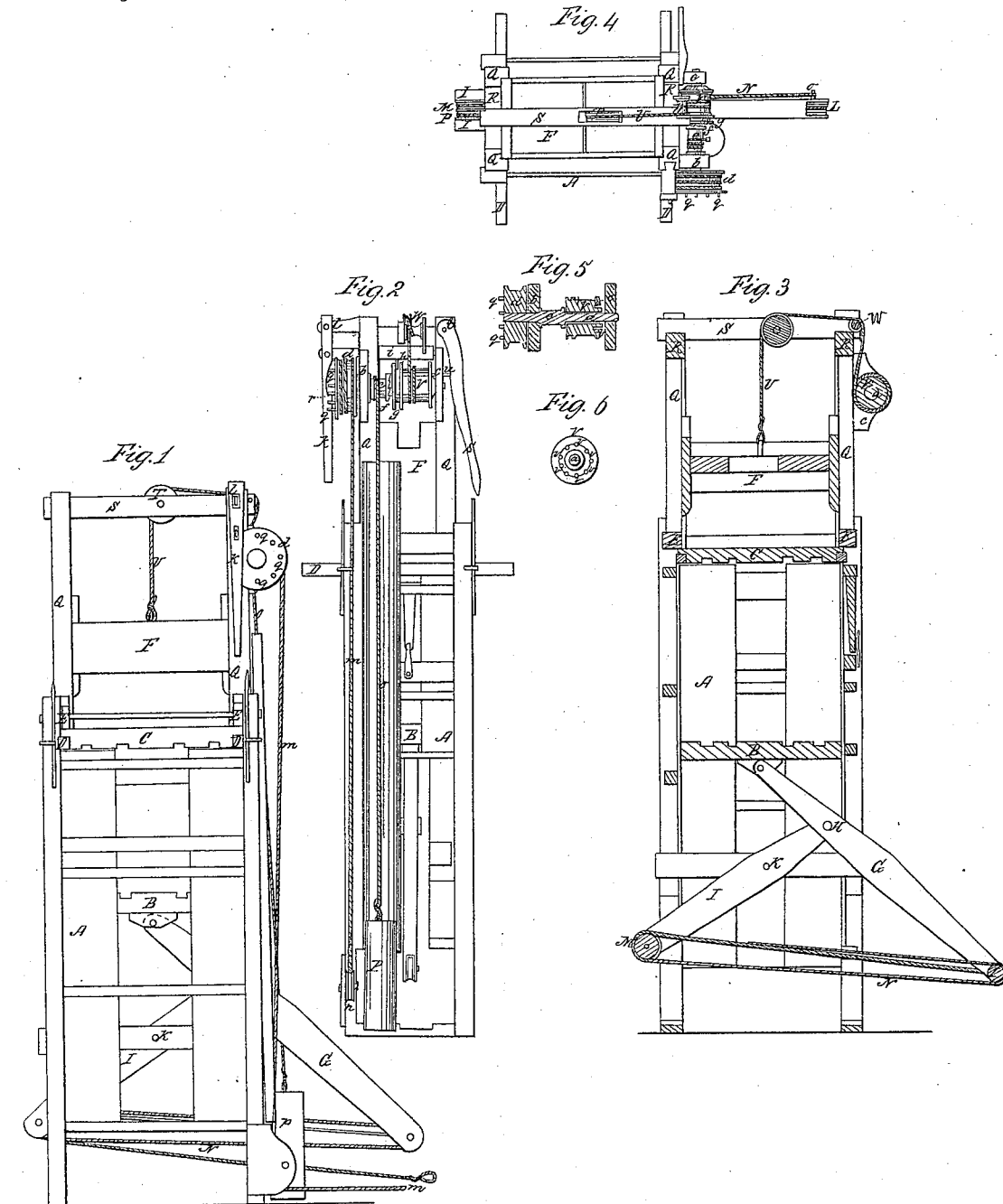


D. R. Allen,

Hay Press.

N^o 4,484.

Patented Apr. 25, 1846.



UNITED STATES PATENT OFFICE.

DANIEL R. ALLEN, OF CUMBERLAND, MAINE.

IMPROVEMENT IN HAY-PRESSES.

Specification forming part of Letters Patent No. 4,484, dated April 25, 1846.

To all whom it may concern:

Be it known that I, DANIEL R. ALLEN, of Cumberland, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Hay-Presses; and I do hereby declare that the nature of the same and the manner in which they are constructed and operate are fully set forth and represented in the following specification and accompanying drawings, letters, figures, and references thereof.

Of the said drawings, Figure 1 denotes a side elevation, Fig. 2 an end elevation, Fig. 3 a vertical central and longitudinal section, and Fig. 4 a top or plan view, of my improved hay-press.

The nature of my invention consists, first, in the manner in which I construct and operate the toggle or progressive levers by which the platen is elevated; second, in the application to the press-box of an apparatus by which I am enabled to consolidate or pack the hay therein previous to its being pressed between the bed and platen.

In Figs. 1, 2, 3, and 4, A exhibits an ordinary press-box, having a platen, B, arranged within it, so as to freely move upward and downward therein, or toward and from a bed or plate, C, placed at the top of the box, as seen in Figs. 1 and 3. The said bed rests at its ends on horizontal rails or sills D D, secured or fastened to the inner sides of the ends of the frame or press-box, in the positions as seen in the drawings. Other sills or rails, E E, are arranged over and parallel to the sills D D, and directly over and in contact with the ends of the bed, which rests and bears against them when the platen is in the act of compressing the hay. The bed should be capable of being slid or moved back and forth upon the rails D D in such manner as to open or close the top of the press-box, and when slid back to allow of the box being filled with hay and the compressor F (to be hereinafter described) to descend into the interior of the said press-box. The platen has a long lever, G, jointed to its under side. The said lever turns or works upon a fulcrum or pin, H, which passes through it and the ends of two other levers, I I, (see Figs. 1, 3, 4,) which are placed parallel to each other, or side by side, and at a distance apart equal to the thickness of the lever G. The said levers together constitute one common

lever, which turns upon a fulcrum, K, situated as seen in the drawings. The upper arms of the two levers G and I constitute and act together as toggle-joints. The lower arms of the said levers extend below their respective fulcrums, as represented in Figs. 1, 2. By making the lower ends of the two levers to approach each other the upper arms of the said levers will be made to act together, in the manner of toggle-joints, and by so doing raise the platen upward.

I am aware that toggles have been constructed in every respect like those above described, with the exception that the lever I had no arm extending below its fulcrum K, and it is this peculiar feature that I consider new when used in combination with an extension of the lever G below its fulcrum. A pulley or sheave, L, is arranged in the lower end of the lever G, and two pulleys or sheaves, M P, in the lower end of the lever I. A rope, N, is rove about these pulleys in the following manner: One end of it is made fast to a pin, O, which projects from the side of the lever G at its lower end, as seen in Fig. 4. From the said pin the rope is passed over and partially about the sheave M; thence toward and under and partially around the sheave L; thence, or from the sheave L, to the top of and partially about the sheave P; thence under the latter sheave and toward the lower end of the lever G. The horse or animal power by which the toggles are made to operate is suitably attached to that end of the rope which is so extended toward the lower end of the lever G, and when said animal-power draws upon the rope the lower ends of the levers G and I will be made to approach each other.

The above arrangement of toggles is a very simple one, and is very powerful in its operation, so far as it acts upon the platen. As it is a great object to reduce friction as much as possible in cheap machinery of this kind, it will be seen that two toggles may be made to work together with much less friction than a greater number thereof can as generally arranged and applied to hay-presses.

My next improvement consists of what I term the "compressor." It is exhibited at F in Figs. 1 and 3. It consists of a heavy or weighted rectangular platen, made to fit the interior of the press-box and to slide freely up and down therein, and between suitable up-

right guides or timbers, Q Q Q Q, extending upward from the top of the press-box, as seen in the drawings. The two of the said timbers Q Q at each end of the press are connected by one of two horizontal cross bars or ties, R R. A timber, S, extends from the top of one of the said ties to that of the other, and in the center of each, and is firmly bolted to them. A sheave or grooved roller, T, is arranged in the central part of the beam S, as seen in the drawings. A rope, U, is secured at one end to the compressor F, and is carried upward and partially around and over the sheave T, as seen in the drawings. The said rope is thence carried over a sheave, W, and from thence downward underneath and around about a barrel or windlass, V, as seen in Figs. 2, 3, and 4. This windlass is arranged and turns loosely upon a horizontal shaft, *a*. (Seen in Fig. 5, which represents a vertical central and longitudinal section of the said shaft and windlass and other parts connected therewith, to be described.) The said shaft is supported by and turns in bearings *b c*, secured to and projecting from the posts Q Q. It has another windlass or barrel, *d*, fixed upon it in the position as seen in the drawings. A third windlass or barrel, *e*, is also fixed upon the shaft between the bearing *b* and the loose windlass V. A suitable clutch apparatus, *f*, is applied to the two windlasses or barrels V and *e*, and the barrel V should have proper mechanism applied to it, in order to move it toward or from the windlass *e* and to engage or disengage it therewith. To effect the same, the barrel V has a groove, *g*, turned out of it, into which groove a stud or pin, *h*, extends. The pin *h* projects from a slide-bar, *i*, which is jointed to and moved longitudinally by a lever, *k*, which turns upon a fulcrum at *l*. The said lever is what is commonly known as a "shipping" or "shifting" lever, and when its lower end is moved toward the adjacent post Q it (the lever) moves the slide-bar *i* in such manner as to cause the pin *h* to bear against one side of the groove *g*, and thereby force the barrel V away from the barrel *e* and unclutch the two. When the lever *k* is moved in an opposite direction, the two barrels will be clutched together, so that when the shaft on which they are situated is revolved the barrel V will be made to revolve with and by it. A rope, *m*, is fixed to and wound about the windlass-barrel *d*, and is passed downward to and underneath a fixed sheave, *n*, as seen in the drawings. Another rope, *o*, is secured to and wound upon the windlass-barrel *e*, and has a weight, *p*, attached to its lower end, the said weight being sufficient to overbalance the weight of the compressor F and to operate the mechanism by which the same is elevated, as will be hereinafter described. A series of teeth or pins, *q q*, &c., is inserted at regular distances apart in the side of the windlass-barrel *d*, and they project therefrom, as seen in the drawings. The said pins act in connection with a notch or shoulder, *r*, formed

in the lever *k*, as seen in Fig. 2. The rope *o*, which is wound upon the windlass *e*, extends downward from that side of it which is next to the post Q adjacent to it, and therefore the weight of the counter-balance *p* causes it to act upon the shaft *a* in such manner as to bring some one of the projections *q q* to act upon the shoulder *r* of the lever *k* when said lever is forced inward, or toward the post Q. Another lever, *s*, turning upon a fulcrum, *t*, is disposed as seen in Fig. 2. It has a pin, *u*, extending from it, and passing and moving freely through the cheek or bearing *c*, and in apposition with a series of holes, *v v*, &c., bored in the end of the loose windlass V, as seen in Fig. 6, which denotes an end view of the windlass V. When the lower arm of the lever *s* is moved so as to carry the pin *u* toward and against the end of the windlass, the said pin may be made to enter one of the holes *v v*, and thus prevent the windlass from revolving while it (the pin) is in the hole.

The manner in which the compressor is operated is as follows: The animal or animals by which the press is operated are attached to the rope *m*, and made to pull or draw upon the same, and this when the windlass-barrel V is unclutched from the barrel *e*. By so doing the rope as it unwinds from the barrel *d* causes it to revolve, and thereby turn the shaft *a* and barrel *e*, and thus wind the rope *o* upon the barrel *e*, and thereby elevate the counter-balance-weight *p*. We will now suppose that hay has been pitched into the press-box until it is filled, and the hay extends above it as high as it can be conveniently piled. The lever *s* is moved so as to draw the pin *u* out of the barrel V. The compressor will then descend by its own weight upon the hay and force it down into the press-box. The lever *k* is next moved so as to clutch the windlass V with the windlass *e*, and at the same time so as to carry the shoulder *r* away from underneath the pin *q*, resting upon it, which being accomplished, the weight *p* will descend and turn the shaft *a* and the several windlasses, and by so doing elevate the compressor or raise it out of the press-box and to its highest position. When the weight *p* so descends, it causes the windlass *d* to turn and rewind the rope *m* upon itself. The bed C is next slid or moved upon its rails D D, and so as to cover the top of the press-box, or to come directly over the platen. The toggle-joints are put in motion, so as to elevate the platen and press the hay in the box. Next move the lever *s* so as to cause the pin *u* to enter one of the holes *v* of the windlass V. Then move the shoulder *r* away from the pins *q q* and draw or pull the rope *m*, and thereby wind up the weight *p*, as before, which, when being up, will be ready to again raise the compressor at the proper time.

The drawings represent various other matters or mechanism belonging to a hay-press, and which are in common use in others. As these constitute no part of my invention I do

not deem it necessary for me to give any description of them.

I am cognizant of the fact that toggles have been constructed wherein one was a long lever jointed between its ends to one end of a short arm constituting the other toggle, and which turned upon a pin or fulcrum at its opposite end, the power which operated the said toggles being applied to but one of them—viz., the long lever. I do not claim such; but That which I do claim is—

The extended levers I and G, as made and combined together, and having the power which operates them applied to both of them, and operating upon them, as above described.

In testimony whereof I have hereto set my signature this 21st day of January, A. D. 1846.

DANIEL R. ALLEN.

Witnesses:

SAMUEL TRUE,
SAMUEL R. SWEETIN.