

Sept. 20, 1960

R. F. SHOUP
VOTING MACHINE

2,953,296

Filed Oct. 7, 1957

4 Sheets-Sheet 1

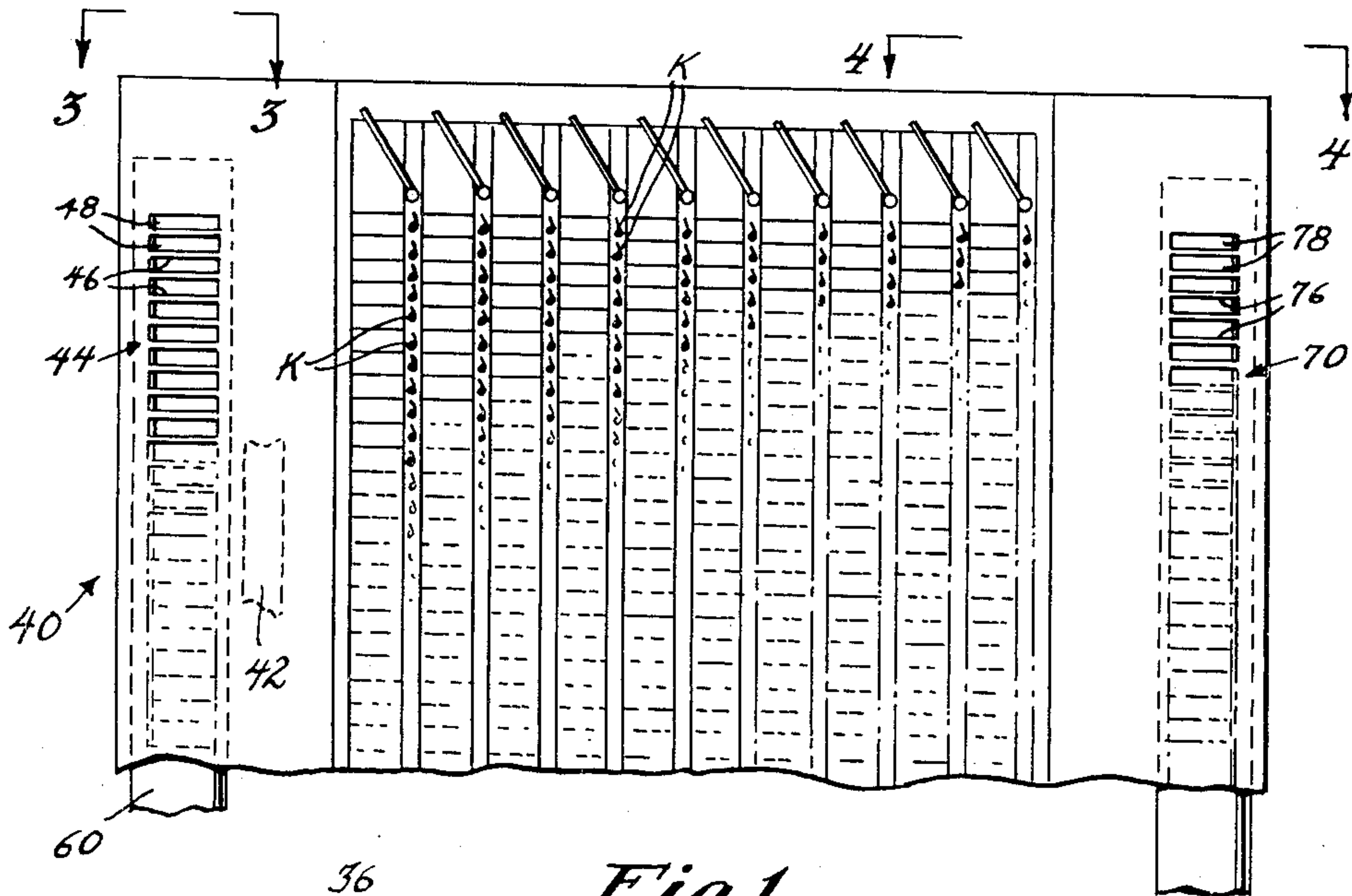


Fig. 1.

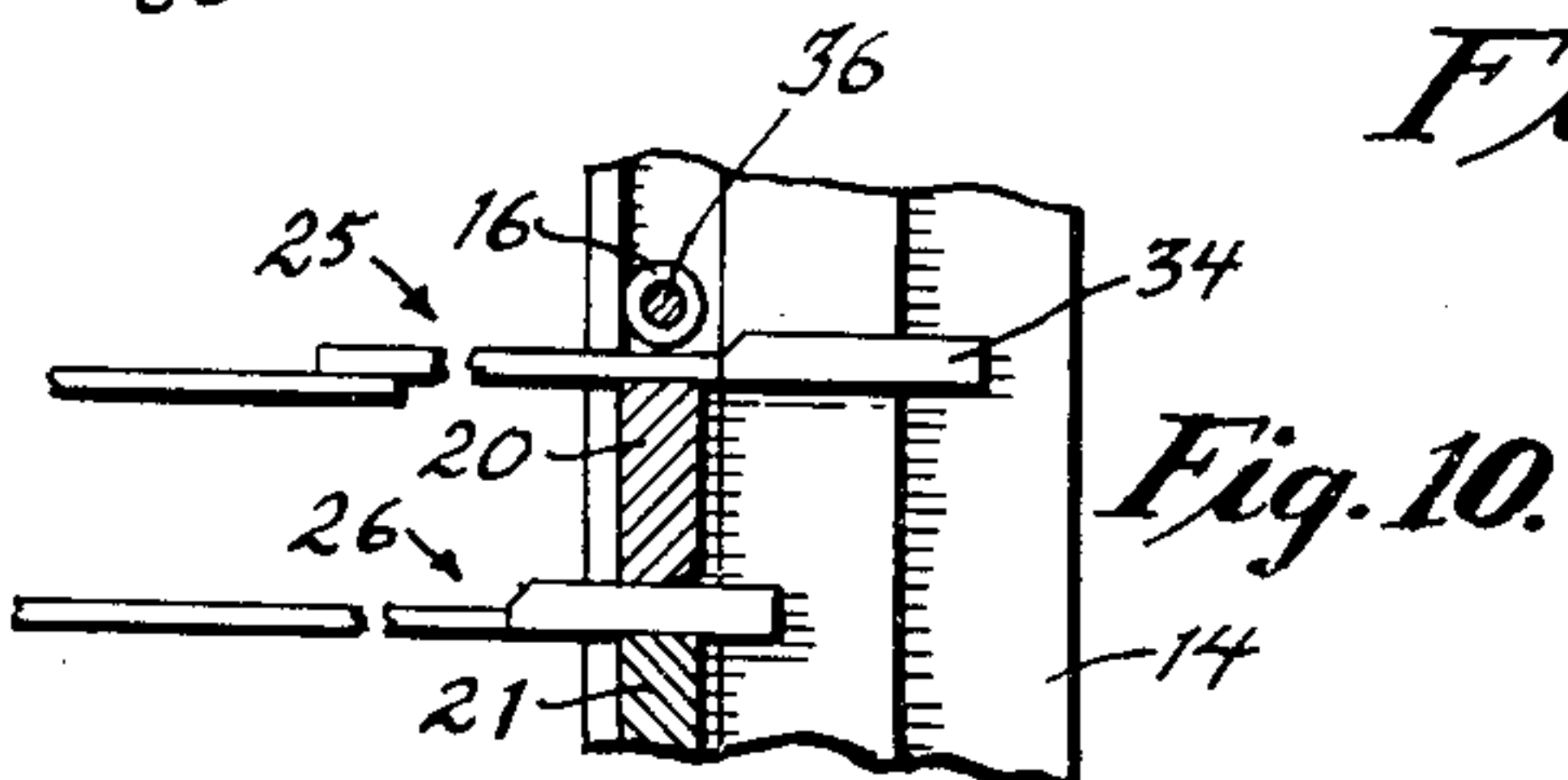


Fig. 10.

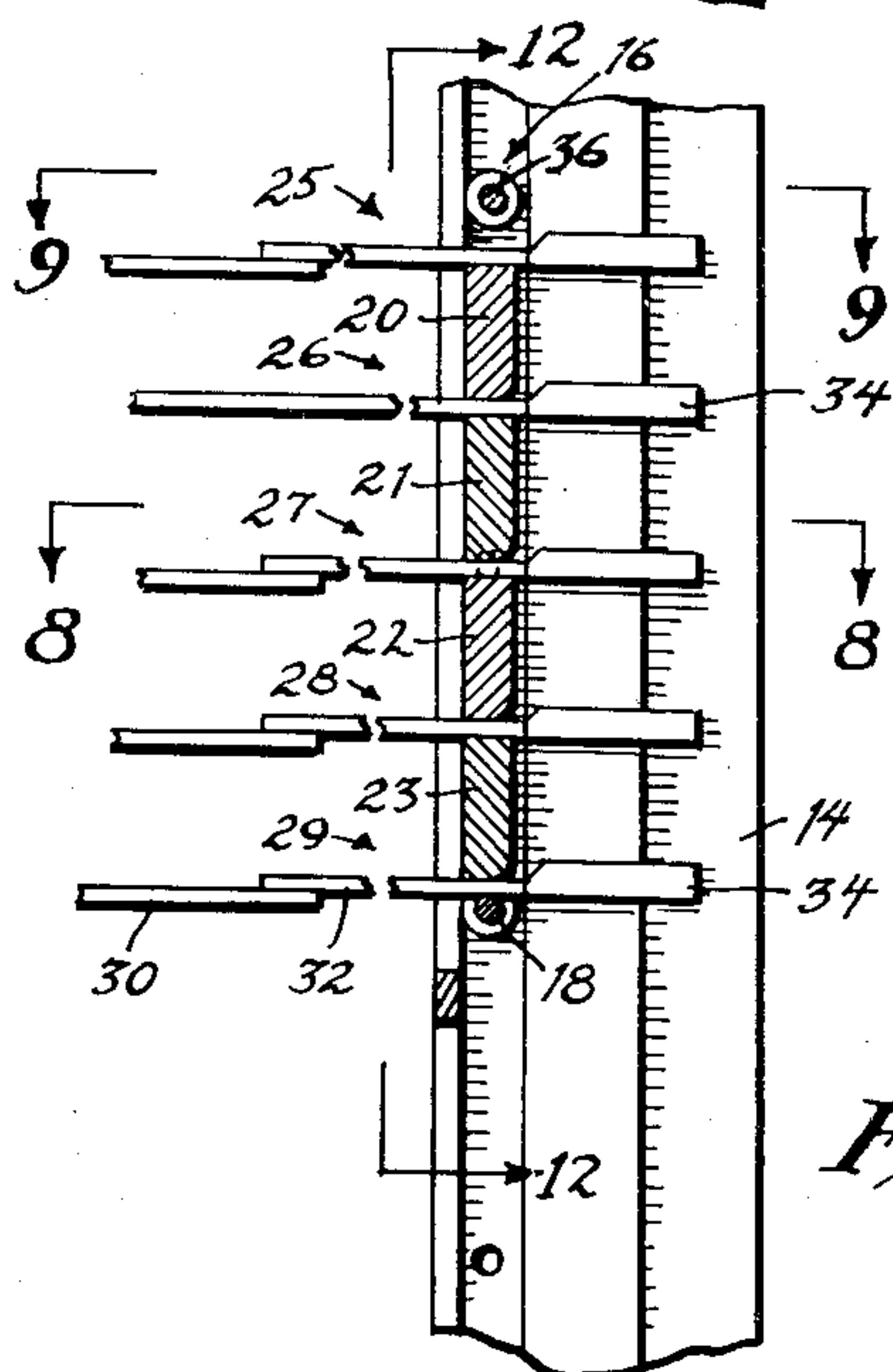


Fig. 7.

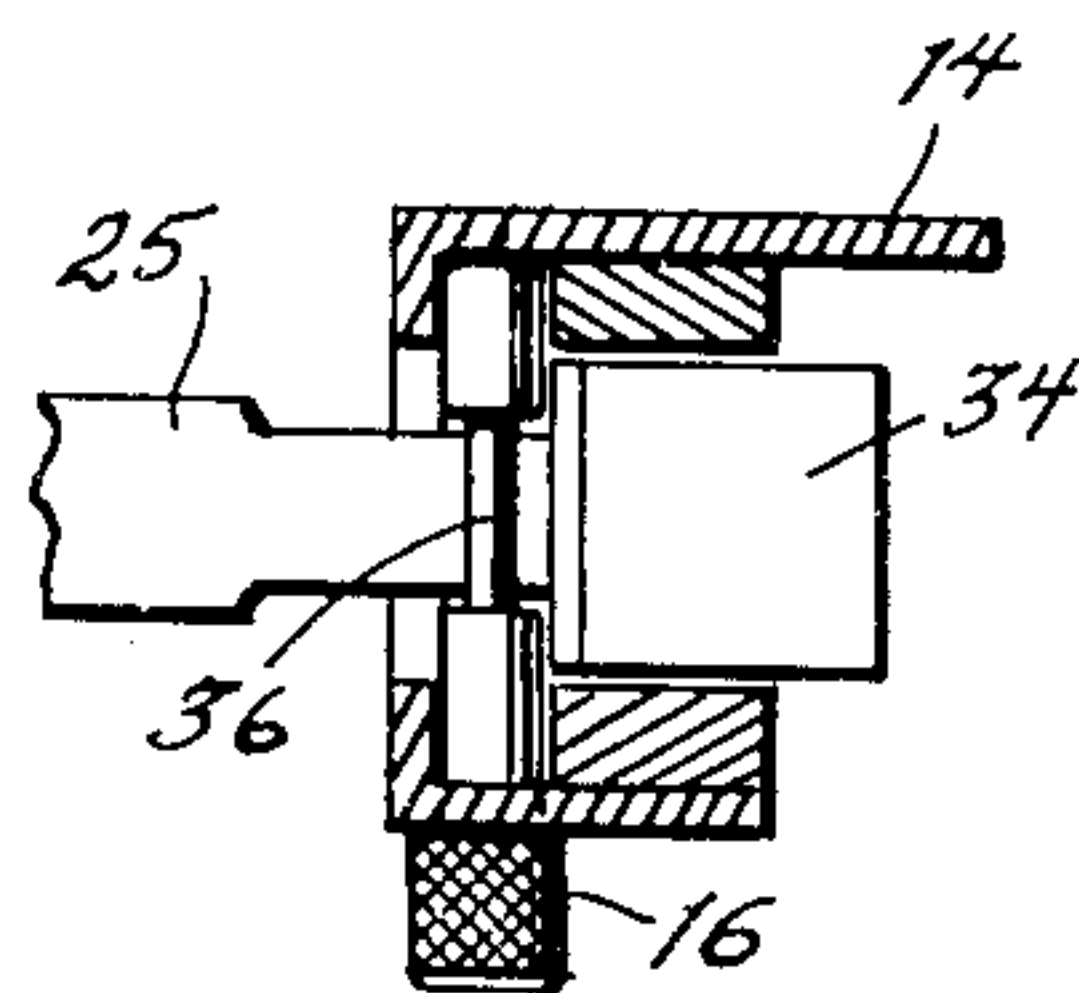


Fig. 9.

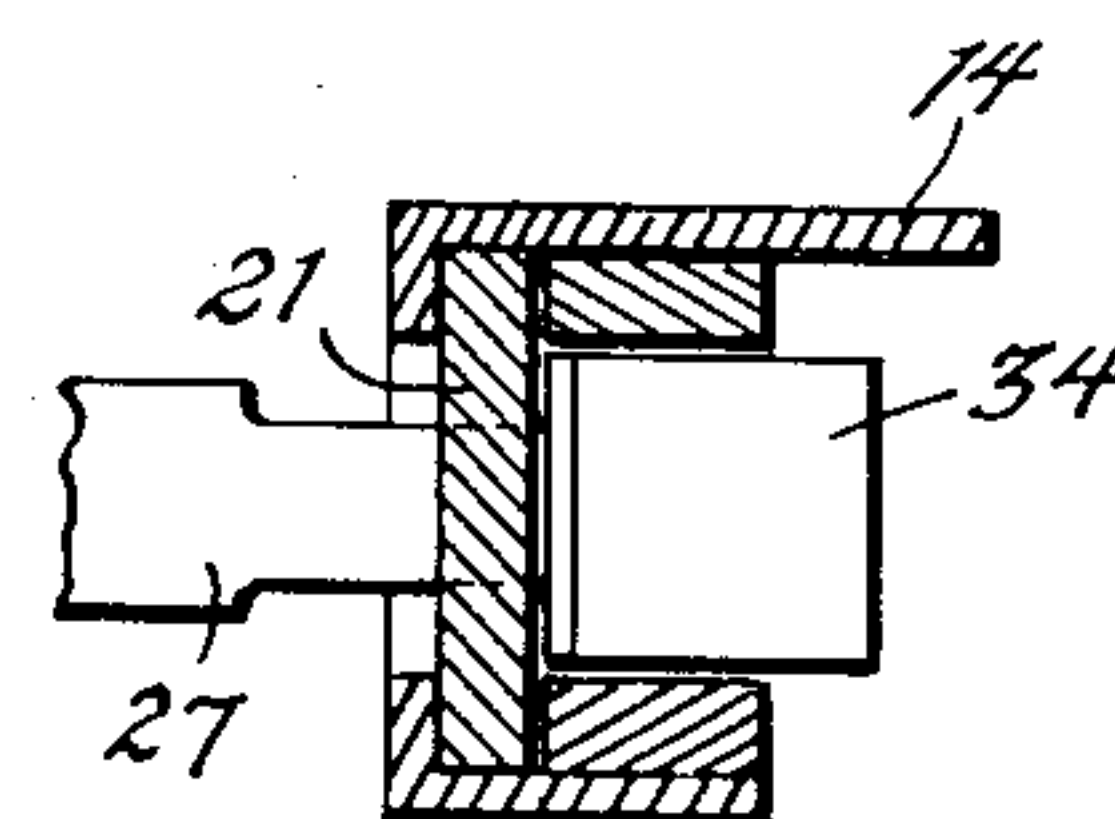


Fig. 8.

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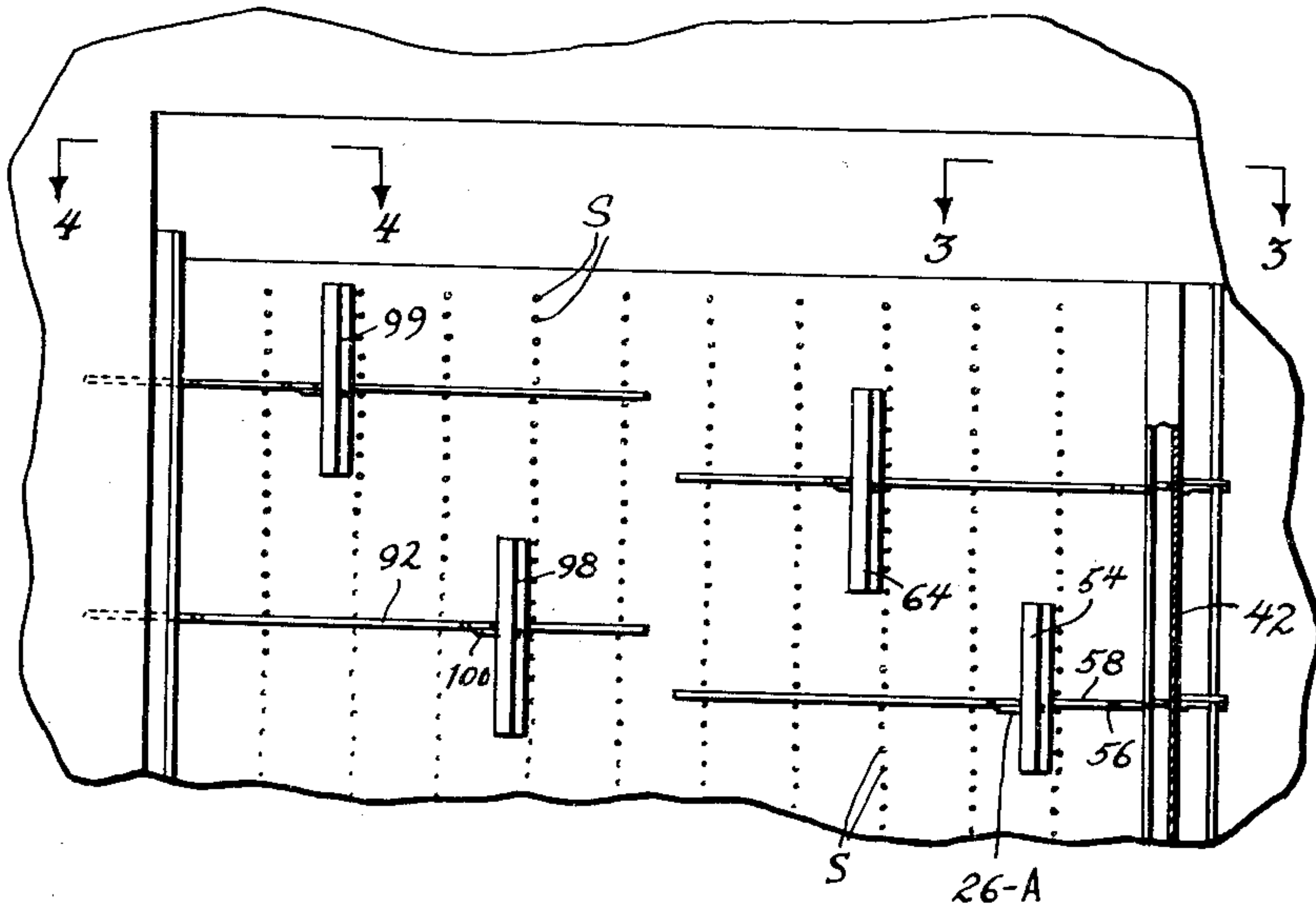


Fig. 2.

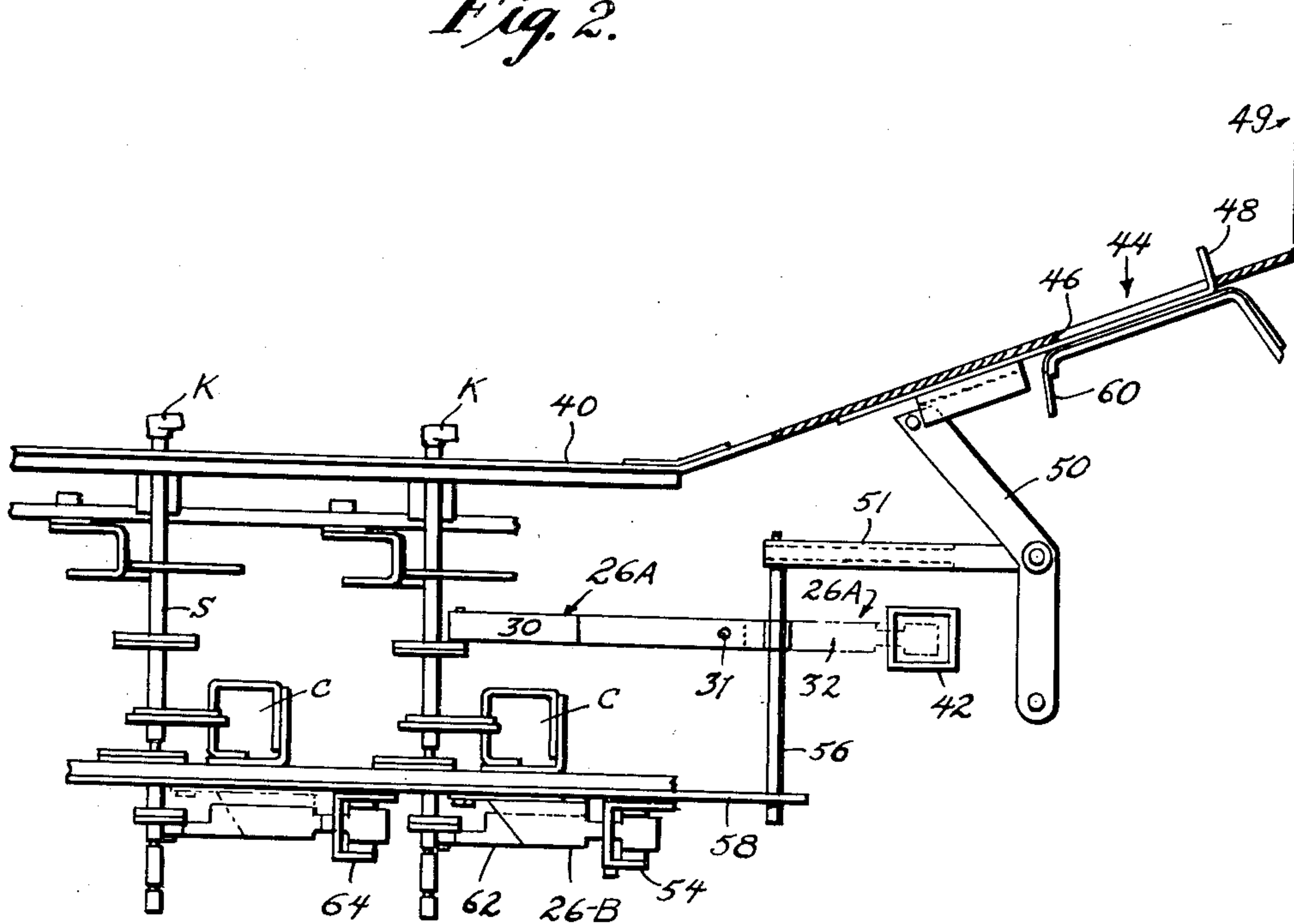


Fig. 3.

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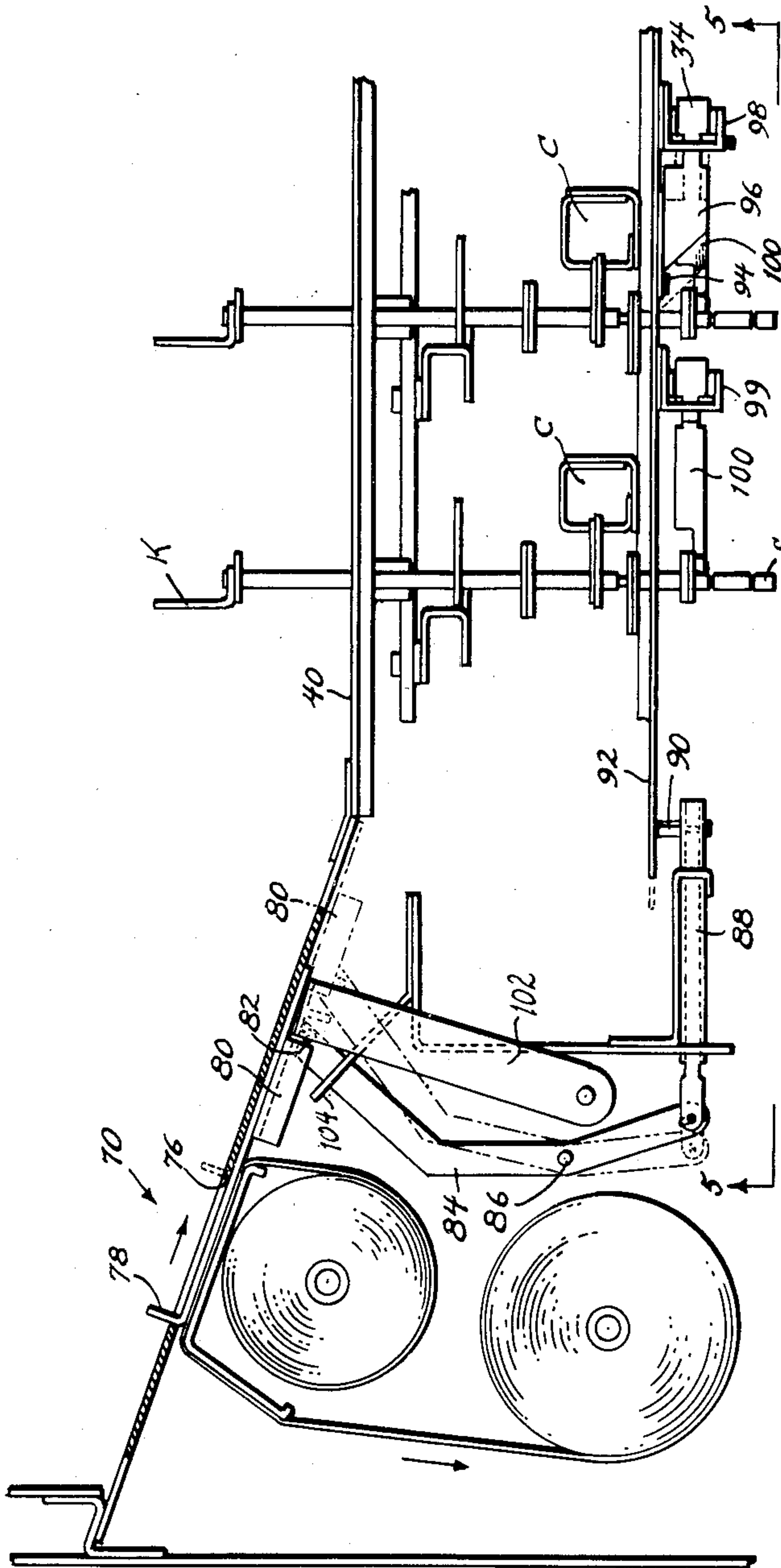
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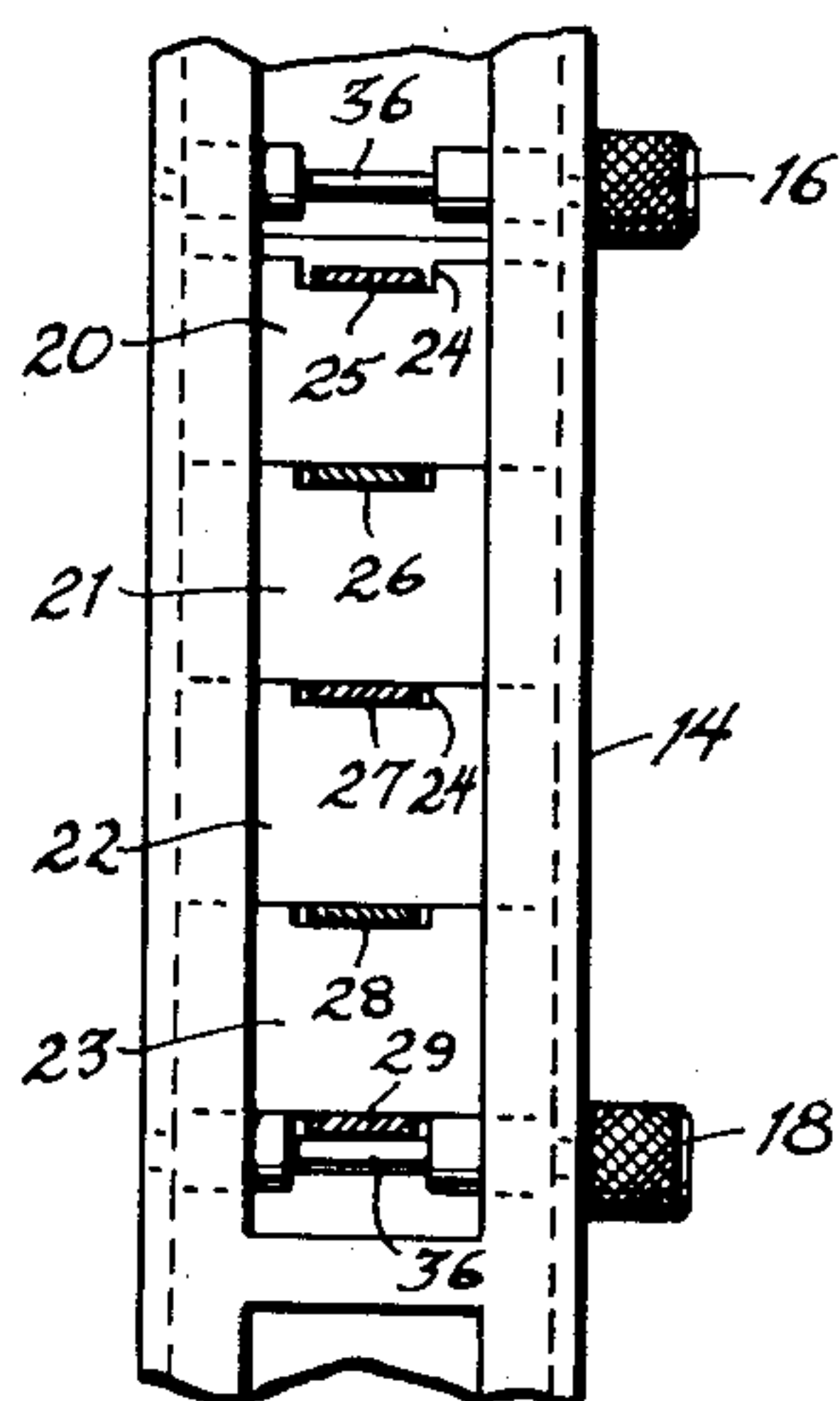


Fig. 12.

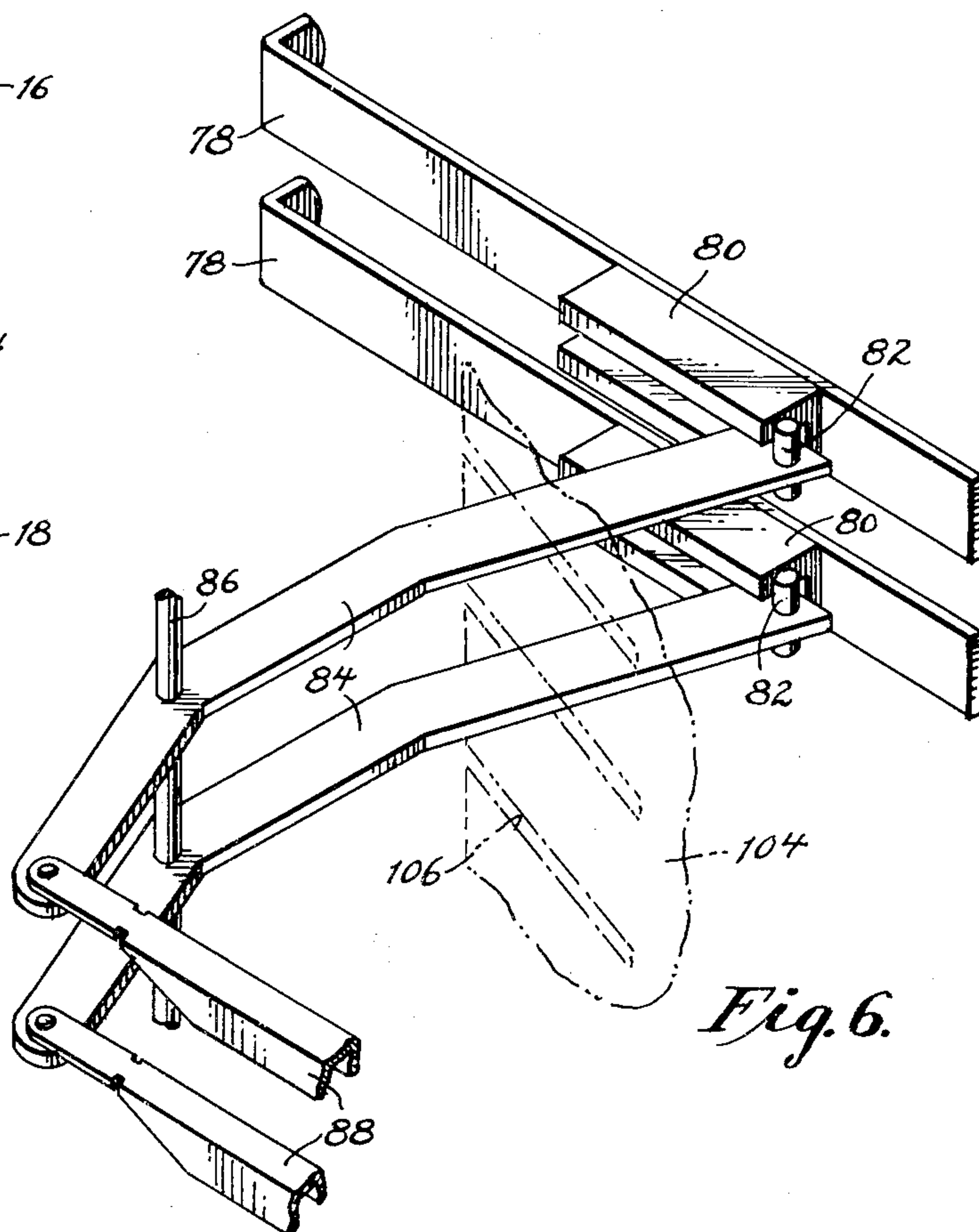


Fig. 6.

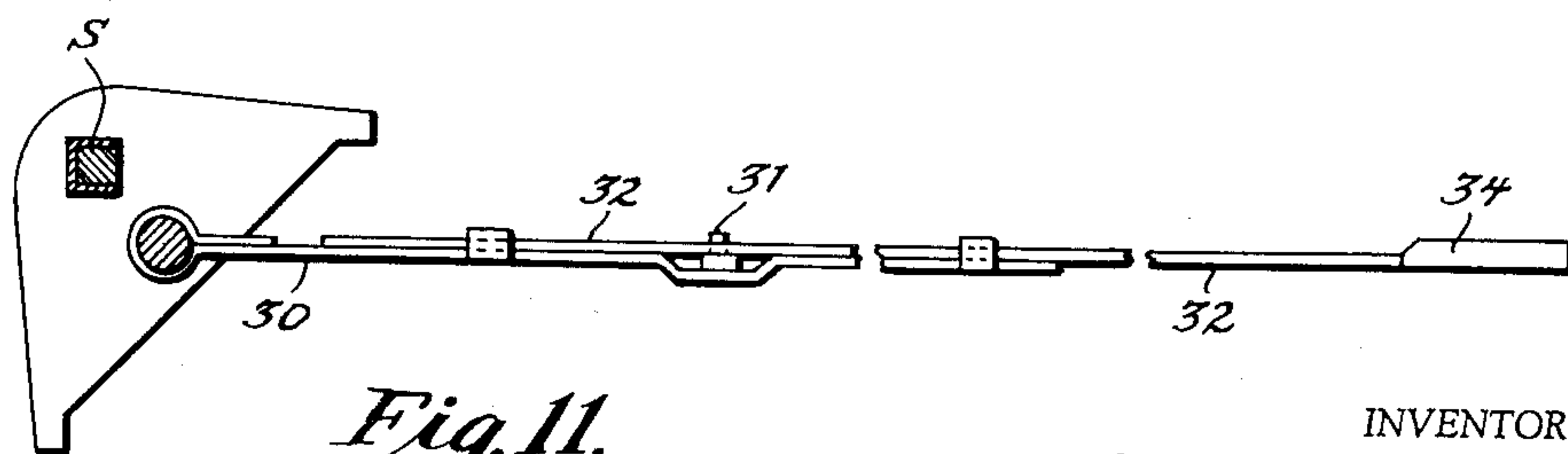


Fig. 11.

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2,953,296

VOTING MACHINE

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7 Claims. (Cl. 235—55)

Voting machines of the type shown, for example, in Shoup Patent No. 2,054,103, of September 15, 1936; Shoup Patent No. 2,329,005 of September 7, 1943, and Shoup Patent No. 2,541,553, of February 13, 1951, include a number of mechanically operated voting spindles which record a vote cast for one candidate or another. But, because the voters may wish to vote for candidates to whom no mechanically operated voting spindles are assigned, the machines referred to also included a mechanism which enabled voters to write the names of candidates on a paper ballot. This mechanism is known as the person choice column, and is located adjacent to, and is tied in with, the main interlock, so that, when a voter elects to cast a vote by writing the name of a candidate on the paper ballot, he could not also operate the mechanical voting spindle assigned to another candidate running for the same office. This meant that whenever a personal choice vote was cast, all of the pull straps in that particular section of the interlock were immobilized and, consequently, all the voting spindles connected to said straps were locked. While this arrangement gave the machine some flexibility, it also limited the voting capacity of the machine. When the offices to be filled, or questions to be voted on, or candidates running, were relatively few, this limitation of the voting capacity did not present any problems. But, because of the increase in the number of offices for which candidates are to be elected, and the increase in the number of candidates who run independently of any major, recognized political party, and the increase in the number of questions to be voted on, the machines above referred to are no longer adequate. Nor is it feasible further to increase the number of candidates, or questions, which can be voted on by increasing the number of voting spindles or voting columns. This is due to the fact that the voting machines are already about as large and as heavy as it is practical to make them, and because it is necessary that the average voter be able conveniently to reach the uppermost and the lowermost voting keys.

It is therefore one object of my invention to increase the number of candidates, or questions, which can be voted on by the voting machine without increasing the number of voting spindles, or voting columns without increasing the length of the interlock, and without increasing the overall dimensions or the cost of the machine.

Since the requirements in different voting districts vary, and since the requirements in the same district also may vary from time to time, it is not feasible to equip all voting machines with all of the parts required to adapt the machines for all conceivable requirements. To do so will increase the weight of the machine and make it more difficult to handle, and it will increase the cost of the machine to voting districts whose requirements are satisfactorily met by the number of voting columns found in voting machines of the type now in use.

A further object of the invention is to provide means for increasing the versatility of the machine so as to make

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it readily adaptable to the requirements of various districts and to the laws of various states.

A still further object of the invention is to produce a standard machine which is completely assembled and ready for use under standard conditions, but which can be readily adapted to the increased requirements of particular voting districts by the mere addition of parts and with negligible adjustment of other parts.

A still further object of the invention is to produce a voting machine to which the parts needed to adapt it to particular requirements can be easily and quickly added "on the job" or at the place where the machine is to be used, and after the local requirements have been ascertained. This means that a machine having a standard number of voting spindles, or voting columns can be shipped without the weight of the parts which may be needed in one voting district, but not in another voting district, and it means that a machine purchased by a given voting district can later on be provided with auxiliary interlocks as election requirements in said district increase, by merely installing the needed parts and making the necessary adjustments.

Also, in the machines disclosed in the above mentioned Shoup patents, the surface of the personal choice column, and of the paper ballot supported thereby, constituted an extension of the front of the machine, that is to say, the surface of the paper on which the voter had to write, was in the same plane as the surface of the machine which carried the voting keys, and the outer edge of the personal choice column formed a substantially right angle with the side wall of the machine. Due to the small width of the personal choice column, and due to its right angular relation to the adjacent side of the machine, the surface of the ballot on which the voter had to write could not be readily and comfortably reached.

It is, therefore, a still further object of this invention to produce an improved arrangement whereby the surface of the ballot on which the voter must write is so disposed as to form an obtuse angle with the front of the machine and with the adjacent side wall of the machine, whereby said surface can be readily and comfortably reached.

These and other objects are attained by my invention as set forth in the following specification and as illustrated in the accompanying drawings in which:

Fig. 1 is a fragmentary and highly diagrammatic front elevational view of a voting machine embodying my invention.

Fig. 2 is a similar, rear elevational view of the machine.

Fig. 3 is an enlarged, fragmentary view partly in top plan and partly in horizontal section, looking in the direction of line 3—3 on Fig. 1 and showing details of the personal choice operating mechanism shown at the left hand end of the voting machine as viewed in Fig. 1.

Fig. 4 is similar to Fig. 3, but looking in the direction of line 4—4 on Fig. 1 and showing details of the personal choice mechanism shown at the right hand of the machine as viewed in Fig. 1.

Fig. 5 is a fragmentary, elevational view looking in the direction of line 5—5 on Fig. 4.

Fig. 6 is an enlarged fragmentary, perspective view showing details of the structure of the personal choice operating mechanism shown at the left hand portion of Fig. 4.

Fig. 7 is a fragmentary, vertical, sectional view, showing a portion of one form of interlock, which can be used in carrying out my invention, and showing the positions of the parts before any vote has been cast.

Fig. 8 is a horizontal sectional view taken on line 8—8 in Fig. 7.

Fig. 9 is a fragmentary horizontal sectional view looking in the direction of line 9—9 on Fig. 7.

Fig. 10 is a view of a portion of Fig. 7 showing the position of the parts after one vote has been cast and the manner in which this prevents the operation of all of the other voting spindles which are operatively connected to this portion of the interlock which is shown in Fig. 7.

Fig. 11 is a highly fragmentary and diagrammatic side elevational view of a separable pull strap which is used in carrying out the invention.

Fig. 12 is an enlarged vertical sectional view taken on line 12—12 on Fig. 7.

The structure and operation of the interlock, as such, form no part of the present invention and are fully disclosed in the above mentioned, and in other, Shoup patents. But, because the structure of the interlock illustrated in describing the invention is slightly different from the structures of the interlocks shown in the prior Shoup patents, and in order to obviate, or to minimize, reference to prior patents, the structure and operation of the present interlock are illustrated and described to the extent necessary for proper understanding of the present invention.

In the following specification, only so much of the voting machine will be described as is necessary for a proper understanding of the subject matter of the present invention and the drawings, in so far as they relate to the parts of the machine which form no part of the present invention, are fragmentary and diagrammatic.

As best shown in Figs. 7 to 12, the interlock used in connection with the present invention includes a vertical channel 14 which is divided by fixed horizontal pins 16 and 18 into a series of superimposed sections, each of which is adapted to accommodate a number of spacer blocks 20, 21, 22 and 23, which, as shown in Fig. 12, rest, one on top of the other, and the undersides of which are provided with recesses 24, which movably accommodate the shanks of pull straps 25, 26, 27, 28 and 29. In prior practice, each machine of this type has ten vertical columns of mechanically operated voting spindles and a vertical column of personal choice, or manually operable voting spindles, and each section of the interlock, such as the section defined by pins 16 and 18, has the desired number pull straps, one going to each of the voting columns. In other words, in this regard, the drawings are illustrative, not descriptive.

Pull straps 25 to 29 are of the separable or "come-apart" type, the structure of which is fully disclosed in Shoup Patent No. 2,520,740. Again, in order to make reference to this patent unnecessary, the structure of the separable pull straps is described to the extent necessary for proper understanding of the present invention. As shown in Fig. 11, each pull strap includes a shank 30, the left hand end of which, as viewed in Figs. 7 and 11, is operatively connected to a voting key K, which operates one of the voting spindles S, and the other end of which is detachably secured at 31 to another shank 32, the right hand end of which terminates in an enlarged wedge 34. Shanks 30 and 32 of Fig. 11 correspond to shanks 61(a) and 61(b), respectively, of Fig. 2 of Shoup Patent No. 2,520,740, and may be detachably secured in the manner shown in said patent or in any other desired manner.

It will be seen from Figs. 7 to 12 that the center portions of pins 16 and 18 are reduced, as at 36, so as to accommodate the shank of lowermost straps 29, that there is a recess R in the upper edge of each spacer block to accommodate the shank of a strap and the thickness of one wedge 34 of one strap. Therefore, when the voting key which corresponds to a strap, such, for example, as strap 26, is turned to cast a vote, pull strap 26 will be moved to the position of Fig. 10 in which its wedge 34 will be positioned between blocks 20 and 21 and will raise uppermost block 20 and the shank of strap 25 thereabove into engagement with the enlarged portion of upper pin 16 as shown at the top of Fig. 10. In this

position, wedge 34 of strap 26 takes up all of the previously available space or play between the shank of strap 25 immediately thereabove and pin 16. In other words, if a strap in any interlock section is moved to the position of strap 26 in Fig. 10, the play in this section of the interlock will be taken up and, therefore, no other strap in this section of the interlock can be moved from the position of Fig. 7 to the position of Fig. 10. Since the shanks 30 of the pull straps in this section of the interlock are connected to corresponding voting keys which operate the voting spindles in the various voting columns, it follows that all such keys and voting spindles will be immobilized. For example, if five candidates are running for the office of Sheriff, and if these candidates are represented by pull straps 25, 26, 27, 28 and 29, a vote cast for any one of these candidates by moving pull strap 26 in the manner above described, will immobilize all of the remaining pull straps in this section of the interlock. This is true whether the voter casts his vote by turning one of the voting keys or whether the voter uses the personal choice column as disclosed in my above mentioned patents. This immobilizing of nine out of ten pull straps and their corresponding voting spindles seriously limited the number of candidates, or questions, which can be voted on by the machine.

As above stated, the increase in the number of offices and the different and changing requirements of different voting districts render machines of the type referred to inadequate except for elections where the number of offices to be filled and the number of questions to be voted on, etc., are limited. The trend, however, is in the opposite direction, and, in order to meet the increasing requirements, the capacity and adaptability of the machine must be greatly increased. In order to do so, I provide the structure which is best illustrated in Figs. 3 and 4.

In Fig. 3 there is shown the front 40 of the machine on which are located the voting keys K which are carried by spindles S which, when turned about their axes, operate vote counters C which form no part of the invention and are therefore not described. Behind the left hand end of the machine, as viewed in Fig. 1 (the right hand end as viewed in Fig. 3) is the main interlock 42 which corresponds to the interlock shown in Figs. 7 and 8 of Shoup Patent No. 2,054,103, albeit the interlock shown in Figs. 7 to 10 of the present invention uses spacer blocks 20, 21, 23, etc., instead of rollers 31 of Figs. 7 and 8 of said patent. Also shown in Fig. 3 of the present application is a write-in, or personal choice, column 44 which corresponds to the personal choice column shown at the left hand portion of Fig. 1 of Shoup Patent No. 2,054,103. Again, in order to make reference to this, or to other Shoup patent unnecessary, it is pointed out that this personal choice column includes a series of vertically spaced slots 46, each of which is covered by a slide shutter 48. Each slide shutter 48 is connected by suitable links 50 and 51 to the personal choice pull strap 26A by a short pin which is not shown in the drawings herein, but which is the same as pin 161a in Fig. 9 of Shoup Patent No. 2,498,380 of February 21, 1950. The connection of slide shutter 48 to pull strap 26A is such that, when the slide is moved to expose the paper ballot, pull strap 26A is moved to the left in Fig. 3, or to the position of pull strap 26 in Fig. 10, and consequently, all straps in that particular portion of the interlock and the voting keys connected thereto are immobilized thus limiting the number of candidates, or questions, that can be voted on at one time.

In order to overcome this difficulty, I first provide an auxiliary interlock 54 which is constructed like that portion of main interlock 42 which is shown between pins 16 and 18 in Fig. 7 and which should be assumed to contain the required number of pull straps and spacer blocks. It also must be assumed that the shanks of the

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pull straps in auxiliary interlock 54 are connected to the same voting spindles to which pull straps 25 to 29 of Fig. 7, in interlock 42 are connected. I next remove the short pin above referred to and which, in conventional machines, connected pull strap 26A to link 51 to disconnect the personal choice shutter 48 from the corresponding pull strap in main interlock 42 and, in place of the discarded short pin, I use pin 56 which is long enough to connect link 51 to slide bar 58 to which is connected a pull strap 26B which is similar to pull strap 26A. By this arrangement, when slide shutter 48 is moved to the left in Fig. 3 to uncover the paper ballot 60, slide bar 58 is also moved to the left, and since pull strap 26B is secured to bar 58, pull strap 26B will be moved to the left in Fig. 3, or to a position which corresponds to the position of pull strap 26 in Fig. 10. Therefore, only the other pull straps in auxiliary interlock 54, will be immobilized and the voting spindles to which these pull straps are connected will be locked.

In order that a voter who does not wish to use the personal choice, or write in, column 44 may still be able to vote mechanically by turning the appropriate key, the corresponding mechanically operable spindles are also provided with pull straps 62 which are similar to the pull straps of Figs. 7 and 10 of interlock 42, but the wedges of which are located in the auxiliary interlock 54. By this means, a voter can ignore the personal choice mechanism and can vote mechanically by turning the appropriate key. It will be understood that, when a particular strap 62 is moved to the left in Fig. 3, all of the pull straps in auxiliary interlock 54 will be immobilized in the manner, and for the purpose set forth in connection with Fig. 7.

Since personal choice shutter 14 is now disconnected from pull strap 26A in main interlock 42, it follows that this particular interlock section is now free and available for use in connection with the voting keys of some other voting column. This can be done by connecting the interlock section 42 to voting spindles in other columns in the manner shown in Fig. 7. In other words the number of interlock sections and, hence, the number of candidates or questions to be voted on by the machine is increased. In Fig. 2, I show only two auxiliary interlocks 54 and 64 which may be connected to mechanical voting spindles or to the conventional personal choice mechanism 44 by means of pins 56 and slide bars 58. But it is to be understood that any number of such auxiliary interlocks can be used and suitably interconnected in the manner described thus increasing the number of available interlocks. In addition to increasing the number of interlocks of the machine, the arrangement described also increases the flexibility or adaptability of the voting machine by making it possible to provide for a wider use of personal choice. For example, and assuming that each vertical voting column of the voting machine has 50 voting spindles in each vertical column, and assuming that the pull straps of the spindles are confined in a given number of interlock sections, it follows that, every time one vote is cast for one candidate in one column, all of the other pull straps in the particular interlock section and their corresponding voting spindles will be immobilized. By providing auxiliary interlocks 54 and 64, etc., this limitation is removed and the capacity of the machine can be doubled.

In addition to increasing the capacity and versatility of the machine in the manner thus far described, I further increase the versatility and capacity of the machine by providing an auxiliary personal choice column 70 at the right hand end of the machine, as viewed in Fig. 1, and by providing a number of auxiliary interlock sections for cooperating therewith. Due to the absence of a main interlock at this end of the machine, the structure and operation of the personal choice column 70 are slightly different from the structure and operation of the auxiliary interlocks described in connection with main inter-

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lock 42. The mechanism for operating the second personal choice column 70 is shown in Figs. 4, 5 and 6, from which it will be seen that column 70 includes slots 76 and slide shutters 78 which are the same as slots 46 and slide covers 48 of Fig. 3.

In this construction each slide cover 78 carries a block 80 which is adapted to engage pin 82 which is carried by lever 84 which is pivoted to the frame of the machine at 86. When slide 80 is moved to the right, or to the broken line position in Fig. 4 to expose the paper ballot, block 80 pushes pin 82 and moves it and lever 84 to the broken line position so as to move bar 88 also to the left or to the broken line position of Fig. 4. Bar 88 is connected, by pin 90, which corresponds to pin 56 of Fig. 3, to a bar 92, which corresponds to bar 58 of Fig. 6. Bar 92 is connected, at 94, to strap 96, the wedge of which is placed in auxiliary interlock 98. Auxiliary interlock 98 should be assumed to have the structure shown in Fig. 7. Therefore, when bar 92 is moved to the left, as shown in Fig. 4, pull strap 96 will be moved to the position of pull strap 26 in Fig. 10 and will immobilize all of the other straps in this interlock section so that, again, no more than one vote for one candidate for one office can be cast before the machine is reset. In order to enable the voter to vote for a candidate by turning one of the voting keys instead of by writing the name of the candidate on the paper ballot, pull straps 100 are also connected to the butterfly cams on the corresponding voting spindles, so that when a voter turns one of the keys mechanically to cast a vote for one of the candidates, the wedge of the corresponding pull strap 100 will be moved to the position of pull strap 26 in Fig. 10 and will immobilize the remaining straps in said auxiliary interlock. It will be noted that pin 82 is placed in the path of the block 80 so as to be moved by it, but that pin 80 is not in any way connected to the block so that, once block 80 pushes pin 82 to the broken line position of Fig. 4 and thus operates lever 84 to move pull strap 96 to the position of Fig. 10 with reference to its interlock 98, the voter may move slide cover 78 back to slot covering position, but, since pin 82 is not in any way connected to block 80, it will not move back with block 80 and lever 84 will remain in the broken line position of Fig. 4, and pull strap 96 will remain in the position of Fig. 10. In other words, once a voter has moved a slide cover to expose the paper ballot, he cannot change his mind and proceed to vote by using one of the keys.

While I have described an arrangement whereby a voter may cast a vote for only one of a number of candidates running for a given office, my invention is equally applicable to elections in which the voter may vote for more than one candidate as, for example, when two or more councilmen have to be elected from among three or more candidates contending for the nomination. This can be done by increasing the length of the interlock section, that is, the distance between pins 16 and 18 by the thickness of one, or two, or more, wedges as the case may require, so that two, or more, pull straps can be moved before the pull straps remaining in said section are immobilized. Again, in Fig. 2, I have shown only two auxiliary interlocks 98 and 99 for cooperating with auxiliary personal choice column 70, but it will be understood that as many additional interlock sections in the same, or in various vertical voting columns, may be used, as desired. Also the bars 58 and 92, for example, are preferably made long enough to reach across all, or across a major portion, of the width of the machine so that these bars may be used interchangeably regardless of whether the personal choice is to be exercised in a vertical column close to, or remote from, the one end of the machine or the other. See Fig. 2.

It will be seen from the foregoing that the addition of personal choice column 70 and the auxiliary interlocks 98 and 99 will not increase the overall dimensions of

the machine and that, because the additional auxiliary interlocks and their adjuncts can be applied to a machine as, and when, they are required, the shipping and handling weight of the machine is not increased except by the weight of the additional personal choice column 70 which is best installed when the machine is first assembled, but which may be added later on.

In conventional machines the effective surface of the personal choice, or write-in, column 44 was disposed in the plane of the effective surface 40 of the machine and it terminated at the right angle side wall of the machine. This made it inconvenient and uncomfortable for a voter to write on the personal choice ballot and, if the voter was left handed, he could not write on a left hand personal choice ballot at all. Voters are notoriously apathetic and it does not take much of an obstacle to produce total inaction. According to my invention the surface of the personal choice ballot forms an obtuse angle with the front surface 40 of the machine and the edge 49 of the personal choice column forms an obtuse angle with the adjacent side wall of the machine which is represented by broken line L in Fig. 3. This provides ample room for the clenched fist of the voter and makes the personal choice column inviting instead of forbidding.

What I claim is:

1. A voting machine including a mechanically operable vote-casting mechanism, at least one side wall disposed in a plane substantially normal to the plane of the operative surface of said mechanism, and a write-in ballot on which a voter may write the name of a candidate, the surface of said ballot on which the voter must write being disposed in a plane which forms obtuse angles with the plane of said side wall and with the plane of the operative surface of said mechanism.
2. The combination with a voting machine of the type which includes voting spindles, a main interlock, pull straps connected to said spindles and engaging said interlock, the structure of said pull straps and said interlock being such that, movement of any of said straps in vote-casting direction immobilizes the other straps in said interlock and the spindles connected thereto, a built-in, main personal choice mechanism including write-in ballots, movable slide shutters normally covering said ballots, and means connecting selected pull straps to selected shutters whereby, movement of a shutter in a direction to expose the corresponding ballot moves the corresponding pull strap in vote-casting direction and immobilizes the main interlock of an identical auxiliary interlock attachable to the machine extraneously of said main interlock, and means connecting the shutters of the personal choice mechanism to the pull straps of the auxiliary interlock whereby the personal choice mechanism

can be used independently of, and without immobilizing, the main interlock.

3. The structure recited in claim 2 and a second auxiliary interlock attachable to said machine extraneously of said main and auxiliary interlocks, an auxiliary personal choice mechanism and auxiliary pull straps connecting the shutters of said auxiliary personal choice mechanism to said auxiliary interlock.

4. The structure recited in claim 2 and locking means operable on movement of a shutter to ballot-exposing position to prevent return movement of said shutter.

5. The structure recited in claim 2 and means connecting the pull straps of the auxiliary interlock to said spindles, whereby a vote may be cast mechanically by operating said spindles or by writing the names of candidates on the ballots of the personal choice ballot, and locking means operable upon movement of a shutter of the auxiliary personal choice mechanism to a ballot exposing position to prevent return movement of said shutter.

6. The combination with a voting machine of the type which includes voting spindles, a main interlock, pull straps connected to said spindles and engaging said interlock, the structure of said pull straps and said interlock being such that, movement of any of said straps in vote-casting direction immobilizes the other straps in said interlock and the spindles connected thereto, a built-in, main personal choice mechanism including write-in ballots, movable slide shutters normally covering said ballots, and means connecting selected pull straps to selected shutters whereby movement of a shutter in a direction to expose the corresponding ballot moves the corresponding pull strap in vote-casting direction and immobilizes the main interlock, of an auxiliary personal choice mechanism which is identical with said main personal choice column, means mounting said auxiliary personal choice mechanism adjacent said voting spindles, an auxiliary interlock identical with the main interlock, means mounting said auxiliary interlock extraneously of said main interlock and auxiliary pull straps connected to the shutters of said auxiliary personal choice mechanism and engaging said auxiliary interlock.

7. The structure recited in claim 6 and means connecting said auxiliary straps to said spindles whereby a personal choice vote can be cast by operating a spindle, or by means of a write-in ballot without immobilizing any part of the main interlock.

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2,054,102 Shoup et al. ----- Sept. 15, 1936