

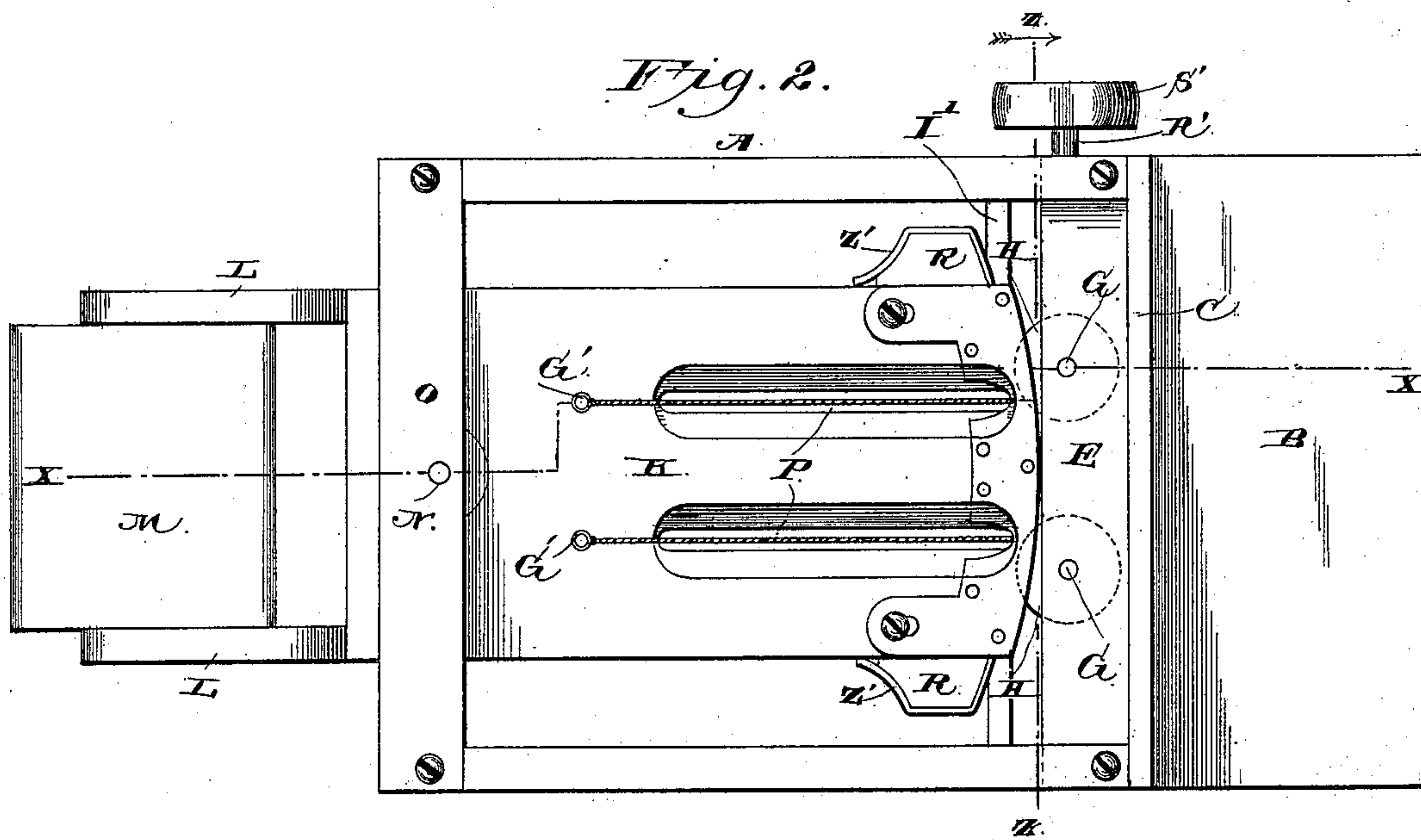
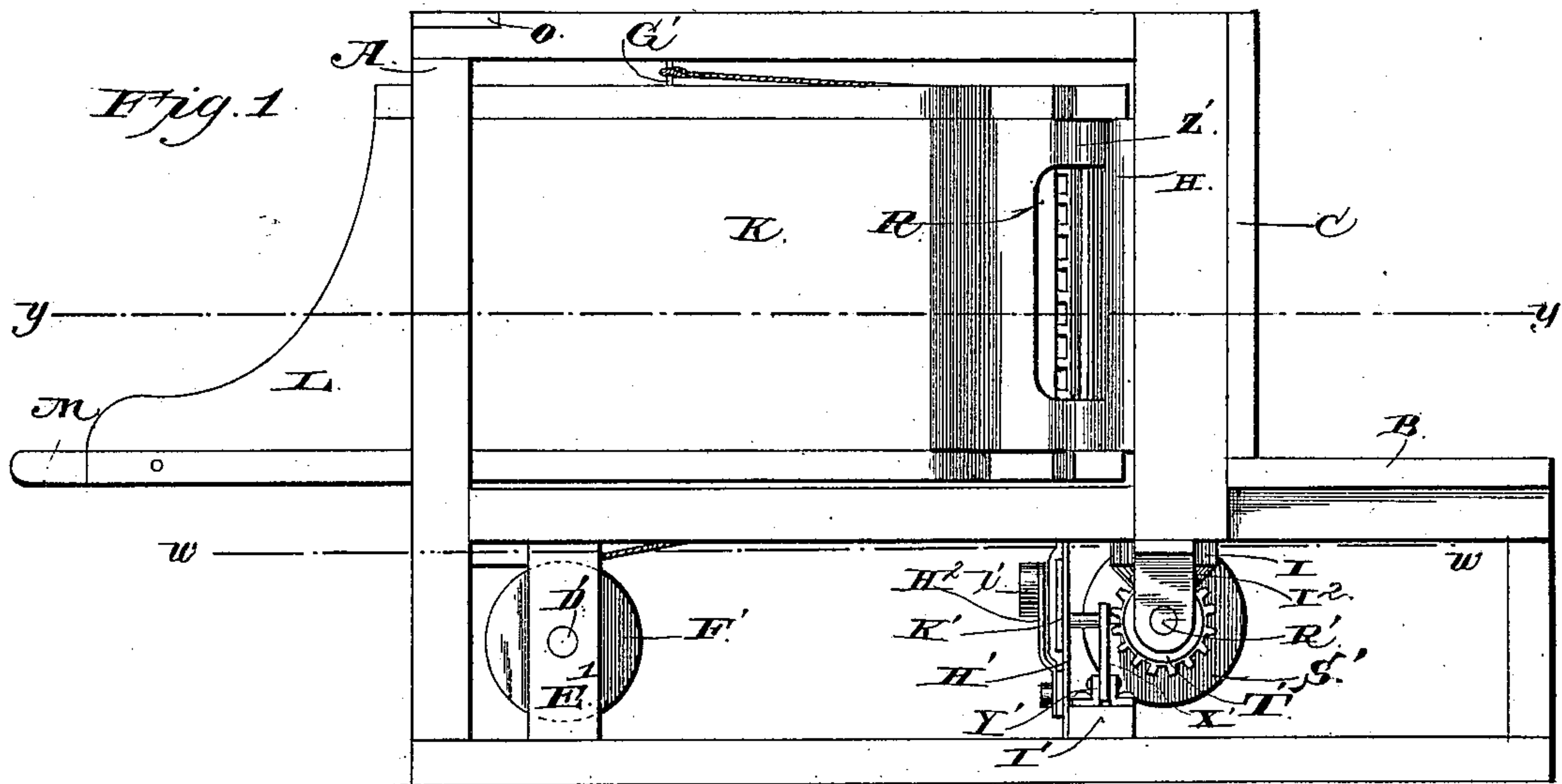
(No Model.)

4 Sheets—Sheet 1.

W. H. HEFFLEY.
BALING PRESS.

No. 400,912.

Patented Apr. 9, 1889.



Witnesses
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Inventor.
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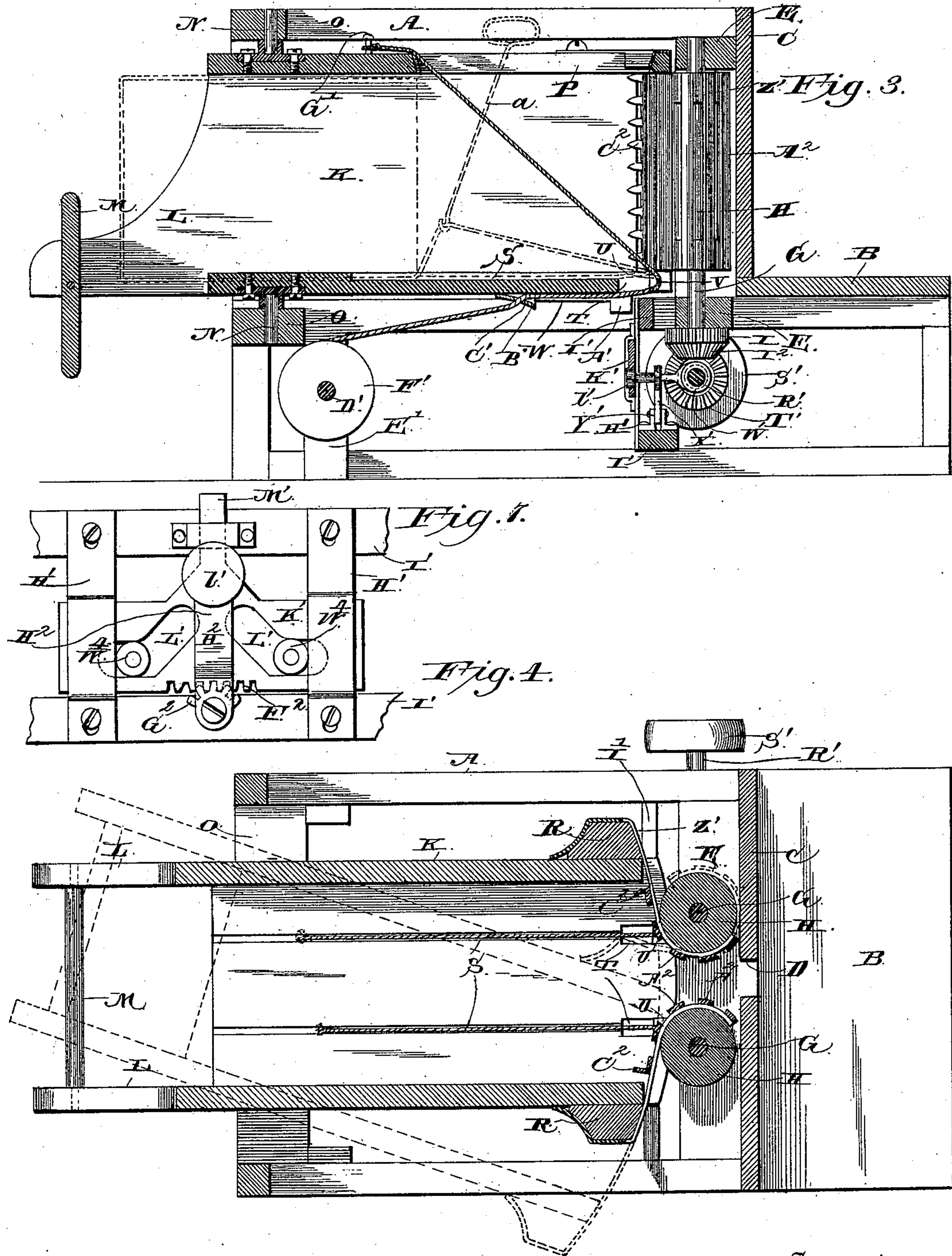
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4 Sheets—Sheet 2.

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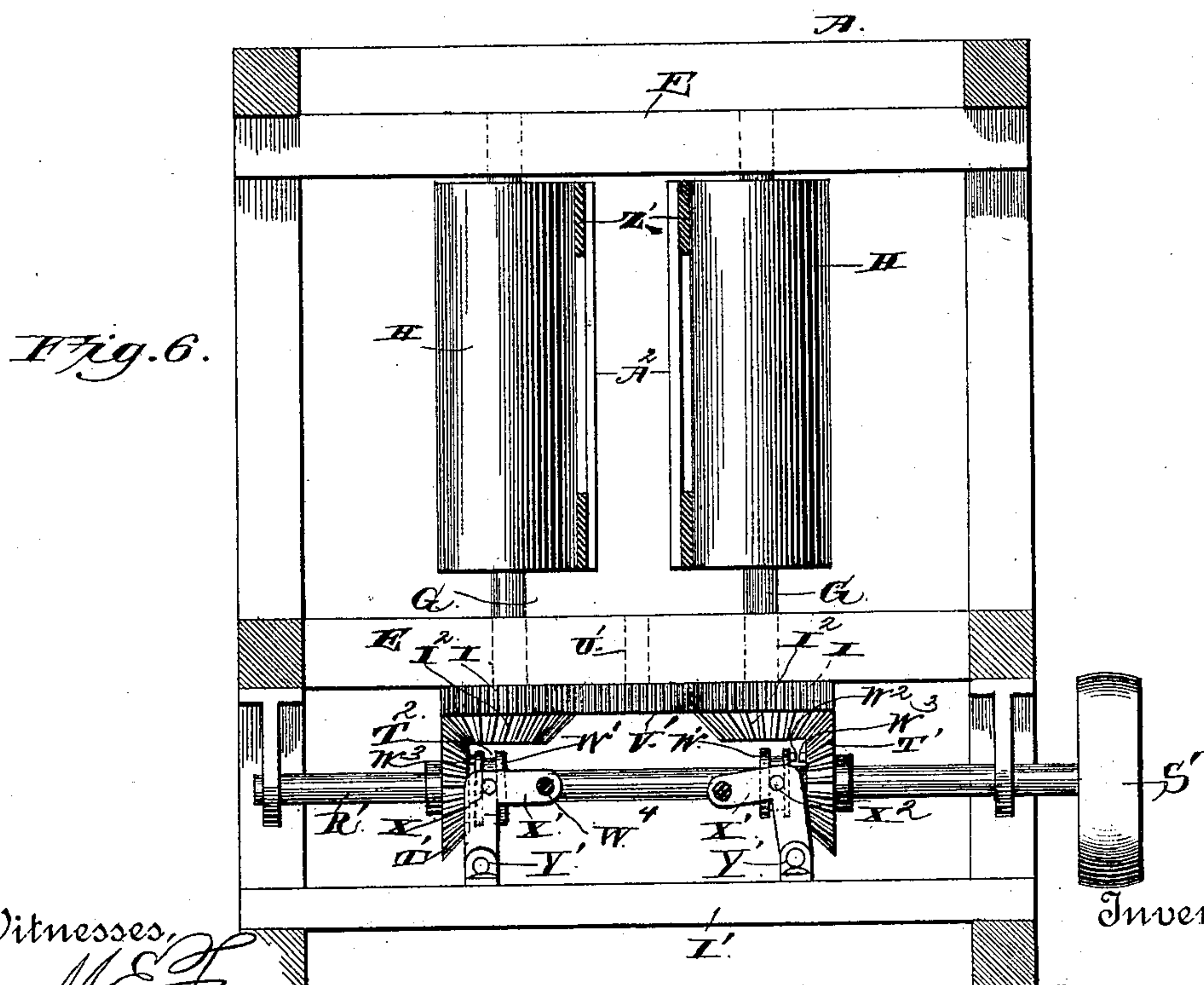
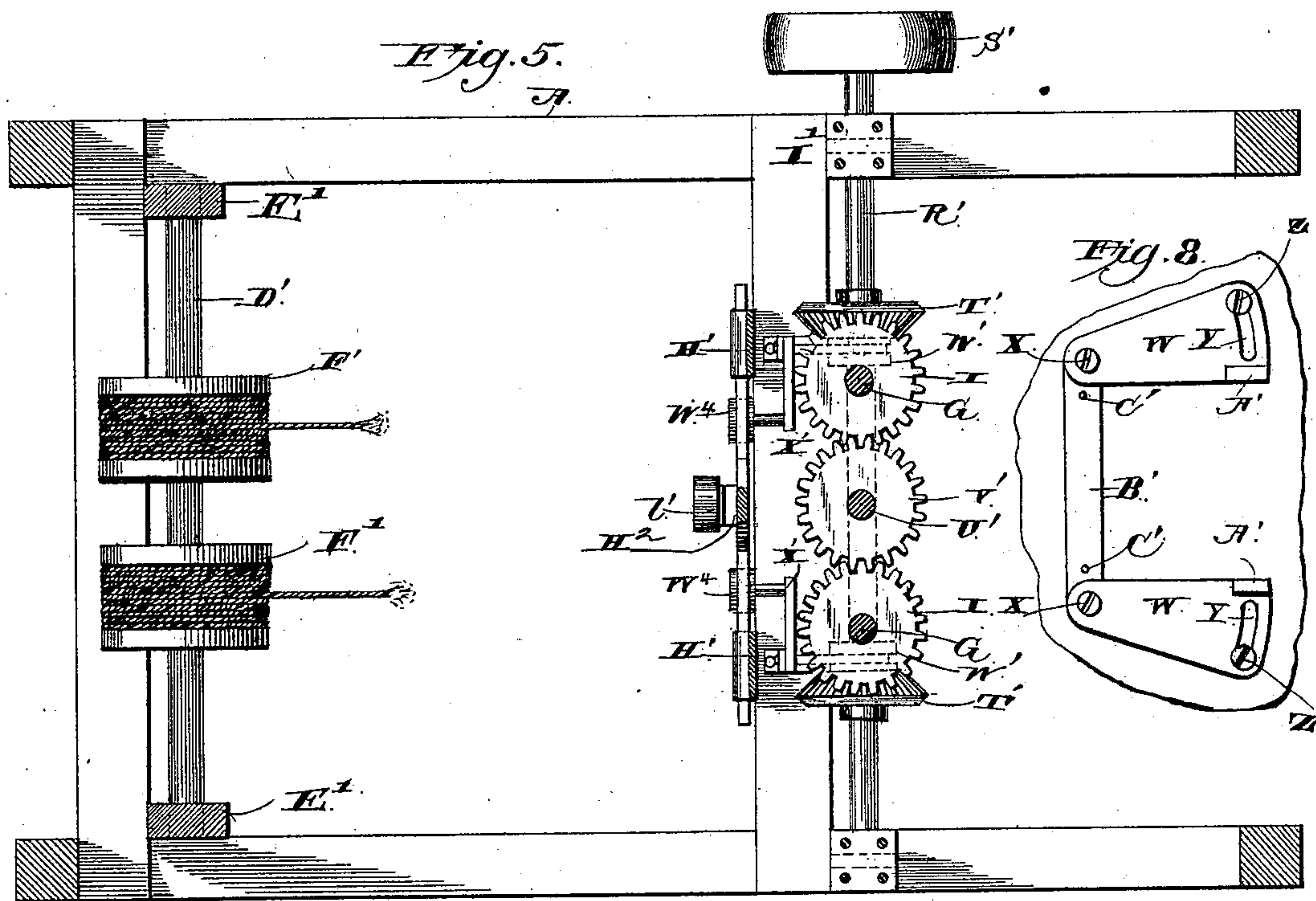
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(No Model.)

4 Sheets—Sheet 4.

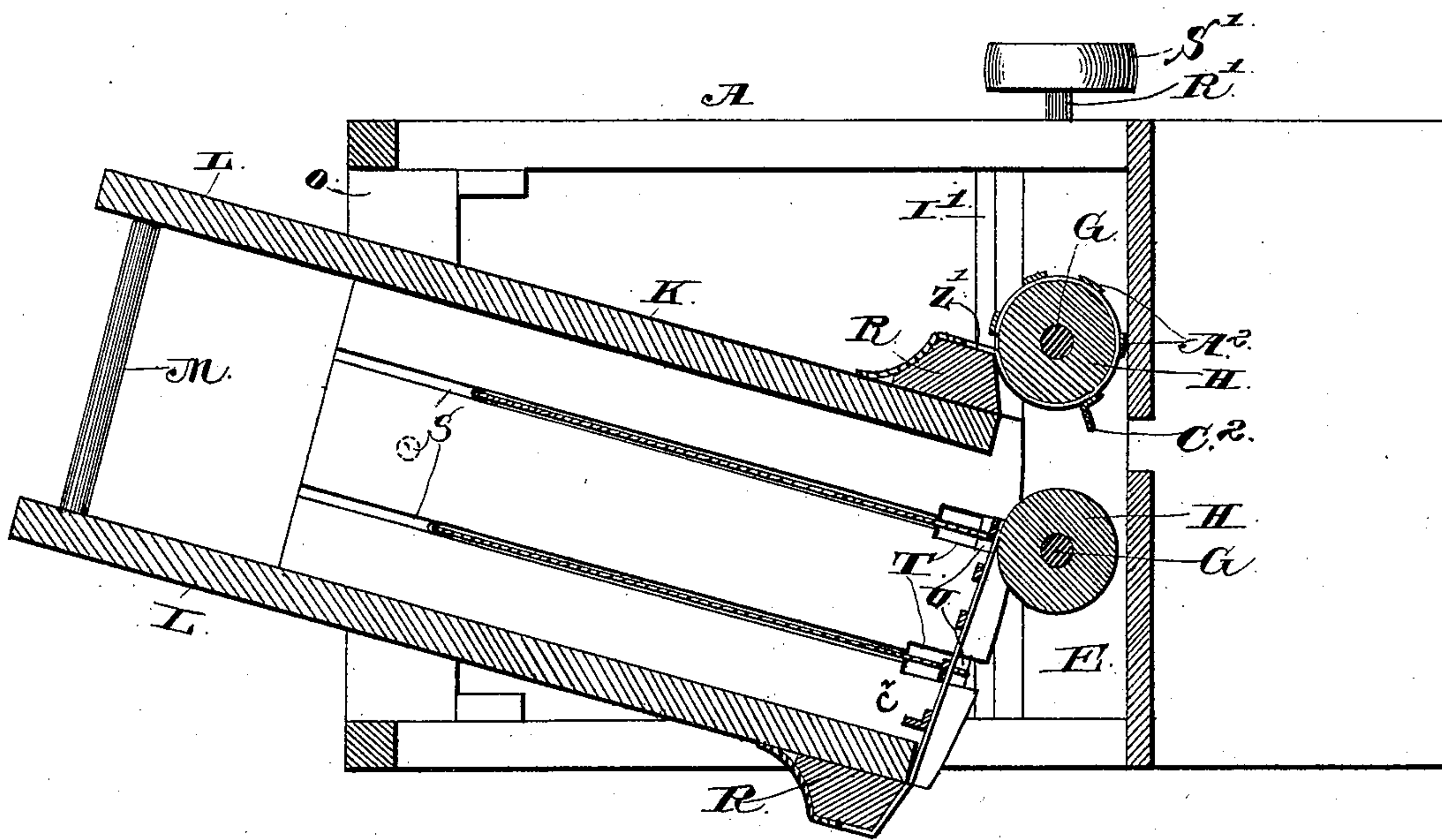
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Fig. 9.



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UNITED STATES PATENT OFFICE.

WILLIAM H. HEFFLEY, OF OSAGE MISSION, KANSAS.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 400,912, dated April 9, 1889.

Application filed July 28, 1888. Serial No. 281,273. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. HEFFLEY, a citizen of the United States, residing at Osage Mission, in the county of Neosho and State of Kansas, have invented a new and useful Improvement in Baling-Presses, of which the following is a specification.

My invention relates to an improvement in baling-presses; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a baling-press embodying my improvements. Fig. 2 is a top plan view of the same. Fig. 3 is a vertical longitudinal sectional view taken on the line *xx* of Fig. 2. Fig. 4 is a horizontal sectional view taken on the line *yy* of Fig. 1. Fig. 5 is a similar view taken on the line *ww* of Fig. 1. Fig. 6 is a vertical transverse sectional view taken on the line *zz* of Fig. 2. Fig. 7 is a detail view. Fig. 8 is a detail view of a portion of the bottom of the press-box. Fig. 9 is a horizontal sectional view on the line *yy* of Fig. 1, showing the press-box in its position at the end of side stroke.

A represents a vertical rectangular frame, which is provided at one end with an elevated horizontal feed-platform, B, and has a vertical end wall, C, rising from the inner side of the said platform and provided with a central vertical rectangular feed-opening, D. On the inner side of the vertical end wall, C, and arranged near the upper and lower edges thereof, are cross-beams E, which form portions of the frame A, and extending through the said beams are a pair of vertical shafts, G, which are arranged on opposite sides of and equally distant from the feed-opening D. To those portions of the said shafts which are between the beams E are secured vertical cylindrical drums H, and to the lower ends of the said shafts G are secured spur-wheels I and miter-wheels I².

K represents a horizontal press-box, which is open at both ends, and is provided at its discharge end with extended arms L, which are formed integrally with its sides. Between the said arms, near the outer ends thereof, is pivoted a gate, M, which is adapted

to be turned to a horizontal position on a level with the bottom of the press-box or to a vertical position across the discharge end of the press-box, for the purposes to be hereinafter stated. The press-box is provided on its upper and lower sides near its rear or discharge end with trunnions N, which have their bearings in cross-beams O, which form portions of the frame A, and the upper and lower sides of the press-box at its front or feed end are rounded concentrically with the trunnions. In the upper side of the press-box and extending for a suitable distance from the feed end thereof are two or more longitudinal slots, P, and projecting from opposite sides of the press-box at its feed end are vertical cleats R.

The bottom of the press-box is provided on its upper side with longitudinal grooves S, which are in the same vertical planes with the slots P. At the front ends of the grooves S, and in the bottom of the press-box, are vertical openings T, in which are secured blocks U, the front sides of which are provided with grooves V.

On the under side of the press-box, at a suitable distance from the front end thereof, are a pair of stop-plates, W, which have their rear ends pivoted on bolts X and have their front ends provided with curved transverse slots Y, which are concentric with the pivotal bolts and through which extend set-screws Z, which engage the bottom of the press-box and serve to secure the front ends of the stop-plates thereto at any desired lateral adjustment. The said stop-plates are further provided at their inner front corners with depending lugs or stops A'.

B' represents a plate, which is arranged transversely under the press-box between the rear ends of the stop-plates and pivotally connected thereto, and said plate is provided near its ends with guide-openings C'.

D' represents a transverse shaft or axle, which is secured between vertical standards E' with which the frame A is provided, and on the said shaft or axle are mounted spools or drums F', each of which is wound with suitable cord or wire for securing the bale. The free ends of the cords or wires are first passed through the guide-openings C', thence forward under the bottom of the press-box to

the blocks U, are guided through the grooves in said blocks, and are from thence passed in an inclined direction upward and rearward through the press-box and through the slots P therein, and are secured on pins G', that project from the upper side of the press-box near the rear ends of the slots.

H' represents a pair of vertical bars, which connect a pair of horizontal beams, I', which are arranged transversely in the frame, the upper beam I' being directly in rear of the lower beam E. Said vertical bars are provided on their rear sides with straps or loops, in which is guided a horizontally-reciprocating bar, K'. This bar is provided in opposite ends with horizontal longitudinal slots L', the inner portions of which incline upward toward each other at an angle of about forty-five degrees. From the upper side of the bar K', at the center thereof, projects a vertical arm, M'.

Journalled in bearings on the under side of the main frame is a transverse shaft, R', which is provided at one end with a crank or driving-pulley, S', and has miter gear-wheels T', which mesh with the miter-wheels I². The said miter-wheels T' are loosely mounted on the shaft R', and engage with the miter-wheels I², and adjacent to the inner sides, respectively, of the wheels T' are arranged the clutch members W', which are feathered on the shaft, and are therefore capable of longitudinal movement thereon. These clutch members are provided with annular peripheral grooves T², and also (on their outer sides) with teeth W², which are adapted to engage similar teeth, W³, on the inner sides of the miter-wheels T'.

U' represents a vertical spindle, which depends from a cross-beam, E, and on the lower end of which is mounted a wheel, V', which meshes with the wheels I.

X' represents a pair of crank-levers, which are fulcrumed on standards Y', projecting upward from the lower cross-beam, I', and the inner arms of said levers are provided with studs having on their ends anti-friction rollers U⁴, which engage the angular slots L' of the reciprocating bar K'. The bell-crank levers are further provided with guide-pins X², which engage the peripheral grooves of the clutch members W', whereby when the said levers are moved the loosely-mounted clutch members are moved on the shaft R' and either engaged with the miter-wheels or disengaged therefrom.

Z' represents straps or belts, which have their outer ends secured on the outer sides of the cleats R, and the inner ends of the said belts are secured to the drums H. The said belts are connected in pairs by vertically-crossed slats A², and the said slats which are nearest the inner ends of the said straps are provided with inwardly-projecting spur-teeth C².

The operation of my invention is as follows: The press-box is in its initial position when

its sides are parallel with the sides of the frame A, and the central portion of its mouth is directly opposite the feed-opening D, and the pairs of straps are partly wound on the drums H, and are stretched over the mouth of the press-box between the drums and the sides of the box.

When the driving-shaft is rotated, the shafts G, which are geared thereto, are rotated by means of an idler in the same direction, which rotates the drums H in the same direction, one of the said drums being thereby caused to wind up the pair of straps which are attached thereto, and the other drum being caused to slacken or uncoil its pair of straps, thus causing the press-box to be turned horizontally on its trunnions and swung to one side of the frame, as shown by dotted lines in Fig. 4. The teeth or spurs C², which are attached to the coiled straps, are now arranged in a vertical series on the inner side of one of the drums, and at one side of the space between the drums, and when the operator, who is stationed in front of the platform, feeds hay or other material to be baled into the opening D it is engaged by the said teeth or spurs as the latter are drawn inward by the uncoiling of the straps, thereby drawing the hay into the press-box and carrying it to one side thereof. When the press-box reaches the opposite end of the stroke, the other set of teeth or spurs are arranged at the opposite side of the space between the drums, and when the hay is fed in it is caught by said teeth or spurs and carried to the opposite side of the press-box. While one clutch member W' is in engagement with the adjacent wheel T', the other clutch member is out of engagement with the companion wheel T', this being caused by one of the stop-plates of the press-box engaging the arm M' of the reciprocating plate K' at the end of each lateral stroke or vibratory motion of the press-box and moving the said bar K' longitudinally, whereby its angular cam-slots elevate one of the anti-friction rollers (so as to cause the clutch member connected thereto to engage the adjacent wheel T' and rotate the same,) and lower the other anti-friction roller, thereby throwing the clutch member connected therewith out of engagement with its wheel T', and allowing the latter to turn idly on the shaft.

From the foregoing it will be understood that the wheels T' are at all times engaged with and at all times turn with the wheels I²; further, that the clutch members turn with the shaft and in the same direction, that the clutch members are alternately engaged with and disengaged from the wheels T', and consequently the shafts G are rotated alternately in opposite directions.

The bar K' is provided on its lower side with rack-teeth F², which engage a pinion, G², mounted on a suitable spindle, and from the said pinion projects an arm, H², which has a weight, W', at its upper end. The momentum acquired by this weighted arm as it is rocked

back and forth by the reciprocating bar K' causes the latter to be moved to the full extent of its stroke at each longitudinal movement thereof, and thereby insure the successful operation of the clutch-levers by the cam-slots of the said bar.

From the foregoing description it will be understood that the press-box, when the press is in operation, is oscillated in a horizontal direction first to one side of the frame and then to the opposite side thereof, and that this oscillating motion of the press-box is accompanied by an alternate coiling up and uncoiling of the straps Z', and by simultaneous partial rotations or vibrations alternately in opposite directions of the drums H, so that each set of spurs or teeth at the inner ends of the pairs of straps will alternately be arranged in the space at the mouth of the press-box between the drums H, so that the hay or other material which is fed between the drums will be caught by the said teeth or spurs and drawn into the press-box first toward one side thereof and then toward the other in successive strata or layers. By this means the hay or material is continuously accumulated in the press-box and moved longitudinally therethrough by the pressure of the succeeding strata or layers, and the mass of hay or material, as it moves rearward in the oscillating press-box, presses against the cords or wires, so as to cause the same to envelop the front side and bottom of the mass of materials, and as the latter continues to move rearward the cords or wires are drawn from the spools or drums and caused to be stretched also over the upper side of the mass of material, so as to envelop three sides thereof. When a sufficient quantity of the material is thus compressed to form a bale, the operator causes the machine to momentarily cease to operate, and by means of a hooked rod, a, which he inserts through the slots P, catches the cords or wires in the grooves in the bottom of the press-box and draws the same upward over the proximate vertical side of the bale or mass of material, and secures said wires or cords to form the bale, severs the ends thereof, and secures the same again to the pins G', as before, and the operation before described is then repeated, each bale while it is being formed in the press serving to press its predecessor rearward to the press-box, and to finally eject the same from the rear end thereof.

When the pivoted gate M at the discharge end of the press-box is in a horizontal position, the bales are free to escape from the press-box; but when the said gate is turned to a vertical position it effectually arrests the escape of the rearmost bale, and causes the bale which is being formed to be compressed with great force into the smallest possible space.

Having thus described my invention, I claim—

1. The combination of the oscillating press-box having an open mouth, the drums jour-

naled in fixed supports at points opposite the mouth of the press-box and geared together so as to vibrate simultaneously in the same direction, and the straps provided with teeth or spurs, connecting said drums, respectively, to opposite sides of the mouth of the press-box and adapted each to coil and uncoil alternately thereon, whereby the mouth of the press-box is oscillated, substantially as specified.

2. The combination of the oscillating press-box having an open mouth, the vibrating drums journaled in fixed supports beyond the mouth of the press-box and geared together to revolve simultaneously in the same direction, the straps coiled on the said drums and connected, respectively, to opposite sides of the mouth of the press-box, and the slats or cleats secured to the straps and provided with spurs or teeth, substantially as specified.

3. The combination, in a baling-press, of the oscillating press-box having an open mouth, the gate at the rear end of the press-box, the vibrating drums arranged opposite the mouth of the press-box in proximity to each other and geared together to revolve simultaneously in the same direction, the said direction being reversed alternately, and the straps connecting the drums, respectively, to opposite sides of the mouth of the press-box and coiled on the drums, whereby as the latter are vibrated the press-box is oscillated.

4. In a bailing-press, the combination of the shaft R', having the loose gear-wheels T', the clutches feathered on the said shaft and adapted to alternately engage their respective gear-wheels, the revoluble shafts G, having drums at the upper ends and having their lower ends geared together and provided with gears I², engaging the gear-wheels T', the pivoted press-box adapted to oscillate and having its mouth presented to the drums, the straps connecting opposite sides of the mouth of the press-box to the drums, the levers connected to the clutches and adapted to move them longitudinally on the shaft to engage the gear-wheels T', and connections, substantially as described, to the press-box and the levers to operate the latter, substantially as specified.

5. The combination of the reciprocating bar K', having the cam-slots, the pinion engaging the rack on said bar and having the weighted arm, the clutch-levers engaging the cam-slots, and the oscillating press-box having the stop-plates to engage and operate the bar K' alternately, substantially as described.

6. The combination of the oscillating press-box, the drums arranged at the mouth thereof, straps connecting said drums to opposite sides of the mouth of the press-box, gearing for rotating the drums simultaneously in the same direction, the power-shaft, the clutch members mounted on the shaft and adapted to alternately engage the said gearing, the clutch-levers connected to the clutch members, the reciprocating bar K', having the

cam-slots engaged by the clutch-levers and provided by the arm M', and the stops secured to the press-box and adapted to engage said arm, for the purpose set forth, substantially as described.

7. The combination, in a baling-press, of the oscillating press-box, the stop-plates secured thereto and adjustable laterally thereon, and the reciprocating-bar having the arm engaged by the stop-plates, for the purpose set forth, substantially as described.

8. The combination of the oscillating press-box having the vertical longitudinal slots in its upper sides and the guides in its lower side near its mouth, the drums arranged opposite the mouth of the press-box, the straps connecting said drums to opposite sides of the mouth of the press-box, the reels or spools, and the cords or wires thereon directed by

the guides and passed upward and rearward through the press-box, and the slots therein, substantially as described.

9. The combination of the oscillating press-box open at its front and rear ends, the vibrating drums arranged opposite the mouth of the press-box and adapted to rotate simultaneously in the same direction, the straps connecting said drums to opposite sides of the mouth of the press-box, and the gate pivoted in the rear end of the press-box, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

WILLIAM H. HEFFLEY.

Witnesses:

I. P. WILLIAMS,
J. H. WOODS.