

(No Model.)

3 Sheets—Sheet 1.

F. RITTENHOUSE.

SPACING DEVICE FOR CUTTING AND PUNCHING MACHINES.

No. 460,801.

Patented Oct. 6, 1891.

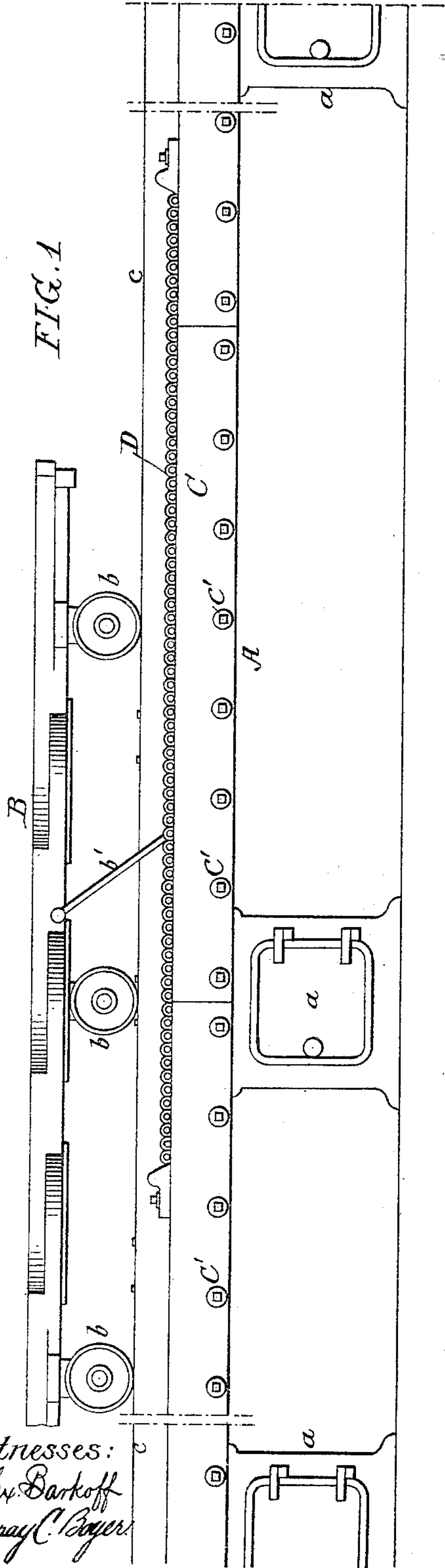
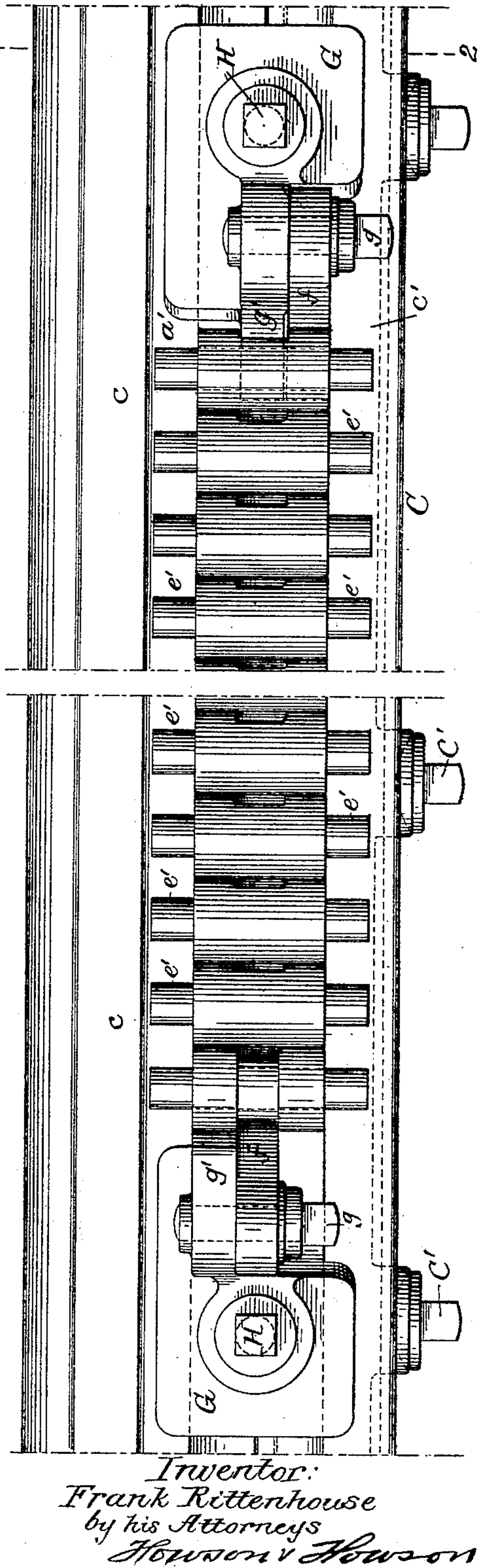


FIG. 2



(No Model.)

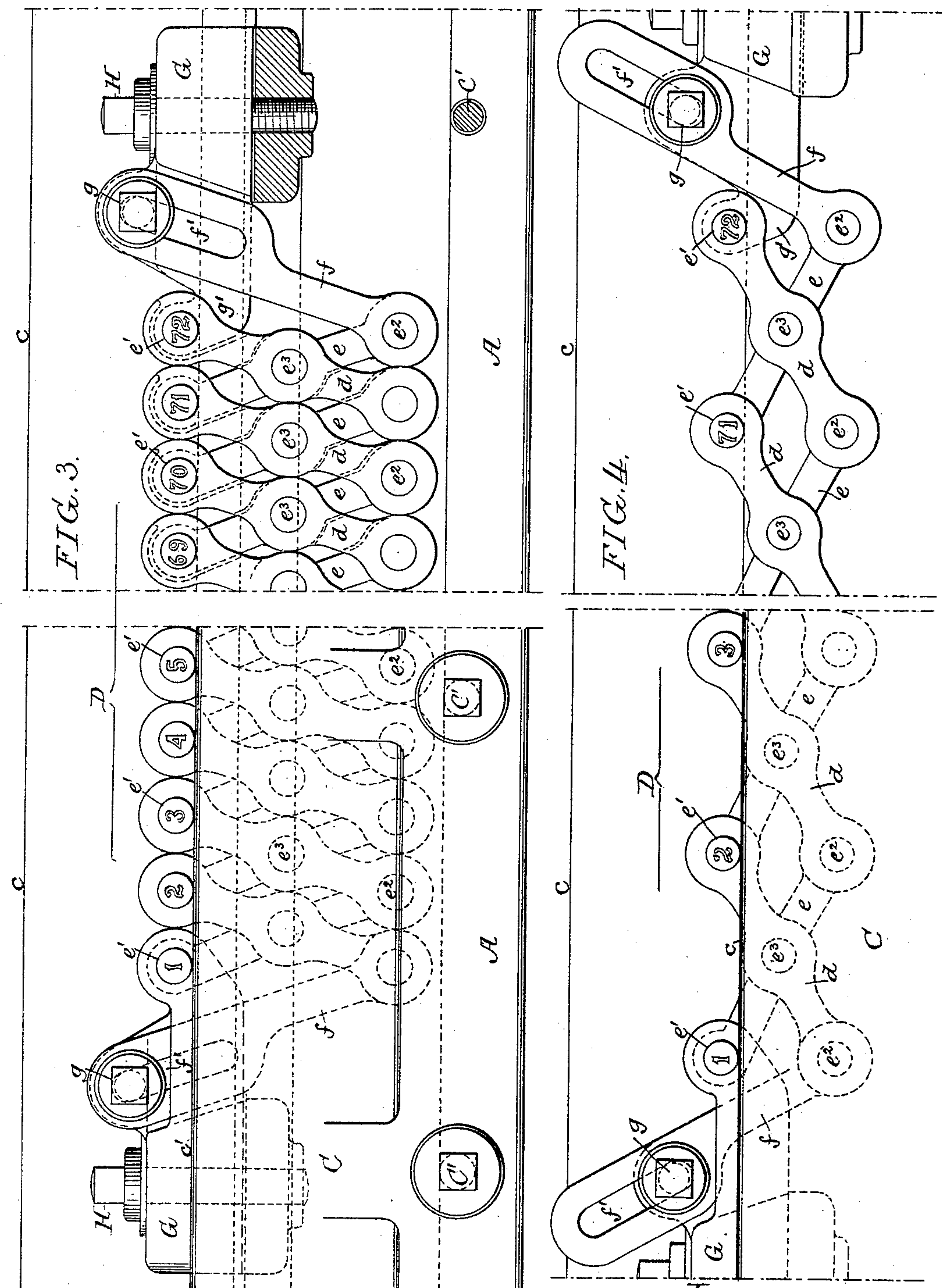
3 Sheets—Sheet 2.

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Witnesses:
Alex. Barkoff
Murray C. Boyer

Inventor:
Frank Ritterhouse
by his Attorneys
Howson & Howson

(No Model.)

3 Sheets—Sheet 3.

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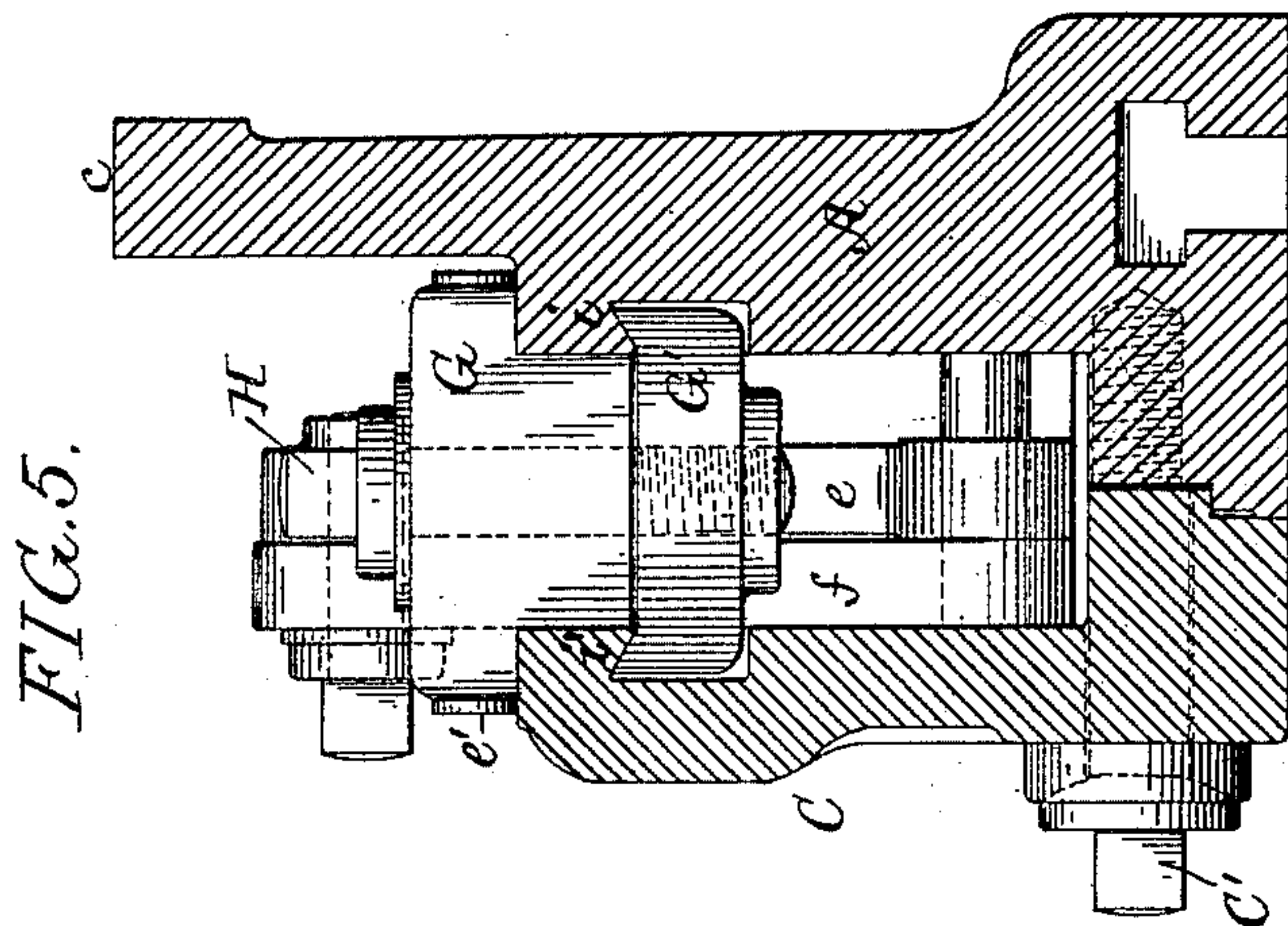


FIG. 6.

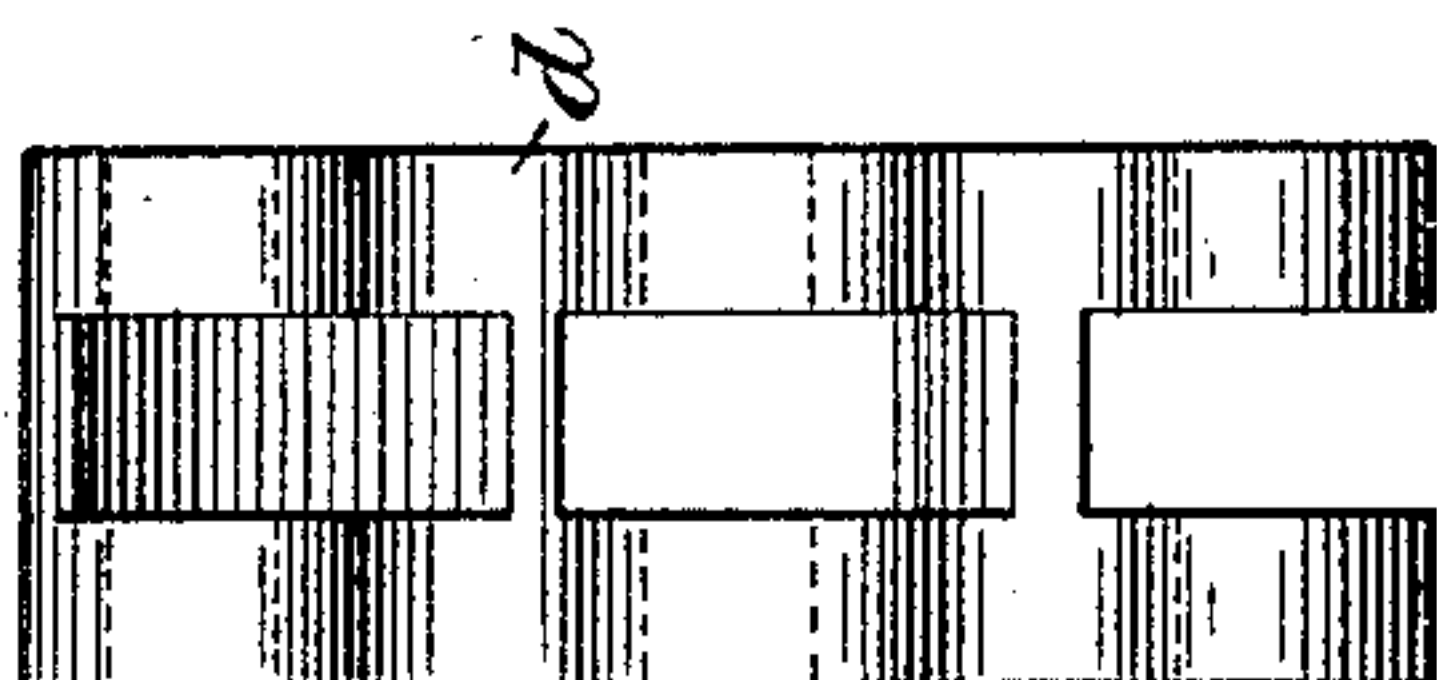


FIG. 7.

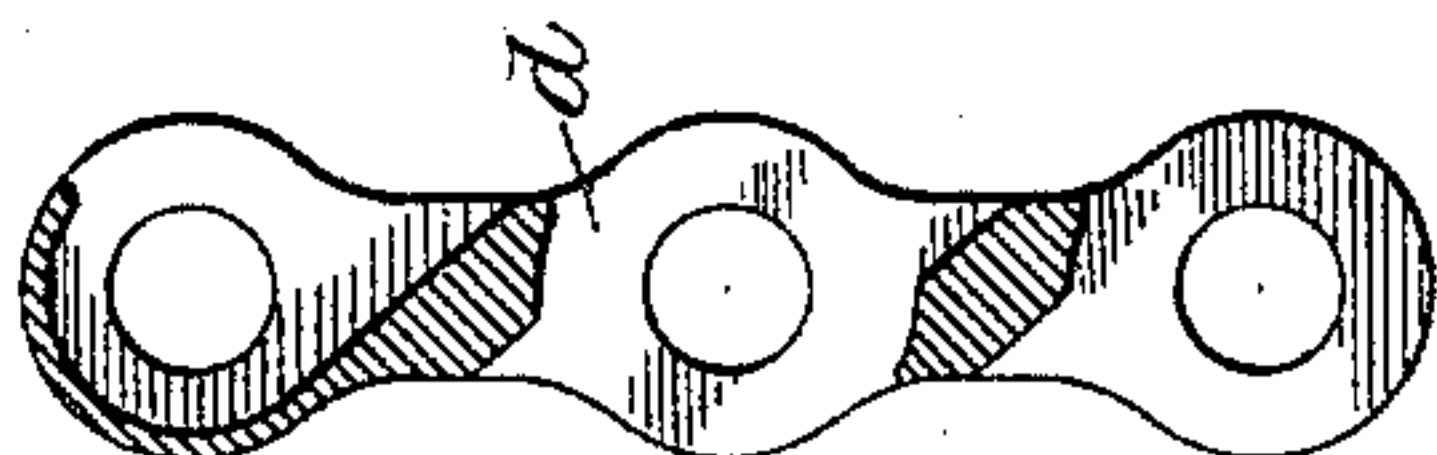


FIG. 8.

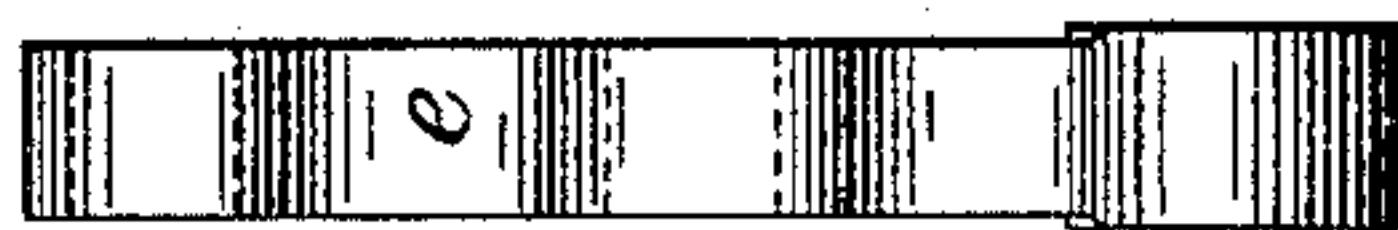
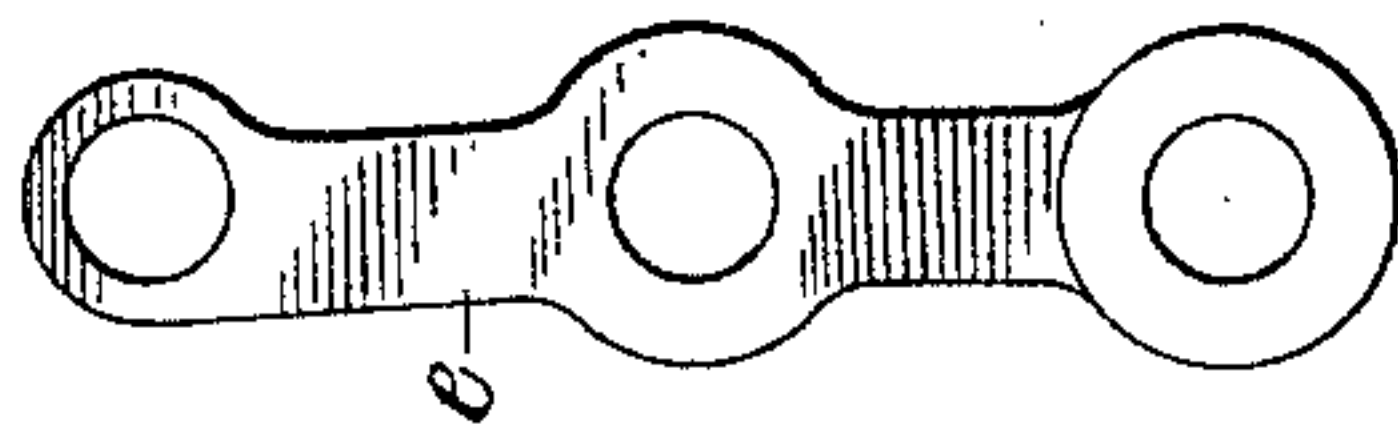


FIG. 9.



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UNITED STATES PATENT OFFICE.

FRANK RITTENHOUSE, OF NORRISTOWN, PENNSYLVANIA.

SPACING DEVICE FOR CUTTING AND PUNCHING MACHINES.

SPECIFICATION forming part of Letters Patent No. 460,801, dated October 6, 1891.

Application filed November 21, 1890. Serial No. 372,184. (No model.)

To all whom it may concern:

Be it known that I, FRANK RITTENHOUSE, a citizen of the United States, and a resident of Norristown, Montgomery county, Pennsylvania, have invented certain Improvements in Spacing Devices for Punching and Cutting Machines, of which the following is a specification.

The object of my invention is to construct an adjustable spacing device for cutting and punching tables, the device being especially applicable for use in connection with metal-punching machines.

In the accompanying drawings, Figure 1 is a side view showing the application of my invention to a punching-table. Fig. 2 is an enlarged plan view of sufficient of the mechanism to illustrate my invention, the spacing device being shown in the contracted position. Fig. 3 is a side view partly in section. Fig. 4 is a side view of part of the device, showing the same expanded. Fig. 5 is a section on the line 1 2, Fig. 2; and Figs. 6, 7, 8, and 9 are detached views of links of the spacing device.

It is essential in metal-punching machines, and in fact in metal-cutting machines generally, to provide for variable feeds. For instance, in punching a series of holes near the edge of a plate they frequently have to be formed at a certain distance apart, and the spacing varies according to the character of the work.

My invention therefore has in view the provision of a simple device whereby the spacing can be readily varied, as desired, and accurate spacing always insured.

Referring to the drawings, A is the bed-plate of a punching-machine table supported on suitable boxes or legs *a*. This table is situated in front of an ordinary punching or cutting machine in the same manner as the plain feed-table. A carriage B, having wheels *b*, is adapted to ways *c* on the bed A, and on this carriage is secured the plate to be punched or cut. Pivoted to the carriage is a pawl *b'*, which engages with an adjustable ratchet or spacing device D. In the present instance the table is fed from tooth to tooth of the ratchet by hand; but it will be understood that any of the ordinary power feeds may be used. The teeth of the spacing device form

stops for the pawl, so that by adjusting the distance apart of these teeth the punch will punch holes correspondingly. At one side of the bed is a plate C, Fig. 5, and between this plate and the side of the bed are located the links *d e* of the adjustable spacing device D, these links being constructed as shown in Figs. 6, 7, 8, and 9, and being connected together by pins *e' e² e³*, so as to form what is commonly known as a "lazy-tongs" structure. The links *d* are double links, as shown in Fig. 6; but the links *e* are single links, and are contained between the side bars of the double links, as shown in Fig. 2. The ends of the pins *e² e³* are preferably flush with the faces of the links *d*; but the pins *e'* extend beyond the links, as shown in Fig. 2, and rest upon a ledge *a'* of the bed and a ledge *c'* of the plate C, thus supporting the lazy-tongs structure in a suspended position, and at the same time these pins act as a ratchet, with which can engage the pawl *b'*, pivoted to the carriage B.

At each end of the lazy-tongs structure D is a slotted link *f*, and through the slot *f'* in this link passes a collar-bolt *g* on an adjustable block G, said block having a projection *g'*, through which passes the first or "set" pin of the series, as shown clearly in Fig. 3. Each block G is clamped to the bed-plate A and plate C by means of a clamp-block G', adapted to the undercut edges *i i'* in the bed-plate and plate C, a collar-bolt H firmly securing the clamp-block, and thus preventing longitudinal movement of the block G after the device is once set, so that the tightening of the collar-bolt *g* will serve to firmly secure the links *f* to the blocks G, and thus effectually lock the lazy-tongs structure in the position to which it has been adjusted.

The plate C is held in position by the screw-bolt C', Fig. 5, which passes through the plate and into the bed by slackening the collar-bolt *g* and one of the bolts H. One of the blocks G can be adjusted longitudinally on the frame of the machine and the lazy-tongs thus expanded or contracted so as to separate the pins *e'* to any desired extent which the spacing of the work may require. Each pin *e'* has its number stamped or cut upon its end, as clearly shown in Figs. 3 and 4, thus facilitating the adjustment, as it is not necessary to count the pins, but simply move

the device until the pin representing the number of holes is at the point required, as will be readily understood on reference to Figs. 3 and 4, the distance between any two of said pins e' being the same as the distance between any other two of the pins, so that accuracy in spacing is insured, while a ready means of effecting variations in the spacing is provided. If, for instance, it is desired to punch sixty-nine holes in a plate of iron, the distance between the two extreme holes to be, say, one hundred and one-fourth inches, then the collar-bolts $g g$ are loosened, and one of the blocks G is released and moved to such a distance that the pins Nos. 1 and 69 are one hundred and one-fourth inches apart. Then the several bolts are tightened and the rack is set to feed the distance required.

The suspending of the lazy-tongs structure between two of the plates of the frame insures compactness and provides a ready means of locking the structure to the frame, while at the same time said structure is out of the way and is protected from injury.

The several links are detachable and interchangeable, as the device when extended its full length takes three times the space it does when closed. Consequently in some cases it may be necessary to remove some of the links, preferably the higher numbers.

It should be understood that the pins e' need not of necessity form a ratchet for use in conjunction with the pawl of the carriage on the machine, as said pawl may act directly upon the tops or heads of the links of the structure, or the pins e' may project on but one side of said links, or the other pins may be used, depending upon the construction of the machine to which the spacing device is applied.

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

1. The combination of the hollow frame of the machine with a lazy-tongs structure suspended within said hollow frame by means of the upper pins of the structure, which rest upon the supporting-ledge on the frame, substantially as specified.

2. The within-described adjustable spacing device, consisting of a lazy-tongs structure, one of the end links of which is hung to an adjustable block, the other end link being slotted for the reception of a set-screw carried by said block, whereby the structure can be expanded and contracted and locked in position when set, substantially as specified.

3. The combination of the inner and outer plates of the machine, the lazy-tongs structure suspended between said plates, a block adjustable longitudinally on the frame and carrying the end links of said lazy-tongs structure, a clamping-block, and a set-screw whereby said clamping-block can be readily secured to the frame, substantially as specified.

4. The combination of the inner and outer plates of the frame with a lazy-tongs structure suspended between said plates and having its upper pins projecting on opposite sides of the links and supported upon ledges on said plates, substantially as specified.

5. The combination, in an adjustable spacing device, of the series of pins adjustably connected together, each pin having its respective number marked thereon, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK RITTENHOUSE.

Witnesses:

R. R. CORSON,
FREAS STYER.