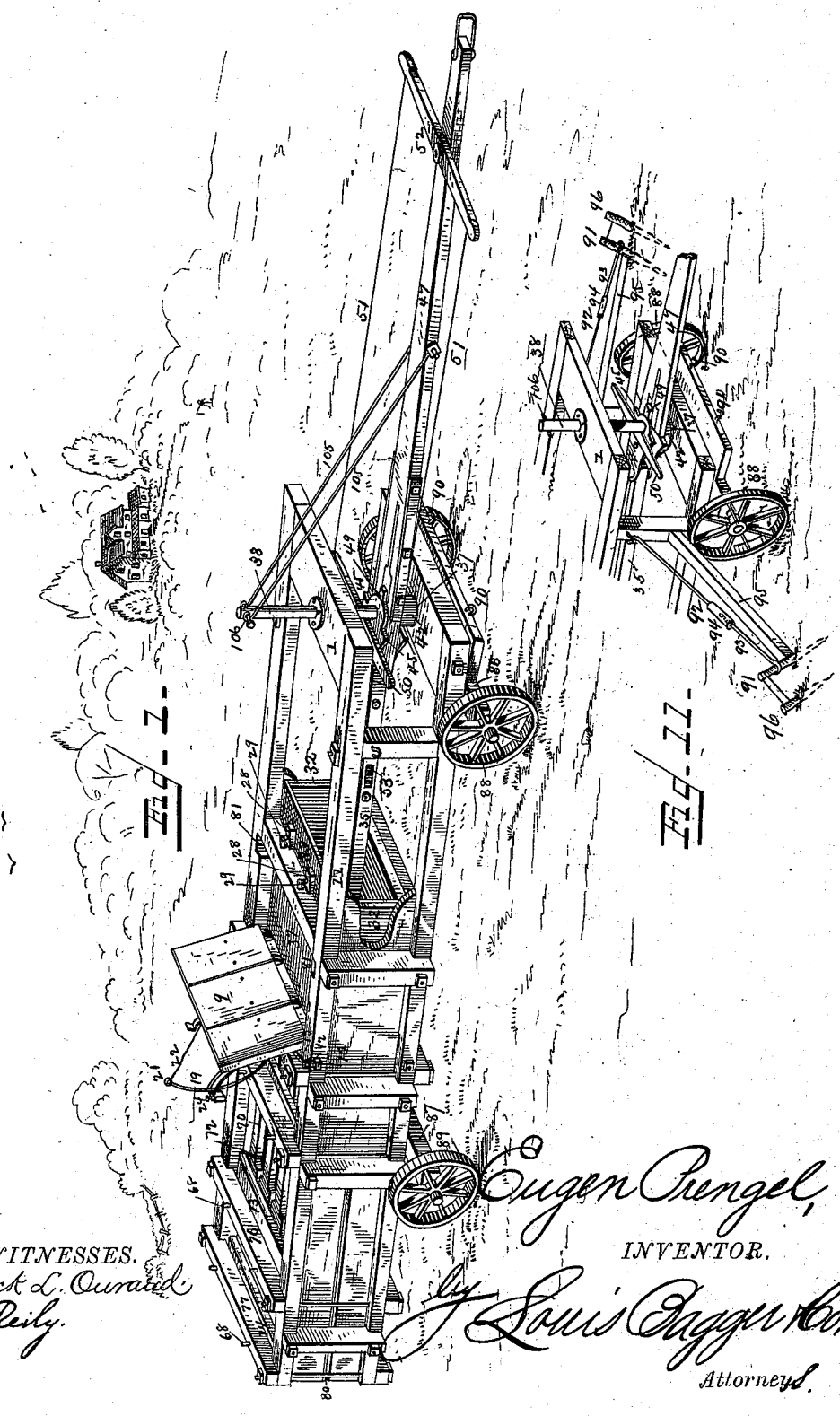
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E. PRENGEL, Dec'd.

H. G. PRENGEL, Executrix.

HAY PRESS.

No. 382,664. Patented May 8, 1888.



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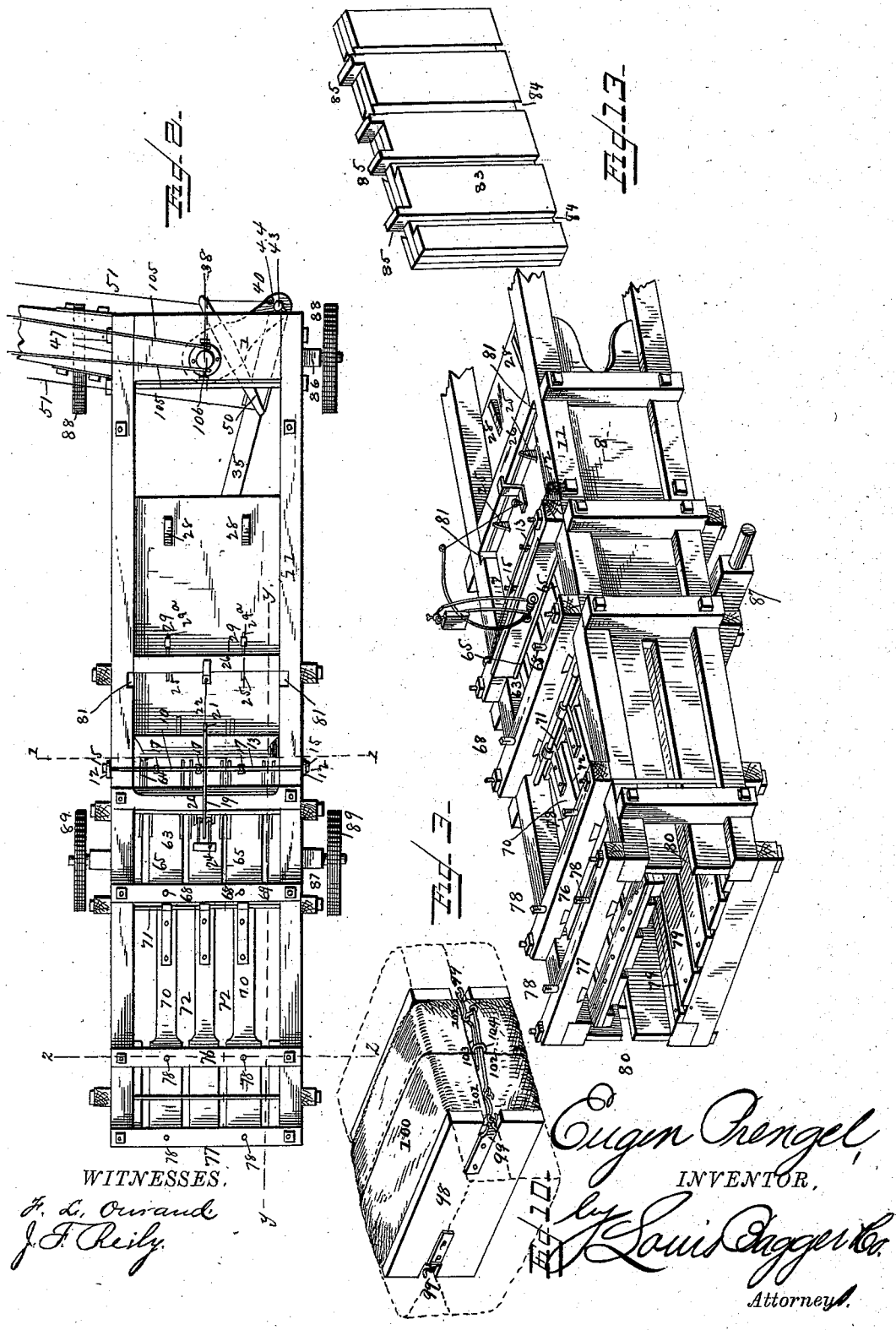
N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) E. PRENGEL, Dec'd. 4 Sheets—Sheet 2.

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(No Model.) E. PRENGEL, Dec'd. 4 Sheets—Sheet 3.

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No. 382,664. Patented May 8, 1888.

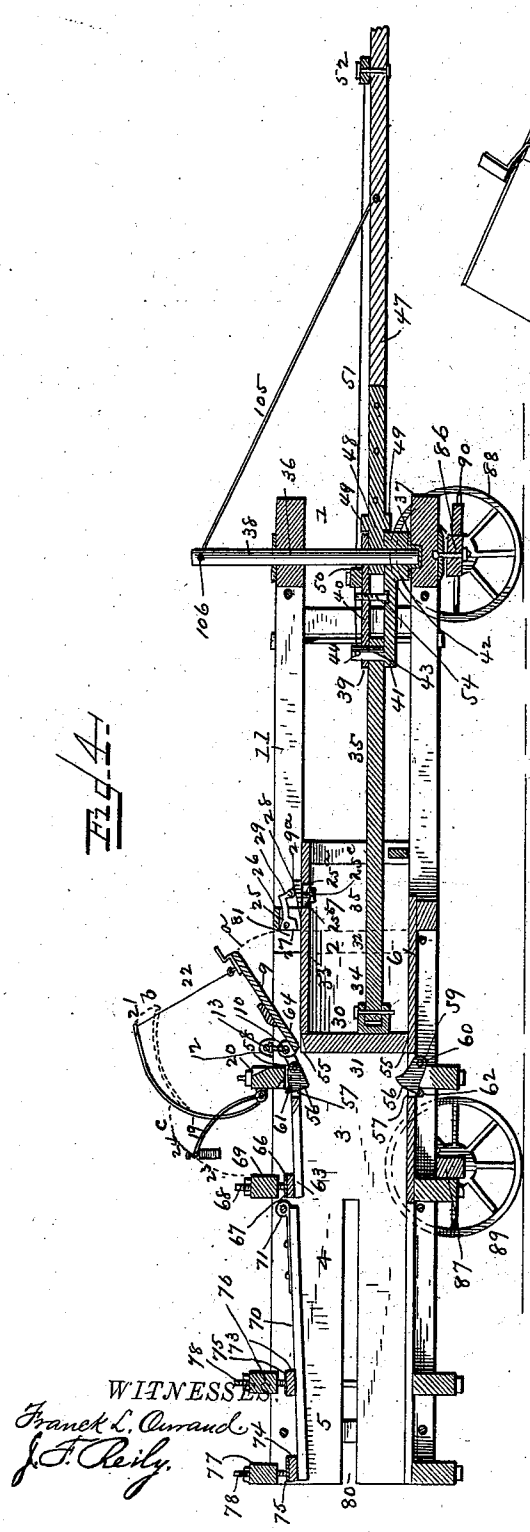


Fig. 4.

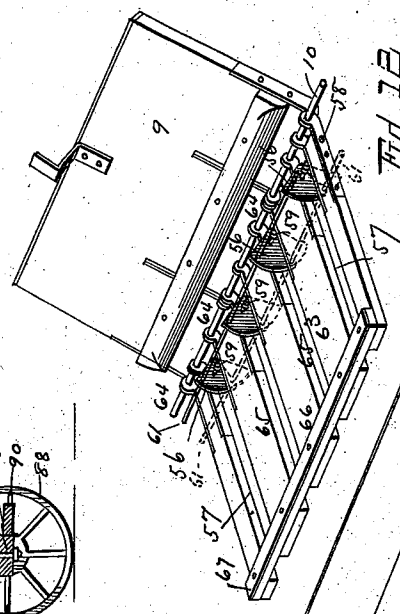


Fig. 12.

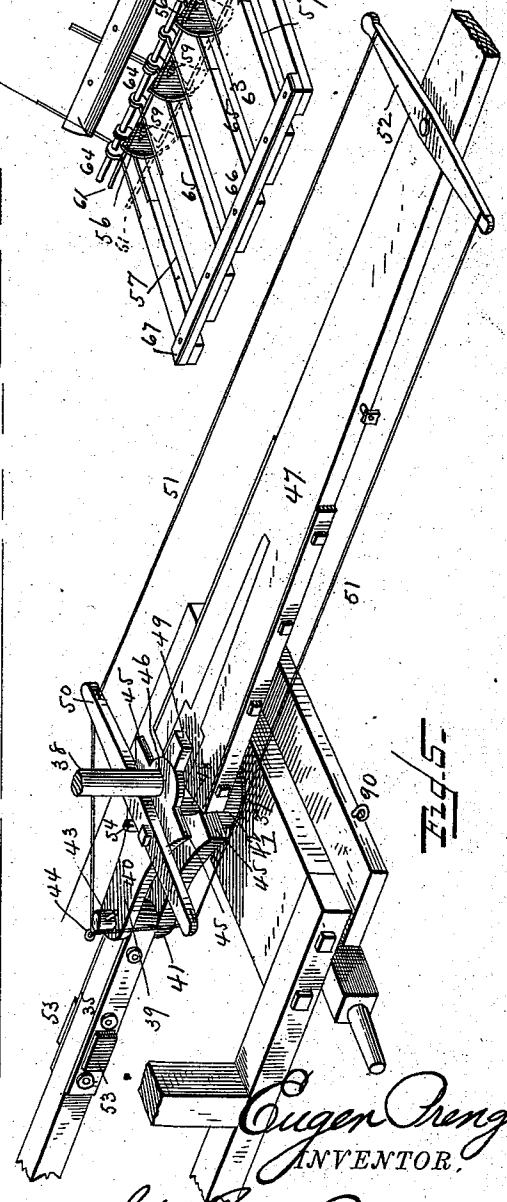


Fig. 5.

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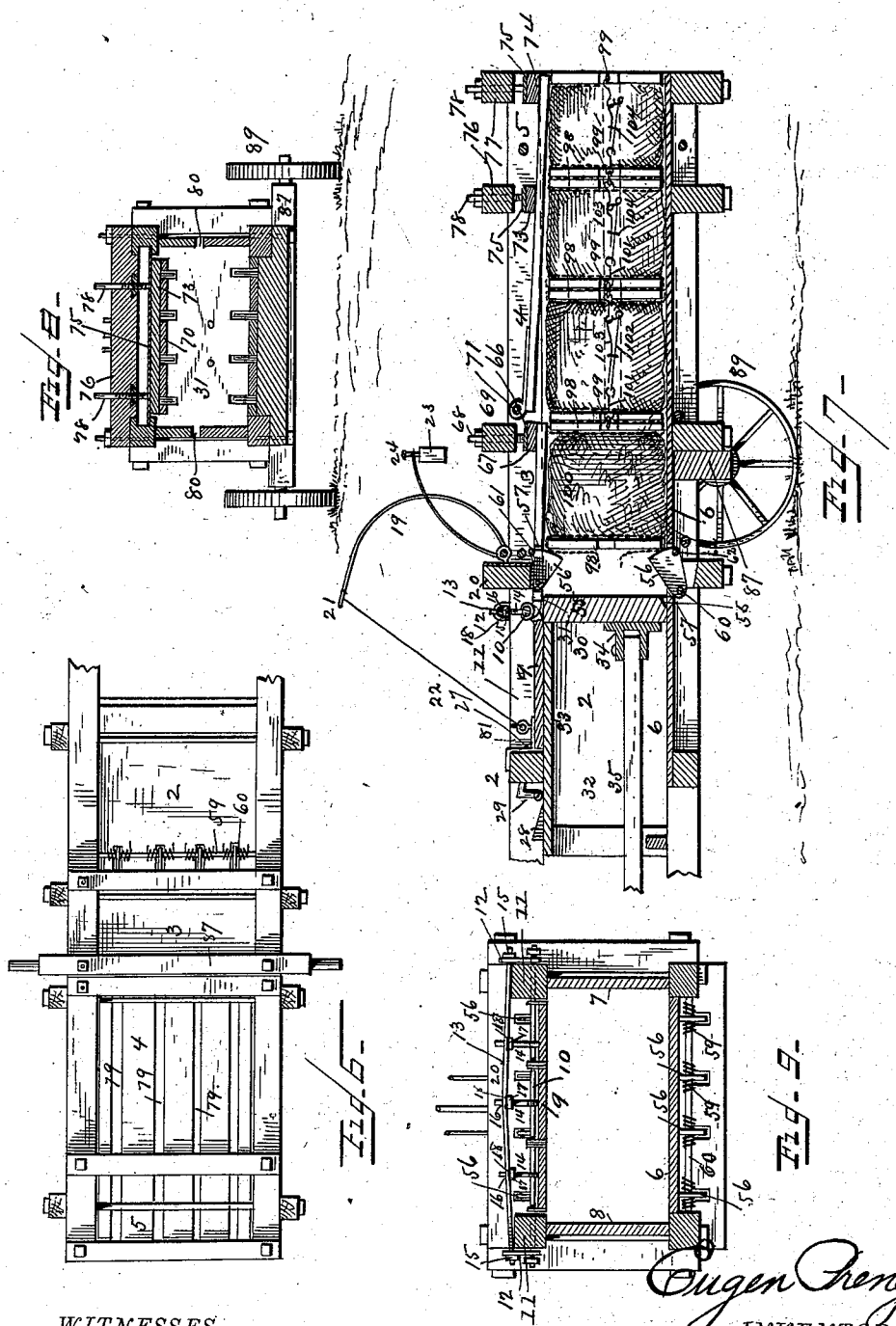
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E. PRENGEL, Dec'd.

H. G. PRENGEL, Executrix.

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UNITED STATES PATENT OFFICE.

EUGEN PRENGEL, OF OAKLAND, CALIFORNIA; HELENE G. PRENGEL EXECUTRIX OF SAID EUGEN PRENGEL, DECEASED.

HAY-PRESS.

SPECIFICATION forming part of Letters Patent No. 382,664, dated May 8, 1888.

Application filed November 21, 1887. Serial No. 255,763. (No model.)

To all whom it may concern:

Be it known that I, EUGEN PRENGEL, a citizen of the United States, and a resident of Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Hay-Presses; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view of my new and improved hay-press, showing the trap-door of the feed-box thereof open. Fig. 2 is a top plan view of the press with the said door closed and the plunger or follower drawn out forward. Fig. 3 is a perspective view taken from the rear end of the press. Fig. 4 is a longitudinal vertical central sectional view. Fig. 5 is a perspective detail view of the forward or "power" end of the press. Fig. 6 is a bottom plan view of the rear half of the press. Fig. 7 is a longitudinal vertical sectional view taken on line *y y* of Fig. 2, showing the follower pushed in and several bales of hops in positon within the press held between their end boards or followers. Fig. 8 is a transverse vertical sectional view taken on line *z z* of Fig. 2. Fig. 9 is a cross-sectional view taken on line 1 1 of Fig. 2; and Figs. 10, 11, 12, and 13 are perspective detail views, which will be hereinafter described.

The same numerals of reference indicate corresponding parts in all the figures.

The capacity of all presses is determined by either the voluminousness of the receptacle or the frequency of the application of power, the two features which in their various applications constitute the two systems of presses in existence. The distinguishing feature of the first class of press is, generally speaking, that the machine stands upright, the power being applied at right angles, the whole inside of the press being filled with the material to be pressed, and this material is pressed down against a solid end door, and the bale being tied across its short diameter. The distinguishing feature of the second class of press is that the machine is generally a horizontal one, the bale being formed in layers, the compression being produced by friction against the walls of the press, and the bale being tied around its long diameter. Both of these systems have their disadvantages. In the first the hay has to be lifted up and reduced in volume by human exertion to give proper but generally deficient weight to the bale. This latter (the bale) has not a good form, being wedge-shaped, and loose material hanging out of its sides and edges. The power has to do its work with a single stroke, acting over pulleys, and is either expensive or insufficient. The machine must stop to be filled, and afterward to tie the bale and discharge it, for which human exertion is again required. Operating this form of press is very detrimental to health, as no harder and more disagreeable work can be found than going down into one of these compression-boxes and tramping down the hay or other material. In the case of hops, when pressed in one of these presses, a positive damage is done, as the lupuline is tramped out of the hull and unevenly distributed in the bale or wasted. The press is not movable and has to be transported on a wagon.

Referring to the second class or horizontal press, it may be said that it requires an undue proportion of time and power as now constructed. The bale compressed in it is made up of from twelve to twenty layers, for each one of which a separate application of the power is required, and as the width of the bale or its smallest diameter determines the width of the press the hay can be fed only in small quantities, thereby limiting the capacity of the press. Where a press of the first class will have a capacity of, say, ten tons per day with four men and two horses, a press of the second class with the same force will have not one-half that capacity. Besides, the presses of the second class are adapted only for the baling of hay or such similar material that needs to be tied only with wire or rope. Hops, wool, cotton, &c., that have to be sewed up in sacking, have thus far been pressed only in machines of the first class. As the bale in the second class is composed of so many small layers, the hay

is considerably crushed, the chaff settling down to the bottom and frequently causing the breaking of the overstrained lower wires, while the top one may be loose.

My invention consists in a new and improved horizontal portable press, which will be hereinafter fully described and claimed, and in which the hay or other material is pressed in three or four layers extending transversely across the length of the press, the bale offering its long section to the transverse section of the press, and is tied around its short diameter, being pressed without an end door, as hereinafter fully described.

An end door to a press, either upright or horizontal, is a great objection in many respects. Not to mention the liability to breakages of some part of the machine which its use entails, it is the cause of the bale not being evenly pressed. If the bale is pressed with one stroke, the material will be left loose at the door, while compressed harder near the plunger or power, while if more strokes are used the first layers will experience no pressure, while the latter or last layers will have to receive about as much expenditure of force and power as if the bale were formed by a single stroke. The bales will have the rugged wedge-shaped form, and will differ too materially in weight from each other. The use of a door requires the machine or press to stop for tramping, tying, and discharging.

My invention consists in a new combination of the two, whereby I succeed in dispensing with the use of an end door and make the length of the bale the width of the press.

For convenience of description I will divide the several parts of the press and refer to them as the power end, the feed-box, the first converging box, the tying-chamber, and the second converging box, respectively, although the first converging box, the tying-chamber and the second or last converging box are only a continuation or portion of the feed-box.

Referring to the several parts by their numerals, 1 indicates the power end of the press; 2, the feed-box, of which 3 is the first converging box; 4, the tying-chamber; and 5, the last converging box, from the rear end of which the bales are discharged.

I will first describe the feed-box, which is located, usually, at about one-third the distance from the front end of the main frame of the press. This feed-box is formed with the solid bottom and sides 6, 7, and 8, respectively, and its top is closed by the hinged trap-door 9. This trap-door is hinged at its rear end on the transverse rod or bolt 10, which may be called the "hinge-bolt," the hinges of the door extending up above its upper rear edge, as shown, and the hinge-bolt 10 is strengthened and braced by having its ends passed through transverse apertures in the upper sills, 11, of the press and through the end plates, 12 12, and also by the spring bolt or brace 13, the ends of which also extend through the said plates 12 12, and by the brace-bolts 14, the ends of both the hinge-bolt and the spring-bolt 13 extending through the plates 12, as most clearly shown in Fig. 9 of the drawings, and also in Fig. 7, and having nuts 15 screwed on their outer threaded ends, while the brace-bolts 14 are mounted at their lower eyed ends upon the hinge-bolt at suitable distances apart, as shown, and their upper threaded ends extend through openings 16 in the spring-bolt 13, and have nuts 17 screwed on their said upper threaded ends below the spring bolt, so that the spring-bolt rests and bears down upon the said nuts, and the lower side of the spring-bolt is preferably formed at those points with depressions or recesses 18, in which the said nuts fit.

The trap-door of the feed-box is automatically opened at the end of the inward stroke of the plunger of the press by the action of the lever-spring 19, which is secured to the cross-piece 20, which extends across the top of the press just back of the hinge-rod of the trap-door, the main portion of this spring being curved and extending forward, as shown, and being connected at its upper forward end to an eye, 21, on the forward end of the trap-door by a rope, 22, this rope being of such length that when the door is forced down in its closed position the said spring will be bent down at its forward end. When the trap-door is thus pushed down into its closed horizontal position, which is done by the man tending the feed-box and who places the hay in the same, the door swings down easily until within one-third of its closed position, being balanced by an adjustable weight, 23, on the rear free part of the spring-lever 19, the said adjustable weight being secured in its adjusted position by a set-screw, 24, and when the door reaches this point it is forced down by the man stepping upon it, the said man standing on a platform level with the top of the feed-box of the press, when his weight overcomes the tension of the lever-spring and forces the door down to its horizontal position. The door is thus closed after the plunger has been retracted to admit of the feed-box being filled with hay, and the forward edge of the door sliding down over the inclined rear edge of catches 25 25, which are pivoted near their rear upper ends in a forward cross-piece, 26, of the press-frame, as shown, forces the said ends of the catches in until the front edge of the door is below the points of the catches, when the catches swing back to their normal position, owing to the weight of their forward ends, and their points 27 are thus brought up over the forward edge of the door, and the feed-door is thus automatically locked in its closed position. As the plunger is forced in, as hereinafter described, to compress the hay, when it reaches the end of its inward stroke two inclined blocks, 28, which are secured on top of it, pass under the forward depending ends, 29, of the said catches, thereby raising the said ends and

retracting the pointed rear ends of the catches into the slots, in which the catches are pivoted, thus automatically freeing the forward end of the trap-door, when the tension of the spring 19 will swing the door up for about one-third of the distance through which it travels, and when it reaches this point the straightening of the spring, and also the weight of the adjustable weight 23 on the rear free part of the spring-lever, will bring the door back to its full-open position. This operation is fully illustrated by the full and dotted lines in Fig. 4 of the drawings, in which the dotted line *a* indicates the track of the front end of the door, the dotted line *b* the track of the forward end of the long spring 19, and the dotted line *c* the track of the outer end of the rear part of the spring-lever, as will be readily understood. In the depending ends 29 are journaled small anti-friction rollers 29[a], for reducing friction.

The plunger 30 consists of a dovetailed box square in outline, having the heavy face or operative end 31 and the lighter guide-boards 32 32 on its sides, while it has the flat top or table 33, which serves to support and hold up the hay which may be piled on while the plunger is being moved forward before it has cleared the feed-box, and which also forms a bearing for the attachment of the wedge-blocks 28, which operate, as above described, to automatically unlock the trap-door by raising the door-latches 25 25. These latches or catches can be adjusted back and forth on the top of the plunger, having stems 25[a] depending from their lower sides and passing through longitudinal slots 25[b] in the top of the plunger, as shown in Fig. 4 of the drawings, these stems having nuts 25[c] on their lower threaded ends, so that by loosening the nuts the beveled blocks can be adjusted back and forth and secured in their adjusted positions by tightening the said nuts, and it will be seen that by this arrangement or adjustment the moment when the trap-door opens can be regulated as desired. To the rear side of the head of this plunger is pivoted in a bearing or bracket, 34, below the middle of the height of the plunger, the inner end of a pitman, 35, which connects the plunger with the crank mechanism which operates the plunger.

The upper solid forward end of the press-frame is formed with a vertical opening, 36, which may be protected from wear by a metal collar, and the lower solid forward end of the press-frame is provided with a bearing or collar, 37, immediately below the upper opening, 36, and a vertical shaft, 38, round in cross-section, passes through the upper opening, 36, and rests with its lower end in the collar or bearing 37. Upon the lower part of this shaft is mounted the swinging crank 39, which is formed of the top plate 40 and the bottom plate, 41, the two plates being precisely similar in shape, except that the lower plate is formed with a collar, 42, on the lower side of its forward end, which rests upon the solid forward end of the press-frame, thus reducing friction, and between the rear or outer ends of the said bottom and top plates the forward end of the pitman 35 is pivotally secured on a connecting-pivot, 43, which is formed on the lower plate at that end and extends up through the perforated corresponding end of the upper plate, as shown, a small key, 44, having an eye at one end, for the purpose hereinafter specified, passing through a transverse perforation in the upper end of the said pivot 43, and thus securing that end of the top plate in position. The inner ends of both the upper and lower plates are rounded, and each plate is formed on each side of the said rounded end with the straight shoulders 45, the shoulders of the upper plate registering with those of the lower plate. These rounded inner ends are formed with the central registering perforations, 46, through which the shaft 38 passes.

47 indicates the lever, to the outer end of which the horses are attached, and which increases in width from its outer to its inner end, being formed at its inner end centrally with the collar or metallic bearing 48, through which the shaft 38 passes, the inner wide end of the lever being thus pivotally secured between the rounded inner ends of the top and the bottom plates of the crank 39. The inner broad end of the lever 47 is provided with the upper and lower lugs 49, which are arranged centrally, as shown, the lever itself being of such vertical thickness that it can swing between the inner ends of the upper and lower plates of the crank at its wide inner end.

Upon the top plate of the crank is secured a transverse bar or handle, 50, having the perforated ends through which pass the ropes 51, which are secured at their inner ends to the eye of the key in the top of the pivot of the crank, thence pass through the perforated ends of the said handle, and extend forward on each side of the lever, and are secured at their ends to the ends of a centrally-pivoted transverse handle, 52, pivoted on the lever toward the outer end of the same.

In operation, the plunger having been drawn out forward by turning the team to one side and drawing upon the rope 51 to turn the swinging crank, and the feed-box having been filled with the desired quantity of hay to be compressed at the next stroke, and the door of the feed-box being closed, the team is started and walks to the opposite side of the press from that from which it started, and it will be seen that when the team thus starts the upper and lower lugs 49 on the inner end of the lever will come in contact with the shoulders 45 on that side of the upper and lower plates of the swinging crank, and will thus swing the crank around until it passes the dead-center, when the rebound from the compressed hay will swing the crank around for the remainder of the distance, the plunger being forced in to compress the hay by the positive action of the lever, bearing with its lugs against the shoulders of the crank-plates, and being withdrawn by the rebound in combination with the force or

sweep of the lever, which carries the crank past its dead-center, so as to leave the feed-box clear for the next layer of hay to be placed in it. As the crank sweeps around on the rebound, the side of the forward end of the connecting-pitman 35 will strike against the shaft 38, and to prevent the jarring of iron against iron I secure on each side of the pitman, at the proper points, cushions 53, of india-rubber or other suitable elastic material.

For the purpose of regulating the force of the rebound I secure in the top plate of the crank, toward its inner end, a set-screw, 54, the lower end of which fits in a square opening in the bottom plate, and by means of this set-screw the top plate can be let down, so as to bring its weight upon the pitman as the latter swings in between its edge and the edge of the lower plate of the crank on its outstroke, the pitman being thicker than the collar 48, so that the pitman is thus wedged between the said plates as it flies back under the rebound, thus preventing the wrecking of the castings and avoiding the necessity of making them heavier than is required for them to perform the work allotted to them.

The head of the plunger is formed with the slots 55 in both its top and bottom edges to receive the retainers 56 when the plunger reaches its innermost point. These retainers are mounted in both the bottom and top of the press at the rear end of the feed-box, and serve to hold the hay, and also the followers, from rebounding or crowding back into the feed-box as the plunger is withdrawn. The retainers are arranged transversely across the top and bottom, respectively, of the press, extending through vertical slots 57 in the top and bottom, the upper series of retainers being pivoted in vertical slots on a transverse rod, 58, which extends transversely through the several pieces of the adjustable top plate of the first converging box back of the main bolt of the same, as shown, so that they can be moved with the said adjustable top plate as the latter is adjusted, as hereinafter described, the retainer-plates of both the upper and lower series being formed with the inclined forward edges and nearly-straight rear edges, and being held projecting within the press by the spiral springs 59, which are coiled around the rods 58 and 60, respectively, and have their ends bearing against the sides of the press and against the retaining-plates. The hinge-rods of both the upper and lower series of retainers extend, respectively, through the top plate and bottom, so as to pivot the retainer-plates within the slots, the lower retainers being pivoted on a similar rod, 60, to the rod on which the upper retainers are pivoted. The upper free ends or corners of the upper series of retainer-plates are all held by a small rod, 61, which prevents the retainers from being drawn entirely through into the inside of the box, and the lower free ends of the lower series of retainer-plates are held in a similar manner by a light rod, 62, for a similar purpose.

The bottom and sides of the first converging box, 3, form merely a continuation of those of the feed-box, being plain and solid, the one peculiar feature of its construction being its adjustable top plate. This top plate 63 is hinged at its forward upper end by, preferably, four hinges, 64, to the same hinge-post to which the trap-door of the feed-box is hinged at its rear end, the square meeting ends of the door and plate abutting squarely against each other when both are down in their horizontal position. This top plate is formed with the four parallel slots 65, for the purpose of receiving the horns or projections of the followers, hereinafter described, in case the top plate should be lowered below their level. Upon the rear end of this top plate is secured the cross-piece 66, upon which a thin metal plate, 67, is preferably secured to furnish a hard bearing for the lower ends of the set-screws 68. These set-screws 68 work in vertical threaded apertures in a cross-piece, 69, of the press-frame immediately above the rear free end of the said top plate, and it will be readily seen that by means of these set-screws the rear end of the top plate of the first converging box can be adjusted (raised or lowered) to increase or regulate the amount of friction (pressure) to which the bale will be subjected when being forced through this first compression-chamber. By lowering this top plate as great an amount of friction for the bale can be obtained as is desired, it being necessary to increase the friction as a smaller area of the bale than usual is in contact with the press.

The tying-chamber 4 and last converging box, 5, have their top plate in common—that is, one adjustable top plate extends over both, as shown—this long top plate 70 being hinged at its forward end upon a transverse rod, 71, and having its four parallel slots 72 enlarged over the tying-chamber for convenience in tying the bales. Over or, rather, upon the top of the said plate, at the end of the tying-chamber, is secured a cross-piece, 73, and a similar cross-piece, 74, is secured upon the top of the said plate, at the rear end thereof, and upon both of these plates are preferably secured thin metal plates 75 to furnish a metallic bearing for the lower ends of the two sets of set-screws 78. Two cross-pieces, 76 and 77, of the press-frame extend over these cross-pieces 73 and 74 of the said top plate and through vertical threaded apertures in the said cross-pieces work the set-screws 78, which serve also to adjust the said long top plate and regulate the pressure to which the bale is to be subjected.

The bottom of the tying chamber and of the last converging box is formed with parallel slots 79, registering with those in the top of the said chamber, and the sides of the said chamber and box are formed about midway of their height with the longitudinal slots 80 80, to admit of the attaching of the clasping-chains of the two followers if baling anything that has to be sewed up in sacking after

being discharged from the press, or if it should be found desirable to tie the bale outside of the press.

At the forward end of the feed-box the upper sills of the press-frame are formed on their inner sides with the notches or recesses 81 81, through which the followers are introduced into the press. These followers 83 are used to separate the several bales from each other. They have as many vertical grooves 84 formed in each of their sides as ties are used on the bale, and are formed with the straight end and bottom edges, and on their upper edges are formed with the same number of upward projections or horns 85 as there are slots in the top plates of the several compartments of the press—four in this case.

The press is supported on the axles 86 and 87 and the supporting-wheels 88 and 89, the front axle having the slope or shape of the front bolster of a wagon to give it free lateral motion, and has its king-bolt in the bottom of the collar for the lower end of the vertical shaft 38. The pole or tongue (not shown) is attached to the front axle by a pair of hinged bolts, the eyebolts 90 90 passing through a wide board at the front of the front axle, which answers the purpose of the usual hounds, so as not to interfere with the working of the press. When the press is to be moved a short distance, the sweep or lever is not removed, and the pole may be tied up to it; but when required the lever can be readily detached by lifting the shaft 38 out of its socket, when the lever can be placed on top of the press and the press drawn by its pole or tongue as easily as a wagon. In order not to interfere with the tying of the bales, the hind wheels are in front of the tying-chamber.

In operation the press, having been drawn by the team to the required spot, is secured or "staked down" at each of its four uprights by the arrangement shown in Fig. 11 of the drawings, consisting of an iron pin, 91, which is driven into the ground at about the angle shown, and around which is passed the loop on one end of the adjustable brace 92, the other end of which is hooked to a hook on that upright of the press-frame, this adjustable brace consisting of two rods, one of which is formed with a threaded end, 93, while the other has a sleeve, 94, swiveled on it and formed with a threaded opening, in which the said end works. A wooden brace, 95, is used, as shown, in connection with the pin, and where the ground is soft and yielding a second pin, 96, can be used, driven a short distance back of the first pin, at the same angle, and connected by a rope or short chain to the top of the first pin, as shown in the said view. The press being secured in position with the sweep or lever in its operative position, the trap-door of the feed-box is opened and the plunger drawn out by turning the lever to one side and drawing upon the rope 51. A follower, 83, is placed in position, and the feed-box filled with hay. These followers fit pretty snugly to the sides of the press to avoid any lateral displacement, but have ample room on top, as far as their general outline is concerned, for the reason that the adjustable top plates may be screwed down without the tops of the followers pressing against them so as to interfere with their passage through the press, while the horns or projections on the upper edge of the followers fit in and move freely in the slots in the top plates. The press having been filled with hay, the top plates of the two converging boxes are screwed down to the desired point to get the requisite tension or pressure when forcing the bale through the press, and the top of the feed-box is closed by the man who is filling the feed-box standing upon it. The team is then driven to the other side of the press, and the plunger is forced in and again retracted, as before fully described, thus compressing the bale by forcing it through the converging boxes. At the inner part of its instroke the wedge-blocks on the top of the plunger will unlatch the trap-door of the feed-box, when the spring-lever will automatically open it, as before fully described, when the next bunch of hay is placed in the feed-box and the door thereof closed, as before. The team is never stopped, but travels continuously in a track from one side of the machine to the other. There is no stoppage of the team, the man filling the feed-box while the horse makes the quarter-turn at each end of the track in which he is walking. The top plate of the swinging crank is screwed down to the requisite pressure by means of its set-screw before the team starts.

The top and bottom series of retainers serve to prevent the hay and followers from rebounding or pressing back into the feed-box, as will be readily seen. As soon as one bale is completed, a follower is slipped into the press and the hay for the next bale is placed in the feed-box, each bale being formed of three or four layers. As stated, the team is never stopped, a follower being slipped in the press at the feed-box as soon as one bale is formed, and the capacity of the press is four bales, the followers separating the bales, and when the fifth bale is being pressed or is placed in the feed-box it will force the first completed bale out at the rear open end of the press, and so on. If desired, the capacity of the press may be varied from the above, as by making it capable of containing only three bales or of containing more than four. As each bale reaches the tying-chamber, it is tied around its short diameter with rope or wire, the person whose duty it is to tie the bales passing the wire or rope down from above through the slots of the followers as soon as the latter enter the tying-chamber from the first converging box. By thus tying the bale around its short diameter a saving of nearly one-half of the wire or other tying material is effected. When the press first begins to operate, there is no rebound from the comparatively small quantity of hay in the press, and the driver extracts the plunger

to its farthermost point by pulling upon that rope 51; but after several rounds the hay gets packed tighter, and the plunger is then forced back by the rebound of the pressed hay, as previously described.

The horns on the top edge of the followers serve two purposes. First, they are acted upon by the upper series of retainers, and, second, they assist in the easy tying of the bale in case the hay should cover the upper edge of the followers, as the horns will protrude above the hay, and thus indicate the position of the slots of the followers, the horns being formed right at the edge or side of the upper ends of the said slots.

Where hops, wool, cotton, and similar material that have to be sewed up in sacking is to be pressed, I employ the solid followers 98. (Shown in Fig. 10 of the drawings.) These followers are used in pairs and are formed without slots, having at each of their ends the end hooks, 99 99, at such height from the bottom that when the said followers are inserted in the press these hooks will register with the side slots of the tying-chamber and the last converging box. Sacking, 100, may be placed upon each of these solid followers and turned back over the same, as shown in Fig. 7 of the drawings, the followers, with the sacking arranged on them as described and shown, being placed in pairs in the press, back to back, between each bundle of hops, so that the sacking is thus interposed between the bales while in the press. When each bale of hops reaches the tying-chamber, the end followers are secured together at each end of the bale by means of chains, which may be hooked over the end hooks of the two followers; but I prefer to employ the fastening device here shown, consisting of the end links, 101 101, which are hooked at their ends on the end hooks of the followers at each end of the same, the straight bar 102, the curved or bent locking-bar 103, and the locking-ring 104, the locking-bar being secured by turning it down against the straight bar and slipping the locking-ring over its straight free end. When the bale of hops held between the end followers which are thus chained together is discharged at the rear end of the press, the sacking is turned over the bale and its edges sewed together, as shown in Fig. 10, the chains being loosed and the followers removed when the sacking is securely sewed around the bale, when the followers and chains can be used for the next bale of hops, and so on. In this way half a dozen men can be employed sewing up bales, while the machine keeps on baling, a difference in capacity over the old presses of about one hundred bales per day.

From the foregoing description, taken in connection with the accompanying drawings, the simplicity of construction, ease and rapidity of operation, and great and general efficiency of my new and improved press will be readily understood. The hay is left as plump as if taken out of the stack, the bale being square and smooth, and the bales running to even weights. All the action is direct, and there is consequently no power lost. The friction of the plunger is reduced to the minimum, partly by having the pitman attached thereto below its center. The pressure can be accurately regulated in a moment by the first pair or set of set screws. The press can be easily transported from place to place, running like an ordinary wagon, and can be adjusted for work in a moment. The lever is braced by the inclined rods 105 105, extending from its sides to the top of the vertical shaft 38, where its eyed ends are secured on a bolt, 106, passing transversely through the said upper end of the shaft.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a portable press, the combination, with a reciprocating plunger, of the feed-box having the trap-door, the first compression-chamber having the hinged top, the set-screws for adjusting the said top plate, and the tying-chamber and last converging box having the slotted bottom and the slotted hinged top plate, and the adjusting-screws for the said top plate, and the followers having the side slots, substantially as set forth.

2. In a portable press, the combination, with the reciprocating plunger, of the feed-box having the trap-door, the first compression-chamber having the hinged slotted adjustable top plate, the tying-chamber and last converging box having the slotted bottom and the slotted hinged adjustable top plate, and the followers having the side slots and the top projections or horns, substantially as set forth.

3. The combination, with the reciprocating plunger having the wedge-blocks adjustably secured upon its rear upper portion, as described, of the hinged feed-box trap-door, the hinge-lever having the adjustable weight on its rear end portion, the cord or rope connecting the forward end of the said spring-lever with the hinged trap-door, and the catches pivoted in the cross-piece of the press-frame, having the beveled pointed rear ends and the weighted depending forward ends having the smaller rollers journaled in their lower extremities.

4. The combination, with the reciprocating plunger having the upper and lower slots in its inner end, of the feed-box having the trap-door, the upper and lower spring-actuated retainers connected at their outer ends by the transverse rods, the first compression-box having the hinged slotted top plate, the set screws for adjusting the said plate, the tying-chamber and the last converging box having the slotted bottom and the slotted hinged top-plate, the adjusting-screws for adjusting the said top plate, and the followers having the side slots and the top projections or horns, substantially as set forth.

5. In a hay-press, the combination, with the sliding plunger and the connecting-pitman, of

the swinging crank formed of the upper and lower plates having the shoulders formed at their inner ends, the vertical shaft, and the lever having the collar and the lugs at its wide inner end, substantially as set forth.

6. In a hay-press, the combination, with the sliding plunger, of the connecting-pitman, the swinging crank consisting of the lower and upper plates formed at their inner ends with the shoulders, the upper plate having the set-screw, the vertical shaft, and the lever having the collar and lugs at its wide inner end, substantially as set forth.

7. In a hay-press, the combination, with the sliding plunger, of the connecting-pitman having the elastic cushions on each side of its forward end portion, the swinging crank consisting of the lower plate and the upper plate having the set-screw and the cross-handle, the vertical shaft, the lever having the collar and lugs at its inner wide end, and having the pivoted cross-handle near its outer end, and the turning-ropes, substantially as set forth.

8. The herein-described portable hay-press, consisting of the outer frame mounted upon the supporting-wheels, the feed-box having the hinged trap-door, the spring-lever having the adjustable weight and connected by a rope to the trap-door of the feed-box, the spring-actuated retainers having their outer ends connected by the cross-rods, the first compression-box having the slotted hinged top plate, the set-screws for adjusting the same, the tying-chamber and last converging box having the slotted bottom, the slotted sides, and the hinged slotted top plate, the set-screws for adjusting the said top plate, the followers having the side slots and the top projections, the catches pivoted in slots in the forward cross-piece of the press-frame, the sliding plunger having the solid inner end, the solid top having the wedge-blocks secured upon it, and the solid side wings, the connecting-pitman pivoted to the head of the plunger below the center of the same and having the elastic side cushions, the swinging crank consisting of the bottom plate and the top plate having the shoulders and the set-screw and the cross-handle, the vertical shaft, the lever having the collar and the lugs at its wider end, and the forward cross-handle, the inclined brace-rods, and the turning-ropes, substantially as set forth.

9. The combination of the feed-box trap-door and the top plate of the first converging box, each having the end hinges, the transverse hinge-rod, the end plates, the spring-bolt or brace-rod having the apertures and the recesses in its lower side, and the brace-bolts having the end nuts, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

EUGEN PRENGEL.

Witnesses:
T. B. MARSHALL,
JOHN AVAN.