

No. 651,830.

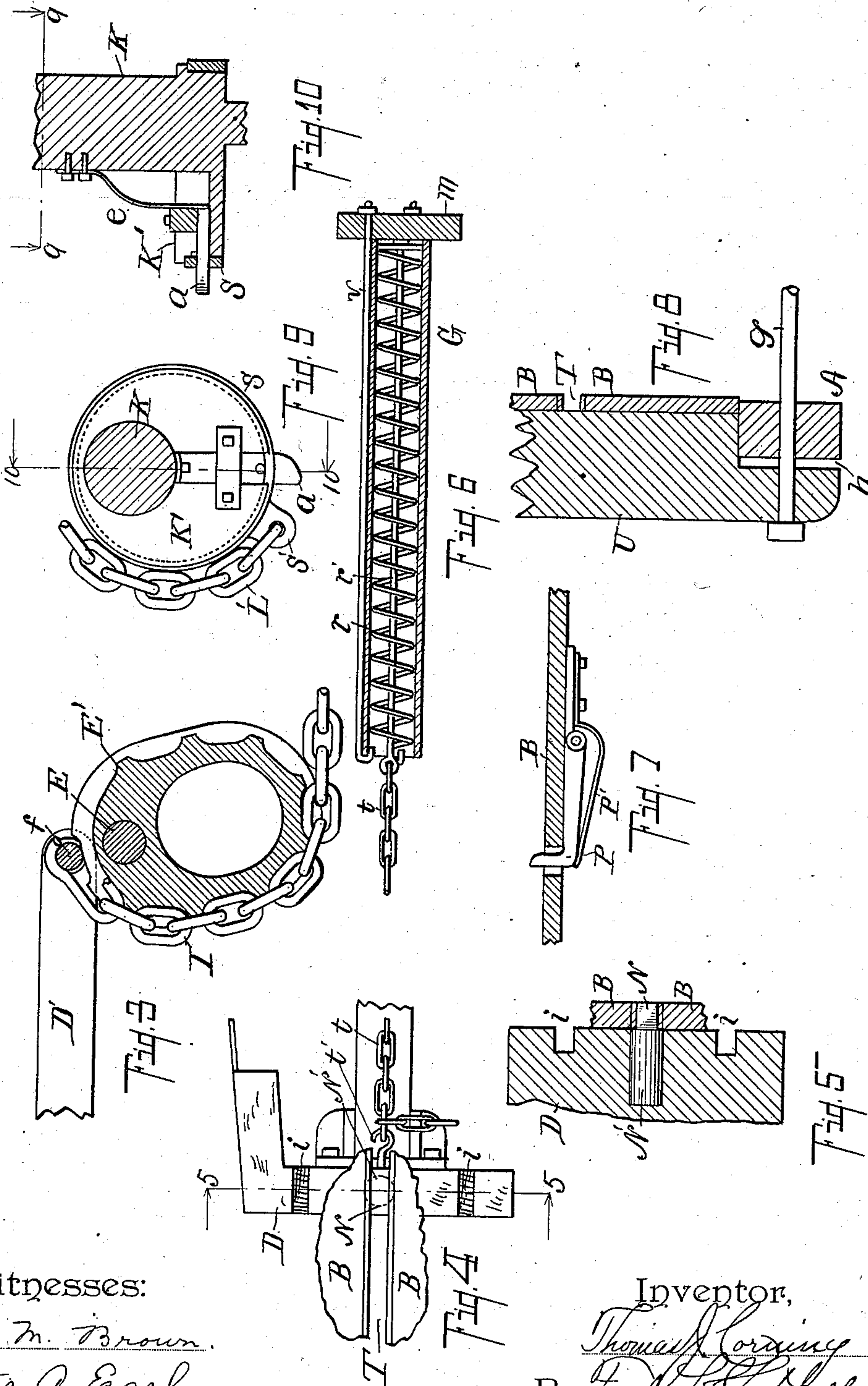
Patented June 19, 1900.

T. J. CORNING.
BALING PRESS.

(Application filed Oct. 3, 1898.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

THOMAS J. CORNING, OF KALAMAZOO, MICHIGAN.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 651,830, dated June 19, 1900.

Application filed October 3, 1898. Serial No. 692,565. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. CORNING, a citizen of the United States, residing at the city of Kalamazoo, in the county of Kalamazoo and 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 hay-presses and presses for similar purposes.

As heretofore constructed hay-presses or presses for baling straw have been cumbersome in the extreme if they possess sufficient power to operate efficiently, and they have also been so constructed that there was considerable variation in the power required to properly operate the same, and for a moderate size they lack sufficient speed.

The objects of this invention are, first, to provide a simple, compact, and efficient construction which can be easily operated inside of a barn of ordinary size; second, to provide a new and improved mechanism for exerting power on the plunger of hay-presses or similar machines; third, to provide an improved trip for use in such press to release the mechanism to allow the plunger to be returned by springs or otherwise; fourth, to provide, in connection with a structure of this kind, improved means of recoiling the chain when the plunger is returned to its initial position; fifth, to provide improved means of retaining the follow-board in position in a hay-press, whereby the springs for holding the dogs are placed outside and easily accessible; sixth, to provide an improved construction for applying a brake to the plunger to prevent its rebound after it is released and withdrawn, and, seventh, to provide an improved combination of eccentrics for delivering power to a press or for similar purposes. Other objects will definitely appear in the detailed description to follow. I accomplish these objects by the devices, means, and mechanism described in this specification.

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

The structure embracing my invention is fully illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a detail sectional elevation of a

machine embodying the features of my invention, taken on a line corresponding to line 1 1 of Fig. 2, the left-hand portion of the machine being broken away and portions toward the right-hand end being shown in full lines. Fig. 2 is a horizontal sectional elevation taken on line 2 2 of Fig. 1, showing the same parts. Fig. 3 is an enlarged detail sectional view of the eccentric which acts upon the pitman and also a part of the pitman itself, taken on a line corresponding to line 1 1 of Fig. 2. Fig. 4 is an enlarged detail view of a portion of the plunger-head and parts of the casing, showing the manner in which the plunger-head is supported and the connection with the pitman. Fig. 5 is a detailed sectional view taken on line 5 5 of Fig. 4. Fig. 6 is a longitudinal detail sectional view of one of the springs and its casing, taken on line 6 6 of Fig. 2. Fig. 7 is an enlarged detail sectional view through the casing, showing the retaining-dogs and their springs for retaining the follow or end board for the bale, taken on a line corresponding to line 7 7 of Fig. 1. Fig. 8 is an enlarged detail transverse sectional view taken on line 8 8 of Fig. 2, showing the construction of the general framework and casing at that point, whereby the brake is applied to the plunger-head on its return. Fig. 9 is an enlarged detail view of the eccentric K' as it appears in Fig. 2, taken on a line corresponding to line 9 9 of Fig. 10. Fig. 10 is an enlarged detail sectional view taken on line 10 10 of Fig. 9.

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

Referring to the lettered parts of the drawings, A represents the main frame of the hay-press, which is in the usual form, except in the modifications and changes hereinafter described, and it has the usual bale-holder, only a portion of which is shown in the drawings. The press is carried on suitable wheels, which can be let down into the ground where the press is used in open air or can be removed to lower the press when it is used on a barn-floor. Within the press is a plunger D, to which is rigidly secured a pitman D', consisting of a pair of bars, preferably of steel. The

rear ends of the bars are connected by pin *f*, to which is attached the chain *I* for actuating the same. The plunger being secured rigidly to the pitman, provision is made for variation of the movement of the pitman by providing suitable guides *T* for the plunger in the side of the frame of the press. A slide *N* is provided to travel in the guides and is secured to the head of pivot *N'*, (see Figs. 2, 4, and 5,) which permits the head to swing slightly to accommodate the movements of the pitman. This enables a very short head to be used, thus securing compactness. The head is provided with means for returning it to the initial position, and the sides of the press are adapted to be drawn slightly together, a space *h* being left for that purpose in the frame by a bolt *g* through the press and cross-pieces *U*, as clearly appears in Figs. 1, 2, and 8. This causes the plunger to wedge in between the sides, which retains the plunger and prevents its rebounding from its initial position. The plunger forces the hay into place and also the usual follow-board (not shown) that retains the bale. The follow-board and charges of hay are retained in position by dogs *P*, provided on the outside and projecting in from the opposite sides of the press. Suitable notches *i* are made in the plunger for it to pass the dogs. Blade-springs *P'* are secured to the outside to hold the dogs in engaging position. This enables an easy replacing of the parts when necessary. Other forms of springs are possible.

Supported in the rear part of the press, by hooked bolts *v* through plates *m*, are tubes *G*, containing springs *r*, with rods *r'*, to which are connected chains *t* to return the plunger-head to the initial position. The length of the chains can be easily adjusted, as they are secured to the head by hooks *t'*, adapted to engage the links of the chain.

Supported on shaft *E*, which has suitable bearings *n* in the rear portion of the frame, is an eccentric *E'*, which is provided with a suitable face for receiving the actuating-chain *I*. The chain *I* extends around the eccentric, but is not secured thereto, but embraces the cross-pin *f* at the rear end of the pitman *D'*. The face of the eccentric is conformed and grooved to receive the chain *I*, and a small notch is formed at the point nearest the shaft to receive the pin *f* of the pitman to enable power to be delivered directly from the shaft *E*, and thus relieve much of the heavy strain on the chain, making it possible to use comparatively-light chain in this relation, though by dispensing with the notch the same would still be very effective.

Supported by suitable stirrups or yokes *H'* to the rear of the main frame is a pair of timbers or beams *H*, extending rearwardly from the machine. A suitable vertical shaft *K*, with an eccentric *K'*, is located on these beams. These two parts can be formed integral, as shown in the drawings, or can be

made separate and the parts united. Around this eccentric is a ring which has an eye *S'*, to which chain *L'* is secured. A rod *L* extends from the chain *L'* to a slide *J*. The slide *J* is carried by suitable guides *R R*. A rod *I'* is also connected to the slide and extends forwardly, terminating in a chain *I*, which embraces the eccentric *E'*, as heretofore described.

Supported on a suitable guide on the eccentric *K'* is a sliding dog *a*, which is held normally outward by a spring *e*. The front side of the dog *a* is beveled and is adapted to strike against a lug or ear *a'*, secured to the base which carries the eccentric. In operation the dog *a* strikes lug or ear *a'*, which pushes it back and releases the ring, allowing it to swing back around the eccentric.

The usual sweep *M* for attaching the horse is provided on the upper end of shaft *K*. Any suitable power could be applied.

Having thus described the various parts of my improved hay-press, I will briefly indicate their operation.

In the operation of my improved hay-press the hay is fed into the hopper *F* as the horse operates the machine from the sweep *M*. The plunger being withdrawn at the time as the horse moves around the power, the eccentric *E'*, being up, is actuated quickly, so that the plunger moves quickly on the start, pressing the hay into bales. As the horse continues to travel the eccentric swings down until the pitman *D'* approaches close to the shaft *E*, carrying the eccentric *E'*, when of course the greatest power is delivered. The horse traveling around winds up the chain *L'* on the eccentric *K'*, and when the plunger is near the end of its stroke the chain *L'* is nearest the center of the rotation of the eccentric *K'*, so it will be observed that the power at that point is applied to the greatest advantage, the leverage in both eccentrics being at the heaviest point. As eccentric *E'* swings down (see Fig. 3) the cross-pin *f* is engaged by a little notch therein, so that in finishing the stroke the pressure is delivered largely from this notch and is almost entirely taken up by the shaft, and much of the strain on the chain is relieved. It would be possible, however, to provide a chain strong enough within convenient limits to dispense with the notch. As the horse travels around the sweep the sliding dog *a* comes in contact with the ear or lug *a'* and is driven back and releases the ring *S*. This releases the entire power mechanism from acting on the plunger. The plunger being so released is immediately withdrawn by the springs *r*, connected by the rod *r'* and chain *T* to the plunger. This withdrawing of the plunger acts on the eccentric *E'*, causing it to revolve into the initial position. In fact, the entire mechanism is returned to the initial position by the springs. These springs in operation on hay or straw under ordinary circumstances can be comparatively light, for the material being pressed or baled will itself

act as a spring to throw the plunger back. When the plunger is thrown back either by the springs or other means, (for other means might be provided, though not so desirable,)

5 it passes between the side walls, which are slightly drawn together by the bolt *g*, and is wedged between the same and any rebounding is prevented. The operation is of course continued till a bale of the required size is
10 produced, when it is tied up in the usual way,

I have fully described the structure and operation of my improved hay-baling press and wish to state that many of its details can be varied without departing from my invention,
15 though I believe that the exact construction which I have shown will be found the best in all its details, taking into consideration expense of material and labor in manufacturing and efficiency of the operation of the machine.

20 While the slide *J*, with its guides *R R*, is preferred by me, I am aware that other guides may be easily substituted, and, in fact, the machine would operate with no guides at all at that point. I have the pitman *D'* double
25 to engage the opposite side of the eccentric *E'* to serve as a guide. This is a most efficient means and worthy of a patent claim, though I am aware that other means might be adopted and still secure the valuable ef-

30 fects of the remaining devices. The incased springs *r* are preferred by me, though I am aware that other spring connections could be provided for returning the plunger and that this might be done by a weight, or other means
35 might be provided for returning it by power. The spring, however, as I have it shown is desirable on account of the quickness of its action, its simplicity, and its great efficiency.

In place of chain and rod connections, as I
40 have shown, other connections might be adopted which would operate the machine, though the chains are preferred on account of the facility with which they engage the eccentric to actuate the same and for other obvious rea-
45 sons.

I have shown my machine all connected together in practically a single frame. It would be possible to provide suitable anchors and anchor the horse-power separate from the
50 press should it for any reason be desirable so to do. This would materially interfere with the compactness and portability of the machine, however. The press could be operated by other power.

55 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 suitable frame with part for retaining the bale
60 with hopper at the top; a plunger *D*, with pitman *D'*, rigidly secured thereto; slides *N*, pivoted to said plunger, and passing in suitable guideways in the side of the frame; spring *r*, suitably connected to return the plunger to the initial position; shaft *E*, with eccentric *E'*,
65 thereon supported to the rear of said frame;

a chain *I*, engaging the periphery of said eccentric and secured to said pitman; suitable beams *H*, extending from said machine carrying the vertical shaft *K*, with eccentric *K'*,
70 thereon; a band *S*, with an eye *S'*, on said eccentric *K'*; chain *L'*, connected to said eye and adapted to wrap around said eccentric and connected by suitable intermediate means to the chain *I*; a sliding dog *a*, on the eccentric
75 *K'*, and adapted to engage the ring *S*, on the eccentric; a lug or ears *a'*, to engage the dog *a*, and depress it to release the ring, and a sweep *M*, connected to the shaft *K*, for actuating the same, all coacting together sub-
80 stantially as described for the purpose specified.

2. In a baling-press, a suitable frame, a plunger, a pitman connected to said plunger; an eccentric; a chain on said eccentric con-
85 nected to said pitman; a second eccentric; a ring on said second eccentric; a chain secured thereto adapted to wrap around the same and connected to the chain on the first eccentric; a release for said ring on the second eccen-
90 tric; and means of actuating the second eccentric so that the longest and strongest leverage of both eccentrics are combined to act on the pitman and plunger at the end of the stroke, for the purpose specified.

3. In a baling-press, a suitable frame, a plunger, a pitman connected to operate said plunger; an eccentric; a chain connected to said pitman and adapted to pass over said eccentric; a second eccentric; a ring on second
100 eccentric; a chain secured thereto and adapted to wrap around the same and connected to the chain on the first eccentric; a release for said ring; means of actuating the second eccentric so that the longest and strongest lever-
105 age of both eccentrics are combined to act on the pitman and plunger at the end of the stroke, for the purpose specified.

4. In a baling-press a suitable frame, a plunger, a pitman connected to operate said
110 plunger; an eccentric, a chain connected to said pitman and adapted to pass over said eccentric, and means of applying power to said chain to roll the eccentric and deliver the longer and stronger leverage thereof to the
115 pitman and plunger at the end of the stroke substantially as described for the purpose specified.

5. In a baling-press, the combination of a suitable casing, a plunger therein; a pitman
120 connected to said plunger, an eccentric, a chain adapted to pass around said eccentric, connected to said pitman; means of applying power to the said chain to actuate the plunger; a spring connection to the plunger to re-
125 turn the same so that in operation the springs will return the plunger and so actuate the eccentric to wind up the chain thereon.

6. In a baling-press, the combination of the main casing or frame; a plunger, a pitman
130 consisting of double bars; an eccentric for actuating said pitman, a chain attached to said

pitman and embracing said eccentric, means
of applying power to said chain, said eccen-
tric having a notch in its periphery to engage
the pitman in such position as to be in direct
5 line with the shaft of said eccentric and pit-
man at end of stroke, for the purpose specified.

In witness whereof I have hereunto set my

hand and seal in the presence of two wit-
nesses.

THOMAS J. CORNING. [L. S.]

Witnesses:

LELA M. BROWN,
OTIS A. EARL.