4 Sheets—Sheet 1.

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No. 1,349. Patented Sept. 30, 1839.

Fig: 1.

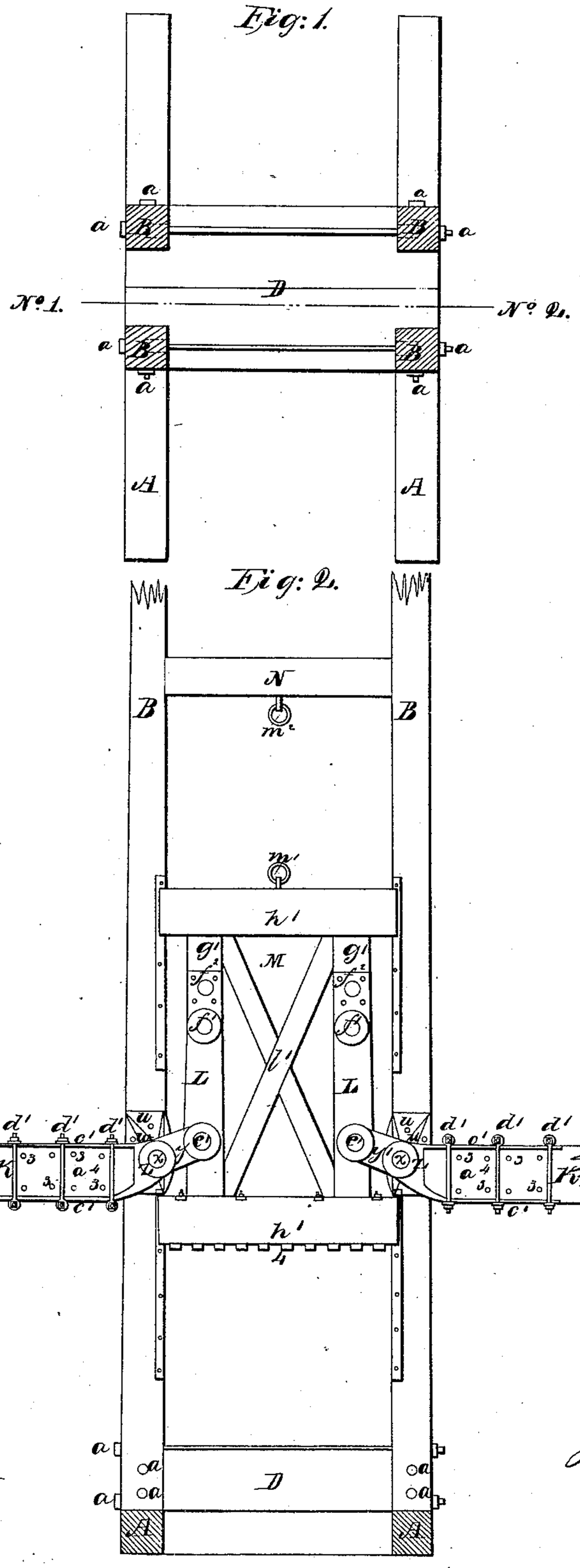

Fig: 2.

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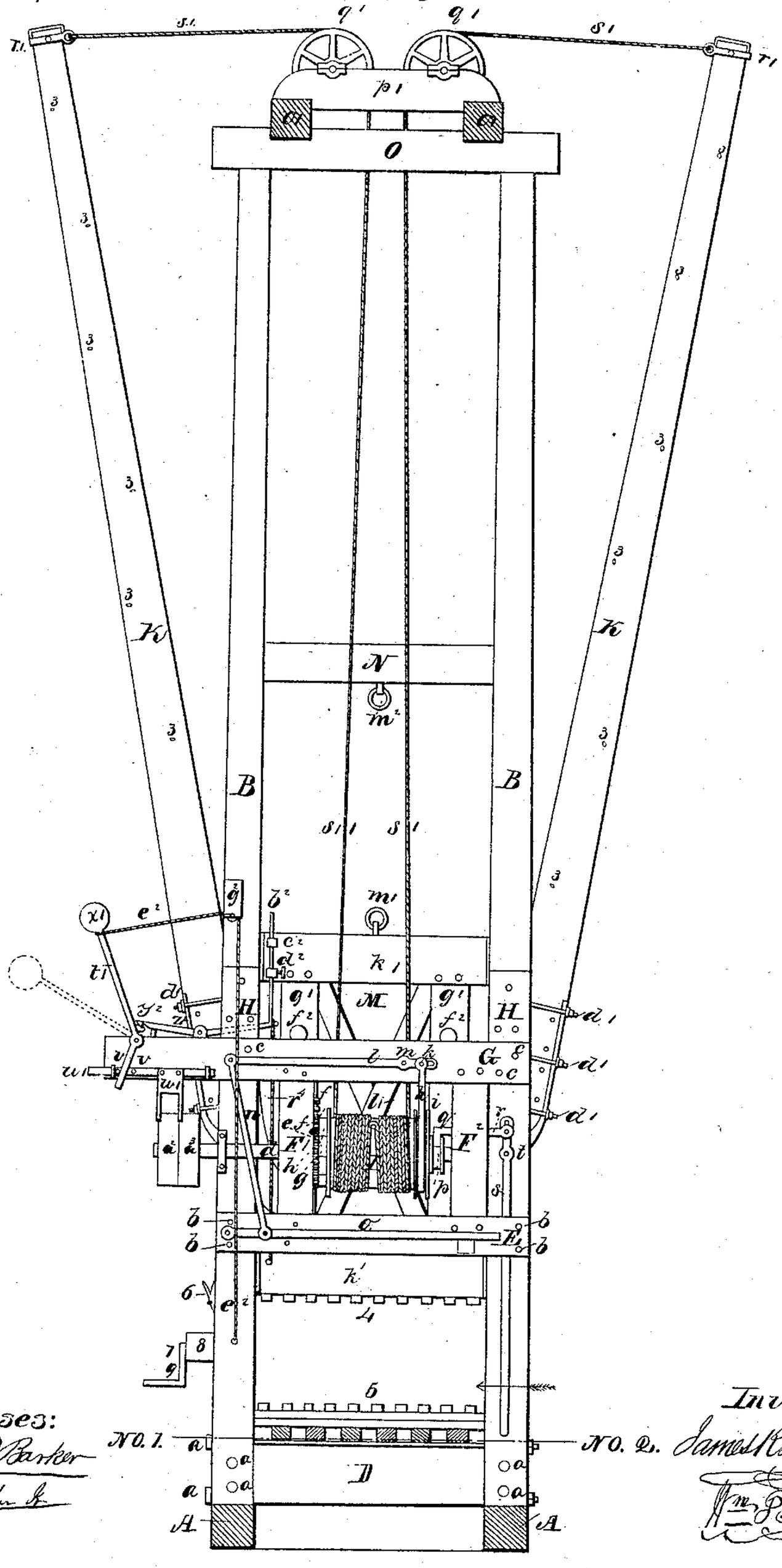
Fig: 3.



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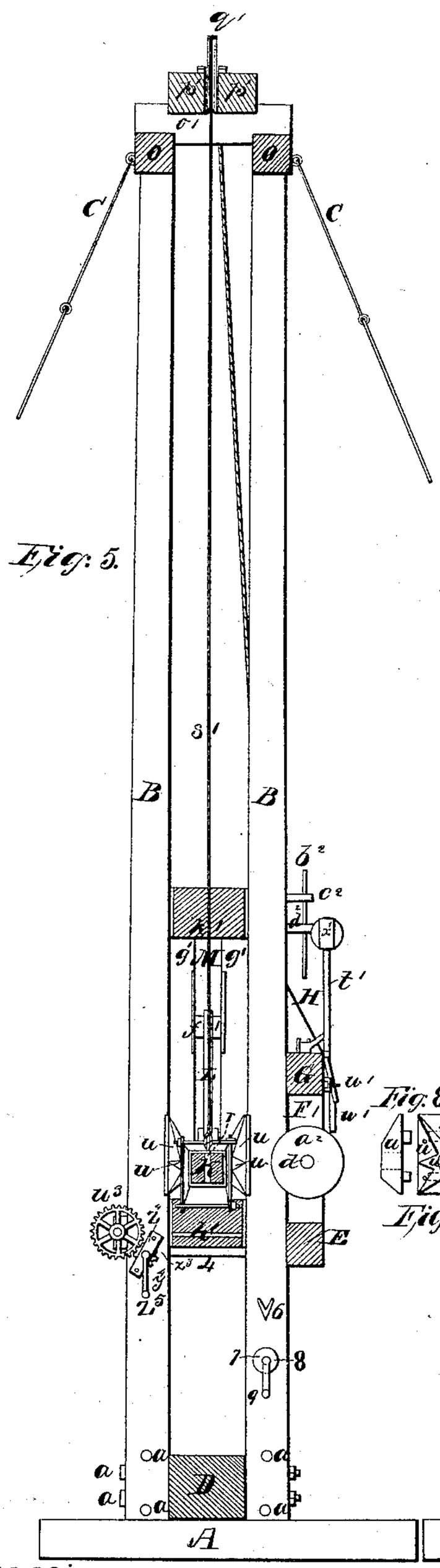

Fig: 5.

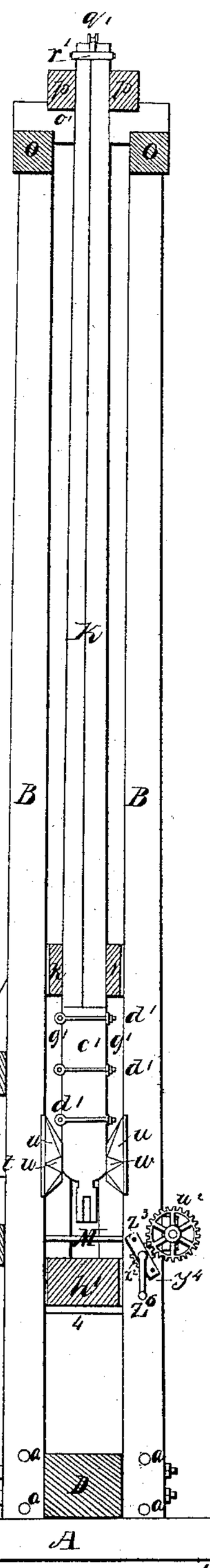

Fig: 6.

Fig: 8.

Fig: 9.

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Fig: 14.

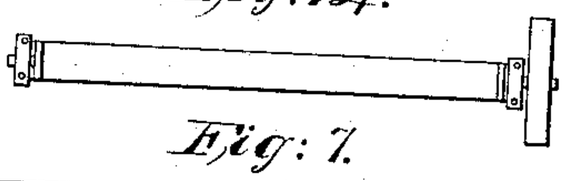

Fig: 7.

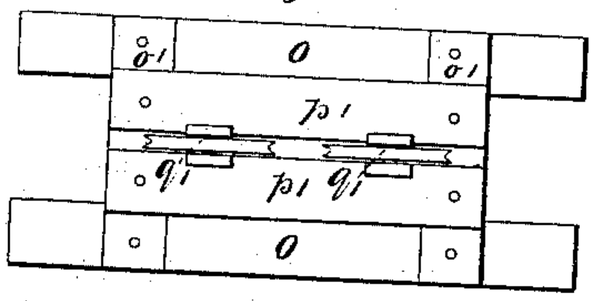

Fig: 4.

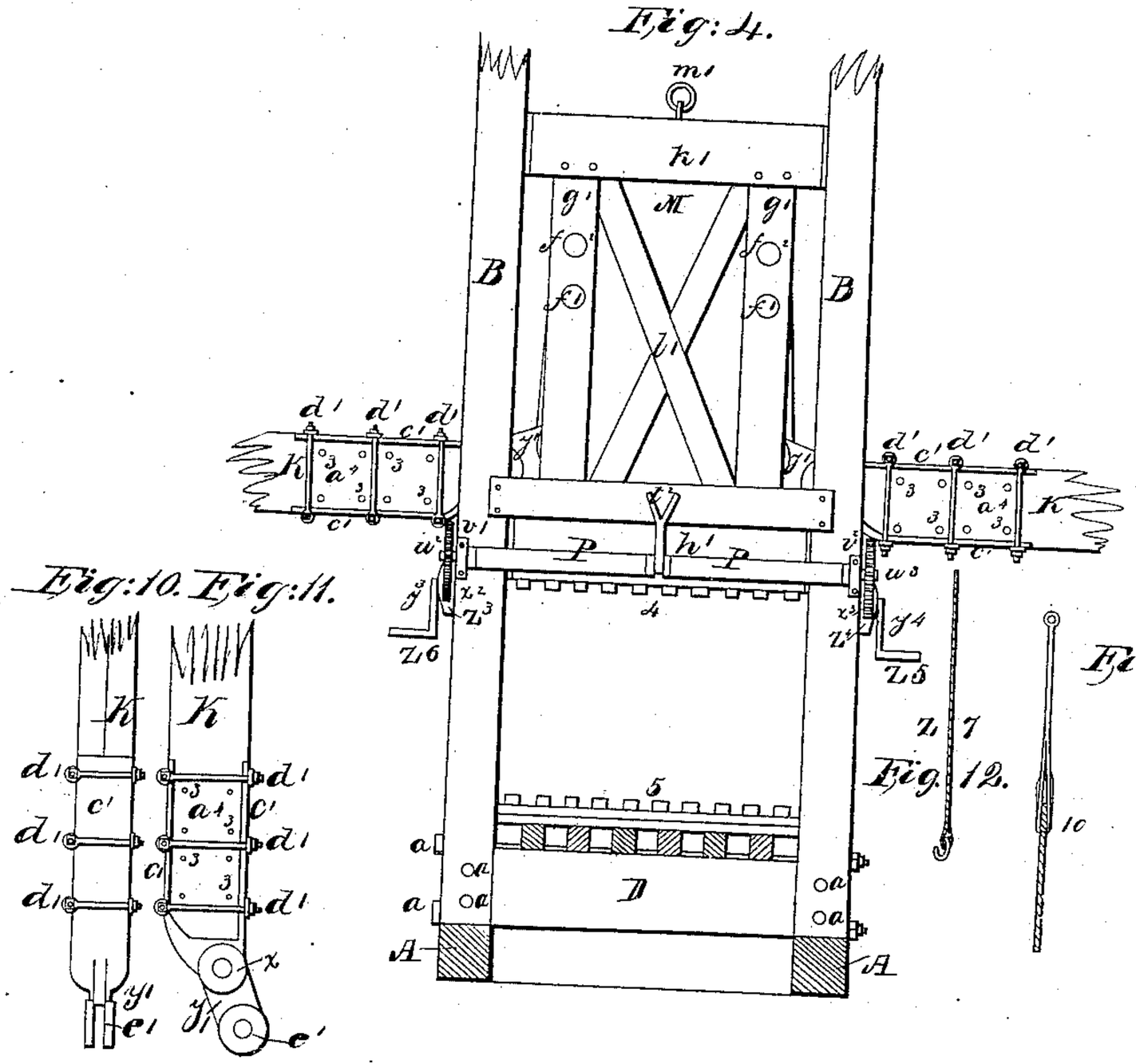

Fig: 10. Fig: 11.

Fig: 12.

Fig: 13.

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UNITED STATES PATENT OFFICE.

JAS. R. HITCHCOCK AND WM. F. SERRELL, OF NEW YORK, N. Y.

IMPROVEMENT IN COTTON-PRESSES.

Specification forming part of Letters Patent No. **1,349**, dated September 30, 1839.

To all whom it may concern:

Be it known that we, JAMES R. HITCHCOCK and WILLIAM F. SERRELL, of the city, county, and State of New York, merchants, have invented, made, and applied to use certain new and useful improvements in the mechanical means of compressing bales of cotton, packs of skins, tobacco, or other articles of which it may be needful to reduce the bulk, for which invention and improvements we seek Letters Patent of the United States, the same consisting of an arrangement and combination of parts employed, which produce quicker and more effective results by means apparently similar in general principles, but varying essentially in combination and effect, with many other machines for similar purposes which are the subjects of existing or expired patents; and we do hereby declare that the said improvements and the mode of constructing and using the same and the effects produced are fully and clearly set forth in the following description, and shown in the drawings attached to and making a part of this specification, wherein—

Figure 1 is a general ground plan of the foundational parts employed. Fig. 2 is a sectional elevation of the working parts in the machine or press as they would be seen if cut vertically through or on the red line from No. 1 to No. 2 on the ground plan, Fig. 1, and which is referred to correspondingly in Fig. 3. Fig. 3 is a similar elevation of the back of the press, with a portion of the working parts and the means of connection to the power employed for moving the same. Fig. 4 is a similar representation of the front of the machine, with the working parts on that side. Fig. 5 is a similar representation of the side or end of the machine denoted by No. 1 on Figs. 1 and 3, and Fig. 6 is a like elevation of the side or end denoted by No. 2 on Figs. 1 and 3.

The detached figures are separately explained and referred to, and the several letters and numbers used as marks of reference apply to the same parts in all the several figures.

A A are the foundation-pieces, bedded firmly in the ground to give the needful stability.

B B are four principal posts or standards, steadied by stay-chains C or wood braces or other usual means from the upper parts of the work.

D are the bearers or bed of the machine. These are made in two or more solid pieces, and serve also as ties at the feet of the standard-posts, which they are mortised into, having the tenon-shoulders, as shown by dotted lines in Fig. 1, so as to give the bed a proper bearing in the standards. These are all securely held in place by bolts and nuts *a a*, of large size, going directly across and lengthwise of the machine, both above and below and through the bearers. Above the bearers a strong piece, E, Figs. 3, 5, and 6, forms the lower part of a frame for a windlass, and is securely bolted on the face of the standards by bolts *b b*. Two short uprights or standards, F′ F², connect this with the upper cross-frame piece, G, which is in like manner secured to the main standards by bolts *c c*, and steadied above by two reversed bracket-chocks, H H.

The end of the cross-piece G on the side F′ is made an extra length, for purposes shown hereinafter, and within this frame is a windlass-barrel, I, mounted on a shaft, *d*, which goes through the side standards, F′ F², and is to be connected outside, at the end F′, to any competent moving power in any usual mechanical manner; but where steam-power is used a fast drum, a^2, and a loose drum, a^3, should be fitted on the end F′ of the windlass-shaft *d*, to communicate and detach the power, as hereinafter shown. At the end toward F′ a ratchet-wheel, *e*, is fixed on the shaft *d*, and turns with it. Above are the pawls *f f*, attached on the inside of the standard F′, and on the ratchet-wheel toward the windlass is the half-clutch *g*, fitting into the corresponding half-clutch, *h*, on a flange at that end of the windlass-barrel. At the other end of the windlass is the flanged and grooved brake-ring *i* and brake-band *k*. This is connected to the lever *l*, whose fulcrum is at *m* on the cross-piece G, having at the other end the drop-rod *n*, which is jointed below to the counter-lever *o*, having its fulcrum on the cross-piece E. By this compound leverage a powerful action is obtained on the brake-band, for purposes hereinafter specified. Outside the brake-ring is a rigger, *p*, made with a deep flat groove, and strongly secured to or made in one piece with

the brake-ring *i*, and above and gearing into the groove, is a T clutch-piece, *q*, whose arms ere curved to fit the groove, and whose shaft *r* goes through the short standard F^2 above the shaft *d*, and finishes with a joint-pin to a drop-lever, *s*, whose upper end is slotted to allow the proper motion on the pin and the lever-fulcrum, as at *t*. By this part of the apparatus the windlass is moved in a horizontal direction to unite or separate the half-clutches *g* and *h*.

In the width of the machine or narrowest way inside each of the main standards are iron plates *u u*, securely bolted on, having corks cast on the side next the wood and let into it, by which the bolts are relieved from lateral strain. On the faces of these plates are conical bosses *w*, supported round by brackets or buttresses, the whole cast solid with the plates, as shown in the detached Figs. 8 and 9, and in these bosses the holes are bored out to fit the fulcrum-axles *x*, which carry the cast-iron lever-heads *y y'*, formed with a point rising at an angle of about twenty degrees with the center line of the levers. These heads are cast with thick bosses *z* round the fulcra, to give requisite strength at the parts and proper width of bearing on the axle, as shown in the detached Figs. 10 and 11, and the tail-piece of each head a^4 is made of a length to receive on each side the half of the long wooden lever-arms K, which are secured on with bolts 3 laterally, and on the edges by flanges *c'*, cast on solid with the tail-pieces a^4, and the connection of the wood and iron is further fortified by wrought-iron stirrup-straps *d'*, formed as eye-bolts with screw-points going successively through each of the eyes, with nuts to secure all firm, thus pressing the wood to the iron sidewise and bracing the wood itself.

The points of the levers are made double with an open-ended mortise, as shown in the detached Figs. 10 and 11, to receive the cast or wrought iron arms L L, which are attached by wrought pins *e'*, turned to fit the holes bored out to receive them in the lever-heads *y y'*. The other ends of the arms L L are attached by pins *f'*, going through iron plates and securing that end of each arm L between the standards *g' g'* of the driver M, which is formed of a strongly-bolted pair of bottom pieces, *h'*, two upright standards, *g'*, toward each end, a head-piece, *k'*, and a pair of cross-braces, *l'*, the whole firmly bolted together and fitted to slide easily on the inner angles of the upright standards B by square indents on the angles of the bottom and head of the driver, which indents are fitted with cast-iron angle-pieces corresponding with similar long angle-irons on the inner angles of the main standards.

An eyebolt, *m'*, on the head and a similar eyebolt, m^2, on a tie or stretcher, N, in one side of the main frame gives the means of attaching a tackle to hang the driver for repairs when needful, or for shifting the driver lower down to bring the pins *f'* into the upper holes, (shown at f^2 on the driver M, Fig. 2,) for pressing articles requiring a less space than that shown as between the bed and driver when that space is too great to be conveniently lessened by blocking up from below, as shown at 5, Fig. 3.

On the tops of the main standards are two lintel-heads, O O, lengthwise of the machine, and across these are the two bearers *o'*, carrying a sheave-block, *p'*, in which are mounted two metal sheaves, *q'*, of large size, having anti-friction metal bushes working on steel pins in the block *p'*. This part of the work is shown in plan in Fig. 7.

On the outer end of each main lever-arm K is a wrought strap, *r'*, with an eyebolt stirrupped over the lever end, which receives that end of a rope or chain, *s'*, the other end being carried over the sheaves *q'* to the windlass-barrel F and there secured. On a fulcrum at the longer end of the cross-piece G is placed a vertical lever, *t'*, whose lower point is between a pair of pins, *v v*, on a bar, *u'*, hung in staples, and below is a fork, *w'*, on the bar *u'*, between the points of which fork *w'* the belt from the motive power is to pass. The upper end of the lever *t'* has a weight, *x'*, and a latch-catch, y^2, near the fulcrum, next to which a crooked horizontal latch-lever, z^2, is fixed on a fulcrum-joint, with the other end extending below a vertical slide-bar, b^2, working in eyes c^2 on the head of the driver M, and held by a stop-screw, d^2, at a length adjusted to strike the horizontal lever z^2 at any point at which it may be required to stop the descent of the driver.

On the lever-head *t'* one end of a cord, e^2, is fastened. The other end passes over the sheave g^2, and hangs loosely down. The use of this part of the apparatus is, that when the driver has descended so low as to carry the lower end of the upright bar b^2 onto the lever z^2 it depresses that end and disengages the latch in the bar *t'*, and the weight *x'* will immediately descend and carry the point of the bar *t'* in the opposite direction, and with it the bar *u'* and belt-fork, as shown by the dotted lines, and throw the belt from the fast drum a^2 to the loose drum a^3, thus obviating any danger of breaking the machine by preventing the power employed from continuing to operate after the levers K are upright, and the cord e^2 enables the attending workman to throw the belt into gear by pulling the lever *t'* in the opposite direction, and the cord r^4 (shown descending from the inner end of the lever z^2) will enable the attending workman to ungear the power at any moment by pulling it downward by the ring on it.

In the front of the machine, Fig. 4, is a pair of winches, P P, the ends toward the center supported in bearings on a hanging bracket, t^2, the outer ends in bearings $v' v^2$, beyond which the winch-shafts project on each side to receive the tooth-wheels u^2 u^3. Below these the pinions x^2 x^3 are mounted on short shafts y^3 y^4,

each mounted in bracket-bearings z^3 z^4, and on the ends of the shafts y^3 y^4 are mounted the crank-handles z^5 z^6. The lower face of the driver M is fitted with laths or slats 4, wherein the baling-ropes are to be passed over the bales when in work, and a shifting bottom, 5, is fitted with slats in a similar way for the baling-ropes to be laid into in work. This shifting bottom 5 lies on blocks of wood, which may be used to shift in and out, and may be made of any available thickness.

At the end of the machine No. 1, Fig. 5, against one of the standard-posts, is a fork, 6, standing out, and immediately below a short shaft in a bracket, 7, carries a small short barrel-winch, 8, with a crank-handle, 9. The use of this is, that when it is needful to draw knots out of baling-ropes that have been used the knot in each is to be placed above the fork 6, with the running part through the fork and round the barrel. The crank, being turned to wind the rope on, will draw the running part out and leave the rope ready to use again.

The needle-bar (shown detached in Fig. 13) is made with a ring at one end to pull by, and at the other end is a strong open spring-clip, 10, like a hollow pointed tongs, to nip the baling-ropes. This instrument is to be used as hereinafter shown, and a supply of short baling snatch-ropes, z^7, (shown separate in Fig. 12,) with a hook in one end, is to be at hand for the winches P P, and the machine, being ready for work, is to be used as follows: So many baling-ropes as are needful are to be laid through the slats 5, with a single snatch-knot at the end in front. The bale intended to be pressed is to be rolled in, and being set square and vertical, the driving or moving power is to be set in operation to turn the shaft d and gather the ropes or chains s' on the windlass I, thus raising the levers K accordingly and depressing their points, which by their connection through the upright arms L, carry down the driver M with great force upon the bale or article in the press, the reduction of which will commence as soon as the lower face of the driver touches it. While the reduction is going on, the workmen in front pass the needle-bar, Fig. 13, through successively between the slats 4 under the driver, and the workmen behind enter the back and unknotted ends of the baling-ropes into the spring-clips 10 of the needle-bar, and the front men draw the needle-bar back, which compressing the clips as they pass between the required slats, the clips bring over with them that end of each baling-rope successively which the knotted end below is hitched onto, with a second or double snatch-knot, and when the compression is effected as far as the resistance of the article or the power of the machine will allow the working-power is disconnected either by the operation of the driver with the bar b^2 on the lever z^2, or by the attending workmen, and the pawls f f prevent the windlass returning, while the bale-ropes are tightened and tied as follows: The ends of the baling-ropes are first drawn tight by hand through the snatch-knots on each. The extra length is seized by a hitch in the hooks of the snatch-ropes z^7, the ropes of which are passed round the winches P, and a man at each winch holds on the snatch-rope, while another turns the crank-handles z^5 or z^6 and draws up the bale-ropes thoroughly tight, while a man beats the knots up with a maul, as needful, and ties them by a knot next the hitch in the baling-rope.

The winch being in two parts allows two men to be hitching on and tying while two others are holding on the snatch-ropes, and two more tightening for them by turning the winches. Thus six men conjointly operating to bind the bale, it is done with unusual celerity; or the snatch-ropes may be secured at one end on the winches, if found best to do so; or the winch may be made single and driven by a drum on the shaft with a belt to the motive power, as shown in the detached Fig. 14, by which the roping and tying may be effected with a far less number of hands. When this is completed in front, one of the attendant workmen at the back throws the windlass out of gear with the clutch g h by the clutch q and lever s by moving the drop-lever s in the direction of the arrow on it. Another at the same instant seizes the counter-lever o, and by depressing it compresses the brake-ring i by the band k, and controls the descent of the levers K, so as to let them come down easily to a horizontal position, where they either hang by the ropes or chains s' or rest on a stop-piece, as may be convenient. The pressed bale is now rolled out and others successively rolled in and subjected to pressure in the same manner and with the same effect.

It will be seen that many of the arrangements and operations of this machine are similar to those in other machines for like purposes; but we have no knowledge of any other invention in which such arrangements and operations are combined so as to produce a machine and its attendant apparatus capable of compressing an average of twelve New Orleans pressed bales of cotton in one hour and reducing them all upward of thirty per cent. of their bulk when received, as the machine herein described has done to the extent of several hundred bales, and can continue to do so, the power of the combination to effect the compression appearing in practice to be limited only by the strength of the parts.

The parts we consider to be new or to be of our own invention or application in the machine thus described are—

1. The mode of connecting the levers K and driver M by the upright arms L, including the mode specified and shown of changing the height of the driver by shifting the pins f' into the upper holes, f^2, in the driver-standards, in combination with the driver, as the said mode of connecting is described.

2. The mode specified of throwing the motive power out of operation at any point by the adjustment of the vertical bar b^3 on the driver M, and its operation through the other parts on the connection with the motive power, in combination with the driver, as the said mode of throwing the motive power out of operation is described.

3. The two-part winches or a single winch with the shifting snatch-ropes and hooks z^1, Fig. 12, for tightening the baling-ropes, in combination with the bed and driver of the press, the whole being constructed and operating substantially as described.

4. In combination with the above, the fork 6 and winch 8, for drawing the knots out of baling-ropes that have been used and making the same ready to use again, the same being constructed and operating substantially as described.

In witness whereof we have hereunto set our hands, this 15th day of May, 1839, in the presence of the witnesses witnessing hereto.

JAMES R. HITCHCOCK. [L. S.]
WM. F. SERRELL. [L. S.]

Witnesses:
E. W. FISKE,
RICHARD P. BARKER.