

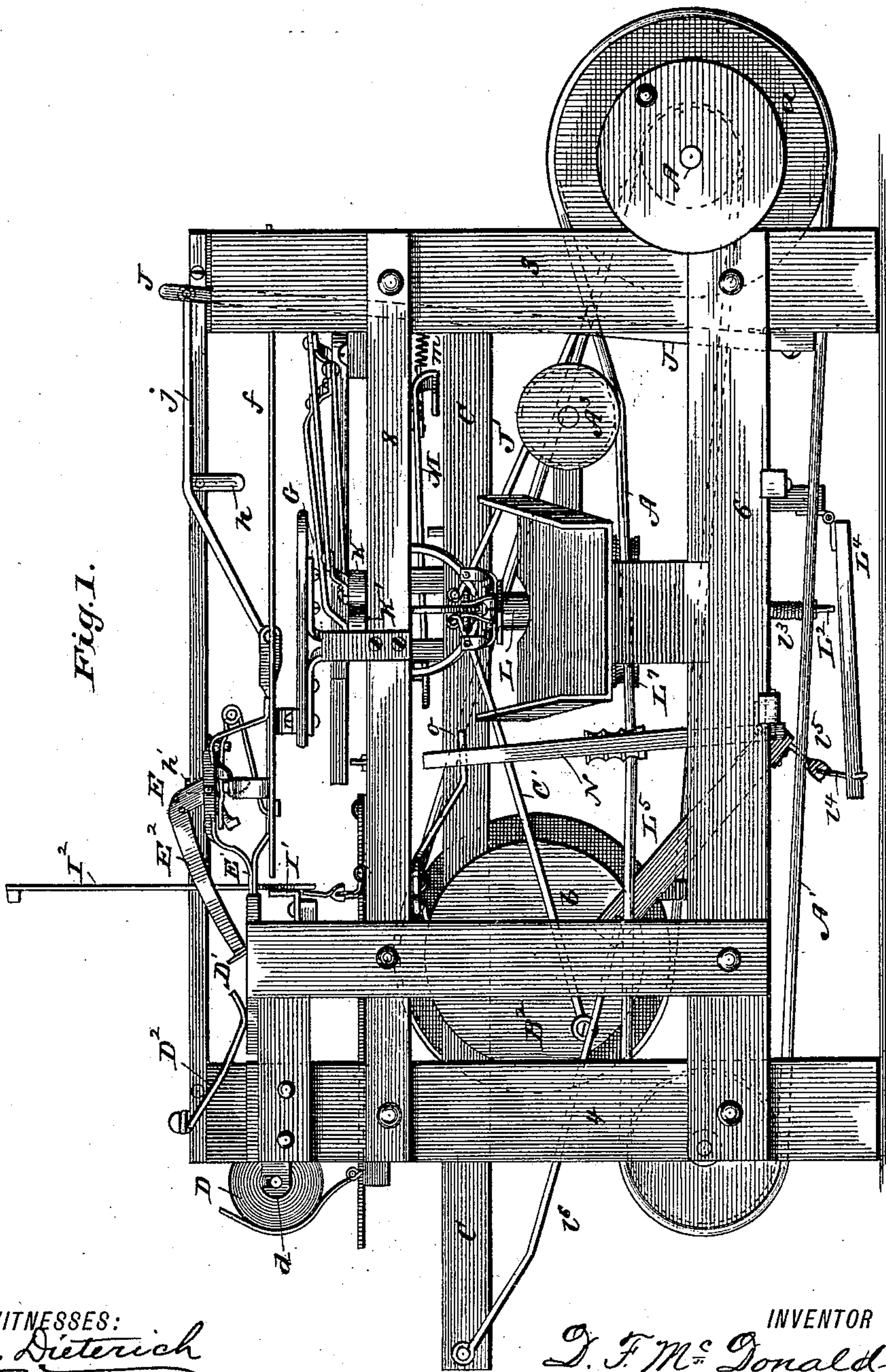
(No Model.)

5 Sheets—Sheet 1.

D. F. McDONALD.
WRAPPING MACHINE.

No. 407,544.

Patented July 23, 1889.



WITNESSES:
Fred G. Dietrich
P. B. Furman.

INVENTOR
D. F. McDonald
BY *Munn & Co*
ATTORNEY

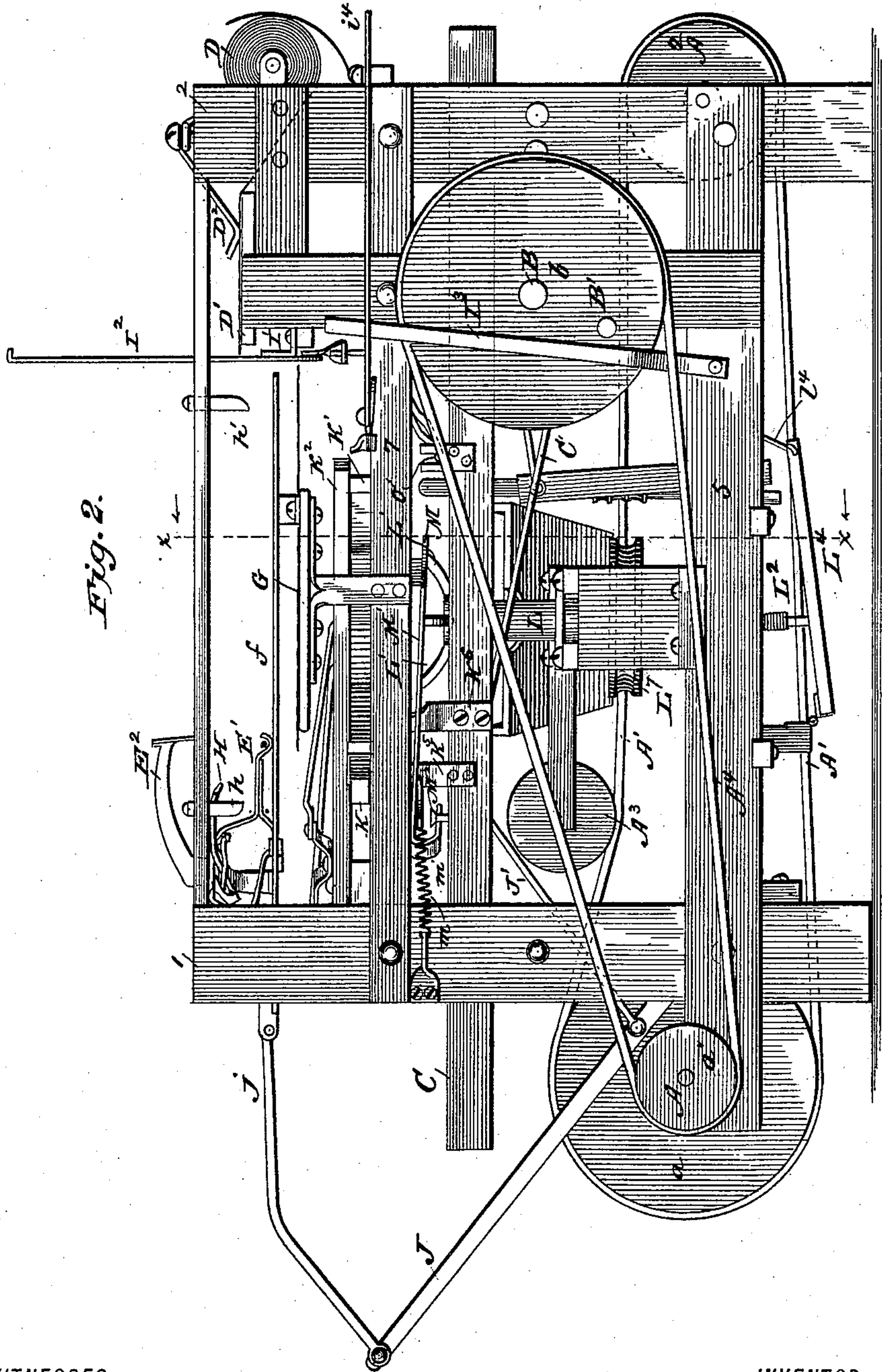
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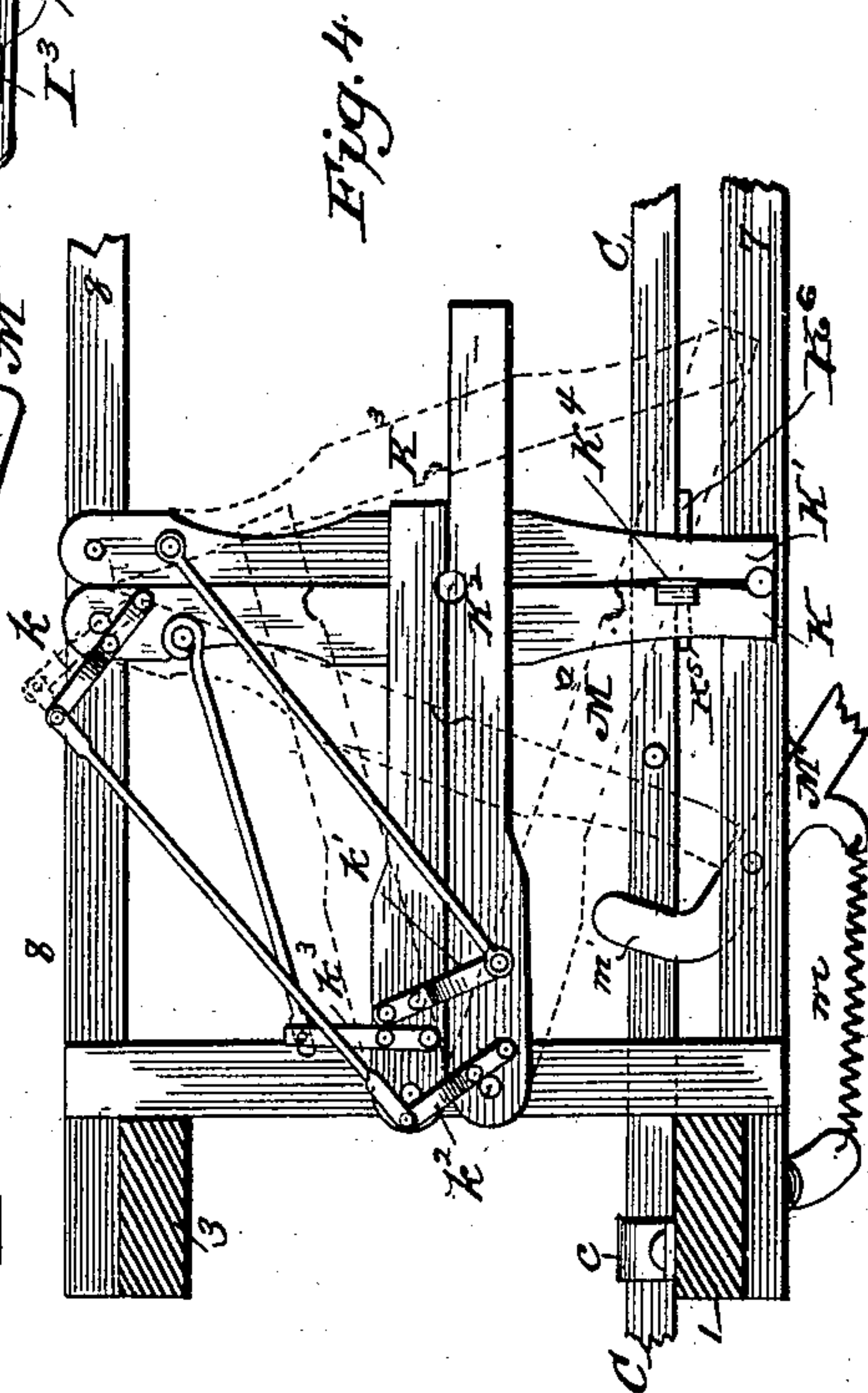
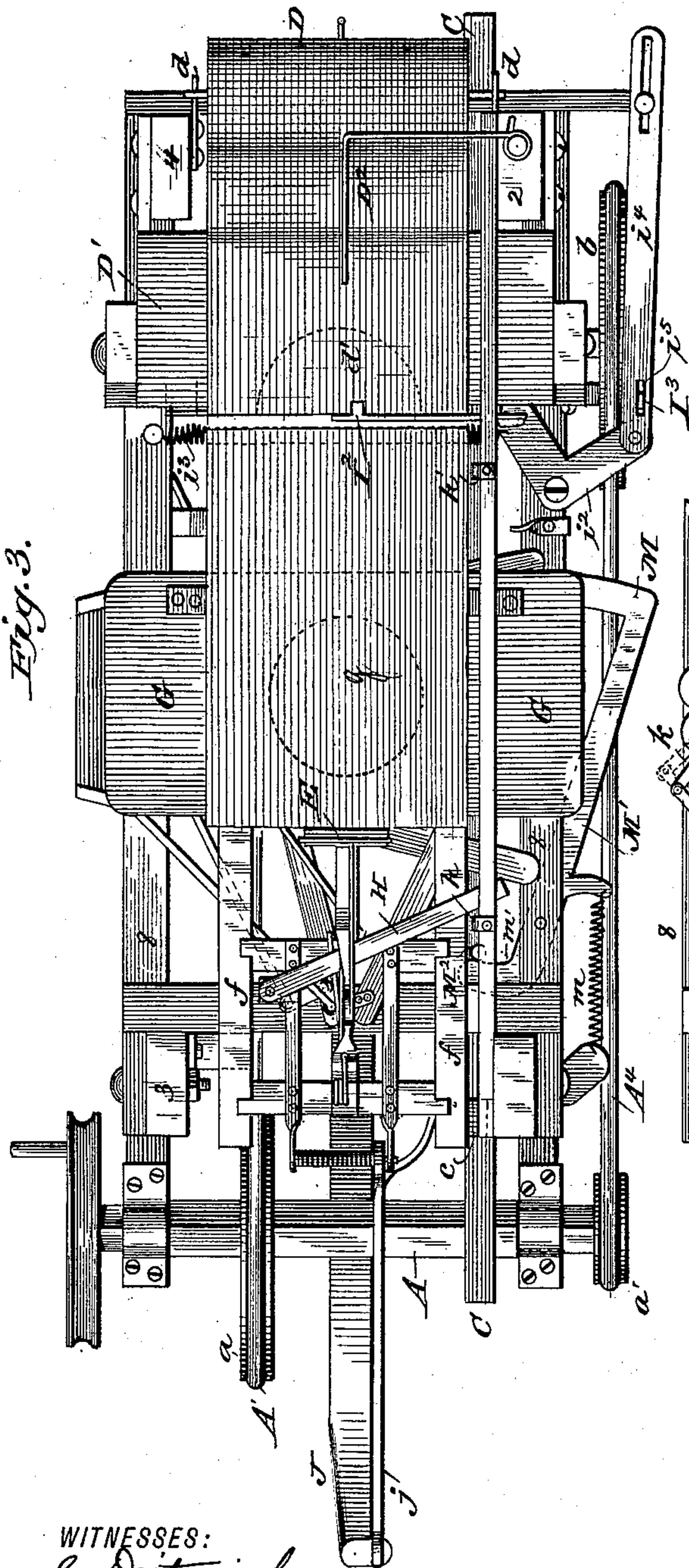
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5 Sheets—Sheet 4.

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Fig. 5.

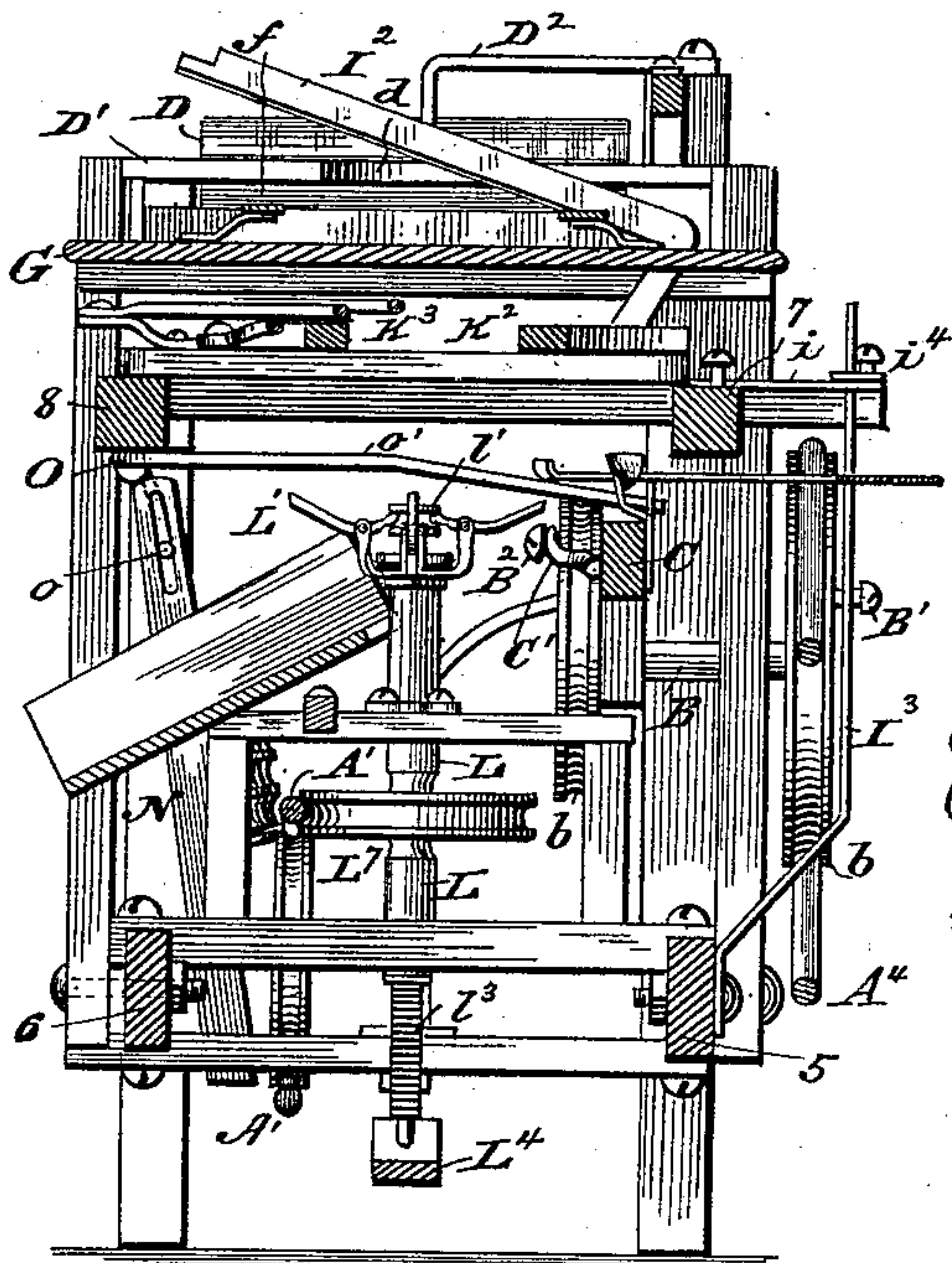


Fig. 6.

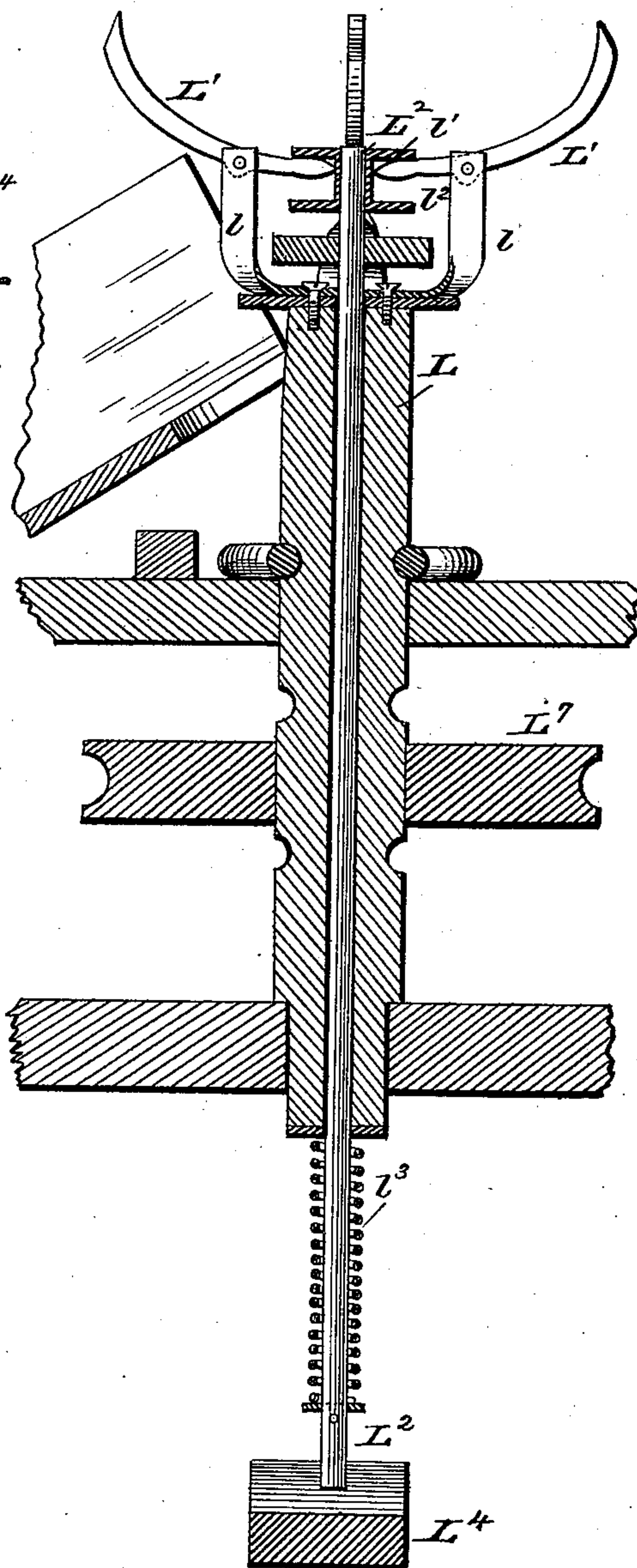
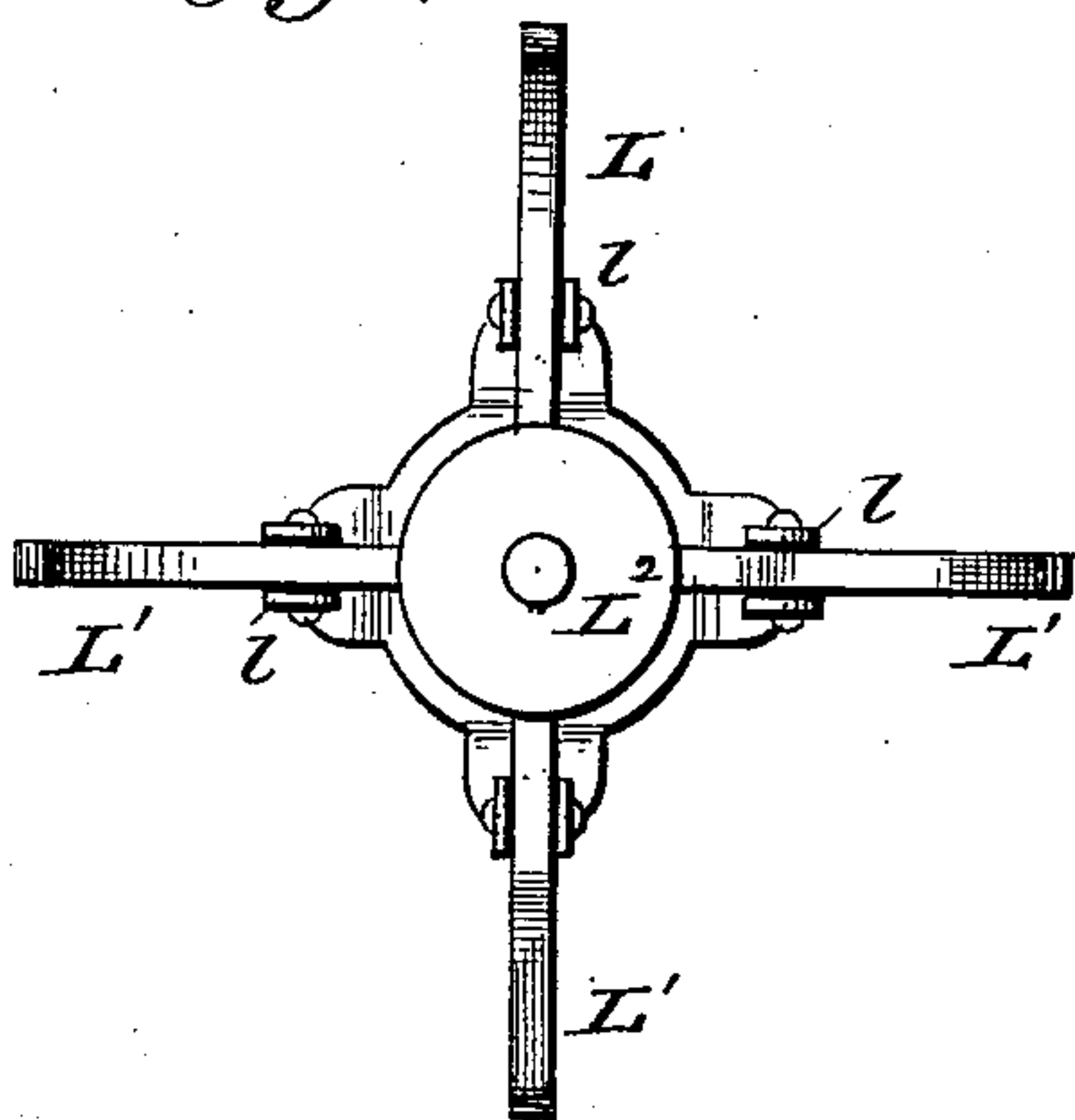


Fig. 7.



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(No Model.)

5 Sheets—Sheet 5.

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Fig. 8.

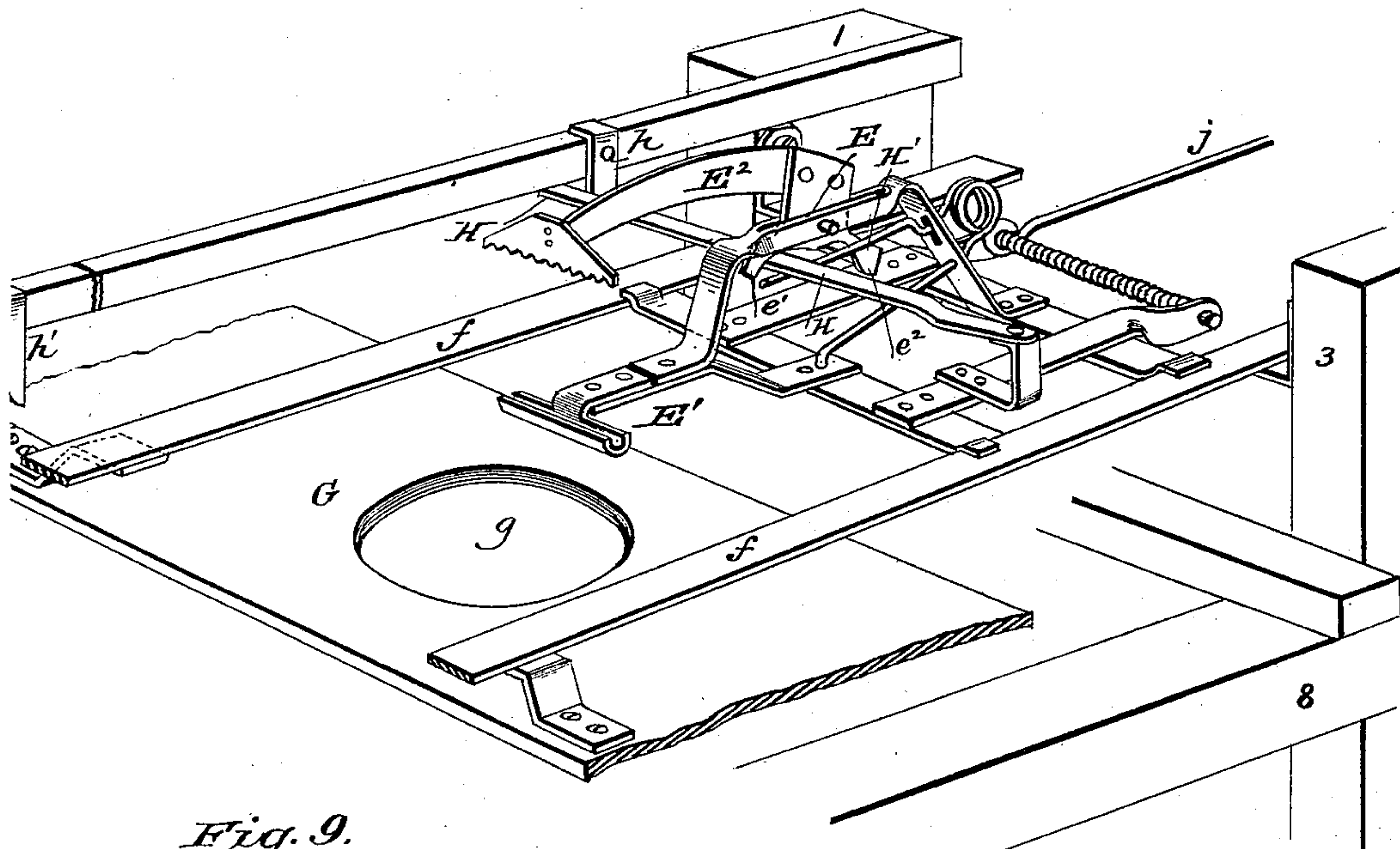
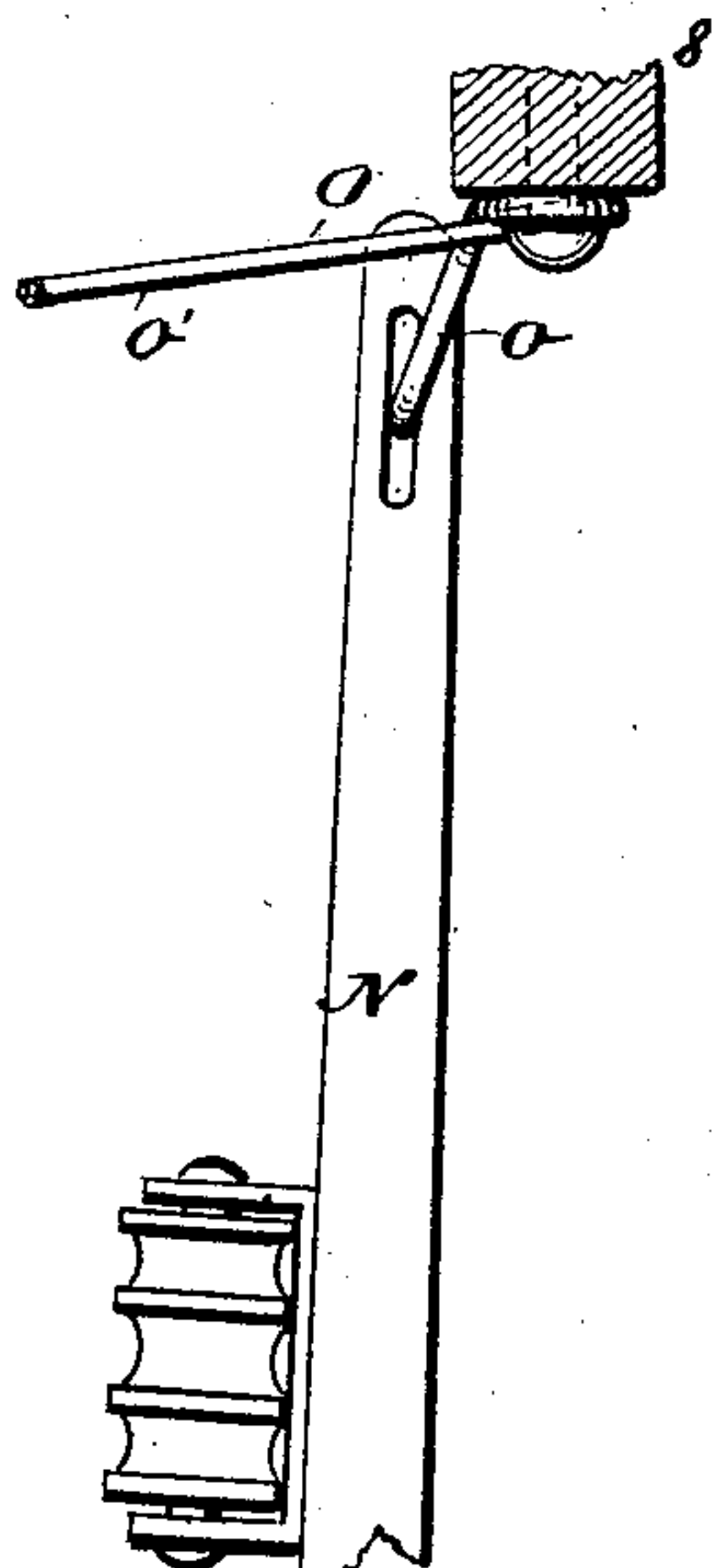


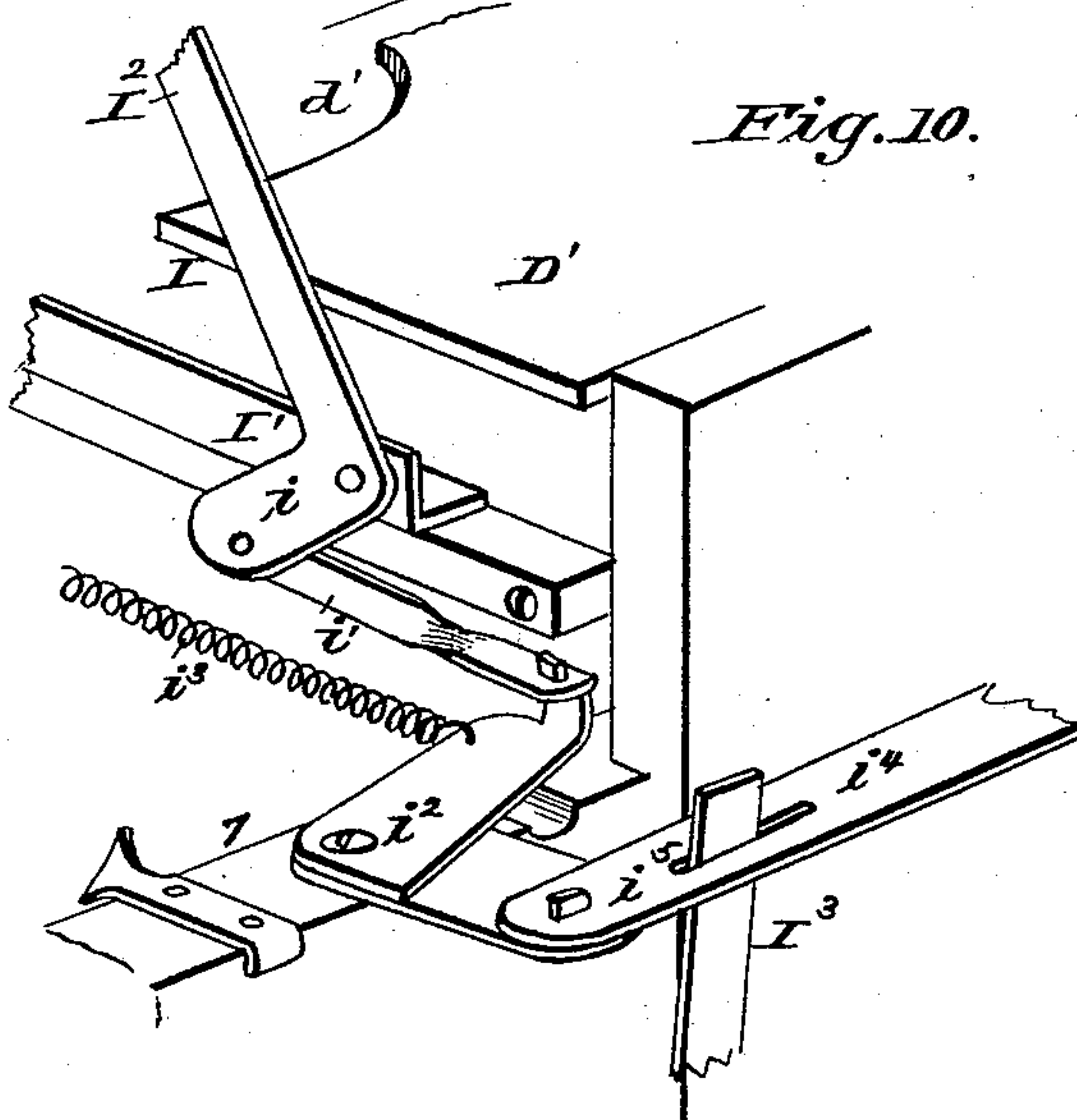
Fig. 9.



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Fig. 10.



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ATTORNEY

UNITED STATES PATENT OFFICE.

DAVID FULTON McDONALD, OF LAKE BUTLER, FLORIDA.

WRAPPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 407,544, dated July 23, 1889.

Application filed March 15, 1888. Serial No. 267,269. (No model.)

To all whom it may concern:

Be it known that I, DAVID FULTON McDONALD, of Lake Butler, in the county of Bradford and State of Florida, have invented a new and useful Improvement in Wrapping-Machines, of which the following is a specification.

My invention is a machine intended especially for wrapping oranges, but which may be used for wrapping other fruit or other articles which it is desired to wrap preparatory to shipment or storage.

The machine comprises a support for the wrapping-paper, a carrier for moving the paper forward to the point where the oranges are fed into the machine, a clamp for pressing the edges of the paper together into a neck-like form and for holding it when so pressed, a holder for the orange, one of such parts—that is, the holder and the clamp—being rotatable with reference to the other, whereby the wrapper may be twisted on the orange, a discharger for forcing the orange out of the holder, and other improvements, as will be hereinafter described.

The invention consists in certain features of construction and novel combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the drawings, Figures 1 and 2 are elevations of the opposite sides of the machine. Fig. 3 is a top plan view thereof, with the wrapping-paper adjusted over the in-feed opening. Fig. 4 is a detail view of the paper-clamp. Fig. 5 is a vertical section on about line *x x*, Fig. 2. Fig. 6 is a detail view, mainly in section, of the holder. Fig. 7 is a detail plan view of such holder. Fig. 8 is a perspective view of the paper-carrier in connection with a part of the framing of the machine. Fig. 9 is a detail view of a part of the shifter, and Fig. 10 is a detail perspective view of a part of the paper-cutter and some of its operating devices.

The framing comprises uprights 1, 2, 3, and 4, connected by lower side bars 5 6, upper side bars 7 and 8, and suitable cross-bars being provided to brace the structure. In this framing I journal the main shaft A, having a drive-pulley *a* and a smaller pulley *a'*. The drive-belt A' passes around the pulley *a*, extends about the full length of the machine,

and around a guide-pulley A². A pulley A³ also bears on the belt slightly in advance of the drive-pulley and presses the belt down firmly onto said wheel. The pulley *a'* is connected by belt A⁴ with a pulley *b* on a counter-shaft B, such counter-shaft being provided with crank-pins B' B², formed or secured, preferably, on pulleys *b b*, fixed on the counter-shaft. The belts A' A⁴, it will be seen, form a part of the gearing for communicating motion to the several parts of the machine.

In the framing I support in guides *c* the longitudinally-reciprocating slide-bar C, which is given its reciprocating motion by means of a pitman-rod C', connecting it with the crank-pin B². It is through the medium of this slide-bar that I communicate motion to most of the moving parts of my machine. At one end of the machine I provide bearings *d* for the paper roll D. In practice I use paper from a continuous strip rolled, as shown, and from which the paper is drawn and cut off as used. In advance of the paper-support I provide a paper platform or board D', on which the paper rests and against which it is held by a paper-presser D², formed of a spring-wire secured at one end to the framing and arranged at its other end to press the paper firmly onto the platform D'. This presser is an important feature, for the reason that it holds the free edge of the paper in position to be operated on by the paper-carrier E. In its inner edge the platform or board D' has an opening *d'*, over which the free edge of the paper is held.

The sliding carrier E is movable on guides *f* back and forth over the opening *g* in the feed-board G, which board is fixed in the framing, as shown. The paper-carrier E is formed with a lower section E' and an upper section E², and in the movement of the carrier toward the paper to grip same the sections E' E² are separated, the latter being elevated, so that the said sections project in their extreme rearmost position one above and the other below the free edge of the paper, so that when such sections are brought together they will grip the paper and secure the same, so that the paper in the reverse movement of the carrier will be drawn forward over the opening *g* in feed-board G and is then released.

The particular construction for operating

the sections shown consists in pivoting the upper section E^2 to the lower one and providing such pivoted section on its end opposite the gripping portion with extensions $e' e^2$, which project to the opposite sides of such pivot, and by engaging which extensions the upper section may be operated to open or close. In order to engage these extensions, I provide an arm or bar H, pivoted at one end and movable into contact with either one of the extensions $e' e^2$. By preference, this bar H is engaged by a spring H' , supported on the lower section, so that the bar H will be pressed firmly in contact with whichever of the extensions $e' e^2$ it may be set to engage.

In order to automatically operate the bar H to open or close the section E^2 , I provide on the framing stops $h h'$, arranged to be engaged by the movable end of bar H at the forward and rearward end of the stroke or movement of the carriage so as to open the sections at the rear point of stroke of the carriage to grip the paper and draw it forward, and then open the sections to release the paper after it has been drawn forward over the feed-opening.

It will be understood that the spring H' is for the purpose of holding the section E^2 in its open or closed position, and that its arrangement to bear on the bar H efficiently serves such end, but manifestly it would involve no departure to arrange the spring to bear directly against the section E^2 . In use, therefore, the sections $E' E^2$ being separated, the carrier is moved rearwardly, said sections projecting one above and the other below the end of the wrapper-paper. The upper section is then lowered, and the sections $E' E^2$ grip the paper within the opening d' , and as the carrier reverses its motion the paper is drawn over the feed-board G and above the opening therein. The paper at this stage of the operation is cut close to the inner edge of the platform D' by means of the cutter I, comprising a lower bearing edge or blade I' and a pivoted cutter or blade I^2 , cutting in opposition thereto. This blade I^2 is connected with and operated by a swinging arm I^3 , pivoted at one end to the framing and engaged by the crank-pin B' . In connecting the upper end of the arm I^3 with the cutter-blade I form the latter with an arm i , connected by link i' with one arm of a bell-crank i^2 , which latter is operated in one direction by a spring i^3 , and is connected with a longitudinally-movable bar i^4 , which latter has slot i^5 entered by the swinging arm I^3 .

The sliding carrier is connected by a pitman j with a swinging arm J, which in turn is connected by pitman J' with the slide-bar C. Below the feed-opening g , I arrange the paper-clamp and below the latter the holder. This arrangement is especially desirable, for the reason that the article to be wrapped is fed into the machine by its own weight or gravity by simply placing the article on the wrapper over the opening g , when the weight

of the article will feed it and its wrapper down through the clamp and into the holder.

As stated hereinbefore in relation to the clamp and holder, I make one of such parts rotatable with reference to the other. I either make the clamp or the holder rotatable with reference to the other. It will be understood that this is an important feature of my invention, as by the same I am able to twist the neck of the wrapper on the orange by machine, which operation, as far as I am aware, has only heretofore been accomplished by hand.

In practice I prefer to rotate the holder to make such rotation intermittent, and to effect it by the means hereinafter described.

I will first describe the construction of clamp shown, preliminary to which, however, I desire to say that the particular construction of the clamp or of the holder is not essential to the broad combination of such holder and clamp outlined above and expressed in some of the appended claims.

The clamp shown consists of a series of bars K, K' , K^2 , and K^3 , pivoted at or near one end and movable at their free ends over each other, forming between them, when open, a pocket-like opening, through which the orange may be passed, and contracting on the wrapper after the orange has passed to the holder, forming the wrapper into a neck-like portion and holding it firmly as the holder is rotated, thus forming a twisted neck, securing the wrapper in place.

In the construction shown the clamp-bars are arranged in two pairs, the bars $K^2 K^3$ being, when closed, approximately at right angles to the bars K K' , forming a pocket or recess between the bars at their intersection. For convenience of operation, I connect these bars together, so that the movement of one will effect a corresponding movement of all. To this end I provide the bar K^2 with an arm k^2 , connected by a link with an arm k on bar K. I also provide the bar K^3 with arms $k' k^3$, connected by links or rods, respectively, with bars K' and K. From the connections, as shown, it will be seen that as one bar is turned on its pivot to or from its clamping position the other bars will be similarly operated. To operate the clamp, I provide its bar K at its free end with a depending lug K^4 , which rests between the trip projections or shoulders $K^5 K^6$ on the slide-bar C, the parts $K^4 K^5 K^6$ forming interengaging projections on the slide and clamp bars, as it will be manifest that the simple reversal of such parts—that is to say, the arrangement of stops $K^5 K^6$ on the clamp-bar and lug K^4 on the slide-bar—would involve no departure from this feature of my invention. By the described construction the clamp will be opened and closed, as desired.

The holder is journaled in suitable bearings, and comprises a hollow shaft L, expanding-fingers L' , pivoted on supports or brackets l , mounted on said shaft and extended in-

ward past the pivot, forming inward extensions, which are connected with a rod L^2 , movable through the hollow shaft, the connection being preferably effected by means of plates or disks $l' l^2$, fitting one above and the other below the inner extensions of the fingers. This rod L^2 is engaged by a spring l^3 , which acts to depress said rod and normally close the fingers. I provide in connection with the rod L^2 a lifter L^4 , whereby to raise the rod and open the fingers of the holder. This lifter L^4 is a bar pivoted at one end, bearing between its ends under the rod L^2 , and is automatically operated by connecting its movable end by link l^4 with the arm l^5 of a bell-crank lever L^5 , the other arm of which is connected by pitman l^6 with the slide-bar C, so that the rod L^2 may be tripped at intervals to open the fingers when desired to receive or discharge the orange.

In order to automatically discharge the orange when wrapped, I provide a discharger M, which is movable across the holder and forces the orange out into a spout, down which it passes. It may be into a box or other suitable receptacle. This discharger is shown as a bar formed with a shank M' , pivoted to the framing, and with an arc-like arm projected from the movable end of such shank and moving across the holder. This discharger is engaged by a spring m , which retracts it, and it has an extension m' inwardly beyond its pivot, which extension has a portion arranged to be engaged by a projection or shoulder M^2 on the slide-bar C, which operates to turn the discharger on its pivot and cause it to move across the holder, as desired. I have found it desirable to only rotate the holder during the twisting operation and to let it remain at rest when receiving the orange and when the latter is being discharged. To this end I provide a shifter, whereby to throw the holder into and out of gear with the drive mechanism, and I also, by preference, provide means for automatically operating such shifter.

The holder is shown as provided with a pulley L^7 , which is not normally operatively engaged by the drive-belt.

The shifter comprises a bar N, pivoted at one end, arranged between its ends to engage the drive-belt, whereby it may move the latter into operative contact with the pulley L^7 of the holder, the bar being preferably provided with an anti-friction pulley where it engages the belt. At its upper or movable end the shifter-bar is connected with one arm o of a bell-crank lever O, pivoted to the framing and having its arm o' connected with the slide-bar C, so that the shifter will by the movement of such slide-bar be operated to throw the drive-belt into and out of engagement with the pulley of the holder.

In using the machine the paper roll being in position, the free end of the paper should be adjusted onto the platform over the opening d' in the inner edge thereof and under

the presser, which holds the paper on said platform, and the machine may be put in motion by turning the main or drive shaft usually to the right. The paper-carrier will now move to and grip that portion of the paper over opening d' , and will draw the paper forward over the feed-opening g , when it will release the paper. The cutter will now be operated and cut off the wrapper, and an orange may be placed on said wrapper over the opening g , and will pass down through the clamp and into the holder, the fingers of the latter being open or expanded to receive the orange. Then as the carrier moves rearward to again grip the paper the fingers of the holder will be closed and the clamp will close to hold the neck of the wrapper. When the fingers of the holder have closed on the orange, the shifter will have moved the drive-belt into contact with the pulley of the holder, and the latter will be rotated, twisting the neck of the wrapper. After having been properly turned to effect this twisting, the fingers of the holder and the bars of the clamp will open and the discharger will move across the holder and force the orange out of the holder. Meantime the carrier has been moved rearwardly to again grip the paper, and the operation will proceed, as before.

Having thus described my invention, what I claim as new is—

1. In a wrapping-machine, a paper-clamp consisting of a series of pivoted bars and connections between said bars, whereby the movement of one bar on its pivot will effect a movement of the others, substantially as set forth.

2. In a wrapping-machine, the combination of the framing, a series of pivoted bars forming a paper-clamp and connected together, whereby the movement of one bar will effect a movement of the others, a slide-bar, and interengaging projections on said slide-bar and one of the clamp-bars, substantially as and for the purposes specified.

3. In a wrapping-machine, the combination of a series of pivoted bars connected together and forming a wrapper-clamp, a slide-bar engaging one of said bars, and a rotating holder arranged adjacent to the said clamp, all substantially as and for the purposes specified.

4. The combination, with the holder, of a discharger having a portion movable across said holder, whereby to discharge the article therefrom, and having a shank M' pivotally supported, and having an extension m' , a spring for retracting said discharger, and the slide-bar having a stud or projection arranged to engage the extension m' , all substantially as and for the purposes specified.

5. In a wrapping-machine, the combination of the framing, the holder supported therein, a slide-bar movable in said frame and having a trip projection, a discharger pivoted to the framing and having a portion movable across the holder and provided with a lug or portion

projecting into the path of the trip projection of the slide-bar, and a retracting-spring connected with said discharger, substantially as set forth.

5 6. In a wrapping-machine, the combination, with the rotatable holder constructed to receive the wrapper and the article to be in-
closed therein and having a pulley and the
10 drive-belt movable into and out of contact with said pulley, of the belt-shifter engaging said belt, whereby it may be moved into con-
tact with the pulley of the holder, substan-
tially as set forth.

7. In a wrapping-machine, the combination,
15 with the framing, the rotatable holder having a pulley, the drive-belt movable into engage-
ment with said pulley, and a shifter whereby to adjust said belt into engagement with the
pulley of the holder and the paper-clamp, of
20 the slide-bar supported in the framing and a bell-crank lever pivoted in said framing and
having one arm connected with the shifter
and its other arm connected with the slide-
bar, substantially as set forth.

25 8. In a wrapping-machine, the combination of the framing, the drive-shaft, a counter-shaft
geared therewith and having a crank-pin, a
slide-bar, a pitman connecting the slide-bar
with the said crank-pin, the holder having its
30 shaft provided with a pulley and provided
with movable fingers and with a rod for op-
erating such fingers, a drive-belt movable into
and out of contact with the pulley of the
holder, the shifter for moving such drive-
35 belt, the lifting-bar arranged to trip the spring-
actuated rod of the holder, the lever connected
with said lifting-bar, a pitman connecting the
said lever with the sliding bar, the discharger-
connections between such discharger and the
40 slide-bar, and the bell-crank lever connected

at one end with the shifter and at its other
end with the slide-bar, all substantially as and
for the purposes specified.

9. In a wrapping-machine, the combina-
tion of the framing, the rotatable holder, a
45 shifter whereby said holder may be geared at
intervals with the drive-gearing, and interme-
diate connections between said shifter and
the drive-gearing, whereby the shifter may be
operated thereby, substantially as and for the
50 purposes specified.

10. In a wrapping-machine, the combination
of a rotatable holder having movable fingers
and a rod whereby to operate the same, a
55 shifter whereby the holder is at intervals
geared with the drive-gearing, the discharger
movable across the holder, the slide-bar and
connections, whereby the movement of said
slide-bar will operate the discharger, the
shifter, and the finger-operating rod of the
60 holder, substantially as set forth.

11. In a wrapping-machine, the combination
of a paper-carrier, the wrapper-clamp, the ro-
tatable holder, the discharger, whereby to
65 force the wrapped article out of such holder,
and the shifter, whereby the drive-gearing
may be moved into operative engagement
with the holder, substantially as set forth.

12. In a wrapping-machine, the combination
of the framing, the paper-carrier, the wrapper-
70 clamp, the holder, the discharger, the shifter,
the slide-bar movably supported in the fram-
ing, and connections between said slide-bar
and the carrier, clamp, holder, discharger, and
shifter, substantially as and for the purposes
75 specified.

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