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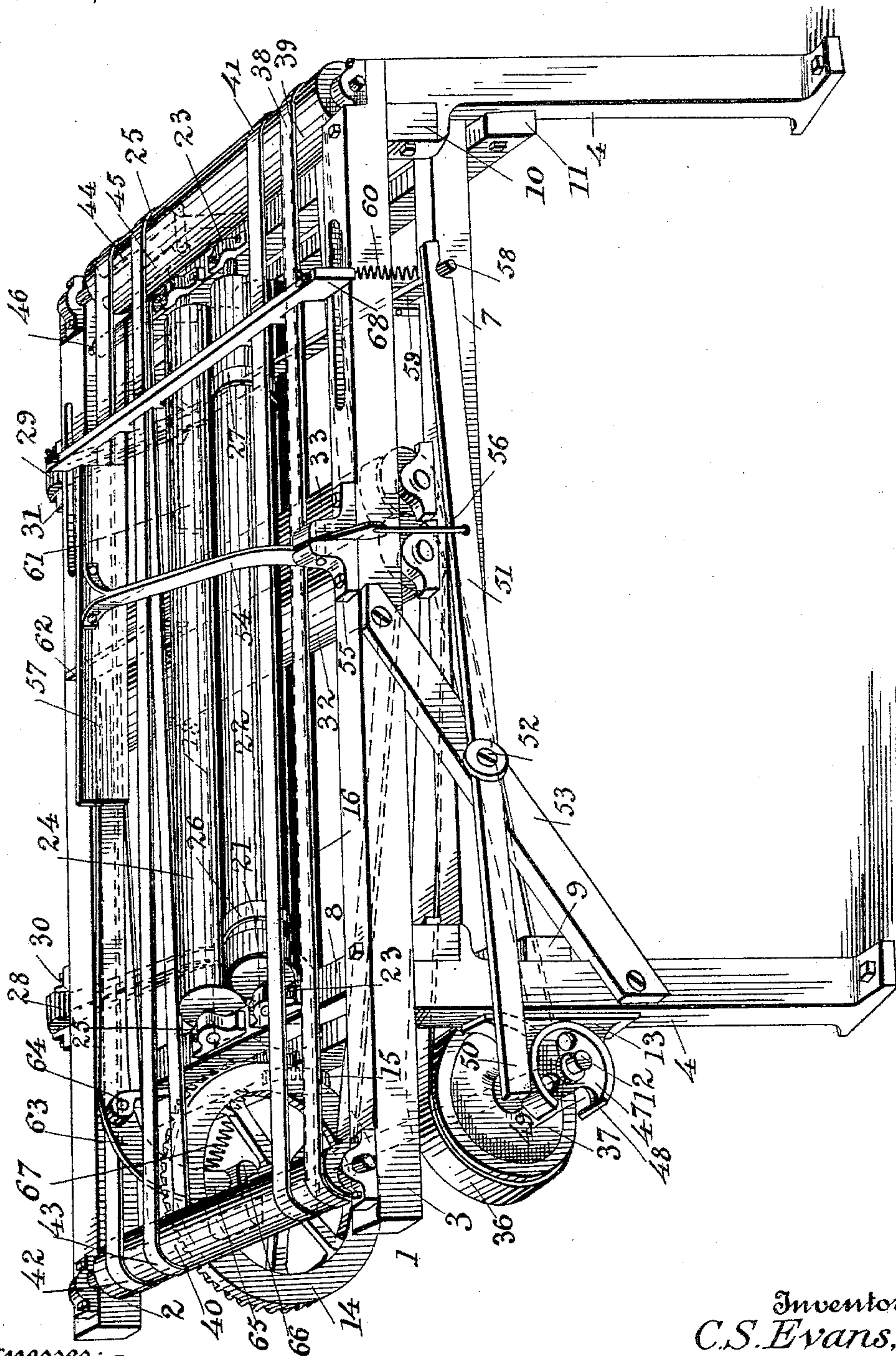
4 Sheets—Sheet 1.

C. S. EVANS.
PAPER FOLDING MACHINE.

No. 597,461.

Patented Jan. 18, 1898.

Fig. 1.



Witnesses:

J. S. Brown
J. A. Wells

Inventor:
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H. B. Wilson
Attorney

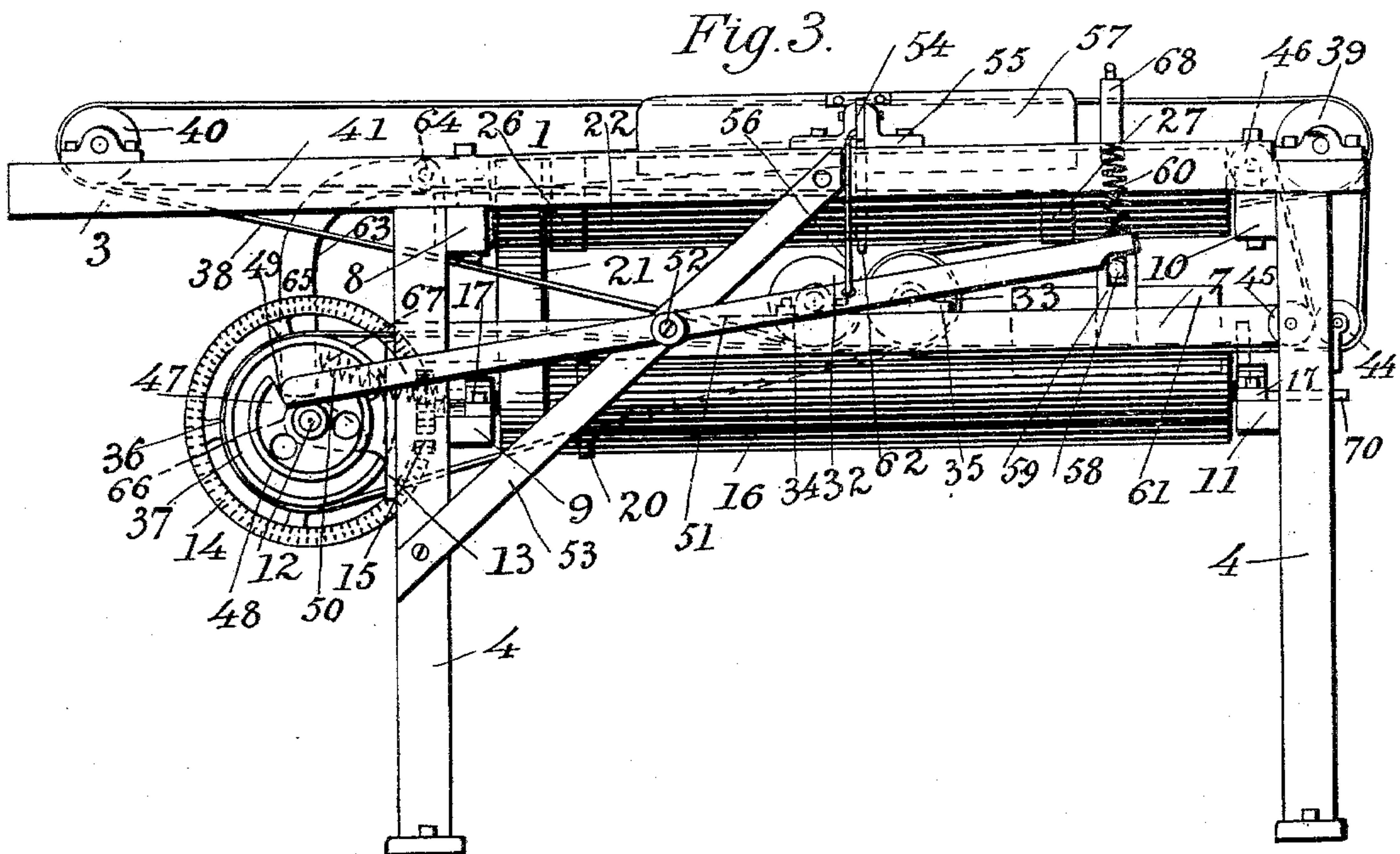
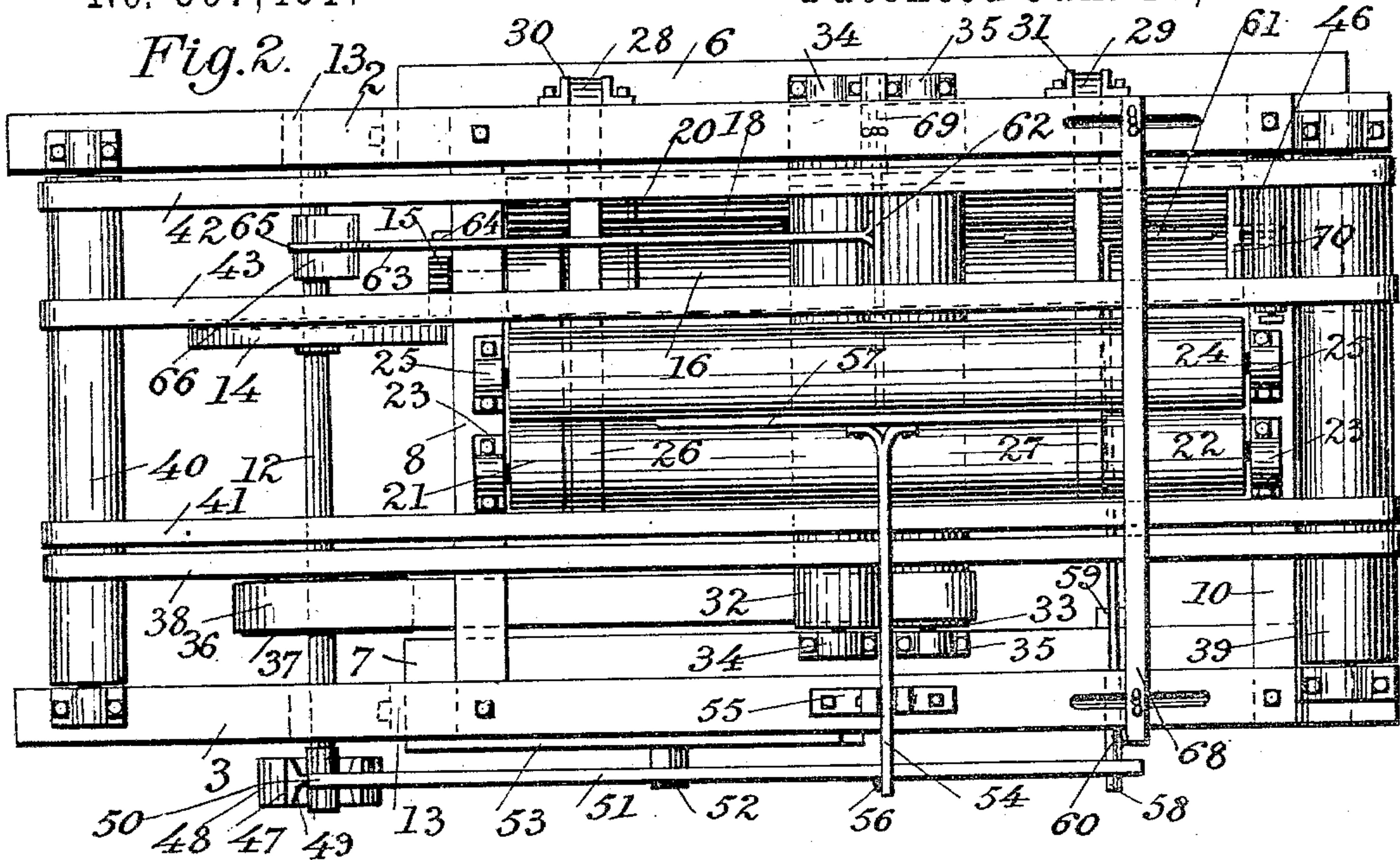
(No Model.)

4 Sheets—Sheet 2.

C. S. EVANS.
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Witnesses:
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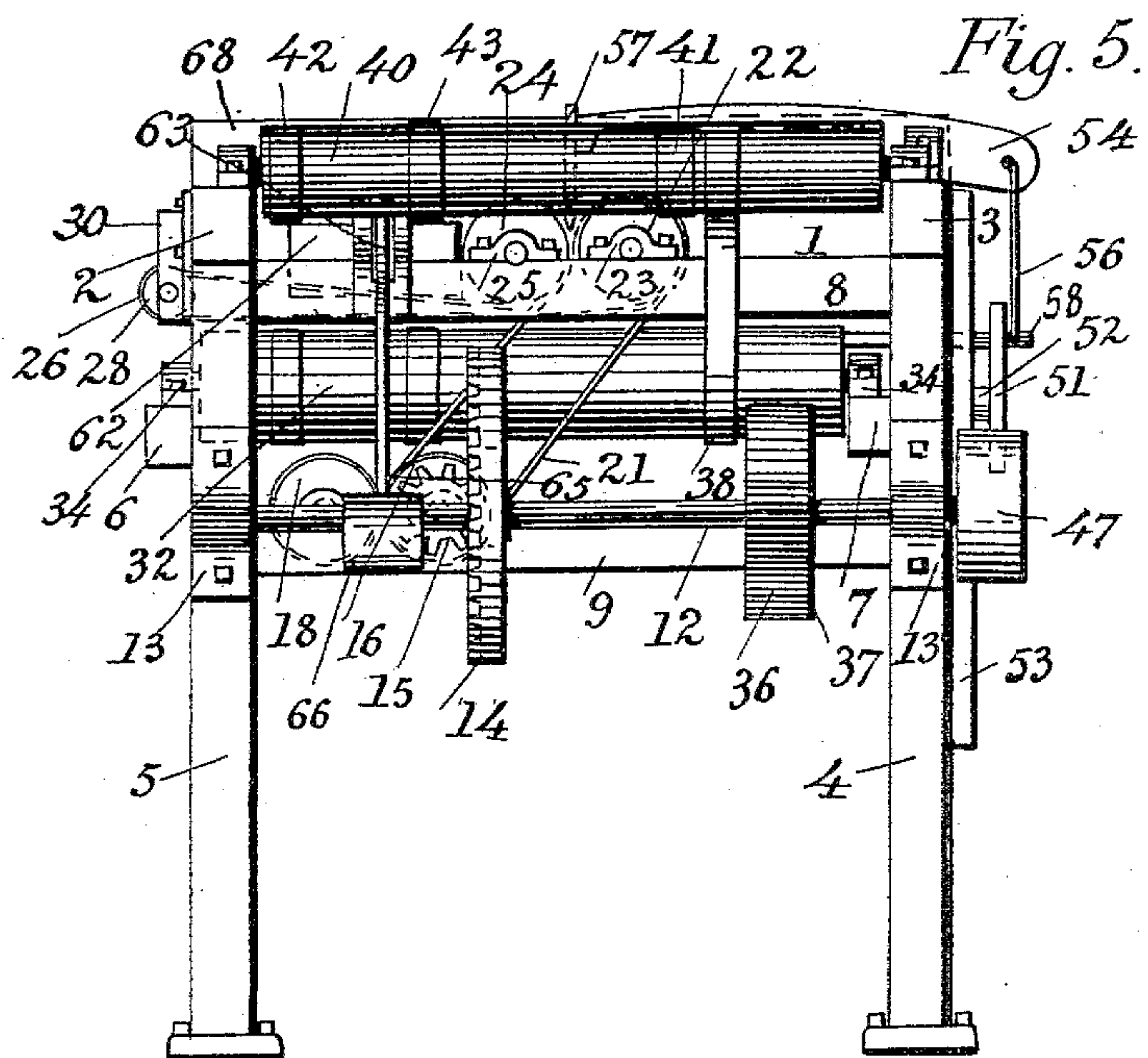
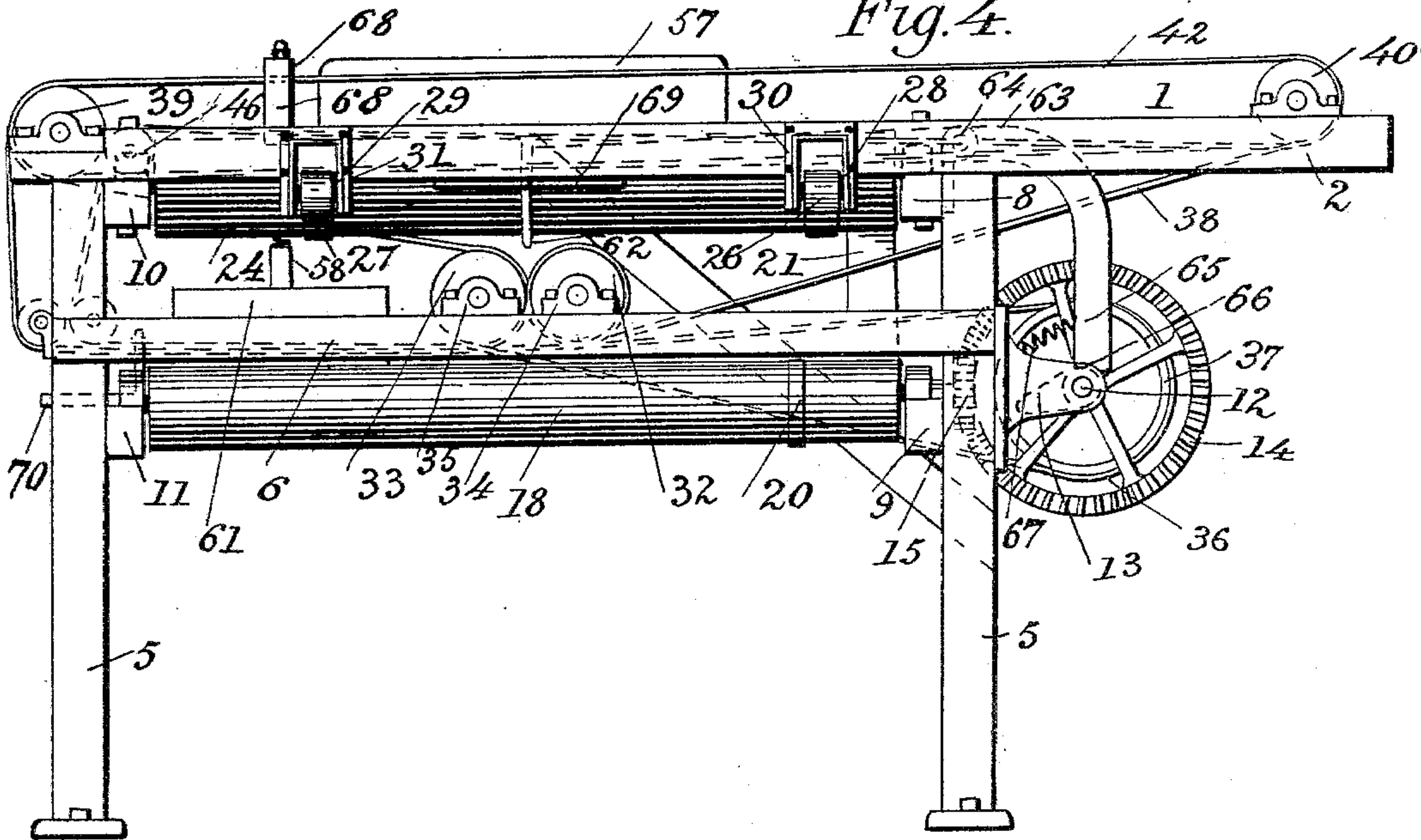
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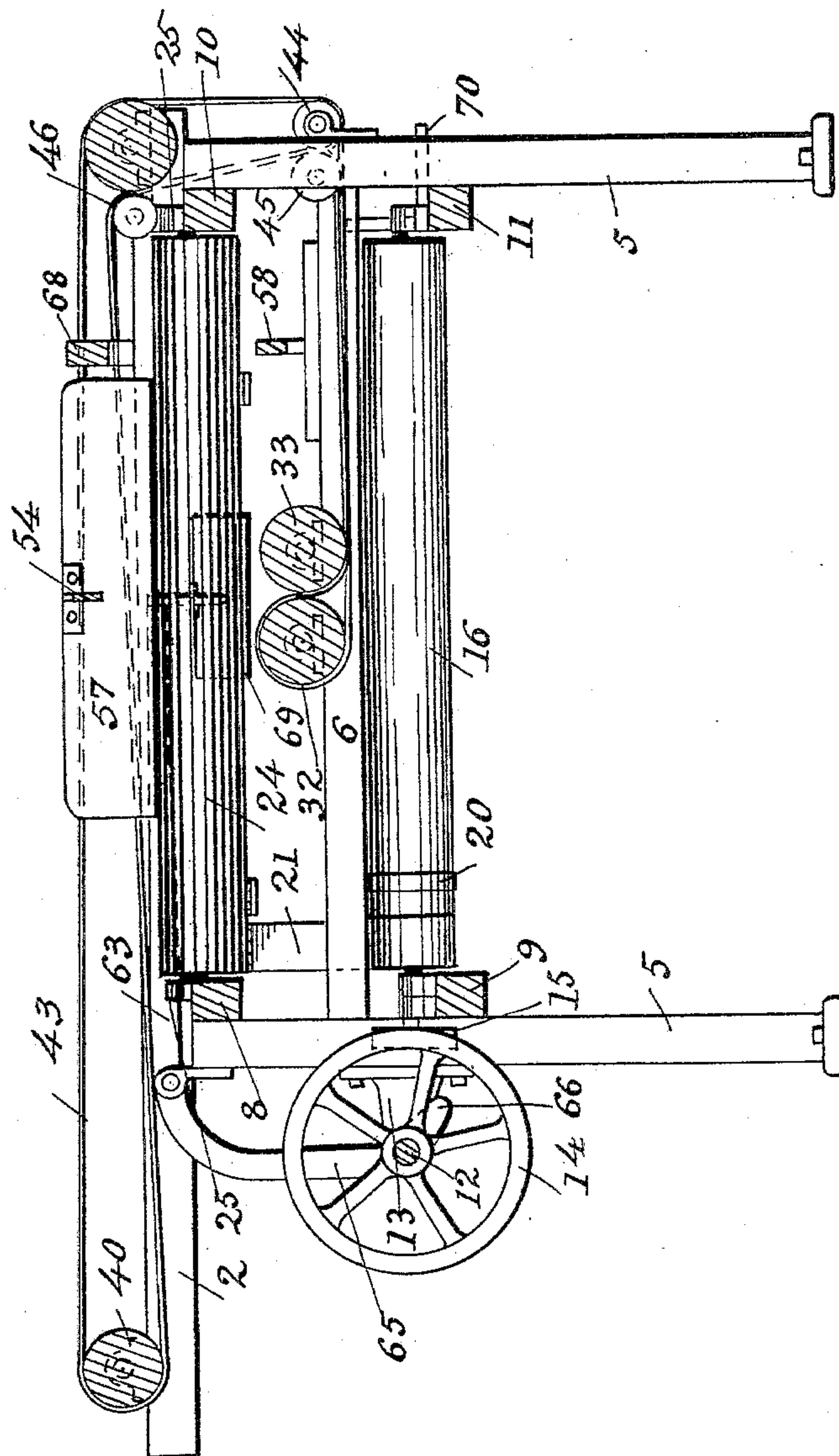
4 Sheets—Sheet 4.

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Fig. 6.



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UNITED STATES PATENT OFFICE.

CHARLES S. EVANS, OF MEADOW GROVE, NEBRASKA.

PAPER-FOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 597,461, dated January 18, 1898.

Application filed July 22, 1897. Serial No. 646,571. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. EVANS, a citizen of the United States, residing at Meadow Grove, in the county of Madison and State of Nebraska, have invented certain new and useful Improvements in Newspaper-Folding Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to newspaper-folding machines; and the object is to provide a simple and effective machine of this class for receiving the printed sheet from a hand or power press and folding the same in a convenient form for delivery.

To this end the invention consists in the construction, combination, and arrangement of the several parts of the same, as will be hereinafter more fully described, and particularly pointed out in the claims.

In the accompanying drawings the same reference-characters indicate the same parts of the invention.

Figure 1 is a perspective view of my improved newspaper-folding machine. Fig. 2 is a top plan view. Fig. 3 is a left-hand side elevation. Fig. 4 is a right-hand side elevation. Fig. 5 is a front elevation. Fig. 6 is a central longitudinal section.

1 represents the rectangular frame, comprising the horizontal parallel side rails 2 3, the vertical legs 4 4 and 5 5, the longitudinal parallel side braces 6 7, the front transverse braces 8 and 9, and the corresponding rear braces 10 11.

12 represents the main driving-shaft, journaled in the brackets 13 13, fixed to the front legs 4 5. This shaft 12 is provided with a crown-toothed gear-wheel 14, which meshes with a pinion 15, fixed on the contiguous end of a longitudinal roller 16, journaled in the bearings 17 17, fixed on the transverse braces 9 and 11, and 18 represents a corresponding roller journaled in similar bearings on the said braces, parallel with and in the same horizontal plane with the roller 16.

20 represents a crossed belt connecting the

rollers 16 and 18, so that their contiguous peripheries travel in the same direction, and from the roller 16 an endless straight belt 21 extends to and imparts motion to a longitudinal roller 22, journaled in the bearings 23 23, fixed to the transverse braces 8 and 10.

24 represents a corresponding roller journaled in the brackets 25 25, fixed to said braces 8 and 10, parallel with and in the same horizontal plane with the roller 22, and the periphery of this roller 24 adjacent to the roller 22 bears for about one-quarter of its circumference against the outer face of the upper portion of the belt 21 to impart the proper motion to the roller 24.

26 and 27 represent endless conveyer-tapes, which extend around the roller 22 and under the contiguous roller 24, engaging about one-third of the circumference thereof to assist in rotating it, and the opposite looped ends of said tapes pass over the tension-pulleys 28 and 29, journaled in the lower bifurcated ends of the depending brackets 30 31, secured to the side rail 2.

32 and 33 represent transverse parallel rollers horizontally journaled in the brackets 34 34 and 35 35, fixed on the longitudinal side braces 6 and 7, and they extend midway between and at a right angle to the upper and lower pairs of longitudinal rollers 22 24 and 16 18, respectively.

An endless belt 36 extends from the roller 33 to the band-pulley 37, fixed on the main shaft 12, passing under and engaging about one-third of the periphery of the contiguous roller 32 to impart motion in the proper direction to it.

38 represents an endless conveyer-tape passing under the roller 32 and over the roller 33, thence over the transverse guide or idler roller 39, journaled at the rear end of the frame in the side rails 2 and 3, thence horizontally along the top of the frame in the same horizontal plane and parallel with the upper surface of the longitudinal rollers 22 24, and thence over the transverse guide-roller or idler-roller 40, journaled at the front end of the frame in the side rails 2 and 3. A second endless conveyer-tape 41 passes around

the guide-rollers 39 and 40 on the same side of the roller 22 and parallel with the tape 38. Similar endless conveyer-tapes 42 and 43 extend from the roller 40 across the top of the frame, parallel with and in the same horizontal plane as those first mentioned, to the roller 39, thence vertically downward around a transverse parallel roller 44, thence horizontally forward under the roller 32, around over the top of said roller, and down under the contiguous roller 33, thence across the longitudinal upper faces of the rollers 16 and 18, around a guide-roller 45, thence upward over a similar guide-roller 46, and back to the roller 40.

The conveyer-tapes 38 41 and 42 43 serve to receive the printed sheet from the delivery mechanism of a printing-press and carry it forward over the rollers 22 24 and under the folder 57 and against the gage 88, and the tapes 42 43 perform a like function in carrying the folded sheet from the second-fold rolls to the final-fold rolls.

47 represents a trip-wheel fixed on one end of the main driving-shaft 12, and a portion of its annular flange 48 is cut away to form a recess 49 to receive the forward end 50 of the longitudinal lever 51, fulcrumed on a stud-bolt 52, fixed on the diagonal brace 53, connecting the side rail 3 and the contiguous front leg 4.

54 represents a transverse lever fulcrumed in the bracket 55, fixed on top of the side rail 3, and its shorter arm is connected by a rod 56 to the lever 51, between its fulcrum-point and its outer end.

57 represents the folder, and it is transversely fixed to the inner end of the lever 54, so as to extend parallel with the rollers 22 24 and to travel to and fro between them to start the sheet between said rollers. A similar lever 58 is fulcrumed in the bracket 59, fixed to the longitudinal brace 7, and its shorter arm extends under the rear end of the lever 51, from which it receives its intermittent motion.

60 represents a retractile spring which holds the end of the lever 58 in operative contact with the end of the lever 51.

The free end of the lever 58 is provided with a folder 61, arranged vertically above the lower horizontal rollers 16 18 and is arranged to move in unison with the folder 57.

A transverse folder 62 is mounted vertically above the rollers 32 and 33 on the free end of a longitudinal lever 63, fulcrumed in a bracket 64, fixed on the transverse brace 8, and the forward end of said lever is provided with a depending arm 65, the lower end of which extends into the path of a cam 66, fixed on the driving-shaft 12, which imparts the proper motion to said folder 62. A retractile spring 67 is connected to said arm 65 to restore it to its normal position after it has

been released by the cam 66. The movement of the folders is so timed that a sheet will be folded double by the action of the rollers 22 24 and thence carried by the tapes across the rollers 32 33, where the second folder 62 feeds it to said rollers to give it the second fold at a right angle to the first fold, and the tapes carry the sheet across the rollers 16 18, where it is received from the folder 61 to give it the third and final fold, and from whence it is discharged into a receptacle placed below to receive it.

68 represents a gage adjustably secured to the side rails 2 and 3 to gage the sheet for the rollers 22 24, and a similar gage 69 is adjustably secured to the under side of the rail 2, which performs a similar office for the sheet with reference to the rollers 32 33, and a corresponding gage 70 is adjustably secured to the transverse brace 11, so as to adjust the sheet with reference to the rollers 16 18.

Although I have specifically described the construction and relative arrangement of the several elements of my invention, I do not desire to be confined to the same, as such changes or modifications may be made as clearly fall within the scope of my invention without departing from the spirit thereof.

Having thus fully described my invention, what I claim as new and useful, and desire to secure by Letters Patent of the United States, is—

1. A paper-folding machine comprising the main driving-shaft 12, the crown-gear 14, the band-pulley 37, trip-wheel 47 and the cam 66 fixed on said shaft, the lever 51 having one end projecting into the path of said trip-wheel, the longitudinal parallel rollers 16 and 18 the former provided with a pinion 15 meshing with the gear 14, the cross-belt 20 connecting said rollers, the rollers 22, 24, arranged parallel with the rollers 16 and 18, and the endless belt 21 connecting the rollers 16 and 22, in combination with the transverse rollers 32 and 33, the endless belt 36 connecting the roller 33 and the band-pulley 37, the folder 57 operatively connected with the lever 51 to which an intermittent movement is imparted by the trip-wheel 47, the folder 61 operatively connected with the lever 51, the folder 62 operatively connected with the cam 66 and the series of endless feed-tapes adapted to feed or carry the sheet from one set of folding-rollers to the other, substantially as shown and described.

2. The combination with the main driving-shaft 12, the crown-gear 14, the band-pulley 37, the cam 66 and the trip-wheel 47, of the transverse rollers 32, 33 and the belt 36 connecting said pulley and rollers, the longitudinal parallel rollers 16 and 18, the former provided with a pinion 15 meshing with the gear 14, the cross-belt 20 connecting said rollers 16 and 18, the rollers 22, 24, arranged par-

allel with the rollers 16 and 18, the endless
belt 21 connecting the rollers 16 and 22, the
folder 62 and retractile spring 67 operatively
connected to said cam, the folder 57, the rod
5 56 and the lever 51 having one end project-
ing into the path of said trip-wheel and the
series of endless feed-tapes adapted to feed or
carry the sheet from one set of folding-rollers

to the other, substantially as shown and de-
scribed. 10

In testimony whereof I hereunto affix my
signature in presence of two witnesses.

CHAS. S. EVANS.

Witnesses:

C. T. MUFFLY,

JNO. W. WARRICK.