

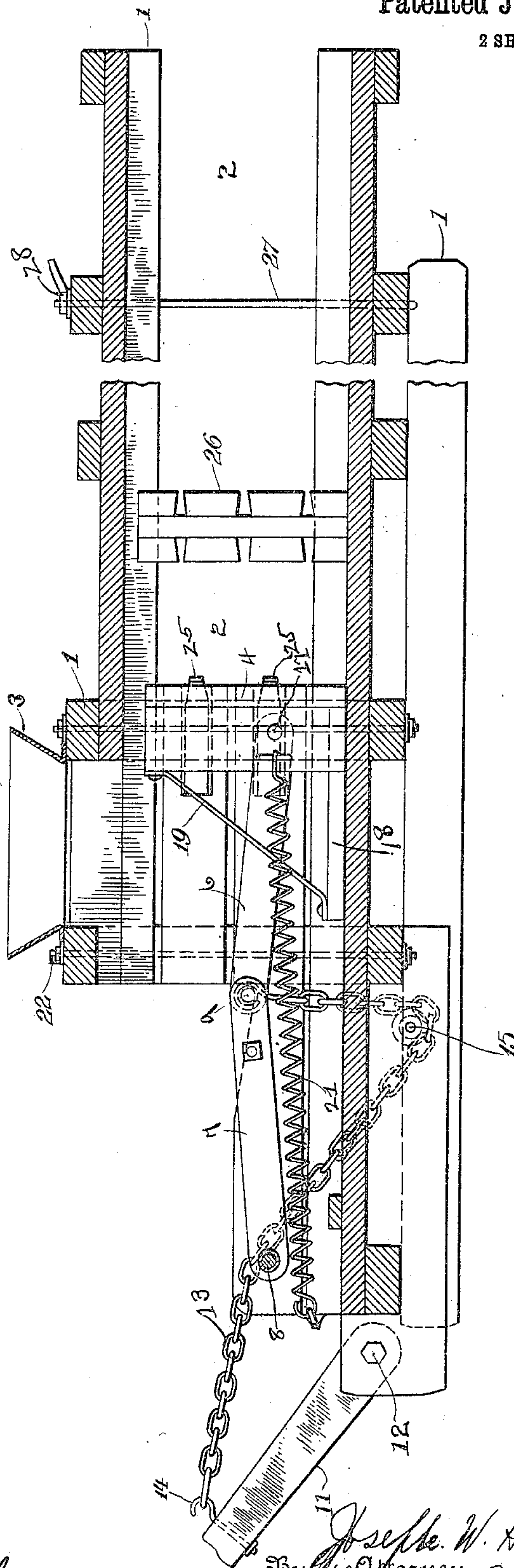
962,432.

J. W. HOBSON.
BALING PRESS.
APPLICATION FILED AUG. 15, 1908.

Patented June 28, 1910.

2 SHEETS—SHEET 1.

Fig. 1



Witnesses:
Edward N. Maggiffin
Edward N. Maggiffin

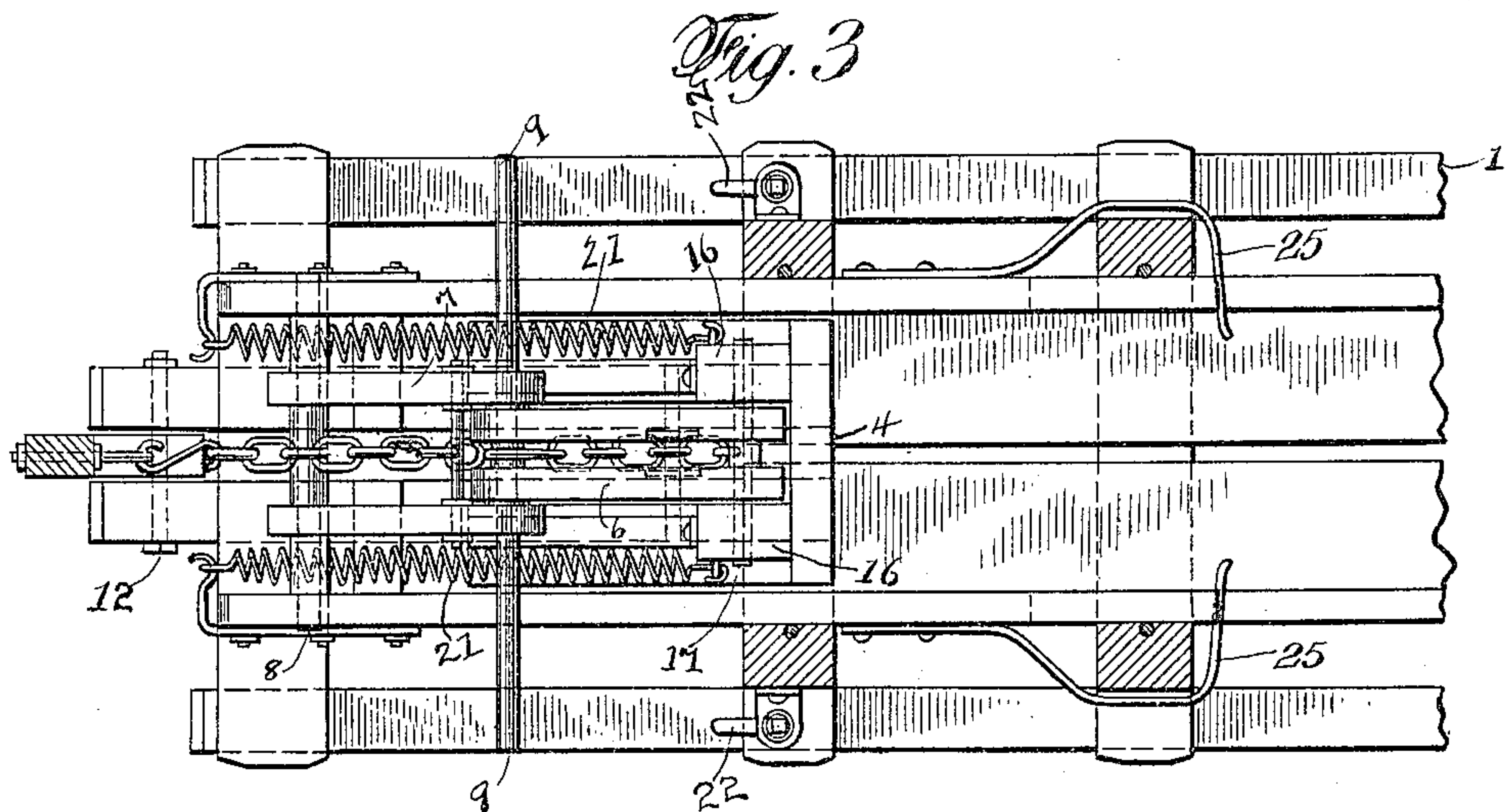
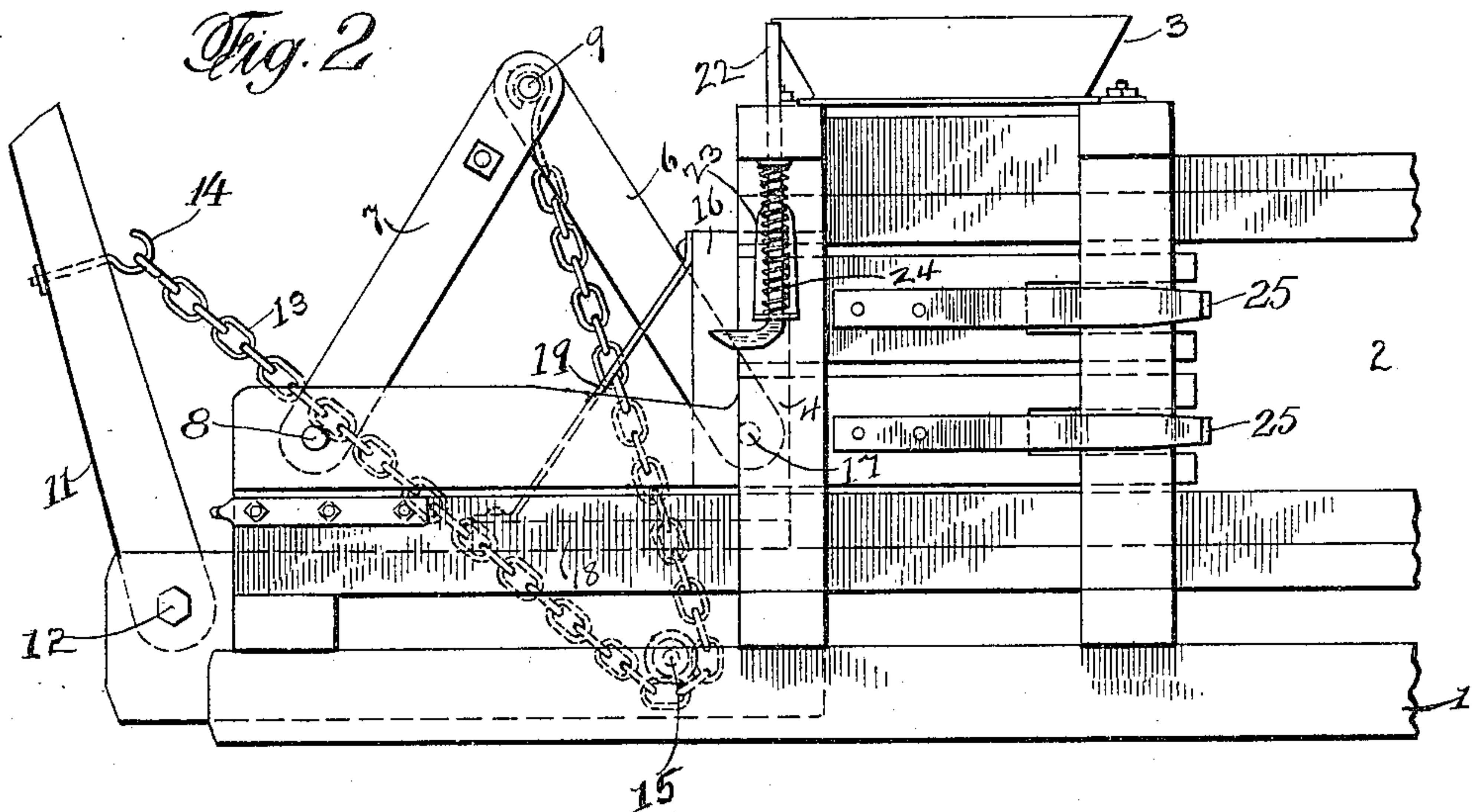
Joseph W. Hobson Inventor
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2 SHEETS—SHEET 2.



Witnesses:
Edward H. Magoffin

Joseph W. Hobson Inventor
By Arthur Baldwin

UNITED STATES PATENT OFFICE.

JOSEPH W. HOBSON, OF BAYONNE, NEW JERSEY, ASSIGNOR TO HOBSON & COMPANY,
A CORPORATION OF PENNSYLVANIA.

BALING-PRESS.

962,432.

Specification of Letters Patent. Patented June 28, 1910.

Application filed August 15, 1908. Serial No. 448,724.

To all whom it may concern:

Be it known that I, JOSEPH W. HOBSON, a citizen of the United States, and a resident of Bayonne, Hudson county, New Jersey, have invented certain new and useful Improvements in Baling-Presses, of which the following is a specification.

My invention relates to presses; and, while it may be embodied in constructions adapted for various purposes, it is more particularly adapted to baling presses for hay, rags, and other similar materials.

Objects of the invention are to provide a device of the character described which shall be particularly adapted to be operated by hand; which shall be adapted to press the material into bales of different sizes; which shall be adapted for continuous operation; whose operating mechanism shall be such that the maximum pressure will be applied at the time of the greatest resistance; whose parts shall be conveniently and compactly arranged and not apt to get out of order; and to provide a construction which shall be simple, cheap and durable, and highly efficient in operation. These and other objects of the invention will in part be obvious and in part be made clear from the following description.

My invention consists in the novel parts, improvements, combinations, and features of construction herein shown and described.

The accompanying drawings, which are referred to herein and form a part hereof, illustrate one embodiment of the invention, the same serving in connection with the description herein to explain the principles of the invention.

Of the drawings: Figure 1 is a vertical longitudinal section of an embodiment of my invention; Fig. 2 is a side elevation of the same with part broken away; and Fig. 3 is a plan section of the same taken on the line 3—3 of Fig. 2.

A press constructed in accordance with one feature of my invention includes in combination, a frame, a compression chamber in said frame, a plunger operating in said chamber, a toggle for actuating said plunger, a lever arranged to swing in a vertical plane and away from said plunger, and connections between said lever and said toggle, so disposed that the direction of the force applied to the toggle in actuating the same lies approximately in the path of

movement of that point on the toggle to which the force is applied. According to certain other features of the invention, flexible connections are provided between said toggle and said lever; retainers are provided in the compression chamber; means are provided for varying the size of the compression chamber; and springs acting on the plunger in the direction of its movement and springs acting on the toggle in a direction at right angles to the movement of the plunger are provided for retracting the plunger. These and other features of the invention will be more fully explained in the following description.

Referring now in detail to the drawings, the particular embodiment of the invention illustrated comprises a frame 1, forming a compression chamber indicated at 2 into which the hay or other material to be baled is fed through a hopper 3 located at the rear of the compression chamber. A follower or plunger 4, whose position of rest is at the extreme rear of the compression chamber at the rear of the hopper, is provided, the same being adapted in size and shape to press the material forward in the compression chamber.

Preferably and as shown, the means provided for pushing forward or operating the plunger 4 comprises a toggle. This toggle in the embodiment of the invention illustrated has its links composed each of a pair of members 6, 7, respectively. The members 6 are each pivotally connected at one end to the plunger, preferably at a point below the center thereof; and the members 7, suitably braced, are each pivoted at one end to a shaft 8 securely journaled in the frame 1, these pivotal connections preferably being substantially in the same horizontal plane. At their other and joint ends all said link members are suitably pivoted to the knuckle shaft 9.

It will be seen that a toggle, disposed as described, has special advantages for use in a press for hay and other similar material in that the motion of the plunger is more rapid at the time when the toggle links are starting from the point of their greatest flexion, and that, as the links approach the horizontal, the power increases until the point of greatest pressure on the bale is reached.

Any desired means may be provided for

applying force to the toggle. Preferably and as shown, however, a lever 11 is pivotally fulcrumed on a shaft 12, suitably journaled in frame 1, and flexible connections or power-conveying means are provided between the lever and the toggle. While these flexible connections may be of any suitable material and disposed in any desired way, preferably and as shown, a chain 13 is secured at one end to the joint of the toggle and at the other end to a hook 14 in the lever, passing in its course around a sheave 15 secured in the frame 1 at a point preferably below the horizontal plane of the toggle, when fully extended, and between the vertical plane of the toggle joint, when the toggle is flexed, and the point of connection of the toggle to the plunger 4, so that the direction of the force applied to the toggle in actuating the same will lie approximately in the path of movement of the joint of the toggle, where the force is applied.

It will be observed also that the lever 11 swings in a vertical plane and away from the plunger, and that as its downward stroke continues, the leverage power is gradually and greatly increased, due to the shortening of the distance between the fulcrum 12 and the line of application of force through the chain. It will be seen also that the advantage is afforded of having the force applied to the lever in a forward and downward direction, and this in turn affords the further advantage of rendering the apparatus stable in operation. It will be noted also that it would be an easy matter so to adjust the power-conveying means that the apparatus could be operated by power. The chain being secured to the lever by a hook, as described, any slack in the same may be easily taken up.

In order to give strength and rigidity to the plunger, braces 16 are secured to the back of the plunger, the pivotal connection of the links 6 to the plunger, preferably and as shown, being made to a shaft 17 journaled in said braces 16; while certainty and ease of movement are imparted by the rearwardly extending guides 18, suitable supporting stays 19 reaching from the guides to the upper portions of braces 16.

Suitable means are provided for retracting the plunger after its forward stroke. While any desired means may be provided for this purpose, preferably and as shown horizontally extending springs 21 are secured at their respective forward ends to the braces 16, preferably on the same horizontal plane with the pivotal connection of the toggle to the plunger, and at their other ends to the rear ends of the frame 1. It will be noted, however, that when the toggle is extended to its fullest extent, a dead center will exist and the springs 21 will be unable

to retract the plunger until the links of the toggle have been started on their upward movement. This is preferably accomplished by providing hook members 22, reciprocating in guides 23, which are depressed by the knuckle shaft 9 engaging their lower hooked ends, which in their normal position are in a horizontal plane above the horizontal plane of the extended toggle members. When the shaft 9 has reached the limit of its downward movement, the hook members will be retracted to their normal position, preferably and as shown by coiled springs 24 which are suitably connected to the hook members and to the guides.

Suitable members are provided for retaining the material against the forward action of the plunger 4 and thus bringing about compression of the material to be baled.

In the preferred embodiment of the invention retainers 25 are attached to the outside of the compression chamber. These retainers are preferably made of metal and preferably also are curved at their forward ends so as to form spring portions which project into the compression chamber. The nature of the material to be baled, as hay, rags, etc., is such that with a suitable number of these retainers, as shown, four, suitably disposed, as shown, two on a side and in pairs, sufficient resistance is offered to the forward action of the plunger properly to compress the material.

The operation of the machine is simple and may be here described in connection with certain remaining features of the apparatus. A charge of hay is inserted in the compression chamber through the hopper, and is pushed forward by plunger 4. The charge is held by the retainers 25 until the charge is compressed to a suitable degree, when the pressure exerted by the plunger becomes too great for the retainers which are forced outwardly and forwardly until, if desired, they are held from further advance movement by contacting with the walls of the compression chamber, the ends of the retainers being suitably curved, as shown, to permit the hay to slip past and to prevent any return movement of the hay due to back pressure. A suitable division block 26 is stationed in front of the retainers and is pushed forward by the material being pressed. The walls of the compression chamber are preferably adapted to be closed in, forwardly, for which purpose rods 27 extend from the bottom of the frame upwardly through the upper wall and have, adjustably mounted on their respective upper ends, hand nuts 28 by means of which, as will be apparent, said upper wall can be raised or lowered sufficiently to control the forward movement of the material being compressed, thereby controlling the degree of compression. The nuts 28 having been adjusted so that the upper wall of the com-

pression chamber will be lowered sufficiently to control the forward movement of the division block 26, as desired, the hay is placed in the compression chamber in successive charges which are compressed and pushed forward until a bale of the desired length is ready, when another division block is introduced through the hopper and pushed past the retainers 25 to a position at the rear of the bale, which is bound in the usual manner, suitable grooves being made in the division blocks 26, as shown, to permit the bale ties to be adjusted. The division block in the rear of the bale in the press acts as a head for the following bale, the first bale offering resistance to the charges of the second bale, while the former is being pushed forward through and out of the press. The process of baling may thus be kept up continuously and indefinitely, only a few division blocks being required, as will be apparent. It will also be apparent that the bales may be made of any desired lengths within the limits of the apparatus, and that the press is adapted to bale a large variety of materials such as hay, flax, cotton, moss, vines, hair, husks, tobacco, rags, paper, and similar materials.

It will be seen that a press constructed in accordance with my invention is simple in construction and operation; easily manipulated either by hand or by power; can be continuously operated to make bales of different sizes; can be used with a great variety of materials; and can be manufactured cheaply. Advantages other than those mentioned will be apparent to those skilled in the art.

My invention in its broader aspects is not limited to the precise construction shown and described nor to any particular construction by which the same has been or may be carried into effect, as many changes may be made in the details of the parts without departing from the main principles of the invention and without sacrificing its chief advantages.

I claim:

1. A baling press including in combination a frame, a compression chamber, a plunger operating in said chamber, a toggle for actuating said plunger, a lever arranged to swing in a vertical plane downwardly and away from said plunger, and flexible connections between said toggle and said lever, said connections being so disposed that the distance between the fulcrum of the lever and the line of application of force through that part of the flexible connections which is adjacent to said lever decreases during the downward stroke of the lever.

2. A baling press including in combination, a frame, a compression chamber, a plunger operating in said chamber, a toggle for actuating said plunger, a lever arranged

to swing in a vertical plane downwardly and away from said plunger, connections between said toggle and said lever, said connections being so disposed that the direction of the force applied to the toggle in actuating the same lies approximately in the path of the movement of that point on the toggle to which the force is applied, and that the distance between the fulcrum of the lever and the line of application of force through that part of said connections which is adjacent to said lever decreases during the downward stroke of the lever.

3. A baling press including in combination, a frame, a compression chamber, a plunger operating in said chamber, means for actuating said plunger, said means comprising a toggle and a lever, and means for retracting said plunger, said means comprising springs acting on the plunger in the direction of its return movement, and springs acting on said toggle at substantially right angles to the movement of the plunger.

4. A baling press including in combination, a frame, a compression chamber, a plunger operating in said chamber, retainers operating within said chamber, means for actuating said plunger, said means comprising a toggle and a vertically swinging lever, and means for retracting said plunger, said means comprising springs acting on the plunger in the direction of its return movement, and springs acting on said toggle at substantially right angles to the movement of the plunger.

5. A baling press including in combination, a frame, a compression chamber, a plunger operating in said chamber, threaded rods and hand nuts for varying the size of the compression chamber, means for actuating said plunger, said means comprising a toggle, a vertically swinging lever, and connections between said toggle and said lever, said connections being so disposed that the distance between the fulcrum of the lever, and the line of application of force through that part of said connections which is adjacent to said lever decreases during the downward stroke of the lever.

6. A baling press including in combination, a frame, a compression chamber, a plunger operating in said chamber, means for actuating said plunger, said means comprising a toggle one member of which is pivotally connected to said plunger and the other member of which is pivotally connected to said frame, a vertically swinging lever, connections between said lever and said toggle arranged to act approximately in the direction of movement of the toggle joint and means for retracting said plunger, said means comprising springs acting on the plunger in the direction of its return movement and springs acting on said toggle at

substantially right angles to the movement of the plunger.

7. In a baling press having a toggle-actuated plunger, a device for overcoming the
5 dead center position of the toggle, comprising a movable spring-pressed element arranged in the path of the toggle joint and so disposed with relation thereto that the spring will be placed under compression in
10 the compressing movement of the toggle.

8. A baling press including in combination, a plunger, a toggle for actuating said plunger, and means for overcoming the dead

center position of the toggle, comprising means for arranging the path of the toggle 15 adjoining and so disposed with relation thereto as to exert a resistance thereon when the toggle is moved to its dead center position.

In testimony whereof, I have signed my 20 name to this specification, in the presence of two subscribing witnesses.

JOSEPH W. HOBSON.

Witnesses:

CHAS. B. BRUNNER,
JOHN BRUNNER.