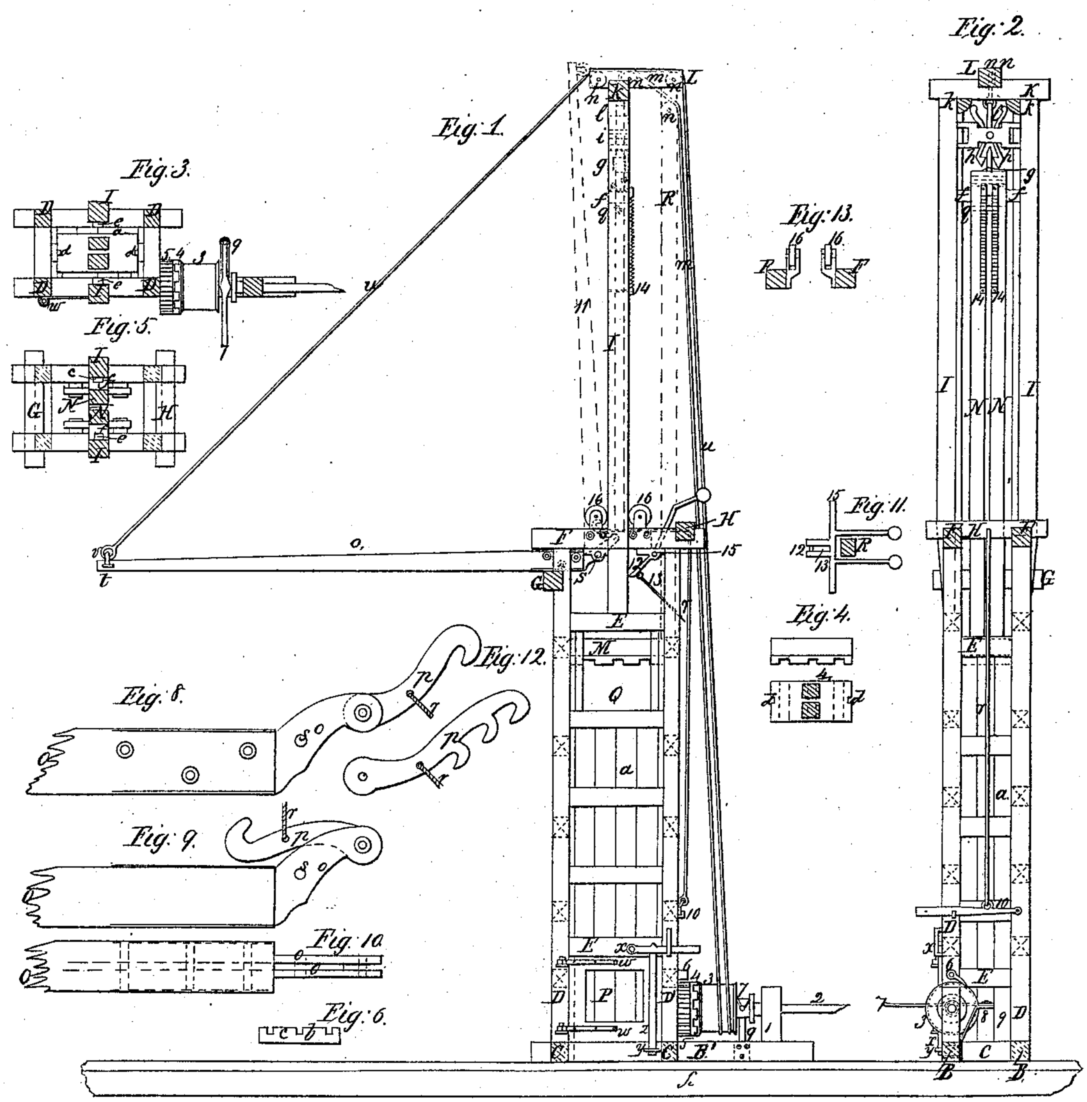
J. Grosvenor,

Hay Press,

No. 369, Patented Aug. 31, 1837.



Witnesses;

Inventor;

Jacob Grosvenor

AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS)

UNITED STATES PATENT OFFICE.

JACOB GROSVENOR, OF NEW YORK, N. Y.

IMPROVEMENT IN PRESSES FOR PRESSING HAY, COTTON, HEMP, AND OTHER SIMILAR SUBSTANCES.

Specification forming part of Letters Patent No. **369**, dated August 31, 1837.

To all whom it may concern:

Be it known that I, JACOB GROSVENOR, of the city, county, and State of New York, machinist, have invented a new and useful combination of mechanical means for compressing or reducing the bulk of hay, cotton, hemp, or other similar substances of which it may be desired to reduce the bulk, which invention I believe not to have been before used in the mode proposed by me, and for which I am seeking Letters Patent from the United States of America; and the said invention, together with the mode of construction and using the mechanical means I employ, is fully set forth in the following description and in the drawings annexed to and making a part of this specification, wherein—

Figure 1 is a vertical elevation or geometrical projection seen in front of the machine as the same will be made and used by me. Fig. 2 is a similar vertical sectional elevation of one end of the machine, and Fig. 3 is a similar ground plan, and certain other detached figures, whose uses are consecutively detailed hereinafter, are added to show certain parts more effectively and distinct, and the same letters and marks of reference as they follow herein apply specially and directly to the same parts of the machinery in all the several figures.

A A is a strong floor plat-form. B B are two lower longitudinal bearers. C C are two cross-bearers. D D D D are four upright standard-posts. E E E E are several horizontal stretcher-timbers connecting the floor-posts D. F F are two lintel-pieces. G is a cross-binder on one side, and H is a cross-binder on the other side. These are all shown as of wood, and collectively form the main frame on which the working parts of the machinery are mounted for use, the whole being strongly connected together by headed bolts screwing into housed nuts in such a way that the machine may be readily built or taken down if required; but this mode of construction may be made equally available in iron should the magnitude of the objects to be attained warrent the expense.

a a are linings forming a vertical trunk to keep the hay, cotton, &c., within the machine. *b b* is a foot-walling or inner platform. *c c* is a bearer on *b b*, grooved to allow of binding the hay, cotton, &c. These may be made of wood or iron, and are shown detached in Figs. 6 and 6′. The entrance to the lower part of the machine is by the door P, mounted on the hinges *w w*, and securely fastened, when in use by the bar Z, the foot of which steps in the staple *y*, and the top is fastened by the latch X. The back and left hand end of the machine must be fitted with similar doors; but these are not shown in the drawings, to avoid complexity.

On the upper part of the machine are two upright standards, I I, connected at top by the lintel K, so as to form a gallows-frame. In the opening or scuttle Q is a ram or monkey, M, of wood or metal, (shown detached in Figs. 4 and 4′,) and forming a drop-weight whose ascent and descent are guided by the leaders N N, and these have their upper ends secured to the metal guide or slide blocks *f f*, whose outer ends are again steadied by the metal slide-ways *e e* in the insides of the gallows-standards I I. (Shown in plan in Fig. 5.)

d d are metal guide-slides to the ram M, fitted inside the main tank. (Shown in plan in Fig. 3.)

g is a square eye or loop fixed between the leaders N N, to receive the latches or catches of the tongs *h h*, and these are mounted on a pin in the wood or metal sliding carriage *i i*, in the middle of which is the eyebolt *l*, having the hoisting rope or chain in which goes over the sheaves *n n*, fixed in the cross-bollard L and post R above the gallows I K, one end of the bollard L being supported by the post R. (Shown in Figs. 1 and 2 by dotted lines.)

On the under side of the lintels F F are the bearings & for the journals of the shaft *s*. This shaft forms the fulcrum of the lever O, which is made in two parts, as shown in plan in the detached Fig. 7, and is fitted with a head and joint and hook, (shown on larger scale in the detached Figs. 8, 9, 10,) in which the standing part of the lever-head *o* carries, by a strong knuckle-joint, the lever-hook *p*, which is fitted to take the purchase-bolt *q*, in the leader-slides N N, by pulling the rope *r*, which goes through the cross-lintel H, and down to the short lever 10 on the side of the machine. In the outer end of the lever O is a cross-chock, *t*, carrying an eyebolt, *v*, to which is attached the rope *u*, that goes over the sheaves *n n*, to the winch-barrel 3. This is mounted to slide on the shaft 2, which is fitted with one end in the upright standard D′. The other end goes through the dwarf standard-post 1, fixed in the longitudinal bearer B′. The clutch-box 4 connects the winch 3 with the ratchet-wheel 5, having the pawl 6 attached on the side of the standard D′. The winch-

barrel 3 is thrown in and out of gear with the ratchet-wheel 5 by the clutch-lever 7, whose fulcrum-joint is in the standard 9 and the method of using this machine, as thus constructed and described, is as follows: The banding or bagging of the intended package being laid properly in on the bearer *c* when needful, the door P and corresponding doors securely fastened, and manual power, horse-power, or any other competent moving power attached by any sufficient mechanical means to the shaft 2, turning that and the winch 3, so as to wind on the rope *m*, and hoist the monkey or ram M, just clear of the filling-scuttle Q. The hay, cotton, or other material to be compressed is now to be filled into the trunk of the machine through the scuttle Q, and when enough is in, the ram M is to be hoisted a little higher. This will bring the reverse ends of the tongs *h h* under the slide *k k*, so as to open and disengage the tongs from the eye *g*, and allow the descent of the ram M with the whole weight and accelerated gravity of a falling body on the material to be pressed, thus squeezing out all the air from the interstices, and reducing the whole body into a much smaller mass, when the ram is to be hoisted up and allowed to descend and operate again on either the original mass, or on an increased quantity filled in, as may be found most available in practice, and a few blows of the ram will generally be found sufficient to press the material into a very close compass. If it is desirable to finish the compression yet closer, the attending workman disengages the hoisting-rope *m*, and bringing the lever-hook *p* into hold upon the bolt *q*, by the rope *r* and lever 10, he then attaches the rope *u* to the winch 3, and then sets the winch in motion by the attached operating power, thereby hoisting the outer end of the lever O, so as to make the lever approximate to the position shown by the dotted lines 11 in Fig. 1, and the operation of the lever by the fulcrum *s* and hook *p*, over the bolt *q*, will force the ram M downward, with a power which may be considered to augment as the distance between the fulcrum *s* and bolt *q* decreases, so as to force the compressed article into the smallest possible space. When this is done, the doors are to be opened, the banding completed, and the package removed through the doors, when other quantities of material may be put in and successively operated on in the same way.

If it is found needful to have means for preventing a recoil of the ram M when it has fallen, the ratchet-racks 14 on the leaders N, and double pawl 12, with a pair of counter-weights (or a spring, if needful) to gear the pawl, and a rope, 13, to put out of gear, all shown detached, Fig. 11, may be fitted on a shaft, 15, as shown in Fig. 1, and will effect the required object.

In practice, with some sorts of goods it may be needful to give the lever O and hook *p* a means of acting at successive depressions. In this case, the machine being built with the gallows-frame L K and leaders N N of an increased length, and a longer space allowed between the bolt *q* and the slides *e e*, the hook *p* may be so formed in the shaft as to have several hooks between the outer hook and the joint, as shown in the detached Fig. 12.

To prevent any lateral spring in the slides N N, which would either injure them or cause the ram M to press against the sides of the trunk, so as to counteract the lever O, the rollers 16 16 may be fitted on the inside of the lintles F, so as to act against the faces of the slides N N, with their gudgeons in small metal brackets, whose flanges are screwed on the inside of the lintels. These are shown in section in the detached Fig. 13.

The head of the lever O may be fitted with a toothed arc or sector of a circle to work into a rack on slides N N; but in this case the bearings & must be made to slide in and out to put the lever in and out of gear. Several other modes of connecting the lever to the slides might be named; but all are more operose, complex, and expensive, therefore objectionable, and are not specified herein for that reason.

The scale of the drawings at three-eighths of one inch to one foot gives a machine for a fair-sized bale of hay; but it is not intended by this specification to confine the machine to these sizes or proportions, as an alteration of the scale may be made to increase or decrease the size of the machine, and yet retain the proportions, if convenient; or an entire alteration of sizes and proportions can be made when needed without altering the actual identity and operation of the machine in any other respect.

I, the said JACOB GROSVENOR, do not claim as my invention any of the parts taken separately of the hereinbefore-described machine; but

I claim as my invention, and as not having been before known or used, as I use the same for such purposes—

The arrangement, application, and use of the parts herein described, by which the weight and accelerated gravity of a falling body are used to effect the compression of hay, cotton, hemp, or other similar substances, such arrangement being used, when needful, in combination with a lever, in the form herein described, such lever acting so as to diminish the length between the fulcrum and the working-point of the lever, and thereby give an increase of power to the lever when the resistance is greatest, the whole detail of parts and identity of operations being as herein substantially set forth and described, but not confined to sizes and proportions other than as the same may become needful in practice for accomplishing any given required purpose.

In witness whereof I have hereunto set my hand this 8th day of August, 1887.

JACOB GROSVENOR. [L. S.]

Witnesses:
ALONZO WAKEMAN,
W. SERRELL.