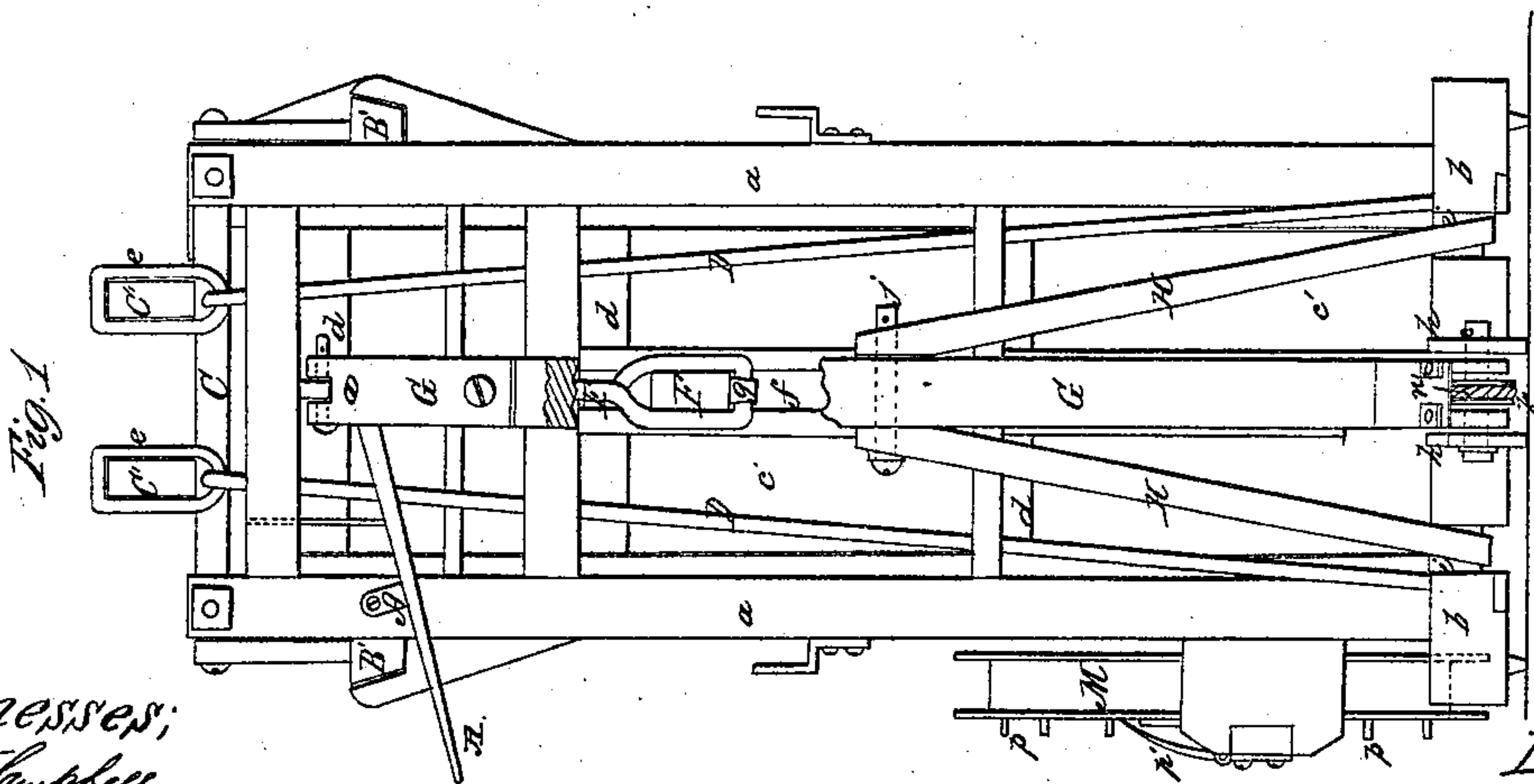
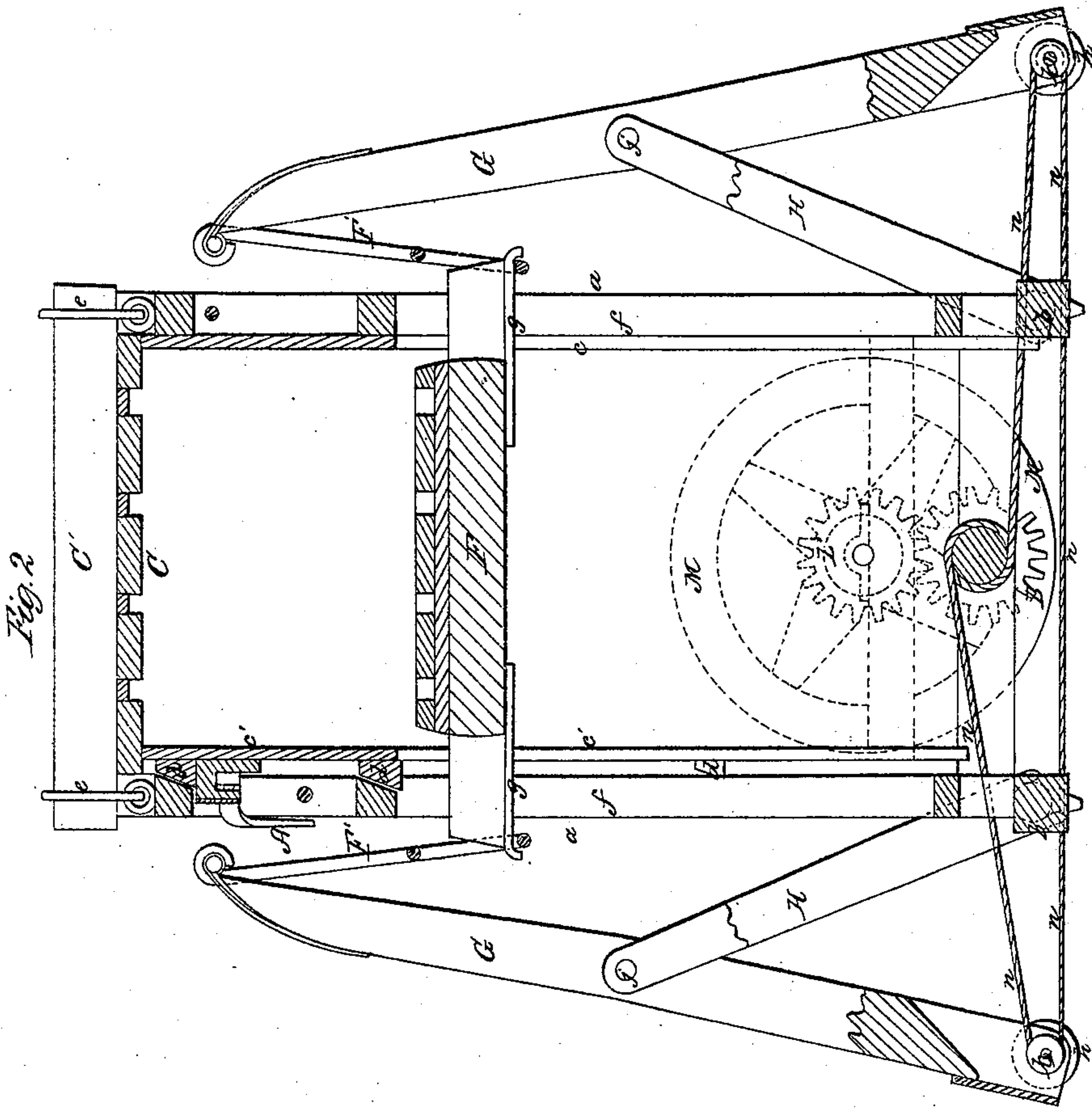


B. Roberts,
Hay Press,

No. 41,722,

Patented Feb. 23, 1864.



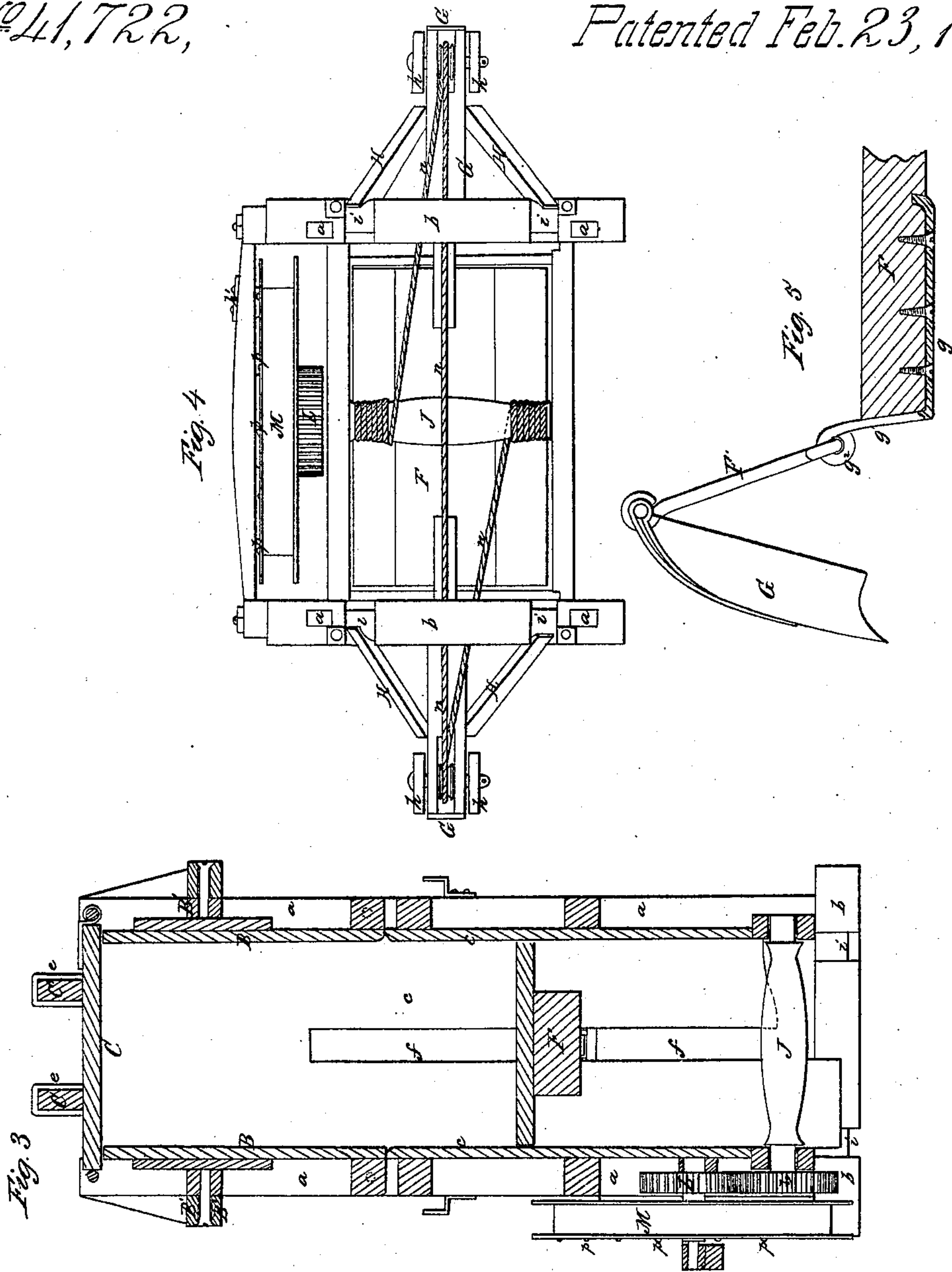
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UNITED STATES PATENT OFFICE.

BENJAMIN ROBERTS, OF CLINTONDALE, NEW YORK.

IMPROVEMENT IN BALING-PRESSES.

Specification forming part of Letters Patent No. 41,722, dated February 23, 1864.

To all whom it may concern:

Be it known that I, BENJAMIN ROBERTS, of Clintondale, in the county of Ulster and State of New York, have invented a new and Improved Baling-Press; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to accompanying drawings, making a part of this specification, in which—

Figure 1 is an elevation of one end of the press. Fig. 2 is a vertical section taken through the center of the press. Fig. 3, Sheet 2, is a transverse section through the center of the press. Fig. 4, Sheet 2, is a bottom view of the press. Fig. 5, Sheet 2, is a detail view showing the mode of connecting the toggle-levers to the follower.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to apply the power which acts upon the follower in the pressing operation in such manner that while I obtain the requisite amount of vertical traverse of said follower, I am enabled to diminish the height of the press nearly, if not quite, one-fourth, as will be hereinafter described.

It also has for its object the use of toggle-levers for operating upon the follower, in combination with an endless rope or single rope and a windlass so applied to the toggle-levers that should the levers on one side of the machine cease to operate in consequence of the rope becoming slack on this side, the windlass will take up this slack rope and bring these levers into action, thus keeping the follower in its proper position or preventing it from being tipped on one side in the operation of pressing, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will proceed to describe its construction and operation.

The frame of the press-box consists of four uprights, *a a a a*, which are strongly braced by cross-timbers and mortised into two sills, *b b*. The boards which form the press-box are applied on the inside of this frame, so that the frame may resist the outward pressure. The three sides *c c c* are closed by nailing the boards to the frame, and the side *c'* is closed by boards which are nailed to battens *d d d*, whose outer surfaces are beveled upward, as shown in Fig. 2. This side *c'* is allowed to move up and down, for the purpose of loosening the pressed bale, to allow of its removal

from the box. The beveled surfaces of the battens on the side *c'* press outward against corresponding surfaces formed on the cross-braces of the frame, as shown in Fig. 2, and by elevating this side *c'* of the press-box by means of a lever, *A*, this side will be forced inward as it is raised and slightly contract the space in the press-box. The side *c'* may be kept in this position by forcing the lever *A* under the block *A'*, as in Fig. 1, and by releasing the lever *A* the side *c'* can be forced downward and outward, thus increasing the space laterally in the press-box, to allow of the bale being removed therefrom. The upper part of the press-box is furnished with the usual doors, *B B*, Fig. 3, which open outward for releasing the pressed bale, which doors are secured in place by the cross-bars *B' B'*. The head *C* on top of the press-box is constructed of slats, which are bolted to beams *C' C'*, and this head is held down in place during the pressing operation by means of loops *e e e e*, which are connected to eyes formed on the upper ends of strong brace-rods *D D*. These rods *D* pass down through the cross-braces of the press-box frame through sills *b b*, and are secured by means of nuts on the bottoms of these sills. The rods *D D* serve as braces for the entire frame, as well as to hold down the head *C*.

The follower is constructed with a bar, *F*, extending out from each end and projecting through the vertical openings *f f*, which are made in the sides of the press-box, beneath the doors *B B*, as shown in Fig. 2.

To the projecting ends of the follower-bar plates *g g* are bolted, as shown in Fig. 5, and to the eyes which are formed on plates *g* the links *F' F'* are attached, which links are again attached to the upper ends of their respective levers *G G*, as shown in Fig. 2. These levers *G G* are mounted on wheels *h h*, which roll on the floor and relieve the levers of a great deal of friction. The levers *G* both have their fulcras on the props *H H*, two of which are used for each lever. These props are pivoted at their upper ends to the levers *G G* at *j*, and they have their lower ends notched to fit over cylindrical portions *i i* of the sill-timbers *b b*.

Between the rollers *h h* of each lever *G* is a pulley, *k*, and around these two pulleys a rope, *n*, is passed, one end of which rope is fastened to one end of a drum, *J*, and the other end of the rope is fastened to the opposite end of

this drum. The rope ends are wound around the drum J in opposite directions, so that by rotating this drum the rope will be wound upon it, and the lower ends of the levers G will be caused to approach each other and to force the follower upward.

It will be seen that I employ a single rope, *n*, and pass the ends of this rope under the pulleys *k k*, and then attach these ends to opposite ends of the drum or windlass J, so that when this drum is rotated the rope will be wound around it in opposite directions, and thus cause the lower ends of the levers G G to approach the press-box. By this arrangement I avoid a series difficulty which frequently happens in machines using independent ropes, in consequence of the lengthening and shortening of the ropes on one side more than on the other, the result being that the follower will tilt over on one side and an unequal force will be exerted on its ends in forcing it upward. As an illustration of this fact, suppose I fasten that portion of the rope *n* which extends from pulley to pulley to the frame of the machine, which would be the same as using two separate ropes, it will be seen now that any extension or contraction of the rope on either side of the fastening would allow one of the levers to be brought up before the other; or, should one of the levers G be checked in its movement or travel faster than the other from any cause, the follower would be tilted on one side, and the machinery would become deranged or broken. By using a single rope passing freely over the two pulleys, *k k*, as above described, these difficulties cannot occur, no matter how much the rope may contract or extend in length, as the slack rope will be taken up by the drum J until both levers are brought into action. Should one side of the follower be elevated a little more than the other, the lever on the more elevated side will cease to move until the opposite lever has raised the follower to a level position, then both levers will move together, as the resistance to be overcome will be equally distributed. The gist of this part of my invention therefore consists in the use of a single rope, *n*, applied to the levers G G and to the drum J in such manner that the rope will pass freely from one end of the drum to the other, and from one lever G to the other, until the force is equally exerted by both levers, then they will both move together, thus obtaining a self-adjustment which will not be affected by the changes in the weather.

The drum J is mounted in bearings which are located as near the base of the machine as it is possible to put them and have the drum work properly. The drum being arranged in this position and in the center of the press-box, it will be seen that the follower can be brought down to a very low point without interfering with this drum. The press-box can by this arrangement be made much shorter than hitherto without diminishing the vertical traverse of the follower, or the ca-

capacity of the box for containing material to be baled, and while this is the case, the press-box can be made to support and to contain within itself the appliances by which the power is imparted to the follower. The drum J carries on one end, outside of the press-box, a spur-wheel, L, which engages with the teeth of a corresponding wheel, L', having its bearings above the wheel L, Figs. 2 and 3, and this spur L' carries a large pulley, M, which is provided on its outside surface with stop-pins *p p*, which catch on the pawl *p'*, Fig. 1, and prevent this wheel from moving backward when it is desired to keep the bale under pressure.

The object of the twin wheels L L' is to apply to the drum J the power of a very large wheel, M, which could not be done in any other manner without having this wheel M project some distance below the base of the machine—an objection which I desire to remove. If the drum J should be elevated for the purpose of applying the large wheel M to it, the press-box would have to be longer to obtain the required traverse of the follower; and if the large wheel M should be applied to the drum J, located as above described, the press would either have to be raised above the floor, or the floor would have to be cut away to admit that portion of this wheel which projects below the base of the press. By elevating the axis of the large driving-pulley M and depressing the drum J, connecting the two together by gearing, I obtain the advantages above stated without losing any power. The drum J is also by this arrangement brought in a position where it will operate more directly upon the lower ends of the two levers G G.

In Fig. 5 I have represented a mode of connecting the links F' F' of the levers G G to the ends of the follower-beam F, which I deem to be very important in my machine to prevent the links from becoming detached from the follower. The plate *g* has an upright portion, *g'*, formed on the upper end of which is an eye, *g''*, which receives a corresponding eye on the lower end of the link F'. The opposite end of the plate *g* has a bill or hook formed on it, which fits into a depression made in the beam F when the plate *g* is bolted or secured in place, as clearly shown in Fig. 5. This forms a very secure attachment, and prevents the plates *g* from being pulled off of the beam F or the links F from becoming detached from this beam.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination of the levers G G, links F' F', props H H, pulleys *k k*, endless rope *n*, drum J, gearing L L', and large driving-wheel M, all arranged and operating substantially as described.

Witnesses: BENJAMIN ROBERTS.
CORODON NORTON,
JACOB ROBERTS.