

(No Model.)

3 Sheets—Sheet 1.

D. L. HANNAY.
BALING PRESS.

No. 396,481.

Patented Jan. 22, 1889.

Fig. 1.

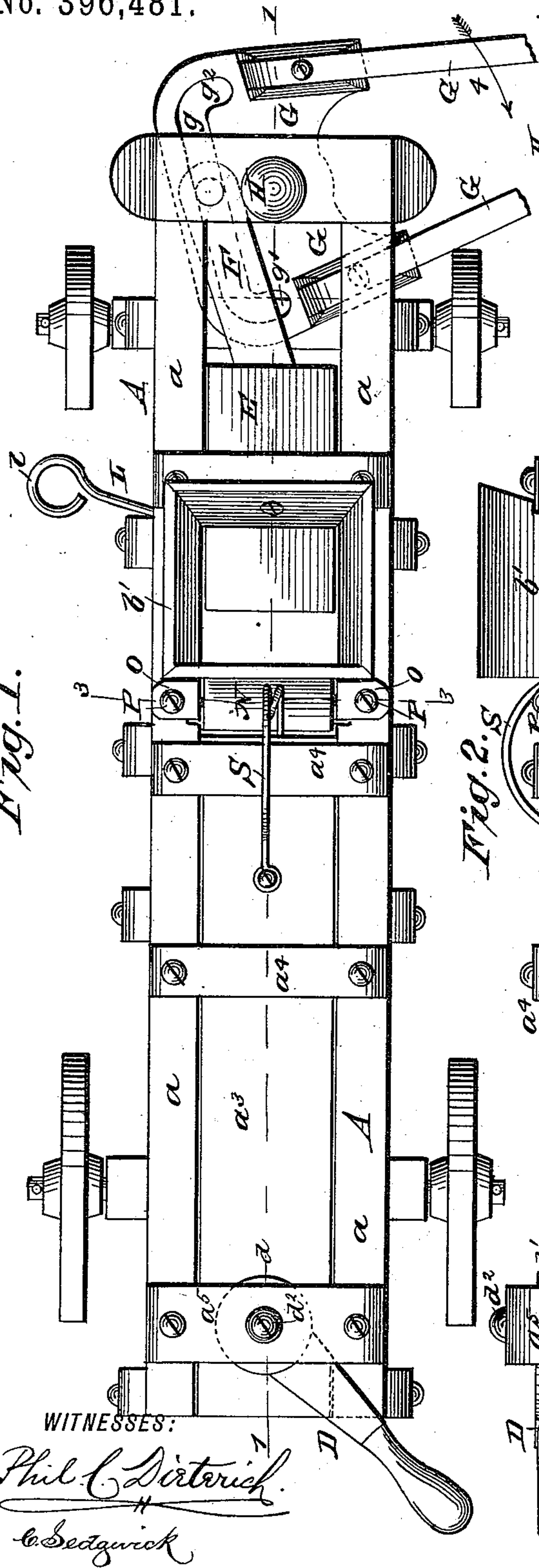
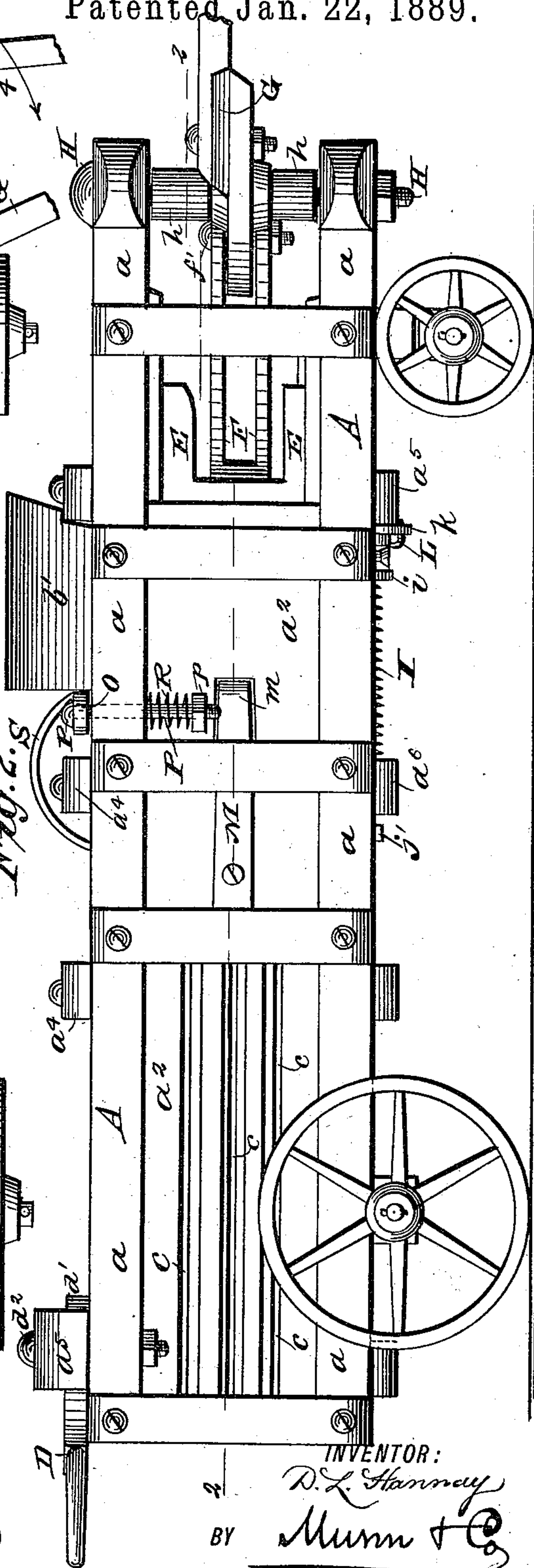


Fig. 2.



WITNESSES:

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C. Sedgwick

INVENTOR:

D. L. Hannay
BY Munn & Co

ATTORNEYS.

(No Model.)

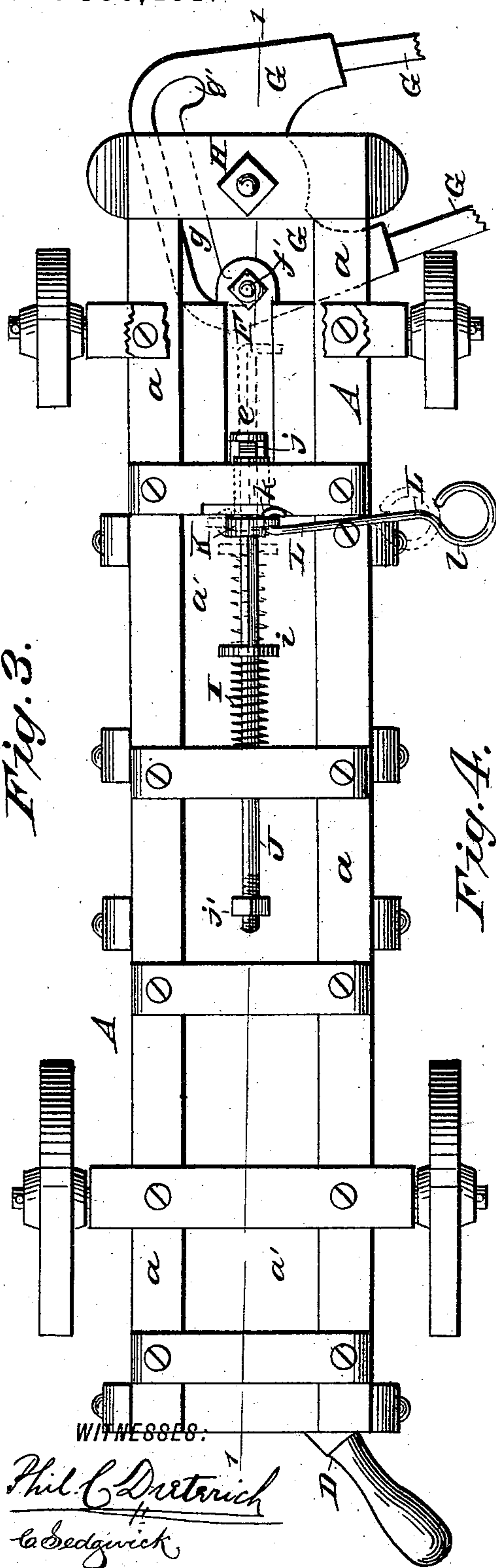
3 Sheets—Sheet 2.

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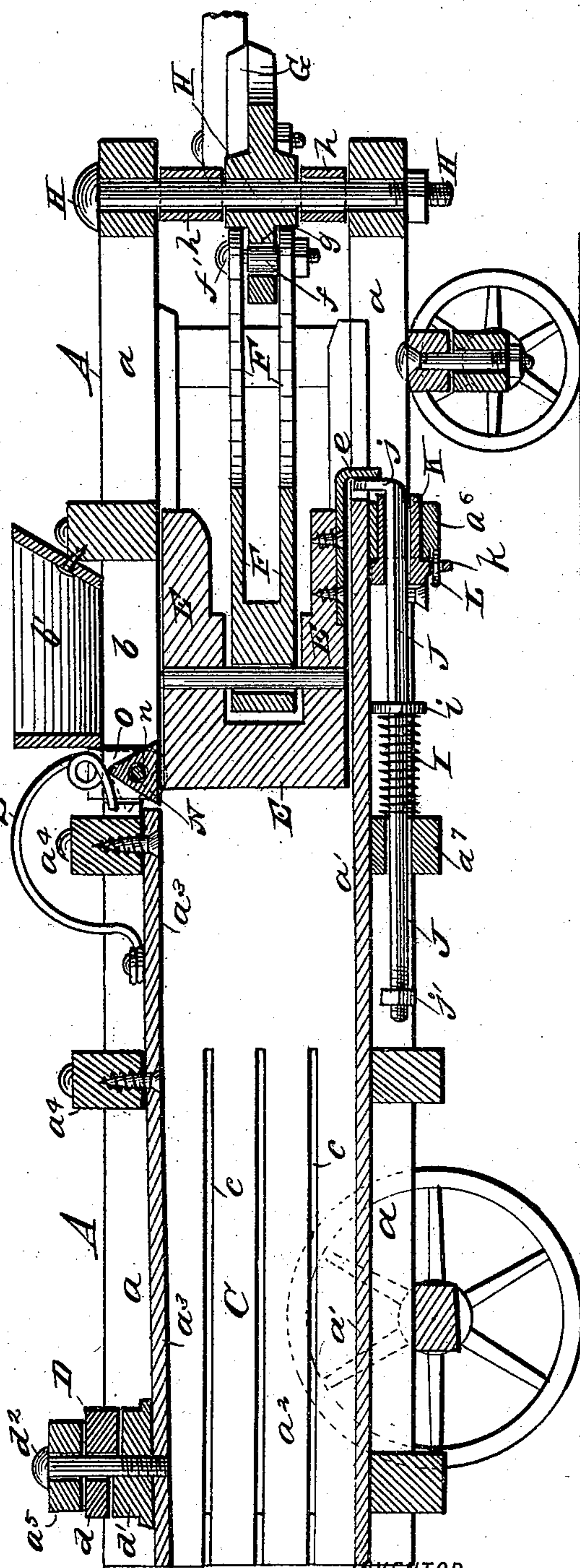
Fig. 3.



WITNESSES:

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Fig. 4.



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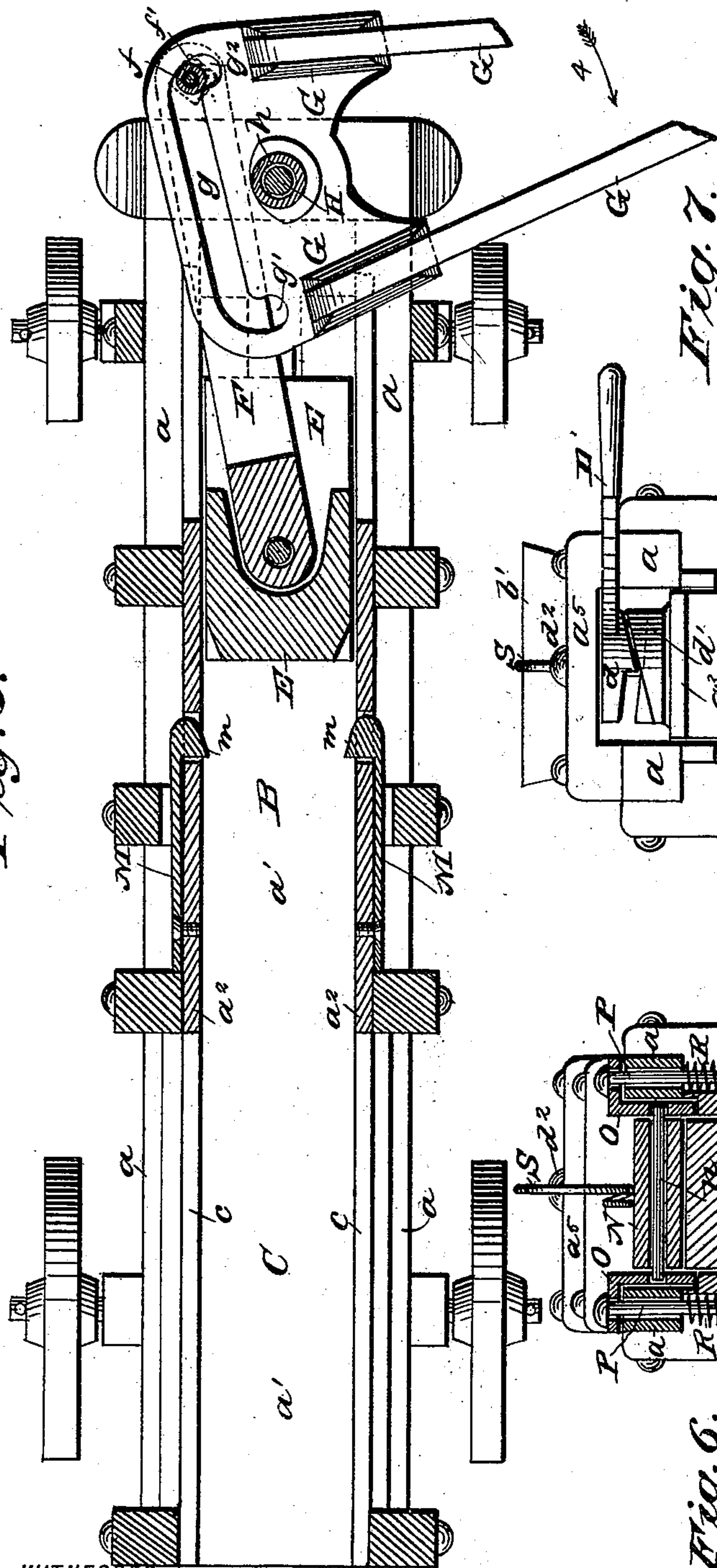
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Fig. 5.



WITNESSES:

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Fig. 7.

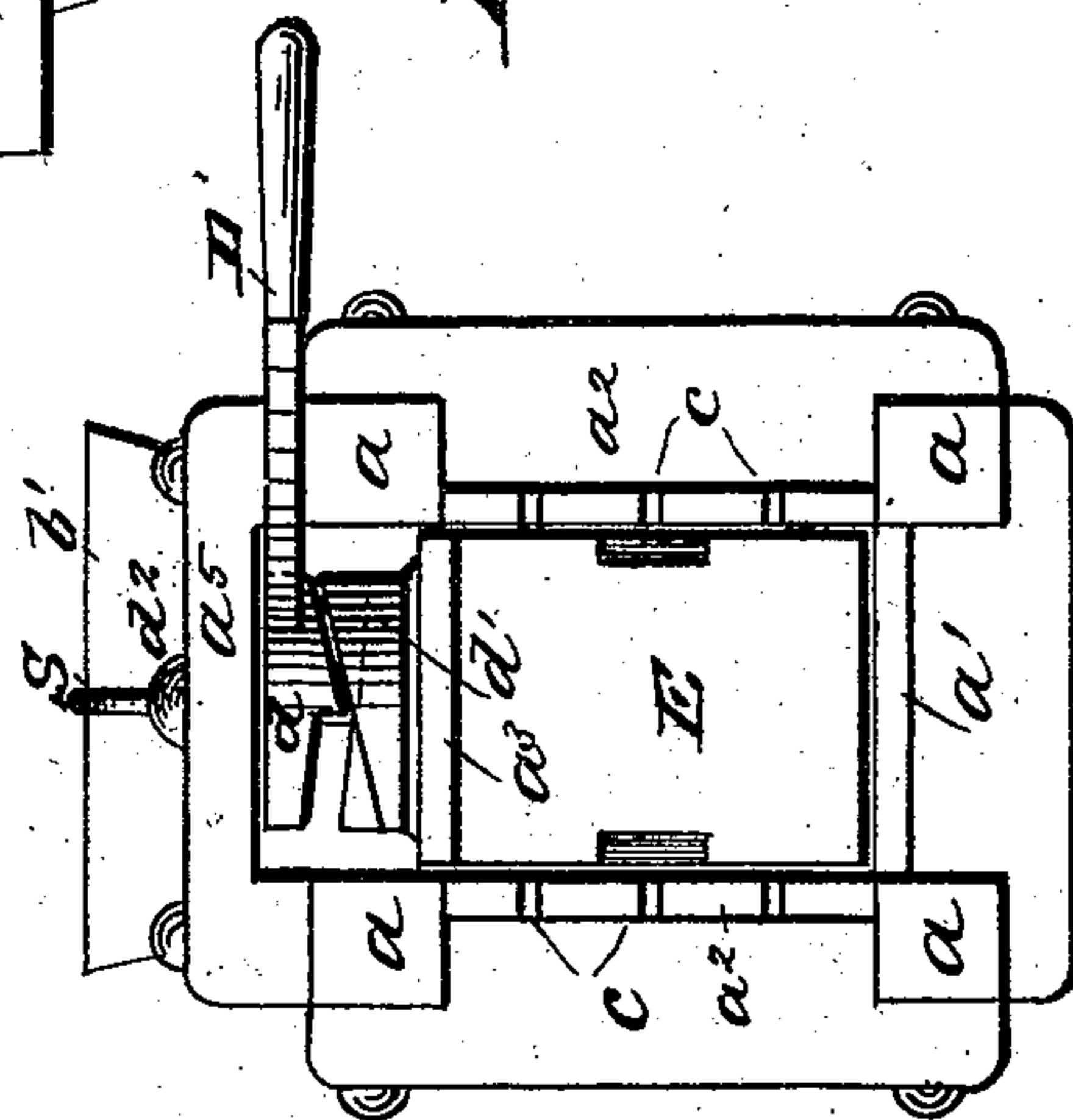
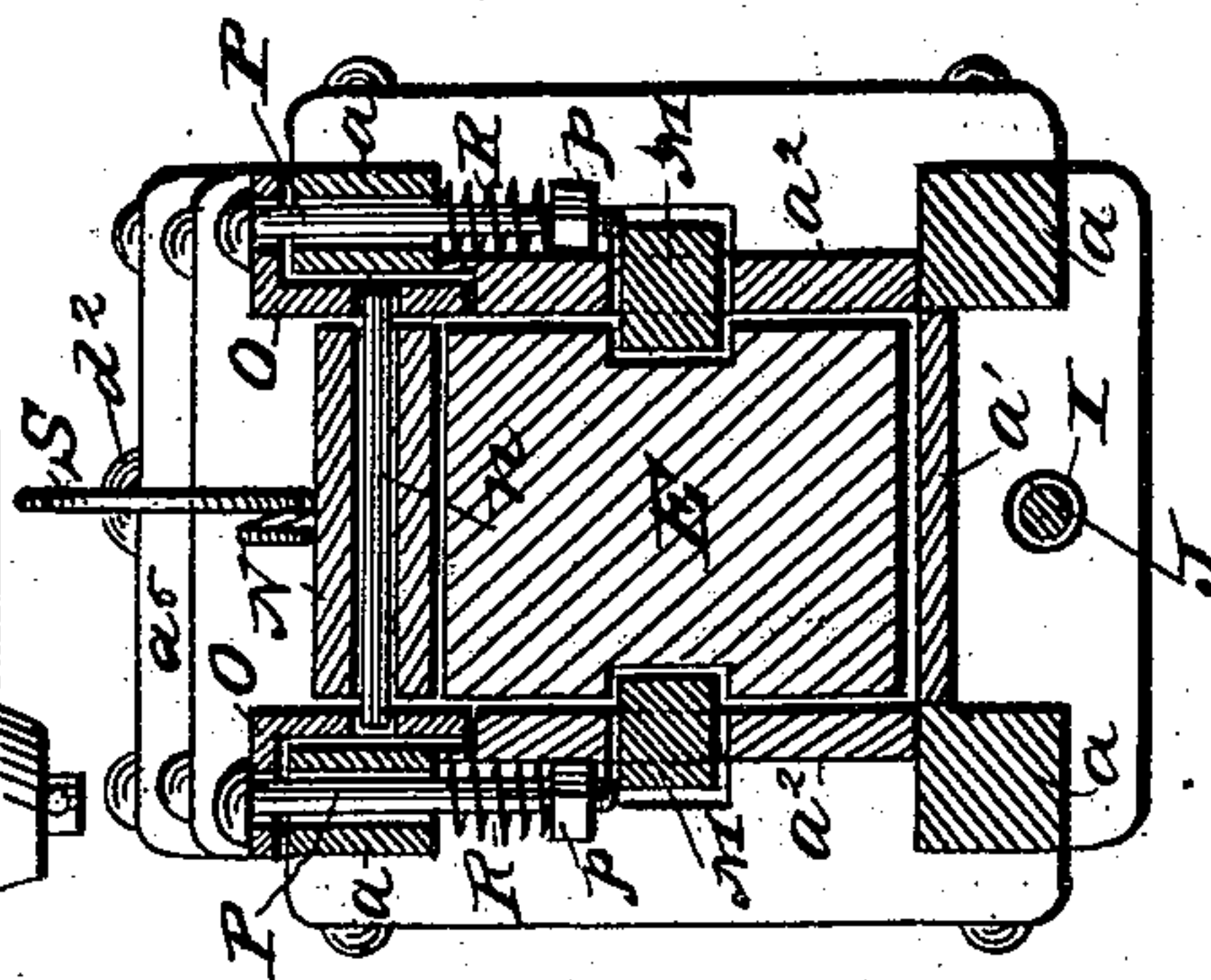


Fig. 6.



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UNITED STATES PATENT OFFICE.

DAVID L. HANNAY, OF GRAPEVILLE, NEW YORK.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 396,481, dated January 22, 1889.

Application filed July 5, 1888. Serial No. 279,076. (No model.)

To all whom it may concern:

Be it known that I, DAVID L. HANNAY, of Grapeville, in the county of Greene and State of New York, have invented a new and Improved Baling-Press, of which the following is a full, clear, and exact description.

My invention relates to baling-presses, and has for its object to provide a simple, comparatively inexpensive, and very efficient machine adapted for pressing hay, straw, cotton, or other material into smooth bales of any required density and with economy of time and labor.

The invention consists in certain novel features of construction and combination of parts of the baling-press, all as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of my improved baling-press with the sweep partly broken away. Fig. 2 is a side elevation thereof. Fig. 3 is a bottom plan view of the press. Fig. 4 is a central longitudinal vertical section of the press, taken on the line 1 1 in Figs. 1 and 3. Fig. 5 is a plan view in horizontal section on the line 2 2 in Fig. 2. Fig. 6 is a vertical transverse section taken on the line 3 3 in Fig. 1, and Fig. 7 is a rear end view of the press-case.

The press-case A is made with a frame consisting of four longitudinally-ranging corner timbers, $a a a a$, which are connected by suitable vertically and horizontally ranging cross timbers or pieces, against the inner faces of which are fixed suitable planks, a' , forming the floor of the baling-box B and bale-chamber C of the press. Planks $a^2 a^2$, fixed to the cross-timbers, form the opposite side walls of the baling-box and bale-chamber, and one or more planks, a^3 , form the top wall of the bale-chamber, and also of the rear portion or half the top of the baling-box, the front half or portion of which is open at b to allow hay, straw, or other material which is to be baled to be fed into the box B through a hopper, b' , mounted on the press-frame at or above the opening b of the box. The top wall, a^3 , of the press-case is fixed to the two top cross-timbers, $a^4 a^4$, of the press-frame behind the feed-opening b ; but in rear of these timbers the wall a^3 is loose or free, and to the top of

the wall, at its rear end and immediately below the rear top arched cross-timber, a^5 , of the press-frame, is fixed a metal block, d' , formed at its upper side with a couple of inclined or cam faces, against which bear inclined or cam faces of the head d of a lever, D, which is journaled on a pin or bolt, d^2 , passed downward through the frame-timber a^5 , the block d' , and the loose top wall of the bale-chamber. With this construction it is obvious that by turning the lever D in horizontal plane the outer or rear loose end of the bale-chamber wall a^3 may be lowered to contract more or less the bale-discharge opening at the rear end of the bale-chamber to regulate the resistance the pressed bale about to be discharged will offer to the rearward effective strokes of the plunger in forming another bale in the baling-box; hence the press operates as a continuous baler, and by adjusting the bale-chamber wall a^3 bales of any required density or weight may be produced.

I am aware that baling-presses have heretofore been provided with a yielding wall at the baling-box and with screws adapted to adjust said wall at its outer free end to regulate the compression of the bales; but the cam device for adjusting the yielding wall has material advantages over the screw adjustment, in that it operates more quickly and but a slight turn of the cam-head lever is sufficient to relieve choking of the press or overstrain the horse operating it, and the attendant may, by noticing the position of the cam-lever, reset the yielding wall more quickly and easily than by the screw, and so accurately as to obviate the necessity of weighing the bales every time the yielding wall is eased up temporarily while working the press.

The usual slots, c , are provided in the press-case side walls for convenience in tying out the bales.

The press-case will or may be mounted on any suitable wheeled truck, as shown in the drawings.

The plunger E, operating in the baling-box to form the bales, is provided with a pitman, F, the outer or front end of which is fitted with a pin, f' , which is preferably provided with an anti-friction roller, f , which runs in a horizontal and transversely-ranging slot, g , made in the metal head of the sweep G, which is provided with converging arms or timbers, to the outer joined ends of which the horse

for working the press will be hitched. The main portion of the sweep-slot g ranges about at right angles to and across a line which would bisect the sweep longitudinally, and the opposite ends of the slot are formed as outwardly-extending short slots or notches $g' g^2$, which communicate with the main slot g , as shown best in Figs. 1, 3, and 5 of the drawings. The sweep is journaled on a heavy bolt, H, on which above and below the sweep-head and between it and the press-frame timbers are placed tubular washers $h h$, which hold the sweep in proper relation to the plunger and its pitman. (See Figs. 2 and 4 of the drawings.)

In operating the plunger the sweep will be drawn around in direction of the arrows 4 in Figs. 1 and 5 of the drawings, while the pitman-roller f rests in the end slot or notch, g' , of the sweep, and as the sweep reaches the position represented in Fig. 1 the roller f will slip from the slot g' , and as the plunger reaches the limit of its rearward or effective stroke the expansion of the pressed material, aided, it may be, by the operation of a spring, presently described, will force the plunger backward, while the pitman-roller is carried outward in the slot g toward the slot or notch g^2 at the other end of the slot g , and as will be understood from Figs. 1 and 5 of the drawings. As the sweep is swung around in the opposite direction the pitman-roller f will be engaged in and by the sweep slot or notch g^2 , and said roller f will slip from said notch as the plunger reaches the limit of its next inward or effective stroke, and the plunger is carried backward by the expansion of the pressed material, and so on, the pitman-roller being engaged alternately by the sweep-head slots or notches $g' g^2$, and one effective pressing-stroke of the plunger being given at each half-turn of the sweep, or while the sweep is drawn in each direction, thus losing no time in pressing the bales.

The spring I, which assists the rebound of the plunger, is placed on a rod, J, which is preferably made square for about one-half of its length, or that part of it which fits a square hole in a bushing, K, which is journaled in a bottom cross-timber, a^6 , of the press-frame, and the rounded part of the rod is fitted to slide in another cross-timber, a^7 , and the spring I is placed on the rod between this timber a^7 and a washer, i , which rests against the shoulders formed at the junction of the square and round parts of the rod. The forward end of the rod is provided with a nut, j' , which limits its rearward throw by the spring, and the rear end of the rod is provided with an upset or bent end or lug, j , which is adapted to be set in front of a pendent lug, e , on the plunger.

The bushing K has a stem, k , to which is connected one end of a transversely-ranging rod, L, which passes to one side of the press-case and is provided with a loop or eye, l , forming a handle, which may be grasped to

turn the bushing K, and consequently the rod J, so as to throw the rod-lug j out of line with the plunger-lug e and allow the plunger to operate without effect of the spring I on it, as may be desirable at times when pressing heavy bales and the force of expansion of the pressed charges of material is quite sufficient to fully retract the plunger and pitman, or at other times when it is desirable or necessary to clean the press after using it. This inoperative adjustment of the spring-rod and spring is indicated in dotted lines in Fig. 3 of the drawings. When the spring is to be used, it is only necessary to draw out the rod L and turn the lug j of the rod J upward behind the plunger-lug e , as shown in full lines in Figs. 3 and 4 of the drawings, and as the plunger is forced rearward on its effective stroke the rod J will be forced rearward in its bearings K and the washer or collar i will compress the spring I, and as the pitman-roller slips out of either of the sweep-notches $g' g^2$ along the slot g the spring will forcibly expand to assist the expansion of the pressed material to carry the plunger and pitman fully back ready to be again driven rearward by the next or return stroke of the sweep after the next charge of material has been passed into the baling-box through the feed-opening b of the press-case. Spring-retainers M are employed at the sides of the baling-box to hold the pressed charges of material by hook-heads m , to prevent undue expansion of it while the plunger moves back prior to pressing the next charge of material. There may be two or more of these retainers at each side of the baling-box.

To ease the strain on the press-case, the plunger, and its operating mechanism, and to make smoother bales than could otherwise be done, I employ a folder at the rear side of the baling-box opening. This folder N has a triangular cross-sectional form, (shown clearly in Fig. 4 of the drawings,) and is preferably journaled on a shaft, n , which at opposite ends is held in angular bearing-plates O, the vertical portions of which are let flush into the inner faces of the upper opposite corner timbers, $a a$, of the press-frame as guides to the plates, while the horizontal flange of the plates lies on top of these timbers and receives a bolt, P, which also passes through the press-timber a and carries at its lower end a nut or collar, p , between which and the timber a is placed on the bolt a spring, R, which normally presses on the nut p to hold the plate O and the end of the folder N, which it carries, down to proper operative positions. There being a plate, O, bolt P, and spring R at each end of the folder N, it is obvious that while the folder is free to turn on its shaft n , journaled in the plates O, the folder is free to rise bodily against the tension of the springs R to prevent excessive pressure or friction of the folder on the plunger E as it advances on its effective stroke beneath the folder, and by adjusting the nuts p on the

bolts P the resistance of the springs R may be regulated to control the downward pressure of the folder as the nature or condition of the material being baled may require. A
 5 spring, S, fixed at one end to the top wall, a^3 , of the press-case, bears by its other end on top of one of the three flat sides or faces of the triangular folder and holds it normally in the position shown in dotted lines in Fig. 4 of the
 10 drawings, or with one of its sides about vertical and facing the fully-drawn back plunger and hanging quite a little into the baling-box in the path of the plunger or of the material being forced rearward by it. It is obvious
 15 that as the plunger moves rearward on its next effective stroke the folder will be turned partly around as it yields upward more or less, and until it takes the position shown in full lines in Fig. 4, or with its face, which had
 20 before been about vertical, now resting about horizontal or parallel with the top of the plunger, this turning of the folder having partly folded the loose material downward, and as the plunger in its rebound passes the
 25 folder or slides from under it the spring S will turn the next side of the folder forward into vertical position, as in dotted lines in Fig. 4, and thereby cause the lowermost angular part of the folder to turn or fold down
 30 all the loose material smoothly into the baling-box and hold it down until it is packed or pressed into the body of the bale by the next charge pressed up by the plunger. The angular vertically-yielding roller thus assures
 35 smoothness of the bales and greatly facilitates the operation of the press by preventing a packing or wedging of material between the rear end of the feed-opening and the plunger.
 40 The triangular rotating folder extending clear across the baling-box at the rear of its feed-opening and preferably made vertically adjustable, as above described, is not to be confounded in its operation with a plain
 45 round roller-folder, or with a longitudinally-fluted round roller-folder, whether they be vertically adjustable or not, as the round or fluted folders cannot effect so close or snug folding of the material to the charge last
 50 pressed up by the plunger as does the triangular rotating folder, which folds all the loose material quite squarely down from or with a comparatively sharp corner at and across the top of the baling-box, and consequently
 55 assures more snugly pressed and smoother bales. Neither is the triangular rotating folder the structural equivalent of a vertically-working folder at the rear of the feed-opening. Neither is the triangular rotating
 60 folder anticipated by short-pendent angular retainers which extend into the baling-box, but not entirely across it, as these retainers can have little effect in folding down loose material entirely across the baling-box against
 65 the charge last pressed by the plunger, as will readily be understood.

Having thus described my invention, what I

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

1. In a baling-press, the combination, with 70 the press-case and a plunger therein having a lug or shoulder, e , of a rod, J, made flat-sided and provided with a lug, j , a bushing journaled on the press-frame and in which the flat-sided rod is fitted for endwise move- 75 ment, and a spring normally forcing the rod backward, substantially as described, for the purposes set forth.

2. In a baling-press, the combination, with the press-case and a plunger therein having 80 a lug or shoulder, e , of a flat-sided rod, J, provided with a lug, j , a bushing journaled on the press-frame and in which the flat-sided rod is fitted for endwise movement, a spring 85 normally forcing the rod backward, and an operating-rod connected to the bushing for turning it and the rod J, substantially as herein set forth.

3. The combination, with the baling-box, of a triangular folder extending across the box 90 and journaled for rotation at the rear of its feed-opening, and a yielding device normally holding the folder with one angle downward and one face presented to the drawn-back plunger, substantially as described, whereby 95 the folder will be given a partial rotation for folding material by one face of it at each effective stroke of the plunger, and will present its next face to the plunger when the latter retracts, as and for the purposes set forth. 100

4. The combination, with the baling-box, of a triangular folder extending across the box and journaled for rotation at the rear of its feed-opening in vertically-yielding bearings, 105 and a yielding device normally holding the folder with one angle downward and one face presented to the drawn-back plunger, substantially as described, whereby the folder will be given a partial rotation for folding material 110 by one face of it at each effective stroke of the plunger and will yield bodily to avoid excessive friction on the plunger, and will present its next face to the plunger when the latter is retracted, as and for the purposes set forth. 115

5. The combination, with the press-frame, of a triangular folder, N, journaled across the baling-box at its feed-opening, and a spring, S, held to the frame and bearing on the folder, 120 substantially as herein set forth.

6. In a baling-press, the combination, with the press-frame, of vertically-movable flanged plates O, pins or bolts P, holding them to the frame, springs R on the bolts, a triangular folder, N, journaled to the plates and cross- 125 ing the rear end of the feed-opening, and a spring normally holding the folder with one side vertical and facing the drawn-back plunger, substantially as herein set forth.

DAVID L. HANNAY.

Witnesses:

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 RICHARD CARTAN.