

(No Model.)

3 Sheets—Sheet 1.

M. E. ELLIOTT.
MACHINE FOR MAKING CAR LINKS.

No. 459,746.

Patented Sept. 22, 1891.

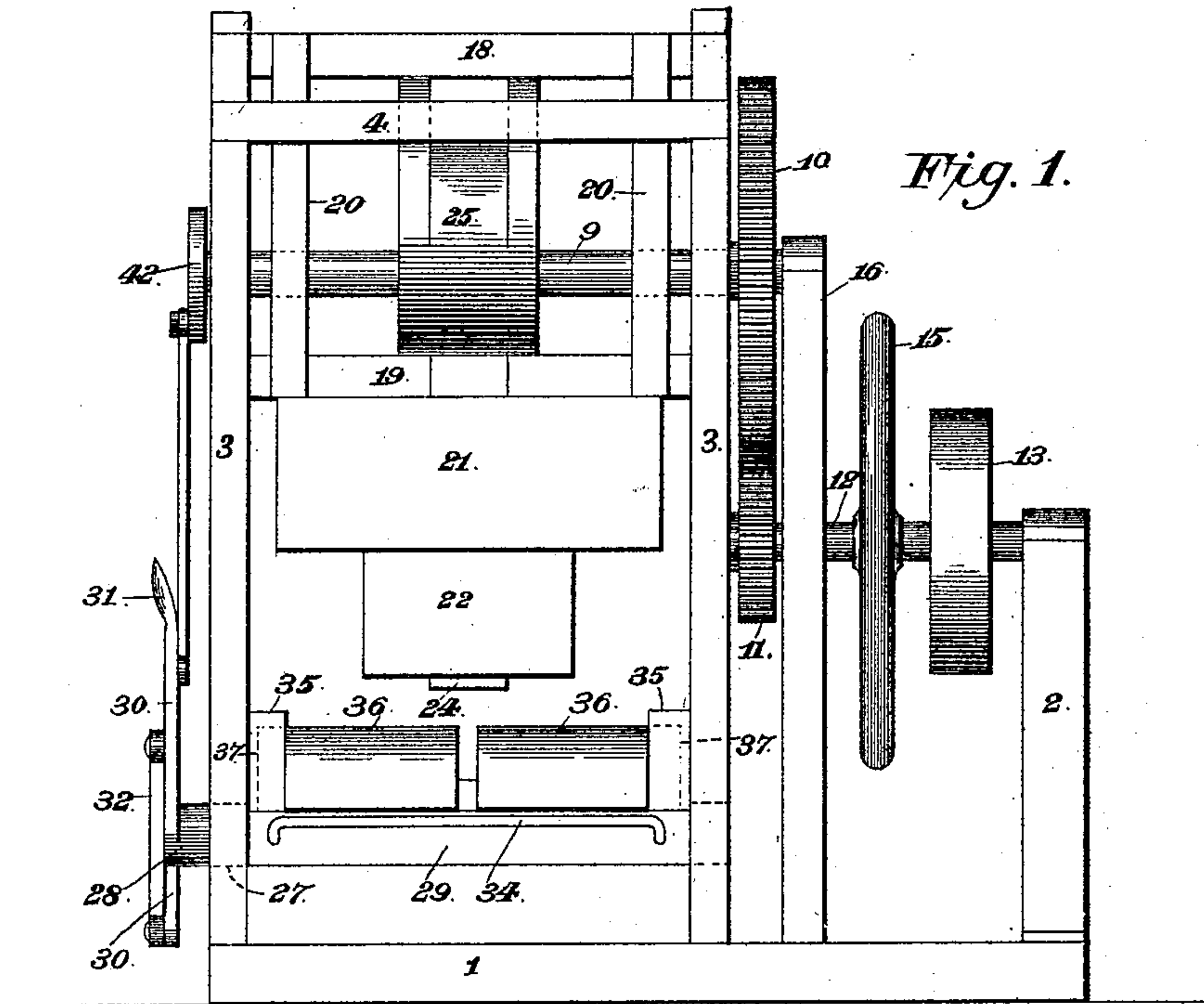


Fig. 1.

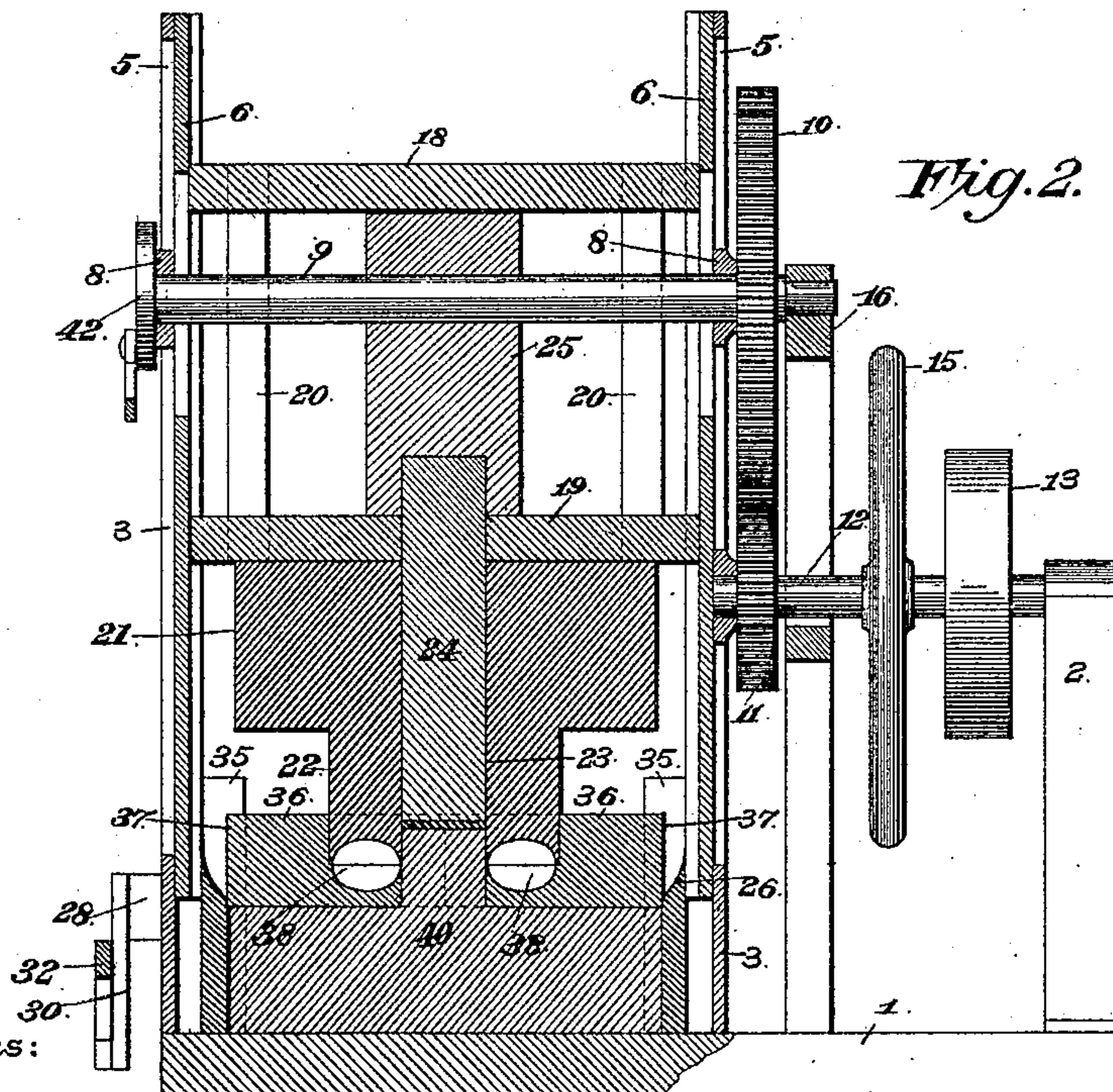


Fig. 2.

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Mahlon E. Elliot

C. A. Snow & Co.

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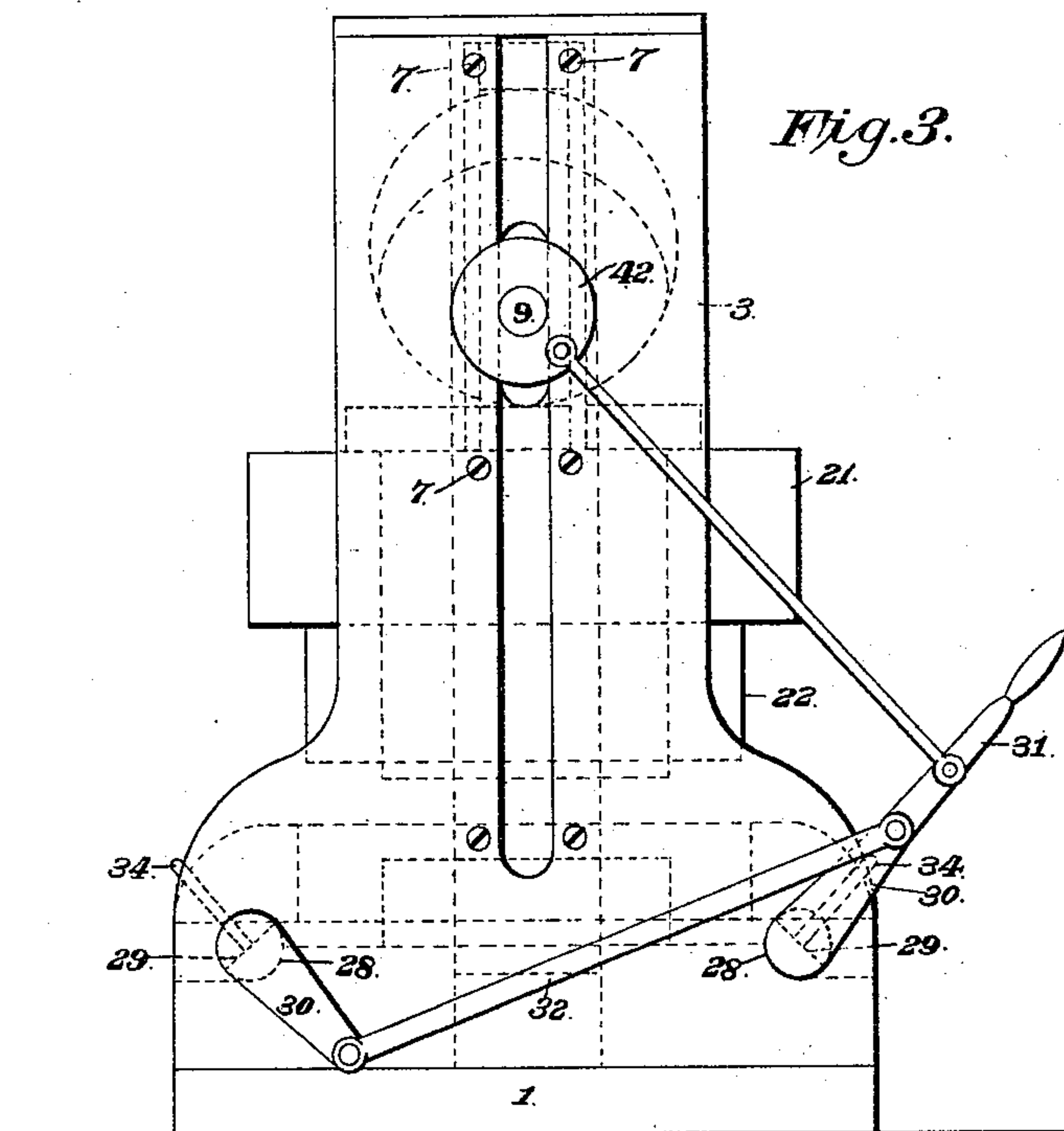


Fig. 3.

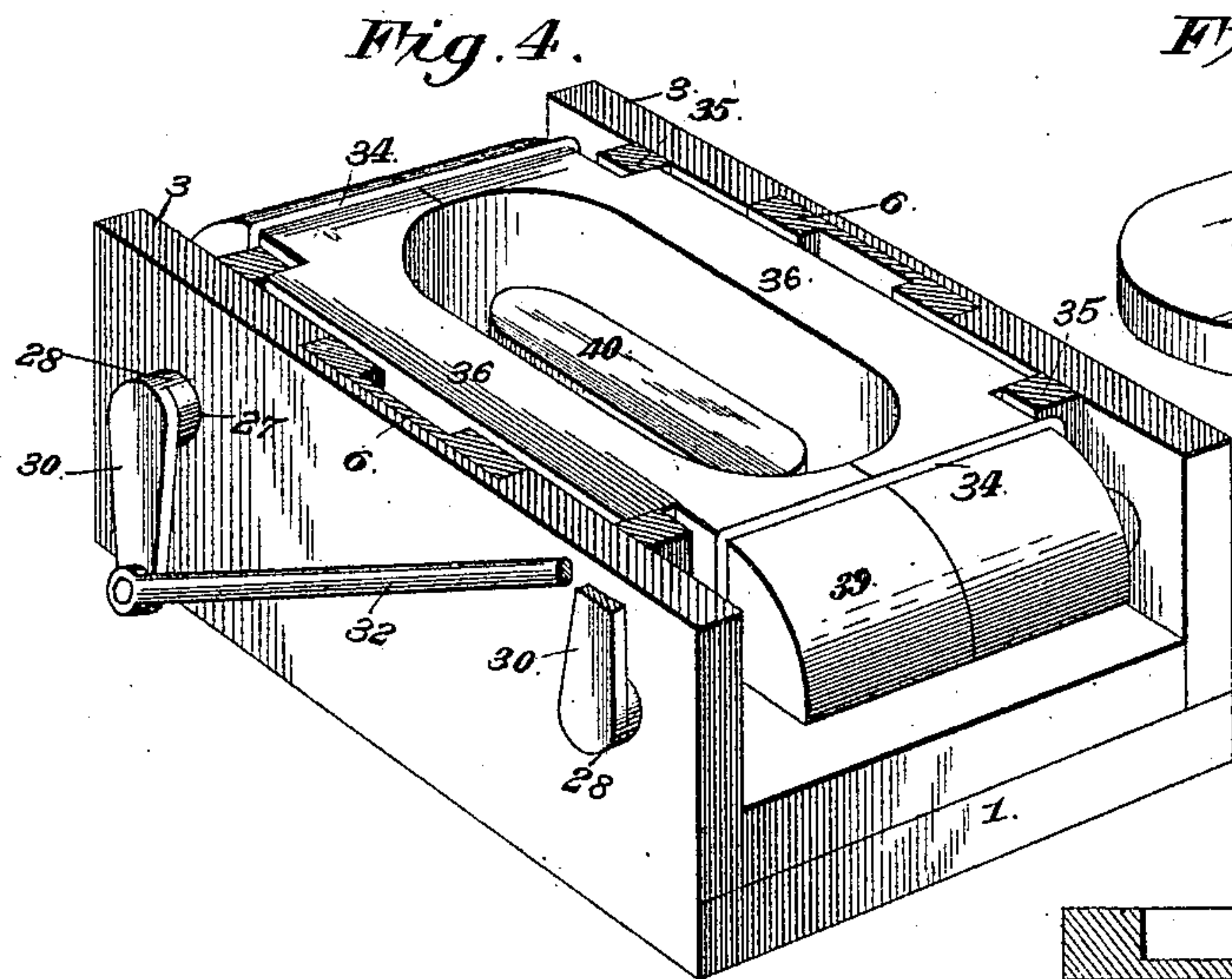


Fig. 4.

Fig. 7.



Fig. 8.



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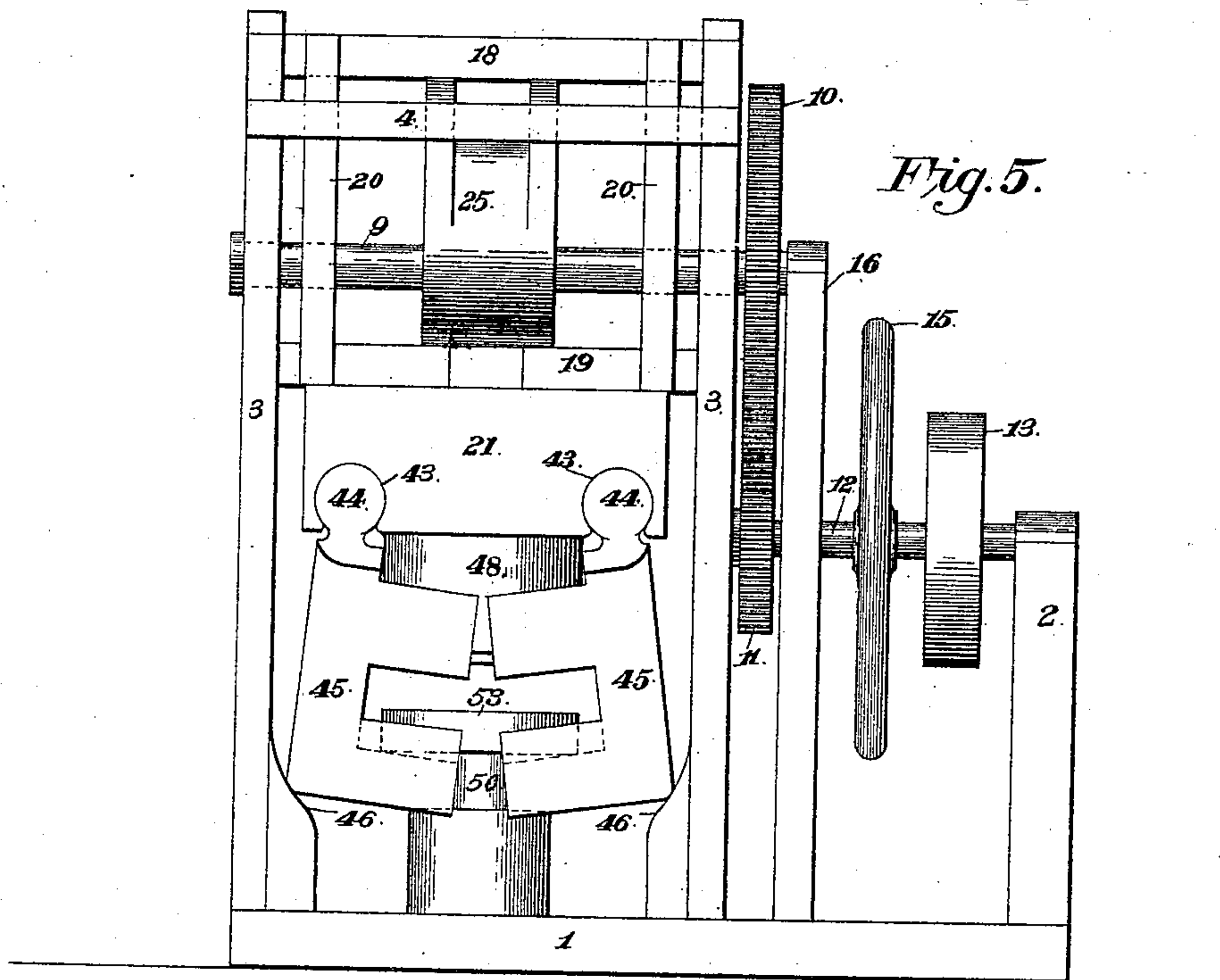


Fig. 5.

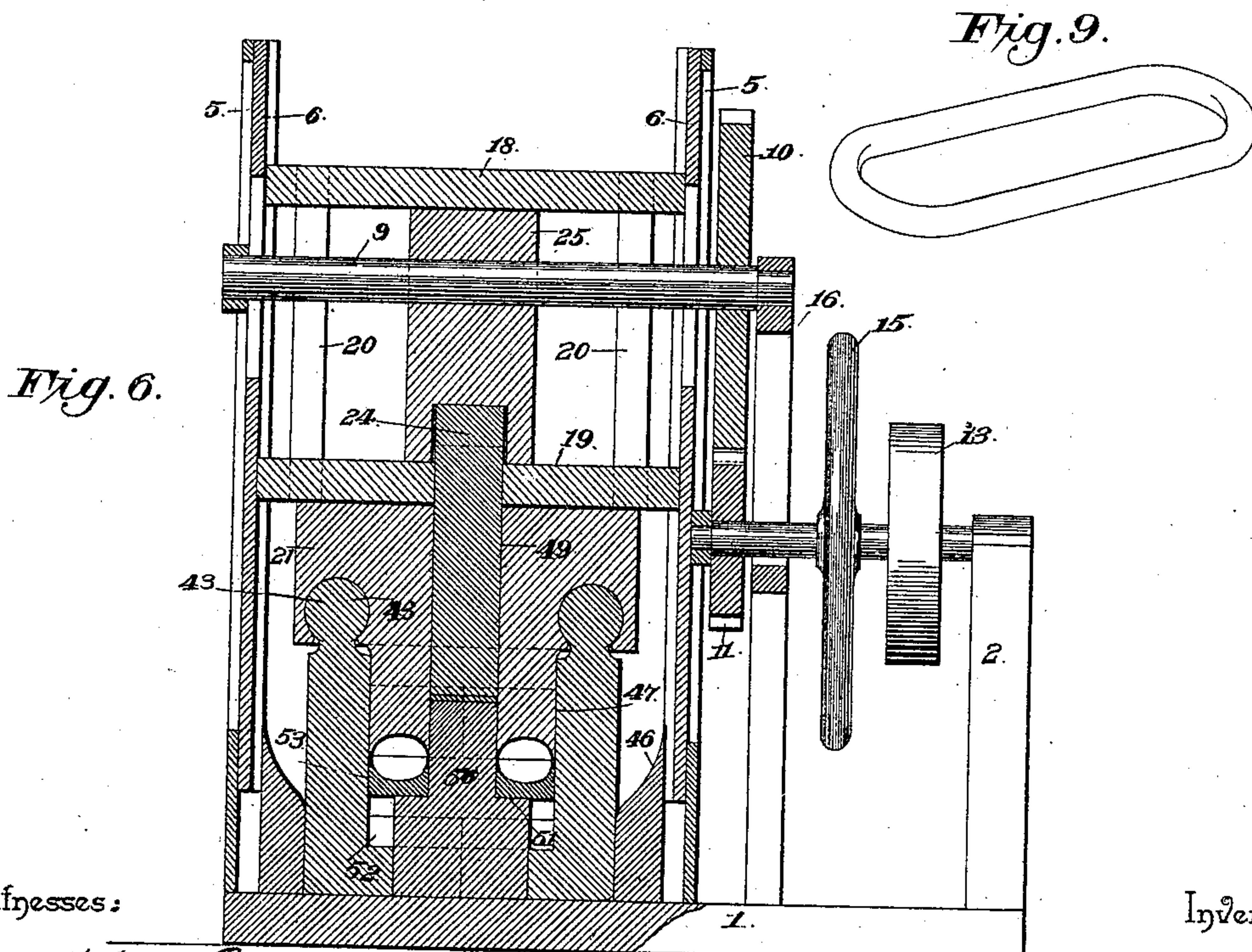


Fig. 6.

Fig. 9.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR MAKING CAR-LINKS.

SPECIFICATION forming part of Letters Patent No. 459,746, dated September 22, 1891.

Application filed January 28, 1891. Serial No. 379,411. (No model.)

To all whom it may concern:

Be it known that I, MAHLON ERSKINE ELLIOTT, a citizen of the United States, residing at Cumberland, in the county of Allegany and State of Maryland, have invented a new and useful Machine for Making Car-Links, of which the following is a specification.

This invention relates to a machine for making car-links; and the objects in view are to provide a cheap and simple machine adapted to be operated either by drop-hammer or other mechanism of simple construction and to receive suitable blanks of metal and readily cut or stamp the links therefrom.

A further object of the invention is to so cut the links as to avoid leaving unfinished edges at the end of the cut and to provide means for readily freeing the link and the cutting when completed and permitting of their withdrawal from the dies.

Referring to the drawings, Figure 1 is a front elevation of a machine constructed in accordance with my invention. Fig. 2 is a transverse view of the same. Fig. 3 is a side elevation. Fig. 4 is a detail in perspective of the dies removed. Fig. 5 is a front elevation of a modified construction of machine. Fig. 6 is a vertical longitudinal section. Fig. 7 is a plan of the blank before being submitted to the dies. Fig. 8 is a transverse section of the link after the descent of the plunger. Fig. 9 is a detail in perspective of the completed link.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 designates the base of the machine, at one end of which is located a bearing-standard 2 and at one side of the same a pair of slotted standards 3, connected at their upper ends by a cross-bar 4 and combined to form the framework.

In the slots 5 of the standard 3, which slots are of T shape in cross-section, are mounted vertical guide-plates 6, made adjustable vertically in the slots by means of set-screws 7, passed through the flanges at the edges of the slots and terminating in the guide-plates. In said plates are formed bearings 8, in which is mounted for rotation a transverse shaft 9, ex-

tending at one end beyond one of its bearings and there provided with a large cog-wheel 10, gearing with a smaller cog 11, mounted upon a counter-shaft 12, journaled in bearings in the standard 2 and the adjacent standard 3. The shaft 12 also carries the pulley 13, around which passes a belt leading thereto from any suitable motor. Between the pulley 13 and the pinion 11 there is mounted upon the shaft 12 the large fly-wheel 15. The bifurcated standard 16 rests upon the base 1 and straddles the shaft 12 between the fly-wheel and the pinion 11 and supports the outer end of the rotatable shaft 9. Above and below the shaft 9 are mounted in the guides 6 upper and lower transverse bars 18 and 19, respectively, which bars are connected at opposite edges by vertical strips 20, and combine with the bars 18 and 19 to form a vertical sliding frame, and to the bar 19 of said frame is secured a head 21, which slides with the frame as it moves up and down within the guides in a manner for a purpose and by mechanism hereinafter specified.

Secured to the under side of the head is a fixed die 22, provided with a central opening 23, corresponding to the opening in the completed link and with a similar opening formed in the head 21, and in the opening of the head and die there is mounted loosely a punch 24.

25 designates a compound cam-disk or eccentric, the same consisting of a central eccentric periphery and a pair of parallel outer flanges, also eccentric with the bearing of the disk. The disk is mounted upon the shaft 9 directly above the movable punch, and the central portion of the eccentric operates upon the punch, while the flanges thereof operate upon the upper and lower cross-bars of the frame-work. The standards 3 are provided near their bases with inclined portions 26, and journaled in the standards directly above the base and preferably resting thereon is a pair of cross-shafts 28, the same being mounted in bearing-openings 27. The cross-shafts are cylindrical near their ends, but between the bearings are cut away to form eccentric seats 29. Two of the corresponding ends of the shafts extend outside of one of the standards

2 and carry crank-arms 30, the front one of which terminates at its free end in a handle 31. The shafts have their cranks oppositely disposed with relation to each other, and the crank of one shaft is connected to the crank of the opposite shaft by a connecting-bar 32, pivoted to position.

In each of the seats 29 formed in the shafts 28 there is located inverted-U-shaped binding-bails 34. The opposite standards 3 upon their inner sides are each provided with a pair of vertical ribs 35, between which are mounted for reciprocation the opposite die-sections 36. These die-sections 36 are of such a width as to loosely fit between the standards 3, and when lowered are by reason of the inclined inner surfaces of the standards forced toward each other, for a purpose hereinafter specified. The die-sections are provided upon their outer sides with lateral projections 37, which take between the pairs of ribs 35. Each section is provided with a concavity or die-recess 38 upon its inner side of the exact shape and size of the proposed car-link, which cavity is reduced slightly at the lower sides of the die-sections, so as to form a shelf for the support of the links after cutting and in the act of delivery. The ends of the die-sections lie side by side and have their upper corners beveled as at 39, and are designed to be ridden over and bound upon by the inverted-U-shaped binding-bails 34 mentioned.

40 designates a fixed punch corresponding in shape to the upper movable punch heretofore described, and the same rises from the bottom or base 1, extending up between the die-sections 36.

The operation of the machine thus described is as follows: The eccentric cam is moved by the machinery until it elevates the head and upper die, together with the movable punch, which elevation is accomplished by the flanges of the disk acting upon the underside of the upper rigid cross-bar of the frame. When thus elevated, a blank A (shown in Fig. 7) is inserted into the concavities 38 of the lower die-sections 36, which die-sections have previously been elevated by a manipulation of the lever 31, throwing the same toward the front of the machine, thus rotating the shafts 28 in opposite directions, withdrawing the binding-bails from over the beveled ends of the die-sections and supporting said die-sections upon the edges of the seats of the shafts. After the blank has been inserted the machine is started and the head is lowered upon the blank, and the central portion of the eccentric begins to operate upon the head of the movable punch and serves to depress the punch and force the same through the blank or nearly so—that is, within about an eighth of an inch. By the time that the punch ceases to act the head has descended and caught the blank between the upper die and the lower die, and the two dies are lowered together and the fixed lower punch 40 serves to punch up-

wardly, and thus complete the removal of the piece of metal from the center of the link. The head continues to descend and the shafts are revolved so as to clamp the ends of the dies 36 by the swinging thereover of the bails 29, and as said die-sections are lowered the inclined walls of the standards 3 serve to compress or force the two dies toward each other, thus crowding the metal around the lower fixed punch and serving to smooth the part where the cut was made. After the link has been completed the cams or eccentrics serve to elevate the head, and the die-sections 36 may be elevated either by the lever 30, operated by hand, or by connecting said lever loosely to a small wheel 42, mounted upon the end of the shaft 9. When the first punch acts upon the blank, the cut, as before stated, extends to within about an eighth of an inch of being complete. The blank thus acted upon is illustrated in Fig. 8, while Fig. 9 illustrates the completed link.

In Figs. 5 and 6 I have illustrated a modified construction, and the same consists of the frame-work described in connection with the machine shown in Figs. 1, 2, and 3. In this modification the head 21 is provided with the cylindrical grooves 43, formed in the under side of the head near the edges thereof, and each of said grooves receives the cylindrical rib 44 of a depending horizontally-disposed U-shaped jaw or die-section 45. Near the base 1 and at opposite sides of the jaws the standards 3 are inclined, as at 46, and are located such a distance apart as to act to compress the jaws laterally when said jaws are lowered. The roof of the jaws and also the bottom are provided with elliptical openings 47, and in the former opening there is secured to the head 21, which is reduced and depends within the opening, a fixed upper die 48, approximating in shape an ordinary car-link. Through the center of the die and head is formed an opening 49, in which is mounted the upper punch heretofore mentioned. To the base is secured a fixed punch 50, which extends up through the opening in the bottom of the jaws, and is provided near its lower end with a surrounding shoulder or shelf 51. The opening in the bottom of the jaws is provided with a surrounding L-shaped recess 52, and seated loosely therein and encircling the fixed punch is the lower die 53.

The operation of the modification is almost identical with that heretofore described and would not seem to require further mention.

If desired, I may, as shown in Fig. 4, construct a die similar to that shown in Fig. 1 and omit the mechanism herein shown for operating the same, substituting a drop-hammer. In such case a head 54 somewhat similar to the head 21 would be employed as the upper die or section.

Having described my invention, what I claim is—

1. In a machine of the class described, the

combination, with an upper and lower die and means for opening and closing the same, of a fixed punch inserted into the dies, and a movable punch inserted in the opposite side
5 of the dies, and means for operating the latter punch, substantially as specified.

2. The combination, with the upper and lower dies having central openings and a suitable support for the same, of a lower fixed
10 punch projecting into the dies, an upper movable punch projecting into the dies, means for first depressing the upper movable punch toward the fixed punch, and means for lower-
15 ing the upper die upon the lower die, substantially as specified.

3. The combination, with the base, the opposite standard of the inclined inner faces, the opposite die-section mounted between the
20 standards, and the upper die and punch, of mechanism for supporting the die-sections and for lowering the same between the inclined walls of the standards and for operating the punch, substantially as specified.

25 4. The combination, with the base, the upper die, and punch, of the lower die forming the sections and means for operating the upper die and punch and compressing the sections of the lower die upon each other, sub-
30 stantially as specified.

5. The combination, with the base, the opposite standards having inclined faces, the front and rear shafts journaled in the stand-
35 ards between their bearings, provided with eccentric seats and U-shaped bails, crank-arms disposed in opposite directions upon the ends of the shaft, and a connecting-bar for said crank-arm, of die-sections mounted in the seats of the shafts and having their ends
40 beveled to receive the bails, substantially as specified.

6. The combination, with vertical stand-
45 ards having guides, the reciprocating frame mounted in the guides, and means for reciprocating the frame, of a head fixed to the frame and supporting an upper die, a loose punch mounted in the head, a lower die, and a fixed die mounted on the base and extend-

ing upwardly through the lower die, substan-
tially as specified. 50

7. The combination, with the base and opposite standards, of the vertically-sliding frame mounted in said standards, means for operating the same, the head secured to the frame and carrying the upper die, the loose
55 punch mounted in the head, the lower die formed in sections, means for clamping the sections and for operating said loose punch, and a fixed punch mounted on the base and extending upwardly between the sections, 60
substantially as specified.

8. The combination, with the base, the opposite standards, and the head mounted mov-
ably between the standards and carrying the
65 upper die, of means for lowering the head and die, a punch mounted loosely in the head, means for operating the punch, a lower die, means for raising and lowering the same, and a fixed die mounted on the base and extend-
70 ing into the lower die, substantially as speci-
fied.

9. The combination, with the base, the opposite standards having guides, the frame mounted for movement in the guides, the head secured to the frame, the upper die secured
75 to the head, the lower die-sections, the opposite shafts having eccentric seats journaled in the standards and receiving the die-sections, the oppositely-disposed crank-arms extend-
80 ing from the shafts, the link connecting the same, and the opposite inverted binding-bails mounted on the shafts of the seat and adapted to ride over and bind upon the beveled ends of the lower die-sections, of the shaft 9, hav-
85 ing the eccentric cam for operating the frame and the punch, the disk mounted on the end of the shaft, and the slotted connecting-rod connecting said disk with the cranks, substan-
tially as specified.

In testimony that I claim the foregoing as
90 my own I have hereto affixed my signature in presence of two witnesses.

MAHLON ERSKINE ELLIOTT.

Witnesses:

W. O. HOFFMAN,

H. W. WILLIAMSON.