arm 62. A trip 67 is provided for this clutch. The actuating arm 65 and the clutch trip are positioned so as to actuate the feed device and the plunger in proper sequence.

In the modification shown in Fig. 11, the shaft 37 is omitted, the driving connection for the gear to the shaft comprising a gear 68 secured or mounted directly upon the shaft 13. In this modification, the traction chain 47 does not pass around the sprocket wheel 46, but is held in driving engagement therewith by means of the idlers 69 and 70, as will clearly appear from the drawing.

The steering gear, in the structure illustrated, consists of the steering post 71 on the lower end of which is a worm 72. This engages the worm 73 on the shaft 76, to which the chains 77 are connected. The details of this will be readily understood.

In the modification shown in Fig. 12, the links 16 are omitted. The lever is here arranged to rest or travel upon the eccentric. The toggle effect is not, of course, here present.

I preferably provide the baling chamber with pairs of lugs 91 arranged on the side walls of the chamber and adapted to support the follower 91', as shown by dotted lines in Fig. 3. These lugs effectively support the follower, and, as is obvious, are a very simple expedient for the purpose. The plunger is notched at 92 to permit it to pass these lugs.

I have illustrated and described my improvements in detail in the form in which I have embodied them, although I am aware that various modifications in structural details are possible, but as these modifications will be readily understood by those skilled in the art to which this invention relates, I do not attempt to illustrate or describe them herein, but I desire to be understood as claiming my invention in the specific form illustrated as well as broadly within the scope of the appended claims.

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 with the frame, baling chamber, feed chamber and plunger, of means for actuating said plunger comprising a shaft, a lever connected to said plunger, pivotally supported links, the upper ends of said links being pivotally connected to said lever, an eccentric connected to said lever for actuating the same; driving connections comprising a gear

on said shaft, a clutch connection for said gear and eccentric, comprising a clutch member on said eccentric and a coacting movable clutch member on said gear, means for returning said plunger, comprising a spring connected to said plunger and frame, and a slidably supported member connected to said plunger and positioned to be engaged by said clutch member on said gear; a feed device; and an actuating means therefor comprising an actuated arm, pivotally mounted on said shaft, an actuating arm secured to said shaft, a clutch member on said actuated arm, a coacting movable clutch member on said actuating arm, and clutch trips arranged to disengage said clutches in proper sequence.

2. In a baling press, the combination with the frame, baling chamber, feed chamber and plunger, of means for actuating said plunger comprising a shaft, a lever connected to said plunger, pivotally supported links, the upper ends of said links being pivotally connected to said lever, an eccentric connected to said lever for actuating the same; driving connections comprising a gear on said shaft, a clutch connection for said gear and eccentric, comprising a clutch member on said eccentric and a coacting movable clutch member on said gear; a feed device; and an actuating means therefor comprising an actuated arm, pivotally mounted on said shaft, an actuating arm secured to said shaft, a clutch member on said actuated arm, a coacting movable clutch member on said actuating arm, and clutch trips arranged to disengage said clutches in proper sequence.

3. In a baling press, the combination with the frame, baling chamber and plunger, of an actuating means for said plunger, comprising a lever pivoted thereto, a shaft, links pivotally mounted on said shaft and pivotally connected to said lever, an eccentric loosely mounted on said shaft, a cable on said eccentric connected to said lever for actuating the same, a gear on said shaft, a clutch member on said eccentric, a coacting clutch member on said gear, a trip for said clutch members, positioned to release said eccentric at the end of the stroke of said plunger; and means for returning said plunger, comprising a spring connected thereto and to said frame, and a member connected to said plunger and arranged to be engaged by said clutch on said gear.

4. In a baling press, the combination with the frame, baling chamber, and plunger, of an actuating means for said plunger, comprising a lever pivoted thereto, a shaft, links pivotally mounted on said shaft and pivotally connected to said lever, an eccentric loosely mounted on said shaft, a cable on said eccentric connected to said lever for actuating the same, a gear on said shaft, a clutch member on said eccentric, a coacting

clutch member on said gear, and a trip for said clutch members, positioned to release said eccentric at the end of the stroke of said plunger.

5 5. In a baling press, the combination with the frame, baling chamber, and plunger, of an actuating means for said plunger, comprising a lever pivoted thereto, a shaft, pivotally supported links, pivotally connected to said lever, an eccentric loosely mounted on said shaft, a cable on said eccentric connected to said lever for actuating the same, a gear on said shaft, a clutch member on said eccentric, a coacting clutch member on said gear, a trip for said clutch members, positioned to release said eccentric at the end of the stroke of said plunger; and means for returning said plunger, comprising a spring connected thereto and to said frame, and a member connected to said plunger and arranged to be engaged by said clutch on said gear.

6. In a baling press, the combination with the frame, baling chamber and plunger, of an actuating means for said plunger, comprising a lever pivoted thereto, a shaft, pivotally supported links, pivotally connected to said lever, an eccentric loosely mounted on said shaft, a cable on said eccentric connected to said lever for actuating the same, a gear on said shaft, a clutch member on said eccentric, a coacting clutch member on said gear, and a trip for said clutch members, positioned to release said eccentric at the end of the stroke of said plunger.

7. In a baling press, the combination with the frame, baling chamber and plunger, of an actuating means for said plunger, comprising a toggle, a shaft, an eccentric loosely mounted on said shaft, a cable on said eccentric connected to said toggle, whereby said toggle is actuated through said eccentric, a clutch connection for said eccentric to said shaft, adapted to be automatically engaged and disengaged as said shaft is revolved; and means for returning said plunger comprising a reciprocating member connected to said plunger, and means for actuating said member in proper sequence to the releasing of said eccentric whereby said plunger is positively started on its return movement.

8. In a baling press, the combination with the frame, baling chamber and plunger, of an actuating means for said plunger, comprising a toggle, a shaft, an eccentric loosely mounted on said shaft, a cable on said eccentric connected to said toggle, whereby said toggle is actuated through said eccentric, and a clutch connection for said eccentric to said shaft, adapted to be automatically engaged and disengaged as said shaft is revolved.

9. In a baling press, the combination with the plunger, of an actuating means for said

plunger, comprising a shaft, an eccentric loosely mounted on said shaft, a gear on said shaft, a clutch member on said eccentric, a coacting clutch member on said gear, a trip for said clutch members, positioned to release said eccentric at the end of the stroke of said plunger; and means for returning said plunger, comprising a spring connected thereto and to said frame, and a member connected to said plunger and arranged to be engaged by said clutch on said gear.

10. In a baling press, the combination with the plunger, of an actuating means for said plunger, comprising a shaft, an eccentric loosely mounted on said shaft, a gear arranged on said shaft at the side of said eccentric, said gear being secured to revolve with said shaft, a clutch member on said eccentric, a coacting clutch member on said gear, and a trip for said clutch members, positioned to release said eccentric at the end of the stroke of the plunger.

11. In a baling press, the combination with the plunger, of a shaft; means for actuating said plunger comprising an eccentric revolubly mounted on said shaft; a gear on said shaft; a laterally-projecting clutch member on said eccentric; a coacting clutch member on said gear, said gear being provided with a radial slot in which said clutch member is slidably arranged, said member being provided with lateral projections, one of the projections on one side being adapted to engage the clutch member on said eccentric, and the other a clutch disengaging trip; a spring for said clutch member; a trip for said clutch member; means for returning said plunger, including a reciprocating member disposed to be engaged by one of the projections on the other side of said gear; and a bail-like member pivoted on said gear and adapted, when in one position, to engage said clutch member and retain it in its inoperative position.

12. In a baling press, the combination with the plunger, of a shaft; means for actuating said plunger comprising an eccentric revolubly mounted on said shaft; a gear on said shaft; a laterally-projecting clutch member on said eccentric; a coacting clutch member on said gear, said gear being provided with a radial slot in which said clutch member is slidably arranged, said member being provided with lateral projections, one of the projections on one side being adapted to engage the clutch member on said eccentric, and the other a clutch disengaging trip; a spring for said clutch member; a trip for said clutch member; and means for returning said plunger, including a reciprocating member disposed to be engaged by one of the projections on the other side of said gear.

13. In a baling press, the combination with the frame, baling chamber, feed cham-

ber and plunger, of a shaft; means for actuating said plunger comprising an eccentric revolubly mounted on said shaft; a gear on said shaft; a clutch member on said eccentric; a coacting clutch member on said gear, said gear being provided with a radial slot in which said clutch member is slidably arranged; and a trip for said clutch member.

14. In a baling press, the combination with the frame, baling chamber, feed chamber and plunger, of a feed device; and means for actuating said feed device comprising a shaft, an actuated arm pivotally mounted on said shaft, connections therefor to said feed device, an actuating arm secured to said shaft, a clutch member on said actuating arm, and a coacting clutch member on said actuated arm, said actuating arm being provided with a radial slot in which said clutch member is slidably arranged, a spring for holding said clutch member yieldingly in its engaging position, and a trip for said clutch members.

15. In a baling press, the combination with the frame, baling chamber, feed chamber and plunger, of a feed device; and means for actuating said feed device comprising a shaft, an actuated arm pivotally mounted on said shaft, connections therefor to said feed device, an actuating arm secured to said shaft, a clutch member on said actuating arm; and a trip for said clutch members.

16. In a baling press, the combination with the frame, baling chamber, feed chamber and plunger, of a feed device comprising a pair of pivotally mounted parallel bars, a feed arm pivotally mounted on the outer ends of said bars, a coacting feed arm pivotally mounted on the lower bar, a spring arranged to hold said feed arms in a normally spaced relation; actuating connections for said feed device, comprising a shaft, an actuated arm pivotally mounted on said shaft, connections for said arm to one of said bars, including a coiled spring, a clutch connection for said arm to said shaft adapted to be automatically engaged and disengaged as said shaft is revolved; a return spring connected to one of said bars and to said frame; and a rebound spring connecting said bars.

17. In a baling press, the combination with the frame, baling chamber, feed chamber and plunger, of a feed device comprising a pair of pivotally mounted parallel bars, a feed arm pivotally mounted on the outer ends of said bars, a coacting feed arm pivotally mounted on the lower bar, a spring arranged to hold said feed arms in a normally spaced relation; actuating connections for said feed device, comprising a shaft, an actuated arm pivotally mounted on said shaft, connections for said arm to one of said bars,

including a coiled spring, a clutch connection for said arm to said shaft adapted to be automatically engaged and disengaged as said shaft is revolved; and a return spring connected to one of said bars and to said frame.

18. In a baling press, the combination with the frame, baling chamber, feed chamber and plunger, of a feed device comprising a pair of pivotally mounted parallel bars, a feed arm pivotally mounted on the outer ends of said bars, a coacting feed arm pivotally mounted on the lower bar, a spring arranged to hold said feed arms in a normally spaced relation; actuating connections for said feed device; a return spring connected to one of said bars and to said frame; and a rebound spring connecting said bars.

19. In a baling press, the combination with the frame, baling chamber, feed chamber and plunger, of a feed device comprising a pair of pivotally mounted parallel bars, a feed arm pivotally mounted on the outer ends of said bars, a coacting feed arm pivotally mounted on the lower bar, a spring arranged to hold said feed arms in a normally spaced relation; actuating connections for said feed device; and a return spring connected to one of said bars and to said frame.

20. In a baling press, the combination with the frame, baling chamber, feed chamber and plunger, of a feed device comprising a pair of pivotally mounted parallel bars, a feed arm pivotally mounted on the outer ends of said bars, actuating connections for said feed device, including a spring, a return spring connected to one of said bars and to said frame, and a rebound spring connecting said bars.

21. In a baling press, the combination with the frame, baling chamber, feed chamber and plunger, of a feed device comprising a pair of pivotally mounted parallel bars, a feed arm pivotally mounted on the outer ends of said bars, actuating connections for said feed device, including a spring, and a rebound spring connecting said bars.

22. In a baling press, the combination with the frame, baling chamber, feed chamber and plunger, of a feed device, and means for actuating said feed device and plunger, comprising a shaft, pivotally supported members connected to said plunger and feed device, respectively, clutch connections therefor to said shaft, and means for automatically engaging and disengaging said clutch connections in proper sequence.

23. In a baling press, the combination with the frame, baling chamber and plunger, of driving connections for said plunger including a shaft, a gear rotatably mounted thereon, a coiled spring slidably mounted on

said shaft, pins on said gear adapted to be engaged by the ends of said spring, a lever for shifting said spring into its engaging position, and a disengaging spring for
5 shifting said clutch spring into its disengaging position.

In witness whereof, I have hereunto set

my hand and seal in the presence of two witnesses.

GEORGE F. WOODARD. [L. S.]

Witnesses:

F. GERTRUDE TALLMAN,
LUELLA GREENFIELD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
