

(No Model.)

4 Sheets—Sheet 1.

S. T. LOCKWOOD.

MACHINE FOR TURNING BAGS.

No. 350,461.

Patented Oct. 5, 1886.

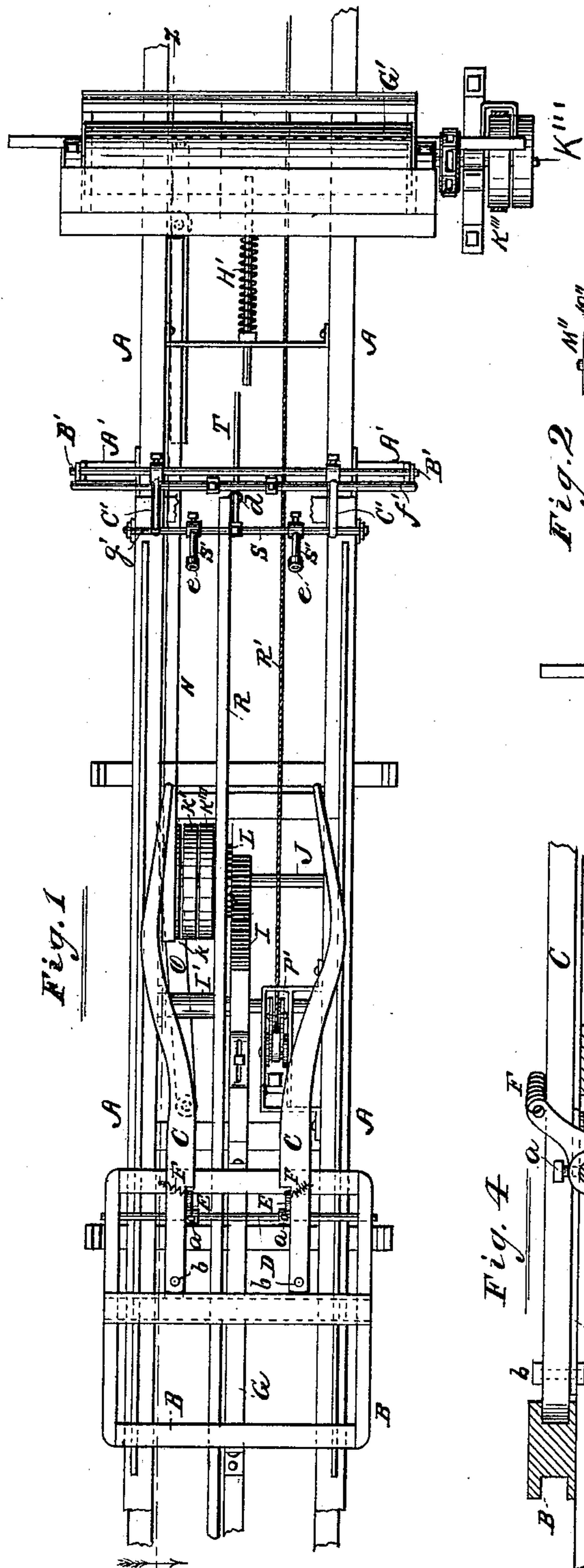


Fig. 1

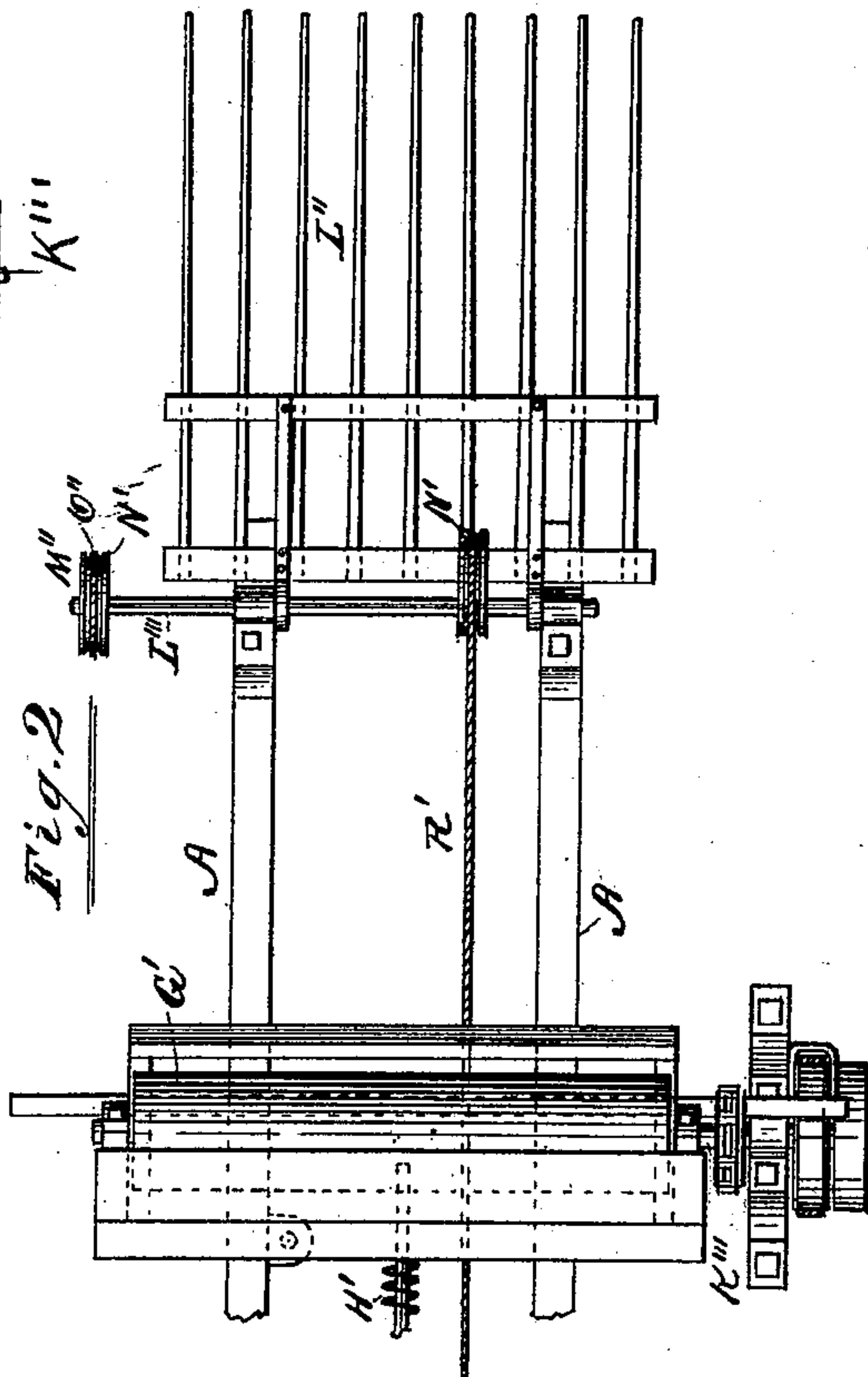


Fig. 2

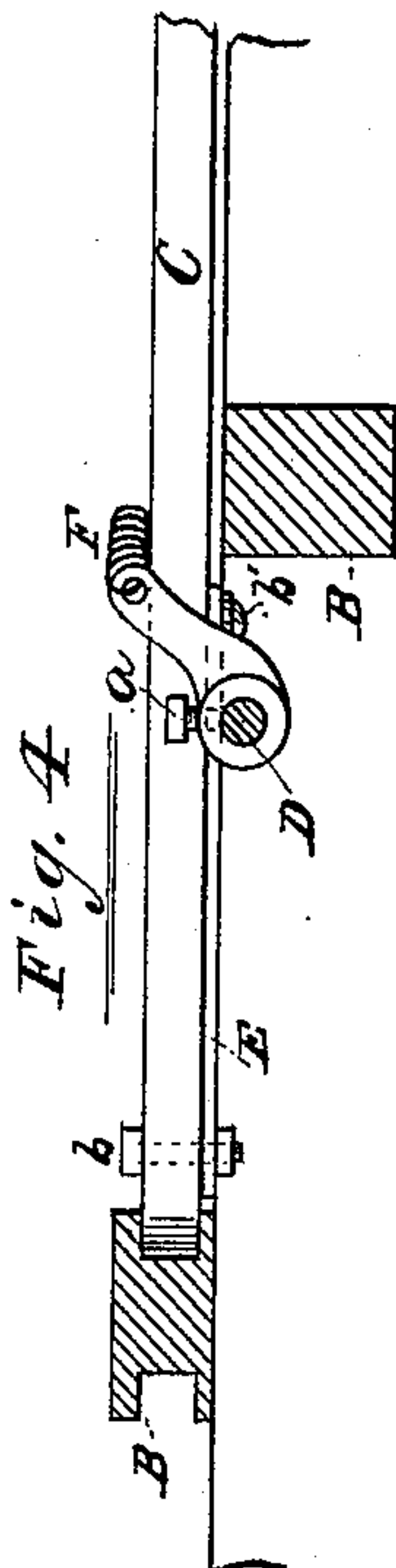


Fig. 3

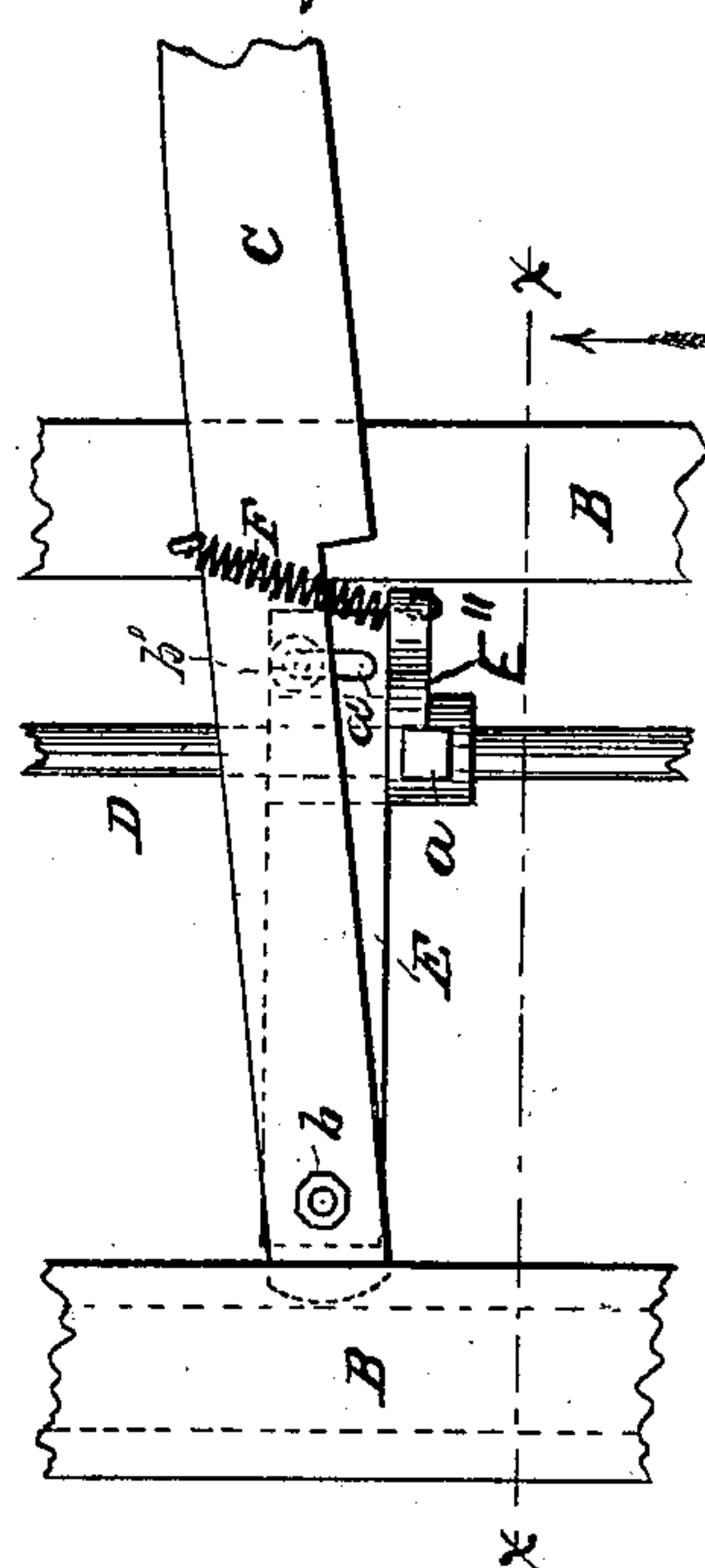


Fig. 4

Witnesses,  
Henry Frankfurter,  
H. Baker

Inventor,  
Samuel T. Lockwood  
per. F. F. Warner  
his Attorney.

(No Model.)

4 Sheets—Sheet 2.

S. T. LOCKWOOD.  
MACHINE FOR TURNING BAGS.

No. 350,461.

Patented Oct. 5, 1886.

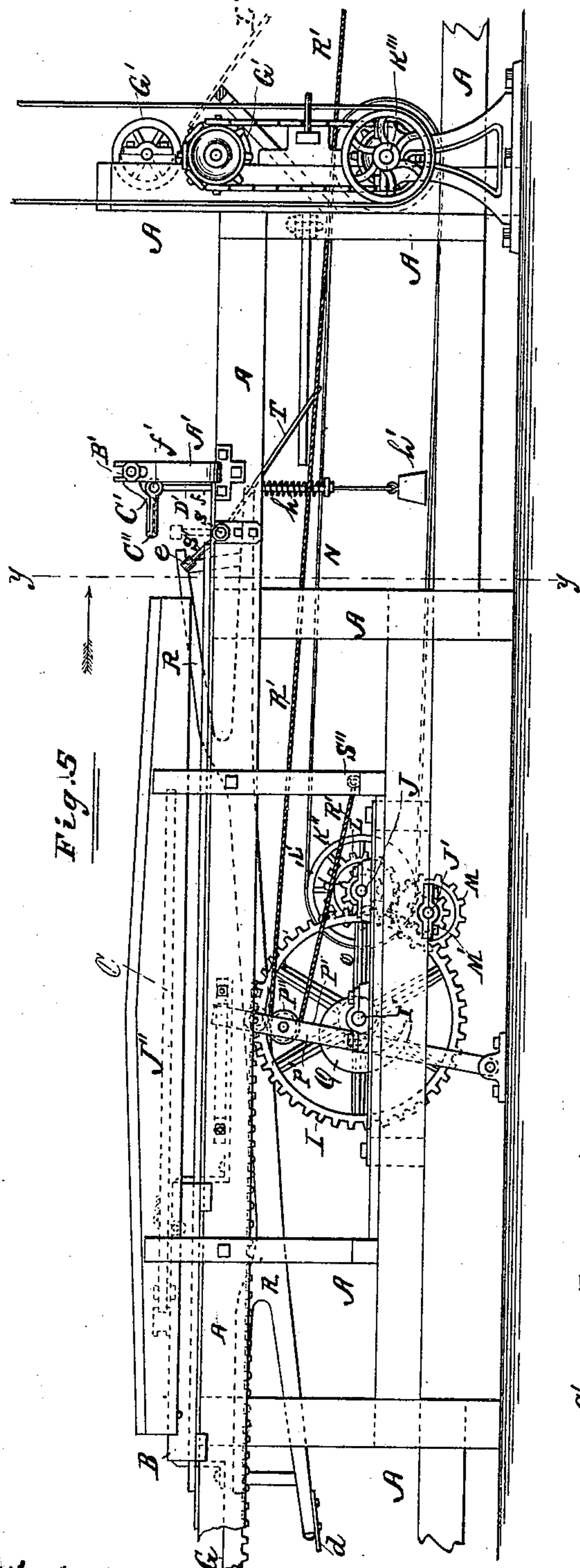


Fig. 5

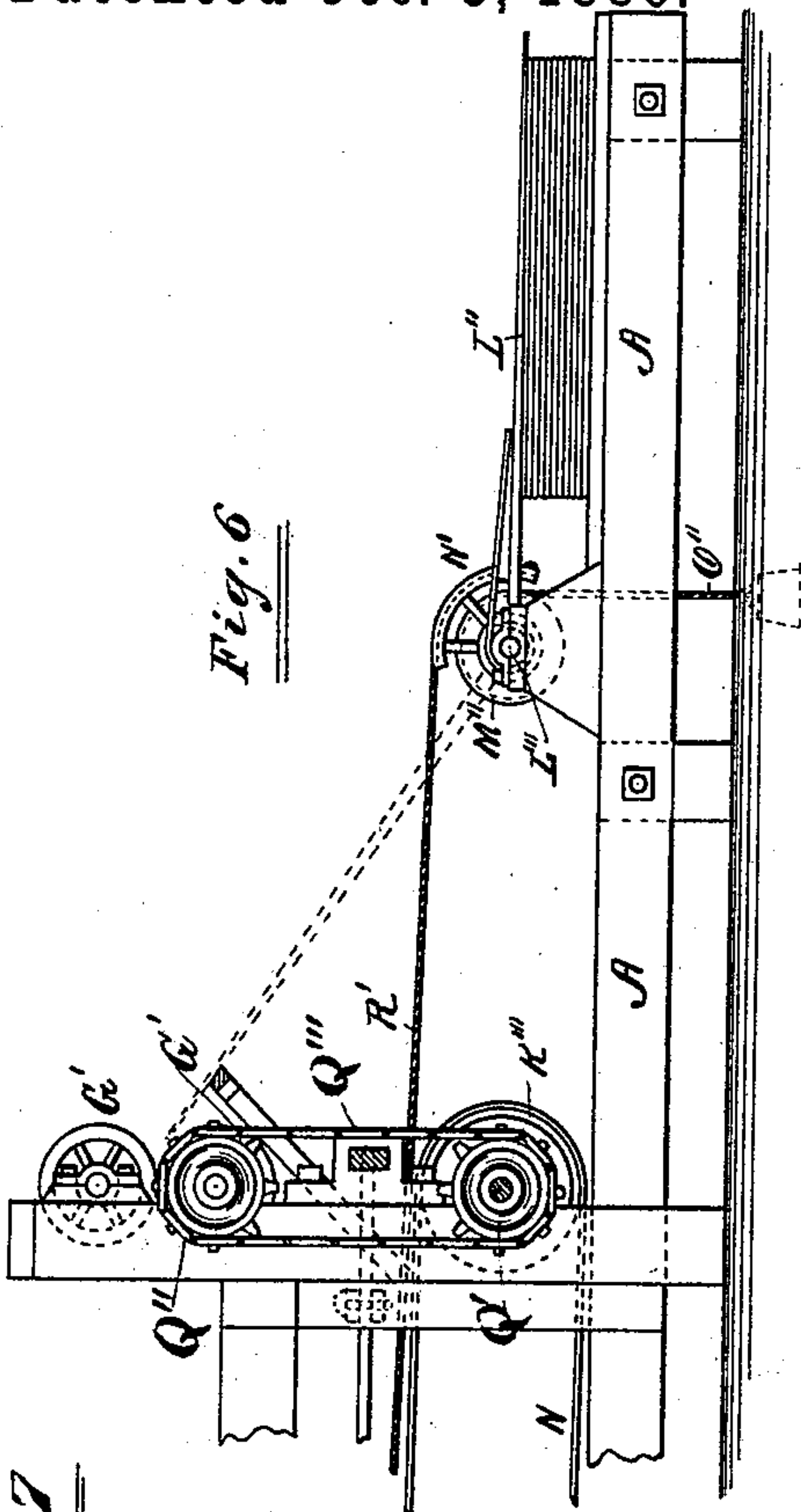


Fig. 6

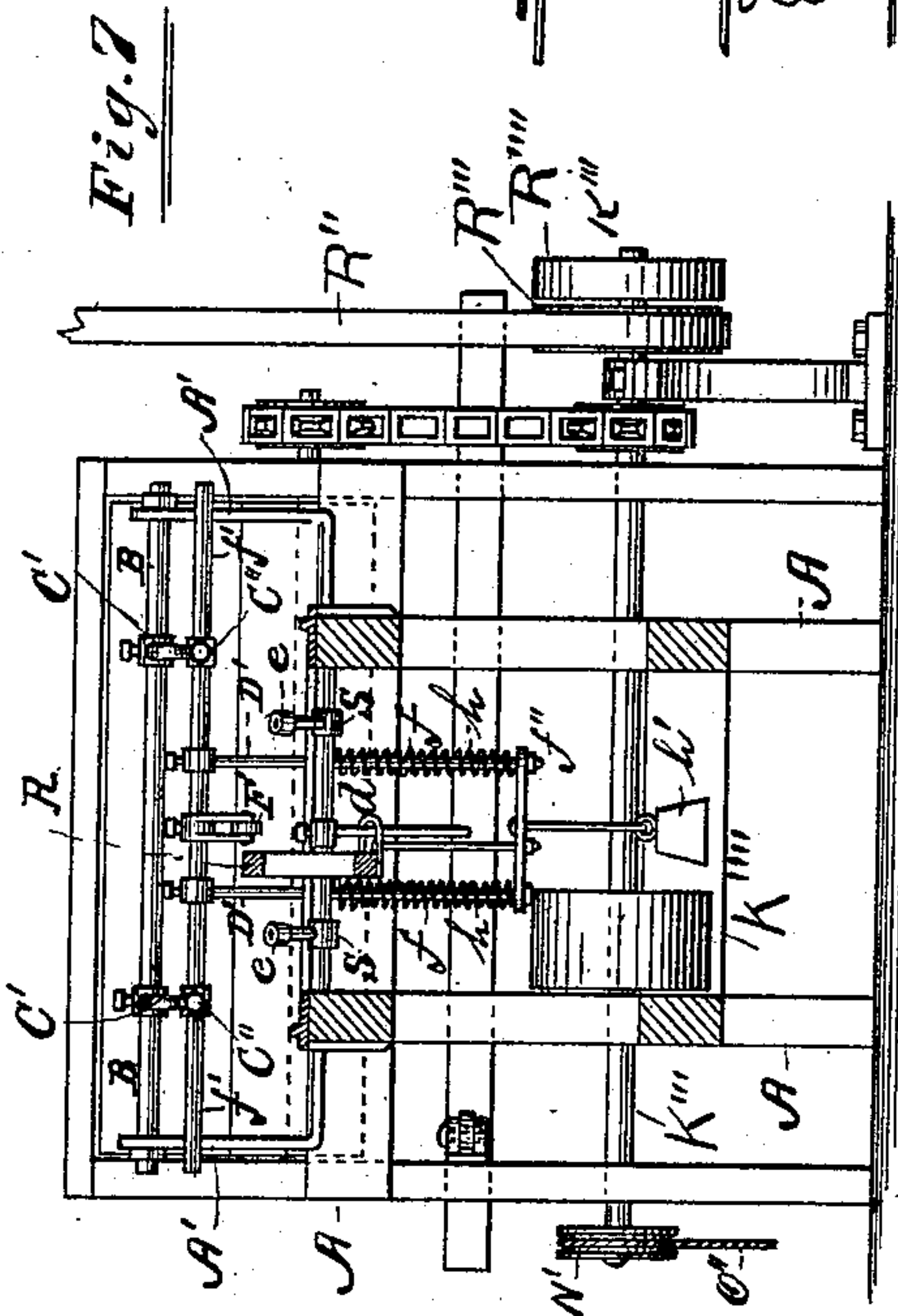


Fig. 7

Witnesses.

*Henry Trautguter*  
*W. L. Baker*

Inventor,  
Samuel T. Lockwood.

per. F. H. Warner -

his - Attorney.



(No Model.)

4 Sheets—Sheet 3.

S. T. LOCKWOOD.

MACHINE FOR TURNING BAGS.

No. 350,461.

Patented Oct. 5, 1886.

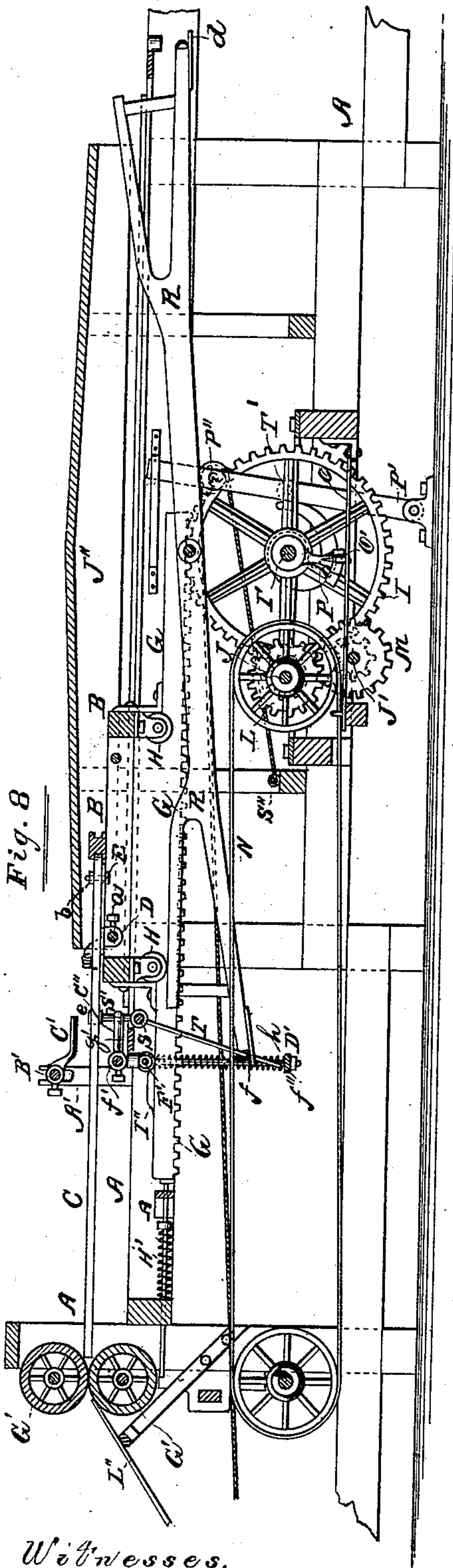


Fig. 8

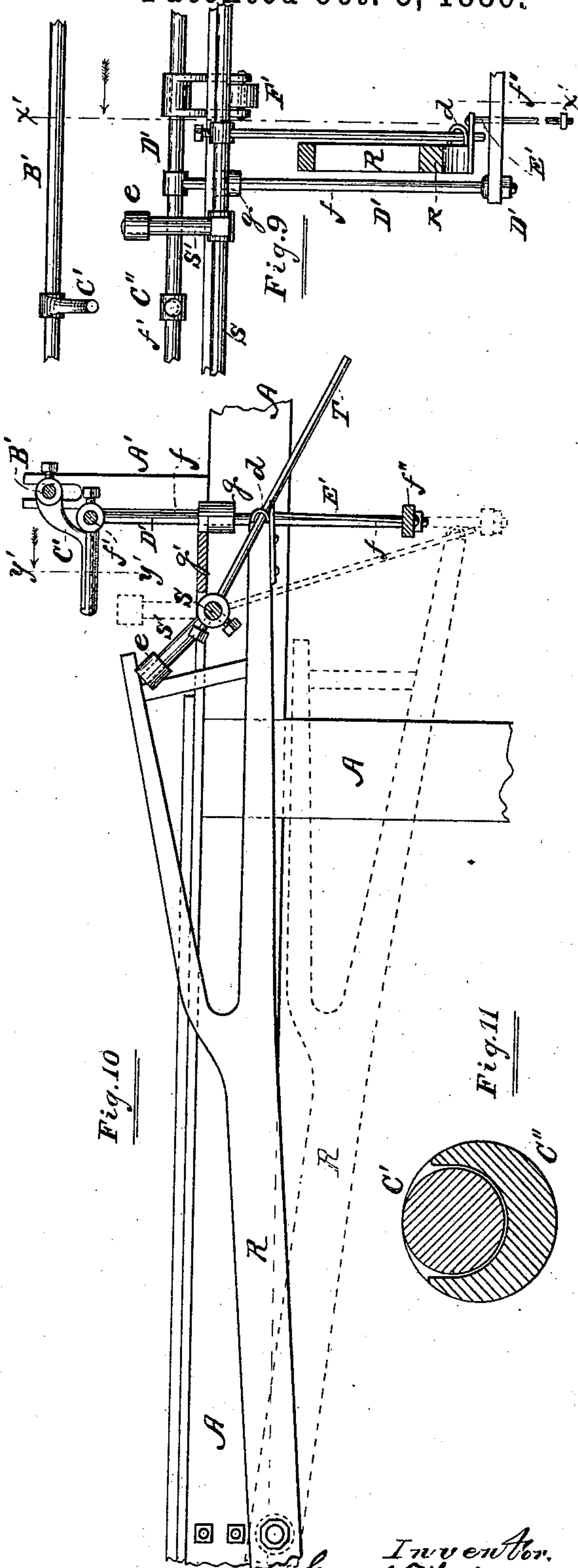


Fig. 10

Fig. 11

Witnesses.

*Henry Trautman,*  
*W. L. Baker*

Inventor.  
*Samuel T. Lockwood*  
per. *F. F. Warner*—  
*his Attorney.*

(No Model.)

4 Sheets—Sheet 4.

S. T. LOCKWOOD.  
MACHINE FOR TURNING BAGS.

No. 350,461.

Patented Oct. 5, 1886.

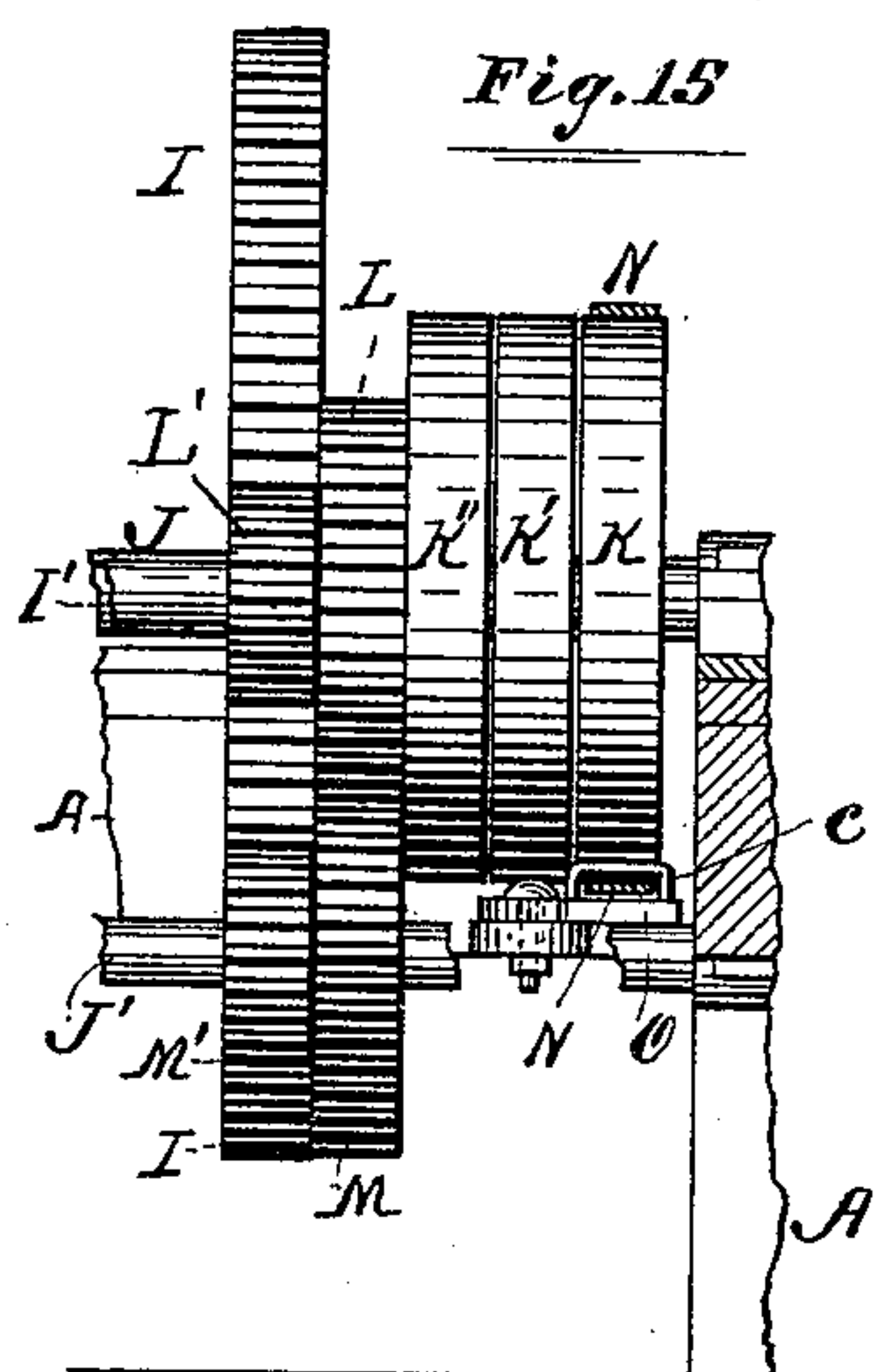


Fig. 15

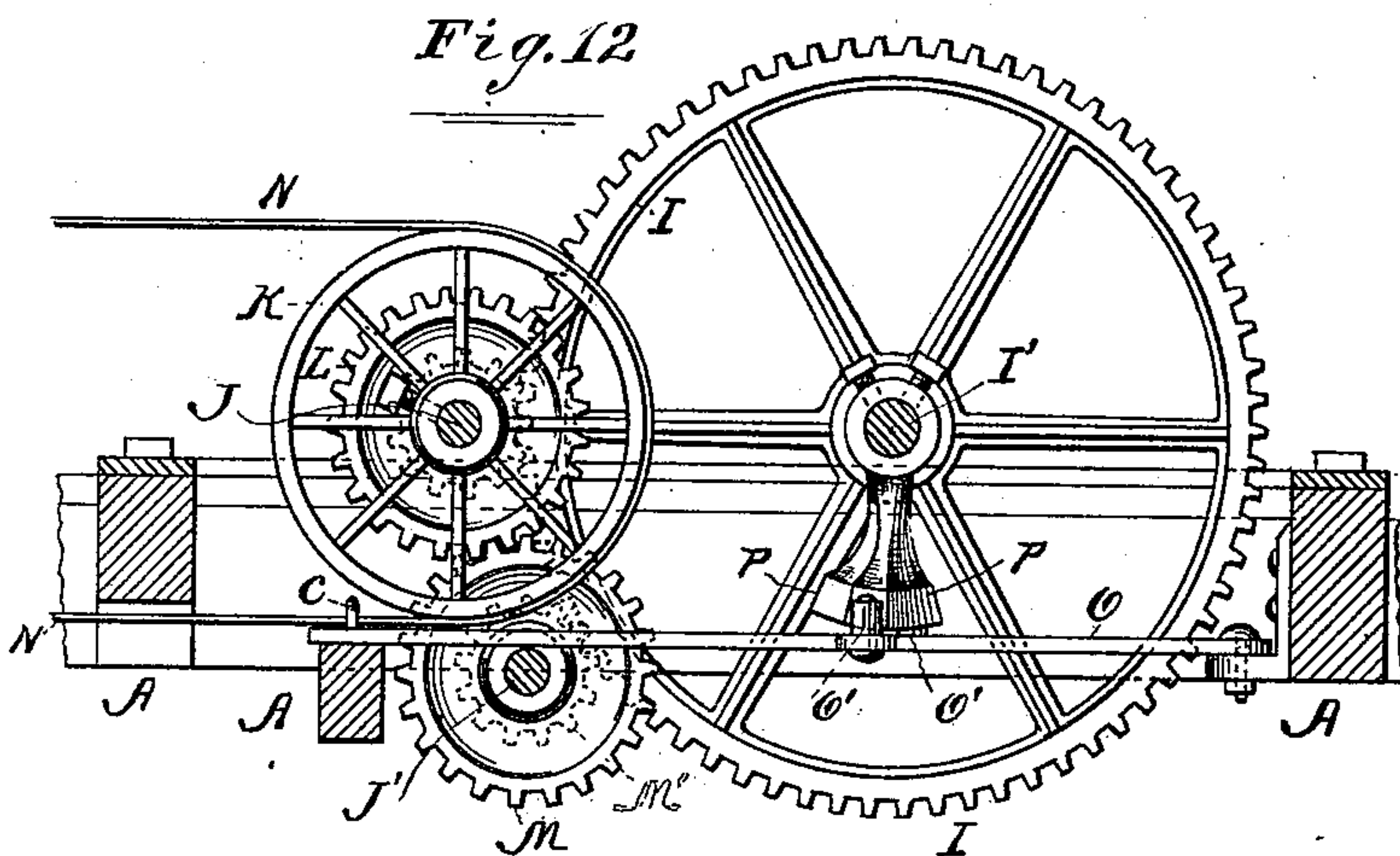


Fig. 12

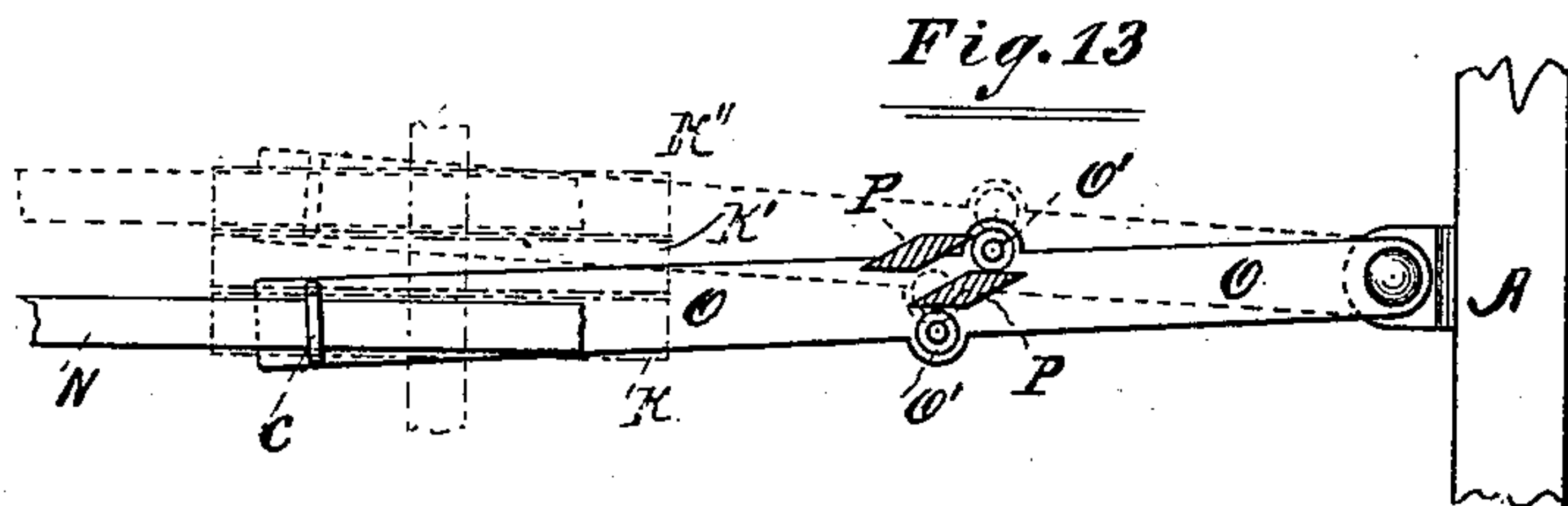


Fig. 13

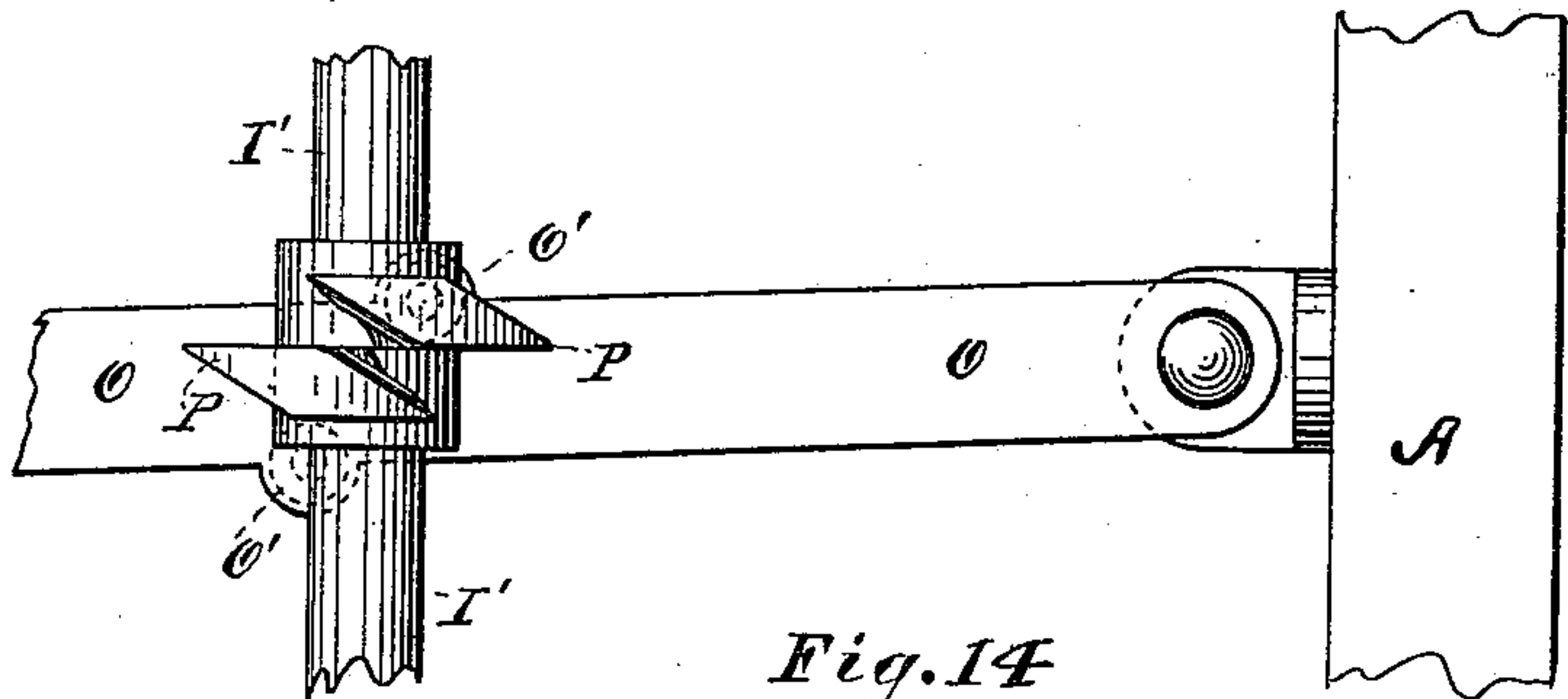


Fig. 14

Witnesses,  
Henry Frankfurter.  
W. L. Baker

Inventor  
Samuel T. Lockwood.  
per. F. F. Warner—  
his Attorney.



# UNITED STATES PATENT OFFICE.

SAMUEL T. LOCKWOOD, OF CHICAGO, ILLINOIS, ASSIGNOR TO D. J. WHITING, OF SAME PLACE.

## MACHINE FOR TURNING BAGS.

SPECIFICATION forming part of Letters Patent No 350,461, dated October 5, 1886.

Application filed May 23, 1883. Renewed March 26, 1884. Serial No. 125,631. (No model.) Patented in England September 21, 1883, No. 4,523, and in Germany January 20, 1884, No. 28,923.

*To all whom it may concern:*

Be it known that I, SAMUEL T. LOCKWOOD, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machines for Turning Bags, of which the following, in connection with the accompanying drawings, is a specification.

In the drawings, Figure 1 is a top or plan view of a bag-turning machine embodying my invention, representing the same with the bag-supporting platform or table removed, and showing the fly broken off or detached. Fig. 2 is a like view of the stripping-rollers and fly attachment. Fig. 3 is a detail, the same being a top or plan view of the rear portion of one of the bag reversing or spreading arms and the parts to which they are applied. Fig. 4 is a section in the plane of the line  $x x$ , Fig. 3, viewed in the direction indicated by the arrow there shown. Fig. 5 is a side elevation of the machine, excepting that the fly is not there shown. Fig. 6 is a like view of the stripping-rollers and fly attachment, showing their relation to each other and the main part of the machine. Fig. 7 is a section in the plane of the line  $y y$ , Fig. 5, viewed in the direction indicated by the arrow therein shown. Fig. 8 is a section in the plane of the line  $z z$ , Fig. 1, viewed in the direction indicated by the arrow therein shown. Fig. 9 is a detail, the same being an enlarged representation of a portion of the bag-holding mechanism, shown as detached from the main frame, and showing the same parts or portions of parts as they appear in a vertical cross-section of Fig. 8, taken immediately in front of the thimbles, the movable fingers being represented as lowered. Fig. 10 is a section in the plane of the line  $x' x'$ , Fig. 9, viewed in the direction indicated by the arrow there shown, and also showing a part of the main frame, the movable fingers being shown as raised. Fig. 11 is a detail, the same being a vertical cross-section in the plane of the line  $y' y'$ , Fig. 10. Fig. 12 is a detail of the reversing mechanism. Fig. 13 is a top view of the shipper-lever. Fig. 14 is a like representation of the same enlarged, and also showing the reversely-ro-

tating shipper-cams; and Fig. 15 is a front representation of some of the parts shown in Fig. 12.

Like letters of reference indicate like parts.

A represents the stationary part or main frame of the machine.

B is a traveling or reciprocating frame or carriage.

C C are bag turning or reversing arms.

D is a transverse rod supported in and carried by the carriage B, and E E are plates mounted on the rod D, and attached adjustably thereto by means of set screws  $a$ .

$a' a'$  are segmental slots in the forward parts of the plates E E.

The arms C C are each pivoted at their rear ends to the rear parts of the plates E E, as shown at  $b$ ; and  $b'$  is a screw passing upward through the slot  $a'$  in each plate E and entering the arm C pivoted to the plate containing that slot.

F F are springs, each attached to a shoulder on one of the plates E, and also connected to the arm C, pivoted to that plate. These features of construction relating to the manner of applying the arms C C to the carriage B are clearly shown in Figs. 3 and 4; and on reference to Fig. 1 it will be perceived that the arms bow outwardly somewhat, their forward ends being nearer together than the parts immediately behind them, it being intended that the forward parts of the arms should be parallel when the said arms are forced apart in the manner and for the purpose hereinafter referred to. When these arms are not actuated, they rest against the shoulder  $E''$  on the plates E E, and are retained yieldingly there by means of the springs F F. These arms, therefore, may not only be made to diverge, but may also be adjusted laterally on the rod D by loosening the screws  $a a$  and shifting the plates E E for that purpose.

G is a rack connected to and carried by the carriage B, and H H are rollers, also connected to the said carriage.

I is a spur-wheel mounted on a shaft, I', and engaging the rack G.

J and J' are shafts turning in suitable bearings.



K is a belt-wheel rigidly mounted on the shaft J, and K' and K'' are loose belt-wheels on the same shaft.

L is a cog-wheel rigidly attached to one side of the wheel K'', and L' is a spur wheel or pinion rigidly attached to the shaft J and engaging the wheel L.

M and M' are cog-wheels rigidly attached to the shaft J'. The wheel M engages the wheel L, and the wheel M' engages the wheel I.

N is a drive-belt passing about the wheel K. This belt may be driven by means of any suitable driving wheels or gearing—for example, by means of a pulley, K''', on the shaft K'''—to which means, however, I do not here intend to make special claim.

O is a pivoted lever carrying fixed studs or thimbles O' O'.

P P are cam-shaped extensions rigidly attached to the shaft I' and arranged for contact with the said studs or thimbles as the said shaft rotates.

The cam-shaped extensions P P may be described in general terms as being diamond-shaped, and one of the said cams is set somewhat in advance of and laterally away from the other, as shown, so as to operate in connection with the studs O' O', in the manner hereinafter described. The belt N, when driven continuously in the same direction while on the wheel K, turns the shaft J and wheel L', and the latter rotates the shaft I' and wheel I, which wheel in turn moves the carriage B and the parts mounted thereon. As the shaft I' rotates, the extensions or cams P P strike the studs O' O' and shift or vibrate the lever O, thereby carrying the belt N to the wheel K'', and holding it there, it being understood that the said belt passes freely through a loop or staple, *c*, on the free end of the lever O, as is clearly indicated in Figs. 12 and 13. As soon as the belt passes to the wheel K'', that wheel, as well as the wheels L, I, and M', is rotated, the latter in such a direction as to reverse the direction of rotation of the wheel I, thereby reversing the movement of the carriage B, and reciprocating it automatically. The function of this part of the driving-gear is to reverse the direction of movement of the arms C C; but any well-known and suitable automatic reversing-gearing may be employed for the same purpose, although that described may be employed, in my opinion, with great advantage in machines of this class.

R is a tilting-lever, having a cam-shaped upper edge. The rollers H H are arranged to operate upon the cam-shaped edge of the lever R in the manner hereinafter explained.

*d* is a loop or staple applied to the end of the lever R.

S is a rod turning in bearings in the frame of the machine, and S' S' are arms adjustably attached to the said rod, and provided on their outer or free ends with thimbles or loose sleeves *e e*.

T is an arm depending from the rod S and

passing through the loop *d* freely. As the lever R is tilted up and down, the arms S' S' are raised and lowered, or also tilted or rocked, occupying a vertical position when the end of the lever next to them is lowered, and an inclined position when the lever is raised, as is clearly indicated by the broken and full lines, respectively, in Fig. 10. When these arms stand vertically, the thimbles *e e* are in position to strike the inner edges of the arms C C and spread them apart sufficiently to make the forward portions of those arms parallel. This contact of the thimbles with the arms takes place near the central part of the latter. When the lever R rises, the thimbles *e e* move downward and out of the way of the said arms, which are then drawn to their original position by means of the springs F F, attached thereto. In other words, the arms C C have an opening and closing or expanding and contracting movement, the purpose of which will be hereinafter explained.

A' A' are uprights secured to the frame A, and B' is a rod supported by the said uprights. C' C' are fingers on the said rod.

D' is a frame consisting of the vertical rods *ff*, of the horizontal rod *f'*, and of the cross-bar *f''*.

C' C' are fingers applied to the rod *f'*. The fingers C' C', by preference, are cylindrical, and the fingers C'' C'' are grooved or crescent-shaped in transverse section, to receive the fingers C' C', as is clearly indicated in Fig. 11. The rods *ff* move in boxes *g*, rigidly attached to a cross-piece, *g'*, forming a part of the frame of the machine.

E' is a rod passing freely through the bar *f''*, and headed or enlarged on its lower end. The upper end of the rod E' is jointed or connected to the lever R.

F' is a roller connected to the rod *f'*.

When the lever R descends, the frame D' and the parts mounted thereon or attached thereto also descend until supported by the cross-bar *g'*. As the said lever ascends, the headed end of the rod E' lifts the frame D' and the parts attached thereto. By this means the fingers C'' C'' are carried to and from the fingers C' C', with the result hereinafter described. The function of the fingers C' C' and C'' C'' is to hold the mouth of the bag open while the bag is being turned. The descent of the frame D' may be aided either by springs *h h* or by means of the weight *h'*; but usually neither of these aids will be necessary, and I have not therefore shown them in all the figures of my drawings.

G' G' are rollers the perimeters of which meet in a line in the plane in which the arms C C move. The upper one of these rollers should yield slightly in a vertical direction.

In Letters Patent granted to me the 22d day of April, 1884, and numbered 297,141, for improvements in machines for turning bags, I have shown and described means for permitting this yielding movement of the upper



roller, and do not therefore here describe the same with particularity.

The rollers  $G' G'$  may be driven in any well-known or suitable way—for example, by means of a sprocket-wheel,  $Q'$ , on the shaft  $K'''$ , a sprocket-wheel,  $Q''$ , on the spindle of the lower roller  $G'$ , and a drive-chain,  $Q'''$ , passing about the said wheels, it being understood that the upper roller  $G'$  will be turned by friction as the bags pass between these rollers.

$R''$  is the main driving-belt, passing about a drive-wheel,  $R'''$ , on the shaft  $K'''$ , and intended to be applied to a driving-wheel forming a part of the driving-gearing in the room where the machine may be located.

$R''''$  is an idle or loose wheel on the shaft  $K'''$ .

The travel of the carriage  $B$  is such as to carry the outer ends of the arms  $C C$  to the rollers  $G' G'$ .

$H'$  is a buffer arranged to be struck by the end of the rack  $G$  just before the latter reaches the end of its stroke.

$I''$  is a cam-block on the upper edge of the rack  $G$ .

$J''$  is a table or platform, preferably removable, and  $K'''$  is the main driving-shaft.

The machine as thus far described is complete in its construction and operation; but, as I employ a fly attachment in connection therewith, I will describe that attachment briefly before describing more fully the operation of the main parts of the machine, or those parts which constitute the principal features of my invention.

$L''$  is a fly, and  $L'''$  is a shaft to which it is rigidly attached, the said shaft turning in suitable bearings in the frame  $A$ .

$M''$  is a wheel or pulley upon the said shaft, and  $N'$  is a grooved segment on the same shaft.

$O''$  is a cord or rope attached at one end to the pulley  $M''$ . The other end of this rope passes through the floor and has a weight attached thereto, as indicated in dotted lines in Fig. 6:

$P'$  is a pivoted arm or lever carrying the pulley  $P''$ .

$Q$  is a cam or curved arm rigidly attached to the shaft  $I'$ .

$R'$  is a rope or cord attached to the rear or lower end of the segment  $N'$ , and passing thence to and around the pulley  $P''$ , and thence to an upright,  $S''$ , to which it is attached.

$T'$  is a pulley, also carried by the arm  $P'$ . The pulley  $T'$  is arranged to be acted upon by the cam  $Q$ , with the result hereinafter described.

The following is the mode of operation of the machine now described: A number of bags, with their side and bottom seams outward, are placed one upon the other upon the table  $J''$ , the open ends or mouths of the bags being toward the fingers or bag holders  $C' C''$ . The attendant then draws the uppermost bag toward the said fingers until the latter enter the mouth of the bag far enough to hold the bag securely, the fingers  $C' C'$  then lying in the fingers  $C'' C''$ , as shown in Figs. 5, 10, and

11, it being understood that the machine has first been set in operation, and that the bags are to be fed forward when the said fingers are in the position described, the operator taking advantage of the movements of the machine to apply the bags to the bag-holding fingers, one after the other. By the time the bags are applied in this manner the fingers  $C'' C''$  drop or fall away from the fingers  $C' C'$ , thus stretching the mouth of the bag open and holding it by tension, the descent of the fingers  $C'' C''$  being permitted by the tilting movement of the lever  $R$  when acted on by a roller,  $H$ , on the carriage  $B$  during the movement of the latter toward the said fingers, the frame  $D'$  being supported by the rod  $E'$ , attached to the said lever, as already described. When the wheel or roller  $H$  strikes the cam of the lever  $R$  in this manner, it tilts down that end of the lever which it strikes, and the lever is, owing to the shape of its cam portion, retained in this position while the carriage  $B$  advances. As the carriage  $B$  advances, the arms  $C C$  are carried forward and past the thimbles  $e e$ , and the forward ends of the arms strike that part of the bag supported by the fingers  $C' C''$ . The continued forward movement of the arms  $C C$  forces or carries the bag through its mouth, and it is thus reversed, bringing the seams upon the inside of the bag. The contact of the thimbles  $e e$  with the contracted parts of the arms  $C C$  spreads these arms apart, so that the bag is thereby drawn out or stretched laterally, it being remembered that the thimbles  $e e$  are thrown up for contact with the said arms at the same time that the fingers  $C'' C''$  are allowed to drop. The position of the fingers  $C' C'$ ,  $C'' C''$ , thimbles  $e e$ , arms  $C C$ , cam or lever  $R$ , and rollers  $H H$  with relation to each other at the completion of the reversal of the bag is clearly shown in Fig. 8. By this time the bottom of the reversed bag meets the rollers  $G' G'$ , which rotate in such a direction as to draw the bag from the arms  $C C$  and fingers  $C' C''$ , the latter rising or yielding, if need be, to permit the disengagement of the bag.

In reversing bags of fine or delicate texture, I employ the cam-block  $I''$  in conjunction with the roller  $F'$  for the purpose of raising the arms  $C C$  by a positive movement in order that the bag may be easily detached from the bag-holding fingers. The buffer  $H'$  aids in stopping the forward movement of the carriage  $B$ , and helps to start the carriage in the reverse direction from that described. The form of the cam projections on the upper edge of the lever  $R$  is such that after the carriage  $B$  has retreated some way the rollers  $H H$  permit the said lever to assume a horizontal position and retain it in that position until the opposite cam upon the lever is reached by the roller  $H$ , located for contact therewith, and that end of the lever is thereby depressed and the other end raised. This change in the position of the lever  $R$  throws the thimbles  $e e$  down away from the arms  $C C$  in time to allow the latter



to be drawn toward each other by the springs F F, so that the said arms, after leaving the bag, will assume a position for entering the next bag, and the fingers C' C' are also raised up to the fingers C' C', so that the next bag may be applied to them with facility, as before described. In Fig. 5 the parts there shown are represented in the position they occupy when the fingers C' C' are ready to receive the bags, it being understood that the machine may be a "double-header," or adapted to operate at both ends. It is also to be understood that the machine is automatically reversible in any well-known or suitable way, but by preference by the means already described. When the bags are presented to the rollers G' G', the fly L' is in the position indicated by the dotted lines shown at L' in Fig. 5, being there held by reason of the contact of the cam Q with the roller T', which contact is then such as to hold the lever P' in the position shown in Fig. 8, the pulley P'' then being in such a position that the cord R' will hold the fly to receive the bags. When the machine is reversed, the cam Q moves in such a direction that the weight upon the cord O' will shift the fly into the position shown by the full lines at L' in Fig. 6, thus depositing the bags in a pile either upon the floor or upon a fly-table arranged to receive them, it being understood that the rotation of the rollers G' G' carries the bags through between them, and that the bags then slip down upon the inclined fly.

It will be perceived from the foregoing description that the bags will be reversed with facility, and also fully and evenly stretched out in a lateral direction, and pressed and neatly piled in order.

In the aforesaid Letters Patent of the United States of America, No. 297,141, for improvements in machines for turning bags, and bearing date the 22d day of April, 1884, the application for which was filed March 8, 1883, I have shown and described certain improvements or features of construction, some of which, broadly considered, are also herein shown and described. For example, in the said Letters Patent I have shown separable bag-holding fingers in combination with reciprocating and yieldingly contractible and expansible bag-turners and rotary stripping-rollers, a tilting cam or lever, and a traveler with means for operating the bag-holding fingers from the said cam or lever, and for reciprocating the said traveler; means for supporting the fixed bag-holding fingers, for carrying the movable bag-holding fingers, and springs for depressing the movable fingers to cause them to distend the mouth of a bag when placed on the bag-holding fingers; a table for supporting the said bags, and springs for rendering the bag-turners yieldingly expansible and contractible, and these parts I have shown in operative connection with certain other minor features of construction employed for the purpose of properly supporting the chief features

of construction already referred to, and for rendering the said parts and groups of parts operative in connection with each other in the same machine; but I do not here intend to claim, broadly, any of the features of construction and operation which I have now referred to thus particularly, as shown and described and set forth in the said Letters Patent, my purpose now being to cover certain improvements upon the said machine, which I have described in the foregoing specification and illustrated in the accompanying drawings.

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

1. The combination of the fingers C' C' with the fingers C' C'', the latter being adapted to receive the fingers C' C', and one set of the said fingers being movable with relation to the other, supports for the said fingers, and means for moving one set of the said fingers with relation to the other, substantially as and for the purposes specified.

2. The combination, substantially as specified, of the laterally-yielding bow-shaped and reciprocating arms C C, the arms S' S', and the fingers C' and C'', with means for reciprocating and contracting the arms C C for operating the arms S' S', supports for the said fingers, and means for moving one set of the said fingers with relation to the other, for the purposes set forth.

3. The combination of the pivoted and expansible bag-reversing arms C C, diverging from their forward or free ends rearward, and then being contracted or converging, with means for contracting, expanding, and reciprocating the said arms, and with means for holding open the mouth of a bag, substantially as and for the purposes specified.

4. The combination, substantially as specified, of the bag-reversing arms C C, the tilting or pivoted arms S' S', and the bag-holding fingers C' C'', with means for operating the arms C C and S' S', supports for the said fingers, and means for moving one set of the said fingers with relation to the other, for the purposes set forth.

5. The combination of the bag-supporting table J'', a holder for holding the bags open, consisting of the separable fingers C' and C'' and supports for the same, one set of fingers being grooved to receive the other set, the reciprocating, yielding, and bow-shaped reversing-arms C C, means for drawing the said arms together yieldingly, means for reciprocating them, and the tilting arms S' S', with the tilting-lever R, and means for operating it, and means for operating the fingers C' C'' and S' S' from said lever, all adapted for operation in connection with each other, substantially as and for the purposes specified.

SAMUEL T. LOCKWOOD.

Witnesses:

H. F. NICKERSON,  
A. W. SMITH.