

(No Model.)

T. J. STRAIT.
REBOUNDING PLUNGER PRESS.

No. 464,484.

Patented Dec. 1, 1891.

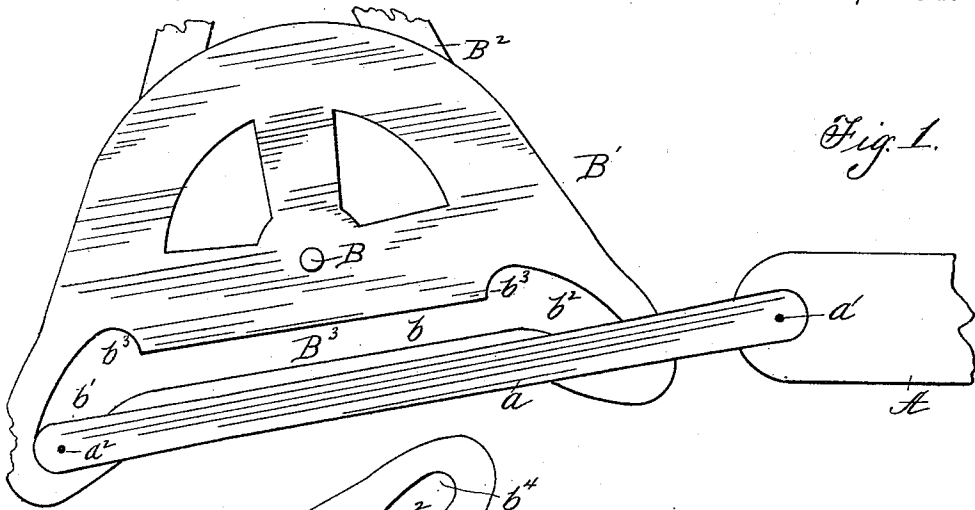


Fig. 1.

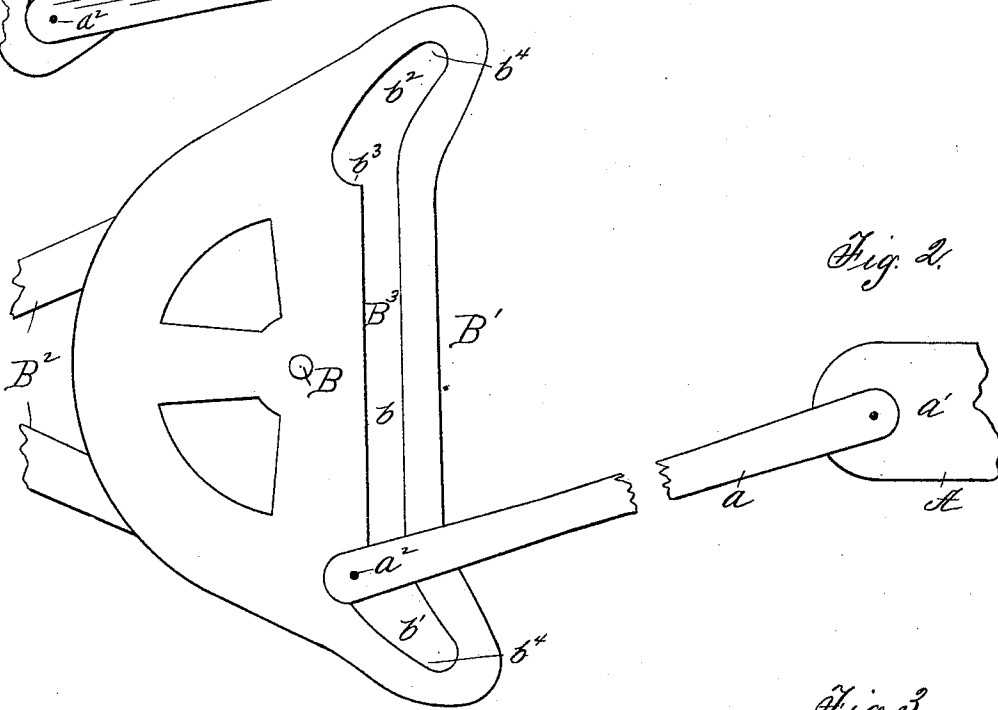


Fig. 2.

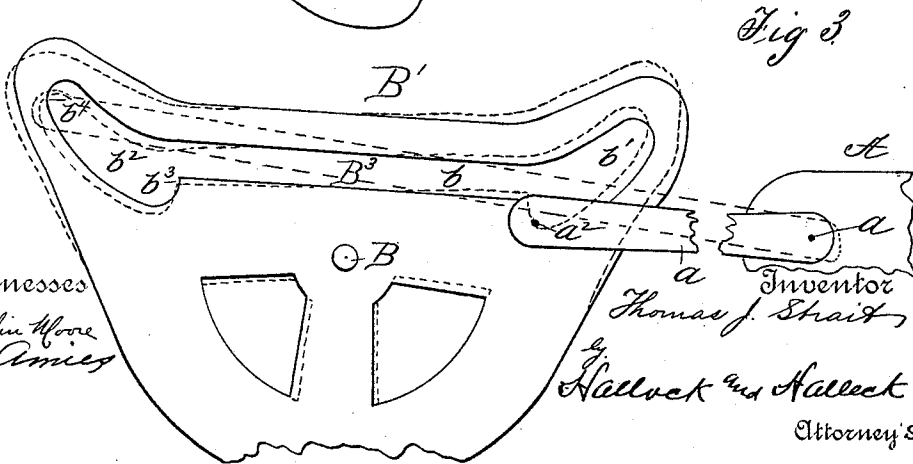


Fig. 3.

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UNITED STATES PATENT OFFICE.

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REBOUNding-PLUNGER PRESS.

SPECIFICATION forming part of Letters Patent No. 464,484, dated December 1, 1891.

Application filed May 4, 1891. Serial No. 391,517. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. STRAIT, a citizen of the United States, residing at Williamsport, in the county of Lycoming and State of Pennsylvania, have invented certain new and useful Improvements in Rebounding-Plunger Presses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to that class of presses known as "rebounding plungers," and has for its object the improvement of the means for forcing the plunger into the press and for allowing it to rebound quickly and surely after passing a certain point.

The invention consists of combinations and constructions, all as will hereinafter be described in the specification and pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 represents a top plan view of the plunger-operating mechanism in its normal position; Fig. 2, a similar view showing the point to which the pitman of the plunger has been moved, and Fig. 3 a similar view showing the last position of the pitman prior to being shifted to the side opposite to that shown in Fig. 1.

A represents the plunger, having the usual pitman a pivoted to its upper and lower side by a pin or other device a' and connected at its opposite end by a bearing-pin a^2 , which may be loose or free to revolve in its bearings in the pitman a .

B is a bearing-shaft mounted in the usual way upon the frame-work of the press, which frame-work is not shown in the drawings.

B' is an oscillating frame pivoted upon the bearing-shaft B, which is the center of the arc of movement of said frame.

B² is the ordinary form of sweep attached to and for oscillating said pivoted frame. The pitman-pin a^2 is provided with a guideway on the pivoted frame B', so that when said frame has been oscillated in one direction the pitman can be shifted to the opposite end of the guideway to be in position for the frame to act upon it when said frame is moved in the opposite direction. The guideway in the

present instance is a slot B³, formed of the part b and the sub-slots $b' b^2$. The part b is preferably straight, and the sub-slots $b' b^2$ are tangential to the arc of movement of the oscillating frame, the ends b^4 being upon a different radii from the ends b^3 , which move in an arc of less radius than the ends b^4 of said slots, so that when the frame is oscillated the outer ends b^4 will swing in a greater arc than the inner ends b^3 to give more rapid action to the pitman. The normal position of the pitman-pin a^2 is at one of the outer ends b^4 , (shown in Fig. 1,) and when the frame B' is oscillated to the position shown in Fig. 2 the pin a^2 slides upon the outer edge of the sub-slot until it strikes the end b^3 of said slot, where it is held until frame B' assumes the position shown in dotted lines, Fig. 3, when said pin slips into the slot b and rebounds to the end b^4 of the opposite slot, as shown in Fig. 3.

The advantages of this construction are that the plunger can be drawn back farther, thus admitting more hay to the box; that the plunger can be moved faster at the starting-point to rapidly pack the hay, which is of great bulk but little compactness, and that when the bulk has been reduced and great force is necessary to compress the hay, the bearing of the pitman is shifted to get less speed and more force.

With the parts in the positions shown in Fig. 1 the operation of the device is as follows: As shown, the pin a^2 rests against the end b^4 of sub-slot b' . The distance from the shaft to this part b^4 in either sub-slot is the greatest that the pin a^2 can pass in the frame, and gives a great leverage to the frame and a wide swing to the end of the pitman. As the material to be pressed is very loose, at the first start of the horse a great deal of power has heretofore been lost. By increasing the sweep of the frame and pitman the plunger is driven faster into the machine and the loose material is quickly packed. To continue the movement of the plunger while having the pin a^2 resting against the end b^4 would be nothing more than enlarging the wheel commonly used and without any different result other than greater but uniform leverage, which in this class of machines is disadvantageous, in that the pitman does not act to force the plunger

directly ahead, but rather tends to crowd it against the way or track on the side opposite to that of the plunger. To overcome this tendency of the pitman, oblique sub-slots b' and b^2 are provided. These slots permit the pin a^2 to slide inward as the frame is swung around, and thus change the point of leverage and keep the pitman in as near a straight line as possible. The pin a^2 travels in the sub-slots until it strikes the shoulder b^3 , which holds the pin in place until it has passed the dead-center or medial line of the press, when it slips off the shoulder and passes up the straight slot b into slot b^2 . When the pin a^2 reaches shoulder b^3 , the greatest pressure is needed, and, as is well known in toggle-levers, the nearer the straight line the two members are brought the greater the force exerted by the lever, everything else being equal. By shifting the point of bearing of the pitman the part which corresponds to the knuckle in the ordinary form of toggle-lever is kept as near a straight line as possible, due regard being given to the fact that more or less swing is necessary to get speed at a time when great pressure is not necessary. By making the part b straight the pitman will move very rapidly to the end opposite to that in which it enters. It also renders the use of the limb

or second member of the ordinary toggle unnecessary.

What I claim is—

1. In a press of the kind described, the combination of a pitman having a pin and an oscillating frame having two sub-slots arranged tangentially to the arc of movement of the frame, the outer ends of said slots being upon different radii from the inner ends and the inner ends upon an arc of less radius than the outer ends and the inner ends connected together by a guide-slot, substantially as described.

2. In a press of the kind described, the combination of a pitman having a pin and an oscillating frame having two sub-slots arranged tangentially to the arc of movement of the frame, the outer ends of said slots being upon different radii from the inner ends and the inner ends upon an arc of less radius than the outer ends and the inner ends connected together by a straight guide-slot, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

THOS. J. STRAIT.

Witnesses:

J. S. SWICK,
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