

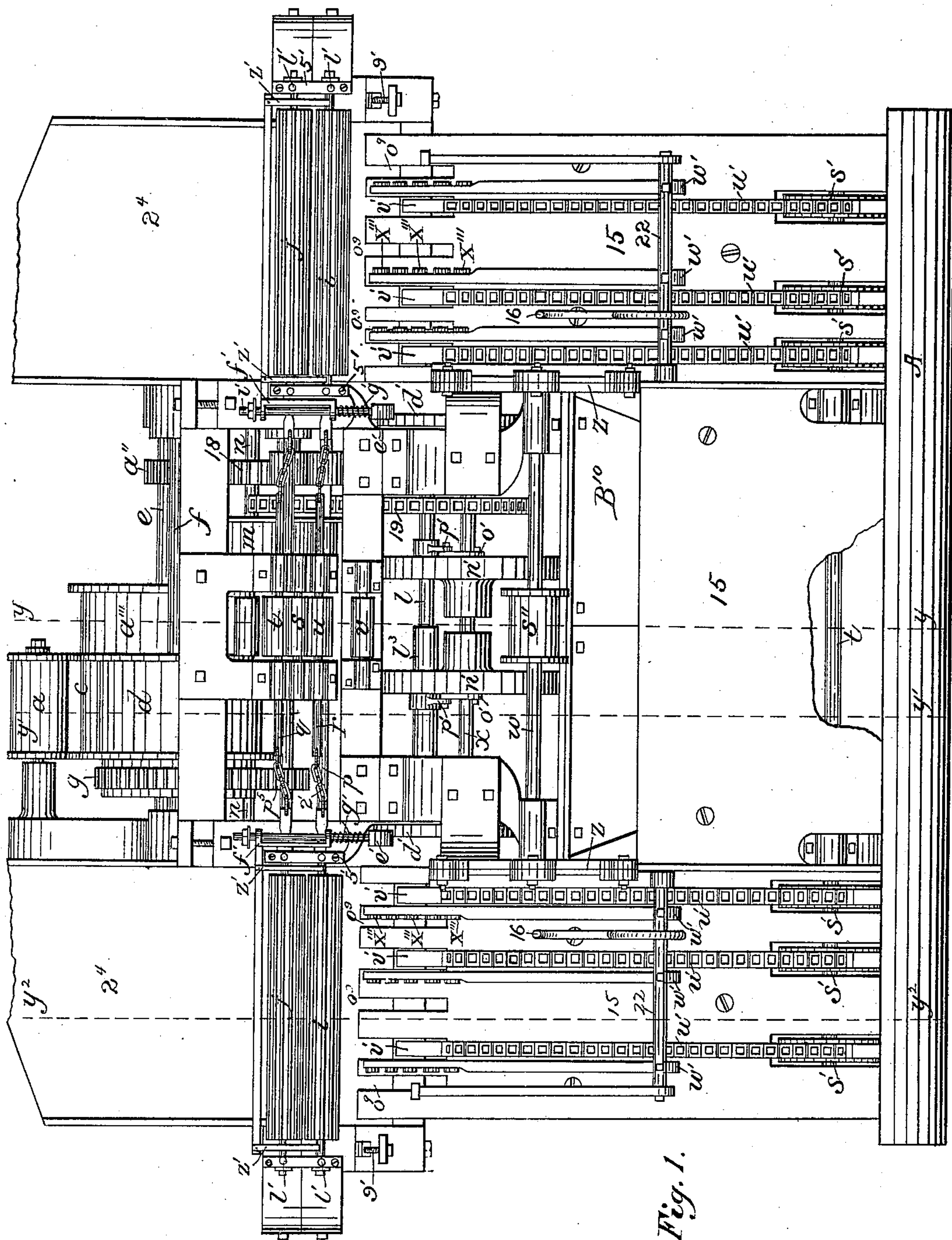
(No Model.)

10 Sheets—Sheet 1.

P. D. CUMMINGS.
CORN HUSKING MACHINE.

No. 350,620.

Patented Oct. 12, 1886.



Witnesses
Aug. L. Smith
J. E. Bid.

Inventor
Perley D. Cummings,
by Franklin C. Payson,
his attorney.

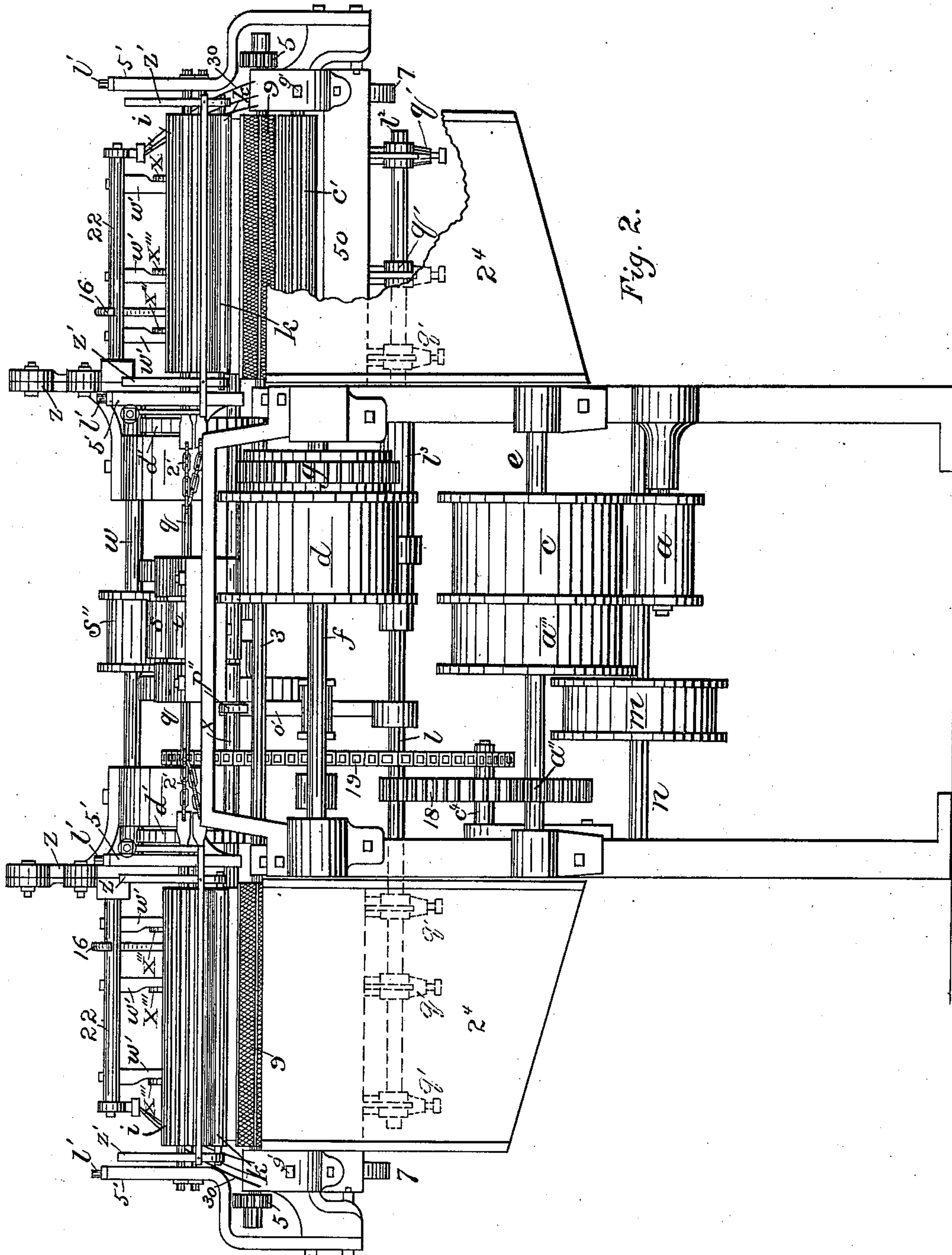
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Witnesses
Aug. L. Smith
Per. E. Bond

Inventor
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his attorney.

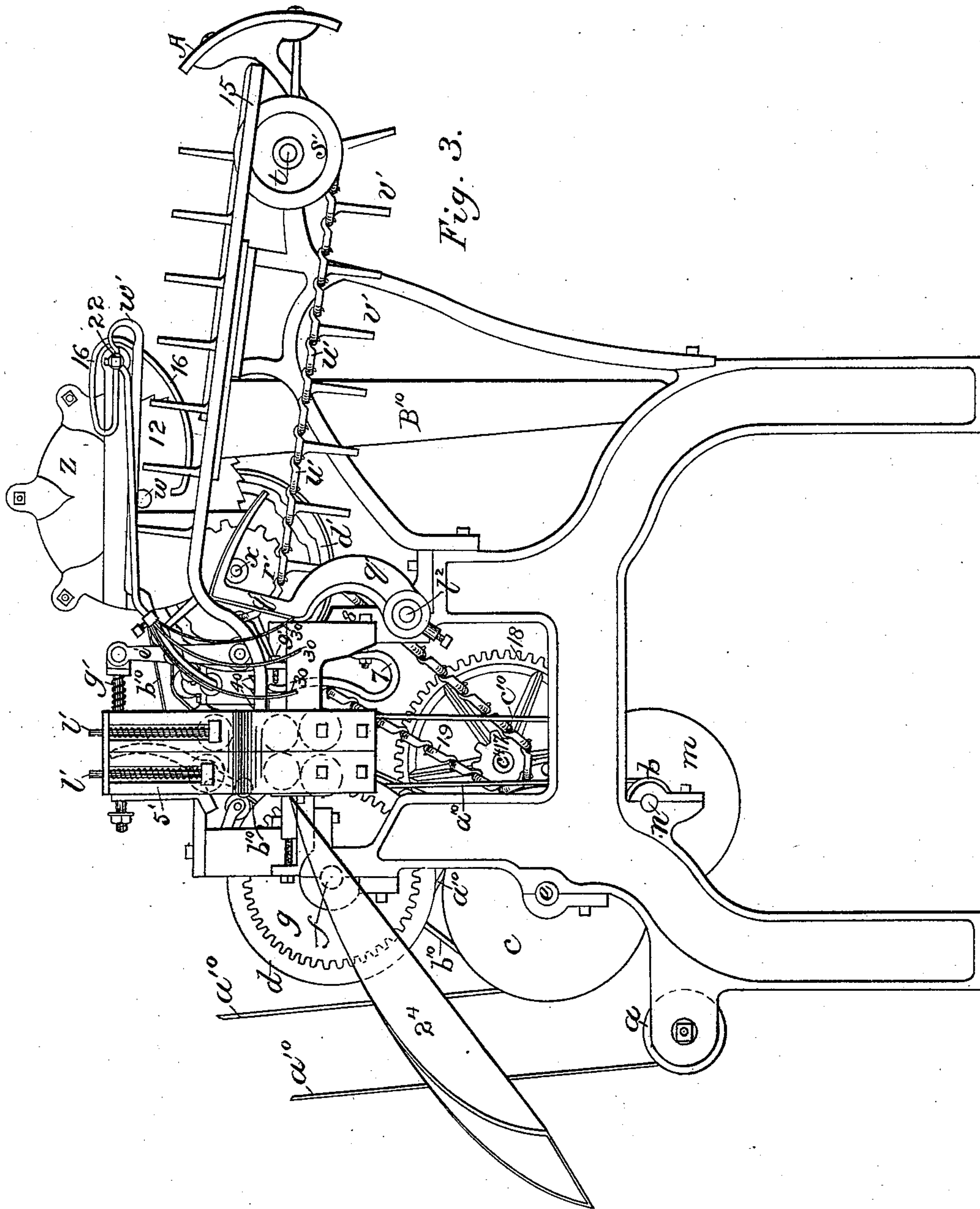
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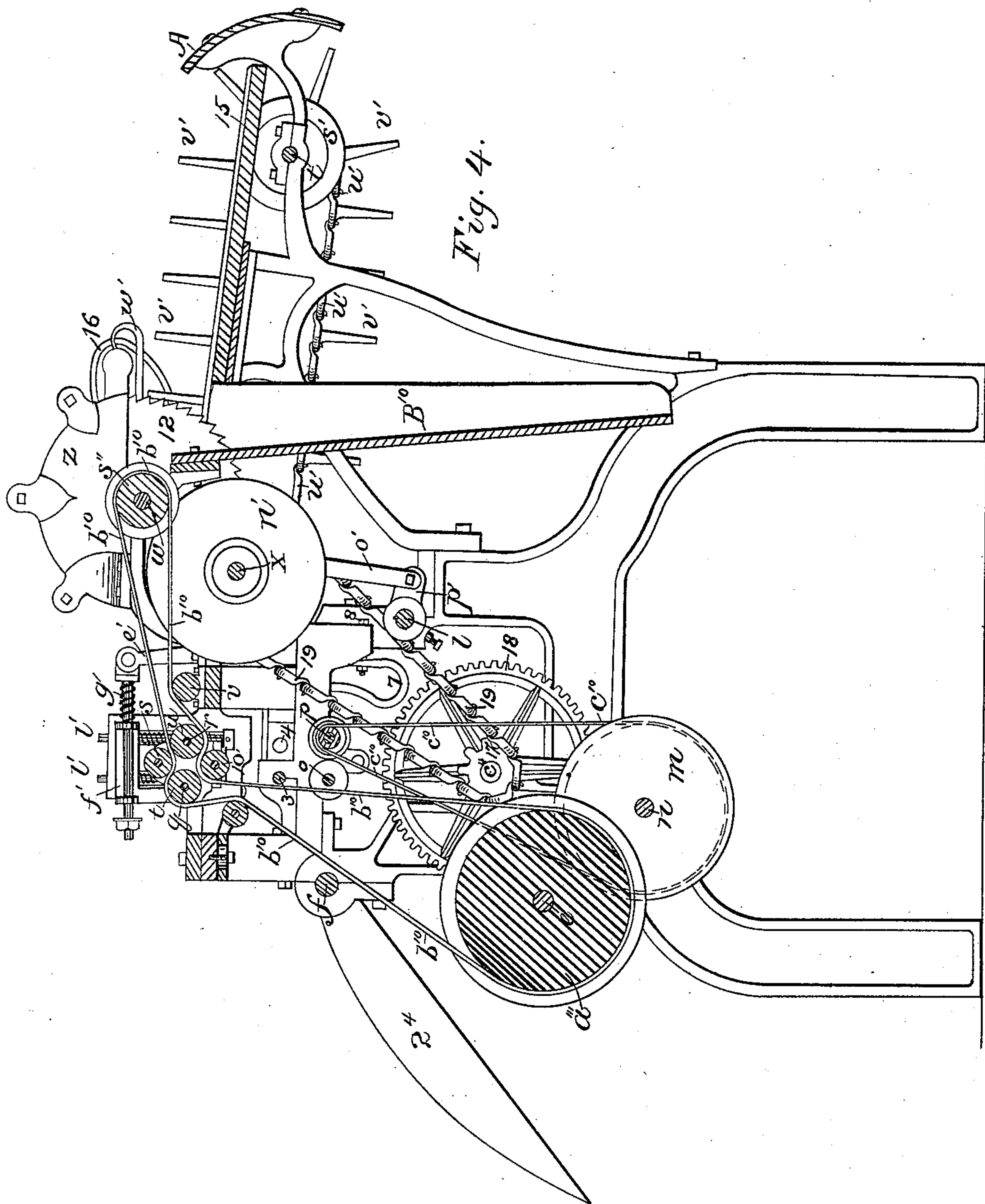
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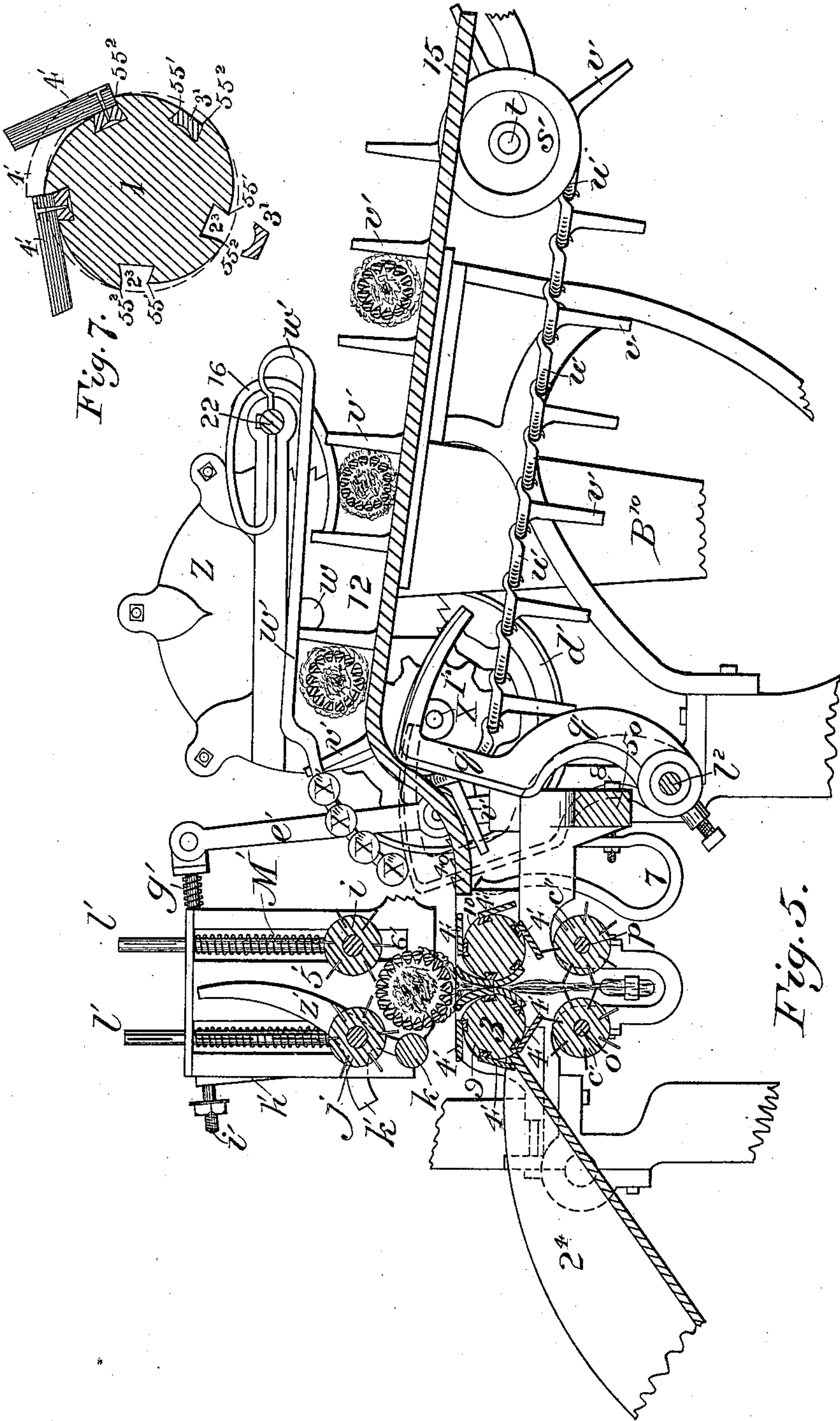
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Witnesses
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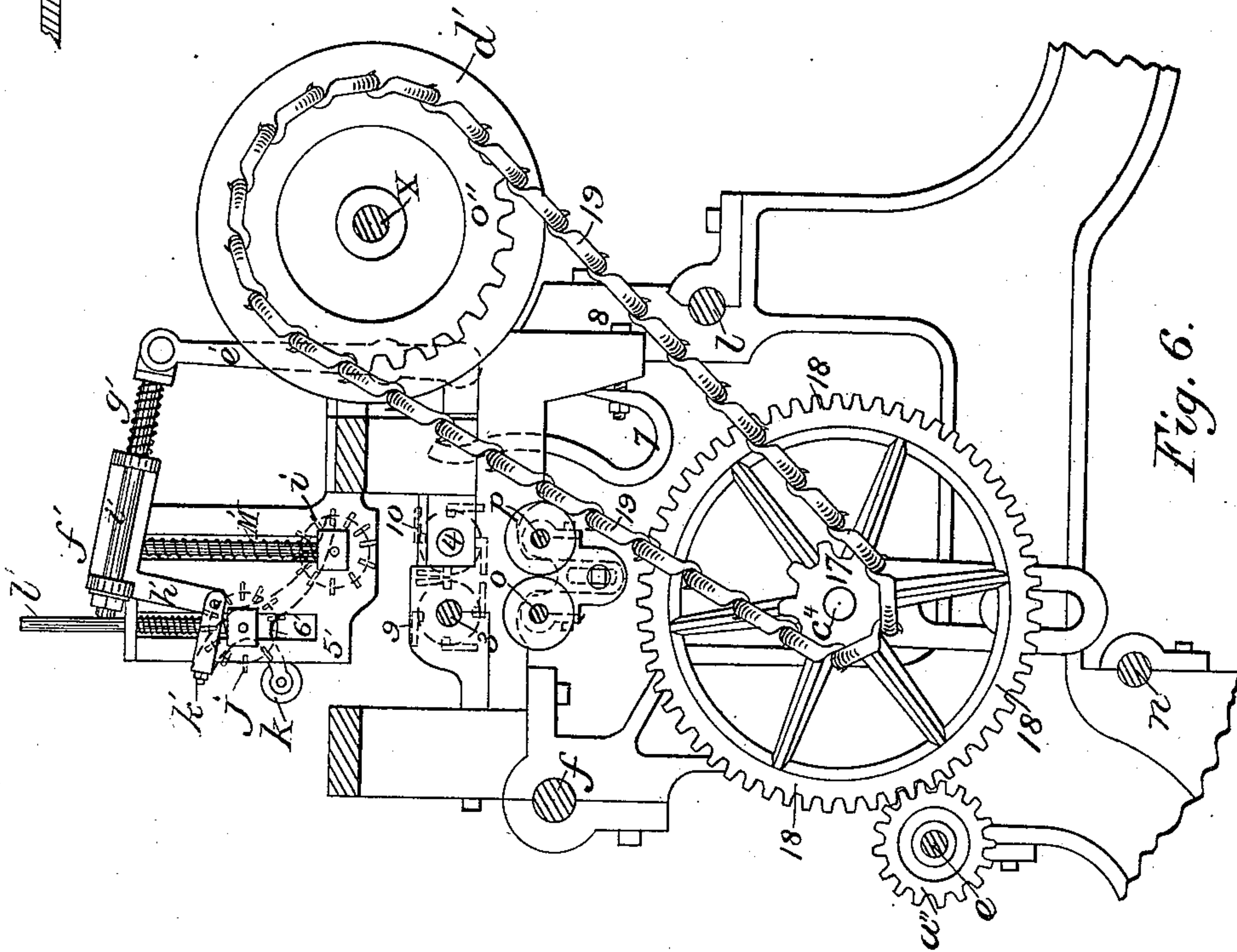
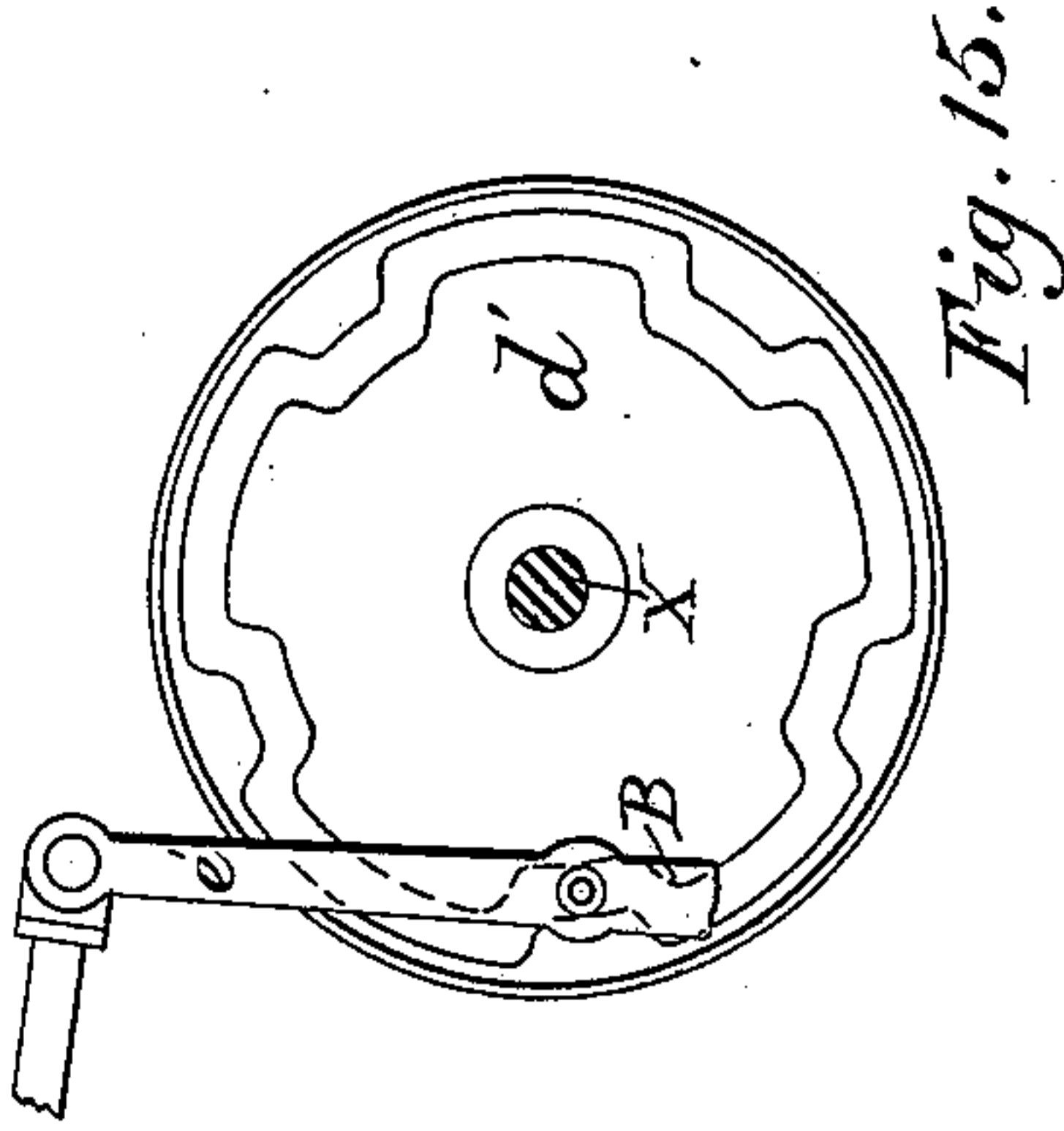
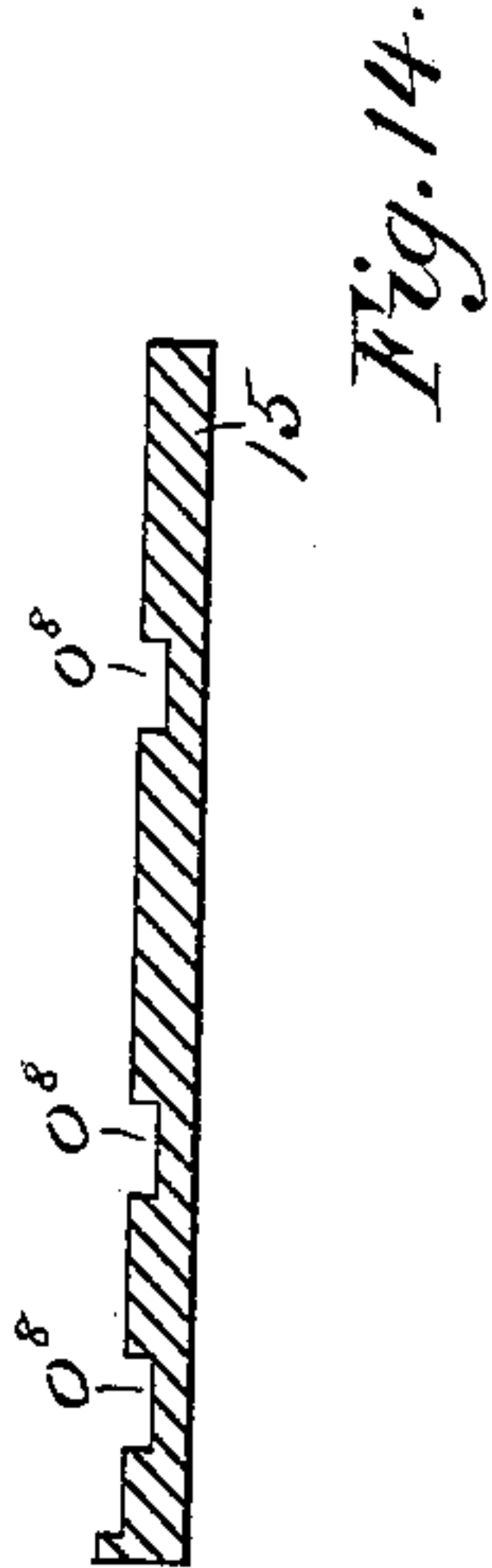
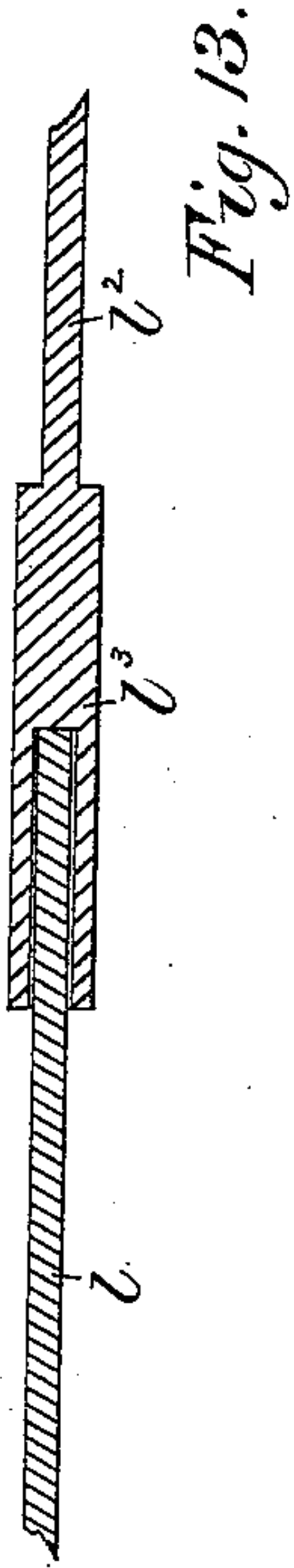
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Witnesses
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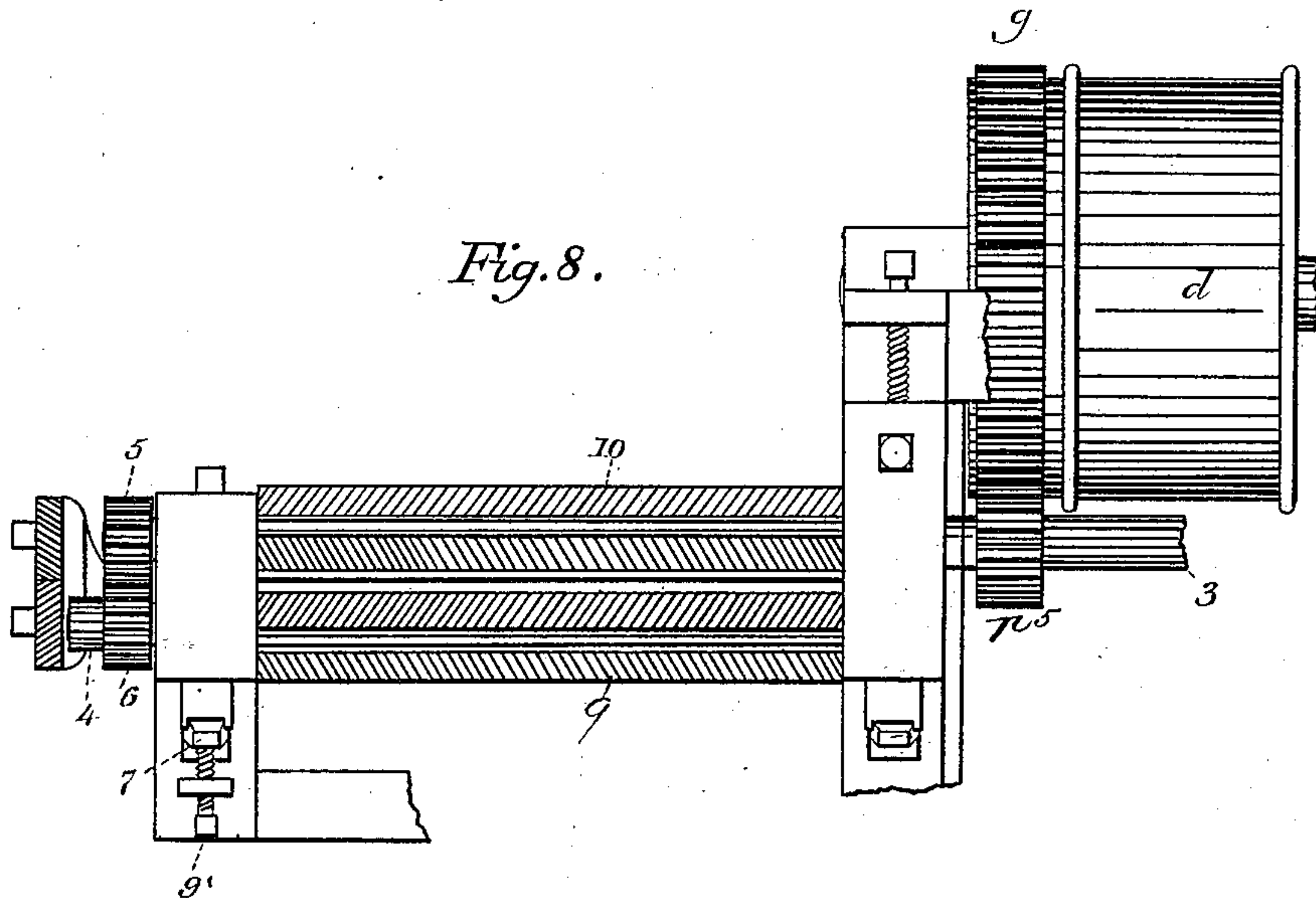
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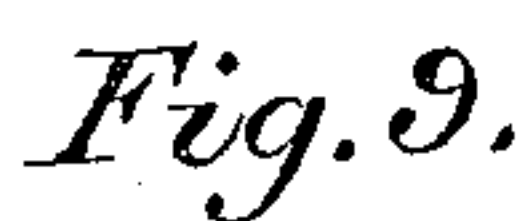
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10 Sheets—Sheet 8.

No. 350,620.

Patented Oct. 12, 1886.



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(No Model.)

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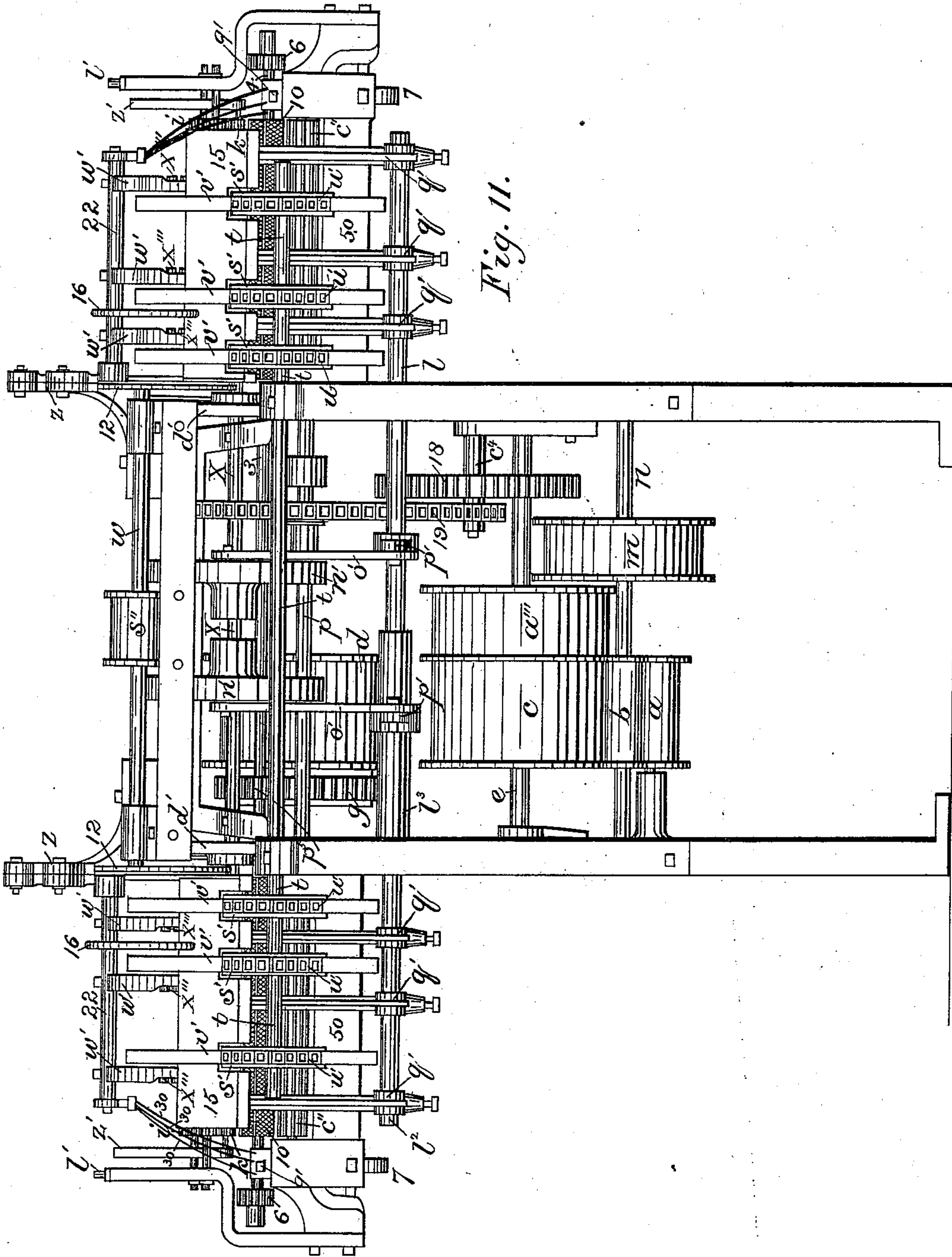


Fig. 11.

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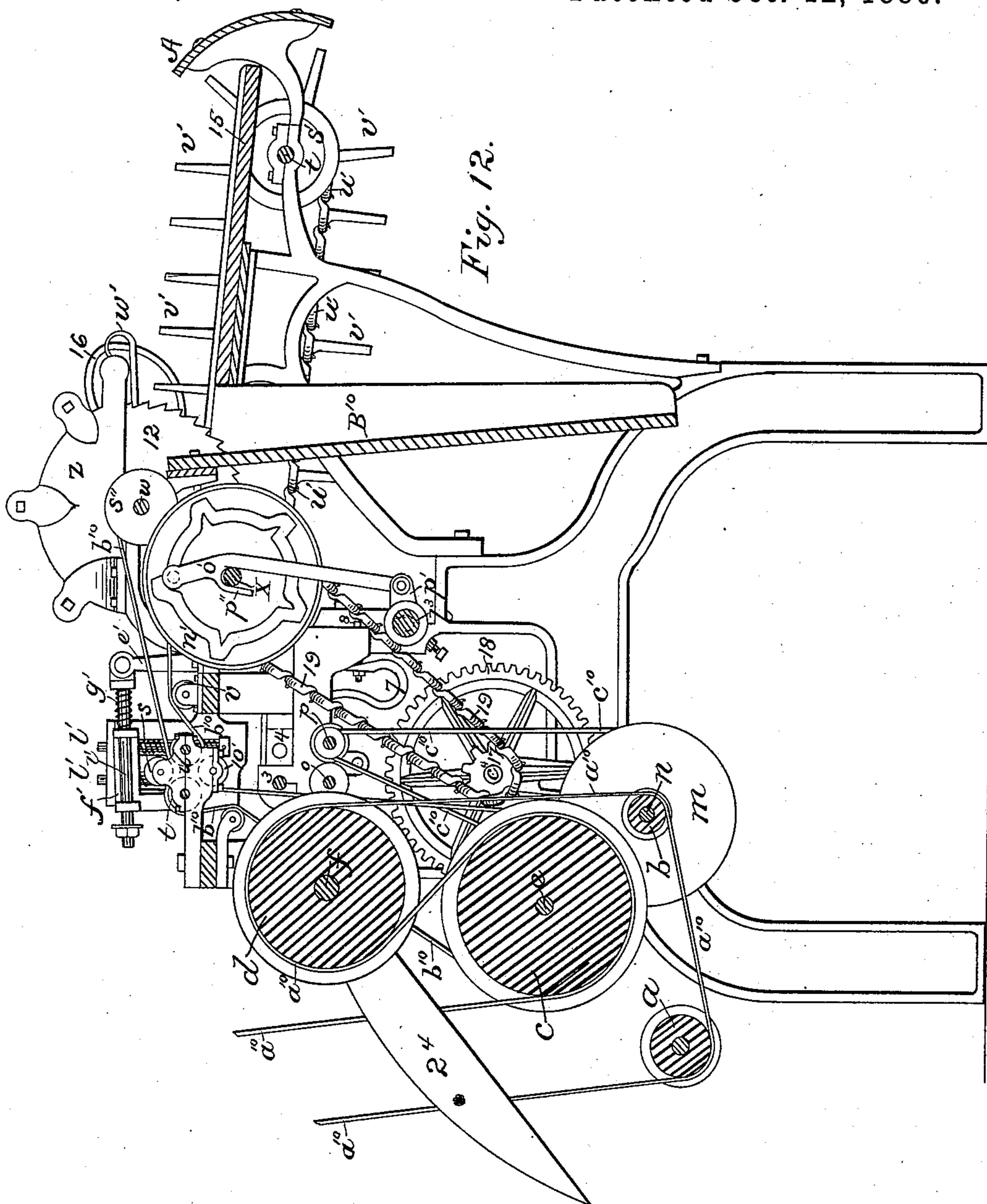
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P. D. CUMMINGS.
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No. 350,620.

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Witnesses
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UNITED STATES PATENT OFFICE.

PERLEY D. CUMMINGS, OF PORTLAND, MAINE, ASSIGNOR TO THE MAINE
CORN HUSKING MACHINE COMPANY, OF SAME PLACE.

CORN-HUSKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 350,620, dated October 12, 1886.

Application filed May 2, 1883. Serial No. 93,684. (No model.)

To all whom it may concern:

Be it known that I, PERLEY D. CUMMINGS, of Portland, in the county of Cumberland and State of Maine, have invented certain new and
5 useful Improvements in Corn-Husking Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, that will enable others skilled in the art to which it appertains to make and
10 use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a top plan of the machine. Fig. 2 is an elevation of the back of the machine. Fig. 3 is an end view of the machine. Fig. 4 is a longitudinal section of the machine through the line $y y$ of Fig. 1. Fig. 5 is a detail in section through $y^2 y^2$ of Fig. 1, showing the feeding device and the nippers and rollers. Fig. 6 is a detail of the devices for controlling the action of the rollers i , j , and k . Fig. 7 is a cross-section showing the construction of the nippers. Fig. 8 is a detail showing a top plan of the nippers, the rollers i , j , and k being removed. Fig. 9 is a detail of part of the feeding apparatus, showing also the rollers i , j , and k and the nippers 9 and 10. Fig. 10 is a detail showing the position of the rollers i , j , and k while the corn is being husked. Fig. 11 is an elevation of the back of the machine, with guard A and apron B¹⁰ and part of table 15 removed. Fig. 12 is a section through $y' y'$ of Fig. 1. Fig. 13 is a longitudinal section of the shaft l . Fig. 14 is a section of table 15, showing the grooves in which the chains u' move. Fig. 15 is a side view of the cam d' on the shaft x . Fig. 16 is a detail showing the manner of connecting the rollers i and j with the shafts r and q , respectively, by means of the chains $2' 2'$.

My invention relates to improvements in machines for husking corn, being especially designed for husking corn in the green state.

It consists of a feeding device, a mechanism for cutting the butt from the ear, a mechanism for removing the husks, a mechanism for holding corn while being husked and discharging it after the operation, and means for cleaning the husking mechanism. At the back of
50 the frame of the machine is the shaft e , carrying the fixed pulleys c and a''' and the pinion

a'' . (See Figs. 2 and 11.) Above the shaft e is the shaft f , which is provided with the fixed pulley d and gear g . (See Fig. 2.) Below the shaft e , and somewhat in front of it, is another
55 shaft, n , which has the fixed pulleys b and m . (See Figs. 2 and 11.) Power is applied by means of a belt, a^{10} , which passes under the loose pulley a (see Fig. 2) and pulley b , over the pulley d , and under the pulley c , as shown
60 in Fig. 12.

The feeding mechanism consists of the table 15, endless chains $u' u'$, having fingers $v' v'$, and sprocket-wheels r' and s' . (See Figs. 5 and 9.) The table 15 is placed at the front of the machine, with wings toward the rear of the machine, on either side, as shown in Fig. 1. Both the table and the side extensions or wings incline slightly upward. The rearward part of each wing has a curvature downward, and at
70 the rear of the curvature is provided with a series of three or more sharp projections, 40 40, extending about one-tenth of an inch above the surface of the table or wing, and inclined thereto at an angle of about twenty-
75 five degrees. (See Figs. 5 and 9.) In parallel grooves o^8 in the table move the endless chains $u' u'$, having at regular and equal intervals the rigid fingers $v' v'$. (See Fig. 5.) The openings o^8 extend from the rear end of
80 the wings to the front of the table, and are at right angles with all the main shafts of the machine. (See Fig. 1.) The chains $u' u'$ pass around the sprocket-wheels r' and s' . The sprocket s' rotates freely upon the shaft t ,
85 while the sprocket r' is fixed upon the shaft x , which is rotated by a chain passing over two other sprocket-wheels, 17 and o'' , the former being fixed upon the shaft c' , and the latter upon shaft x . The wheel o'' is rotated by means
90 of an endless chain, 19, and the gear 18, which matches the pinion a'' upon the shaft e . (See Figs. 2, 3, and 6.)

Upon the shaft x (see Fig. 12) is the cam n' , in which plays the upper end of the arm o' .
95 The slot in which the arm o' plays consists of five slightly irregular sides, the ends of each side being deflected toward the circumference of the wheel, thus forming an acute angle, as shown in Fig. 12. The arm o' has the yoke
100 p'' , which engages with the shaft x , as seen in Fig. 12, while its lower end is pivoted to the

short arm p' , which is fixed to the shaft l for one side of the machine, and l' for the other side, which is parallel with and beneath the shaft x . Fixed also to the shaft l are the arms q' q' , the upper ends of which pass through openings o^9 in the table 15. This shaft l is a sleeve-shaft, and is so constructed that when either of its ends is moved forward by the action of the arms o' in the cam n' the other end will remain stationary, thus allowing the two sides of the machine to husk alternately, and requiring less power than if the two sides husked at the same instant. The openings o^9 extend from the rear edges of the wings of the table forward nearly the whole extent of the curvature of the wings, and are parallel with the openings o^8 . (See Fig. 1.) Above the table, and fixed to the frame of the machine, is the rod 22, (see Figs. 1, 2, 5, and 11,) extending the width of the table, and at right angles to the openings o^8 . From the rod depend the springs $w' w'$, which extend rearward to the inner edges of the wings of the table 15. These springs are parallel, and are so placed as to be suspended, respectively, over and above those portions of the table and wings which lie between the openings o^8 and o^9 . The springs $w' w'$ conform generally to the line of the table, having at their depressed rear ends the rollers $x''' x''' x''' x'''$. (See Fig. 5.) Other springs, 16 16, also, are attached to the rod 22, preferably one between each adjacent two springs $w' w'$, and midway between them. These springs 16 16 curve toward the table near the front edge of the knife 12, and should be made of somewhat more flexible material than the springs $w' w'$. The shaft w , upon which is the knife 12, is rotated by means of a belt, b^{10} , (see Figs. 4 and 12,) which passes around the pulley a''' on the shaft e , (see Figs. 2 and 12,) between and in contact with the loose pulley $10'$ and the pulleys t and u , over the loose pulley v , around the pulley s'' on the shaft w , over the pulleys t and u , and under the loose pulley s . (See Fig. 4.) The knife 12 is fixed to the extremity of the shaft w , and inclosed in the guard z , (see Fig. 3,) and located at the edge of the wing of the table 15 which is next the center of the machine. The gear g matches a pinion, p^5 , on the shaft 3. (See Fig. 8.) This shaft 3 extends toward the outer side of the machine, and has at its outer extremity the small gear 5, which intermatches with another gear, 6, of the same diameter, upon the end of the shaft 4, which shaft is parallel and in the same horizontal plane with the shaft 3. (See Fig. 8.) The journals of the shaft 4 are movable, their movements being controlled by the springs 7, which are secured to the frame of the machine by the screws 8, while the amount of movement of said springs 7 is regulated by the set-screws 9'. (See Figs. 6, 8, 9.)

Upon the shafts 3 and 4, and just inside the gears 5 and 6, are fixed the nippers 9 and 10, respectively. (See Figs. 5, 6, 8, and 9.) The method of constructing these nippers is seen in Fig. 7. 1 is the body of the nippers, hav-

ing at regular intervals the five dovetailed openings $2^3 2^3$. $3' 3'$ are slides of metal, prepared to fit the openings $2^3 2^3$, to which are attached the rubber fingers $4' 4'$ by means of tacks or nails clinched into the grooves in the slides. The body of the nippers is not circular, but from and between each point 55^2 to each point $55'$ the circumference gradually draws nearer the center of the body, as shown in Fig. 7. Thus constructed, the free end of each finger, when compressed, will be slightly above the level of the base or fixed end of the adjacent finger, and their point of contact will be the point of seizure of the husk. The construction of the nippers as described brings the point of seizure above the center of the body, and thus insures the greatest efficiency in husking.

The mechanism for holding the ear of corn in contact with the nippers while being husked is seen in Figs. 5, 9, and 10. It consists of the rollers i , j , and k , the two latter being hung in a frame, the cam d' , the arm e' , with the rod i' , sleeve f' , arm h' , arm k' , and spring g' . These rollers i and j have inserted in them at regular intervals strips of rubber, leather, or other suitable material, which protrude about one-eighth of an inch beyond the surface of the rollers, and serve to turn the ear over and over between the rollers while being husked, so that every portion may be subjected to the action of the nippers.

Attached to or a part of the frame of the machine is the frame $5'$, having vertical slots $6' 6'$. (See Fig. 6.) The centers of these slots are respectively slightly to the back of the shafts 3 and 4. In these slots are placed the shafts carrying the rollers i and j . Rods l' are rigidly attached at their lower ends to both ends of each of the journals of the shafts of the rollers i and j . The upper ends of these rods pass through apertures in the top of the frame $5'$. (See Figs. 1 and 6.) A coil-spring, M' , surrounds each of the rods $l' l'$. Motion is communicated to the rollers i and j from the shafts r and q (see Figs. 1 and 4) by means of chains $2' 2'$, (see Figs. 2 and 16,) which connect the ends of the shafts r and q with the ends of the shafts of the rollers i and j , respectively. The chains $2' 2'$ act as a universal joint, and permit the rollers i and j , while revolving, to move up and down freely and adjust themselves to the size of the different ears of corn. Any other form of universal joint may be substituted for the chains.

Pivoted upon the shaft of the roller j , and between each end of the roller j and the frame $5'$, are the bifurcated levers $z' z'$, their inner or upper ends being prolonged, so that they may rest upon the shaft of the roller i when depressed. (See Figs. 9 and 5 and dotted lines in Fig. 6.) Mounted in the front ends of the bifurcation is the loose roller K . The rear ends of the upper parts of the bifurcations are connected by the rod K' , which, forming a right angle, is pivoted to the arm h' , which is a continuation at right angles of the sleeve f' .

(See Figs. 6 and 9.) The sleeve f' plays upon the rod i' , which is surrounded by the spring g' , and is pivoted to the upper end of the lever e' . The lower end of the lever e' is pivoted to the frame of the machine, and has, somewhat below the center of the length, the projection B, which engages the cam d' upon the shaft X. (See Figs. 6, 9, and 15.)

The cleaning device consists of cylinders c' and c'' , having fingers inserted in them, substantially like the rollers i and j , except that the fingers are metallic and slightly sharper. (See Fig. 5.) These cylinders c' and c'' are rotated upon the shafts o and p , (see Fig. 6,) and each of them has a friction-pulley, by means of which motion is communicated to the shaft o from the shaft p , which is rotated by a belt, c^{10} , from the pulley m . (See Fig. 4.) The position of the shafts carrying the cleaning device or mechanism is such that the ends of its fingers will come in contact with the ends of fingers $4'$. (See Fig. 6.)

In Figs. 2 and 9 are shown three or more wires, 30 30 30, which extend downward beside the table 15 and just in front of the nippers. The object of these wires is to prevent any portion of the husks from passing between the gears of the nippers.

In the drawings the machine is shown double, most of the parts being in duplicate; but the description has been mainly confined to a single machine.

The front of the table 15 is provided with a guard, A, for the double purpose of protecting the hands and clothing of the operator and of preventing the ears of corn from falling from the table. In the rear of the table an apron, B¹⁰, extends downward from near the shaft w , for the purpose of preventing any falling ears of corn from coming in contact with the parts of the machine. (See Figs. 1 and 4.)

At the rear of the machine, and beneath the mechanism for husking and discharging the corn, is an inclined apron, 24, upon which the corn may slide into the receptacle provided.

In operation the ears of corn are placed upon the center of the table, and as they slide under the guard A an ear is selected and moved by the hand of the operator along the guard until the line between the butt and the kernels is on the line of the knife 12. Thence it is carried between the fingers $v' v'$ on the chains u' over the table to the nippers. As it approaches the knife 12, it passes under the springs 16 and w' , the former holding it while the butt is removed, the latter controlling its movement until it has passed down the incline of the table. When it has reached the last of the rollers $x''' x'''$, the arms q' move from under the table and force the ear over the projections 40 40 40, (see Fig. 9,) which slightly abrade the husk against the roller i and the nipper beneath it, whence, by force of the arms q' and the revolutions of the roller and nipper, it is carried between them and against the roller k . Meantime the arms q' return beneath the table. The springs M' and the chains 2'

2' permit the roller i to rise vertically and adjust the space between it and the adjacent nipper to the size of the ear. (See Figs. 6 and 9.) In like manner the roller j rises, but not to the same degree. While the ear is subjected to the operation of husking, the revolutions of the rear nipper, 9, and of the rollers i and j force the ear against the roller k , which is kept in position against the ear by the pressure of the cam d' against the lever e' . (See Fig. 9.) After several revolutions of the ear and the removal of the husks by the nippers the revolutions of the cam d' force the arm e' toward the front of the machine, thus raising the bifurcated ends of the levers z' , the inner or upper ends of which are forced down upon the shaft of the roller i , which acts as a fulcrum. The rollers j and k are thus raised, and, the opposition of the roller k being removed, the ear is forced out over the apron 24 into the proper receptacle. The cam releasing the lever e' , the rollers j and k resume their former position, and are ready to receive the next ear, which is now ready to pass under the roller i . The continued revolutions of the cleaning cylinders c' c'' keep the nippers free from pieces of husks that would otherwise adhere to them. The movable journals of the nipper 10 allow the husks to pass freely between the nippers, while the springs 7, their tension being adjusted by the set-screws 9', tend to keep them continually in contact. The spring g' should be of such strength that when a large ear is to be discharged the sleeve will not slip upon the rod i' . The action of this spring may be supplemented by a rod passing from the sleeve f' , to which it is rigidly attached, to the upper side of the shaft of the roller i .

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the table 15, sprocket-wheels $s' r'$, chains u' , provided with fingers v' , and springs w' , conforming to the line of the table and provided with the rollers x''' , substantially as described.

2. The combination of the table 15, sprocket-wheels $s' r'$, chains u' , provided with fingers v' , springs w' , conforming to the line of the table and provided with the rollers x''' , and arms q' , operated substantially as described.

3. The combination of the arms q' , shaft l , arm p' , arm o' , with yoke p'' , shaft x , and cam n' , substantially as described, for the purposes set forth.

4. The combination of the nippers 3 4 with the rollers i, j , and k , as described.

5. The combination of the arms q' , table 15, nippers 3 4, and rollers i, j , and k , all operated as described, for the purposes set forth.

6. The combination of the base or body 1, having the grooves 2³ 2³, pieces 3' 3', and elastic fingers 4' 4', as described.

7. In combination with a rotary device for removing the husks from corn, the rollers i, j , and k , frame 5', provided with slots 6', springs M', bifurcated lever z' , right-angled

rod *k'*, sleeve *f'*, with arm *h'*, rod *i'*, spring *g'*, arm *e'*, and cam *d'*, substantially as described.

5 8. The combination, in a machine for husking corn, of the rotary nippers 9 and 10, and the cleaning devices *c'* *c''*, arranged beneath said nippers for freeing them from husks and silks, substantially as described.

10 9. In a machine for husking corn, the combination of the nippers 9 and 10, the rollers *i*, *j*, and *k*, and frame 5', formed with slots 6', with mechanism for holding down the roller *k* and raising the same, substantially as described.

10. The combination of the pulley *a*, shaft 15 *n*, pulley *b*, shaft *f*, pulley *d*, shaft *e*, pulley *c*, pulley *a'''*, shafts *q* and *r*, pulleys *t* and *u*, rollers *s*, 10', and *v*, shaft *w*, pulley *s''*, pinion *a''*, gear 18, sprocket-wheel *r'*, endless chain 19, sprocket-wheel 17, and shaft *x*, substantially as described. 20

In testimony that I claim the foregoing I have hereunto set my hand this 2d day of April, 1883.

PERLEY D. CUMMINGS.

Witnesses:

WILLIAM T. SMITH,
WILLIAM H. MASSEY.