

Jan. 2, 1923.

J. HEJL,
PRINTING PRESS,
FILED AUG. 11, 1920.

1,440,995

3 SHEETS-SHEET 1

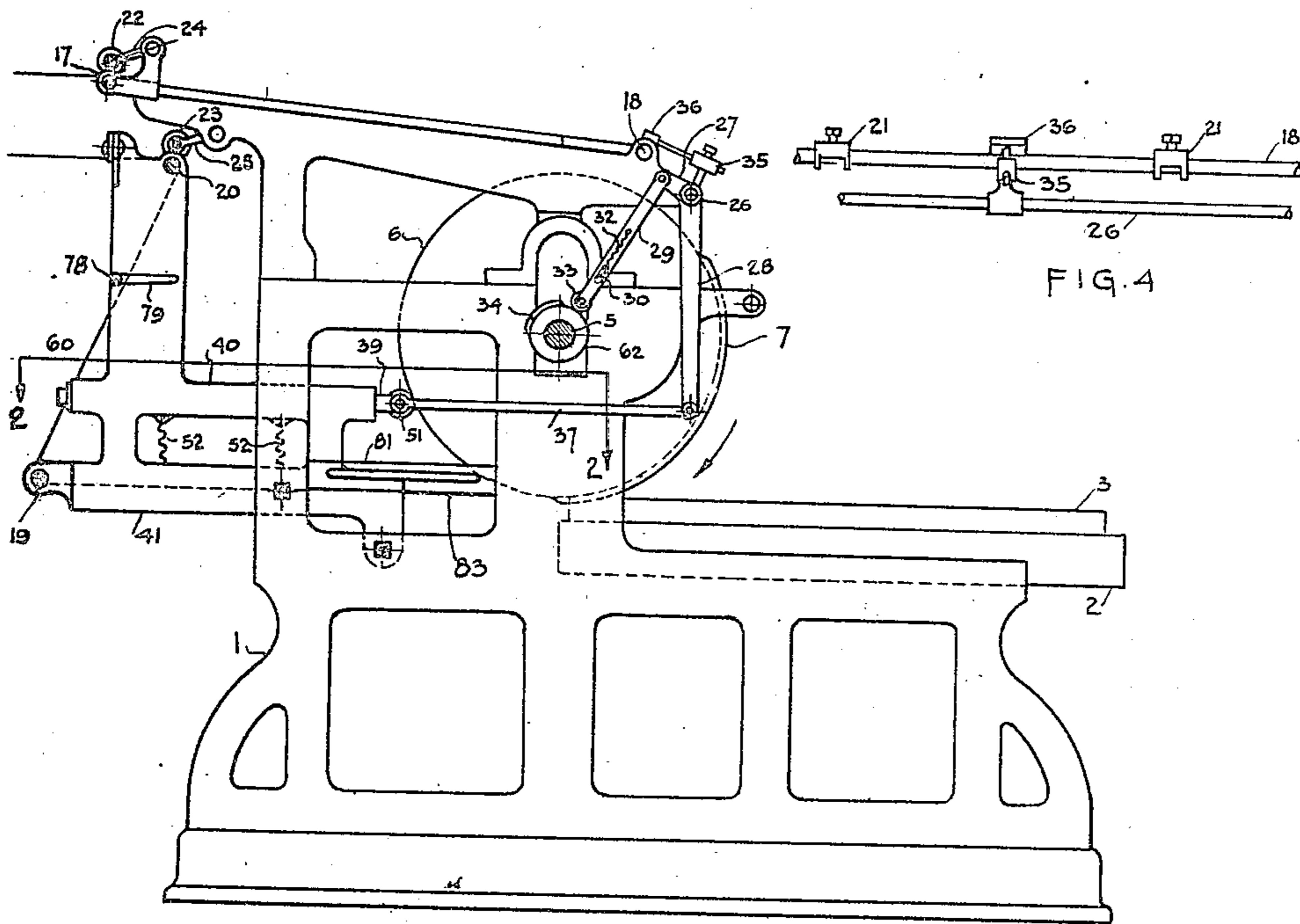


FIG. 4

FIG. 1

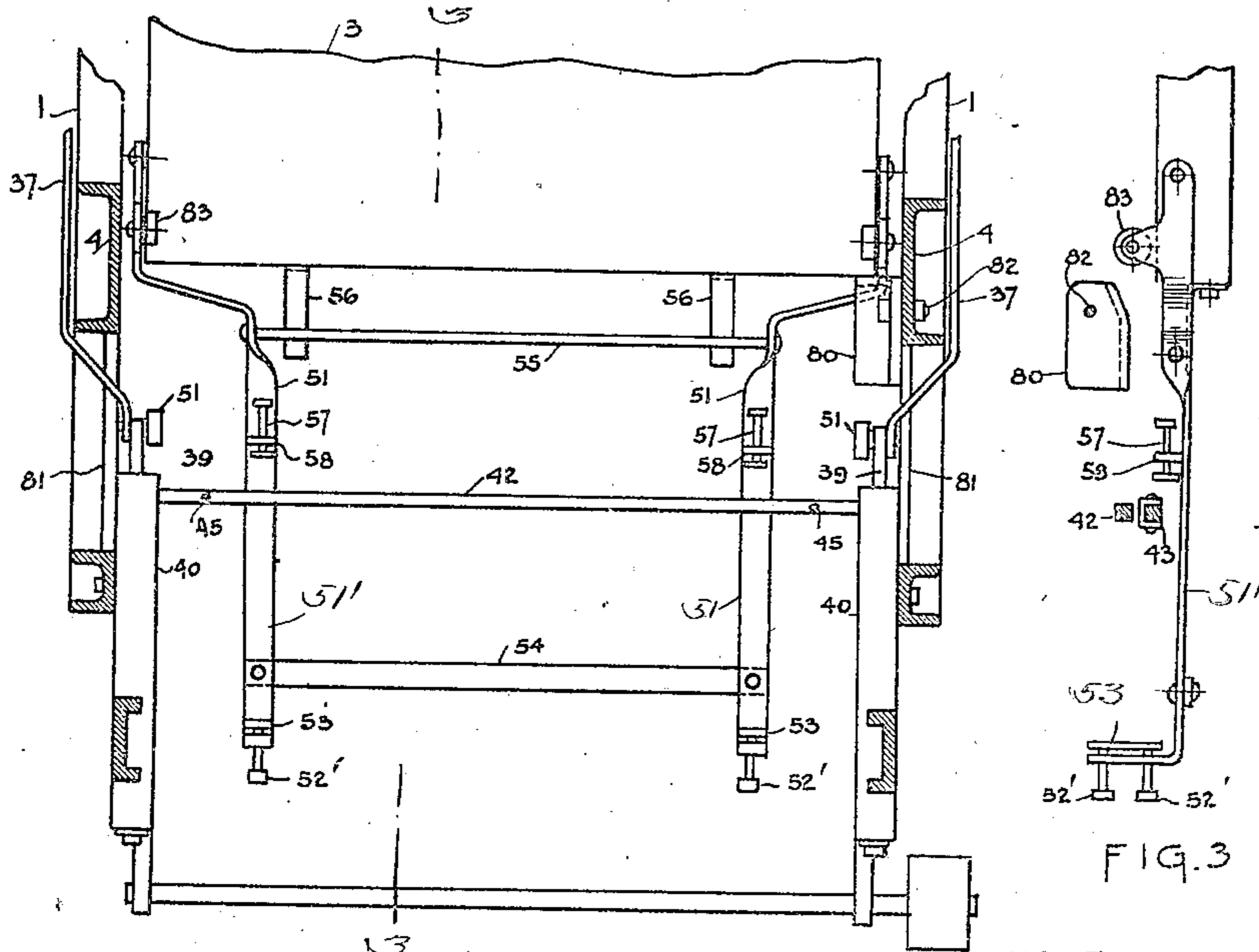


FIG. 2

FIG. 3

INVENTOR
Josef Hejl
BY
Handwing Carter
ATTORNEYS

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3 SHEETS-SHEET 2

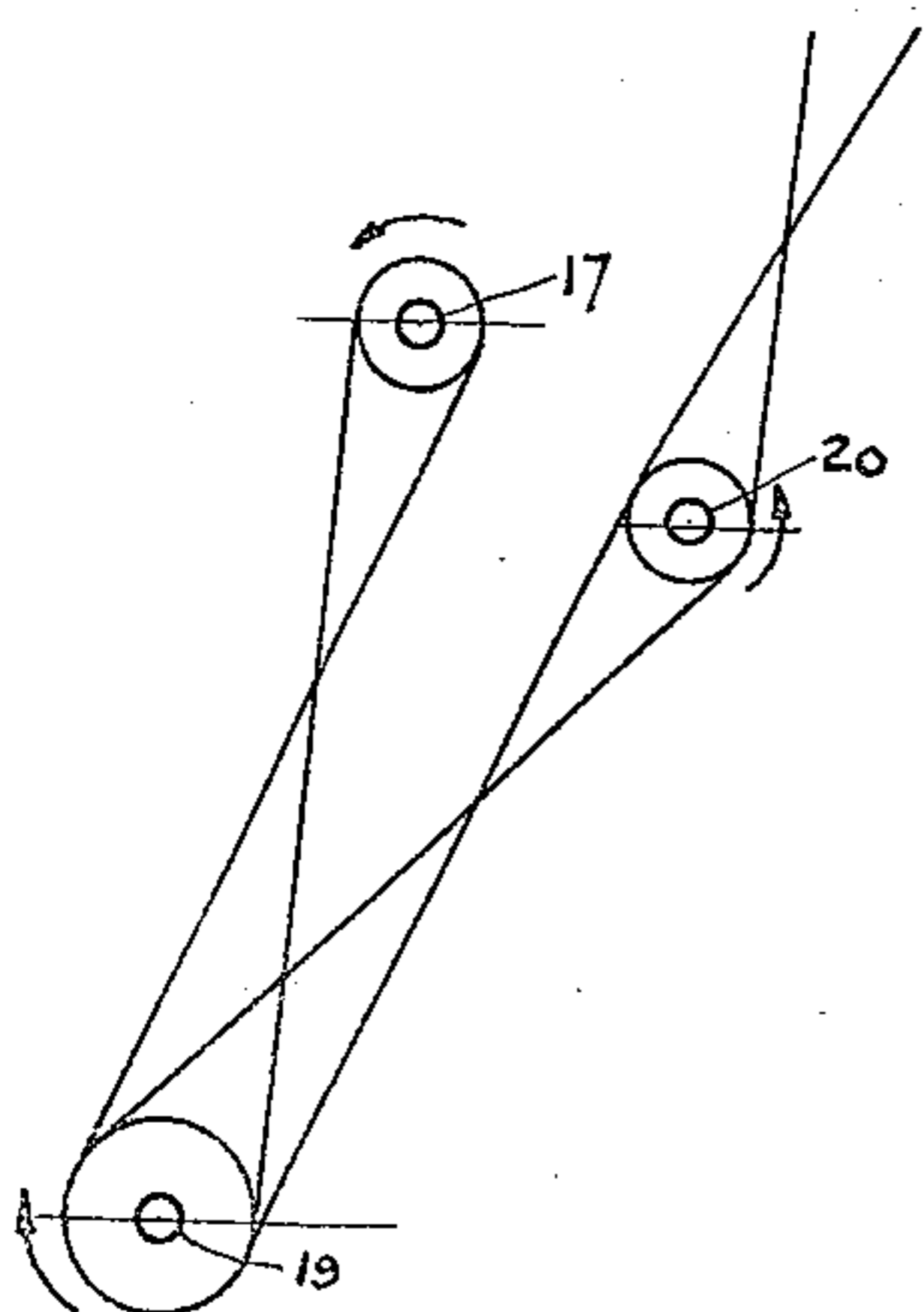


FIG. 6

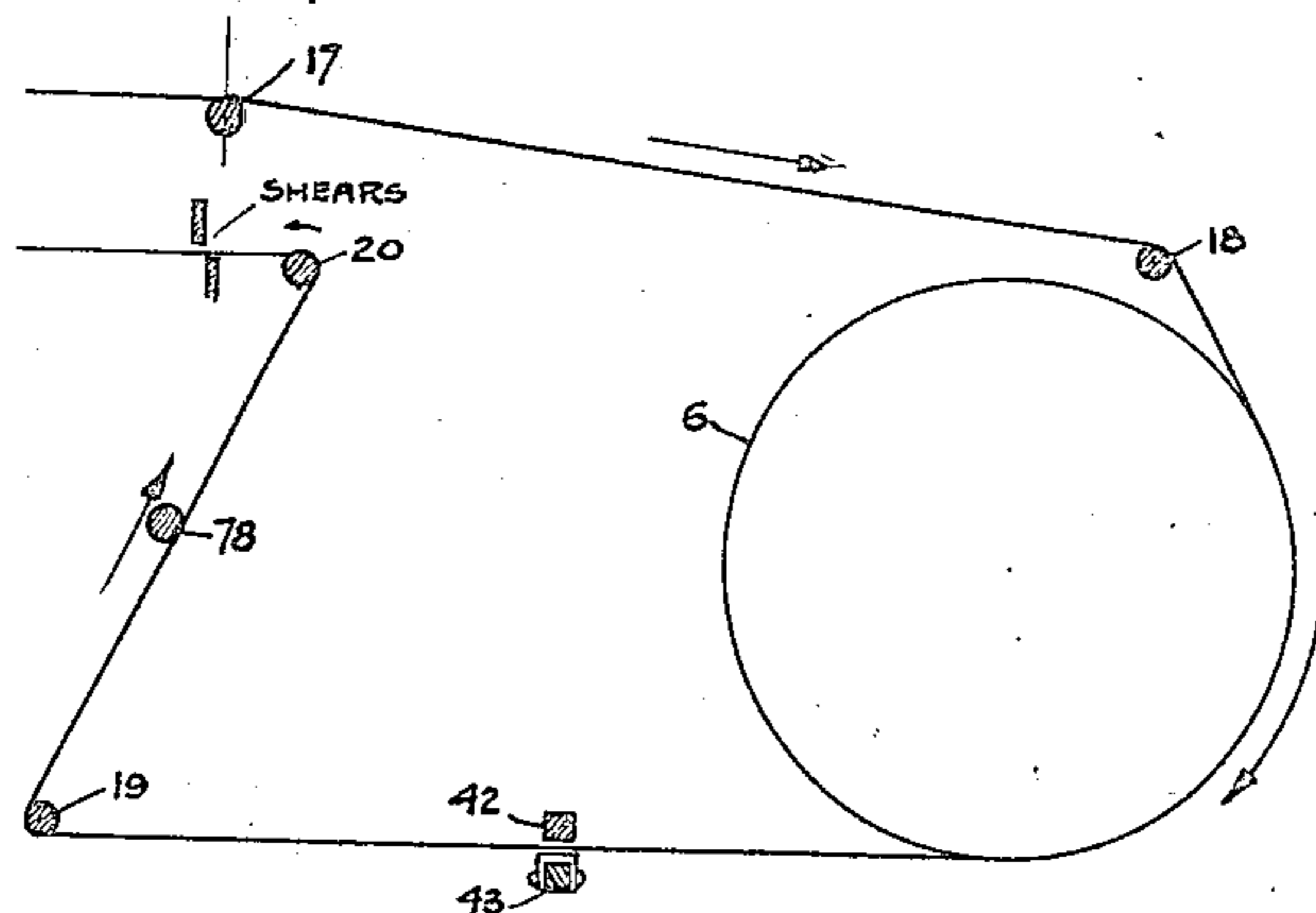


FIG. 5

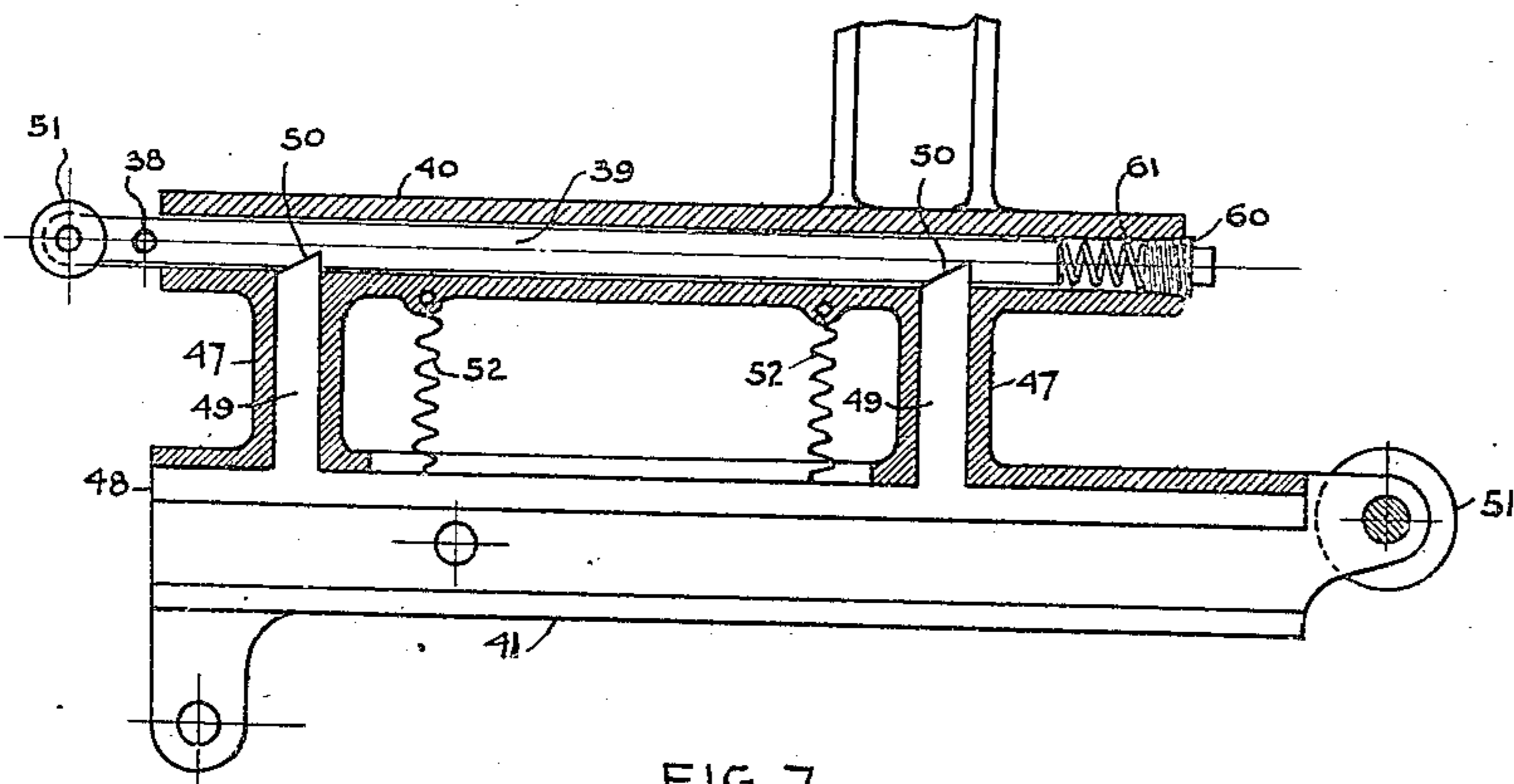


FIG. 7

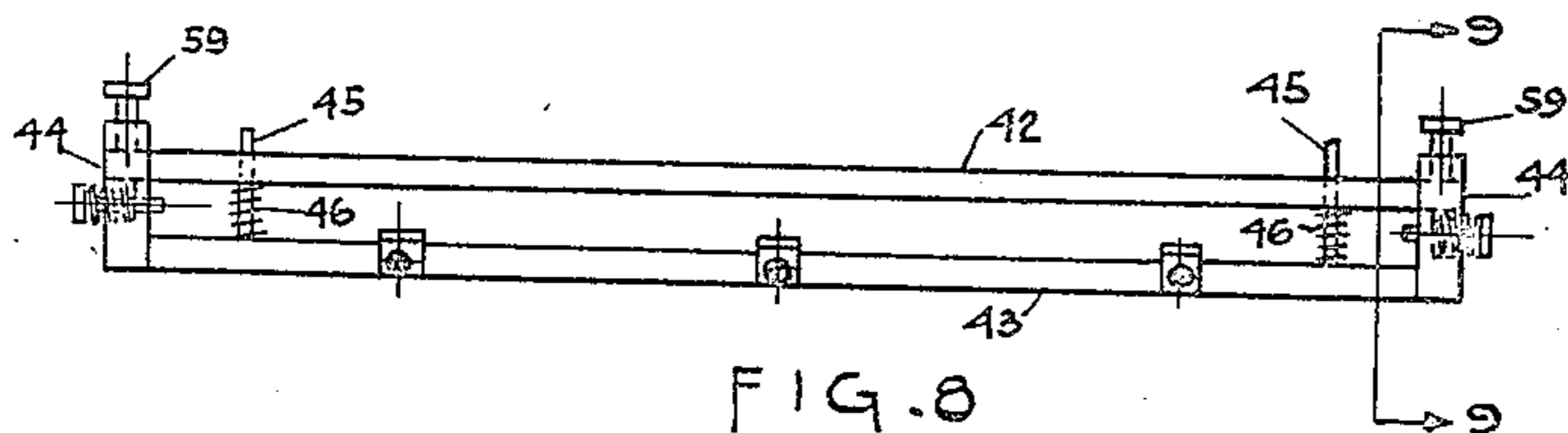


FIG. 8

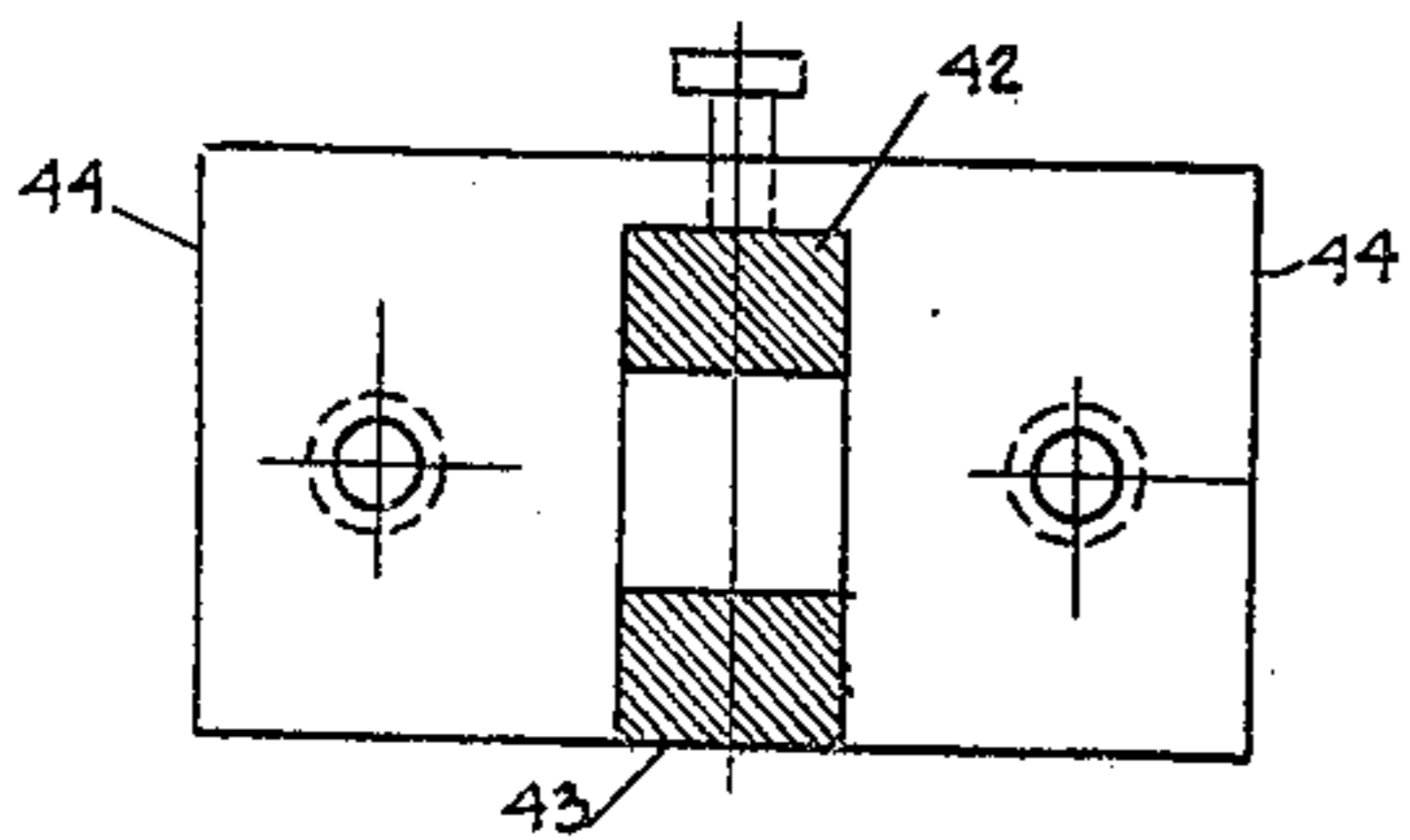


FIG. 9

INVENTOR
Josef Hejl
BY
Harvey C. Carter
ATTORNEYS.

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J. HEJL.
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FILED AUG. 11, 1920.

1,440,995

3 SHEETS-SHEET 3

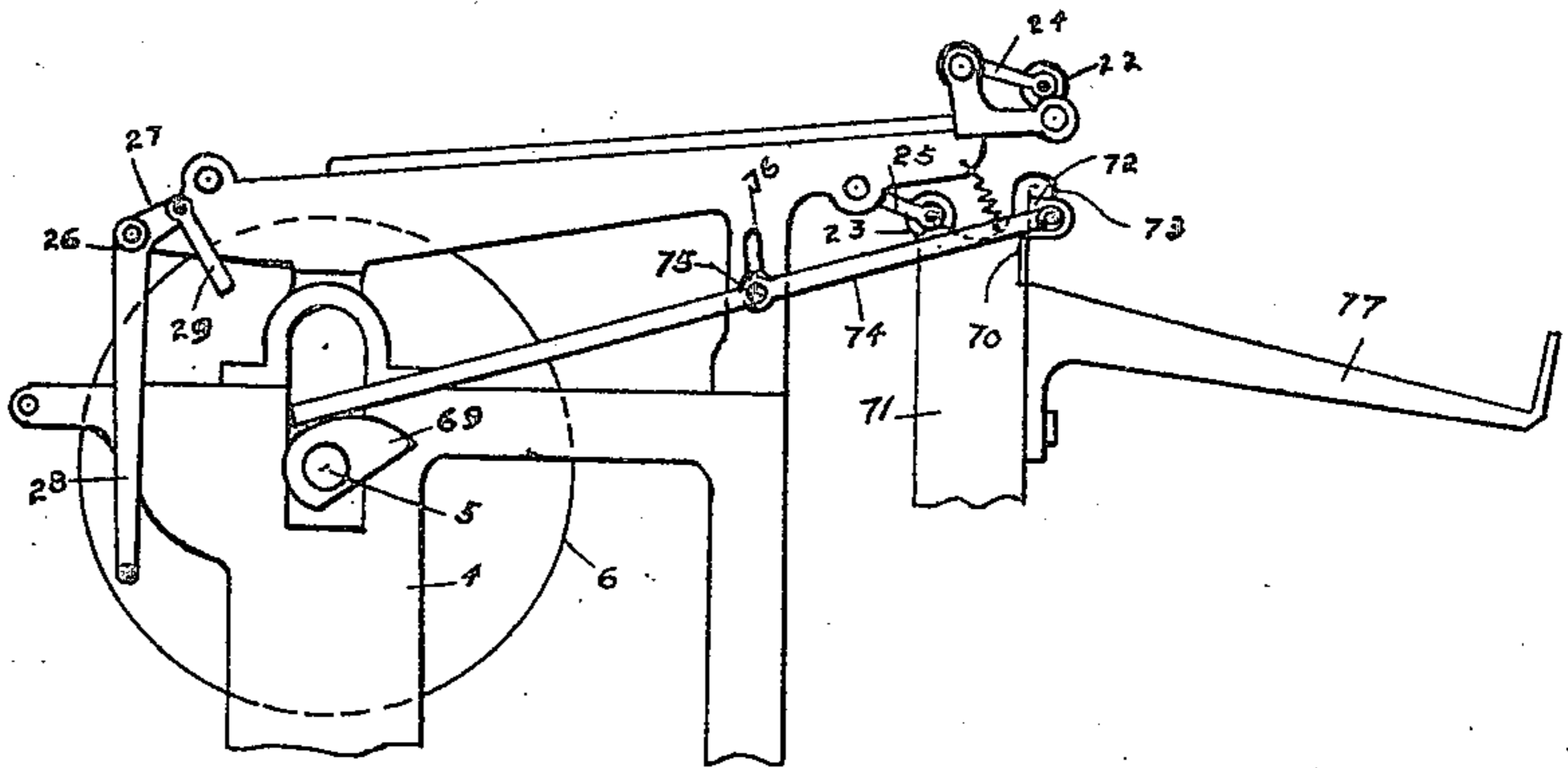


FIG. 10.

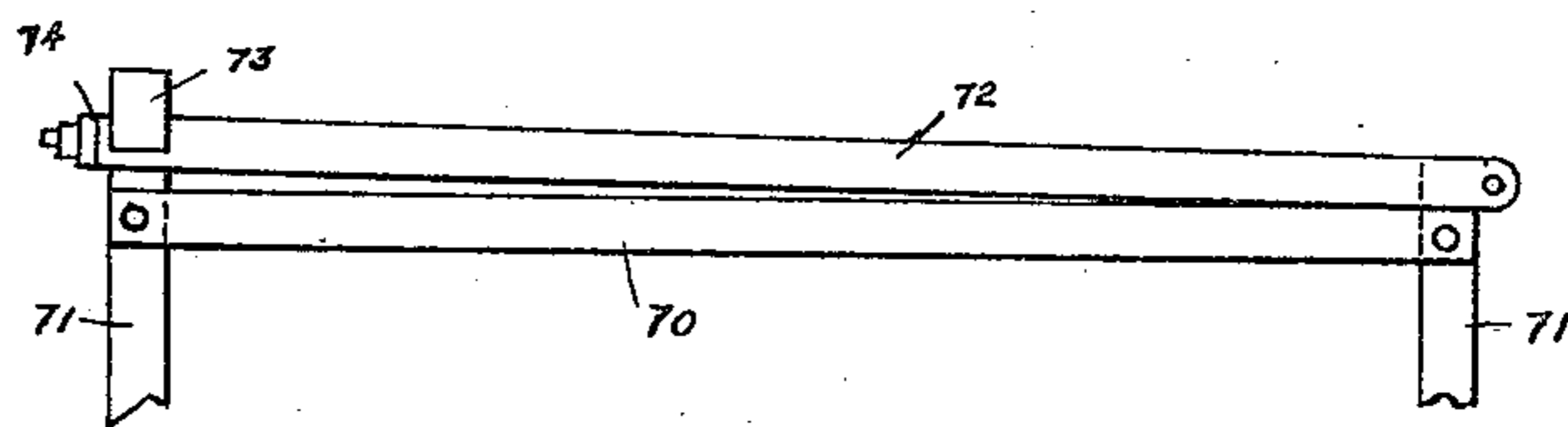


FIG. 11.

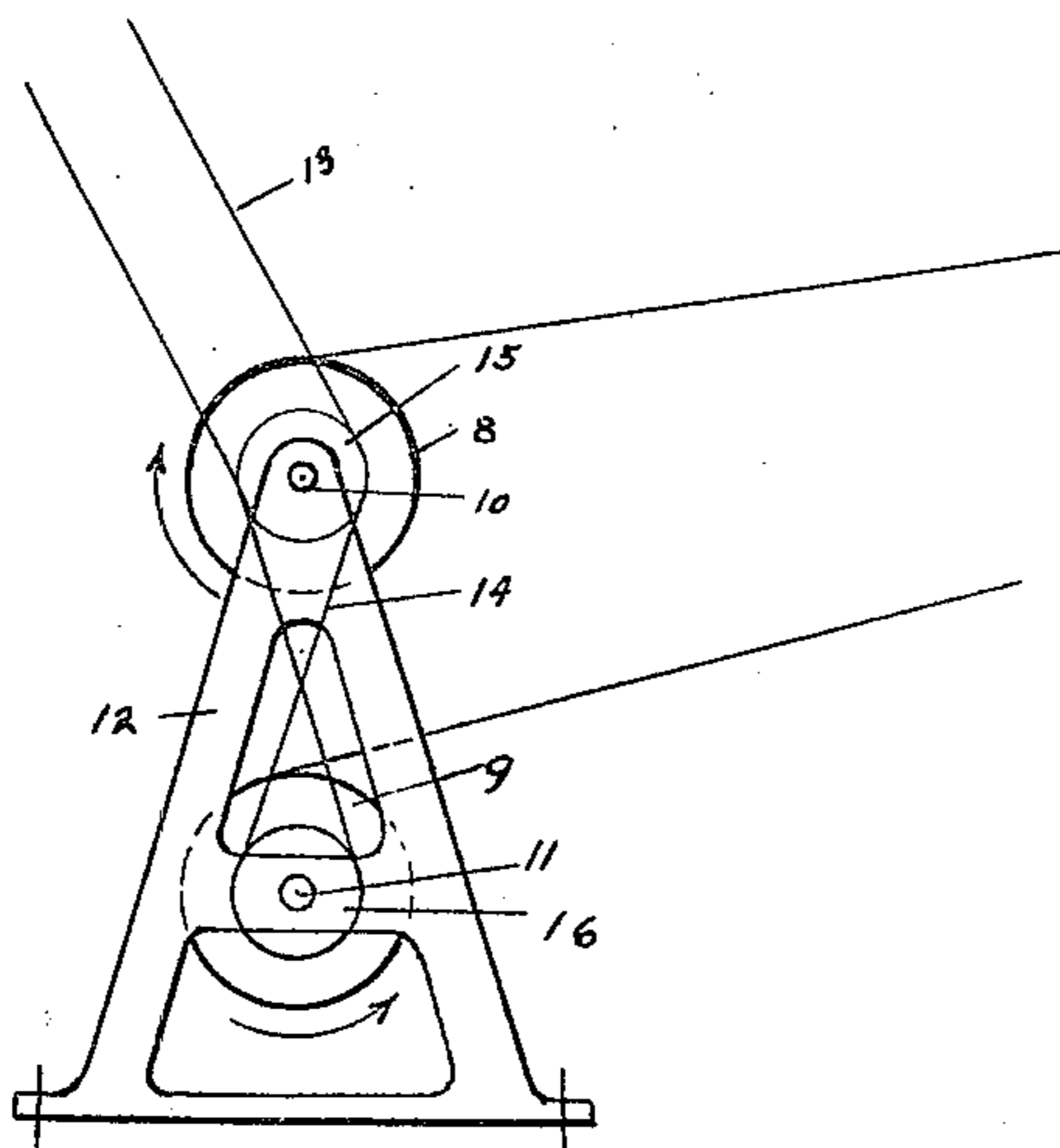


FIG. 12.

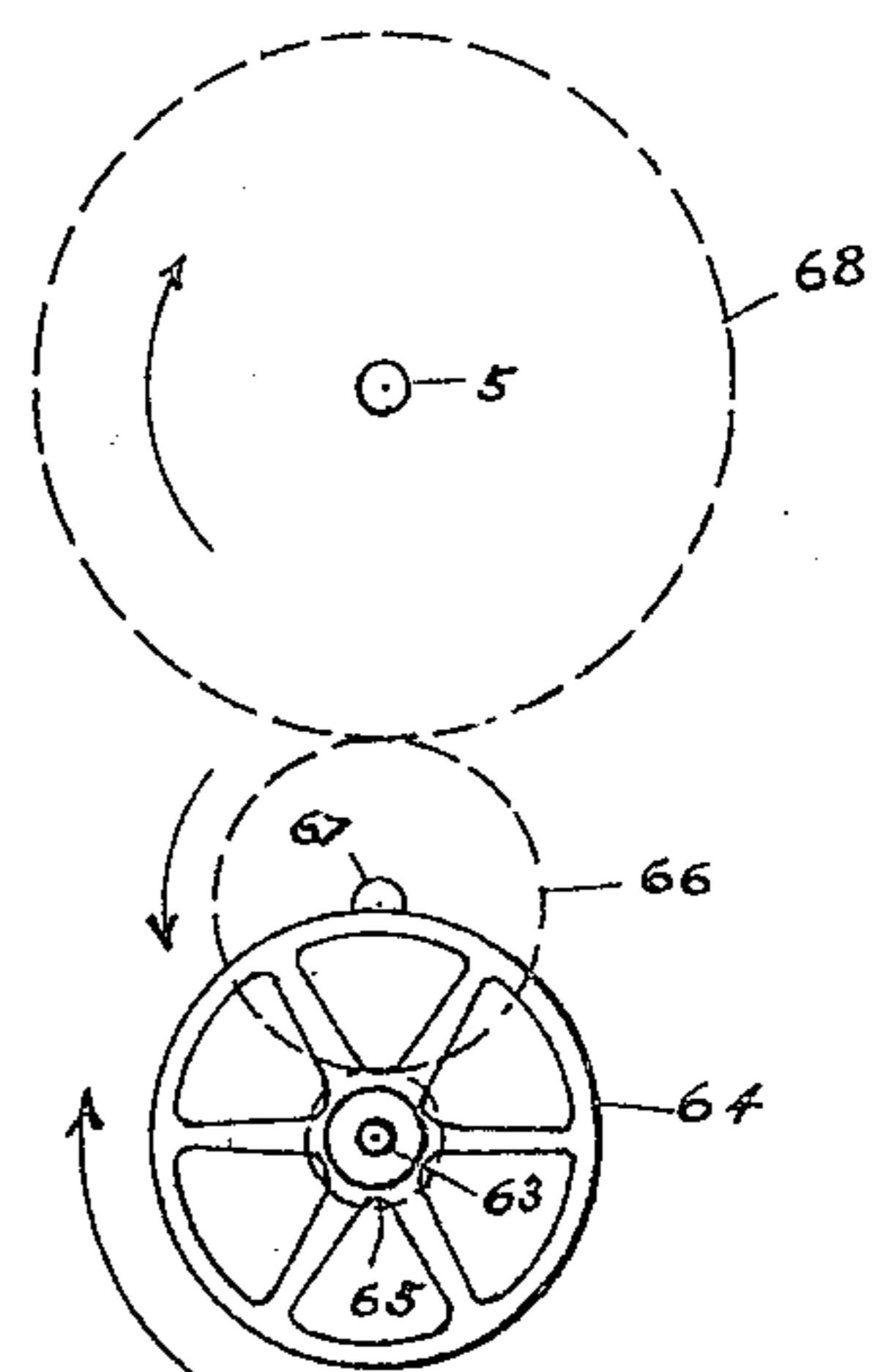


FIG. 13.

INVENTOR
Josef Hejl
BY
Hardway Cath
ATTORNEY

UNITED STATES PATENT OFFICE.

JOSEF HEJL, OF ROSENBERG, TEXAS.

PRINTING PRESS.

Application filed August 11, 1920. Serial No. 402,925.

To all whom it may concern:

Be it known that I, JOSEF HEJL, a citizen of the Republic of Czecho-Slovakia, residing at Rosenberg, in the county of Fort Bend and State of Texas, have invented certain new and useful Improvements in a Printing Press, of which the following is a specification.

This invention relates to new and useful improvements in printing presses.

One object of the invention is to provide an attachment for a printing press of the cylinder type whereby the paper, as unwound from the ordinary roll, may be printed into sheets and cut for binding or folding. The chief advantage of the attachment resides in the fact that it may be readily applied to a simple form of printing press now commonly used for printing sheets which have been previously cut and when so applied, the press will accomplish the same work which now requires the complex and expensive presses in use in printing newspapers and the like.

Another object of the invention is to provide an attachment for printing presses of the cylinder or printing roller type, which will give the press much greater capacity, will require less labor to operate, and will make it possible to use paper which is put up in rolls rather than paper which is cut into sheets, thus resulting in economy in that the paper in rolls is considerably cheaper than that which is cut into sheets previous to printing.

With the above and other objects in view, the invention has particular relation to certain novel features of construction, operation and arrangement of parts, an example of which is given in this specification and illustrated in the accompanying drawings, wherein:—

Figure 1 is a fragmentary side elevation of a printing press, showing the attachment, partially in section, applied thereto.

Figure 2 is a fragmentary, horizontal, sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a fragmentary, vertical, sectional view taken on the line 3—3 of Figure 2.

Figure 4 is a fragmentary front elevation of the paper clamping device.

Figure 5 is a diagrammatic end view of the printing roller, showing the line of travel of the paper over the supporting rollers, said rollers being shown in section.

Figure 6 shows a diagrammatic view of the driving belts employed.

Figure 7 shows an enlarged fragmentary sectional view of the drag bar actuating mechanism.

Figure 8 shows a front elevation of said drag bars.

Figure 9 shows an enlarged transverse sectional view thereof taken on the line 9—9 of Figure 8.

Figure 10 shows a fragmentary side view illustrating the shear actuating mechanism.

Figure 11 shows a front elevation view of the shears.

Figure 12 shows an end view of the spool frame and spools carrying the paper rollers, and

Figure 13 shows a diagrammatic end view of the driving gears through which the printing roller is driven.

Referring now more particularly to the drawings, wherein like numerals of reference designate similar parts in each of the figures, the numeral 1 designates the side members of the press frame, which stand up vertically and are spaced apart. Between these side members, in the front of the frame, there is a horizontal type plate 2 whereon the chase 3 is secured. This type plate is reciprocated back and forth in the usual manner through the conventional reciprocating mechanism, which has not been shown, as it is common to printing presses and familiar to those versed in the art of printing. Integral with the side members 1, and upstanding therefrom, are the standards 4, 4 provided with aligned bearings wherein the shaft 5 is rotatably mounted. Fixed upon this shaft, between the standards, there is a printing roller or drum 6. This drum has the cams 7, 7 one at each end, provided for a purpose to be hereinafter stated. The numerals 8 and 9 refer to the upper and lower paper rolls, which are carried upon the respective shafts 10 and 11, which have end bearings in the frame 12. The shaft is driven by a suitable belt 13, which operates over a pulley fixed on the shaft 10, and the shaft 11 is driven by means of a suitable cross belt 14, which operates over the pulleys 15 and 16, which are fixed upon the said shafts 10 and 11. The paper is thus positively unwound from the roller 8 and wound onto the roller 9, passing over the roller 17, the fixed rod 18, around the

drum 6 and returning over the rollers 19 and 20. These supporting rollers have end bearings in the frame of the press, and are driven by a suitable belting, as shown in Figure 6, the roller 17 rotating backwardly with respect to the direction of travel of the paper so as to give the required tension to the paper as being printed. The fixed rod 18 and the rollers 17, 19 and 20 have the adjustable edge guides 21, 21 thereon, between which the sheet of paper passes and which may be adjusted to accommodate sheets of different widths. Co-operating with the rollers 17 and 20 are the tension rollers 22 and 23, which are supported by the arms 24 and 25, pivotally mounted on the frame-work, and these tension rollers assist in giving the required tension to the sheet as it passes through the press. There is a transverse shaft 26 having end bearings in the opposite sides of the frame-work, and fixed to the opposite ends of this shaft, are bell cranks, each having the short arm 27 and the long depending arm 28. Pivoted to the free end of each short arm 27, there is a push rod 29, having a long slot 30 through which the pin 31, carried by the frame-work, projects. The pull spring 32 is attached at one end to the pin and at its other end to the push rod 29 above the pin. The free end of each push rod 29 has a roller bearing 33, which rides upon the adjustable cam 34, which is fixed upon the shaft 5. Projecting upwardly from the shaft 26, there is a bracket 35. This bracket 35 supports the clamp 36, adapted to clamp the paper between it and the rod 18, as will be hereinafter referred to. The push bars 37 are provided, one on each side. These bars are pivoted at one end to the long arm 28, and at their other ends they are pivoted to the lock-bars 39 by means of the pins 38. These lock-bars are arranged to move lengthwise in the bearings 40, carried by and forming part of the frame-work, and underneath said bearings, are the guides 41 in which the ends of the transverse drag bars 42 and 43 travel. Fastened to the respective ends of these bars are the brackets 44, 44, which move in said guides, and pins 45 carried by the bar 43 pass through bearings in the bar 42, and surrounding said pins 45, and interposed between the bars 42 and 43 are the coil springs 46, 46, which form resilient seats for the bar 42. The long bearings 40 and the guides 41, underneath are connected by the sleeves 47, 47, which are formed integrally therewith, and within the respective guides 41, there are the lock bars 48 which have the integral latches 49, 49 projecting up through the sleeves 47, and whose free ends are beveled, and normally project into correspondingly shaped notches 50 in the underside of the bar 39. The inner end of each of the bars 39 has a roller bearing 51 in rolling contact with the ends of the drum

6 and actuated, at times, by the cams 7, thereof. Pull springs 52 are attached at one end to the underside of the bearing 40, and at their other ends to the lock-bars 48, and which tend to hold the latches 49 seated in the notches 50. The sheet of paper passes between the drag bars 42 and 43 and is at intervals clamped between them, for a purpose to be hereinafter stated.

Pivoted to the sides of the type plate 3 at its inner end, are the shift arms 51', 51', whose free ends are upturned and provided with the adjusting bolts 52', 52', which are threaded through said upturned ends. The inner ends of the bolts have swivel connections with the adjusting blocks 53, 53. These arms are tied together by means of the tie-bars 54 and 55, the latter of which rests upon the flat springs 56, 56 projecting out from the adjacent end of the type plate, thus providing a yieldable support for the shift arms. As the press plate moves inwardly into printing relation with the roller 6, adjusting bolts 57, 57 contact against the lower drag bar 43 and force the said drag bars along, to advance the sheet of paper being printed in synchronism with the press plate and printing roller. These adjusting bolts are threaded through the lugs 58, 58, upstanding from the respective arms 51', 51'. Previous to the movement of the drag bars, however, they are caused to grip the sheet of paper by the cam 34 contacting against the roller 33 and forcing the push rod 29 upwardly, which operates through the bell cranks, to which said push rod is pivoted, to impart a thrust to the push bars 37, and these drive the locking bars 39 along in their bearings 40 against the beveled ends of the latches 49, forcing the same downwardly and driving the lock bars 48 against the upstanding studs 59, 59, carried by the respective ends of the drag bar 42 and forcing said drag bar against the paper and clamping it between said drag bars. At the same time the partial rotation of the shaft 26 operates to lift the clamp 36 and release the sheet of paper so as to permit the movement thereof. When the cam 34 passes the roller 33, the cams 7 are in position to contact against the rollers 51, and hold the drag bars in clamped position until the printing operation is complete and the type plate is ready to start backwardly and thereupon the cams 7 release said rollers 51. The opposite ends of the bearings 40 have the plugs 60 screwed therein, and interposed between these plugs and the corresponding lock-bars, are the push springs 61, which then force said lock-bars backwardly until the notches 50 align with the latches 49, whereupon the springs 52 lift the lock-bars 48 from contact with the studs 59, and the drag bar 42 is thereupon raised out of contact with the sheet of paper by the springs 46. As the type plate returns,

the blocks 53 contact against said drag bars and return them to their original position. The range of movement of said drag bars may be varied by a suitable adjustment of the bolts 52 and 57. The cam 34 may be adjusted through the instrumentality of the set screw 62 so that the drag bars will clamp the paper at the desired time.

The printing roller 6 is driven through a series of gears, shown in Figure 13. In this figure the numeral 63 designates a transverse drive shaft rotatably mounted in the frame work and one end of which carries the belt pulley 64. Fixed upon the shaft 63 there is a small spur gear 65, which is in mesh with a larger spur gear 66, which is fixed upon the transverse shaft 67, and this gear 66 is in mesh with and drives a larger gear wheel 68, which is fixed upon the shaft 5.

Fixed upon the end of shaft 5, opposite the cam 34, there is a cam 69 provided to actuate the shears, hereinafter described. While one side of the sheet is being printed, the shears do not operate and the sheet of paper is unwound from the roller 8 and wound on the roller 9. While printing the other side of the sheet, these rollers are reversed and the paper is unwound from said last mentioned roller and passes through the press to print the other side of the sheet. As the other side of the sheet is printed, it is cut into sections for folding, by means of said shears. These shears include the fixed transverse blade 70, whose ends are secured to the standards 71, 71, and the reciprocating blade 72, mounted above the fixed blade. One end of the reciprocating blade 72 is pivoted to one of the standards 71, and at its other end works in a guide 73 carried by the upper end of the other standard. A shear actuating lever 74 is pivoted at one end to the blade 72. This lever is fulcrumed at an intermediate point on the bolt 75 which may be adjusted vertically in the slot 76, through which it passes, so as to carry the free end of the lever 74 into, or out of contact with the cam 69. When the sheet is being printed on one side, the lever 74 is adjusted out of contact with said cam, and the shears do not operate. When the rolls are reversed and the other side of the sheet is printed, the lever 74 is adjusted so that the cam 69 will contact therewith and operate the shears. The sheet as now printed, will pass along between said blades, which are actuated through the mechanism described, to cut the sheet into proper sections, which fall down upon the receiving platform 77, or onto a suitable folding machine, (not shown). It will be necessary to so adjust the sheet that the shears will cut through the blank space left between the pages, rather than through the printing. For this purpose I have provided an adjusting roller 78, whose ends are mounted in the long transverse bearings 79

of the frame-work. This roller may be adjusted to any desired position relative to the sheet of paper, and thereby the sheet may be so adjusted relative to the shears, that it will be cut at the required place.

Provision is made for varying the range of movement of the drag bars 42 and 43, so that pages or sections of different sizes may be printed. This is accomplished through the instrumentality of suitable cams as 80, which are secured to the respective bars 81, arranged on each side of the frame. These cams are secured to said bars by means of the bolts 82, which pass through said cams and through the oblong slot 83 in said bars 81. The arms 51' carry the respective rollers 83, arranged to contact against the underside of the cams 80, and thereby the arms 51' will be pressed downwardly so that the adjusting bolts 57 will be disengaged from the drag bars 43 at the proper time and the advancement of the sheet thereby stopped. It is obvious that the cams 80 may be adjusted to any desired position, and the range of movement of the drag bars thus varied in accordance with the length of the printed section of the sheet.

What I claim is:—

1. In a printing press, a clamping device arranged to clamp the sheet of paper passing around the printing roller, and hold the same stationary, drag bars adapted to intermittently clamp and release said sheet to advance the same and a mechanism arranged to release said clamp and simultaneously actuate the drag bars into engagement with the sheet of paper.

2. In a printing press, having a reciprocating type plate and a printing roller co-operating therewith, around which the sheet of paper passes, a stationary rod over which said sheet travels, a clamp intermittently clamping the sheet between it and said rod, drag bars between which the sheet passes, means intermittently clamping said bars against and releasing them from said sheet, means advancing said bars when in clamping position and returning them to original position when in released position, and a common actuating device for simultaneously releasing said clamp from the sheet and clamping said bars into engagement with the sheet.

3. In a printing press, a clamping device intermittently clamping and releasing the sheet, drag bars between which the sheet passes, means provided to actuate said bars into clamping engagement with and to release them from said sheet, means advancing said bars when in clamping relation with the sheet and returning them when released, and a common actuating device for simultaneously releasing the clamp and actuating said bars into engagement with the sheet and vice versa.

4. In a printing press, having a reciprocating type plate and a printing roller co-operating therewith and around which the sheet of paper passes, a clamp-device intermittently clamping and releasing the sheet, drag bars between which the sheet passes, means provided to actuate said bars into clamping engagement with and to release them from said sheet, means advancing said bars when in clamping relation with the sheet and returning them when released, and a common actuating device for simultane-

ously releasing the clamp and actuating said bars into engagement with the sheet and vice versa, and shears arranged to automatically cut said sheet into sections. 15

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

JOSEF HEJL.

Witnesses:

R. M. SMITH,
JOSEPH DEDEK.