

E. ROTHONG.
AUTOMATIC GLUE FEEDER AND SPREADER FOR BOX MACHINES.
APPLICATION FILED OCT. 22, 1907.

899,621.

Patented Sept. 29, 1908.

3 SHEETS—SHEET 1.

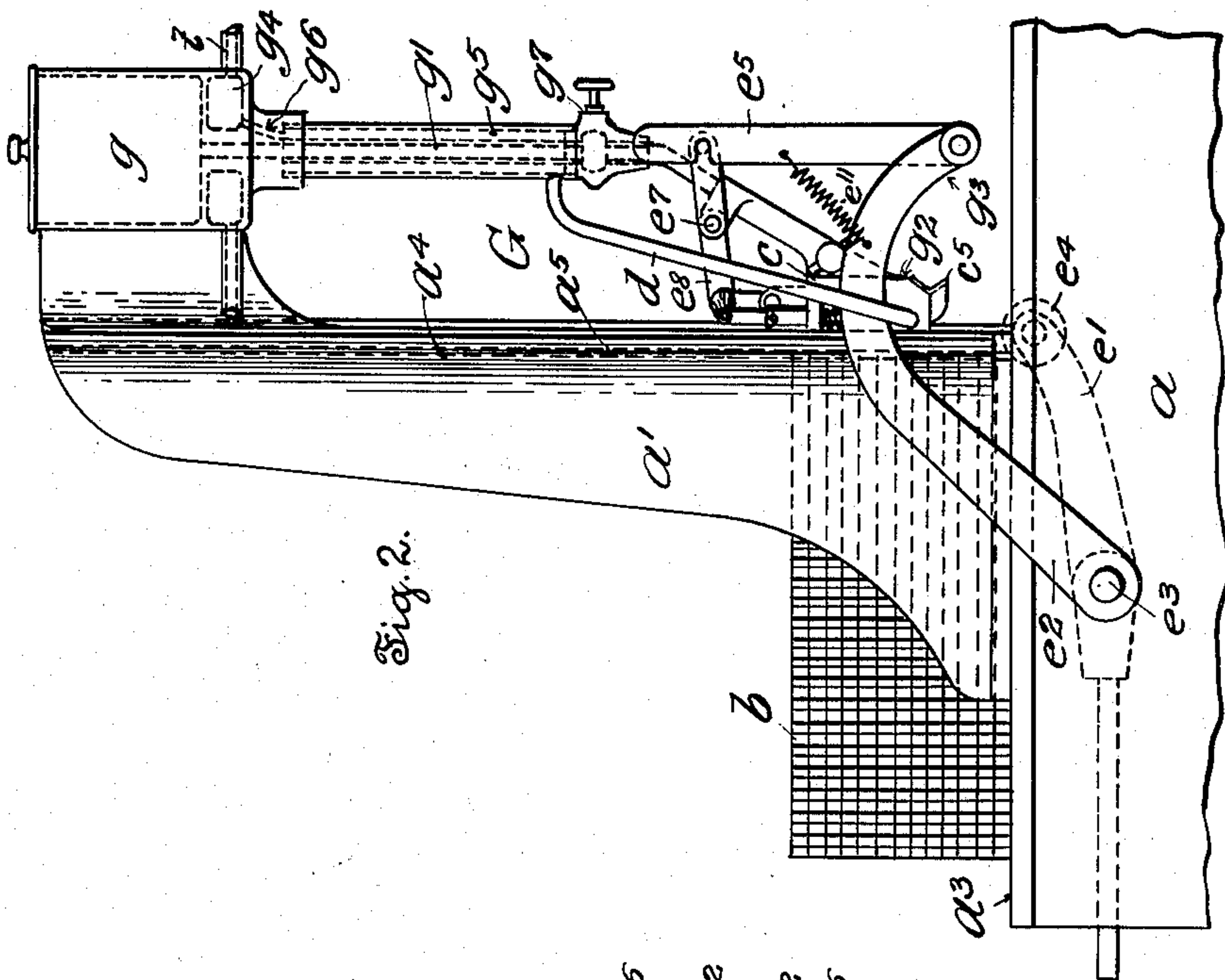


Fig. 2.

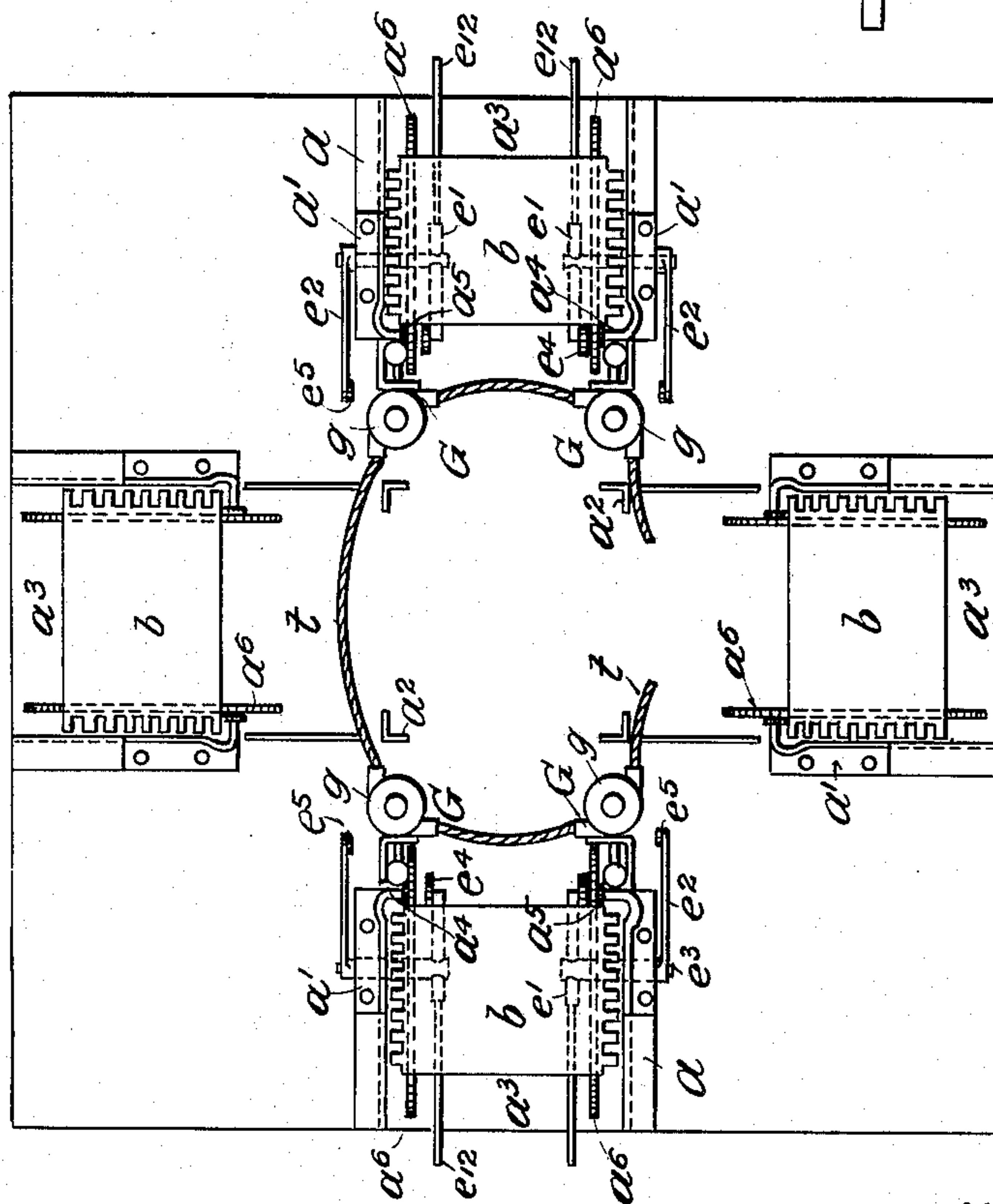


Fig. 1.

Witnesses:
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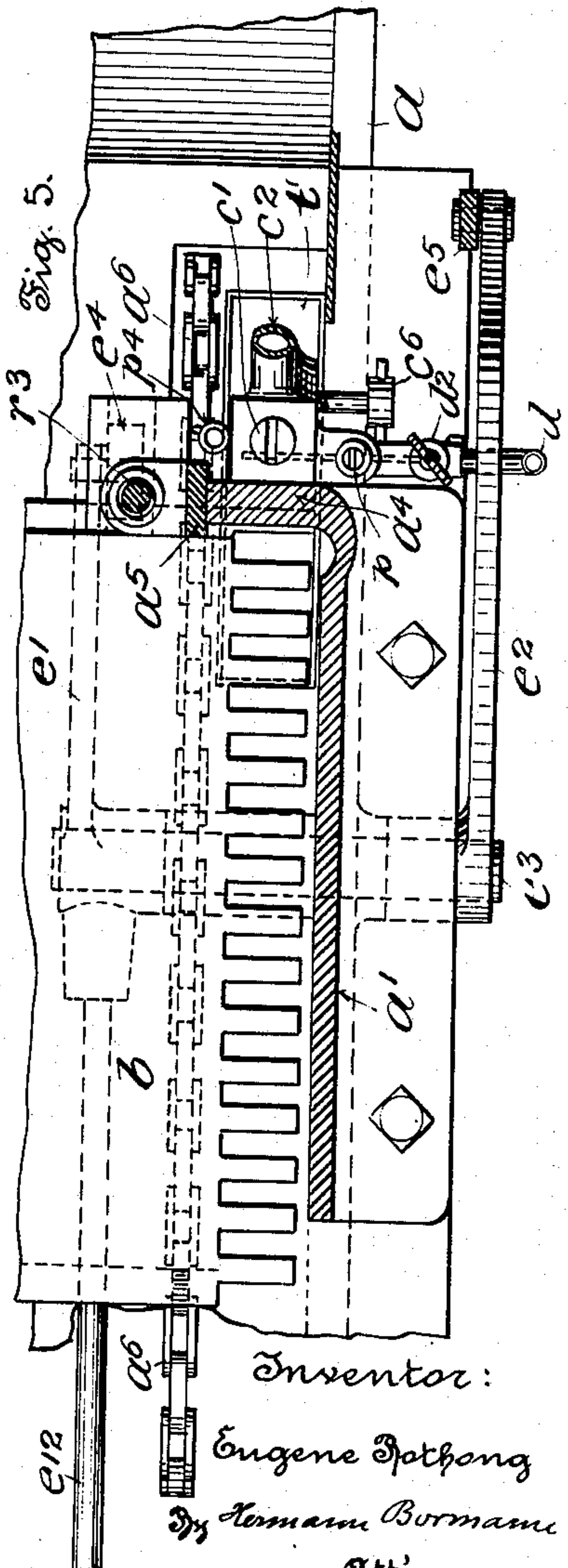
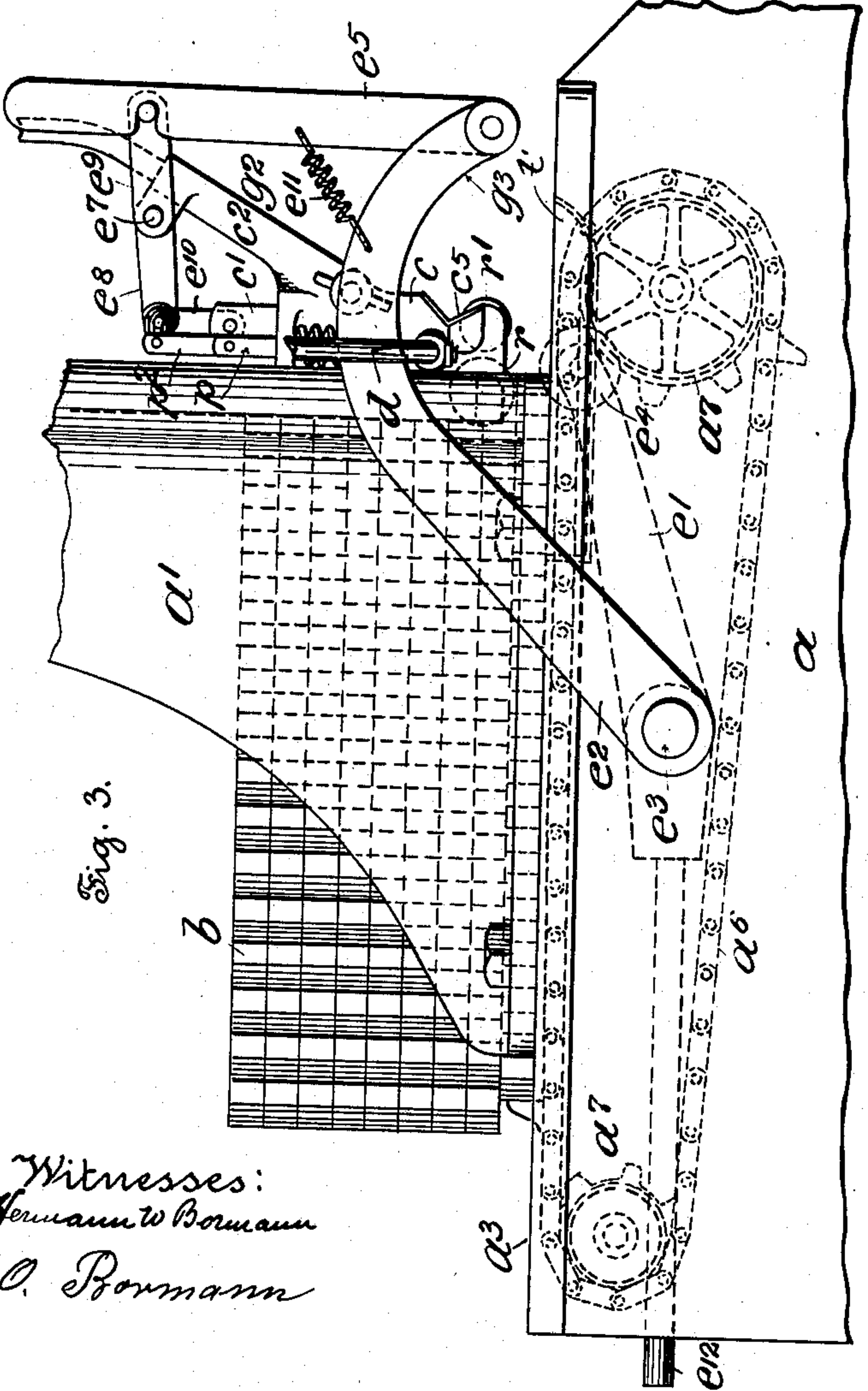
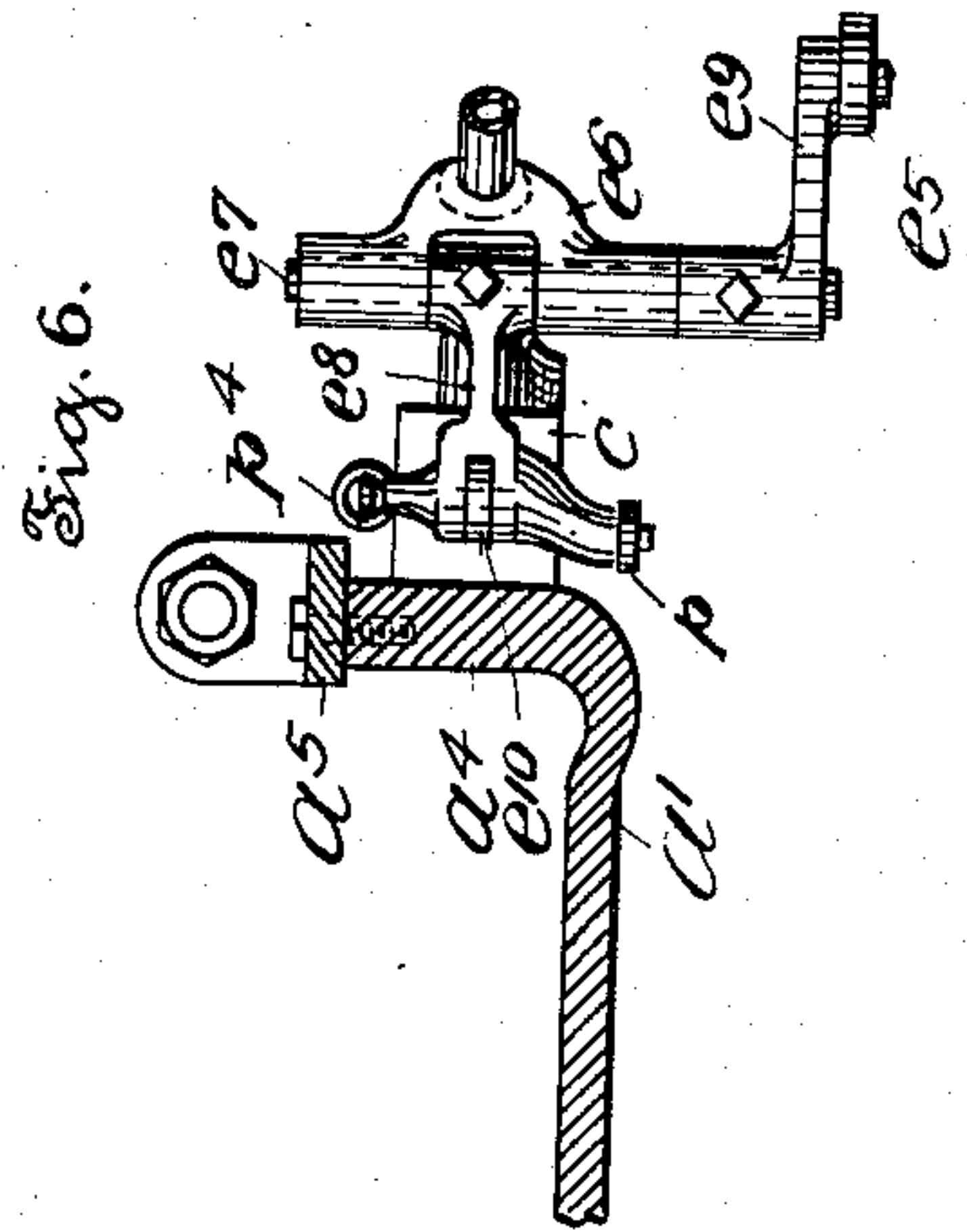
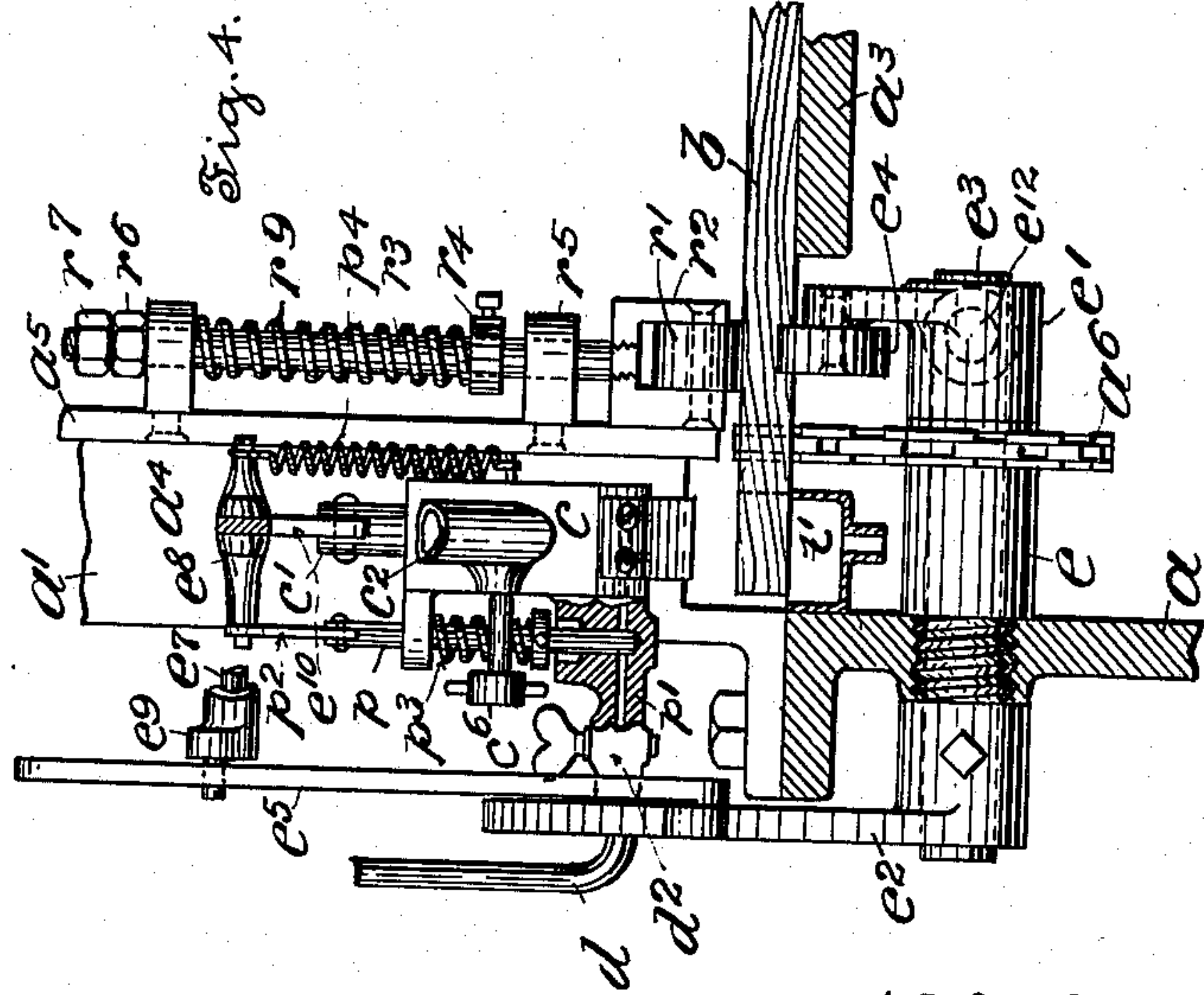
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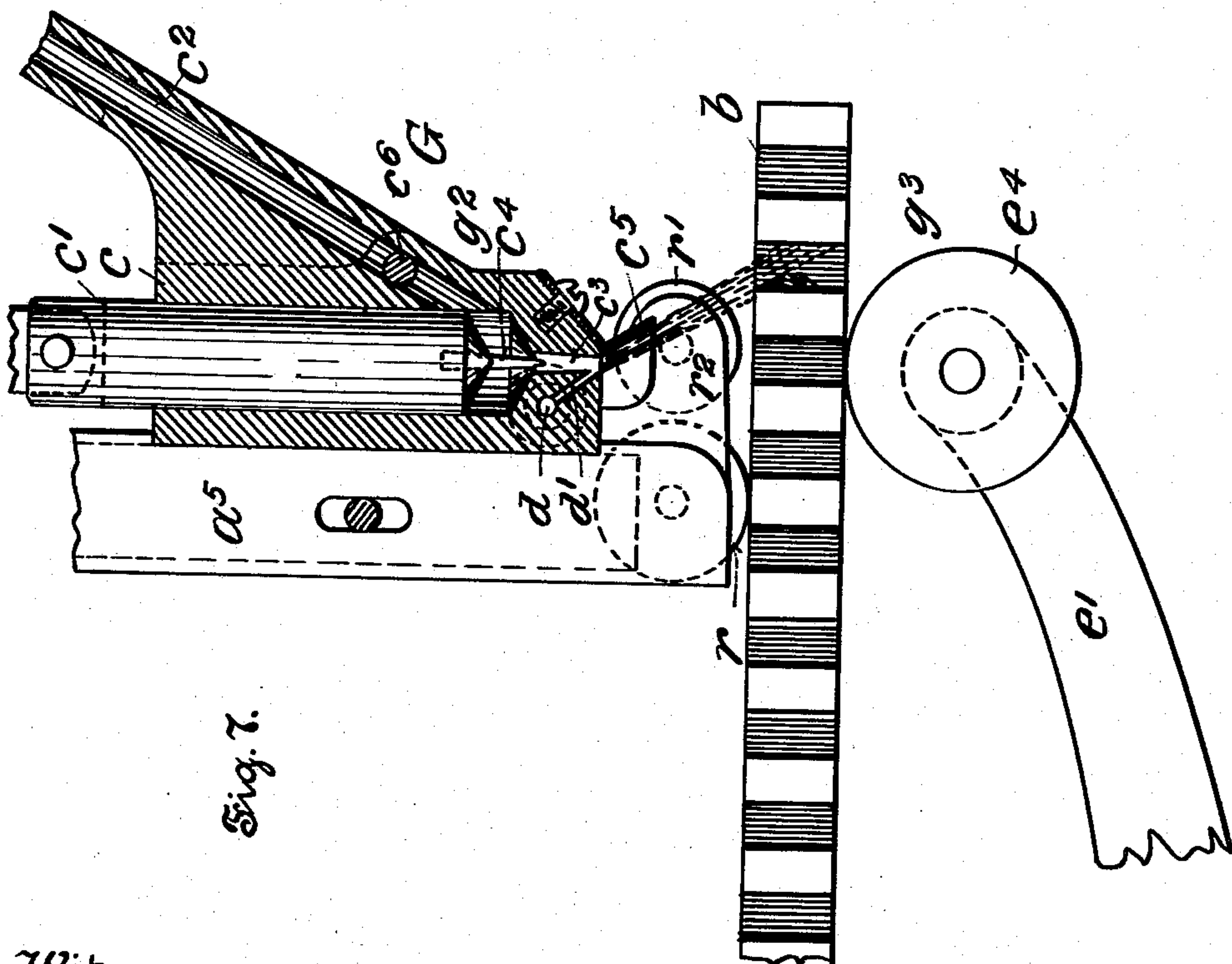
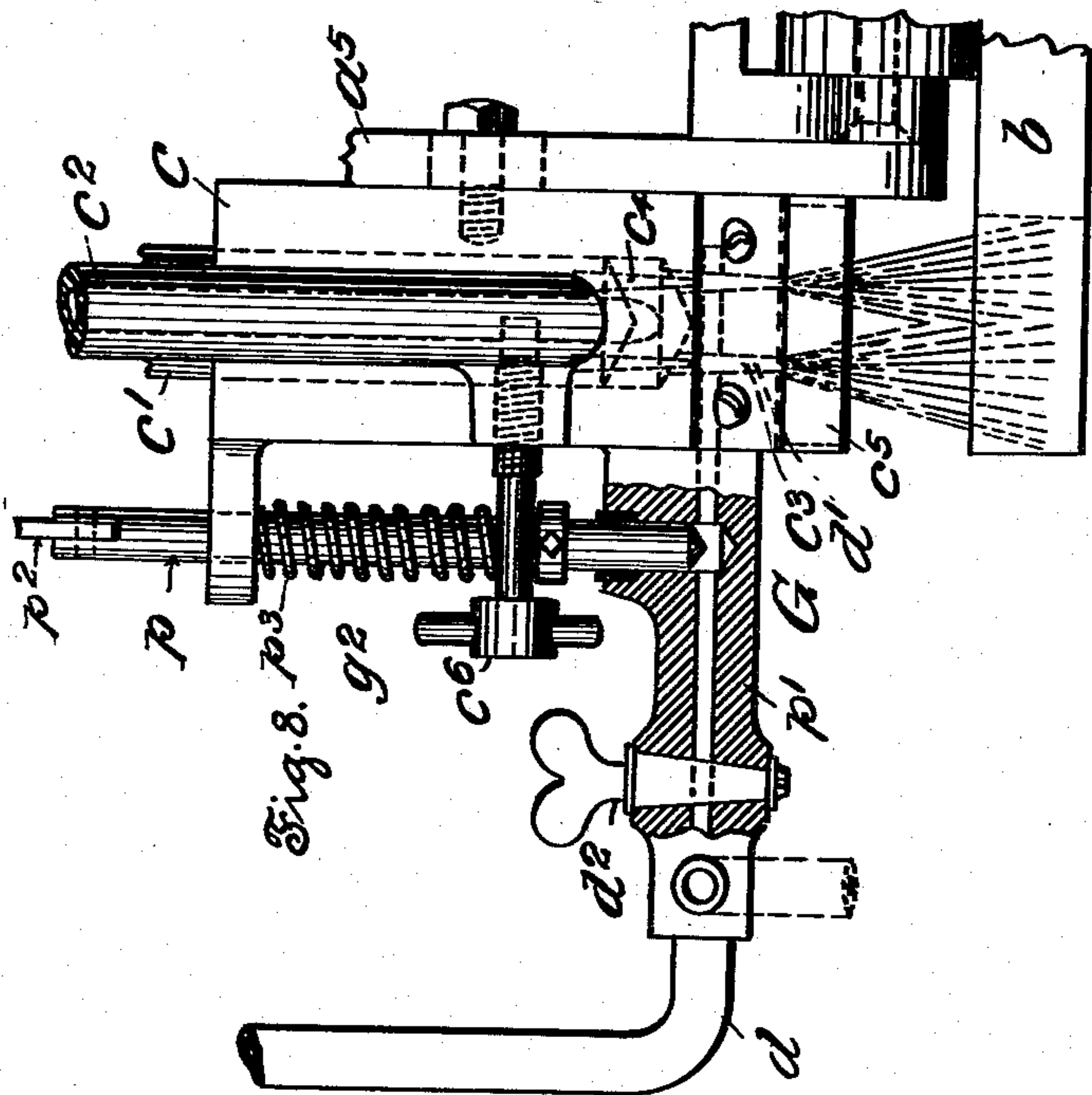
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UNITED STATES PATENT OFFICE.

EUGENE ROTHONG, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO JORDAN MACHINE COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

AUTOMATIC GLUE FEEDER AND SPREADER FOR BOX-MACHINES.

No. 899,621.

Specification of Letters Patent.

Patented Sept. 29, 1908.

Application filed October 22, 1907. Serial No. 398,678.

To all whom it may concern:

Be it known that I, EUGENE ROTHONG, a subject of the Emperor of Germany, having declared my intention of becoming a citizen of the United States, and residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Automatic Glue Feeders and Spreaders for Box-Machines, of which the following is a specification.

My invention relates to machines for assembling and uniting the boards constituting the sides of packing or other boxes and the object of the invention is to provide an effective, automatic glue feeder and spreader to apply to the joints of the boards the right quantity and consistency of glue.

Attempts have been made to supply glue to the tenoned joints of a box by rotary brushes, while the boards constituting the sides of a box were fed towards the center of the box-machine, but as such brushes spread the glue only on top of the tenons without bringing any glue between them, such glue-feed never came into practical use. The common practice is and has been to bundle the boards for boxes and dip the ends of the bundled boards into the glue, and this has the disadvantages, that the glue will be cold before the joints of a box are completed and further the boards will stick to each other due to the glue entering between the faces of the boards, this latter disadvantage is the more serious as the boards sticking together cannot be readily moved into the hopper by the board feeding mechanism and in consequence the box machine has to be stopped frequently to separate the boards. With my new glue feeder these disadvantages are entirely obviated, and the glue is applied to the joints of the board as each board is fed to the edge of the hopper.

The glue-feeder and spreader will work effectively on any thickness of board and is provided with means to have the glue fed while warm and of the right consistency and with means to prevent any clogging-up of the feeding device proper.

My invention consists of a glue receptacle supported on the box machine frame at each corner and above the hopper in which the sides of a box are assembled.

It further consists of devices operated by the under-side of the boards as they are fed from a pile into the hopper, to open and close

valves and to apply the glue to the joints at the right time, it also consists of means in connection with this feeding of the glue to spread the latter into the joints of the sides, and it further consists of improvements hereinafter more fully described and pointed out in the claims.

My invention will be more fully understood taken in connection with the accompanying drawings forming part hereof and in which

Figure 1, is a plain view of a box machine, showing the hopper, in which the sides of the box are assembled, and the feed mechanism for feeding the sides into the hopper, and four of my glue-feeding and spreading devices in application, these devices are connected by flexible steam pipe to keep the glue in a heated condition and the outlets of the glue clean. Fig. 2, is a side view of one of my glue-feeding and spreading devices, showing the boards or sides, which are to form the boxes and also showing the device with superposed glue receptacle, which is heated by steam. Fig. 3, is a side view, showing the glue-feeding and spreading device, in connection with a pile of boards ready to be joined, the means for transferring the lowermost board to the hopper and the means for operating the valves by the under-side of the lowermost board. Fig. 4, is an end view of the mechanism and devices shown on Fig. 3. Fig. 5, is a top view partly in section of the mechanism shown in Fig. 3. Fig. 6, is a top view of the mechanism for operating the valves for the glue-feeding and spreading device. Fig. 7, is a sectional view in detail of the glue-feeder and spreader, and Fig. 8 is an end view thereof.

Referring now to the drawings for a further description of my invention, *a* is part of the frame of a box-machine such for instance as is shown in U. S. Patent No. 771,825, dated October 11, 1904; *a*¹ are brackets secured to the frame *a*, and to these brackets the four glue-feeding and spreading devices *G* for one machine are fastened. In the center of the machine, (Fig. 1) is formed a hopper by the guides *a*², and the boards *b*, to form the sides of a box are located on the tables *a*³, back of the projections *a*⁴ on the brackets *a*¹. These projections *a*⁴ are cut away sufficiently to permit the thickest board to be used for a box to pass, and an adjustable slide *a*⁵ is provided on the face of each projection *a*⁴ to allow only one board at a

time to be fed into the hopper by means of carrier chains a^6 and wheels a^7 driven from any suitable source (Figs. 1, 3, 4 and 5).

The box-machine is adapted to make boxes of different sizes and the glue-feeding and spreading devices G move with the adjustable sections to which they are attached and since the invention is for the glue-feeding and spreading device only, it is deemed unnecessary to describe the working and mechanism of the box-machine. As before stated, the boards b previously provided with joints are placed in four stacks on the tables a^3 , and so long as the box-machine is out of action, the glue feeders G will not issue any glue to the joints of a board, in other words the glue-feeder and spreader automatically start operating when boards are fed from the four piles towards the hopper and stop operating as soon as the feeding of boards ceases. To obtain these results the valve operating devices of the glue-feeder and spreader must be actuated from the lower-most face of the advancing board, since the thickness of the boards constituting the box vary with the size or other conditions of the box.

The glue-feeder and spreader G, comprises the glue receptacle g fastened to the brackets a^1 (Fig. 2), the conducting pipe g^1 , the regulator g^2 and the valve operating devices g^3 . The glue receptacle g is provided on its bottom with a steam jacket g^4 and the four receptacles of a machine Fig. 1 are connected in series by flexible tubing t so that the machine can be adjusted to different sizes of boxes, the steam circulating in the jacket g^4 will keep the glue in the receptacle in condition to be fed through the conducting pipe g^1 , which is also provided with a steam jacket g^5 ; the two jackets g^4 and g^5 being in communication through an orifice g^6 , the lower end of the conducting pipe g^1 is provided with a stop valve g^7 .

A short distance above the table a^3 , and fastened to the bracket a^1 is arranged the regulator g^2 , consisting of the cylinder c , with plunger c^1 and pipe neck c^2 , the latter communicating with the conducting pipe g^1 and the cylinder c (Figs. 2 and 7). The plunger c^1 is operated as hereinafter described to prevent or stop the flow of glue from the receptacle g , through conducting pipe g^1 , neck c^2 and orifices c^3 onto the joints of the underlying board b . The plunger c^1 is provided with pins c^4 registering with and entering into the orifices c^3 , so that by working the plunger up and down the orifices may be cleaned.

In line with the orifices c^3 and communicating with a steam supply pipe d are steam-jets d^1 , to force and spread the glue issuing from the orifices c^3 onto and into the joints of the board as it passes from its pile towards the hopper. A shield c^5 is attached to the lower end of the cylinder c to direct the glue and steam.

To actuate the plunger c^1 in order to allow glue to issue through the orifices c^3 , a shaft bearing e is secured to the frame a (Fig. 4) and a lever e^1 and e^2 is attached to each end of the shaft e^3 . The forward end of the lever e^1 is provided with a roller e^4 , which normally projects above the table a^3 , but when a board is fed from under the pile of boards towards the hopper the forward ends of the levers e^1 and e^2 are depressed and cause the downward move of the connecting bar e^5 . Integral with or fastened to the pipe-neck c^2 is a bearing e^6 in which a rock-shaft e^7 is journaled, an arm e^8 in line with the plunger c^1 and an arm e^9 engaging the connecting bar e^5 are rigidly held onto the rock-shaft e^7 ; the free end of the arm e^8 is pivoted to the plunger c^1 by a link e^{10} , so that whenever a board b travels over the roller e^4 the plunger c^1 is lifted to allow the flow of glue through the orifices c^3 . At the same time the plunger c^1 is lifted steam is permitted through the jets d^1 to force and spread the glue onto the joints of the underlying board b , and to accomplish this a piston p is arranged to work in a fitting p^1 of the steam-pipe d . This piston is connected to an extension of the arm e^8 by means of a link p^2 , so that the plunger and piston p work in unison; the piston p is held in depressed position by the spring p^3 bearing against a lug on the cylinder c , and a collar on the piston p , while the weight of the various levers, arms and bar e^5 is counterbalanced by the spring p^4 .

To guide the board in entirely horizontal position until the far edge thereof is past the glue-feeder before it tilts and is deposited in the hopper, two guide rollers r and r^1 are journaled in a bracket r^2 , this bracket is secured to a rod r^3 with collar r^4 and is held in the guides r^5 . The upper end of the rod is threaded and has a nut r^6 for adjustment and a jam-nut r^7 to secure the adjustment.

The guides r^5 are secured to the adjustable slides a^5 and move with the same for the purpose of suiting various thicknesses of boards as before stated. A spring r^8 is interposed between the upper guide r^5 and the collar r^4 to keep the large roller r in contact with the board b .

The connecting bar e^5 notched to engage the free extremity of the arm e^9 , and a spring e^{11} is employed to normally keep the arm e^9 in engagement with said notch, but if it is desired to clean the orifices c^3 of glue or other matter which may have settled therein or if for any reason the plunger c^1 or piston p or both of them must be removed from their cylinder c and fitting p^1 , the bar e^5 is disengaged from the arm e^9 , and by removing the rock-shaft e^7 the plunger and piston may be extracted, the levers e^2 and e^3 in the meanwhile are supported by the rear-extension e^{12} of the lever e^3 , the said extension resting against the shaft of the chain-wheel a^7 or a stop is provided for the purpose.

Ordinarily it will be found sufficient to work the extension e^{12} up and down to clean the orifices c^3 , because in doing so the steam issuing from the jets d^1 will warm the glue while the pins c^4 working in the orifices will force out any matter settled therein.

To regulate the flow of glue through the orifices c^3 to a nicety, a valve c^6 is arranged on the pipe-neck c^2 ; and to regulate the supply of steam through the jets d^1 , a valve d^2 is installed in the fitting p^1 so that a requisite amount of steam can be supplied to effect the best results in spreading the glue into the joints of the boards b .

To collect any glue which may drop through the joints while the board is passing under the feeder, a tank t^1 is provided as shown in Figs. 3 and 4.

It will be understood by those skilled in the art to which my invention appertains that modifications may be made without departing from the spirit of my invention, for instance the number of orifices and steam jets may be increased or decreased also the direction thereof and further the constructional details may also be changed to suit conditions; and

Having thus described the nature and objects of my invention, what I claim as new and desire to secure by Letters Patent is:

1. A glue-feeder and spreader, comprising a steam-jacketed glue receptacle, a steam jacketed glue conductor pipe, a stop valve on said pipe, a cylinder joined to said pipe, a plunger operating in said cylinder, an orifice in the bottom of the cylinder and a steam-jet at an angle to said orifice, substantially as and for the purposes set forth.

2. A glue-feeder and spreader comprising a glue-supply pipe, a valve therein, a cylinder communicating with said pipe, an orifice in said cylinder and a steam-jet communicating with said orifice, substantially as and for the purposes set forth.

3. A glue-feeder and spreader, comprising a glue-supply pipe, a cylinder communicating therewith, an orifice in said cylinder, a steam-jet joining said orifice, means for automatically stopping and starting the flow of glue and means for automatically regulating the steam-jet in conjunction with the flow of the glue, substantially as and for the purposes set forth.

4. A glue-feeder and spreader comprising a glue-supply pipe, a cylinder communicating with said pipe, orifices in said cylinder, means for stopping and starting the flow of glue through said orifices, pins registering with said orifices and attached to said means, for the purpose of cleaning the said orifices, a

steam-jet and means for regulating the steam-jet in conjunction with the flow of the glue, substantially as and for the purposes set forth.

5. In a box-machine in combination with a board-feed, a glue-feeder and spreader comprising a glue-supply pipe, a cylinder communicating with said pipe, an orifice in said cylinder, means for stopping and starting the flow of glue through the orifice, a steam-jet, means for regulating the steam-jet in conjunction with the flow of glue and devices between the board-feed and the glue-feeder and spreader for effecting the automatic regulation of the flow of glue and steam-jet, substantially as and for the purposes set forth.

6. In a box-machine in combination with a board-feed, a glue-feeder and spreader comprising a glue-supply pipe, a cylinder communicating with said pipe, an orifice in said cylinder, means for automatically stopping and starting the flow of the glue through the orifice, a steam-jet, means for automatically regulating the steam-jet in conjunction with the flow of the glue, a device operated by the underside of a board as it is fed by the board-feed for actuating the said means for the regulation of the flow of glue and steam-jet, substantially as and for the purposes set forth.

7. In a box-machine in combination with a board-feed, a glue-feeder and spreader comprising a glue supply-pipe, a cylinder attached to and communicating with said pipe, orifices in said cylinder, a pin for each orifice, a steam-jet for each of the orifices and means to automatically regulate and control the flow of glue through the orifices and the steam-jet, by the feeding of a board, substantially as and for the purposes set forth.

8. In a box-machine in combination with a board-feed, a glue-feeder and spreader comprising a glue supply-pipe, a cylinder attached to and communicating with said pipe, orifices in said cylinder, a plunger in said cylinder, a pin for each of the orifices, a lever with a roller normally projecting in the path of the board to be fed, and means between said roller, plunger and steam-jet to operate the plunger and control the flow of glue and steam, substantially as and for the purposes set forth.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

EUGÈNE ROTHONG.

Witnesses:

OLIVER S. KEELY,
HERMANN BOWMANN.