2 Sheets—Sheet 1.

W. KELLY.

HAY-PRESS.

No. 189,744. Patented April 17, 1877.

Fig. 1.

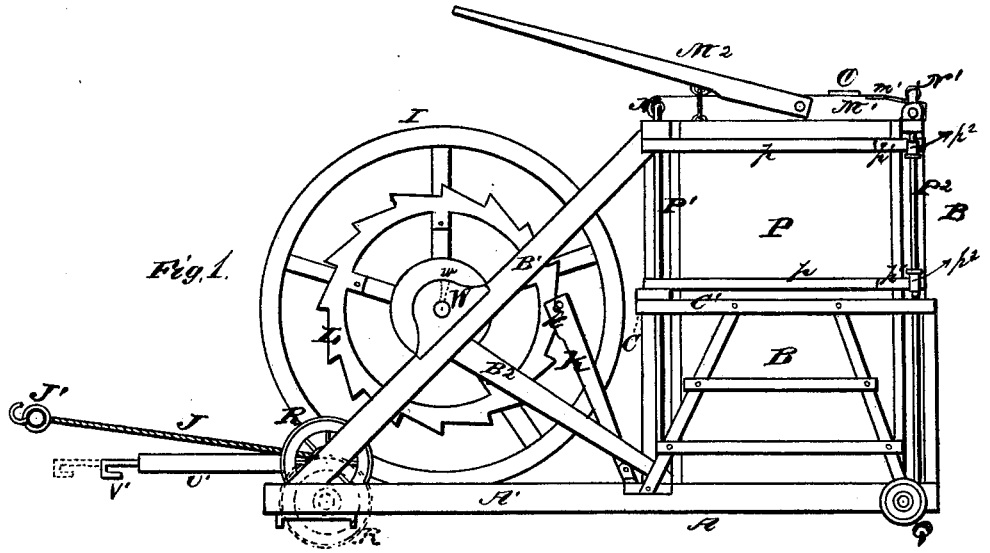

Fig. 2.

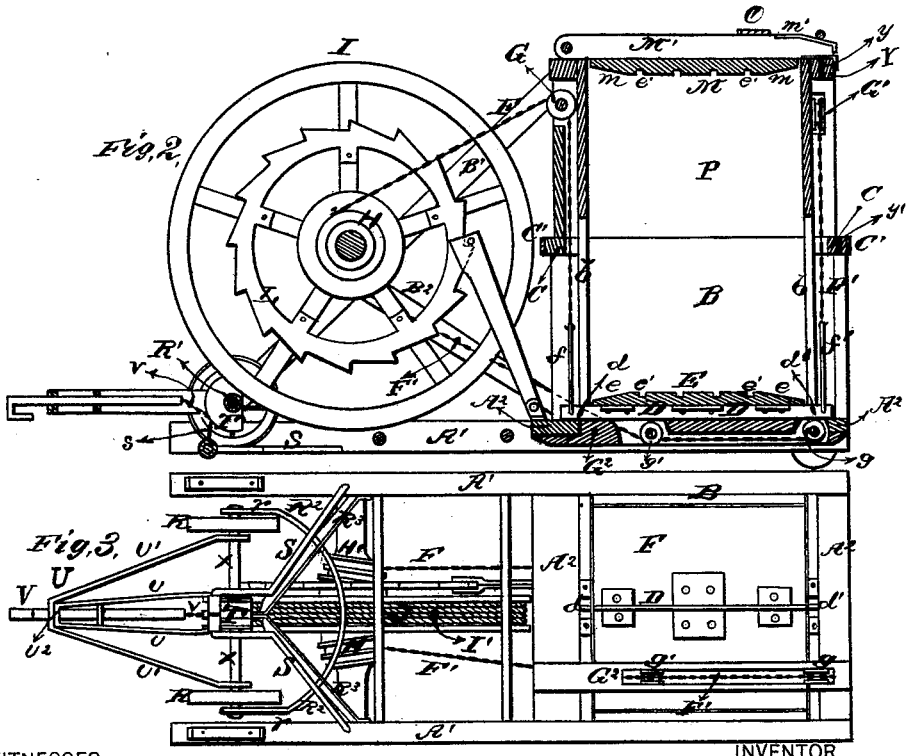

Fig. 3.

WITNESSES.

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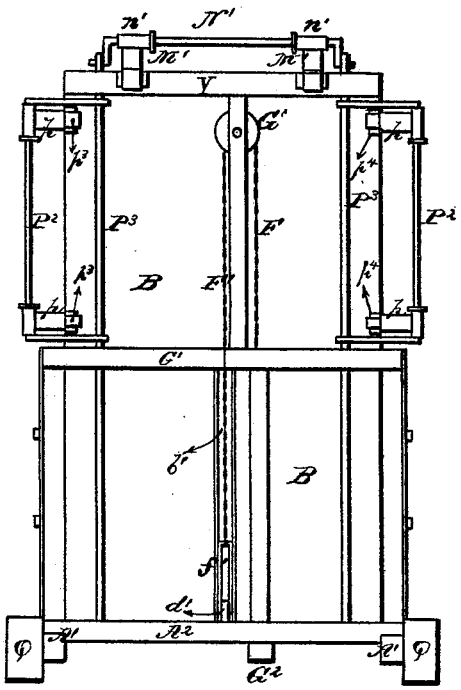

Fig. 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN HAY-PRESSES.

Specification forming part of Letters Patent No. **189,744**, dated April 17, 1877; application filed December 23, 1876.

To all whom it may concern:

Be it known that I, WILLIAM KELLY, of Sonora, in the county of Tuolumne and State of California, have invented a new and valuable Improvement in Hay-Presses; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side elevation of my hay-press, and Fig. 2 is a central vertical sectional view thereof. Fig. 3 is a plan view, and Fig. 4 is a rear view of the same.

This invention relates to presses for hay and similar articles. The nature of said invention consists, first, in certain devices for raising the front end of the press, and throwing the weight thereof upon the front wheels for convenience of transportation. It also consists in beveling the ends of the follower and head on their opposite faces, so as to make the size of each bale of hay greater at the ends than in the middle. It consists, finally, in sundry other devices, arrangements, and combinations, hereinafter fully set forth and claimed.

In the annexed drawings, A designates the sill of my press, which consists of two longitudinal beams, A^1 A^1, extending in front some distance beyond the casing B of said press, and cross-beams A^2 A^2, which connect said longitudinal beams A^1 A^1 at the front and rear of said press. The press-casing or press proper, B, is braced by oblique beams B^1, which extend from the top of the front thereof, forward and downward to the front ends of said longitudinal sill-beams A^1 A^1, and by supplemental brace-beams B^2 B^2, which extend obliquely upward from the bottom of the front of said press to the middle of said main brace-beams B^1 B^1, meeting the same at right angles. C designates a strengthening-timber or waist-beam surrounding the waist of said press, for the purpose of resisting the lateral expansion of the hay while the latter is undergoing compression. A metal band, C′, surrounds said strengthening-timber C, and adds to its resisting power. The front and rear of said press are vertically slotted at *b b′*, from the bottom to a point at or above the waist.

In said slots slide the ends *d d′* of a guide-bar, D, which is secured to the bottom of a follower, E. Motion is communicated to said follower by means of two chains, F F′. Chain F is connected at its rear end, by link or connecting-rod *f*, to front end *d* of guide-bar D. Thence it passes up to and over a small pulley or sheave, G, on the upper part of the front of said press, and thence to the outer part of conoidal outwardly-tapering spirally-grooved hub H, attached to one side of a large operating-wheel, I. Chain F′ is connected at its rear end, by link *f′*, to rear end *d′* of said guide-bar D, and passes up over a small pulley or sheave, G^1, at the top of the rear of said press, whence it passes down to and over two similar pulleys, *g g′*, journaled within a slotted longitudinal beam, G^2, secured to the cross-bars A^2 A^2, and finally said chain passes from said pulley *g′* forward to a hub, H′, similar in its construction to H, and attached to the opposite side of said wheel I. Whenever said operating-wheel rotates backward, said chains are wound upon the grooves of said hubs or drums H H′, and said follower E is raised so as to compress the hay. This backward rotation of said wheel I is produced by means of a cord or chain, J, which is wound in a peripheral groove, I′, of said wheel, the front end of said chain J being attached to a double-tree, J′. The draft of the horses on said double-tree thus turns said wheel I, raises said follower D, and presses the hay.

The spiral arrangement of the grooves on said hubs H H′ gives to the hay a regularly-increasing pressure, proportioned to the increase in its expanding tendency, caused by its greater compression toward the latter part of the operation. Follower E is locked against such expansion at any desired point by throwing a pawl, K, pivoted to the upper side of front cross-beam A^2, into engagement with a ratchet

disk, L, secured to said wheel I. Said pawl K is made double, and provided at its upper end with a cross-pin, *k*, which engages with the teeth of said ratchet and prevents them from turning forward.

M designates the head of the press, which is provided on top with two longitudinal strengthening-bars, M^1 M^1, to one of which is attached a forwardly-extending arm, M^2. Said head M is locked in place in front by a transverse rod or long pin, N, which passes through the front ends of said bars M^1, and also through eyes fixed to the top of the press B, or formed in the ends of rods used for bolting the parts of said press together. The rear of said head M is secured to said press by an arched pivoted fastening bar or catch, N′, which may be turned up over the rear ends of bars M^1, or down again, at will. To prevent friction said rear ends of bars M^1 are provided on their upper sides with metal plates *m′ m′*, and said catch N′ is provided with loose anti-friction sleeves *n′ n′*, which turn upon the same when said catch or fastening-bar N′ is thrown up to secure said head in place. Said rear ends of strengthening-bars M^1 are also beveled to facilitate such fastening. O designates a small platform, secured to the top and near the rear of said bars M^1, so as to afford a footing for the person who draws up catch N′ to fasten said head M.

The ends of follower E are beveled on the upper side at *e e*, and the ends of head M are beveled on the under side at *m m*, the object of these bevels being to make the ends of the bales larger than the middle parts thereof, so that the binding-ropes or bale-ties will remain in their proper place. The said opposite faces of said follower E and head M are also transversely grooved at *e′*, to facilitate the introduction and attachment of said ties.

Said press is provided with two doors on opposite sides of the upper part thereof, one of which doors is shown closed in Fig. 1, and marked P. Said door is hinged at one end to a rod, P^1, which is secured to said press, and binds parts of the same together. The other end of said door is secured by means of a pivoted catch or arched fastening-bar, P^2, which resembles catch N′ in construction, operation, and function. Said door is also provided with strengthening-bars *p p*, similar to M^1 M^1, which are similarly beveled at their rear ends, and provided with plates p^1 p^1, over which roll loose sleeves p^2 p^2 on said catch P^2. The above-referred-to hinging or pivoting of said door is effected by means of the vertically-perforated front ends of said strengthening bars *pp*, through which said rod P^1 passes. The construction of the said door P is the same on both sides of the said press. As soon as the catches P^2 are turned back from them the expansion of the hay forces said doors open. Catches P^2 P^2 are pivoted on vertical rods, one of which is shown in the drawings and marked P^3, which secure the various parts of said press together, and catch N′, previously described, is pivoted in eyes at the upper ends of said rods.

Follower E of said press is made of iron, and consequently occupies less space than if made of wood, while the guide-slots *b b′* in the front and rear of the press-casing B are smaller than they would necessarily be if adapted to receive the ends of a wooden guide-bar. Parts D and E may be cast or otherwise constructed in a single piece. The weight of said iron follower E will, when pawl K is disengaged from ratchet-ring L, operate to turn grooved wheel I, and thus wind up chain J in readiness for the next pressing.

The said press is made of such height that it can be filled from the ground. Its various parts are secured together by bolts and rods; and the various beams, bars, and braces above described are weakened as little as possible by recessing. Each one of the doors P is provided with two small spring-plates, p^3 p^3, on the inner side of their rear ends, near the top and bottom thereof. Said spring-plates p^3 press upon flat plates p^4 p^4, attached to the rear of said press, when the said door is closed, and serve to hold it in that position when no expansive force is applied—as, for instance, during the transportation of said press from place to place.

In order to effect said transportation said press and the operating devices hereinbefore described are set upon rear transporting-wheels Q Q and front transporting-wheels R R; and the following devices are employed to throw the weight of the forward part of said press and attachments upon the said front wheels or upon the ground, according as it is desired to transport said press or to leave it stationary. Said front wheels R R are connected by an axle, R^1, to the ends of which, beyond said wheels, are attached the ends of a backward-curving semicircular guide and brace bar, R^2. This bar is supported by two forwardly-converging arms or plates, R^3, the rear ends of which are pivoted to the inner sides of sills A^1 A^1. Said bar R^2 passes through perforations in said arms R^3, and axle R^1 also passes through perforations in an extension, *r*, of said converging arms in front of the point of convergence and attachment. Thus said arms R^3 constitute a supporting-frame for said front wheels and axle, and their rear pivots form the bearings therefor. The attachment of said axle R^1 to said supporting-frame is, however, sufficiently loose to allow said axle to swivel laterally.

S designates a fixed frame or bent bar secured to the lower side of the forward part of sill-beams A^1 A^1, and connected by a chain, *o*, to one side of a doubly-grooved eccentric, T, turning on said axle R. U designates a draw-bar frame, consisting of two longitudinal pieces or plates, *u u*, and oblique braces u^1 u^1,

all of which are pivotally attached at their rear ends to axle R^1. Each of these pairs of plates u or u^1 may be made in one piece, if preferred. Said draw-bar frame also has perforated cross guide-pieces u^2 u^2, through which passes longitudinal draw-bar V. Said draw-bar is provided in front with a hook, V′, which is adapted to engage with a loop or staple on the rear of draw-bar J′, already described; and the rear end of said draw-bar is connected by a chain, v, with said eccentric T. When draft is applied to said draw-bar, said eccentric operates to lift the front part of sill-beams A^1 A^1, throwing the weight thereof upon said front wheels R; but when there is no draft upon said draw-bar said sills and the parts sustained thereby descend until said sills rest in front upon the ground, and become practically immovable until raised.

Wheel I, which operates said press, is journaled in boxes W W on main braces B^1 B^1. The said boxes are perforated at w w to allow the lubrication of said journals. All the transporting-wheels of the said press are made broad enough to prevent them from cutting into the ground. The draw-bar V, above described, is made of iron, and is square in cross-section, so that it will not turn in the guide-plates through which it passes. Any prismatic form will answer, however. Eccentric T is recessed, so as to avoid contact with the front ends of supporting arms or frame R^3. Sleeves X X are placed on axle R^1, on each side of eccentric T, as shown in Figs. 2 and 3, and hold in place the various parts connected to said axle. The upper rear cross-beam Y of the above-described press is provided with a vertical perforation, y, and the waist-beam below is socketed at y'. Said perforation and socket allow the convenient attachment of the upright arm of a crane, which supports a common scale-beam. The other tools and utensils commonly used with a hay-press may be placed upon said press, or attached thereto in any convenient manner.

Many of the devices hereinbefore described may be modified in various ways without departing from the spirit of my invention.

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

1. The combination of draw-bar V with doubly-grooved eccentric T, axle R^1, chains s and v, and frame or bar S, fixed to vertically-movable sill-beams A^1 A^1, substantially as and for the purpose set forth.

2. The combination of pivoted arms or frame R^3 with curved guide-bar R^2, recessed doubly-grooved eccentric T, and swiveled axle R^1, substantially as set forth.

3. In a press for hay and similar materials, the combination of a sill which is vertically movable in front with transporting-wheels and axle, and an eccentric which operates to raise the front end of said sill relatively to said wheels and axle when draft is applied, substantially as set forth.

4. In a hay-press, the combination of a follower having its upper face beveled at each end with a head having its lower face beveled at each end, substantially as set forth.

5. The combination of chains F and F′ with pulleys G G^1 g g', arranged as shown, and spirally-grooved hubs or drums H H′, substantially as set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM KELLY.

Witnesses:
I. J. POTTER,
J. D. REDMOND.