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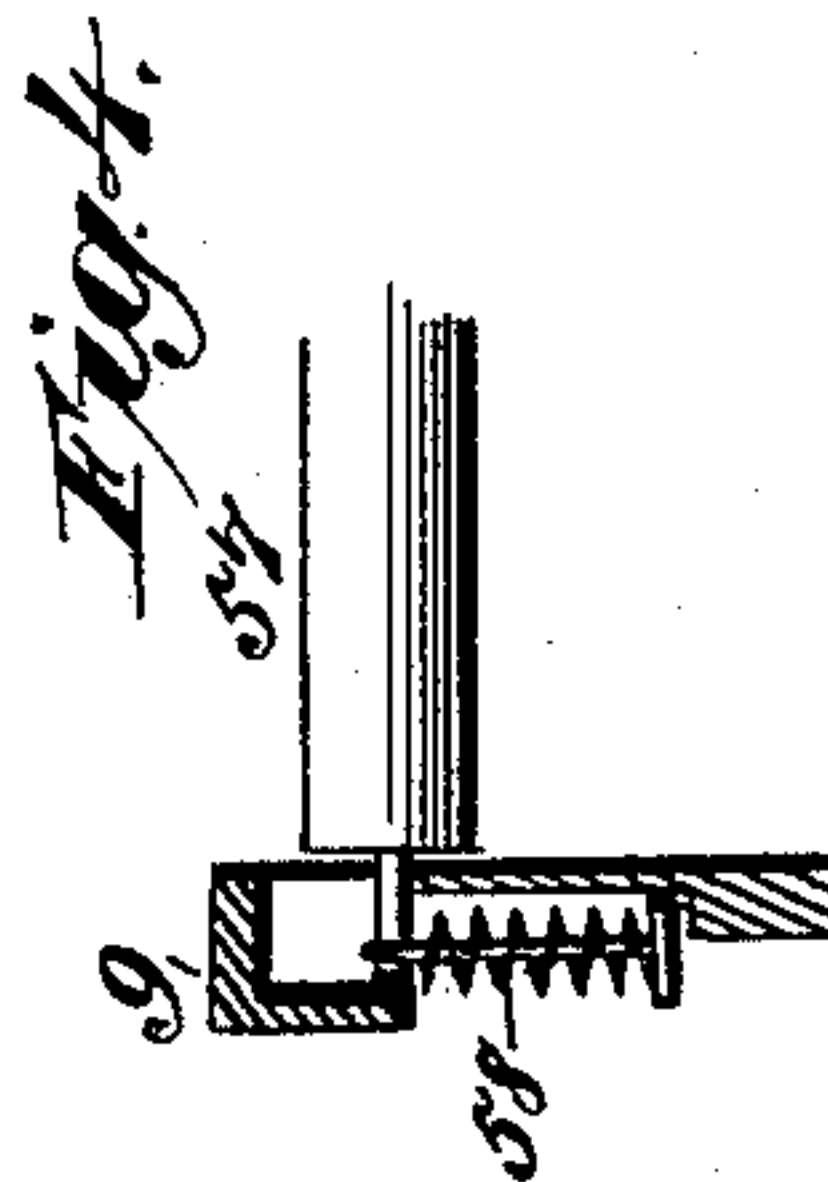
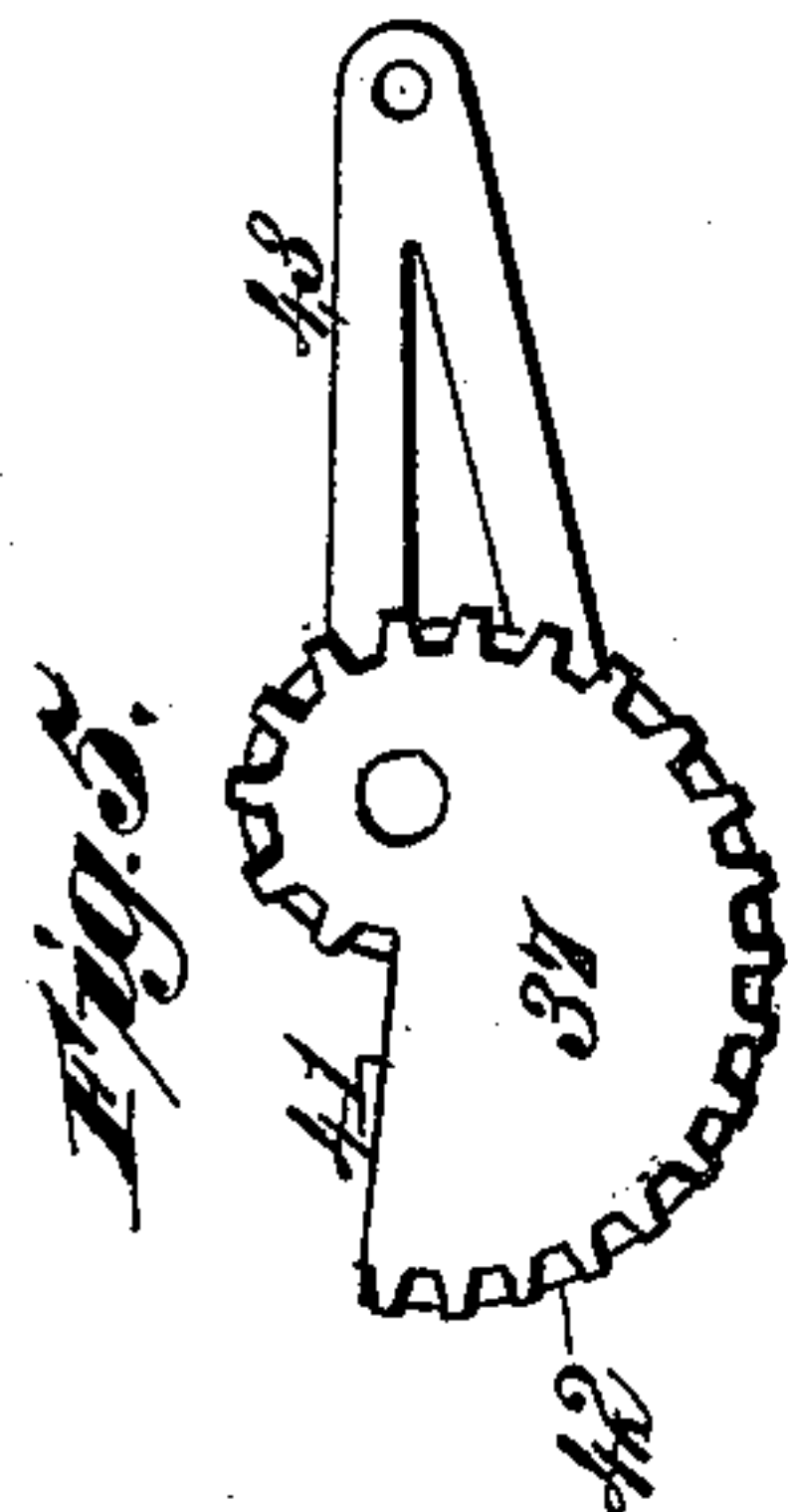
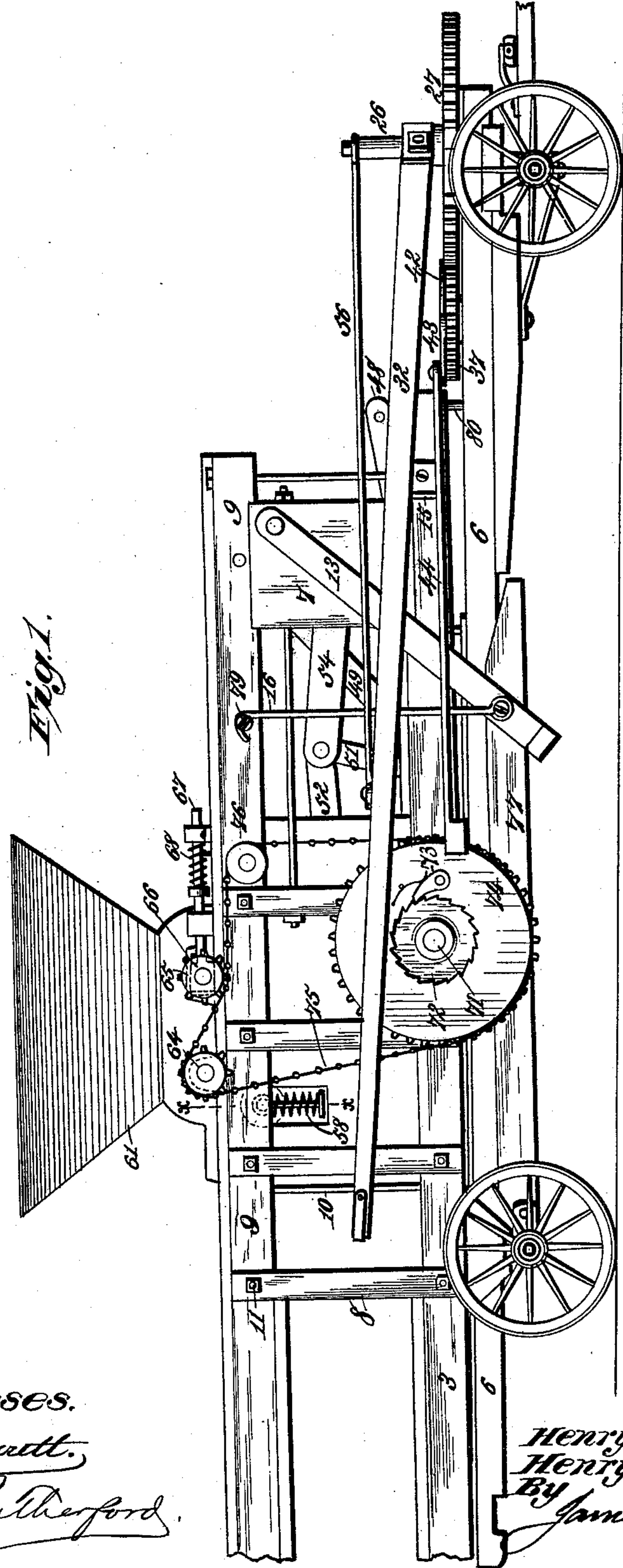
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H. F. BLANK & H. W. SCHWARZBURG.

BALING PRESS.

No. 387,486.

Patented Aug. 7, 1888.



Witnesses.  
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Att'y.

(No Model.)

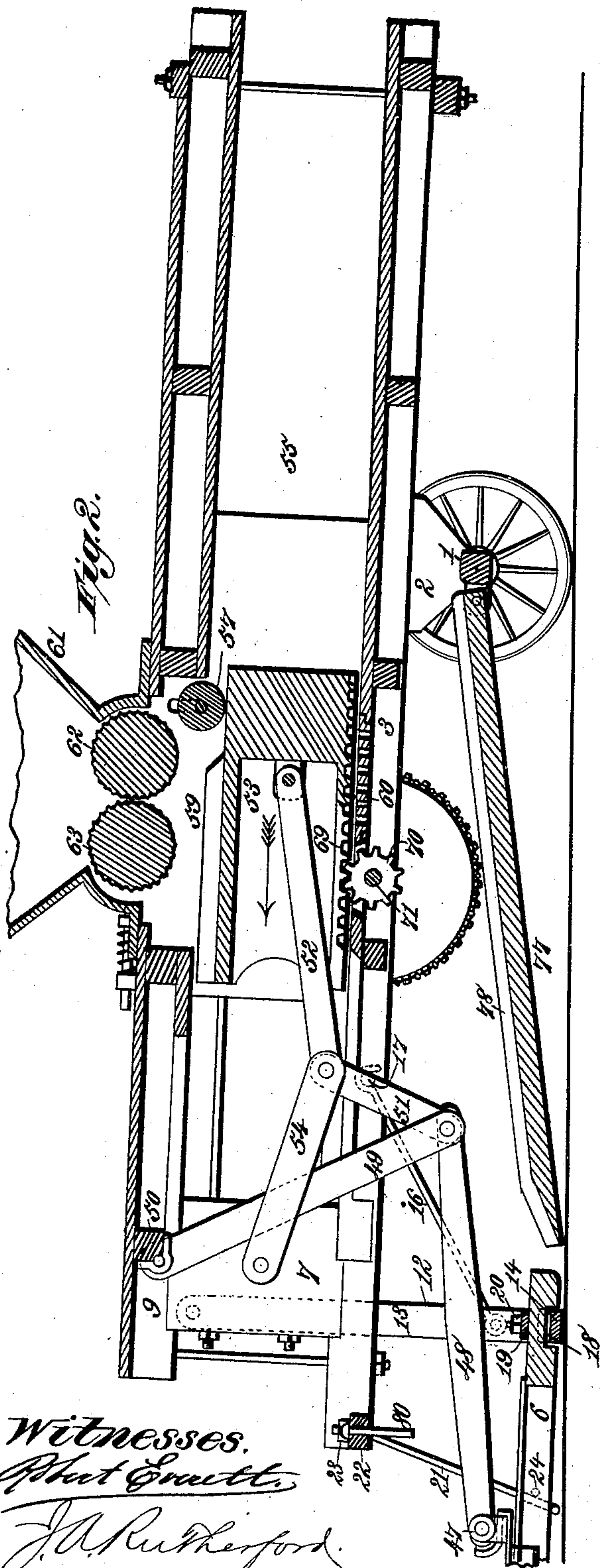
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H. F. BLANK & H. W. SCHWARZBURG.

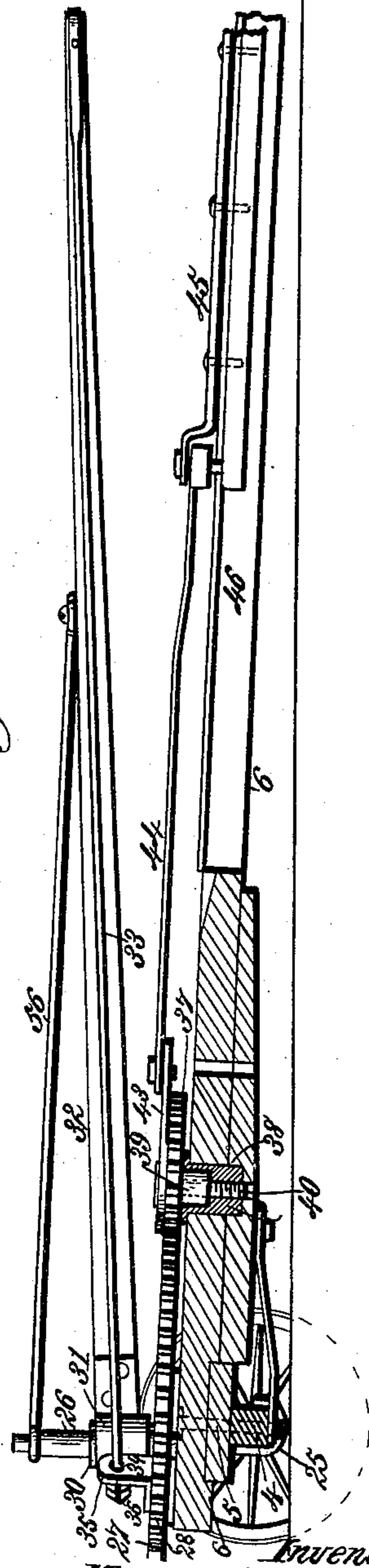
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*Fig. 2a.*





(No Model.)

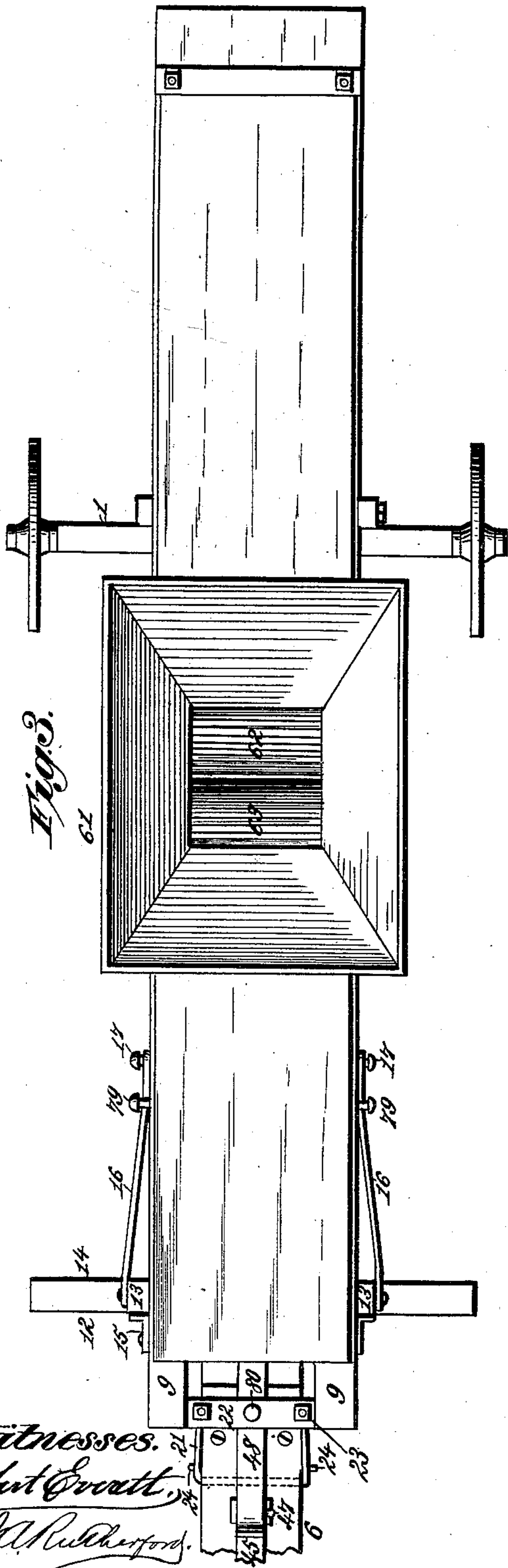
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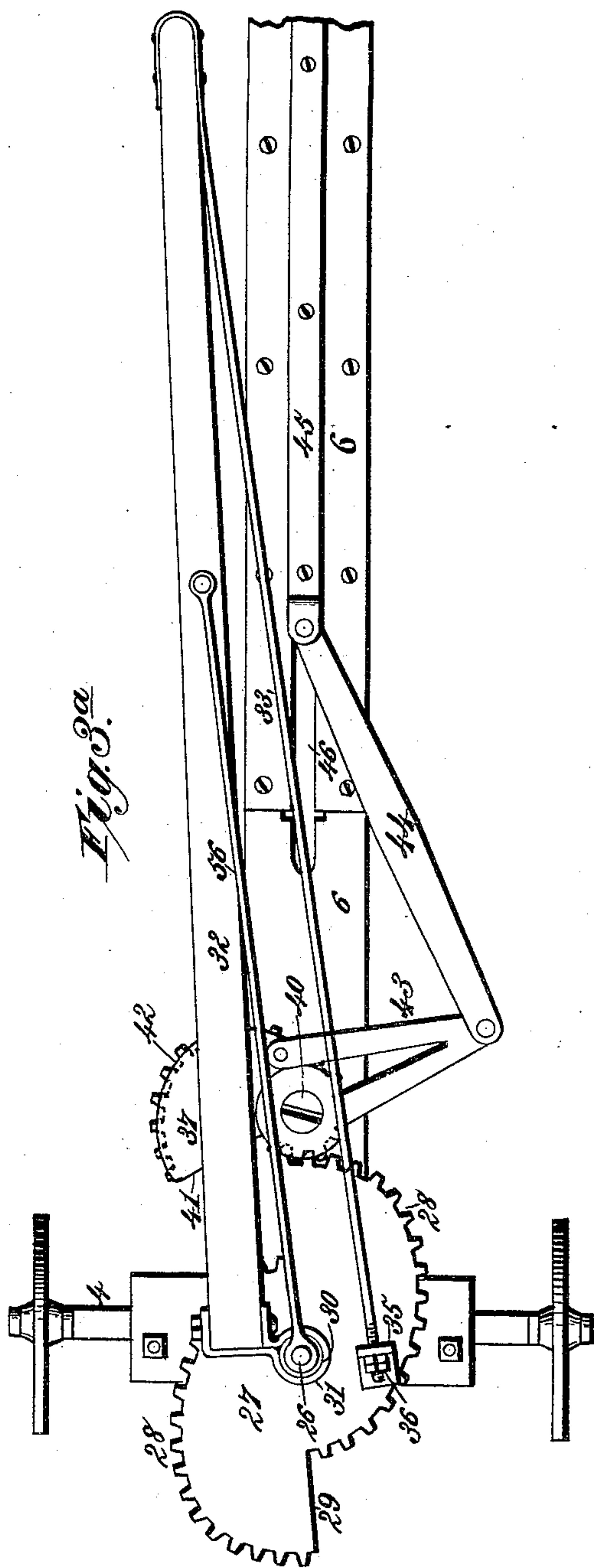
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# UNITED STATES PATENT OFFICE.

HENRY F. BLANK AND HENRY W. SCHWARZBURG, OF QUINCY, ILLINOIS.

## BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 387,486, dated August 7, 1888.

Application filed April 11, 1888. Serial No. 270,292. (No model.)

*To all whom it may concern:*

Be it known that we, HENRY F. BLANK and HENRY W. SCHWARZBURG, citizens of the United States, residing at Quincy, in the county of Adams and State of Illinois, have invented new and useful Improvements in Baling-Presses, of which the following is a specification.

Our invention relates to that class of portable presses for baling hay, cotton, and other material, and for various other purposes, in which a plunger is driven by a horse-power continuously acting in one direction through the rotation of a sweep.

One object of our invention is to provide means for automatically increasing and diminishing the leverage of the plunger-actuating mechanism to correspond with the requirements of the operation of pressing.

Another object of the invention is to provide an automatic feeding mechanism that is operated by the pressing-plunger; and the invention has for a further object the construction of a horse-power press in which the horse-power mechanism is supported on a power-sill attached to the forward axle of the press-frame and supported beneath the press-body for facility of transportation, but capable of being withdrawn with the forward axle when it is required to arrange the press and horse-power for operation. These objects are accomplished through the construction and combination of devices hereinafter described, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of our improved portable horse-power press arranged for transportation. Figs. 2 and 2<sup>a</sup> represent a vertical longitudinal section of the press and horse-power arranged for operation. Figs. 3 and 3<sup>a</sup> show a plan view of the press and horse-power. Fig. 4 is a detail section on the line *xx* of Fig. 1, and Fig. 5 is a detail view of the scroll-gear.

The numeral 1 designates the rear axle of the press-frame. On top of the axle are secured two cross-blocks, 2, to which the lower longitudinal press sills, 3, are fastened. The forward axle, 4, is connected by a king-bolt, 5, with the forward enlarged end of the horse-power sill 6, which is adapted to be moved forward and back beneath the press-frame. When moved back, it can be secured beneath the press-frame, as hereinafter explained, for transportation, and when drawn forward the

horse-power mechanism mounted on said sill is brought into position for operating the press-plunger.

Near the forward ends of the longitudinal sills 3 are located a pair of stout struts, 7, one on each side of the press-frame. These struts 7 assist the vertical side braces, 8, in supporting the upper longitudinal side bars, 9, and also afford a firm support for the mechanism, hereinafter described, that sustains the plunger-actuating levers. The lower sills, 3, and upper side bars, 9, may also be connected by vertical tie-rods 10, and the struts 7 and side braces, 8, can be connected by horizontal tie-rods 11, if desired.

To the forward end of the press frame, preferably to the struts 7, is pivoted a swinging frame, 12, which consists of the pivoted bars 13 and a connecting cross-bar, 14, secured to their lower ends. This swinging frame 12 is of sufficient length to rest on the ground when lowered and support the forward end of the horizontal press-frame when the forward wheeled axle is detached, together with the power-sill, and drawn forward to carry the horse-power into operative position. When lowered, the swinging frame 12 is braced and held erect by stops 15 on the lower sills, 3, in front of said frame and by pivoted brace-rods 16, having hooked ends that engage fastenings 17 on the sills at the rear of the swinging frame.

The rear end of the power-sill 6 is mortised on its under side to engage a corresponding mortise, 18, in the upper side of the cross-bar 14 of the frame 12, which thus affords an abutment for the rear end of the horse-power. A strap, 19, is pivoted to the cross-bar 14 in position to extend across the rear end of the power-sill 6 and is fastened by a bolt and hand-nut, 20, so as to be readily unfastened and swung to one side when the horse-power is to be moved back beneath the press. The rear end of the horse-power sill may be steadied against the pull of the horse-power mechanism by means of a bail, 21, suspended from a cross-bar or bolster, 22, that connects the forward ends of the press-sills. This bail 21 has its upper ends passed through the bolster 22 and threaded to engage nuts 23 on the upper side of the bolster. The bail 21 extends down in a forwardly-inclined position beneath the sill 6 and in front of pins or lugs 24, projecting



laterally from the edges of the sill, thus bracing it against lateral as well as endwise movement. When the horse-power mechanism is drawn forward for operation, the wheels of the forward axle, 4, can be detached, so as to bring the power sill 6 into a horizontal position, or the same result can be attained by sinking the forward wheels into the ground a sufficient distance. The power-sill 6 is then steadied on the axle 4 by means of hooked rods or clips 25, and stakes can be driven into the ground adjacent to the axle and sill at suitable points for the purpose of preventing any movement of the sill or horse-power support.

On the forward end of the horse-power sill is a stationary vertical post, 26, that forms a pivot for an S-shaped variable gear, 27, having two cogged portions, 28, that occupy about three-fourths of its periphery and are separated by two plain or uncogged portions, 29, that constitute the other fourth. The upper surface of this gear 27 is formed with a projecting hub, 30, which surrounds the post 26, and is in turn surrounded by a socket or collar, 31, on the pivoted end of a sweep, 32, to the other end of which is secured one end of a pull-rod, 33, which has its other end passed through an opening, 34, in a lug, 35, that is secured to the upper surface of the gear. The end of the pull-rod 33, adjacent to the perforated lug 35, is screw-threaded for attachment of a nut or nuts, 36, by which a pulling action is exerted on the lug 35, so as to rotate the attached gear 27 when the sweep is turned.

The S-shaped or variable gear 27 meshes with a small variable scroll-gear, 37, that is pivoted on the horse-power sill, a socket, 38, being provided in the sill to receive a hollow hub, 39, on the under side of the scroll-gear, which is held in place by a screw-bolt, 40, passed through its center. About three-fourths of the scroll-gear 37 is cogged, and the other fourth forms a straight uncogged portion, 41, which corresponds with the uncogged portions 29 of the larger variable gear. The cogged portion of the scroll-gear 37 is preferably formed on its upper surface with a flange, 42, that laps over the gear 27 and prevents any tendency to vertical displacement under strain.

A bifurcated toggle-arm, 43, projects horizontally from the scroll-gear 37 on the side opposite to its uncogged portion 41 and in line therewith. This toggle-arm 43 may be either integral with the gear or detachably secured thereto in any suitable manner, and rotates with the scroll-gear when the horse-power is in operation. The outer end of the rotary toggle-arm 43 is pivotally connected to a vibratory toggle-arm, 44, the other end of which is pivoted to a slide-bar, 45, which is supported in a guide-slot, 46, formed longitudinally in the power-sill. The edges of this guide-slot are provided with metal wearing-surfaces, and similar surfaces are arranged beneath the gears.

The rear end of the slide-bar 45 is detach-

bly pivoted, by means of a bolt and nuts, 47, to one end of the principal plunger-lever 48, the other end of which is pivoted to hangers 49, that are pivotally suspended from a cross-rod, 50, supported above the struts 7 in the upper forward part of the press-frame. The rear end of the main plunger-lever 48 is also connected by parallel bars 51 to the end of a lever, 52, that is pivoted in the recessed and slotted end of a horizontally-movable plunger, 53, which is suitably supported in the press-frame. The pivotally-connected ends of the bars 51 and inner plunger-lever, 52, are supported by hangers 54, that are pivoted to the inner sides of the struts 7 and swing together with the hangers 49, bars 51, and plunger-levers 48 and 52 when the horse-power is operated.

The horses for supplying the power are hitched to the sweep 32 in any convenient manner; and it will be seen that the horse-power sill 6 is so close to the ground that it will afford no obstruction to the animals. It will also be seen that the variable gears 27 and 37 are so proportioned and arranged as to cause two strokes of the plunger 53 during each revolution of the sweep, the small gear 37 being rotated twice for each rotation of the large gear 27, to which the sweep is connected. When either straight uncogged portion 29 of the large gear 27 is parallel to and in contact with the straight uncogged portion 41 of the small gear 37, the plunger will be projected to its farthest extent into the baling-chamber 55, and as the rotation of the sweep continues the more abrupt portions of the gears 27 and 37 come into mesh and retract the plunger with a quick movement. It will also be apparent that, owing to the form of the gears 27 and 37, as shown, the movement of the plunger toward the baling-chamber will commence quickly and will gradually diminish in rapidity, so as to exert its full pressing force without jar or strain. As the sweep 32 is loosely pivoted on the hub 30 of the gear 27 and has its pull-rod 33 loosely connected with the lug 35, the lug-opening 34 being enlarged to permit a suitable play of said rod, it is obvious that said sweep will be turned without strain on the gears. If desired, the sweep may be provided with a brace, 56, as shown.

The baling-chamber 55 may be of any suitable or well-known construction. At the upper part of its entrance is arranged a folding device, which preferably consists of a roller, 57, journaled in bearings that are supported by springs 58, so that the roller can have a yielding upward movement against the pressure of the material forced into the baling-chamber, and at the same time roll the loose part of material inward in such a manner as to enable the bale to be formed with smooth and even edges. The bottom of the feed-chamber 59 is provided with a perforated plate, 60, for the escape of hay-seed, dirt, and other extraneous substances, and the perforations in this plate may be so arranged as to form the



name or trade-mark of the press manufacturer.

Above the feed-chamber 59 is a hopper, 61, through which hay or other material is introduced. In the lower part of this hopper 61 is a non-yielding feed-roller, 62, and a yielding roller, 63, having, respectively, sprocket-gears 64 and 65 on their ends. The roller 62 is journaled directly in the hopper, while the roller 63 is journaled in eyes 66, formed in the ends of horizontal rods 67, that are supported by the press-frame and provided with springs 68, whereby the roller 63 is capable of a yielding movement horizontally to and from the other feed-roller. Both rollers, 62 and 63, are preferably corrugated or fluted longitudinally to facilitate the feed, and the folding-roller 57, near which they are placed, may also be fluted. On the under side of the plunger 53 is a cogged rack, 69, which gears with a pinion, 70, on a shaft, 74 journaled beneath the feed-chamber. This shaft 71 has secured to it a ratchet-wheel, 72, which is adapted to engage a spring-pawl, 73, carried by a large sprocket-wheel, 74, that is loosely mounted on the pinion-shaft. A sprocket-chain, 75, connects the sprocket-wheel 74, with the roller-sprockets 64 and 65, being held to its engagement with the sprocket 65 by means of an idler, 76, so that as the large sprocket-wheel is rotated the feed-rollers 62 and 63 will be turned inward and toward each other in such a manner as to pass the hay or other material into the feed-chamber. This action of the feed-rollers 62 and 63 takes place, however, only while the plunger 53 is being retracted, because the pawl 73 and the teeth of the ratchet-wheel 72 are so arranged that during the pressing movement of the plunger the ratchet-teeth will slip by the pawl 73 without actuating the large loosely-mounted sprocket-wheel. The manner in which the roller 63 is mounted enables it to yield to the passage of the hay into the feed-chamber and, together with the roller 62, exerts a sufficient degree of speed and compression to facilitate the feed and somewhat compact the material.

The operation of the press and its connections will be readily understood from the foregoing description.

In preparing the press and horse-power for transportation the slide-bar 45 and main plunger-lever 48 will be disconnected by removing one of the nuts 47 and withdrawing the pivot-bolt that connects said parts. The plunger 53 will then be moved toward the baling-chamber and the free end of the lever 48 raised and rested on the bolster 22 at the forward end of the press-frame. The hand-nut 20 will be loosened and the strap 19 turned backward and to one side, thereby unfastening the rear end of the power sill 6 from the cross-bar 14 of the swinging frame 12, thus enabling the rear end of the horse-power sill 6 to be lifted onto an inclined plane, 77, that is hinged to the rear axle. This inclined plane 77 is formed with flanged sides 78. Its rear end is hinged

to the rear axle, 1, and its forward end rests on the ground when the machine is not ready for transportation. The horse-power sill 6 being now unfastened in the manner described and the slide-bar 45 and vibratory toggle-arm 44 being also disconnected, the stakes adjacent to the horse-power sill will be withdrawn, the horses will be hitched to the front axle, the forward wheels will be lifted from the pits in which they were placed, and the rear end of the power-sill will be lifted over the cross-bar 14 while the horses are backed, thereby bringing the rear end of the horse-power sill onto the inclined plane 77, and then as the horses continue to back, the horse-power sill will be moved upward and backward along the inclined plane 77 between its sides 78, which act as guides until the rear end of the horse-power sill is passed over the rear axle, 1, between the blocks 2 and lower sills, 3, of the press-frame. Before moving the horse-power sill backward the brace-rods 16, that confine the swinging frame 12, should be disconnected from the fastenings 17 and the press-body moved slightly forward to give the swinging frame 12 a slight backward tilt. After the horse-power sill has been moved back beneath the press-frame the forward end of the hinged inclined plane 77 will be raised and the frame 12 will be swung back in an inclined position, with its cross-bar 14 beneath and in contact with the under side of said inclined plane. The brace-rods 16 are hooked to pins or fastenings 79 on the upper side bars, 9, of the press-body, thereby supporting the swinging frame 12 and the forward end of the inclined frame away from contact with the ground. The forward axle, 4, now supports the forward end of both the horse-power sill and the press-body, and the horse-power sill is connected with the bolster 22 by means of a vertical pin, 80, supported in said bolster and through which draft is exerted on the press-frame. Before pushing the horse-power sill and its attached mechanism backward the sweep will be turned slightly outward and can be fastened on the right-hand side of the machine in any convenient manner. The bail 21 can be supported from the ground by any suitable means, and the machine as now arranged can be conveniently transported, and is capable of being put in shape for operation without delay or difficulty.

What we claim is—

1. The combination, in a press having a horizontally-movable plunger and the plunger-actuating levers, of a slide bar supported in a horse-power sill and pivotally connected to the main plunger-lever, a vibratory toggle-arm pivoted to said slide-bar, a variable scroll-gear pivoted to the horse-power sill and having a toggle-arm pivoted to the vibratory toggle-arm, an S-shaped variable gear also pivoted to the power-sill and meshing with the scroll-gear, and a sweep having a pull-rod connected with the S shaped variable gear, substantially as described.



2. The combination, with a press-body supported on wheeled axles and having a horizontally-movable plunger, of a horse-power sill connected with the forward axle and adapted to be moved back beneath the press for transportation and to be disconnected from the press-frame and moved forward with the front axle in advance of the press, a horse-power mechanism mounted on said sill and connected with the plunger-levers, and a movable frame for supporting the forward end of the press-body when the front axle and horse-power are disconnected from the press and moved forward for operation, substantially as described.

3. The combination, in a press having a horizontally-movable plunger and the plunger-actuating levers, of a horse-power sill arranged in line with the press at its forward end, a frame attached to the press to support its forward end and form an abutment for the horse-power sill, and a bail suspended from the press-frame and extended beneath and on each side of the horse-power sill to brace the same, substantially as described.

4. The combination, with a press supported on wheeled axles and a horse-power mechanism for actuating the press-plunger, of a sill to support said horse-power mechanism, said horse-power sill being attached to the forward axle and capable of being moved in front of the press for operation and beneath the press for transportation, and an inclined plane hinged to the rear axle and extended forward beneath the press-frame to receive the horse-power sill, and a frame for supporting the forward end of the inclined plane when the power-sill is moved back beneath the press, substantially as described.

5. The combination, with the press-chamber of a press having a horizontally-movable plunger, of a yielding roller journaled above the entrance to the baling-chamber for the purpose of rolling the loose part of the material inward as it enters the baling-chamber, substantially as described.

6. The combination, with a baling-chamber, a feed-chamber, and a horizontally-movable plunger, of a hopper located above the feed-chamber, feed rollers located in said hopper, and gearing for actuating said rollers from the plunger only while the plunger is being moved away from the baling-chamber, substantially as described.

7. The combination, with a baling-chamber, a feed-chamber, and a horizontally-movable plunger having a cogged rack, of a hopper located above the feed-chamber, a horizontally-yielding feed-roller and a non-yielding feed-roller journaled in said hopper, said feed-rollers being provided with sprocket-gears, a shaft having a pinion meshing with said rack, a ratchet-wheel secured to the pinion-shaft, a sprocket-wheel loosely mounted on the pinion-shaft and carrying a pawl to engage the ratchet-wheel, and a chain to connect the sprocket-gears, substantially as described.

8. The combination, with the baling-chamber 55, feed-chamber 59, and hopper 61, of the plunger 53, having a cogged rack, 69, the shaft 71, having a pinion, 70, and ratchet-wheel 72, the loose sprocket-wheel 74, having pawl 73, the feed-rollers 62 and 63, provided with sprocket-gears 64 and 65, the idler 76, and the chain 75, substantially as described.

9. The combination, with the horizontally-movable plunger 53, of the plunger-levers 48 and 52, connected by bars 51, the pivoted hangers 49 and 54, for suspending said levers, the slide bar 45, pivotally connected with the lever 48, and a horse-power mechanism for actuating said slide-bar, substantially as described.

10. The combination, with a portable press-frame mounted on wheels and a horse-power sill, 6, attached to the forward axle and adapted to be moved from beneath the press-frame, of a swinging frame, 12, pivoted to the press-frame and having a cross-bar, 14, to support the rear end of the extended horse-power sill, said swinging frame being also adapted to support the forward end of the press when the front axle is moved forward to extend the horse-power sill, substantially as described.

11. The combination, with a portable press-frame mounted on wheels and a horse-power sill, 6, attached to the forward axle, of the inclined plane 77, hinged to the rear axle and projecting forward beneath the press, the swinging frame 12, having a cross bar, 14, and the brace-rods 16, substantially as described.

12. The combination, with the press-frame and the horse-power sill 6, of the swinging frame 12, having a cross-bar, 14, and braces 15 and 16, and the bail 21, attached to the bolster 22 of the press-frame and engaging lugs or pins 24 on the sides of the power-sill, substantially as described.

13. The combination, with a portable press-frame adapted to be supported and transported on wheeled axles, of a horse-power sill attached to the forward axle, which is detachable from the press-frame, whereby said axle can be moved forward to extend the horse-power sill and be moved back to push the horse-power sill beneath the press-frame, a swinging frame attached to the forward end of the press to support said press when the horse-power is extended or moved forward, said swinging frame being also adapted to assist in supporting the horse-power, a horizontally-movable plunger mounted in the press-frame, and a horse-power mechanism mounted on the movable power-sill to actuate said plunger, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

HENRY F. BLANK.

HENRY W. SCHWARZBURG.

Witnesses:

CHRISTIAN MEYER,  
WM. T. DILLON.