

S. W. Tyler.

Hemp & Flax Harvester.

N^o 62090

Patented Feb. 12, 1867.

FIG. 1.

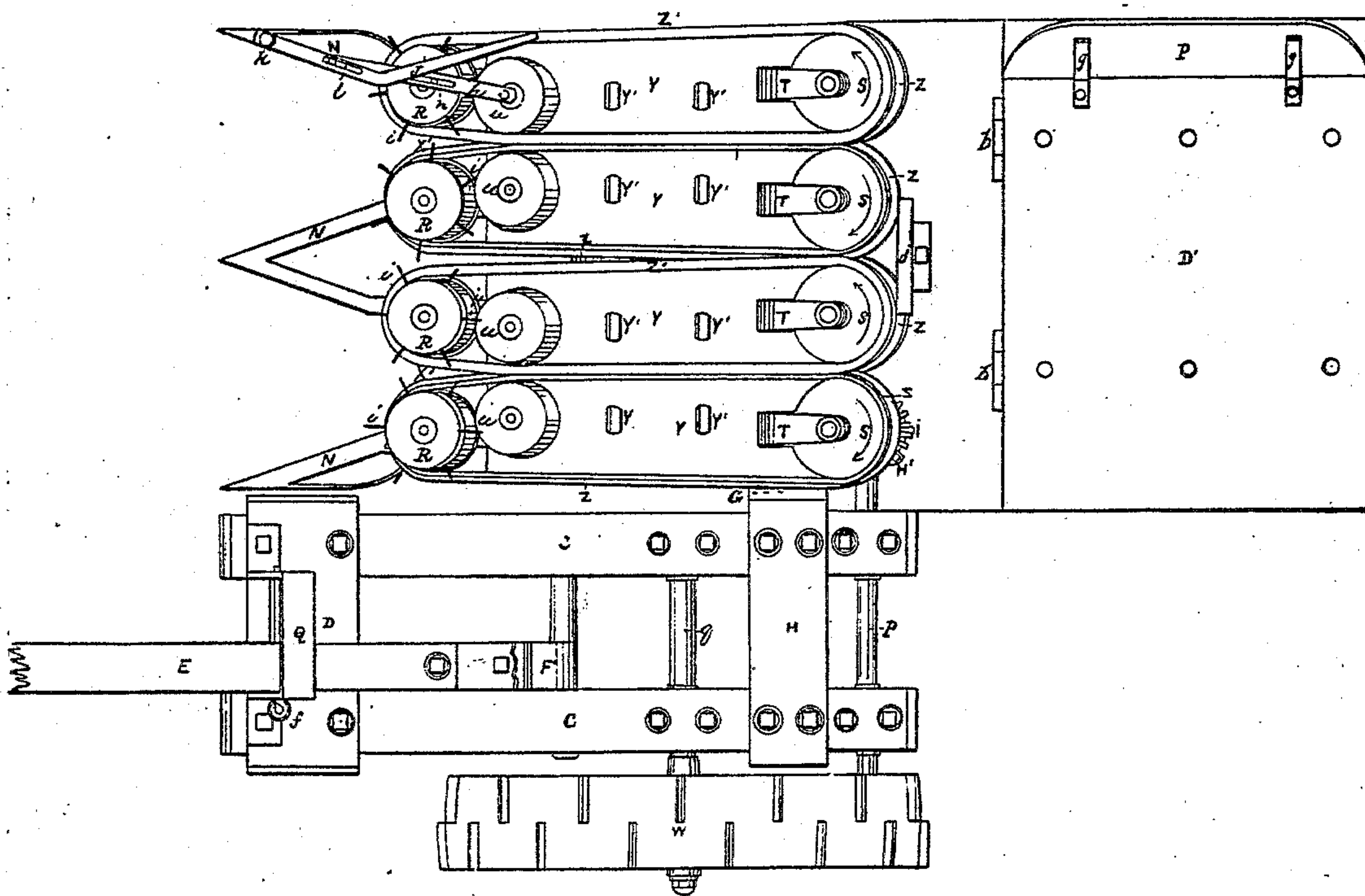
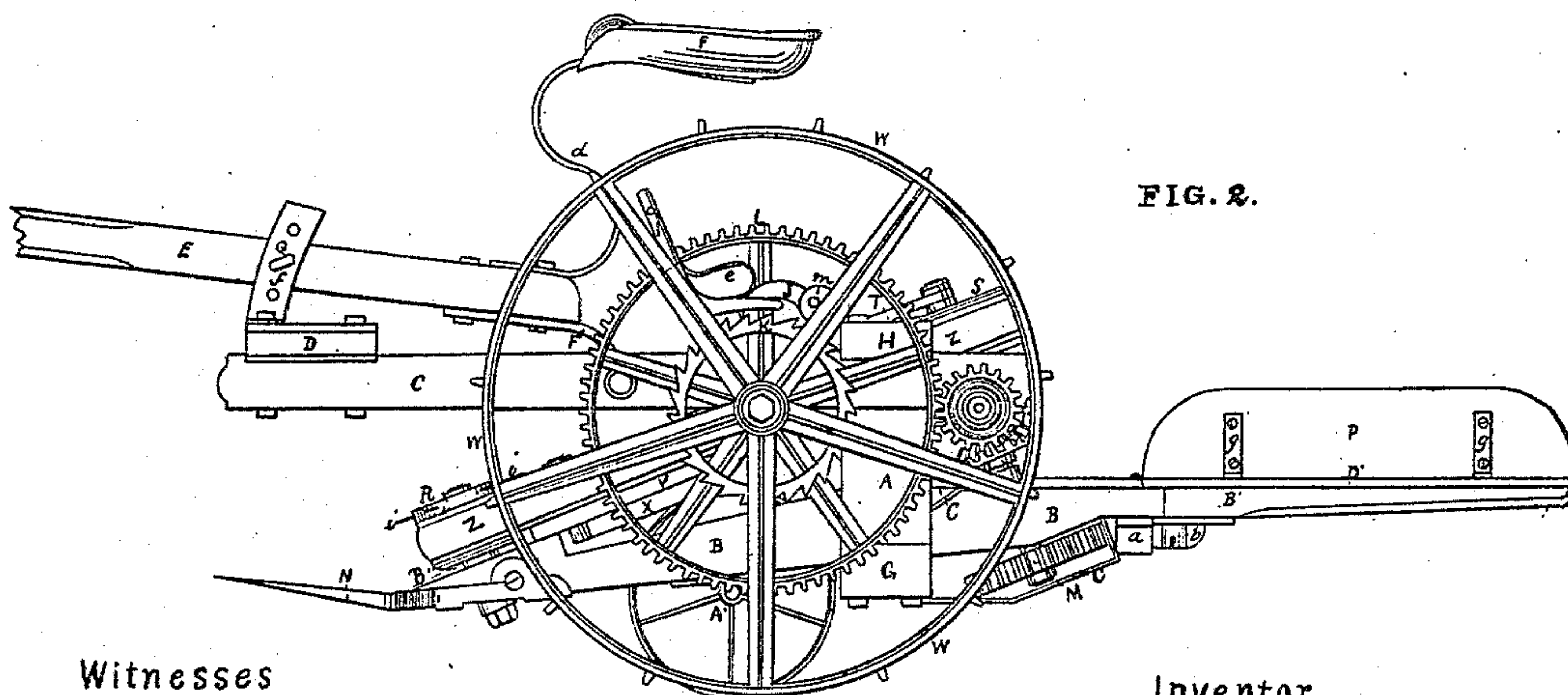


FIG. 2.



Witnesses

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FIG. 8.

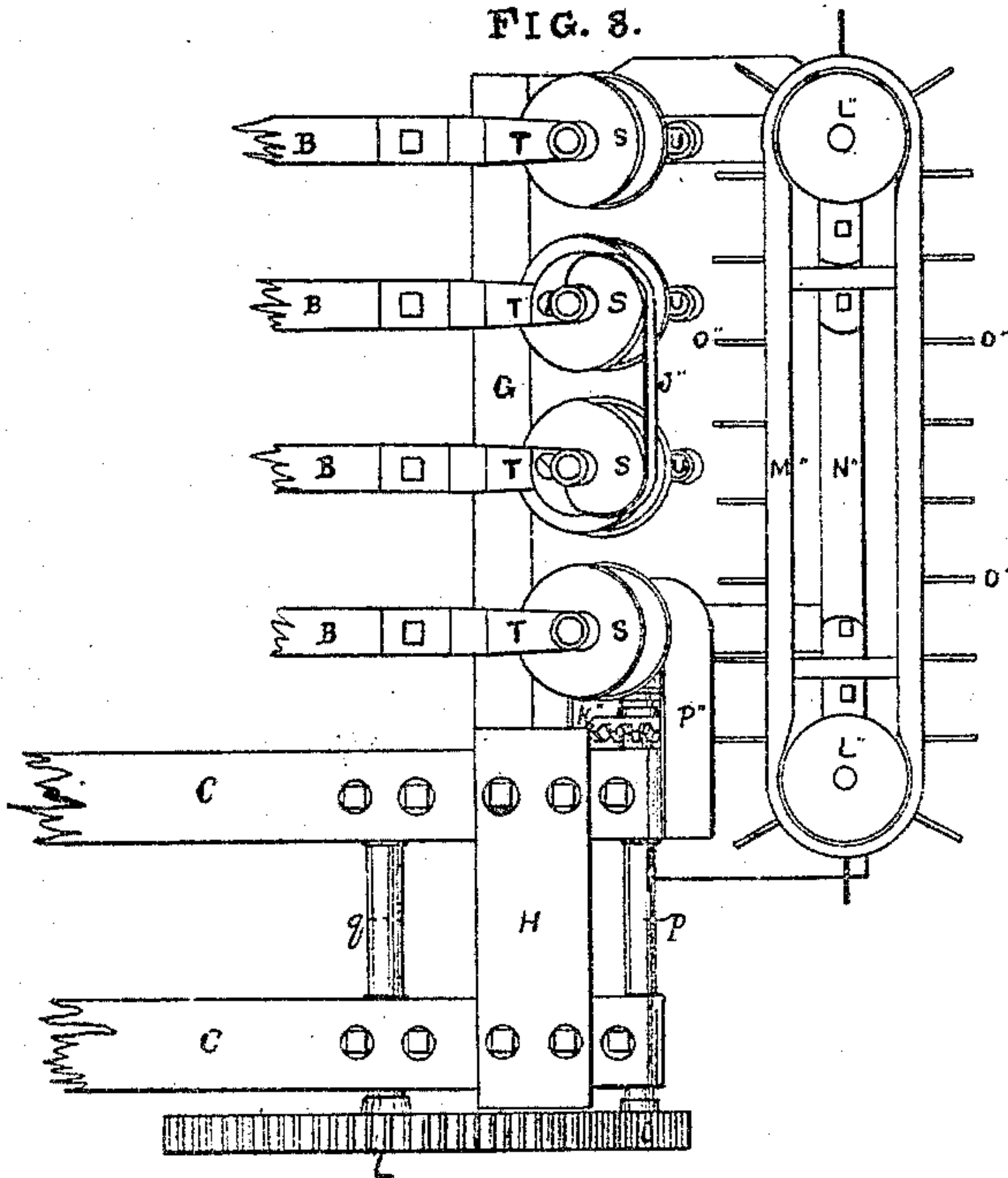


FIG. 9.

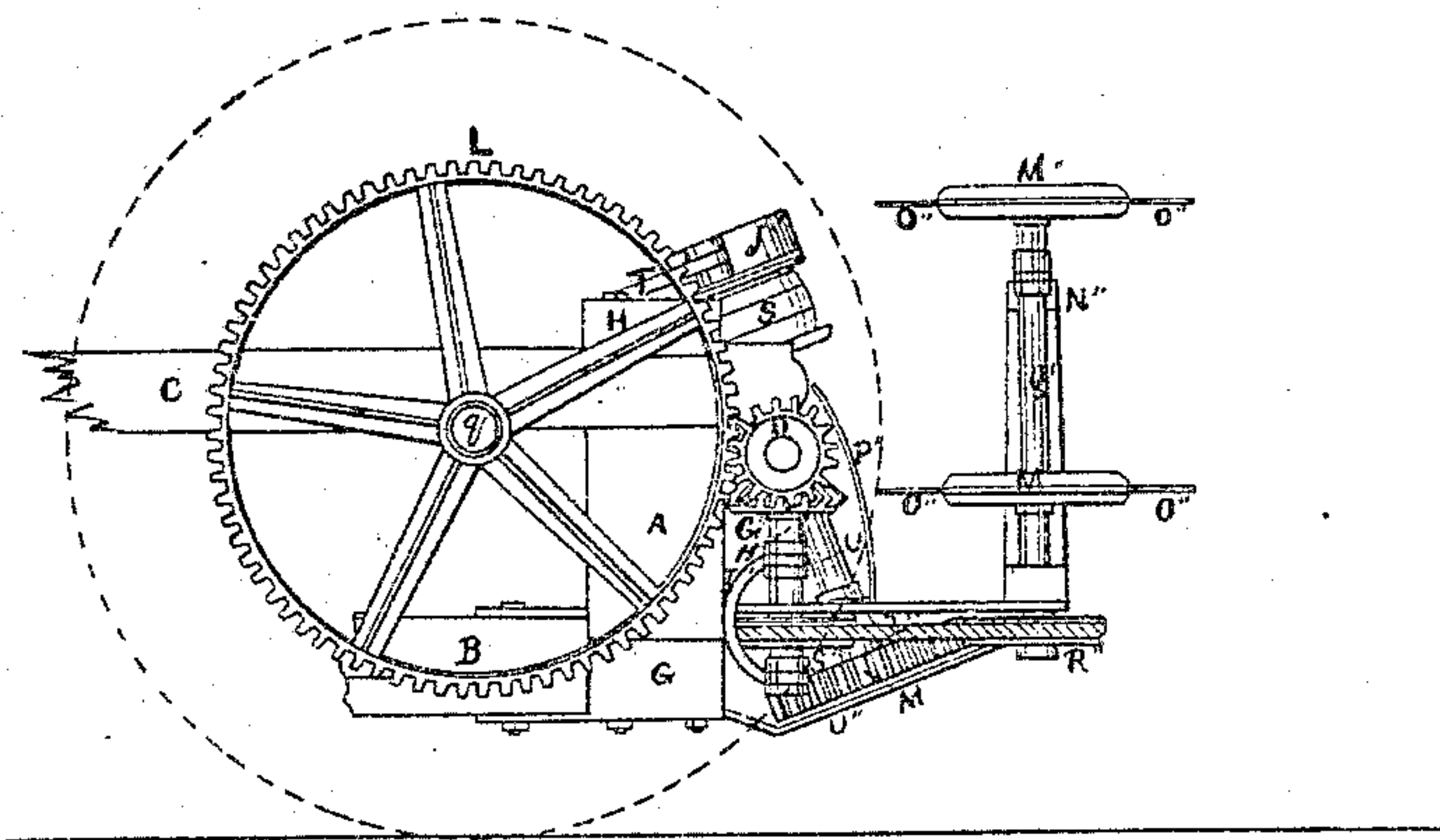


FIG. 10.

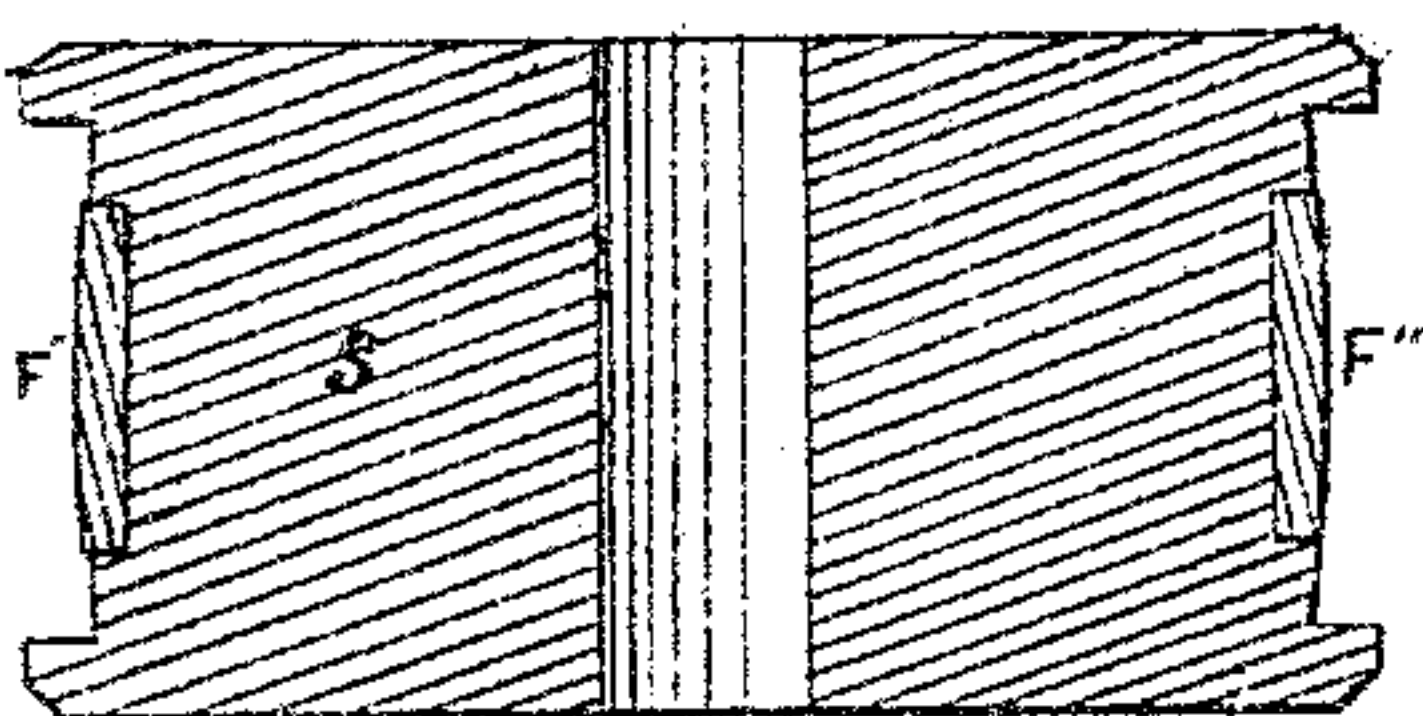
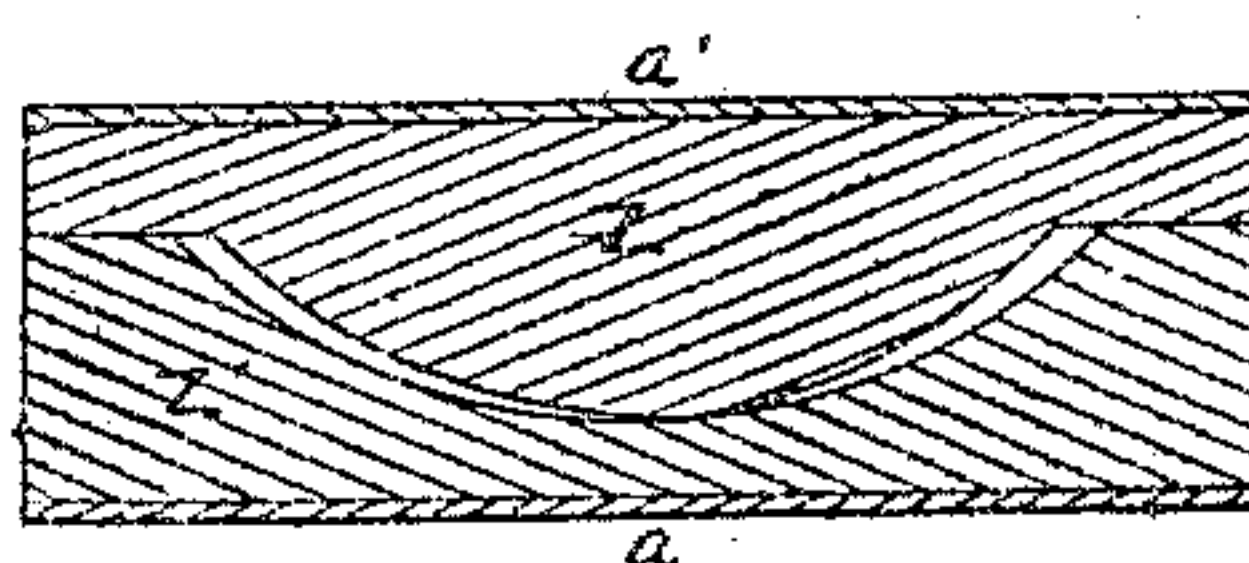


FIG. 11.

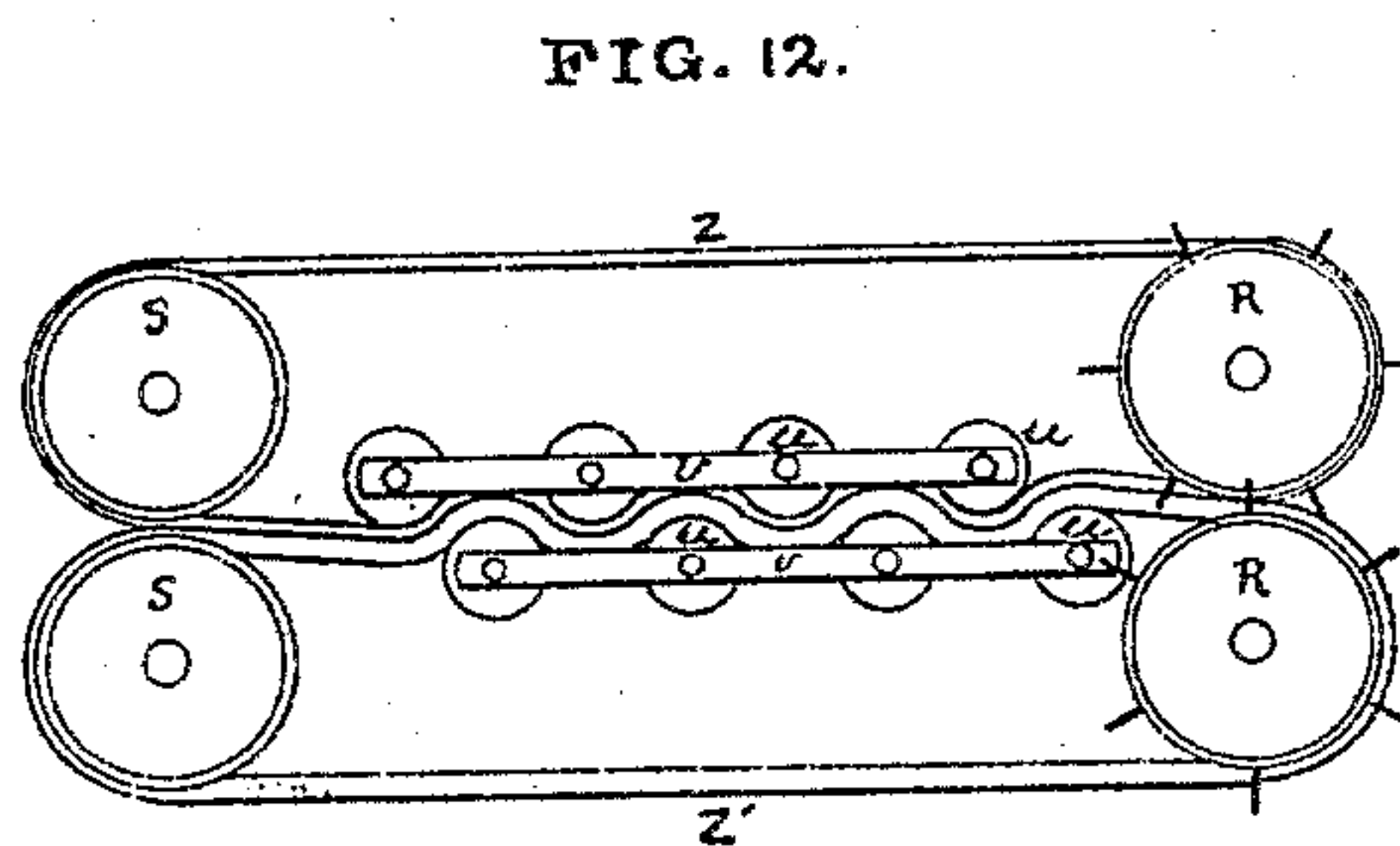
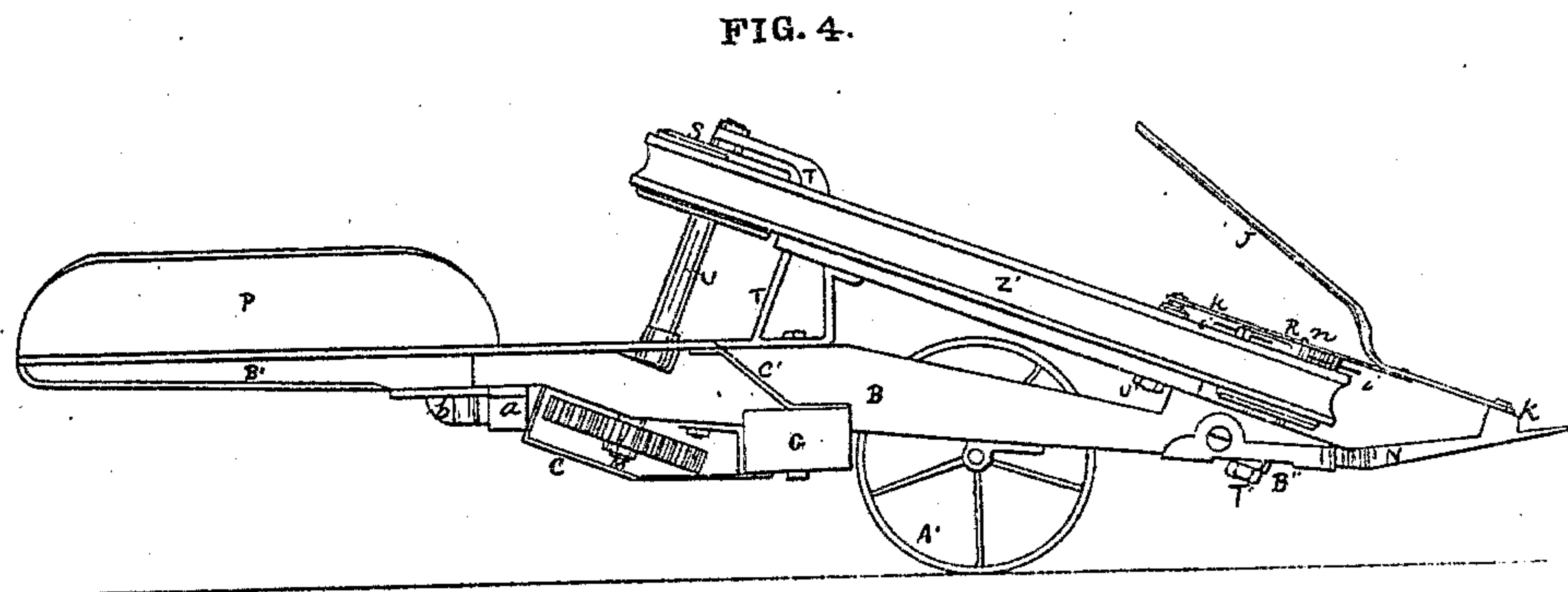
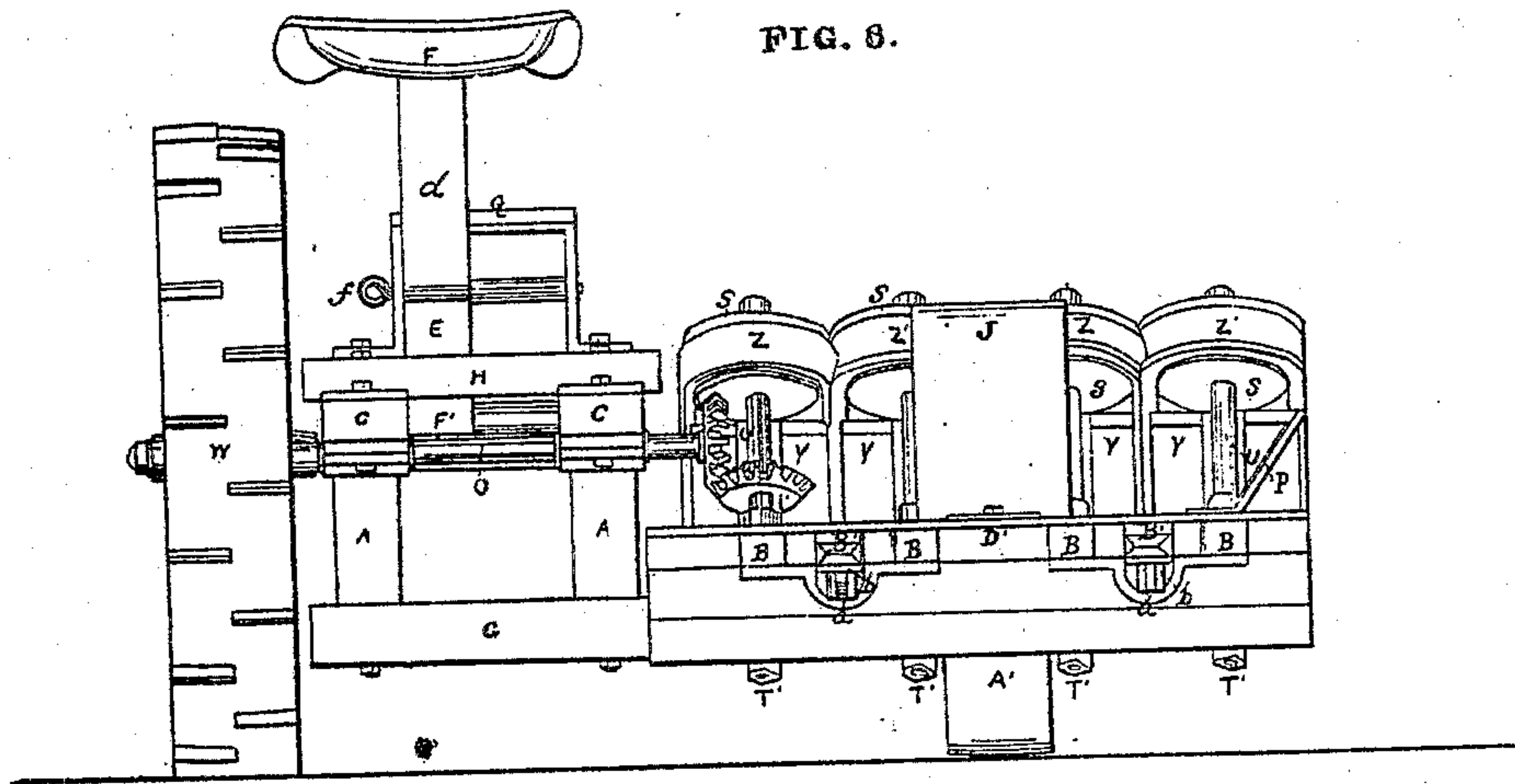


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FIG. 5.

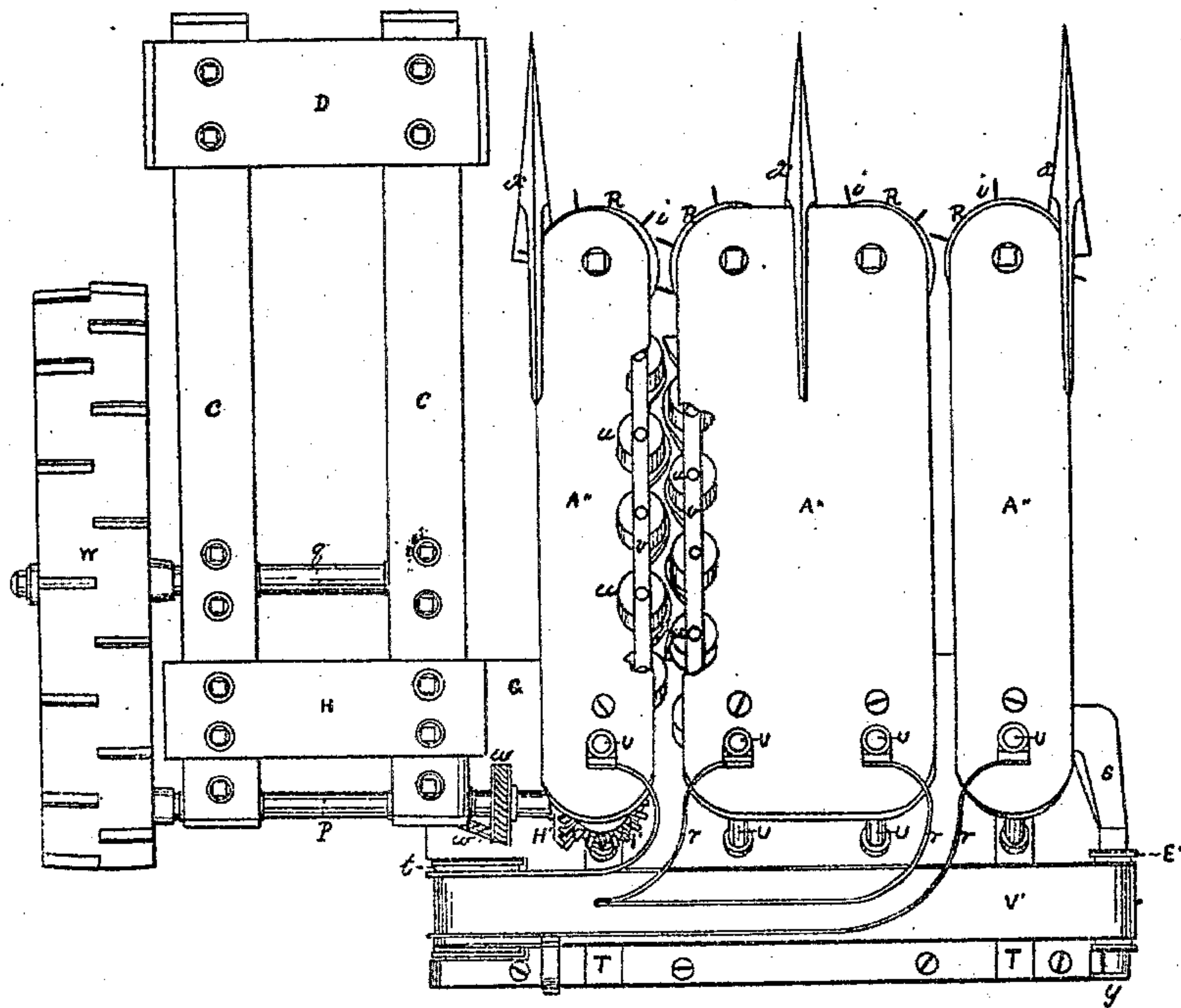


FIG. 6.

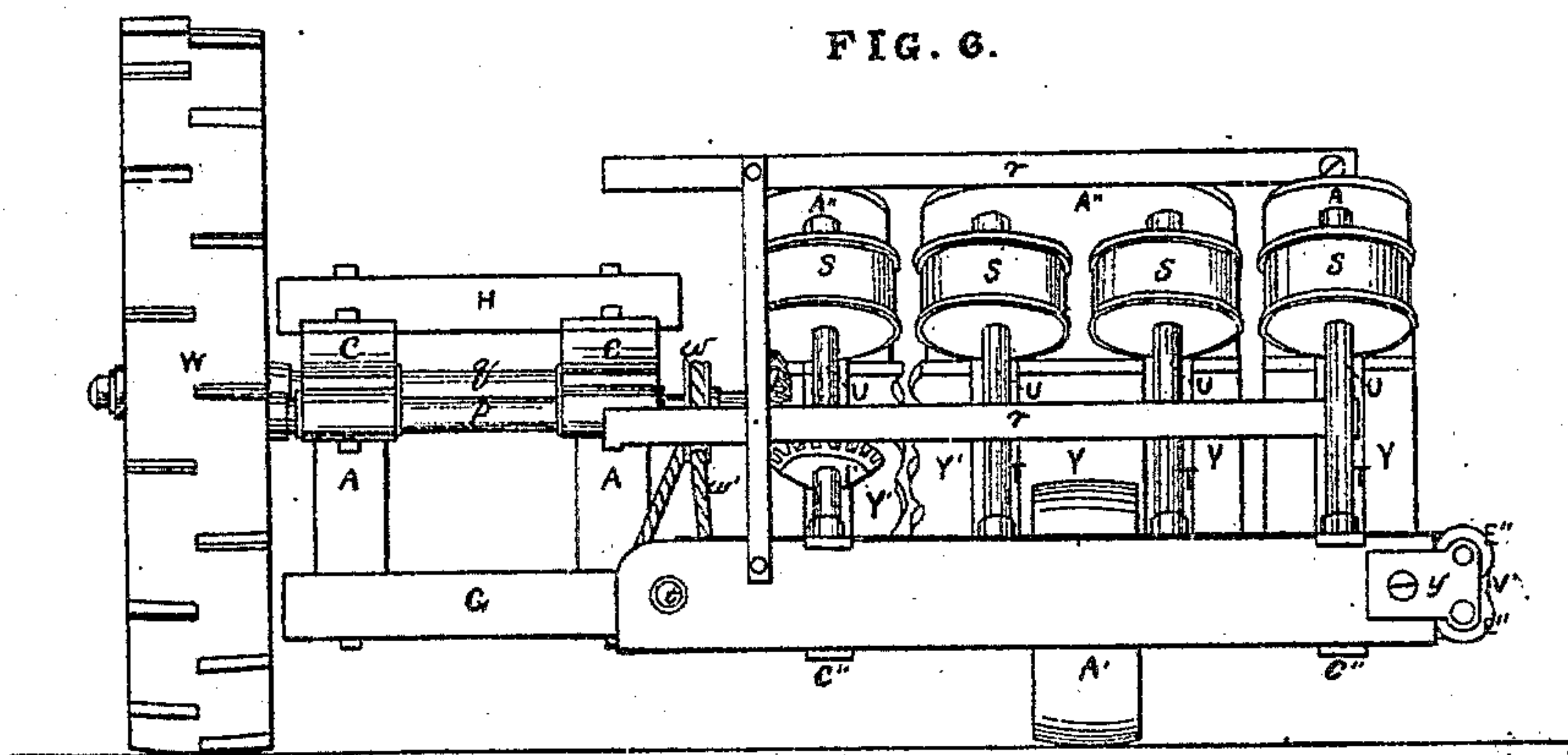
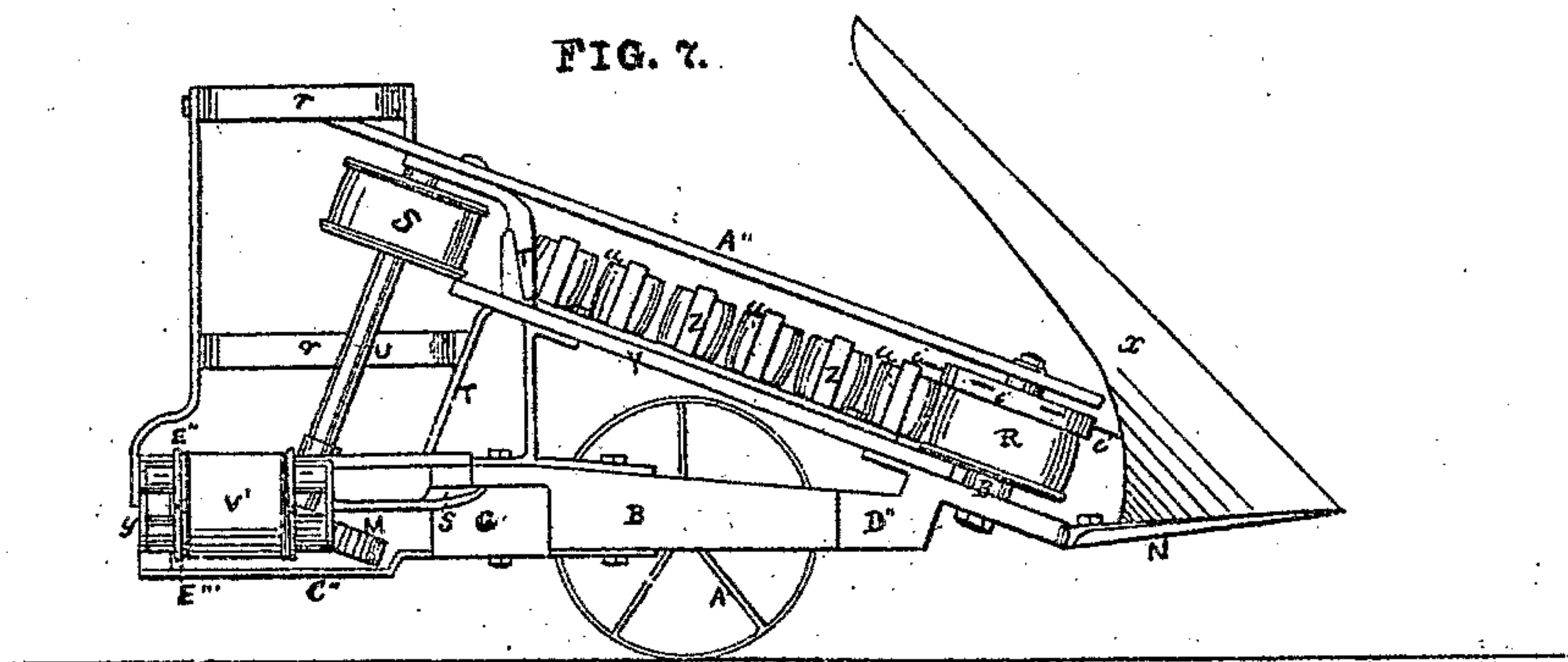


FIG. 7.



United States Patent Office.

SAMUEL W. TYLER, OF TROY, NEW YORK, ASSIGNOR TO HIMSELF, THOMAS M. CLEEMAN, GEORGE P. PRESCOTT, WILLIAM DEYERMAND, EDWARD H. JONES, AND HENRY HOLMES.

Letters Patent No. 62,090, dated February 12, 1867.

IMPROVEMENT IN MACHINE FOR PULLING FLAX.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, SAMUEL W. TYLER, of the city of Troy, in the county of Rensselaer, and State of New York, have invented a new and useful Machine for Pulling Flax and such other crops as require similar harvesting; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figures 1 and 5 are plan views of my invention.

Figure 2 is an elevation of the actuating side of the same.

Figures 4 and 7 are elevations representing the crop or land-side of the same.

Figures 3 and 6 are rear elevations of the same.

Figure 8 is a sectional plan view of the same, showing an automatic raking delivery.

Figure 9 is a side elevation of fig. 8.

Figure 10 is a cross-section of the pulley S.

Figure 11 is a cross-section of the belts Z and Z' placed together.

Figure 12 is a plan view of the belts and pulleys, showing method of obtaining equal pressure upon the belts.

Similar letters refer to like parts of the machine.

The object of this invention is to obtain a machine which, as it is drawn along, will pull up the crop by the roots and deposit it systematically and in a manner that it may be conveniently bound into gavels. And to this end the invention consists in the use of a series of endless belts or bands so arranged upon pulleys as to work in conjunction by pairs, each belt of each pair working in the same plane as its fellow, and in such further manner as to secure to the crop, without injury, a continuous and uniform movement from the point of its first contact with the belts to the point of its delivery from the same. The invention also consists in securing to the belts a lifting force, by arranging them in a manner to traverse an inclined plane, and by which force the crop is lifted out of the ground, the whole substantially as hereinafter more fully shown and described.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A, B, C, D, H, and G constitute the frame of the machine. The side pieces C C, the cross-pieces D and H, the pendent pieces A, and the transverse beam G, are framed and firmly fastened together, forming a rectangular frame with the transverse beam G, extending laterally to any desired width of swath. The longitudinal pieces or arms B, and the stanchions T, are placed together at proper intervals upon and firmly fastened to the transverse beam G, and form supports for the studs B'', shafts U, and boards Y; the whole so arranged as to form an open space through which the crop may pass unimpeded to the platform. The actuating side of the machine is supported by the wheel W, while its opposite side is supported upon the wheel A', which is placed in such a position as to travel within the path of the machine and not to interfere with the crop as it passes between the belts Z and Z' to the platform D'. The driver's seat F is placed upon the spring d, which is attached to the tongue E, which is also attached flexibly to the frame of the machine, and extends within and through the looped stanchion Q, and is held in any desired position by the hand-pin f; the whole so evenly and properly balanced that no important weight falls upon the necks of the team while working the same. The platform D' is attached to the machine by hinges, b, in such a manner that while it cannot fall below its proper level, it may be folded up against the machine for convenient transportation and storage, and while at work it will so yield as to prevent any liability of its being strained or broken by being brought into contact with the ground in consequence of the wheels W and A' being brought into a position lower than the ground immediately under the platform. The pinion O is placed upon the transverse shaft p, and intersects with the gear L. Upon the opposite end of the shaft p is placed the gear-wheel H', which intersects with the gear-wheel I', which is placed upon the first of the inclined shafts U. Upon the lower ends of the inclined shafts U are placed gear-wheels M, intersecting one with another in such a manner as to communicate motion of like speed to each of the said shafts. Upon the gear-wheel L is a ratchet, K, and upon an arm of the driving-wheel W is pivoted a pawl, J, which is placed at will either in or out of gear with the ratchet K, by means of the combined spring e and lever I, which is also pivoted to an arm of the driving-wheel W. As the machine advances when at work, the pawl J is allowed to fall into gear with the ratchet K, by which motion is communicated from the driving-

wheel W to the gear-wheel L, and from which motion is communicated to the shaft U, through the medium of the pinion O, the shaft P, the gear-wheels H' and I', and the series of gear-wheels M; the motion of each of the shafts U being opposite to that of the one next preceding or next following it in the series, and as indicated by the arrows. The extreme front ends of the arms B are chamfered so as to form a series of inclined planes at right angles to the shafts U, and are slotted for the insertion and adjustment of the studs B''. Upon each of the studs B'' is placed loosely a pulley, R, forming a series of the same, and a corresponding series of pulleys, S, are placed firmly upon the shafts U, at an elevation in line with the pulley R. In fig. 7 is shown an attachment of metal D'' upon the arms B, and has an extension which forms the guard N. This attachment is formed in a manner to correspond with the inclined plane, as described above, and is slotted for the reception of the studs B'', as also described. The boards Y are firmly attached, at their upper ends, upon a projection of the stanchion T, and at their lower ends upon the ledges of the arms B, and form stiffening braces to the arms B, guides to the belts Z and Z', and supports for the intermediate pulleys u. The intermediate pulleys u are placed loosely upon studs, which are inserted through the boards Y, and made adjustable in transverse slots, Y', as shown in fig. 1 of the drawings. The belts Z and Z' are placed around the pulleys S and R, as seen in fig. 1, and are actuated each, respectively, in directions corresponding with the motions of the pulleys S and shafts U, as hereinbefore described. The guards N are firmly fastened to the arms B, and are used to separate and guide the crop properly towards the points where it is grasped between the belts. The fingers i are inserted in the pulleys R, and by the action of the pulleys are used to comb or incline the crop within the grasp of the belts. The rate of motion given to the belts Z and Z' in their path around the pulleys is made to correspond with the motion of the machine as it advances over the ground; that is to say, the grasping sides of the belts are made to traverse backwardly at the same rate of speed at which the machine is advanced, so that the point in the belts at which the crop is grasped, in relation to the ground, stands still, as by the following will more fully appear. The required amount of pressure of the belts upon the crop, while the same is being lifted out of the ground, is obtained by means of the adjustable pulleys u, and as the machine advances the rear pulleys S exert a continual lifting force upon the grasping sides of the belts, raising them, together with the crop, gradually from the ground, until the pulleys S have advanced to the point at which the crop is grasped, when the crop is discharged from between the belts, and deposited by falling backward regularly upon the platform D', or is carried off at the side of the platform by either of the automatic raking devices, as shown in figs. 5, 6, 7, 8, and 9. In figs. 1 and 4 is shown a separating device, j, which is used for separating the swath from the standing crop. The piece j is pivoted to the guard N at k, and is made to vibrate by the action of the pulley R in such manner as shall shake apart the clinging tops of the crop. In figs. 5 and 7 are shown separating swords, x, which are rigidly attached to the guards N, and are used to separate the tops of the crop and assist in guiding the same properly between the belts. The guards or shields J' and J'' are used to prevent the crop from being drawn between the belts Z and Z' on their return from the pulleys S to the pulleys R, substantially as shown in figs. 1 and 8. The gear-wheels H', I', K'', and G'' are protected from becoming entangled by the crop by the use of the sheet-iron hood or shield P'', substantially as shown in figs. 8 and 9. The covering boards A'' are used to prevent the crop from becoming improperly entangled around the pulleys and among the belts, substantially as shown in figs. 5, 6, and 7. The device used for the automatic delivery of the crop at the side of the platform of the machine, as shown in figs. 5, 6, and 7, consists in the combination of the endless belt or apron V', the guides r, the pulleys t and E'', the pulley w, and the band w'. The apron V' is placed around the pulleys t and E'', and motion is communicated to it from the shaft p through the medium of the pulley w, the band w', and the pulleys t and E'' in such a manner that the upper portion of the apron is made to traverse a plane in line from E'' to t. The guides r are fastened rigidly to the stanchions T. As the crop passes from the grasp of the belts Z and Z', and upon the apron V', it is supported in an upright position by the guides r, and is carried along at the bottom by the action of the apron V', while the tops are forced along by that portion of the crop which follows from the belts Z and Z', to the side of the platform, where it is deposited by falling regularly in a swath upon the ground at right angles to the path of the machine, or by the aid of proper devices may be deposited in gavels. In figs. 8 and 9 is also shown an automatic raking or delivering device, the purpose of which is to deposit the crop in manner similar to that above described, and may be used in combination with that shown in figs. 5, 6, and 7, and consists in the combination of the upright shafts Q'' placed in line and at either side of the platform, and held in position by the framework N'', the endless bands and fingers O'', the pulleys L'', the brackets or guides M'', the gears G'' and K'', the shaft H'', the bracket I', the band I'', and the pulleys R'' and S''; motion is communicated from the shaft p to the endless band and fingers O'', through the medium of the gears G'' and K'', the shaft H'', and the pulleys S'' and R'', the band I'' and the shaft Q''. As the crop passes from the grasp of the belts Z and Z', it is supported in an upright position by the guiding brackets M'', while it is carried along to the side of the platform by the fingers O'', and is deposited as hereinbefore described. The pulleys S, as shown in figs. 9 and 10, are each surrounded by a friction-band, F'' for the purpose of securing, when at work, a more tenacious adhesion of the belts to the pulleys. The gear-wheels M are protected from dirt or entanglement with weeds, grass, or other extraneous matter by the sheet-iron coverings c and c', as shown in figs. 2, 3, and 4. The belts Z and Z' are formed with irregular surfaces upon their face sides, and are made to work by pairs, a portion of the face surface of the belt Z being made convex, and a corresponding portion of the belt Z' is made concave or grooved, both as shown together in fig. 11 of the drawings. This form is given to the belts for the purpose of so bending the stems or stalks of the crop as to secure to the belts tenacious adhesion to it with less pressure upon them by the pulleys u than would be required were their face surfaces made plain and flat, thereby avoiding much friction that would be produced by such pressure. The pulley u represented in fig. 2 is set upon a spring, X, for the purpose of securing to the pulleys an automatic or self-adjusting pressure upon the belts. In fig. 1 is shown an open space between

the grasping sides of the belts at the points X' , the purpose of which is to secure free admission of the crop between the belts. The belts are constructed with a foundation of webbing, a' , which is comparatively non-elastic, to which is attached the India-rubber cushions Z and Z' , substantially as shown in fig. 11 of the drawings. The whole, as fully shown, is so arranged and constructed as to form independent sections, whereby the machine may be varied to any desired width of swath without changing its plan of construction. In figs. 5 and 7 of the drawings the guards N are represented as being constructed and attached in a manner to allow the crop to approach the belts at a point upon the opposite side of the line of the axis of the pulleys R , to that at which it is received between the belts, and the same is inclined or carried around from the point of its approach to the point at which it is admitted between the belts by the revolving fingers i ; the object of which is to allow the machine to enter into the standing crop, freely or without materially disturbing the same by inclining or crowding it over before the belts have advanced sufficiently far to grasp the same.

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

1. I claim, for pulling flax and such other crops as require similar harvesting, the use of a series of two or more belts or bands, made flexible so as to ply around pulleys or cylinders, and properly arranged to work in conjunction by pairs, so as to eradicate or pull the crop from the earth. And this I claim irrespectively of any pulling or eradicating movement that may be given to the belts, or of any particular form or kind of material employed in the construction of the same, substantially as set forth.

2. I claim constructing the belts with irregular or corrugated surfaces upon their outer or grasping sides, for the purposes set forth and substantially as described.

3. I claim constructing pullers with webbing, or other comparatively non-elastic foundation, cushioned with India rubber or other soft material, substantially as described.

4. I claim arranging the belts upon the machine in the position of an inclined plane, and in such a manner that their grasping sides shall traverse upward and backward at the same time, for the purposes set forth and substantially as described.

5. I claim so imparting motion to the pullers that each section of each pair thereof shall move in a direction around its axis or axes opposite to that of its fellow, and so that the conjunctive sides of the two shall move together in one direction, in combination with impinging elastic surfaces, substantially as described.

6. I claim so arranging the belts as to leave an open space between their grasping sides at the points X' , substantially as set forth and described.

7. I claim giving to the belts Z and Z' , when used in pairs, a motion so corresponding to that of the driving-wheel, that their grasping sides shall traverse backwards at the same rate of speed as that at which the machine is advanced, for the purposes set forth and substantially as described.

8. I claim the intermediate pulleys u , or their equivalent, for the purposes as set forth.

9. I claim the revolving fingers i , or their equivalent, in combination with the travelling elastic pullers, for the purposes set forth.

10. I claim the brace boards Y , or their equivalent, for the purposes set forth and substantially as described.

11. I claim so constructing that portion of the frame upon which the pullers are situated, as to form an open space through which the crop may pass unimpeded to the platform, substantially as described.

12. I claim attaching the intermediate pulleys u in such a manner that they may be so adjusted as to produce any desired degree of pressure upon the crop between the belts, substantially as described.

13. I claim an automatic raking or delivering device, when arranged in a manner to support the crop in an upright position while it is being conveyed along from the pullers or cutters to the point at which it is delivered from the rake, substantially as described.

14. I claim, in combination with the pullers, a vibrating separator for separating the swath from the standing portion of the crop, substantially as described.

15. I claim the separating swords or blades X , for the purposes set forth and substantially as described.

16. I claim so attaching the pullers to the machine in connection with springs as to secure to them an automatic or self-adjusting pressure upon the crop, substantially as described.

17. I claim the adjustability of the tongue E , in combination with the travelling elastic pullers, substantially as described.

18. I claim so constructing and attaching the deflecting guards N as to allow the crop to approach the pullers at a point upon the opposite side of the line of their axes, for the purposes set forth and substantially as described.

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Witnesses:

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EDW. SCHAFER.