

G. ERTEL.

Beater and Compressing Presses.

No. 135,533.

Patented Feb. 4, 1873.

Fig. 1.

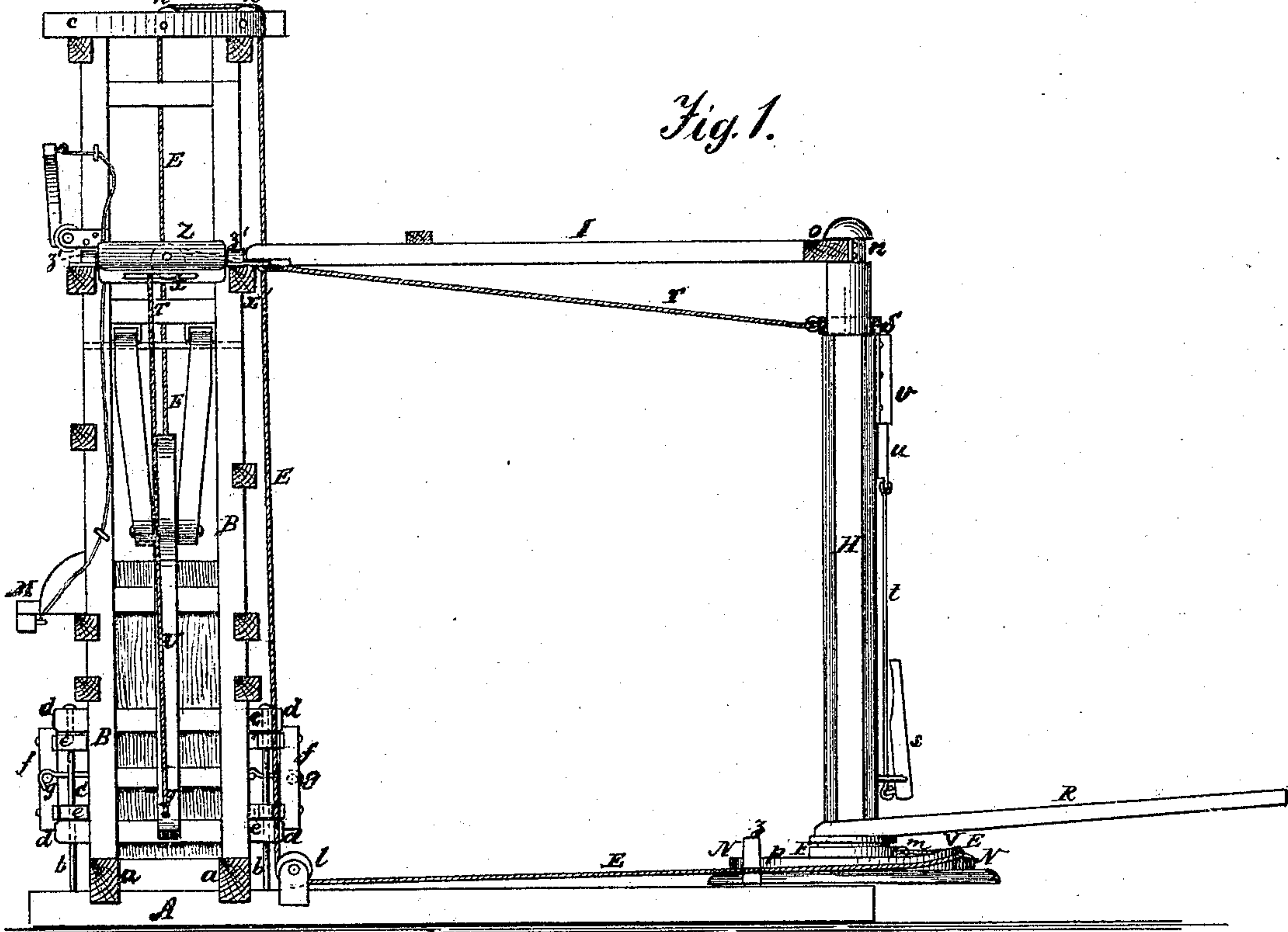
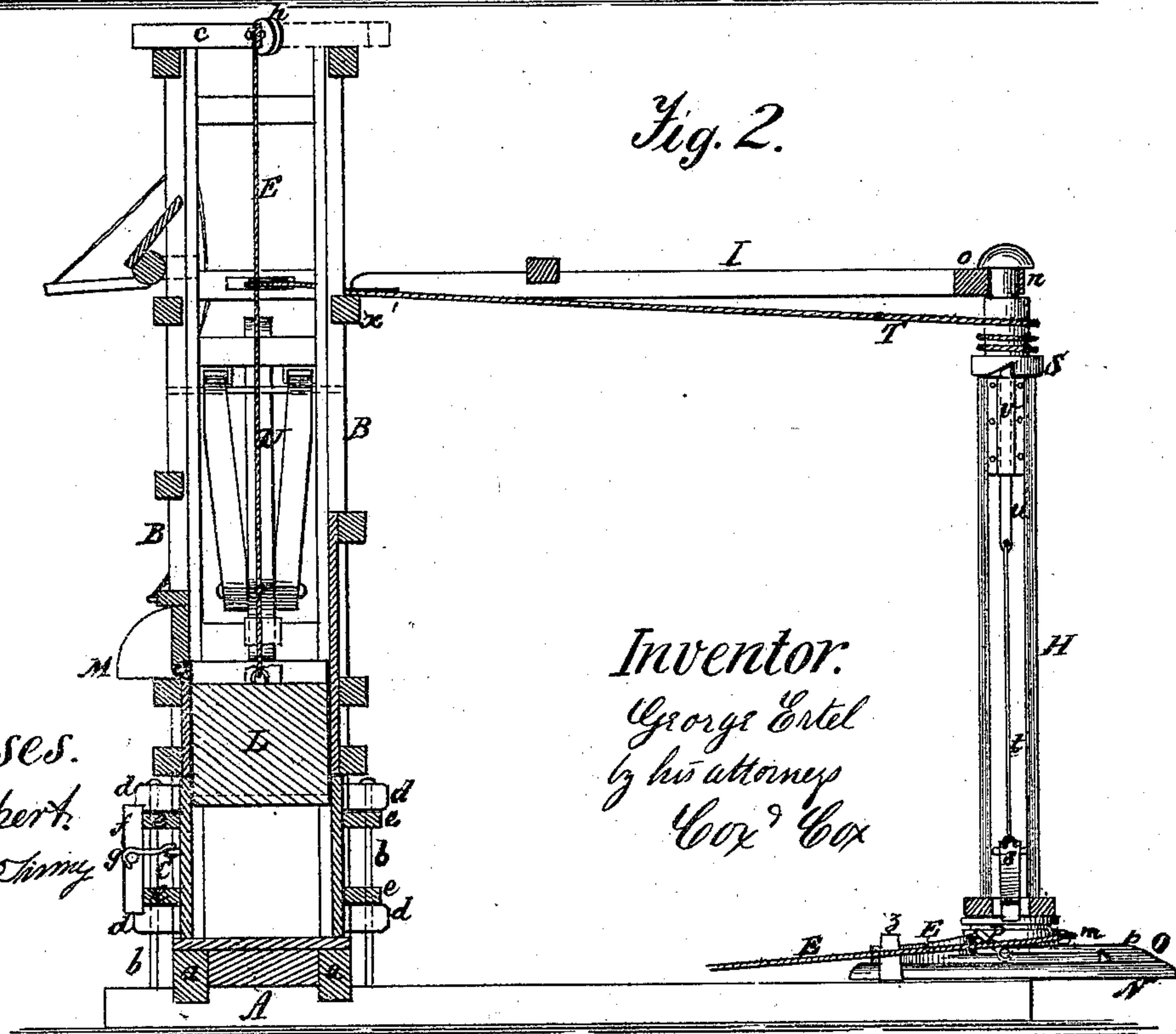


Fig. 2.



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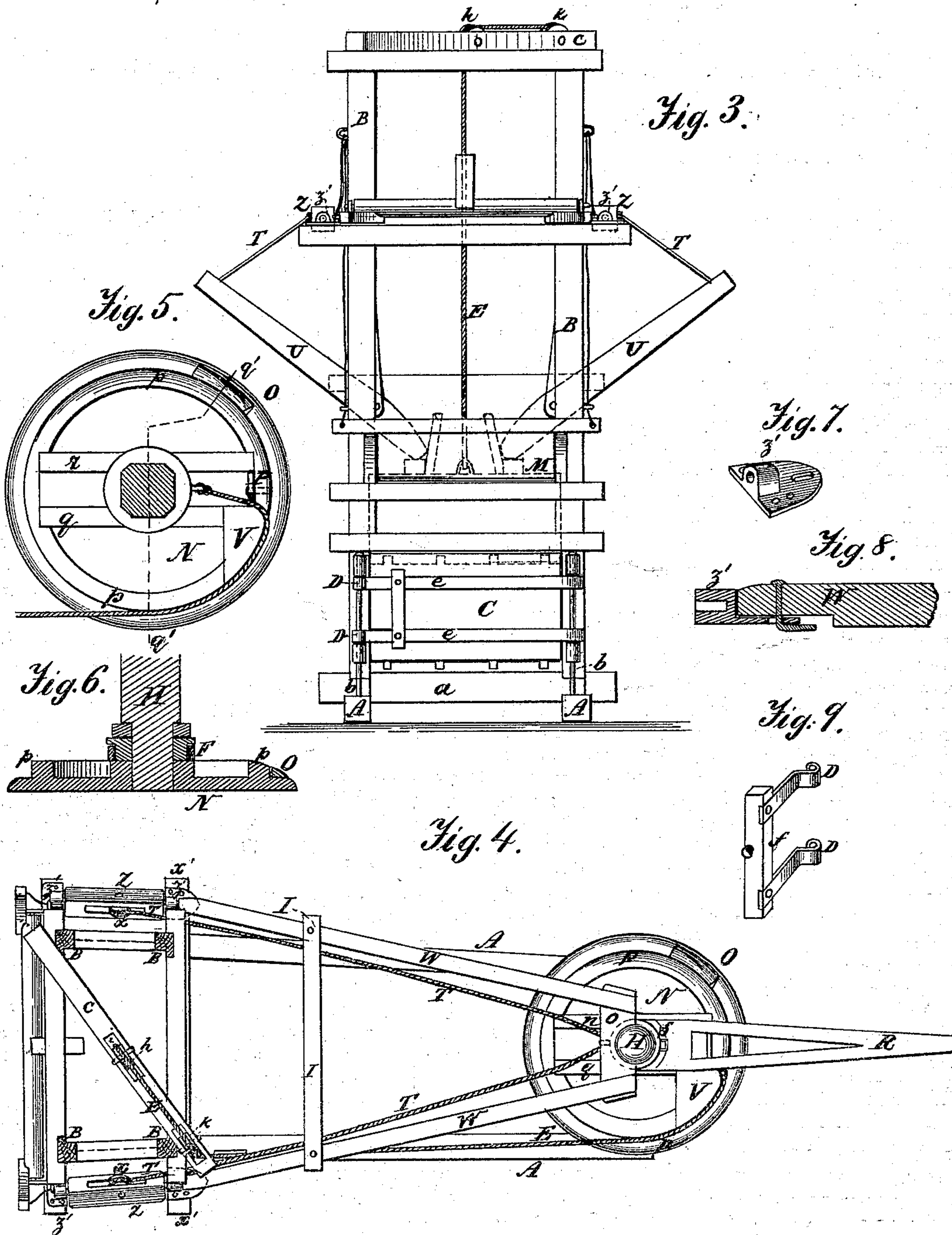
Inventor:
George Ertel
by his attorney
Cox & Cox

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UNITED STATES PATENT OFFICE.

GEORGE ERTEL, OF QUINCY, ILLINOIS.

IMPROVEMENT IN BEATER AND COMPRESSING PRESSES.

Specification forming part of Letters Patent No. 135,533, dated February 4, 1873.

To all whom it may concern:

Be it known that I, GEORGE ERTEL, of the city of Quincy, in the county of Adams and State of Illinois, have invented certain new and useful Improvements in Beater and Compressing Presses, of which the following is a specification, reference being had to the accompanying drawing:

Nature and Objects of the Invention.

The invention relates to providing the driving-shaft of a press used for baling hay, cotton, and like material, with a driving-wheel for taking up the beater-rope, which wheel is properly provided with a mouth or swell to receive and an inclined block to trip the beater-rope; also, in providing the pit-frame of such press with oscillating pulley-axles, which revolve as the presser-ropes are drawn and present the pulley-wheels to the tension of the ropes; also, in furnishing the door of the pit into which the material is forced with a rectangular hinge, so that the bars securing the door may be made of even width from end to end; also, in providing the driving-shaft of such press with a lever pivoted thereto, which operates a sliding pawl acting upon the sliding collar which attaches the presser-ropes to the shaft in such manner that when the pawl is thrown into operative position the collar shall move with the shaft; also, in providing the driving-shaft with a sliding collar attaching the beater-ropes thereto in such manner that, when the pressing-power is being used, the hammer-block will not operate; also, in constructing the pit into which the material is forced with flared sides, so that the bale may be readily removed therefrom.

The object of the invention is to provide a means of pressing hay and other similar materials in an efficient and rapid manner; and consists in certain improvements upon the devices for which Letters Patent of the United States were granted to GEORGE ERTEL, as follows: Improved beater-press, No. 72,728, dated December 31, 1867; and improved compressing and beater press, No. 76,063, dated March 31, 1868.

Description of the Accompanying Drawing.

Figure 1 is a side elevation of the inven-

tion when employed in the beating process. Fig. 2 is a similar view, partly in section, of the invention when employed in the pressing operation. Fig. 3 is an end view of the invention. Fig. 4 is a top view of same. Fig. 5 is a plan view of the driving-wheel N. Fig. 6 is a section of same through the line $q' q'$. Fig. 7 is a detached view of the box-journal z' . Fig. 8 is a central vertical section of same and end of bar of the frame I. Fig. 9 is a perspective view of the rectangular hinges D.

General Description.

A in the accompanying drawing is a frame, at one extremity of which and secured thereto are the bars or sills a , to which are attached the bases of the columns B, held in position by means of the tie-rods b , which assist in securing the columns to the frame by the diagonal brace c connecting the cross-pieces at the upper ends of the columns, and being further secured in position and strengthened by numerous cross-pieces in the usual manner. The lower portion of the space between the columns B is closed on the inside to form a pit or box, X, into which the hay is forced by the action of the hammer-block; the ends of this pit are slightly flared or inclined outward so that the bale when formed may be removed from the pit without difficulty. The lower parts of the sides of the pit are provided with doors C hung upon the tie-rods b , which pass through the ends of the cross-pieces d and into the frame A in such manner that when the door is closed its sides are flush with that side of the pit upon which the door is hung, as shown in said last-named Letters Patent. The bars e are secured to the outside of the door and extend across its length, and have a shoulder projecting slightly beyond the side opposite that whereon the door is hung, the inner edge of which shoulder comes in contact with the column B when the door is closed. The tie-rods b pass through the extremities of two rectangular hinges, the opposite ends of which are connected by the bar f , provided with a staple, upon which the hook g can be attached; the hinges D being so constructed that when the door C is closed they may be swung down and lie in close impact with the ends and outer surface of the

bars *e*, thus allowing these bars to be made of even width from end to end, and avoiding any reduction of material in attaching fastenings. The platform *M*, with its attachments and manner of operation, is analogous to a similar device, as shown and described in the said last-mentioned Letters Patent, to which reference is here made. The cross-pieces upon the upper ends of the columns *B* are connected by the diagonal braces *c*, provided, at a point directly above the center of the hammer-block *L*, with a pulley-wheel, *h*, pivoted in the slot *i*. The hammer-block *L* is constructed similarly to a like device, as shown and described in the Letters Patent last aforesaid, and, as to its movement, operates in like manner, being guided by the grooves in the edges of the columns *B*, which are thus arranged to receive the vertical edges of the hammer-block. The beater-rope *E* is secured at the center of the upper surface of the hammer-block *L*, whence it extends over the pulley-wheel *h*; thence to and over the pulley-wheel *k* at the extremity of the brace *C*. Secured to the frame *A*, immediately below the pulley-wheel *k*, is the pulley-wheel *l*, about which the beater-rope *E* passes, extending from it to and attached in the eye *m* of the rotating collar *F* upon the driving-shaft *H*, the upper part of which is reduced to a neck, working in a journal, *n*, at the extremity of the frame *I*, which frame is composed of two diagonal bars, *W*, attached at one end to the extremities of one of the braces *x'* of the pit-frame, and at the other connected by the brace *o*, all in such manner that the upper and lower surfaces of the frame *I* are in the same horizontal plane. The journal-boxes *z'*, in which the axles of the oscillating pulley-axles work, are constructed with an arched box, the end of which opposite the aperture is closed and vertical, the box being mounted upon a plate which forms a part of the box, and which plate is provided with a longitudinal slot. The ends of the bars *W* opposite the brace *O* are each provided with a hook, which is so placed that when they are inserted in the slots in the box-plates the frame *I* will hang vertically against the pit-frame, the hooks being also so inserted that the frame *I* may be elevated to a horizontal position, the ends of the bars *W* coming in close contact with the ends of the boxes *z'*. Thus the frame *I* is hinged to the pit-frame, from which it may be removed by taking out the hooks in the ends of the bars *W*. When the device is in operative order the frame *I* should be in a horizontal position.

The brace *O* may be attached to the bars *W* in any suitable manner, so that it can be readily attached to or detached therefrom.

In close proximity to the upper surface of the frame *A* is rigidly secured to the shaft *H* the driving-wheel *N*, the under surface of which is flat. The parts of its upper surface adjacent its periphery are beveled, inclined, or rounded at the edge thereof, being flat on those portions adjoining the rim *p*, so as to up-

hold the rope *E* thereon. The rim *p* is placed a proper distance from the periphery of the wheel *N*, and has, at option, grooved or vertical sides. The upper surface of the rim inclines outward from about the point opposite that at which the beater-rope, as the wheel *N* revolves, first comes in contact with the mouth or swell of the rim *p* to said point of contact, the inclination extending over about one-half of the upper surface of the rim, the interior of which is hollow and provided with the bars *q* and *r*, so arranged that when the beater-rope is tripped it will readily pass over them. The standard *z* is provided on the frame *A* in close proximity to the wheel *N* for the purpose of assisting in keeping the beater-rope on the rim. Adjacent the point where the bar *q* is connected therewith the rim *p* has its greatest elevation, and is here rounded vertically and grooved or flanged, so that as the wheel *N* revolves in the beating operation the beater-rope *E* is caught by the curved mouth of the rim, and taken up on the outer surface thereof.

The rim *p* may be constructed as aforesaid, or, as in the present instance, may be provided with the inclined swell *V*, which is secured to the rim *p* and bar *q* with its flat surface downward, its incline lying in a direction opposite the movement of the wheel *M* when employed in the beating process. The exterior periphery of the swell *V* is rounded, conforming to the adjacent vertical surfaces of the parts to which it is attached, its base having a proper elevation above the surface of the rim.

In the event of a swell or shoe being used, the interior elevation of the rim may be the same throughout its circumference.

When so desired the outer end of the bar *q* and a part of the base of the swell *V* may be cut out, and a metal shoe inserted, the upper surface of which should project over its vertical surface opposite the bar *r* to prevent the rope slipping upward. It should be rounded on this side, and project properly above the upper surface of the rim.

It is obvious that the beater-rope must be caught up by the mouth of the rim *p*, or swell *V* or shoe, since, as the wheel *N* revolves, the rope *E* slips over the upper surface of the rim until it comes in contact with the mouth thereof, or the swell or shoe, against any one of which it is caught when the rope is drawn taut. An inclined tripping-block, *O*, the inner curve of which conforms to the curve of the periphery of the rim *p*, and its outer curve to the circumference of the edge of the beveled part of the wheel, is secured to the wheel *N* between its periphery and that of the rim *p*. The block *O* inclines from its upper inner angle both outward and in the direction of the movement of the wheel *N* when employed in the beating process, the surface of the block immediately adjacent the said angle being in the same plane with or its curve conforming to the adjacent parts of the surface

of the rim and the beveled or inclined periphery of the wheel N, which, turning the rope, rides gradually up the incline of the block O until it reaches the highest point thereon, which brings it in the same plane as the adjacent parts of the rim *p*, over which it slips and allows the hammer-block to fall. The block O is so placed that the rope shall be tripped thereby at the instant the hammer-block shall have reached its maximum elevation. The lug P consists of a short bar of metal or other suitable material pivoted inside the rim *p* between the bars *q* and *r*, in such position that it can be depressed so as to have an upward inclination across the mouth of the rim, and thus, when the device is being used as a press, prevent the beater-rope being caught in the mouth of the rim, over which it slips on the lug P. A tongue or arm, R, is secured to the driving-shaft H, as shown, to which is attached the motive power. Above this arm is pivoted a lever, *s*, connected by a wire or rod, *t*, with a bolting-pawl, *u*, working in the sheath *v*, and acting upon the sliding collar S, which rotates freely about the shaft H, here reduced to a less diameter to afford a support to the collar, which revolves freely upon the shaft when the device is being used in its capacity as a beater. The notches in the collar S are so arranged that when the lever *s* is forced down and the shaft H rotated the head of the pawl *u* will engage a notch in the collar and cause it to move with the shaft upon which the presser-rope T will be wound and the pressure brought upon the hay in the pit, as set forth in the said last-mentioned Letters Patent. At the extremities of those cross-pieces which are about on a level with the upper surface of the frame I are provided the boxes *z'*, in which work the journals of the oscillating pulley-axes Z, the centers of which are provided each with a longitudinal slot, in which revolves the pulley-wheel *x*, over which the presser-rope T passes, extending thence downward and attached to the ends of the levers U. As the presser-rope T is drawn taut the axes Z rotate on their bearings, allowing the pulley-wheels *x* to adapt themselves to every change of position of the rope, and also preventing friction against any part of the device.

Operation.

The beating process is performed as follows: The motive power being applied to the arm R, the driving-shaft H revolves, rotating the wheel N, the beater-rope E being caught up by the mouth of the rim *p*, or base of the swell V, and wound upon the outer vertical surface of the rim, thus elevating the hammer-block L. When the beater-rope E reaches that point on the wheel N whereat the upper surface of the block O is flush with the adjacent parts of the upper surface of the rim *p*, the rope E being of such length and so arranged that when it shall have been taken up to this point the hammer-

block L shall have reached the maximum elevation, then at this point the rope is tripped, slipping over the wheel N and allowing the hammer-block to fall. While the above operation is progressing a collar, S, revolves freely upon the shaft H, thus preventing the presser-rope T from being taken up. When the desired quantity of hay has been beaten into the pit the beater-rope E is removed from the mouth of the rim *p*, or from its contact with the base of the swell V, and the lug P depressed across the mouth of the rim *p*, or over the base of the swell V, thus preventing the rope E being taken up as the wheel N revolves, while the rotating collar F rotates freely about the shaft, thus preventing the rope E being wound thereon. The lever S is now depressed, throwing the pawl *u* in contact with the collar S, so that as the shaft revolves the pawl engages a notch in this collar, causing it to turn with the shaft. The motive power is now applied, the presser-rope T drawn taut, the oscillating pulley-axes Z turning to accommodate the position of the pulley-wheels *x* to the tension of the presser-ropes. This movement of the shaft H being continued, any degree of pressure is brought to bear upon the hammer-block now resting upon the hay, in a manner analogous to that set forth in said last-mentioned Letters Patent.

It is obvious that the circumference of the rim *p* should be of such dimensions that it shall have taken up so much of the beater-rope E in revolving that when the rope comes in contact with the highest portion of the block O, or that portion thereof which is flush with the adjacent surface of the rim, the hammer-block L shall have reached its maximum elevation.

The beating process can be applied to pile-drivers and similar devices.

Claims.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The driving-wheel N provided with the inclined rim *p*, block O, and lug P, substantially as shown and described.
2. The levers S *s*, rod *t*, and pawl *u*, in combination with the sliding collar S, substantially as shown and described.
3. The oscillating pulley-axle Z provided with the pulley-wheels *x*, for the uses and purposes substantially as shown and described.
4. The rotating collar F, driving-wheel N, provided with the rim *p*, swell V, and lug P, in combination with the beater-rope E, vertical pulley-wheels *k*, *l*, and *h*, and hammer-block L, substantially as shown and described.
5. The rotating collar F, for the uses and purposes substantially as shown and described.
6. The combination and arrangement of the rotating collar F and sliding collar S, for the uses and purposes substantially as shown and described.

7. The sliding collar S, presser-rope T, oscillating pulley-axle Z, in combination with the levers U, substantially as shown and described.

8. The rectangular hinges D, arranged and operating in connection with the door C substantially as shown and described.

9. The box-journal z' , in combination with the hook at the end of bars W, substantially as shown and described.

In testimony that I claim the foregoing improvements in beater and compressing presses, as above described, I have hereunto set my hand and seal this 23d day of July, 1872.

GEORGE ERTEL. [L. S.]

Witnesses:

H. H. JANSEN,
HARRY COX.