

No. 736,634.

PATENTED AUG. 18, 1903.

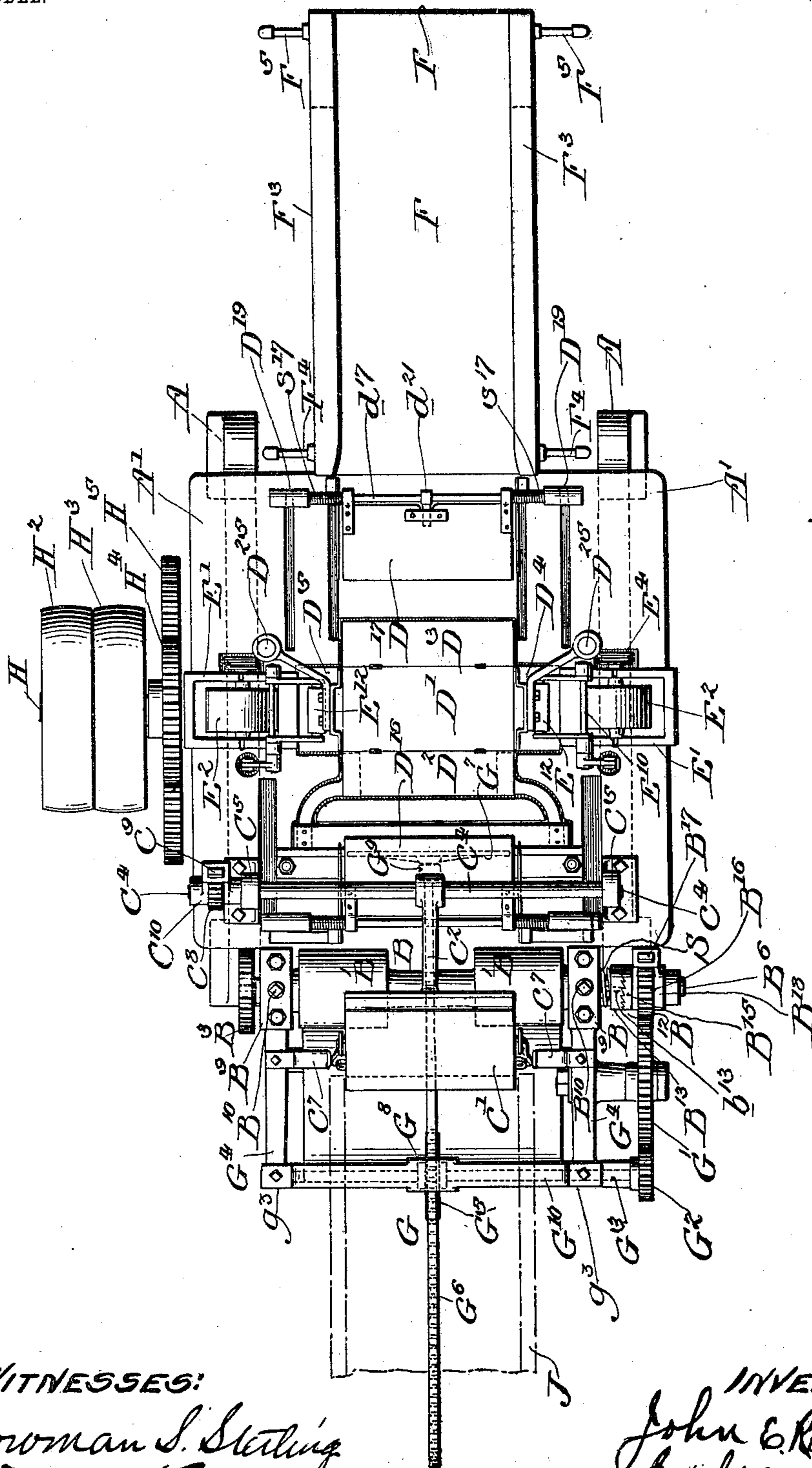
J. E. ROBINSON.  
SOAP WRAPPING MACHINE.

APPLICATION FILED AUG. 15, 1901.

NO MODEL.

8 SHEETS—SHEET 1.

FIG. 1.



WITNESSES:  
Bowman S. Sterling  
Richard H. Sharp

INVENTOR:  
John E. Robinson  
By his attorney  
Walter H. Calhoun

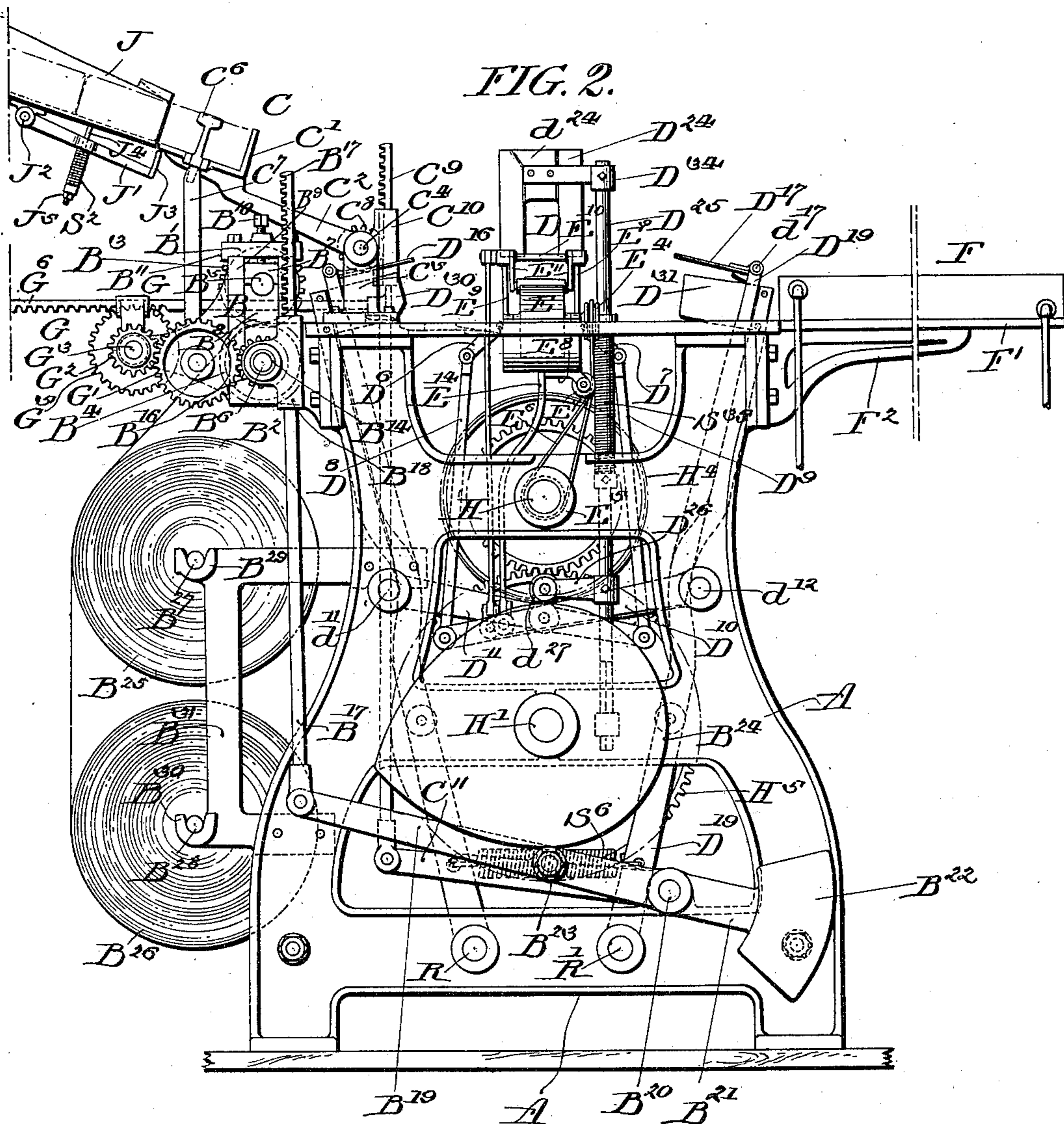
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8 SHEETS—SHEET 2.



WITNESSES:

Cornman S. Stirling  
Richard H. Sharp

INVENTOR:

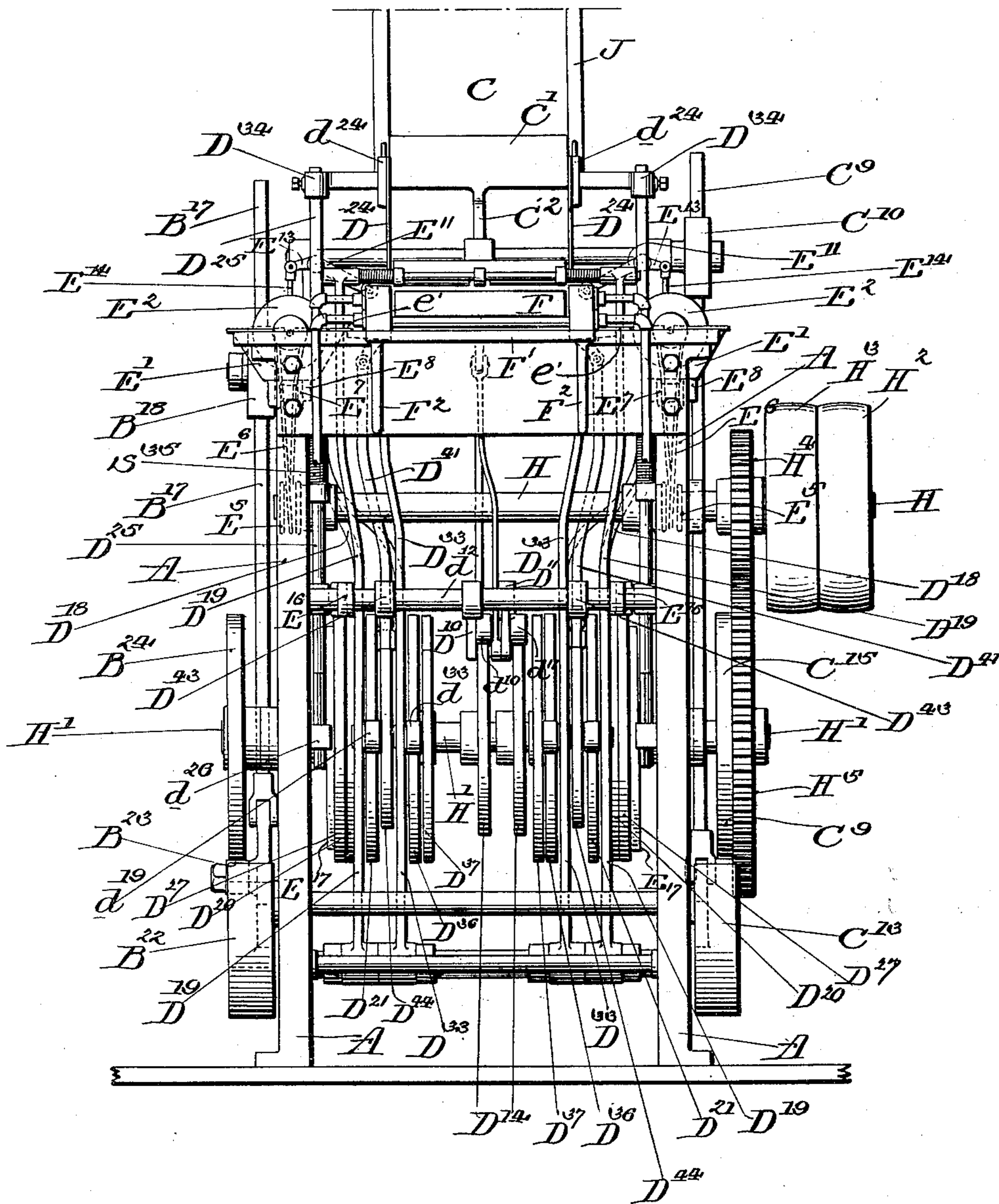
John E. Robinson  
By his attorney  
Walter W. Calhoun

PATENTED AUG. 18, 1903.

NO MODEL.

8 SHEETS—SHEET 3.

*FIG. 3.*



WITNESSES:

Bowman S. Sterling  
Richard H. Sharp

**INVENTOR:**

John E. Robinson  
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Walter H. Baltimore

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8 SHEETS—SHEET 4.

FIG. 4.

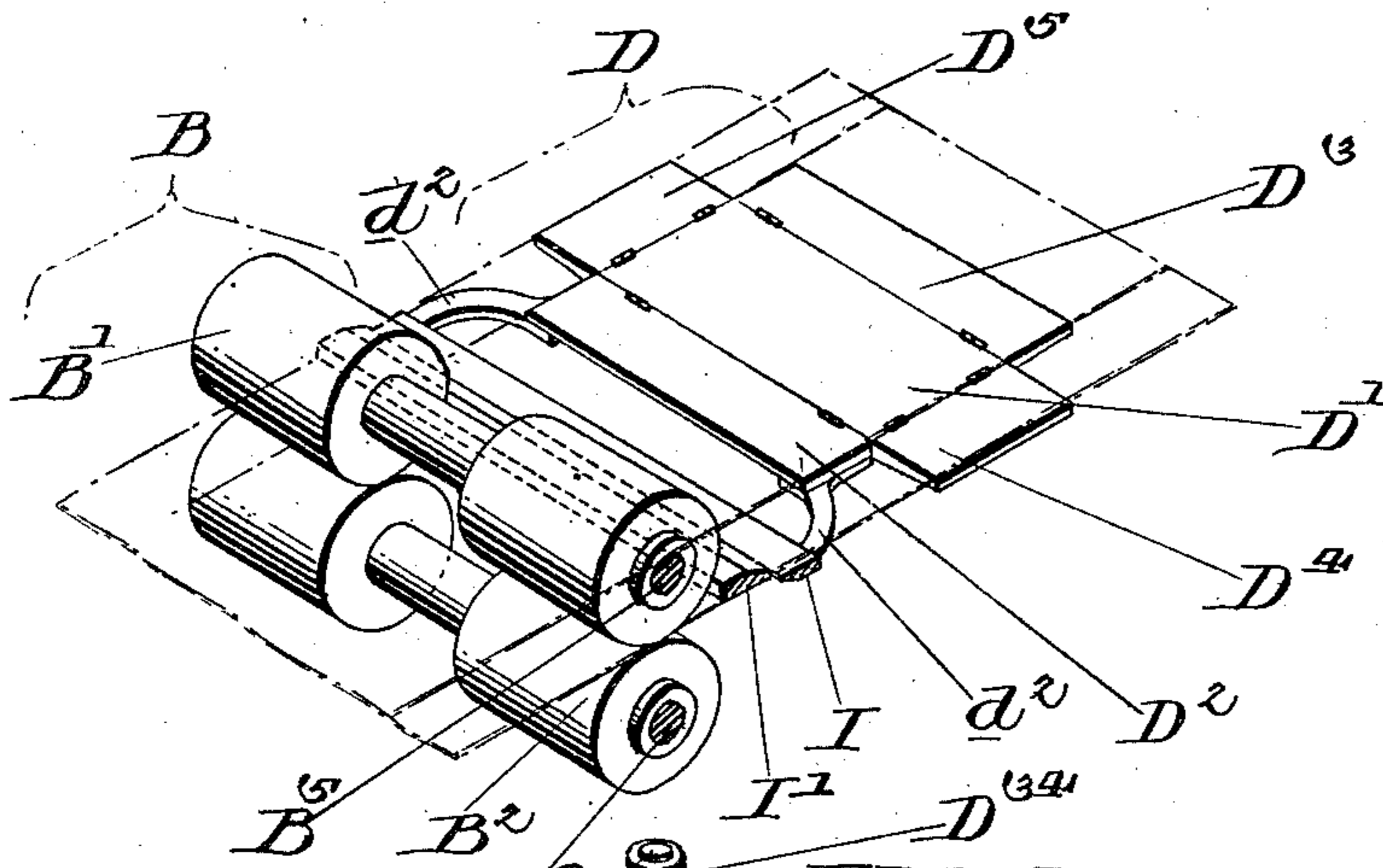


FIG. 5.

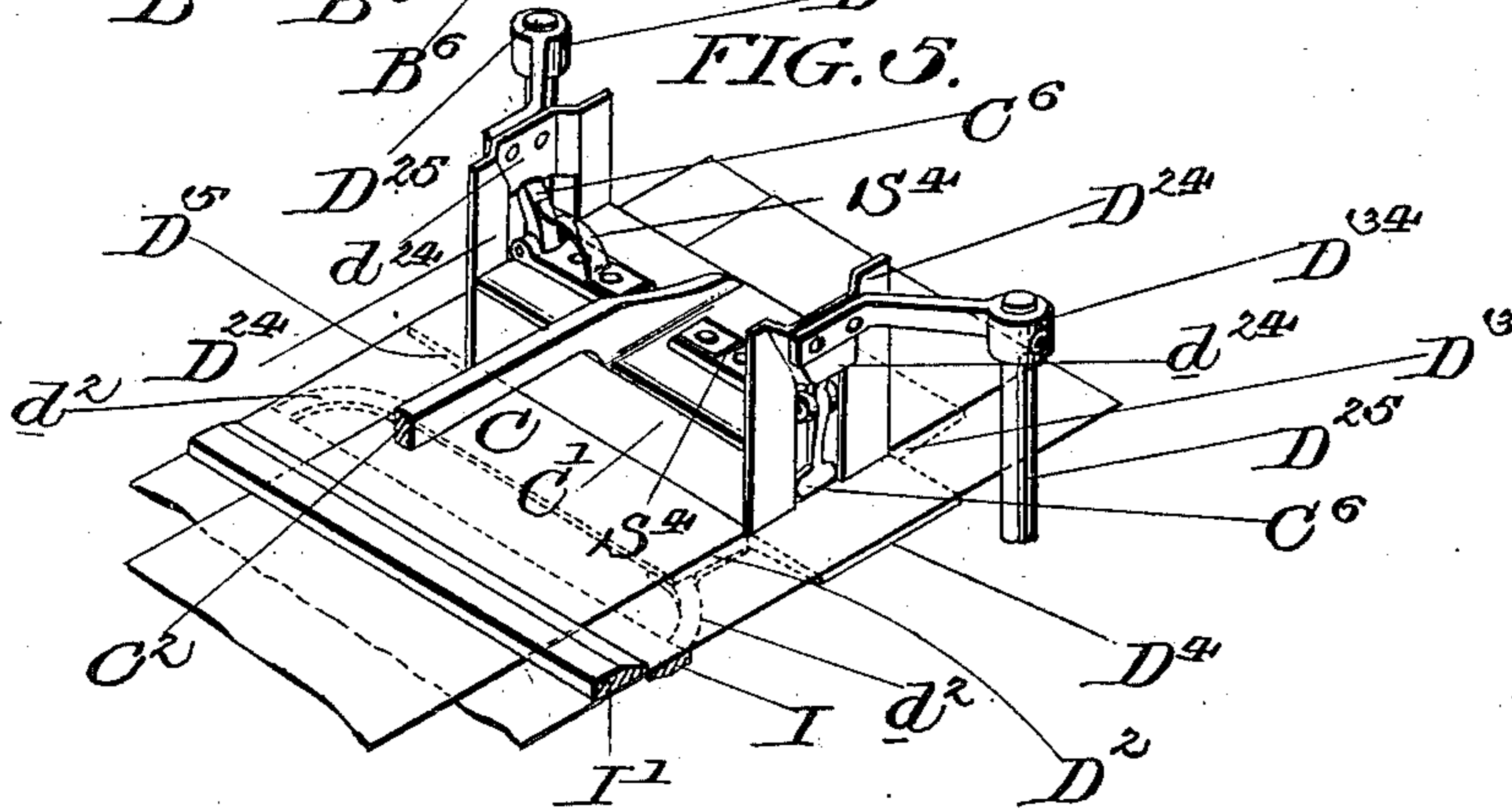
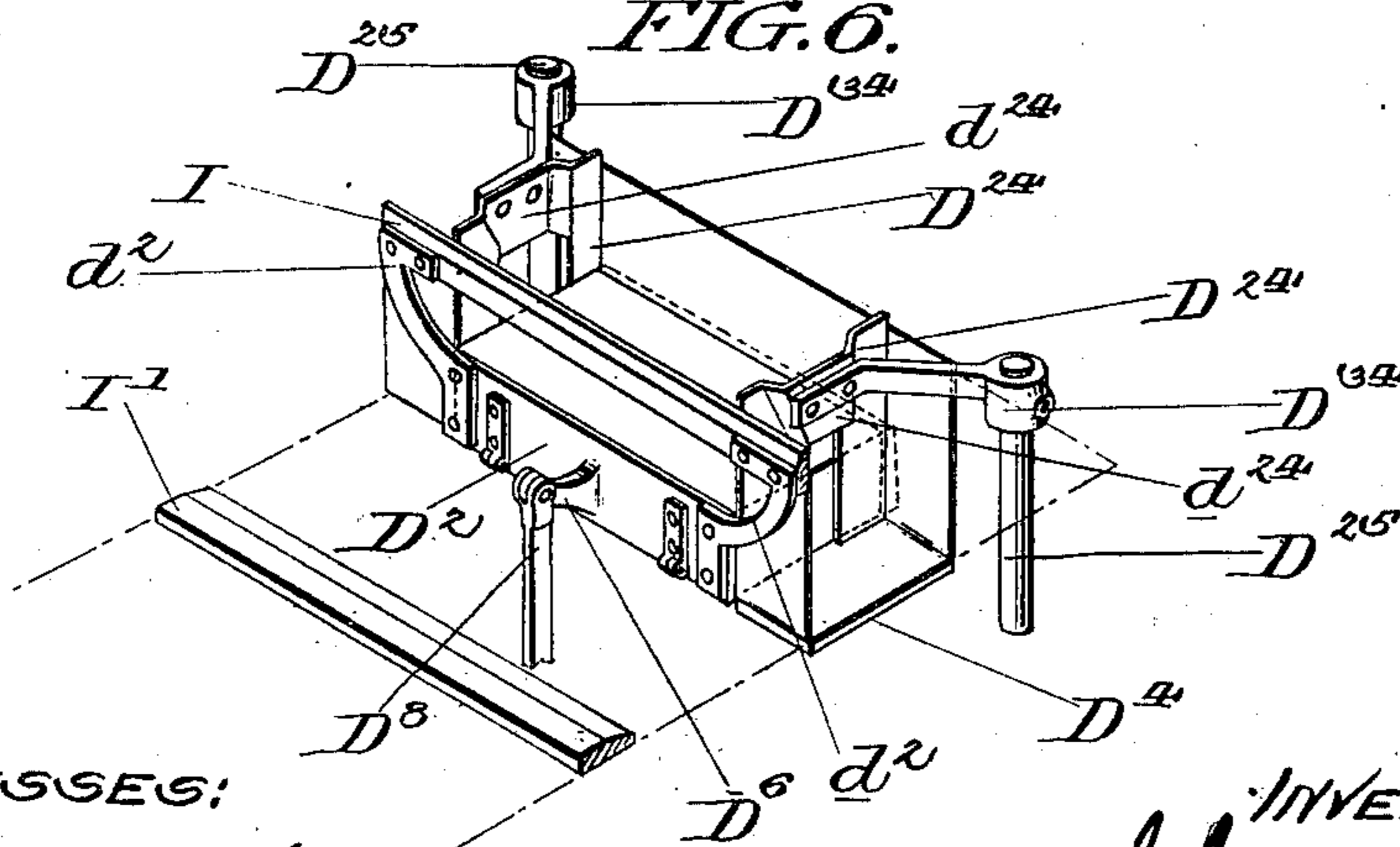


FIG. 6.



WITNESSES:

Crowman S. Sterling  
Richard H. Hoar

INVENTOR:

John E. Robinson  
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Walter W. Calhoun

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8 SHEETS—SHEET 5.

FIG. 7.

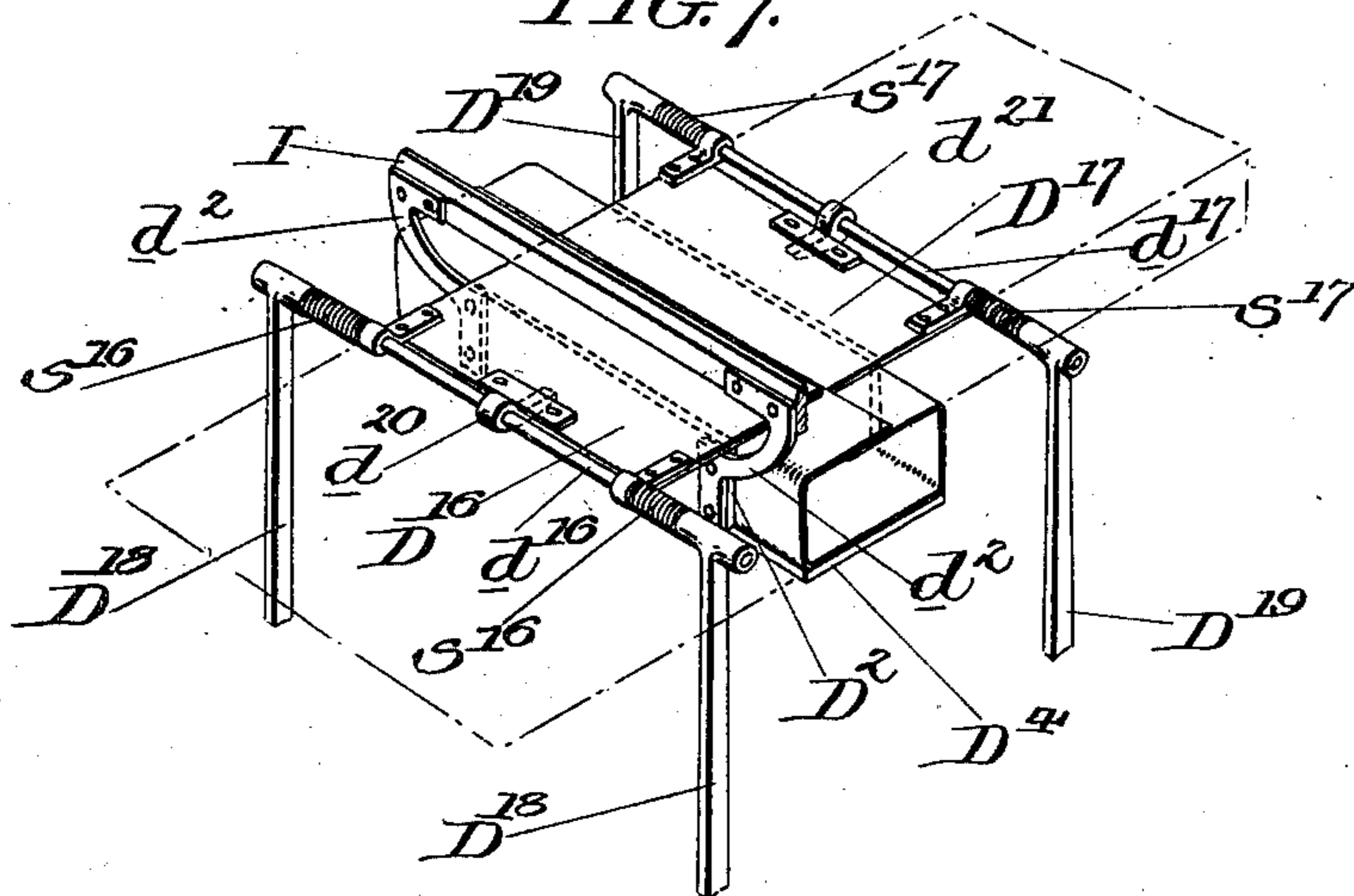


FIG. 8.

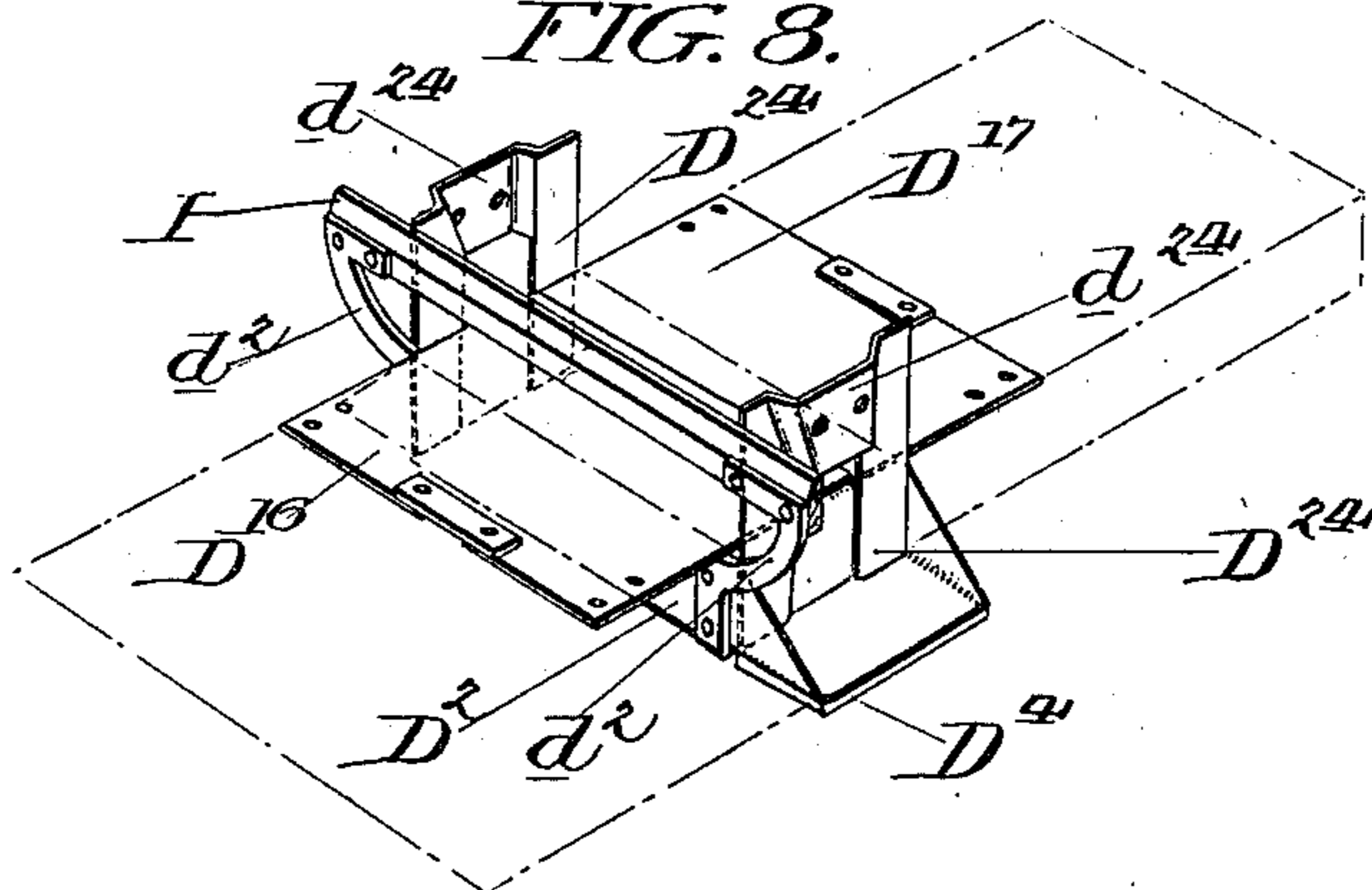
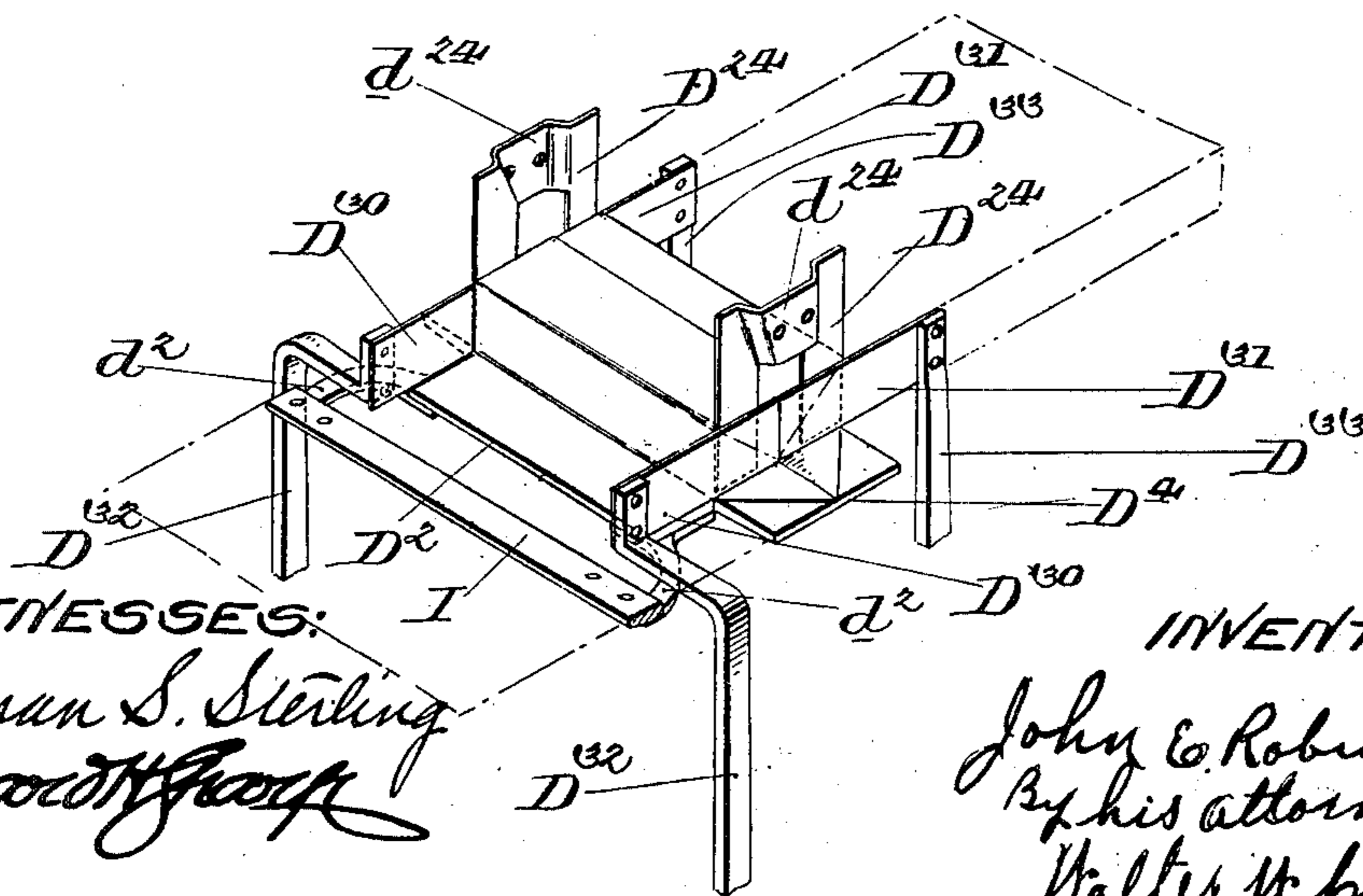


FIG. 9.



WITNESSES:

*Edwman S. Sterling*  
*Richard H. Hoff*

INVENTOR:

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*By his attorney*  
*Walter H. Calmore*

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NO MODEL.

8 SHEETS—SHEET 6.

FIG. 10.

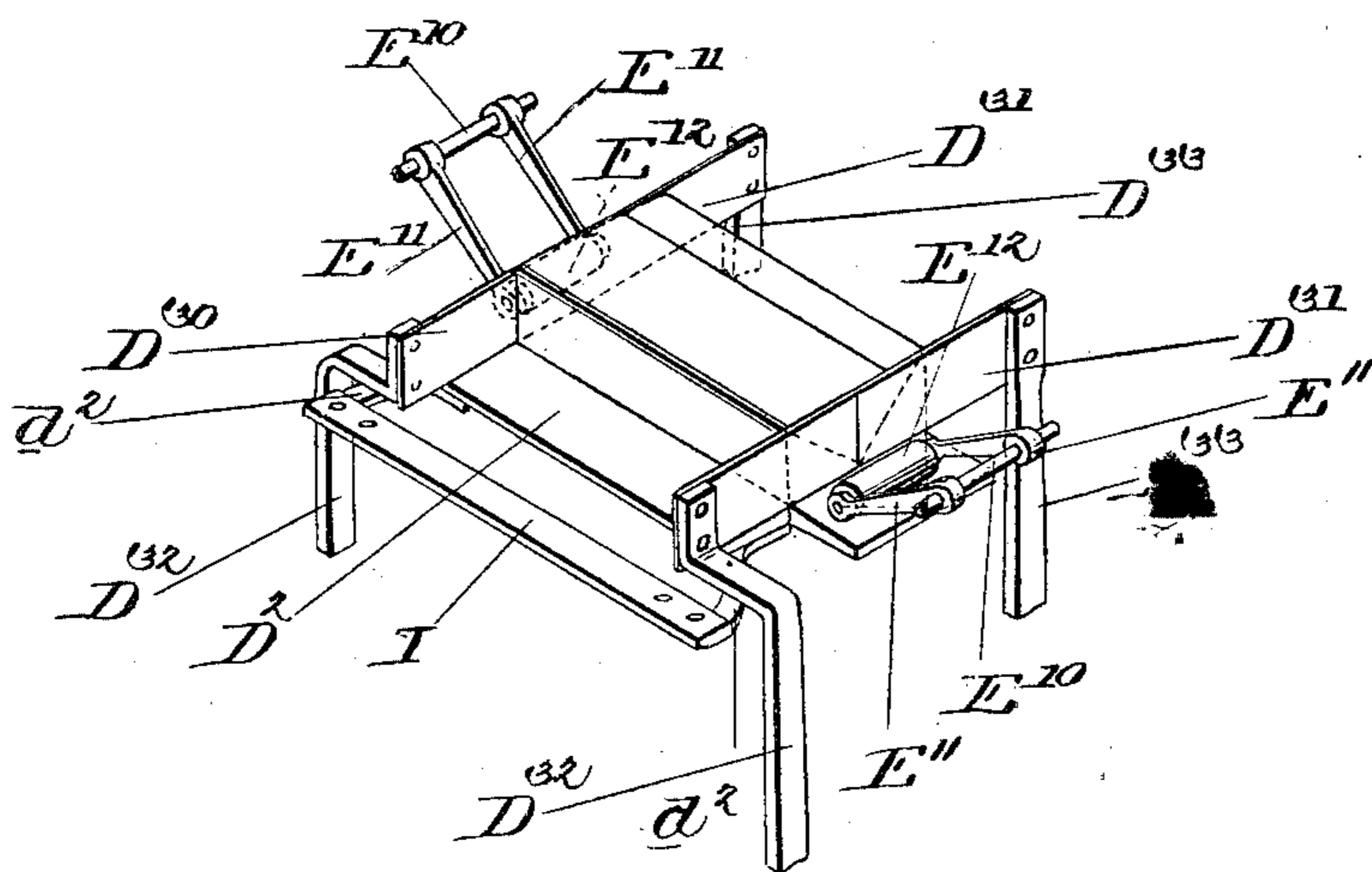


FIG. 11.

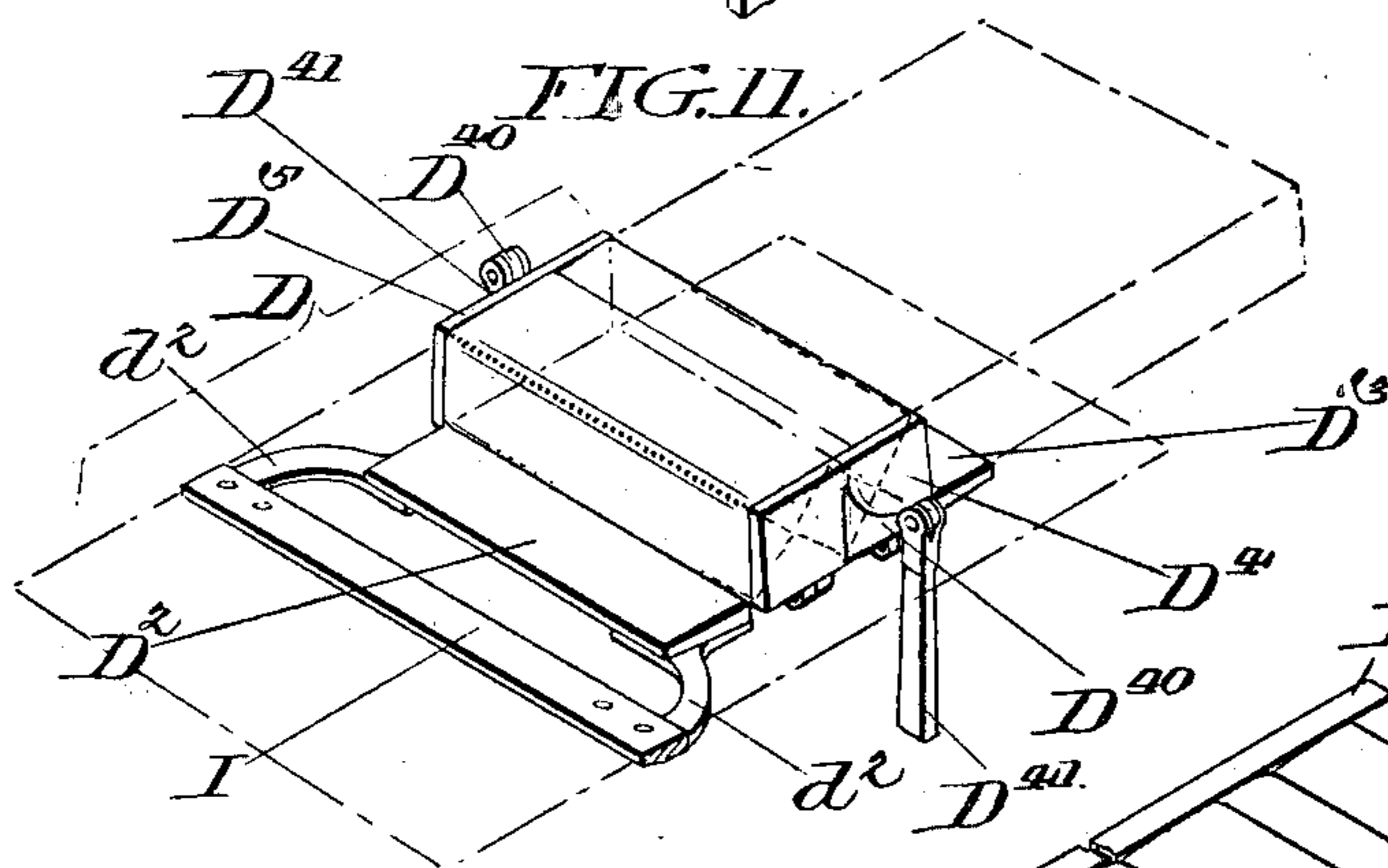
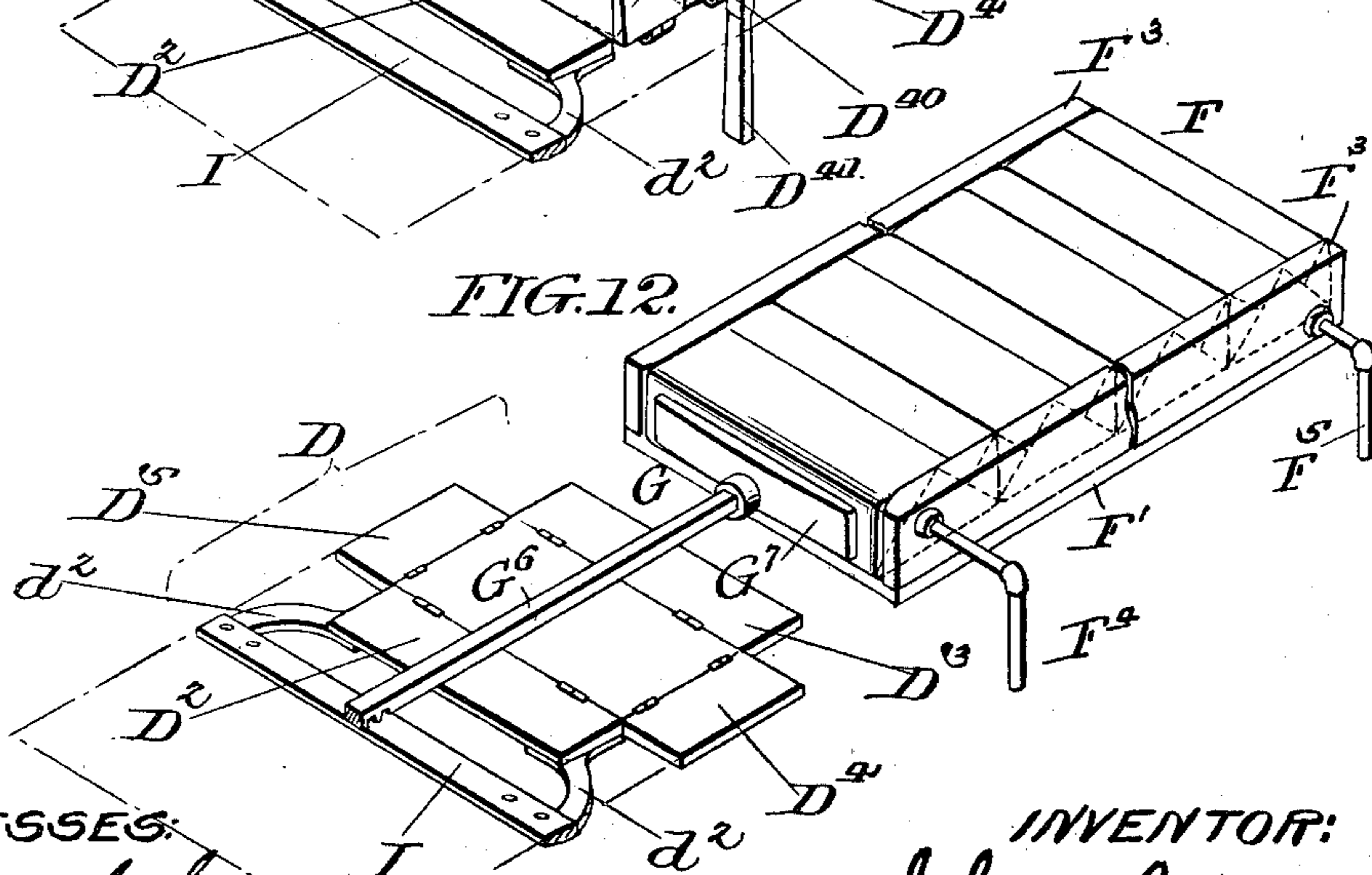


FIG. 12.



WITNESSES:

Cornman S. Stirling  
Richard H. Hartz

INVENTOR:

John E. Robinson  
By his attorney  
Walter W. Kalmoe

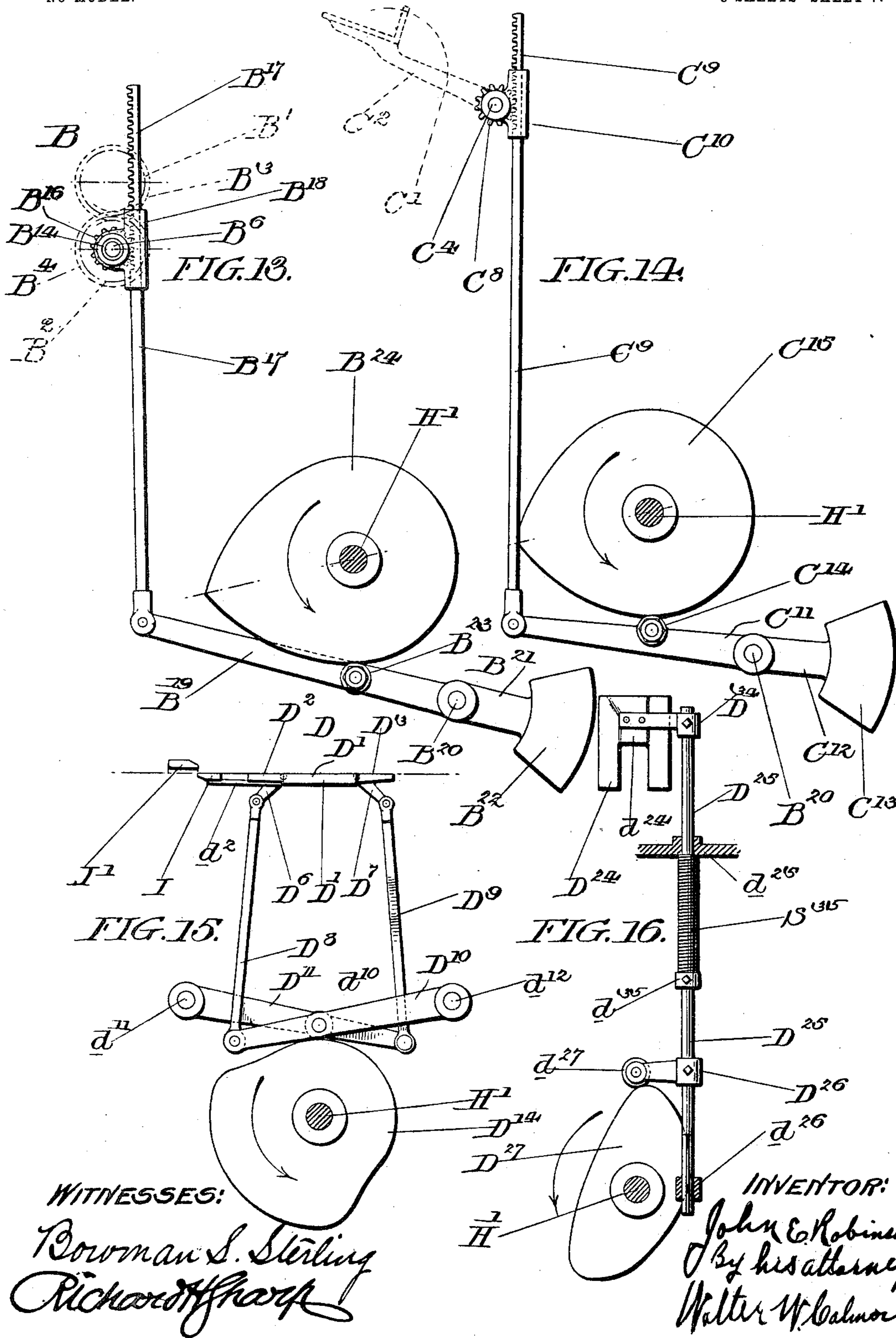
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NO MODEL.

8 SHEETS—SHEET 7.



No. 736,634.

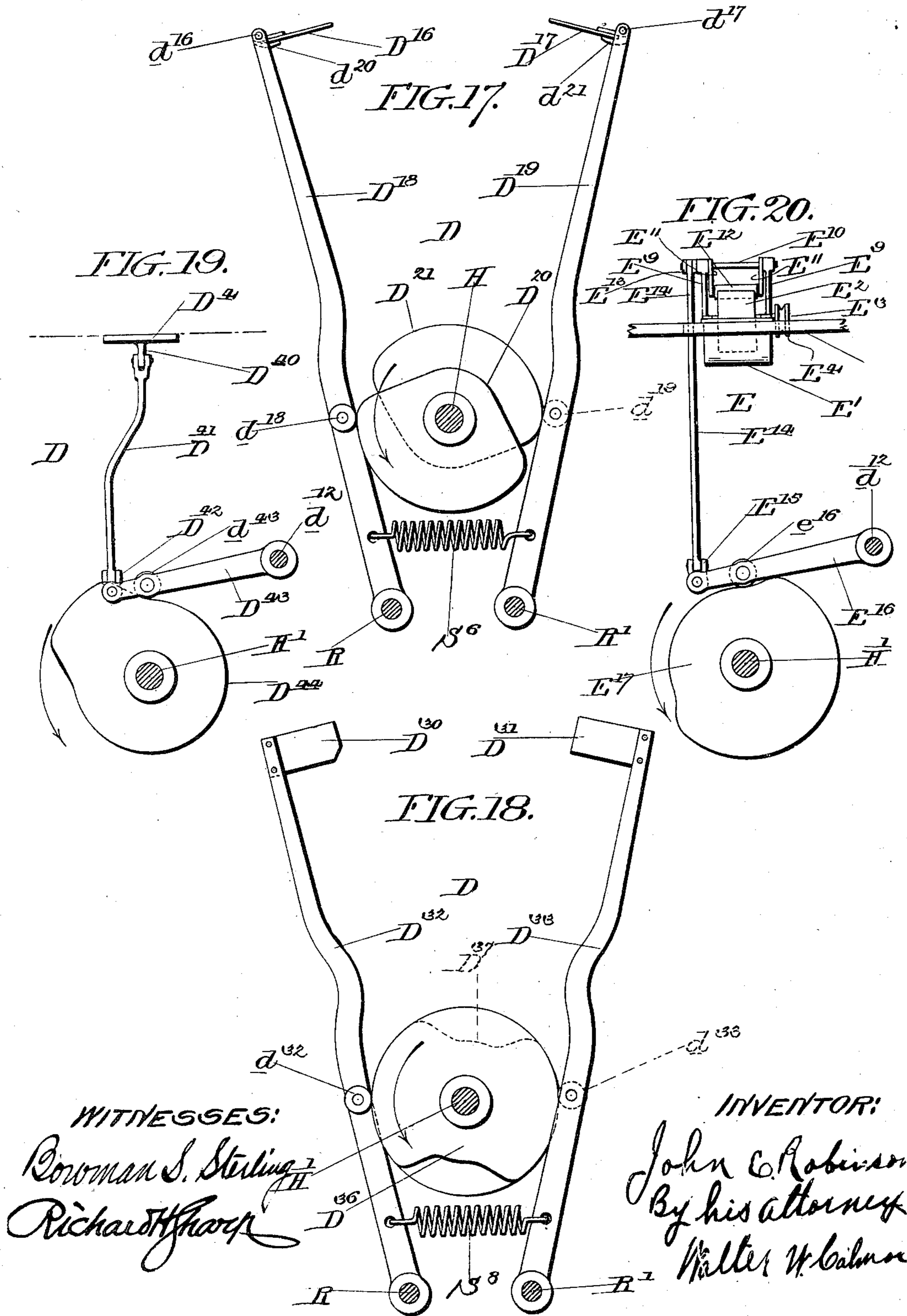
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J. E. ROBINSON.  
SOAP WRAPPING MACHINE.

APPLICATION FILED AUG. 15, 1901.

NO MODEL.

8 SHEETS—SHEET 8.



# UNITED STATES PATENT OFFICE.

JOHN E. ROBINSON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO  
NATIONAL PACKAGE MACHINE COMPANY, A CORPORATION.

## SOAP-WRAPPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 736,634, dated August 18, 1903.

Application filed August 15, 1901. Serial No. 72,100. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN E. ROBINSON, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Soap-Wrapping Machines, of which the following is a specification.

My invention relates to a machine for inclosing bars of soap and other like solids in envelops of paper or other suitable material and in pasting and drying the folded ends of each package prior to its delivery from the machine.

My invention consists in certain novel features in the construction and arrangement of the parts of machine hereinafter fully described, which are shown in the accompanying pages of illustrations, in which—

Figure 1 represents a plan view of the machine, with the chute for delivering the soap to the machine shown in dotted lines. Fig. 2 illustrates a side elevation of the machine, with the soap-carrier in position to receive a bar of soap from the chute. Fig. 3 shows a rear end view of the machine. Fig. 4 illustrates a detached perspective view of the rolls for feeding the paper to the folders, the folders, and knife for severing the paper. Fig. 5 shows a detached perspective view of the soap-carrier about to deliver a bar of soap to the folders, with the upper-end folders down in a position to release the fingers which hold and guide the soap. Fig. 6 represents a detached perspective view of the side-folders in action, showing the paper partly covering a bar of soap. Fig. 7 illustrates a detached perspective view of the top-folders acting upon the paper, the upper-end folders at this point of the operation being withdrawn. Fig. 8 shows a detached perspective view of the folding mechanism, in which the side and top folders remain in position to hold the soap and wrapper while the upper-end folders are brought down to form the first-end folds. Fig. 9 represents a detached perspective view of the second-end folders in position, with the upper-end folders still in position to hold the soap. Fig. 10 shows a detached perspective view of the paste-rollers about to deliver a

layer of paste to the last folds. Fig. 11 illustrates a detached perspective view of the last-end folders in position. Fig. 12 represents a detached perspective view of the drying-frame and steam-boxes for drying the pasted ends, with the plunger and plunger-rod delivering a package to be dried. Fig. 13 represents a side elevation of the cam and its connections for operating the feed-rolls and plunger. Fig. 14 shows a side elevation of the cam and its connecting-levers for operating the soap-carrier. Fig. 15 illustrates a side elevation of one of the cams and their connecting-levers for operating the side-folders and paper-knife. Fig. 16 shows a side elevation of one of the cams and its connecting-levers for operating the folder-plates, which engages the fingers of the soap-carrier prior to acting in the capacity of upper-end folders. Fig. 17 represents a side elevation of the cams and connecting-levers for operating the top-folders. Fig. 18 illustrates a side elevation of the cams and connections for operating the second-end folders. Fig. 19 shows a side elevation of one of the cams and its connecting-levers for operating the last-end or bottom folders, and Fig. 20 shows a side elevation of one of the cams and its connecting-levers for operating the paste-roller.

Referring to the reference-letters of the drawings, A represents the frame of the machine; B, the paper-feed mechanism; C, the carrier; D, the folding mechanism; E, the pasting mechanism; F, the drying-frame, and G the plunger mechanism for discharging the package into the drying-frame.

The paper-feed mechanism comprises the upper feed-roll B<sup>1</sup> and lower feed-roll B<sup>2</sup>, which are geared together by spur-wheels B<sup>3</sup> and B<sup>4</sup>, mounted upon shafts B<sup>5</sup> and B<sup>6</sup>, which support the feed-rolls. The shafts B<sup>5</sup> and B<sup>6</sup> are respectively journaled in boxes B<sup>7</sup> and B<sup>8</sup>, which are guided in standards B<sup>9</sup> and are capable of being adjusted by means of set-screws B<sup>10</sup>, passing through the cross-pieces B<sup>11</sup> and bearing against the upper boxes B<sup>7</sup>. Upon the shaft B<sup>6</sup> is mounted a clutch B<sup>12</sup>, comprising a toothed collar B<sup>13</sup>, sliding upon a feather b<sup>13</sup> and backed by a spiral spring S. Upon a sleeve B<sup>14</sup>, which encircles the end of shaft

B<sup>6</sup>, is a correspondingly-toothed collar B<sup>15</sup>, having inclined teeth engaging similar teeth on the collar B<sup>13</sup>. The sleeve B<sup>14</sup> is provided with a pinion B<sup>16</sup>, operated upon by a rack-lever B<sup>17</sup>, which is guided in an oscillating shoe B<sup>18</sup>, fulcrumed upon the shaft B<sup>6</sup>. Motion is imparted to the rack-lever B<sup>17</sup> by a connecting-lever B<sup>19</sup>, fulcrumed upon a shaft B<sup>20</sup> and having a short arm B<sup>21</sup>, provided with a weight B<sup>22</sup>. The lever B<sup>19</sup> is provided with a roller B<sup>23</sup>, which is acted upon by a cam B<sup>24</sup>, driven by the cam-shaft H'. The cam-shaft H', which carries all of the cams for operating the movable parts of the machine, is driven from the main driving-shaft H by spur-wheels H<sup>4</sup> and H<sup>5</sup>, the former being mounted upon the shaft H, which has fast and loose driving-pulleys H<sup>2</sup> and H<sup>3</sup> and the latter upon the cam-shaft H'. Motion is conveyed from the pinion B<sup>16</sup> to the plunger mechanism G by means of a spur-wheel G', meshing with the said pinion and engaging a spur-wheel G<sup>2</sup>, mounted upon a shaft G<sup>3</sup>, journaled in bearings g<sup>3</sup> in brackets G<sup>4</sup>, and motion is transmitted from the shaft G<sup>3</sup> to the rack G<sup>6</sup> and plunger G<sup>7</sup> by a pinion G<sup>5</sup>.

The plunger-rack, which is in the form of a long toothed rod square in cross-section, is guided in bearings G<sup>8</sup> and G<sup>9</sup>, the former being supported by a cross-bar G<sup>10</sup>, extending from one to the other of the brackets G<sup>4</sup> and the latter being supported by the knife-plate I'.

The paper supplied to the feed-rolls B' and B<sup>2</sup> is in the form of rolls B<sup>25</sup> and B<sup>26</sup>, supported upon shafts B<sup>27</sup> and B<sup>28</sup>, mounted in bearings B<sup>29</sup> and B<sup>30</sup> on the frame B<sup>31</sup>, which are arranged on either side of the machine and bolted to the frame A. The upper roll of paper B<sup>25</sup>, which constitutes the outer wrapper of the package, may be of any quality and may be printed in any desired manner as it passes to the feed-rolls. The lower roll B<sup>26</sup>, which forms the inner covering of the package, I desire to be of a kind that will not adhere to the inner body and which when it is desired to cover soap and other like bodies will prevent the softer constituents of the mass from passing through and damaging the outer covering, and for this reason I desire to use for the inner covering a paper which is either glazed or coated with paraffin.

The bars of soap, caramel, or other like solids which it is desired to cover are conveyed to the carrier mechanism by an inclined chute J, the mouth of which is directly in alignment with the carrier C'. The bottom of the chute J is provided with a latch J', hinged at a point J<sup>2</sup> and having an upwardly-projecting ledge J<sup>3</sup>, which serves to hold the bars of soap against sliding when the carrier has moved away from the mouth of the chute. The latch J' is operated in one direction by a spring S<sup>2</sup>, guided upon a rod J<sup>4</sup>, having an adjusting-nut J<sup>5</sup>, and in the opposite direction by the action of the bottom of the carrier C', pressing upon the project-

ing ledge J<sup>3</sup>. The carrier C' is mounted upon an arm C<sup>3</sup>, operated to move forward and backward by a shaft C<sup>4</sup>, which is journaled in bearings C<sup>5</sup>, bolted to the table A' of the machine. The ends of the carrier C' are provided with fingers C<sup>6</sup>, which are acted upon by springs S<sup>4</sup> to hold the bar of soap within the carrier. These fingers are moved against the action of said springs when the carrier is in a receiving position by arms C<sup>7</sup>, which are fastened to the brackets G<sup>4</sup>. The shaft C<sup>4</sup>, which operates the carrier C', is provided with a pinion C<sup>8</sup>, operated by a rack-bar C<sup>9</sup>, guided in a shoe C<sup>10</sup>, fulcrumed upon the shaft C<sup>4</sup>. The rack-bar C<sup>9</sup> is fulcrumed to a rocking lever C<sup>11</sup>, journaled on a shaft B<sup>20</sup>, having a short arm C<sup>12</sup>, provided with a weight C<sup>13</sup>. Upon the lever C<sup>11</sup> is pinned a roller C<sup>14</sup>, which is operated by a cam C<sup>15</sup>, secured to the cam-shaft H'.

The folding mechanism D comprises in part a bed-plate D', to which are hinged a series of plates or folding members D<sup>2</sup>, D<sup>3</sup>, D<sup>4</sup>, and D<sup>5</sup>, which are arranged in pairs, the two former members operating together to form the side folds and the two latter members operating in unison to form the last folds, which complete the package. The folding-plate D<sup>2</sup> is provided with a knife-blade I to sever the paper fed in by the rolls B' and B<sup>2</sup> and is arranged upon arms d<sup>2</sup> d<sup>2</sup> some distance away from the top of the plate to allow sufficient space for another of the folding members to pass between it and the top of the member D<sup>2</sup> in forming the top fold. The plates D<sup>2</sup> and D<sup>3</sup> are provided, respectively, with short arms D<sup>6</sup> and D<sup>7</sup>, pinned to connecting-rods D<sup>8</sup> and D<sup>9</sup>, which in turn are fulcrumed to the ends of levers D<sup>10</sup> and D<sup>11</sup>, supported upon rods d<sup>11</sup> and d<sup>12</sup>. The levers D<sup>10</sup> and D<sup>11</sup> are provided with rollers d<sup>10</sup> and d<sup>11</sup>, which engage cams D<sup>14</sup> and D<sup>15</sup>, mounted upon the cam-shaft H'. The top folders D<sup>16</sup> and D<sup>17</sup> constitute plates alike in character and mode of operation, except that the latter is caused to move by virtue of the cam arrangement slightly in advance of the former. These plates are hinged, respectively, upon rods d<sup>16</sup> and d<sup>17</sup>, which are securely fastened against turning to duplicate fulcrumed levers D<sup>18</sup> and D<sup>19</sup>, fulcrumed on rods R and R', provided, respectively, with rollers d<sup>18</sup> and d<sup>19</sup> and operated by cams D<sup>20</sup> and D<sup>21</sup>, driven by the cam-shaft H'. The levers D<sup>18</sup> and D<sup>19</sup> are operated against the action of the cams by springs S<sup>6</sup>, extending from one to the other of each of the sets of levers. Fastened to the rods d<sup>16</sup> and d<sup>17</sup> are stops d<sup>20</sup> and d<sup>21</sup>, upon which the plates D<sup>16</sup> and D<sup>17</sup> are caused to rest by means of spiral springs s<sup>16</sup> and s<sup>17</sup>, the object of this particular arrangement of the plates just described being to cause the front edge of the plates to act with yielding pressure against the paper as it is being folded, so as to cause it to closely surround the contents of the package, and as the plates advance by virtue of their connec-

tion with levers which travel through the arc of circle the plates at the limit of their movement are so adjusted as to rest at all points upon the package and hold it firmly in place during the operation of the next set of folding members. The first set of end-folders or upper-end folders  $D^{24}$  constitute bifurcated plates provided at the top with outwardly-projecting connecting-pieces  $d^{24}$ , which prior to their operation as end-folders act, as shown in Fig. 5, to release the contents of the carrier  $C'$ . This is accomplished by cutting the operating-cams in such a manner that the plates  $D^{24}$  will move down upon the paper before the carrier reaches the point of delivery, so that the ends of the fingers will be brought in contact with connecting-pieces  $d^{24}$  and release the fingers  $C^6$ . The plates  $D^{24}$  are connected to arms  $D^{34}$ , fastened to vertical rods  $D^{25}$ , guided in bearings  $d^{25}$  and  $d^{26}$ , fastened to the frame of the machine. The rods  $D^{25}$  are provided at the bottom with arms  $D^{26}$ , having rollers  $d^{27}$ , which engage cams  $D^{27}$  on the cam-shaft  $H'$ . Upon the rods  $D^{25}$  are collars  $d^{35}$ , and between these and the bearing  $d^{25}$  is a spring  $S^{35}$ . The second-end folders or middle-folders constitute plates  $D^{30}$  and  $D^{31}$ , fastened to fulcrumed levers  $D^{32}$  and  $D^{33}$ , supported on rods  $R$  and  $R'$  and provided with rollers  $d^{32}$  and  $d^{33}$ , operated by cams  $D^{36}$  and  $D^{37}$  on the cam-shaft  $H'$ . The levers  $D^{32}$  and  $D^{33}$  are connected together and caused to operate against the action of the cams  $D^{36}$  and  $D^{37}$  by springs  $S^8$ . The last-end folders or bottom-folders, which constitute the plates  $D^4$  and  $D^5$ , are provided with short arms  $D^{40}$ , connected to rods  $D^{41}$ , which are hinged to links  $D^{42}$ , pivoted to cam-levers  $D^{43}$ . The cam-levers  $D^{43}$  are provided with rollers  $d^{43}$ , which engage cams  $D^{44}$  on the cam-shaft  $H'$ .

The pasting mechanism  $E$ , which consists in part of paste boxes or troughs  $E'$ , provided with cylinders  $E^2$ , are arranged on opposite sides of the folding mechanism adjacent to the bottom folders. The cylinders  $E^2$  are mounted upon shafts  $E^3$ , having pulleys  $E^4$ , which are driven from the main driving-shaft  $H$  by pulley  $E^5$ . The belts  $E^6$  are guided in grooved rollers  $E^7$ , supported by bearings  $E^8$ , fastened to the under side of the table of the machine. The paste-boxes  $E'$  are provided with adjustable plates  $e'$ , which remove the surplus paste as the cylinder revolves, leaving but a thin film upon the surface thereof. Mounted in bearings  $E^9$  above each of the paste-cylinders is a shaft  $E^{10}$ , provided with arms  $E^{11}$ , in which are journaled rollers  $E^{12}$ , which are caused to swing from the paste-cylinder into the path of the bottom folders by means of crank-arms  $E^{13}$ . As the bottom folders move upward the last folds of the paper are brought in contact with the paste-rollers, which also rise under the action of the folders and deliver a thin film of paste to the paper as it is about to be closed against the end of the package. The arm  $E^{13}$  is pivoted to a connecting-rod  $E^{14}$ , hinged to a link

$E^{15}$ , which is connected to a cam-lever  $E^{16}$ . The cam-lever is fulcrumed to the frame of the machine and provided with a roller  $e^{16}$ , which is acted upon by a cam  $E^{17}$  on the cam-shaft  $H'$ .

The drying-frame  $F$  comprises a table  $F'$ , secured to the rear end of the machine by brackets  $F^2$  and provided at its sides with hollow chambers or boxes  $F^3$ , which are heated by steam conveyed through inlet-pipes  $F^4$  and after circulating through the chambers is discharged through pipes  $F^5$ . After the packages have been completed by the folding and pasting mechanism they are pushed by the plunger  $G^7$  rearward into the drying-frame, where they are slowly passed forward between the boxes  $F^3$  by each incoming package and the folded ends secured before they reach the end of the drying-frame.

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

1. In a package-making machine, the combination with the paper-feed mechanism, of side-folders hinged to the bed-plate of the machine, one of which is provided with a knife to cut the paper, cams for operating said folders, top-folders, constituting yielding plates fulcrumed to cam-levers, cams for operating said levers, upper-end folders constituting plates secured to vertically-moving cam-rods, cams for operating said rods, second-end or middle folders constituting plates secured to cam-levers, cams for operating said levers, last-end or bottom folders constituting hinged plates fulcrumed to cam-levers and cams for operating the same, substantially as specified.

2. In a package-making machine, the combination, with the paper-feed mechanism and folding mechanism, of a carrier provided with fingers to engage the body to be covered, of upper-end or first-end folders, comprising bifurcated plates united at the top by a bridge-piece, said bridge-piece being arranged to disengage the fingers of the carrier from the body carried, substantially as specified.

3. In a package-making machine, the combination, with the paper-feeding mechanism and folding mechanism, of a rack and pinion operated by suitable mechanism from the cam-shaft, of means as a clutch to cause the pinion to engage the feeding mechanism when traveling in one direction and disengage the same when traveling in the opposite direction, of a plunger adapted to discharge the package from the folding mechanism, a rack operating said plunger, and a pinion engaging said rack and operated directly from the first-mentioned pinion by a suitable train of gearing, substantially as specified.

4. In a package-making machine, the combination with the feed mechanism and carrier of folders constituting a series of hinged plates, one of which is provided with a knife-blade arranged some distance above the top of the folder leaving a space for the passage of another of the folders and a fixed knife-

plate in the path of the knife-blade, substantially as specified.

5. In a package-making machine, the combination with the feed mechanism and carrier of hinged folders, one of which is provided with a knife arranged upon arms some distance above the top of the same, allowing space for the passage of another of the folders and a knife-plate arranged in the path of said knife to sever the paper, substantially as specified.

6. In a package-making machine, the combination with the feed mechanism and carrier, the folders, a fixed knife-plate arranged above the bed of the machine so as to leave space for the passage of paper, and a movable knife mounted upon arms projecting out from one of the folders so as to leave space for the passage of another of the folders, substantially as specified.

7. In a package-making machine, the combination with the feed mechanism and folders, an oscillating carrier comprising a frame having bottom and side supports and spring-actuated end fingers pivoted on said carrier, uprights engaging said fingers when the carrier is in a receiving position, and means whereby the folding members will trip said fingers when the carrier is in a discharging position, substantially as described.

8. In a package-making machine, the combination with the feed mechanism and folders, an oscillating carrier comprising an arm provided with bottom and side supporting-plates and retaining-fingers pivoted on the ends of said bottom, spring means for operating fingers in one direction, uprights arranged at the receiving end of the machine to operate said fingers against the action of the springs, and means whereby the folders will trip the fingers when the carrier is in a discharging position, substantially as specified.

9. In a package-making machine, the combination with the feed mechanism and folders, an oscillating carrier, a pinion mounted upon the shaft of said carrier, a shoe mounted upon the shaft and inclosing the pinion, a rack guided in said shoe engaging said pinion, a cam and a cam-lever engaged by said cam and having one of its ends pivoted to said rack, and its other end weighted, substantially as specified.

10. In a package-making machine, the combination with the feed mechanism and folders, feed-rolls having centrally-reduced portions, a plunger and plunger-rod adapted to pass through the space between the rolls, means for operating said plunger and plun-

ger-rod, and means for operating the feed-rolls, substantially as specified.

11. In a package-making machine the combination with the feed-rolls and plunger mechanism operating between the rolls, a pinion operating the rolls and plunger mechanism, a rack engaging and operating said pinion, and a cam and cam-lever for operating the rack, substantially as specified.

12. In a package-making machine, the combination with the feed-rolls, a plunger adapted to move forward and backward between the rolls, a rack-and-pinion mechanism to operate the rolls and the plunger simultaneously and a clutch mechanism interposed between the rolls and the pinion so as to cause the rolls to move when traveling in one direction and to disengage the rolls when moving in the opposite direction, substantially as specified.

13. In a package-making machine, the combination with the feed mechanism and folders, an oscillating carrier, a pinion engaging the same, a shoe embracing said pinion, a rack carried by said shoe, means for operating said rack and pinion, an inclined chute, a latch adapted to close the end of the chute, and to be released by the carrier, fingers arranged at the side of the carrier, spring means for operating said fingers in one direction, uprights for operating the fingers against the action of said springs when the carrier is in a receiving position, and folding members adapted to release the fingers when the carrier is in a discharging position, substantially as specified.

14. The combination with the feeding mechanism, and an oscillating carrier, of spring-pressed fingers pivotally mounted on said carrier and engaging the article being conveyed, a pair of folders provided with outwardly-projecting pieces adapted to trip said fingers, and means for operating said folders.

15. In a package-making machine, the combination with the feed mechanism and folding mechanism, top-folders constituting plates, rods secured to fulcrumed cam-levers and having said plates hinged thereto, stops carried by said rods and being adapted to support the plates when at rest, and springs mounted on said rod and being adapted to force the plates downward and to cause the same to slide across the package with yielding pressure, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN E. ROBINSON.

Witnesses:

ALLEN C. MIDDLETON,  
WALTER W. CALMORE.