

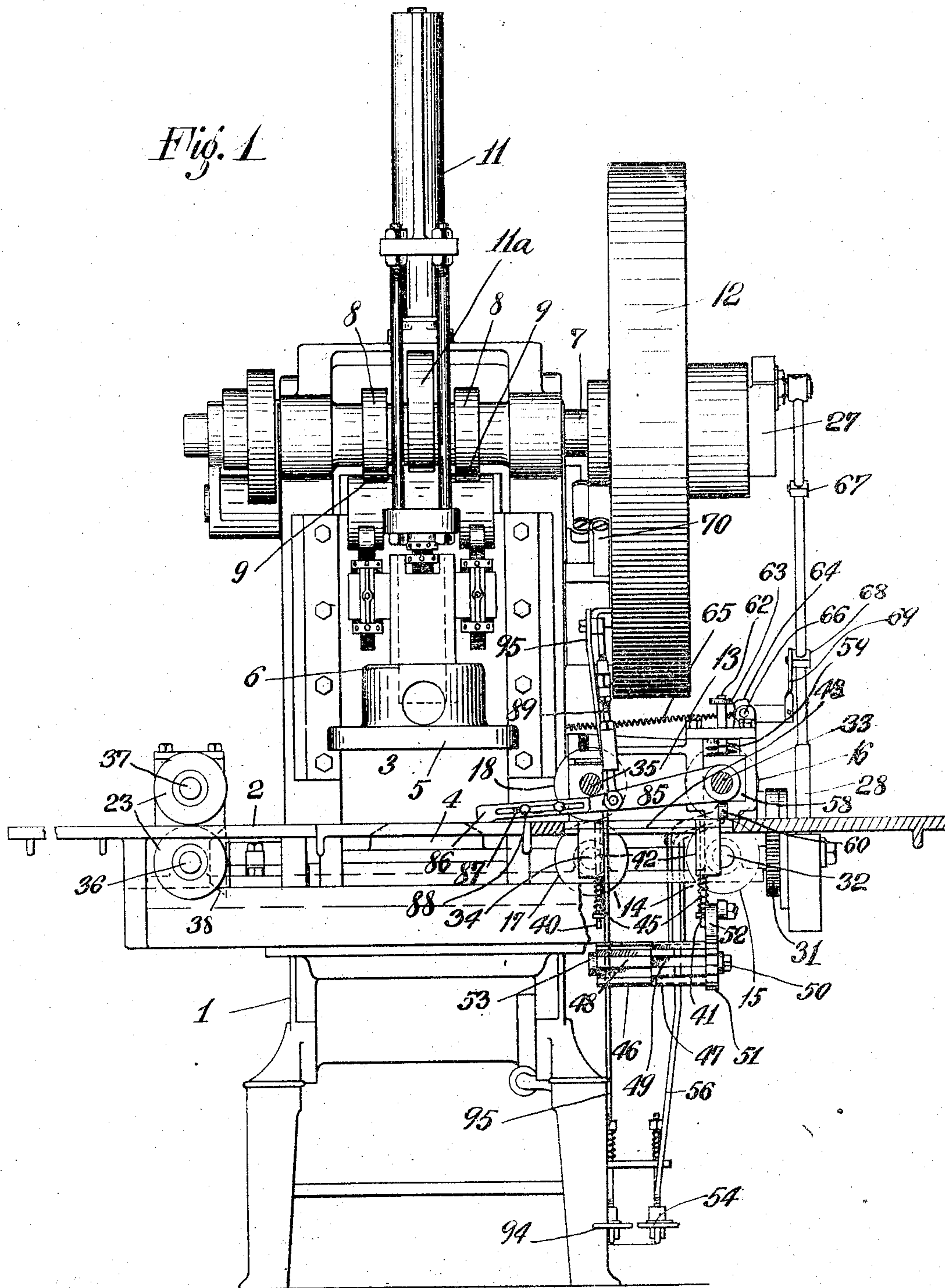
No. 846,832.

PATENTED MAR. 12, 1907.

J. A. EDEN, JR.
WORK FEEDING PUNCHING MACHINE.

APPLICATION FILED MAR 9, 1905.

3 SHEETS—SHEET 1.



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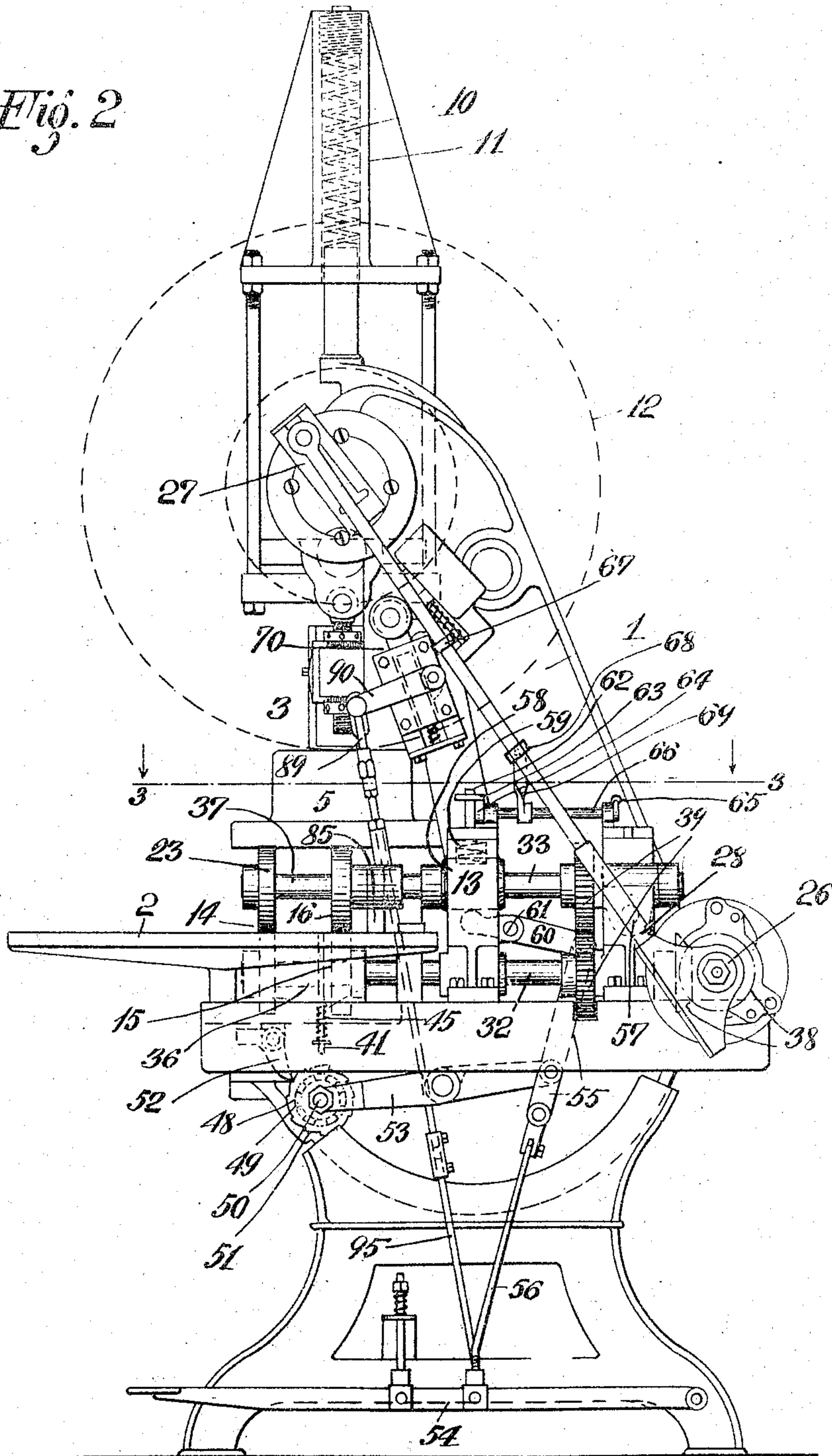
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3 SHEETS—SHEET 2.

Fig. 2



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3 SHEETS—SHEET 3.

Fig. 3

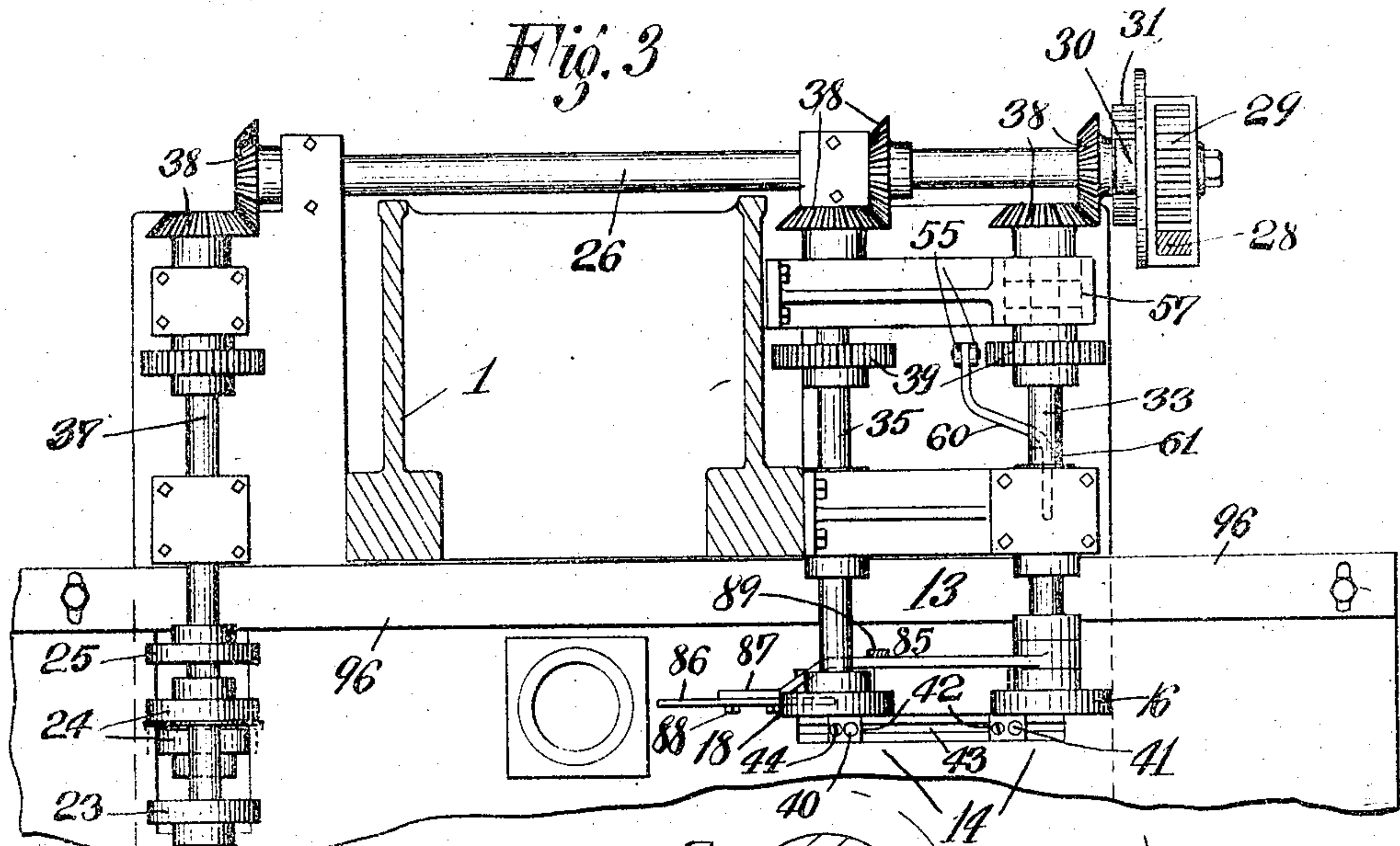


Fig. 4

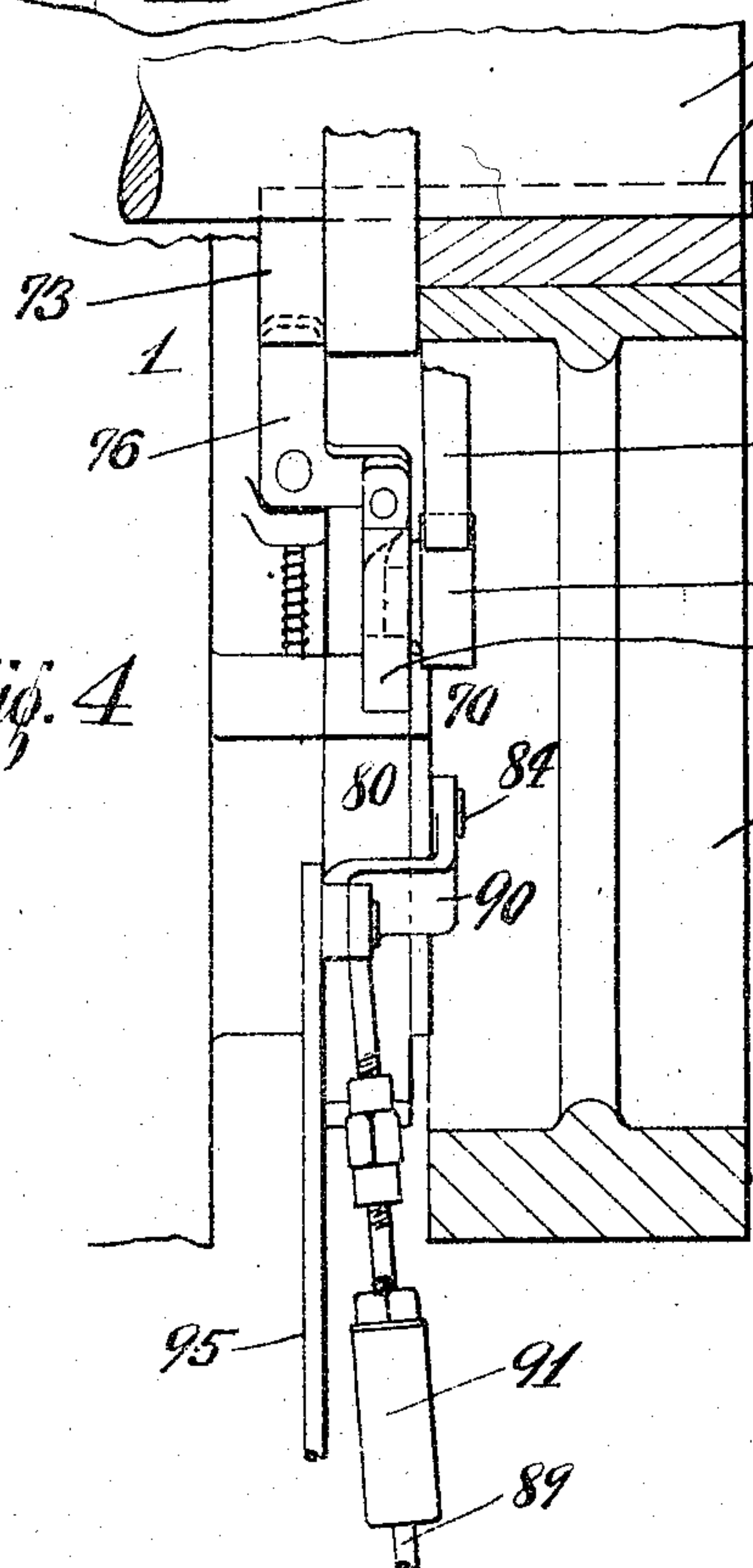
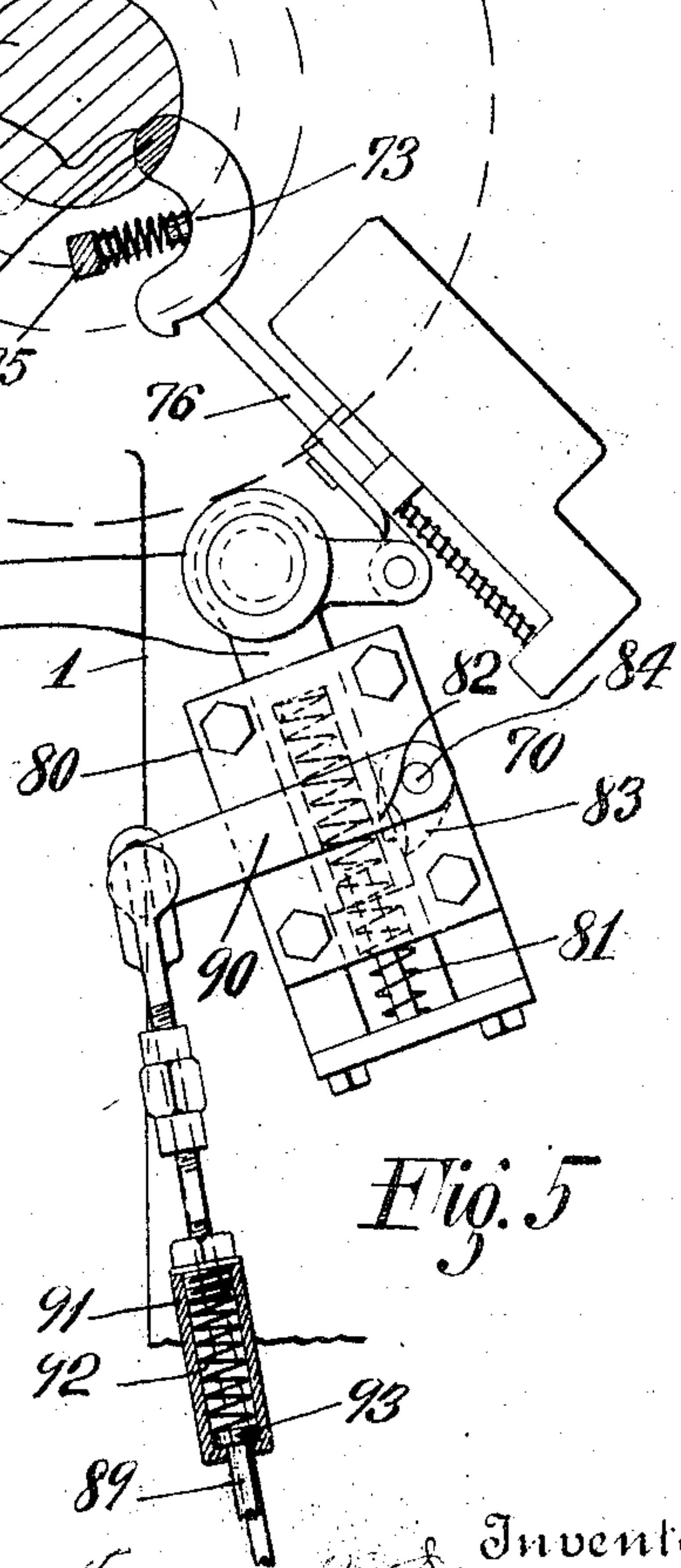


Fig. 5



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UNITED STATES PATENT OFFICE.

JAMES A. EDEN, JR., OF NEW YORK, N. Y., ASSIGNOR TO E. W. BLISS COMPANY, A CORPORATION OF WEST VIRGINIA.

WORK-FEEDING PUNCHING-MACHINE.

No. 846,832.

Specification of Letters Patent.

Patented March 12, 1907.

Application filed March 9, 1905. Serial No. 249,173.

To all whom it may concern:

Be it known that I, JAMES A. EDEN, JR., a citizen of the United States of America, and a resident of the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Work-Feeding Punching-Machines, of which the following is a specification.

10 The present invention relates to a work-feeding punching-machine of the type in which a sheet of material passes through the machine and has only one row of blanks cut out, after which it is removed from the machine and another sheet inserted or the same sheet reinserted into the machine.

15 The machine taken as an illustration of the invention is more particularly designed to act upon cardboard or similar material, but is of course susceptible of being used in connection with other sheet material, such as tin, &c.

20 The object of the invention is to produce a machine of this character generally improved in its construction, more easily manipulated, and requiring less attention on the part of the operator, and yet withal perfectly reliable in its operation. In carrying out this object the invention is characterized by 25 the fact that the operation of the feeding mechanism is independent of the punching mechanism. The feeding mechanism operates continuously, while the operation of the punching mechanism is controlled by the absence or presence of a blank in the machine. Hence the punching mechanism is normally at rest, except when released by the presence of a blank at a certain point in the machine, while the feeding mechanism acts continuously irrespective of the presence or absence of a blank and independently of the punching mechanism. After each row of blanks has been cut it is necessary to reinsert the sheet into the machine until the entire sheet has been cut out. In order to use up the material as thoroughly as possible, it is customary to produce a staggered effect in a well-known manner. In the present instance this effect is produced by means of 30 two gages located with reference to the punch in such a manner that one gage will be a predetermined number of blanks away from the said punch, while the other gage is one-half blank farther away from the said

punch than the first-mentioned gage. Means 55 are further provided whereby these two gages are raised alternately when inserting a sheet. The position of these gages is adjustable. The operation of the punch is in this instance controlled by what is denominated as a 60 "punch-releasing" member, which when lifted by the blank or sheet as it advances causes the punch to operate. It is advisable that the punch should not be operated except when sufficient material is presented to cut 65 a full-size blank, and this punch-releasing member is therefore so positioned with relation to the punch that it is a distance away from the same somewhat greater than the size of blank to be produced. The position 70 of this punch-releasing member is adjustable, so that its position can be varied to correspond with the amount of scrap left over at the tail end of the sheet and not capable of being formed into a perfect blank of a size 75 equal to the size the machine happens to be producing at the time. In this way as the punch-releasing member causes the punch to act upon the revolution of the machine next following its release if there is any less material left than a full-sized blank the punch will not operate upon the next succeeding revolution.

In connection with the punch-releasing member there is provided a suitable clutch 85 mechanism and means for moving the clutch into a position once to every revolution, where it is capable of being acted upon by the punch-releasing member, the parts being arranged in such a way that unless the said 90 punch-releasing member does act the clutch resumes its inactive position without affecting the punch.

A safety-stop is provided whereby the clutch can be thrown out at will, thereby 95 stopping the operation of the punch.

In addition to the foregoing the invention comprises the novel features of construction and combinations of parts, as will more fully hereinafter appear.

100 In the accompanying drawings a concrete structure has been set forth illustrating the invention, which, however, admits of a wide departure from the construction shown without overstepping the broad boundary of the invention.

In the said drawings, Figure 1 is a front elevation of a machine embodying the in-

vention, partly in section. Fig. 2 is a side elevation of the machine. Fig. 3 is a plan sectional view of the feed-table and driving means for the feeding mechanism, together with adjacent parts, on the line 3 3 of Fig. 2. Figs. 4 and 5 are detail views of the clutch mechanism.

Similar characters of reference indicate corresponding parts in the different views. 1 indicates a framework of any suitable construction supporting the various parts of the machine, and 2 is the feed-table.

3 indicates the punching mechanism, in this instance composed of the die 4, blank-holder 5, and punch 6. In the present instance the blank is both cut and drawn; but the invention does not necessarily involve a construction having as one of its elements means for both cutting and drawing a blank.

The parts are all operated from the main shaft 7; the blank-holder being operated by means of cams 8 and rollers 9 in the usual way, while the punch is normally held up by means of the spring 10 in the tower 11 and is moved down by means of the cam 11^a. The foregoing part of the machine is well known.

Mounted loosely upon the main shaft 7 is a fly-wheel 12, constituting a main driving member adapted to be thrown into and out of connection with the shaft or operating means 7 for the punch, in the manner hereinafter more fully set forth.

13 indicates the sheet-feeding mechanism, whose operating means (set forth in detail later on) are operated continuously from the said driving member.

On one side of the machine there are two sets of feeding-rolls 14, each set consisting of two superposed rolls 15, 16, 17, and 18, all located on one side (the feeding end) of the punch mechanism. On the other side of the punch mechanism there are three sets of rolls—viz., the guiding-rolls 23, the shearing-rolls 24, and the scrap-conveying rolls 25.

The driving means for the feeding mechanism are constructed as follows: Located in the rear of the machine is a counter-shaft 26, which is driven intermittently in one direction only, but continuously so, from the driving member 12 by the following means: Moving with the fly-wheel 12 is a crank 27, having the rack 28 meshing with the gear 29, mounted loosely on the shaft 26 or elsewhere. Moving with this rack 28 is a pawl 30, engaging with the ratchet 31 on the said counter-shaft 26.

The various feeding-rolls are mounted on transverse shafts 32, 33, 34, 35, 36, and 37, receiving their motion from the counter-shaft 26 by means of bevel-gears 38. The upper and lower shafts which carry the feeding-rolls are geared together by means of spur-gears 39 in a well-known manner.

40 and 41 indicate the two gages, consisting of sliding blocks 42, adjustable in the way

43 of the feed-table 2 and secured in position by means of screws 44. The sliding blocks 42 carry the gages 40 and 41, which are in the form of pins, normally held down by means of springs 45.

Means are provided for raising these gages alternately. A simple expedient for doing this consists in the cams 46 and 47, which are so arranged that a high point or tooth 48 is always in alinement with one gage, while a notch 49 is always opposite the other gage. These two cams are rotatably mounted on the stud 50, carrying the ratchet 51, with which engages the pawl 52. The stud 50 is mounted on the pivoted forked lever 53, attached to the foot-treadle 54 or other device by means of the link 55 and rod 56, so that by depressing the said foot-treadle the cams are lifted, turning the ratchet 51 one tooth and lifting one of the said gages. It follows that when the foot-treadle is depressed to insert another sheet the ratchet will again be turned and the other gage lifted.

In order to properly insert the sheet, the upper roll 16 of the first set of feeding-rolls has to be lifted. This is accomplished by pivoting the shaft 33, carrying said rolls at 57 at its rear end, and mounting the said shaft 33 in sliding boxes 58. The shaft is normally held down by means of the spring 59 and is raised, preferably, by means of the same foot-treadle which moves the gages in position. In the structure shown the lever 60, pivoted at 61, is connected to the link 55, and acts when the treadle is depressed to lift the said shaft 33.

It is important that the feed-rolls 16 and 18 should not be lowered when pressure is released on the foot-treadle, as this might occur on the upstroke of the rack 28, which is the stroke that imparts motion to the shaft 26, and consequently to the feeding-rolls. If this were done, the feed-rolls would have rotated partly before acting on the sheet and would therefore act improperly on the said sheet, not imparting a full movement to the same. This would of course throw the sheet out of register with the punching mechanism. Provision is therefore made to lock the shaft 33 in its elevated position and for moving it down positively when the rolls are in a state of rest. This is accomplished by providing a rod 62 on the sliding box 58, having the head 63, and by providing a locking-cam 64, which moves automatically in under the said head by reason of the spring 65, which turns the said cam 64 and the rock-shaft 66, on which it is mounted. The downstroke of the rack 28, which imparts no motion to the feeding mechanism, is utilized to release this locking-cam by means of the collar 67 on the said rack, engaging with the loose sleeve 68, connected to the rock-shaft 66 by means of the link 69 or otherwise.

The main driving—member in this instance

the fly-wheel 12—and the operating means for the punching mechanism—in this instance the shaft 7—are thrown in and out of connection at certain periods by means of the clutch mechanism 70. The clutch mechanism consists of the key 71, resting in the groove 72 of the shaft 7 and is provided with the tail 73. The fly-wheel 12 is provided with a corresponding groove 74, into which the key 71 has a tendency to turn, by reason of the weight of the tail 73 and spring 75, when the two grooves 72 and 74 come in alinement with each other. The key 71, however, is normally kept in the groove 72 by reason of a stop in the form of a bell-crank 76 and is only free to follow this tendency when the bell-crank is moved out of the way by means of the cam 77 acting on the roll 78, connected to the said bell-crank. The parts are so arranged, however, that when the cam 77 acts to move the stop out of the way the two grooves 72 and 74 are not in alinement with each other, so that no result follows. Means, however, are provided whereby the stop will be locked so as to prevent its return, and thereby causing the parts to be thrown into clutch with each other when the two grooves coincide. These means will preferably take the following form: The roll 78, which is connected to the bell-crank or stop 76, is provided with a sliding member 79, moving in the bracket 80. The roll 78 is normally held up against the cam 77 on the fly-wheel 12 by means of the spring 81, and the sliding member 79 is provided with a notch 82, with which the latch 83 is adapted to engage to hold the roll 78 down in the position to which it has been moved by the cam 77, and thereby holding the stop 76 out of the way of the tail of the key. This latch 83 is mounted on the rock-shaft 84 and is adapted to be moved positively at certain periods. The means controlling this latch is the punch-releasing member 85, conveniently pivoted on the shaft 33 and made in two parts 86 and 87, one of which is slotted, connected by means of the set-screws 88, so that the length of the member can be adjusted. The free end of this dog rests on the feed-table and is adapted to be raised by the blank or sheet when moved in under the same by the feed-rolls. This slight motion is transmitted through the connection 89 to the link 90, attached to the latch 83. In this connection 89 there is a cylinder 91, in which is located the spring 92, adapted to be compressed by the plunger 93, so that if the blank lifts the punch-releasing member at a time when the cam 77 has not yet moved the sliding member 79 down so as to allow the movement of the connection to turn the latch into the notch power will be stored in this spring. When the cam 77 does move the sliding member down, registering the notch 82 with the latch 83, the latter will be forced into the said notch by the action of

the said spring. When the blank or sheet has passed away from under the punch-releasing member, the latter will drop, causing the latch to be moved out of the notch and moving the stop into the path of the tail of the key, thereby throwing the clutch out.

In addition to the foregoing there is provided a safety-stop in the form of a foot-treadle 94, connecting by means of the rod 95 with the link 90, whereby the latch can be thrown out at will and independently of the punch-releasing dog.

The operation of the machine is as follows: Assuming that the main driving member or fly-wheel 12 is running continuously, the foot-treadle 54 is depressed, thereby lifting the shaft 33 and turning the cams 46 and 47 and lifting one of the gages 40 and 41. The sheet is now inserted, being registered against one of the said gages, which is a predetermined number of blanks away from the punching mechanism. The foot-treadle is now released, and upon the next succeeding downstroke of the rack 28 the shaft 33 is moved down and the sheet clamped between the feed-rolls 15 and 16. Upon the continued operation of the driving means for the feeding mechanism the sheet will advance step by step, guided along the ledge 96 until it lifts the punch-releasing member 85, whereby motion is imparted to the latch 83, thereby causing the latter to move into the notch 82 of the sliding member 79, which latter, it is assumed, has been previously moved down by the cam 77. When the two grooves 72 and 74 are in alinement with each other, the key 71 snaps into a position where it will occupy both grooves, and hence motion will be imparted to the main shaft 7 from the fly-wheel 12, thereby actuating the punching mechanism on the next revolution of the main shaft. If the cam 77 has not moved the stop out of the way and the member 79 down, power will be stored in the spring 92, and upon the two grooves 72 and 74 being brought into alinement the spring 92 will move the latch 83 into the notch 82, thus holding the stop out of the path of the key of the clutch. Should difficulty be experienced with the machine, the safety-stop can be operated and the punching mechanism be stopped. The punch-releasing member is adjusted to suit the amount of scrap left over and is located, say, one blank and one-seventh away from the punching mechanism. It is obvious that so long as there is material left to hold the punch-releasing member in its raised position, the operation of the punching mechanism will continue. When, however, but one blank and one-seventh of a blank are left, the member will move down after the last full blank has been fed under the punching mechanism and after the next succeeding stroke of the punch the clutch will be thrown out and the punching cease.

As the material passes away from under the punch it is held and moved by the guiding-rolls 23, while the longitudinal length of scrap is cut off by the shearing-rolls 24 and re-
5 moved from the machine by the scrap-conveying rolls 25.

The operating means for the punching mechanism and the operating means for the feeding mechanism need of course not be op-
10 erated from the same driving member or fly-wheel 12, as two of these could be had, one for each operating mechanism, and the claims should be construed accordingly.

What is claimed is—

15 1. In a machine of the character set forth, the combination of a punching mechanism, a sheet-feeding mechanism, means for oper-
ating the sheet-feeding mechanism, means for operating the punching mechanism nor-
20 mally inactive, a clutch controlling the operation of the operating means for the punch-
ing mechanism, a stop preventing the clutch from moving into its clutched position,
means for moving the stop out of the path
25 of the clutch once to each revolution, a latch for holding the stop out of the way of
the clutch, and means for moving the latch into position to hold the stop out of the way
of the clutch, so as to allow the clutch to be
30 thrown in, controlled by the advance of the sheet.

2. In a machine of the character set forth, the combination of a punching mechanism, a
sheet-feeding mechanism, means for oper-
35 ating the sheet-feeding mechanism, means for operating the punching mechanism normally
inactive, a clutch controlling the operation of the operating means for the punching mech-
anism, a stop preventing the clutch from
40 moving into its clutched position, means for moving the stop out of the path of the clutch
once to each revolution, a latch for holding the stop out of the way of the clutch so as to
allow the clutch to be thrown in, and a mem-
45 ber in the path of the sheet and operated by the advance of the same adapted to move the
latch into position to hold the stop out of the way of the clutch.

3. In a machine of the character set forth,
50 the combination of a punching mechanism, a sheet-feeding mechanism, means for operat-
ing the sheet-feeding mechanism, means for operating the punching mechanism normally
inactive, a clutch controlling the operation of the operating means for the punching mech-
anism, a stop preventing the clutch from
55 moving into its clutched position, means for moving the stop out of the path of the clutch
once to each revolution, a latch for holding the stop out of the way of the clutch so as to
60 allow the clutch to be thrown in, and a member in the path of the sheet and lifted by the
advance of the same adapted to move the latch into position to hold the stop out of the

way of the clutch so as to allow the clutch to 65
be thrown in.

4. In a machine of the character set forth, the combination of a punching mechanism, a
sheet-feeding mechanism, means for operat-
ing the sheet-feeding mechanism, means for 70
operating the punching mechanism normally inactive, a clutch controlling the operation of
the operating means for the punching mech-
anism, a stop preventing the clutch from
moving into its clutched position, means for 75
moving the stop out of the path of the clutch
once to each revolution, a latch for holding
the stop out of the way of the clutch, a mem-
ber in the path of the sheet and operated by
the advance of the same, and a connection 80
including in part a spring between the mem-
ber in the path of the sheet and the latch,
whereby power will be stored to subsequently
move the latch into position to hold the stop
out of the way of the clutch. 85

5. In a machine of the character set forth, the combination of a punching mechanism, a
sheet-feeding mechanism, means for operat-
ing the sheet-feeding mechanism, means for
operating the punching mechanism normally 90
inactive, a clutch controlling the operation of
the operating means for the punching mech-
anism, a stop preventing the clutch from
moving into its clutched position, means for
moving the stop out of the path of the clutch 95
once to each revolution, a latch for holding
the stop out of the way of the clutch, a mem-
ber in the path of the sheet and lifted by the
advance of the same, and a connection in-
cluding in part a spring between the member 100
in the path of the sheet and the latch, where-
by power will be stored to subsequently
move the latch into position to hold the stop
out of the way of the clutch.

6. In a machine of the character set forth, 105
the combination of a punching mechanism, a sheet-feeding mechanism, means for operat-
ing the sheet-feeding mechanism, means for
operating the punching mechanism normally
inactive, a clutch controlling the operation 110
of the operating means for the punching
mechanism, a stop preventing the clutch
from moving into its clutched position,
means for moving the stop out of the path of
the clutch once to each revolution, a latch for 115
holding the stop out of the way of the clutch
so as to allow the clutch to be thrown in, and a
member in the path of the sheet and actuated
by the advance of the sheet under the same
for moving the latch into position to hold the 120
stop out of the way of the clutch so as to al-
low the clutch to be thrown in, and when re-
leased by the advance of the sheet beyond
it to move the latch out of engagement with
the stop. 125

7. In a machine of the character set forth, the combination of a punching mechanism, a
sheet-feeding mechanism, means for operat-

ing the punching mechanism normally inactive, a clutch controlling the operation of the operating means for the punching mechanism, a stop preventing the clutch from moving into its clutched position, means for moving the stop out of the path of the clutch once to each revolution, a latch for holding the stop out of the way of the clutch, a member in the path of the sheet and actuated by the advance of the sheet under the same, and released by the advance of the sheet beyond it, and a connection, including in part a spring, between the member in the path of the sheet and the latch whereby power will be stored to subsequently move the latch into and out of position to hold the stop out of the way of the clutch.

8. In a machine of the character set forth, the combination of a punching mechanism, a sheet-feeding mechanism, means for operating the sheet-feeding mechanism, means for operating the punching mechanism normally inactive, punch-releasing means actuated by the advance of the sheet under the same for rendering the operating means for the punching mechanism active, and when released by the advance of the sheet beyond it for restoring the operating means of the punching mechanism to their normal position, and adjusting means for the punch-releasing means whereby the distance of the said punch-releasing means with reference to the punching mechanism can be varied.

9. In a machine of the character set forth, the combination of a punching mechanism, a sheet-feeding mechanism, means for operating the sheet-feeding mechanism, means for operating the punching mechanism normally inactive, a punch-releasing member in the path of the sheet and actuated by the advance of the sheet under the same for rendering the operating means for the punching mechanism active and when released by the advance of the sheet beyond it for restoring the operating means of the punching mechanism to their normal position, and adjusting means for the punch-releasing member whereby the distance of the said punch-releasing member with reference to the punching mechanism can be varied.

10. In a machine of the character set forth, the combination of a punching mechanism, a sheet-feeding mechanism, means for operating the sheet-feeding mechanism, means for operating the punching mechanism normally inactive, a clutch controlling the operation of the operating means for the punching mechanism, a stop preventing the clutch from moving into its clutched position, means for moving the stop out of the path of the clutch once to each revolution, a latch for holding the stop out of the way of the clutch, punch-releasing means actuated by the advance of the sheet under the same for moving the latch into posi-

tion to hold the stop out of the way of the clutch so as to allow the clutch to be thrown in, and when released by the advance of the sheet beyond it to move the latch out of engagement with the stop, and adjusting means for the punch-releasing means whereby the distance of the said punch-releasing means with reference to the punching mechanism can be varied.

11. In a machine of the character set forth, the combination of a punching mechanism, a sheet-feeding mechanism, means for operating the sheet-feeding mechanism, means for operating the punching mechanism normally inactive, a clutch controlling the operation of the operating means for the punching mechanism, a stop preventing the clutch from moving into its clutched position, means for moving the stop out of the path of the clutch once to each revolution, a latch for holding the stop out of the way of the clutch so as to allow the clutch to be thrown in, a punch-releasing member in the path of the sheet and actuated by the advance of the sheet under the same for moving the latch into position to hold the stop out of the way of the clutch so as to allow the clutch to be thrown in, and when released by the advance of the sheet beyond it to move the latch out of engagement with the stop, and adjusting means for the punch-releasing member whereby the distance of the said punch-releasing member with reference to the punching mechanism can be varied.

12. In a machine of the character set forth, the combination of a punching mechanism, a sheet-feeding mechanism, means for operating the sheet-feeding mechanism, means for operating the punching mechanism normally inactive, a clutch controlling the operation of the operating means for the punching mechanism, a stop preventing the clutch from moving into its clutched position, means for moving the stop out of the path of the clutch once to each revolution, a latch for holding the stop out of the way of the clutch, a punch-releasing member in the path of the sheet and actuated by the advance of the sheet under the same and released by the advance of the sheet beyond it, a connection, including in part a spring, between the punch-releasing member and the latch whereby power will be stored to subsequently move the latch into and out of position to hold the stop out of the way of the clutch, and adjusting means for the punch-releasing member whereby the distance of the said punch-releasing member with reference to the punching mechanism can be varied.

13. In a machine of the character set forth, the combination of a punching mechanism, a sheet-feeding mechanism, means for operating the sheet-feeding mechanism, means for operating the punching mechanism normally inactive, punch-releasing means actuated by

the advance of the sheet under the same for rendering the operating means for the punching mechanism active, and when released by the advance of the sheet beyond it for restoring the operating means of the punching mechanism to their normal position, adjusting means for the punch-releasing means whereby the distance of the said punch-releasing means with reference to the punching mechanism can be varied, and two gages located a variably predetermined distance from the punching mechanism and a variably predetermined distance from each other.

14. In a machine of the character set forth, the combination of a punching mechanism, a sheet-feeding mechanism, means for operating the sheet-feeding mechanism, means for operating the punching mechanism, normally inactive, a punch-releasing member in the path of the sheet and actuated by the advance of the sheet under the same for rendering the operating means for the punching mechanism active and when released by the advance of the sheet beyond it for restoring the operating means of the punching mechanism to their normal position, adjusting means for the punch-releasing member whereby the distance of the said punch-releasing member with reference to the punching mechanism can be varied, and two gages located a variably predetermined distance from the punching mechanism and a variably predetermined distance from each other.

15. In a machine of the character set forth, the combination of a punching mechanism, a sheet-feeding mechanism, means for operating the sheet-feeding mechanism, means for operating the punching mechanism normally inactive, a clutch controlling the operation of the operating means for the punching mechanism, a stop preventing the clutch from moving into its clutched position, means for moving the stop out of the path of the clutch once to each revolution, a latch for holding the stop out of the way of the clutch, punch-releasing means actuated by the advance of the sheet under the same for moving the latch into position to hold the stop out of the way of the clutch so as to allow the clutch to be thrown in, and when released by the advance of the sheet beyond it to move the latch out of engagement with the stop, adjusting means for the punch-releasing means whereby the distance of the said punch-releasing means with reference to the punching mechanism can be varied, and two gages located a variably predetermined distance from the punching mechanism and a variably predetermined distance from each other.

16. In a machine of the character set forth, the combination of a punching mechanism, a sheet-feeding mechanism, means for operating the sheet-feeding mechanism, means for operating the punching mechanism normally inactive, a clutch controlling the operation of

the operating means for the punching mechanism, a stop preventing the clutch from moving into its clutched position, means for moving the stop out of the path of the clutch once to each revolution, a latch for holding the stop out of the way of the clutch so as to allow the clutch to be thrown in, a punch-releasing member in the path of the sheet and actuated by the advance of the sheet under the same for moving the latch into position to hold the stop out of the way of the clutch so as to allow the clutch to be thrown in, and when released by the advance of the sheet beyond it to move the latch out of engagement with the stop, adjusting means for the punch-releasing member whereby the distance of the said punch-releasing member with reference to the punching mechanism can be varied, and two gages located a variably predetermined distance from the punching mechanism and a variably predetermined distance from each other.

17. In a machine of the character set forth the combination of a punching mechanism, a sheet-feeding mechanism, means for operating the punching mechanism normally inactive, a clutch controlling the operation of the operating means for the punching mechanism, a stop preventing the clutch from moving into its clutched position, means for moving the stop out of the path of the clutch once to each revolution, a latch for holding the stop out of the way of the clutch, a punch-releasing member in the path of the sheet and actuated by the advance of the sheet under the same, and released by the advance of the sheet beyond it, a connection, including in part a spring, between the punch-releasing member and the latch whereby power will be stored to subsequently move the latch into and out of position to hold the stop out of the way of the clutch, adjusting means for the punch-releasing member whereby the distance of the said punch-releasing member with reference to the punching mechanism can be varied, and two gages located a variably predetermined distance from the punching mechanism and a variably predetermined distance from each other.

18. In a machine of the character set forth, the combination of a punching mechanism, a sheet-feeding mechanism, means for operating the sheet-feeding mechanism, means for operating the punching mechanism normally inactive, punch-releasing means actuated by the advance of the sheet under the same for rendering the operating means for the punching mechanism active, and when released by the advance of the sheet beyond it for restoring the operating means of the punching mechanism to their normal position, adjusting means for the punch-releasing means whereby the distance of the said punch-releasing means with reference to the punching mechanism can be varied, two gages located

a variably predetermined distance from the punching mechanism and a variably predetermined distance from each other, and means for alternately raising said gages into operative position.

19. In a machine of the character set forth, the combination of a punching mechanism, a sheet-feeding mechanism, means for operating the sheet-feeding mechanism, means for operating the punching mechanism, normally inactive, a punch-releasing member in the path of the sheet and actuated by the advance of the sheet under the same for rendering the operating means for the punching mechanism active and when released by the advance of the sheet beyond it for restoring the operating means of the punching mechanism to their normal position, adjusting means for the punch-releasing member whereby the distance of the said punch-releasing member with reference to the punching mechanism can be varied, two gages located a variably predetermined distance from the punching mechanism and a variably predetermined distance from each other, and means for alternately raising said gages into operative position.

20. In a machine of the character set forth, the combination of a punching mechanism, a sheet-feeding mechanism, means for operating the sheet-feeding mechanism, means for operating the punching mechanism normally inactive, a clutch controlling the operation of the operating means for the punching mechanism, a stop preventing the clutch from moving into its clutched position, means for moving the stop out of the path of the clutch once to each revolution, a latch for holding the stop out of the way of the clutch, punch-releasing means actuated by the advance of the sheet under the same for moving the latch into position to hold the stop out of the way of the clutch so as to allow the clutch to be thrown in, and when released by the advance of the sheet beyond it to move the latch out of engagement with the stop, adjusting means for the punch-releasing means whereby the distance of the said punch-releasing means with reference to the punching mechanism can be varied, two gages located a variably predetermined distance from the punching mechanism and a variably predetermined distance from each other, and means for alternately raising said gages into operative position.

21. In a machine of the character set forth, the combination of a punching mechanism, a sheet-feeding mechanism, means for operating the sheet-feeding mechanism, means for operating the punching mechanism normally inactive, a clutch controlling the operation of the operating means for the punching mechanism, a stop preventing the clutch from moving into its clutched position, means for moving the stop out of the

path of the clutch once to each revolution, a latch for holding the stop out of the way of the clutch so as to allow the clutch to be thrown in, a punch-releasing member in the path of the sheet and actuated by the advance of the sheet under the same for moving the latch into position to hold the stop out of the way of the clutch so as to allow the clutch to be thrown in, and when released by the advance of the sheet beyond it to move the latch out of engagement with the stop, adjusting means for the punch-releasing member whereby the distance of the said punch-releasing member with reference to the punching mechanism can be varied, two gages located a variably predetermined distance from the punching mechanism and a variably predetermined distance from each other, and means for alternately raising said gages into operative position.

22. In a machine of the character set forth, the combination of a punching mechanism, a sheet-feeding mechanism, means for operating the punching mechanism normally inactive, a clutch controlling the operation of the operating means for the punching mechanism, a stop preventing the clutch from moving into its clutched position, means for moving the stop out of the path of the clutch once to each revolution, a latch for holding the stop out of the way of the clutch, a punch-releasing member in the path of the sheet and actuated by the advance of the sheet under the same, and released by the advance of the sheet beyond it, a connection, including in part a spring, between the punch-releasing member and the latch whereby power will be stored to subsequently move the latch into and out of position to hold the stop out of the way of the clutch, adjusting means for the punch-releasing member whereby the distance of the said punch-releasing member with reference to the punching mechanism can be varied, two gages located a variably predetermined distance from the punching mechanism and a variably predetermined distance from each other, and means for alternately raising said gages into operative position.

23. In a machine of the character set forth, the combination of a punching mechanism, a sheet-feeding mechanism, means for operating the sheet-feeding mechanism, means for operating the punching mechanism normally inactive, a clutch controlling the operation of the operating means for the punching mechanism, a stop preventing the clutch from moving into its clutched position, means for moving the stop out of the path of the clutch once to each revolution, a latch for holding the stop out of the way of the clutch, means for moving the latch into position to hold the stop out of the way of the clutch, so as to allow the clutch to be thrown in, controlled by the advance of the sheet,

and means for moving the latch out of engagement with the stop at will.

24. In a machine of the character set forth, the combination of a punching mechanism, a sheet-feeding mechanism, means for operating the sheet-feeding mechanism, means for operating the punching mechanism normally inactive, a clutch controlling the operation of the operating means for the punching mechanism, a stop preventing the clutch from moving into its clutched position, means for moving the stop out of the path of the clutch once to each revolution, a latch for holding the stop out of the way of the clutch so as to allow the clutch to be thrown in, a member in the path of the sheet and operated by the advance of the same adapted to move the latch into position to hold the stop out of the way of the clutch, and means for moving the latch out of engagement with the stop at will.

25. In a machine of the character set forth, the combination of a punching mechanism, a sheet-feeding mechanism, means for operating the sheet-feeding mechanism, means for operating the punching mechanism normally inactive, a clutch controlling the operation of the operating means for the punching mechanism, a stop preventing the clutch from moving into its clutched position, means for moving the stop out of the path of the clutch once to each revolution, a latch for holding the stop out of the way of the clutch, a member in the path of the sheet and operated by the advance of the same, a connection including in part a spring between the member in the path of the sheet and the latch, whereby power will be stored to subsequently move the latch into position to hold the stop out of the way of the clutch, and means for moving the latch out of engagement with the stop at will.

26. In a machine of the character set forth, the combination of a punching mechanism, a sheet-feeding mechanism, means for operating the sheet-feeding mechanism, means for operating the punching mechanism normally inactive, a clutch controlling the operation of the operating means for the punching mechanism, a stop preventing the clutch from moving into its clutched position, means for moving the stop out of the path of the clutch once to each revolution, a latch for holding the stop out of the way of the clutch so as to allow the clutch to be thrown in, a member in the path of the sheet and lifted by the advance of the same adapted to move the latch into position to hold the stop out of the way of the clutch so as to allow the clutch to be thrown in, and means for moving the latch out of engagement with the stop at will.

27. In a machine of the character set forth, the combination of a punching mechanism, a sheet-feeding mechanism, means

for operating the sheet-feeding mechanism, means for operating the punching mechanism normally inactive, a clutch controlling the operation of the operating means for the punching mechanism, a stop preventing the clutch from moving into its clutched position, means for moving the stop out of the path of the clutch once to each revolution, a latch for holding the stop out of the way of the clutch, means actuated by the advance of the sheet under the same for moving the latch into position to hold the stop out of the way of the clutch so as to allow the clutch to be thrown in, and when released by the advance of the sheet beyond it to move the latch out of engagement with the stop, and means for moving the latch out of engagement with the stop at will.

28. In a machine of the character set forth, the combination of a punching mechanism, a sheet-feeding mechanism, means for operating the sheet-feeding mechanism, means for operating the punching mechanism normally inactive, a clutch controlling the operation of the operating means for the punching mechanism, a stop preventing the clutch from moving into its clutched position, means for moving the stop out of the path of the clutch once to each revolution, a latch for holding the stop out of the way of the clutch so as to allow the clutch to be thrown in, a member in the path of the sheet and actuated by the advance of the sheet under the same for moving the latch into position to hold the stop out of the way of the clutch so as to allow the clutch to be thrown in, and when released by the advance of the sheet beyond it to move the latch out of engagement with the stop, and means for moving the latch out of engagement with the stop at will.

29. In a machine of the character set forth, the combination of a driving and a driven member, a clutch carried by the driving member normally tending to move into clutched position on the driven member, a stop normally in the path of the clutch and preventing the clutch from moving into its clutched position, a rotating cam, a roll connected to the said stop and adapted to move the latter out of the path of the clutch, a member sliding in a bracket carried by said roll, provided with a notch and having a spring tending to move the roll up against the cam, a latch adapted to engage in the notch of the sliding member, a pivoted lever, connections between the pivoted lever and the latch, and a spring interposed in said connection.

30. In a machine of the character set forth, the combination of two gages, two cams for raising said gages having a plurality of teeth and notches arranged so that a notch in one cam comes opposite a tooth on the other cam, a pivoted lever carrying said

cams, means for elevating said cams, and means for turning said cams as they are raised so that the teeth on the cams alternately raise the gages when the cams are elevated.

31. In a machine of the character set forth, the combination of superposed feed-rolls, a pivoted shaft carrying the upper of the superposed feed-rolls, two gages and means for simultaneously raising the shaft carrying the upper of the feed-rolls and one of said gages alternately.

32. In a machine of the character set forth, the combination of superposed feed-rolls, a pivoted shaft carrying the upper of the superposed feed-rolls, two gages and means for simultaneously raising the shaft carrying the upper of the feed-rolls and one of said gages alternately, a locking mechanism holding the shaft in its raised position, operating means for imparting an intermit-

tent motion in one direction to the feed-rolls, and means actuated by the operating means of the feed-rolls for moving the shaft down when the rolls are at rest.

33. In a machine of the character set forth, the combination of superposed feed-rolls, a shaft carrying the upper of the superposed feed-rolls, means for raising the shaft carrying the upper of the feed-rolls, a locking mechanism for holding the shaft in its raised position, means for imparting an intermittent motion in one direction to the feed-rolls, and means actuated by the operating means of the feed-rolls for moving the shaft down when the rolls are at rest.

Signed at Brooklyn, New York, this 23^d day of February, 1905.

JAMES A. EDEN, JR.

Witnesses:

OTTO S. BEYER,

WILLIAM KLOCKE.