

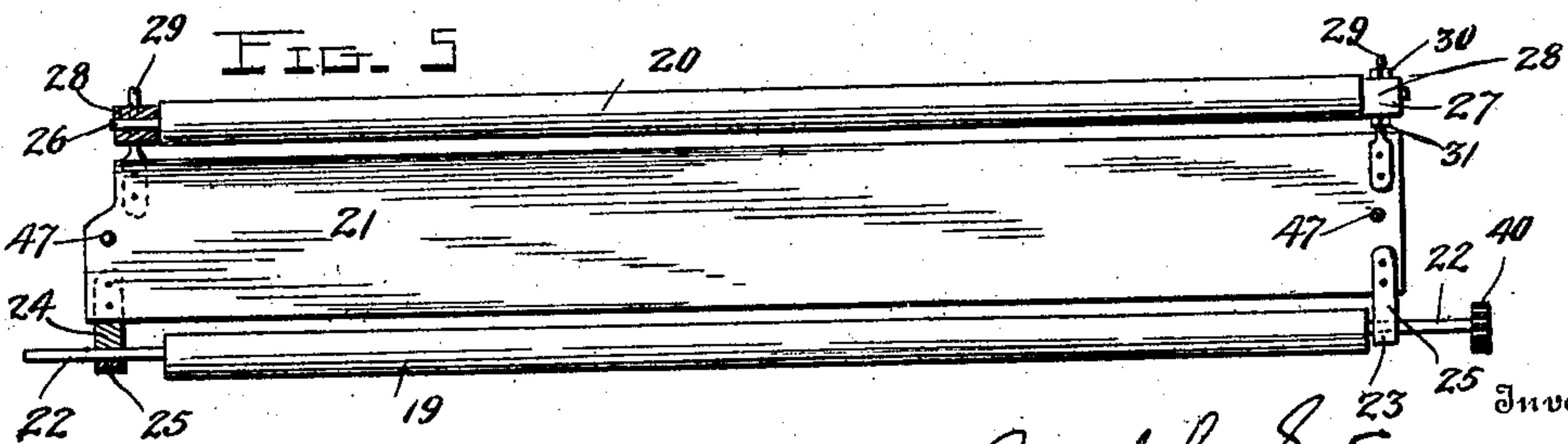
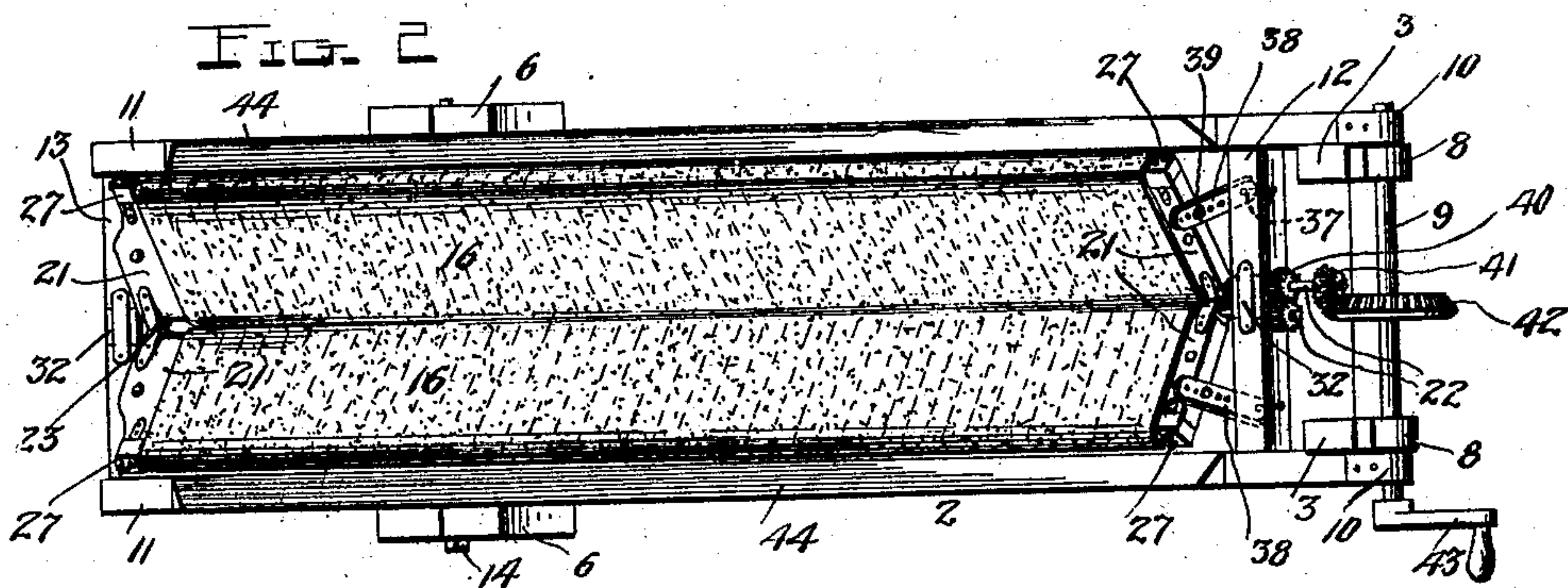
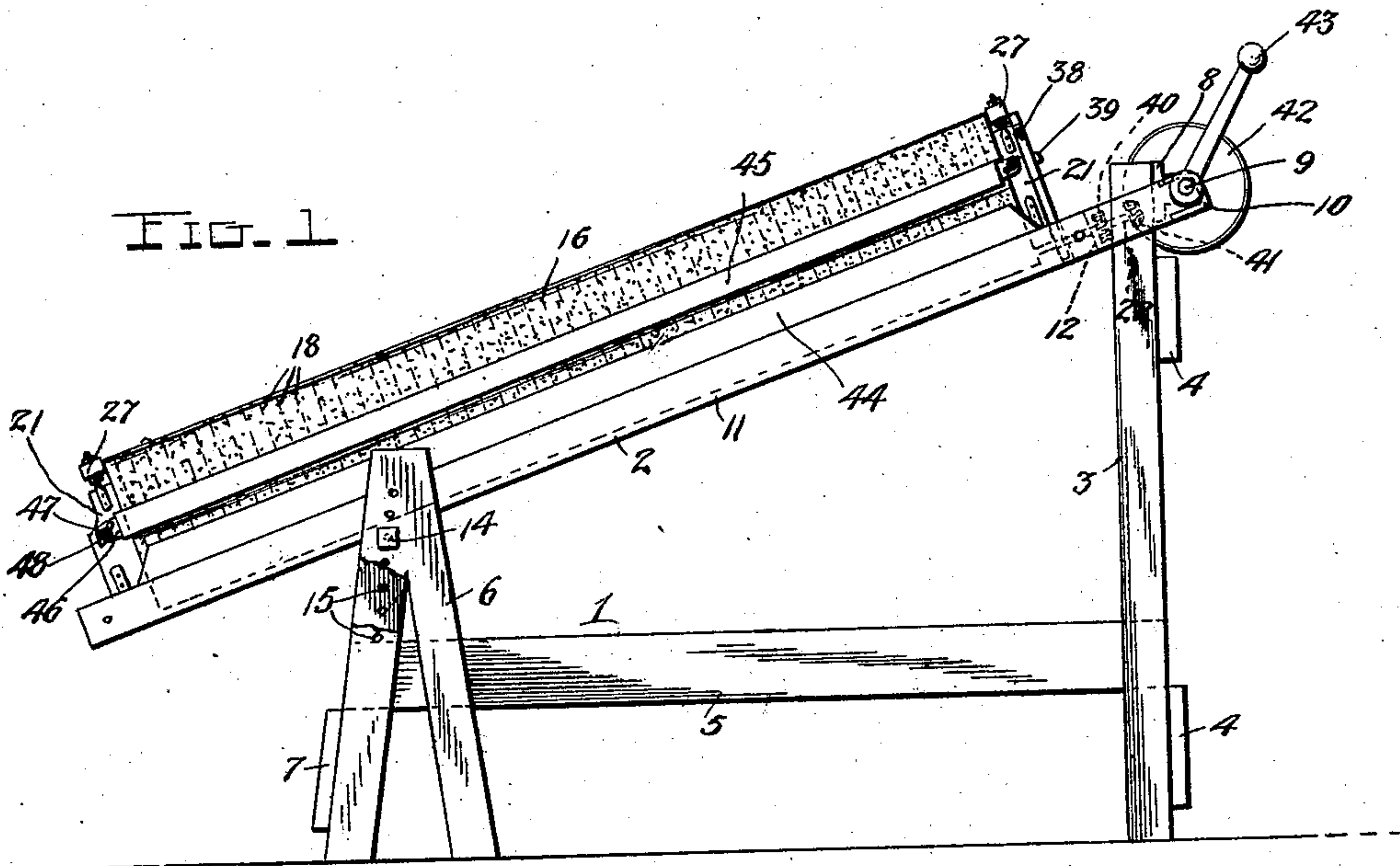
No. 859,933.

PATENTED JULY 16, 1907.

J. S. EVAN.
SEPARATOR.

APPLICATION FILED DEC. 15, 1906.

2 SHEETS—SHEET 1.



Witnesses

J. H. Grisbauer, Jr.
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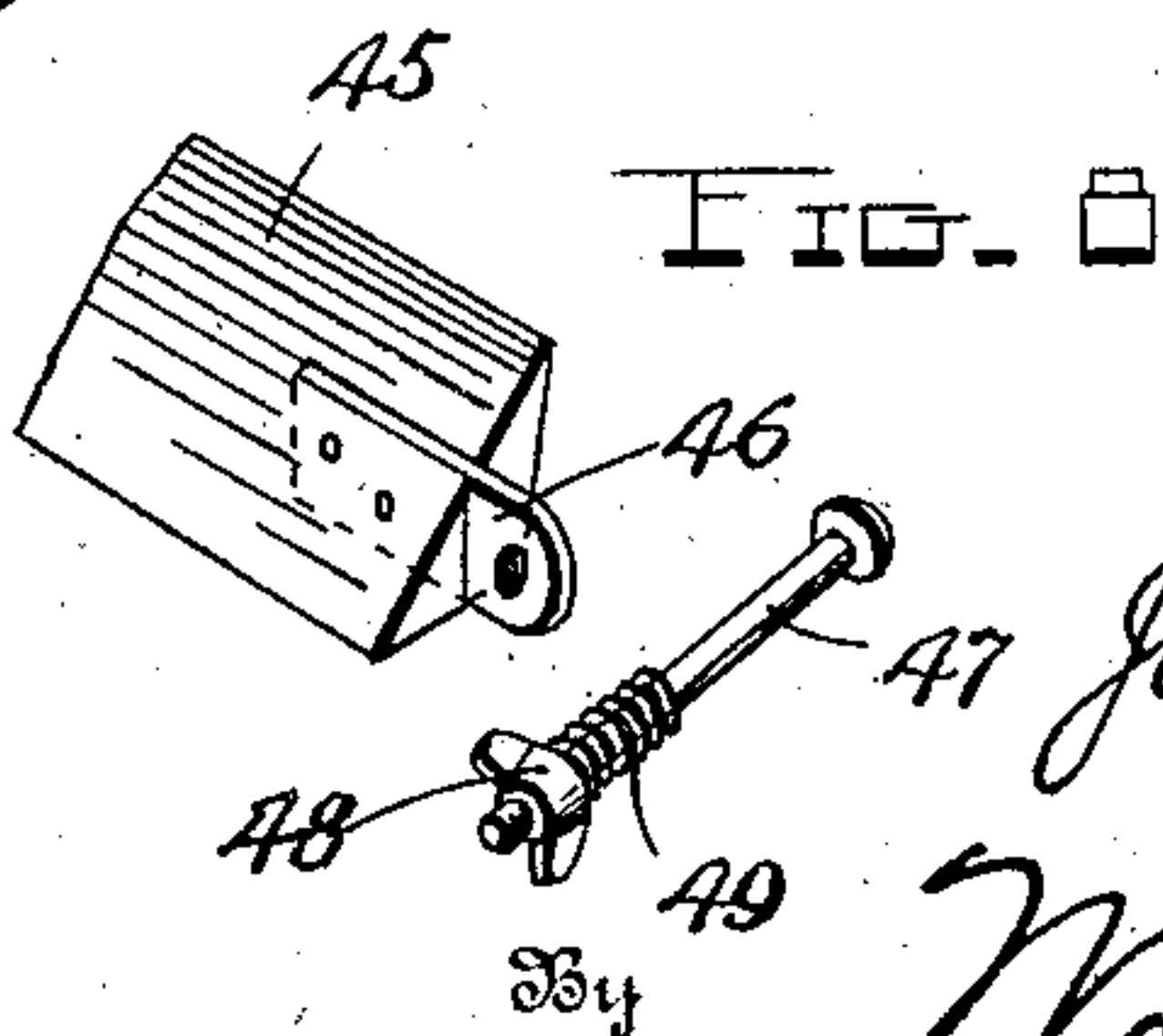
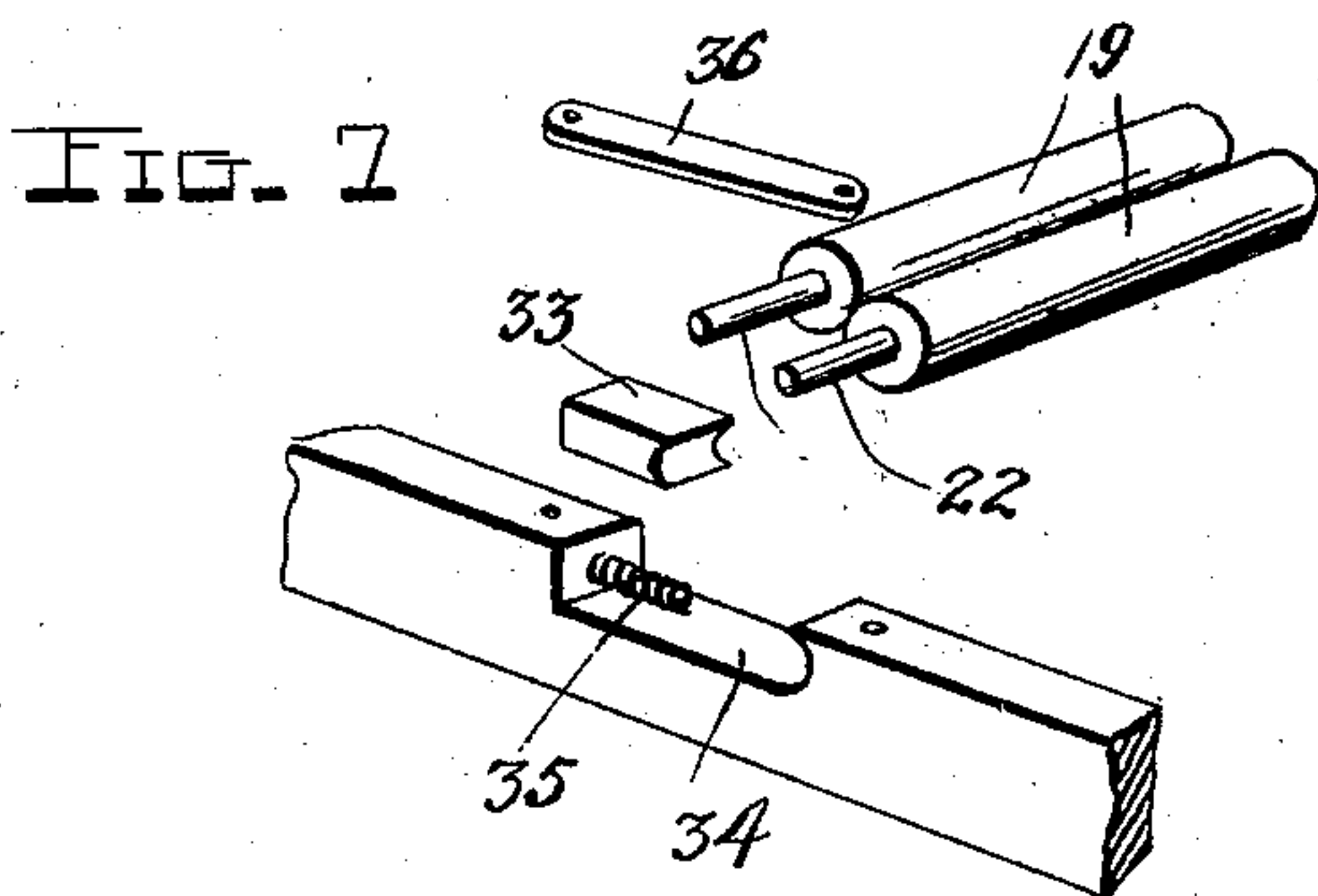
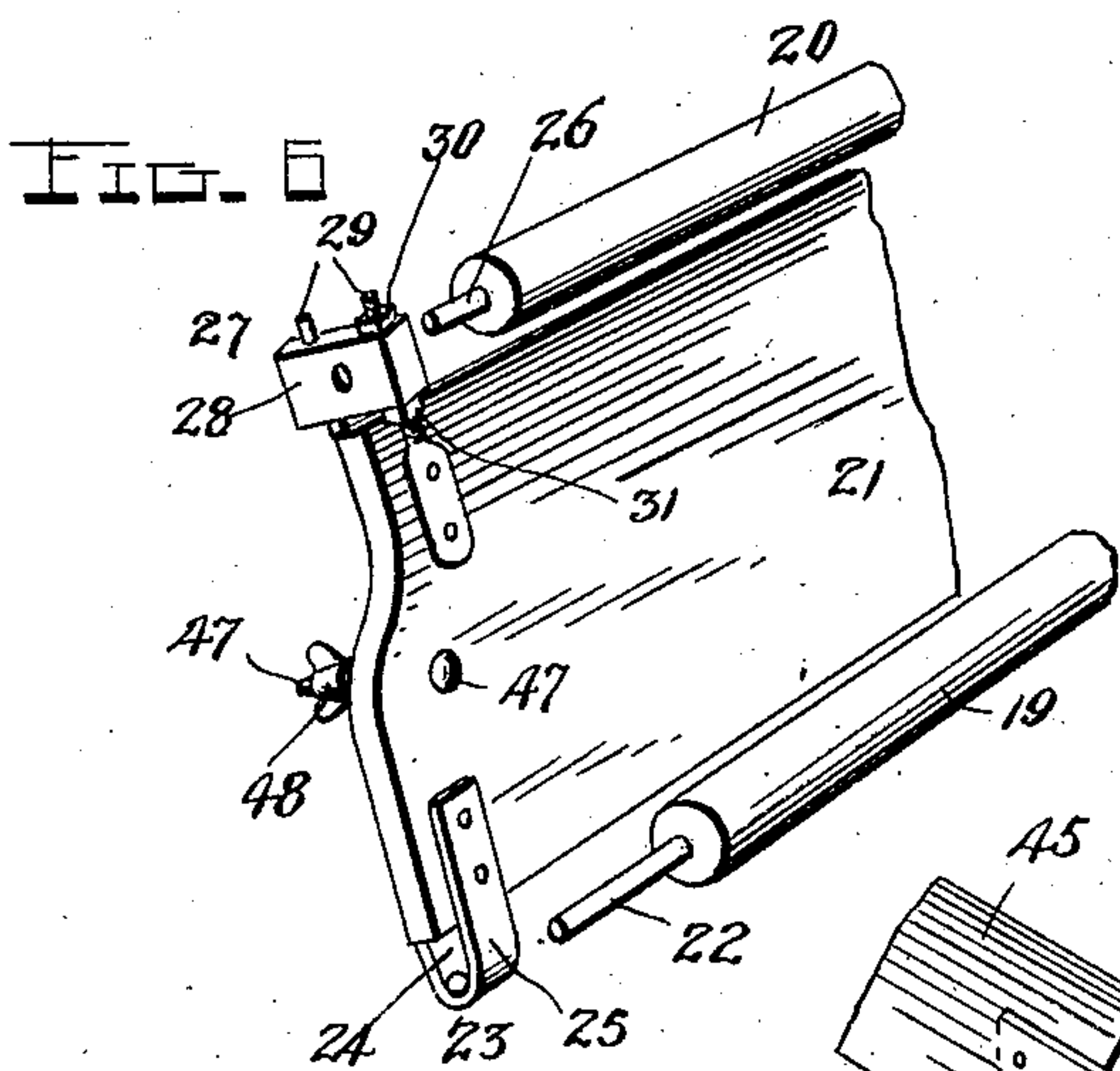
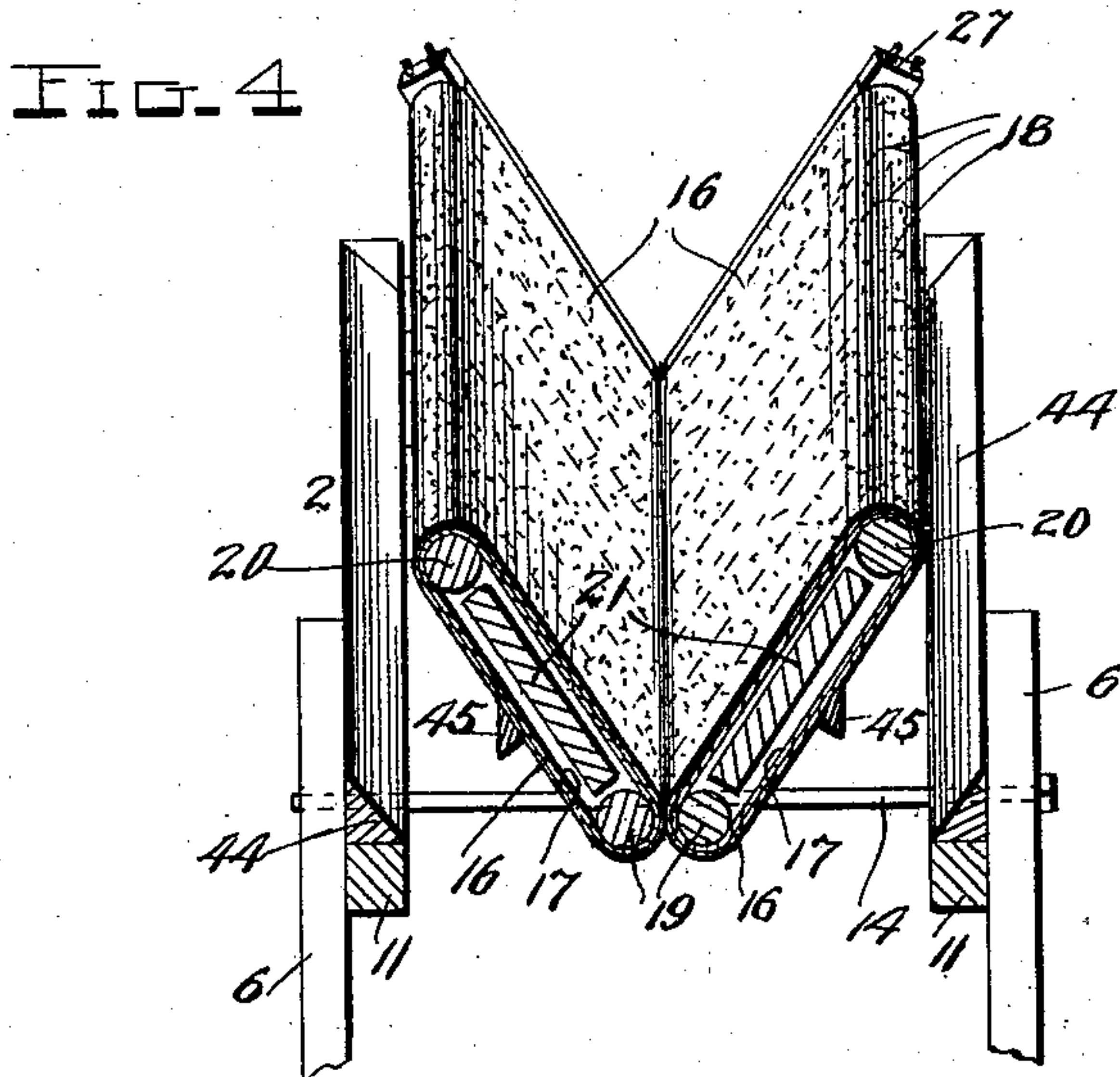
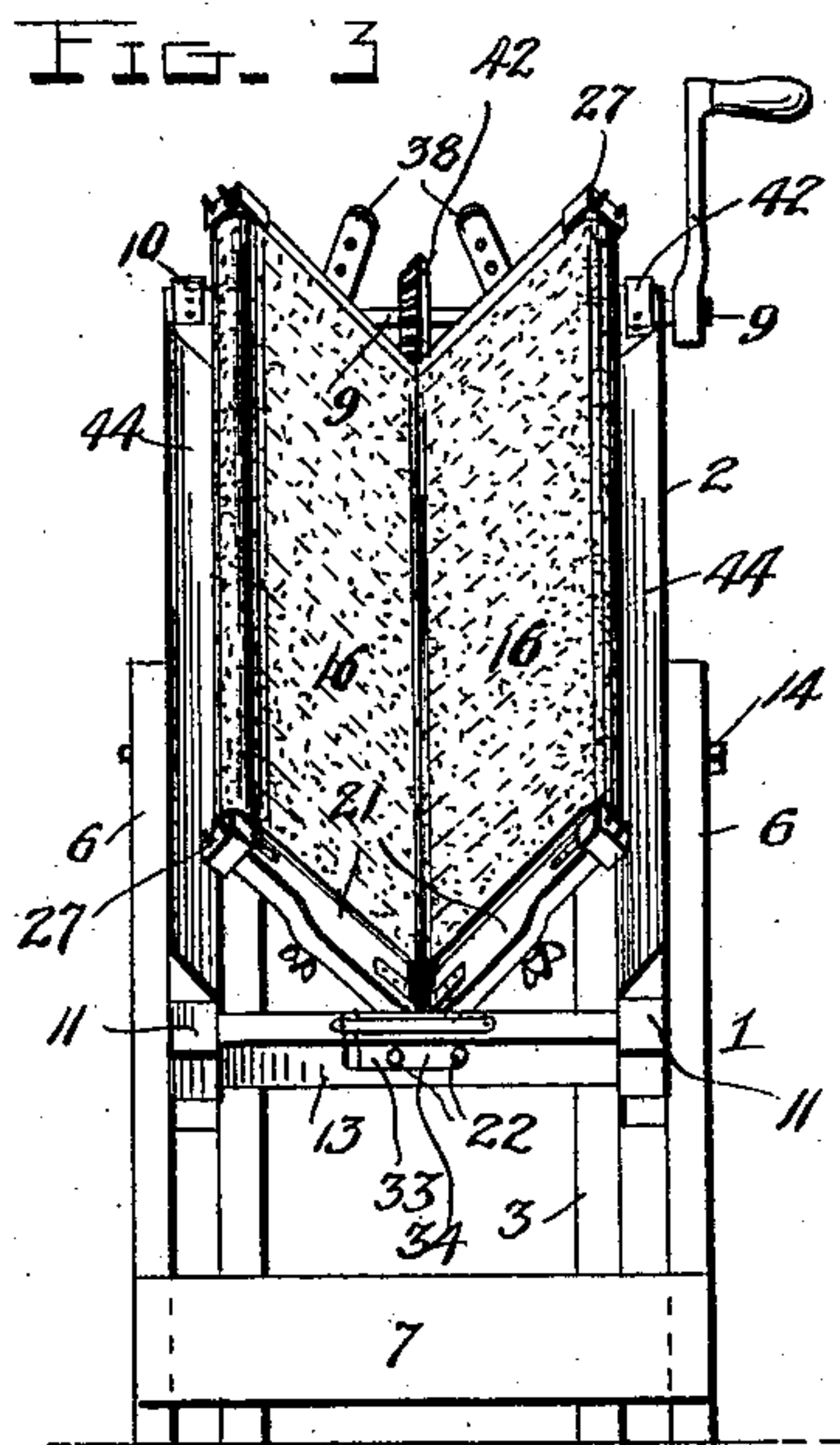
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2 SHEETS—SHEET 2.



Witnesses
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UNITED STATES PATENT OFFICE.

JOSEPH S. EVAN, OF MINNESOTA LAKE, MINNESOTA.

SEPARATOR.

No. 859,933.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed December 15, 1906. Serial No. 348,088.

To all whom it may concern:

Be it known that I, JOSEPH S. EVAN, a citizen of the United States, residing at Minnesota Lake, in the county of Faribault and State of Minnesota, have invented certain new and useful Improvements in Separators, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in machines for separating wild oats and the like from wheat and other grain or seed, and more particularly for use in connection with my improved grain separator forming the subject matter of a co-pending application filed July 21, 1906 and bearing Serial No. 327,187.

The object of the invention is to improve and simplify the construction and operation of machines of this character and thereby render the same more efficient.

The above and other objects are accomplished by the improved construction illustrated in the accompanying drawings in which,

Figure 1 is a side elevation of my improved grain separator and cleaner; Fig. 2 is a top plan view of the same; Fig. 3 is an end elevation; Fig. 4 is a detail vertical transverse section through the endless aprons and their adjustable frame; Fig. 5 is a detail view partly in section and partly in elevation of the board and the two rollers for one of the aprons; Fig. 6 is a detail perspective view showing the manner in which the apron rollers are mounted; Fig. 7 is a detail perspective view showing the bearing for the journals of the lower rollers of the aprons, the parts of said bearing being separated; and Fig. 8 is a detail view showing the connection for one end of one of the scraper bars.

My improved grain separator and cleaner comprises a stationary support or main frame 1 of any suitable form and construction upon which is adjustably mounted a downwardly and rearwardly inclined swinging frame 2 adapted to support the cleaning and separating mechanism. The support 1, as here shown, consists of two uprights 3 arranged at the head of the machine and connected by cross bars 4. The uprights 3 are also connected by longitudinal bars 5 to two inverted V-shaped uprights 6 arranged at the rear end of the machine and connected together by a cross bar 7. Upon the upper ends of the uprights 3 are bearings 8 for a transverse shaft 9. The frame 2 swings from the latter and is pivotally connected to it by straps 10 arranged upon the upper forward ends of its longitudinal side bars 11. As shown, the frame 2 is of rectangular form and consists of the side bars 11 connected by upper and lower cross bars 12, 13. The lower rear end of the frame 2 is adjustable vertically by means of a cross bar or rod 14 upon which it rests and which is adapted to be inserted in alining openings 15 arranged in vertical rows in the uprights 6 as will be readily understood upon reference to Figs. 1 and 4 of the drawings.

The separating and cleaning mechanism mounted

upon the frame 2 is essentially adapted for removing wild oats and the like from wheat and as shown, comprises two diverging, endless traveling aprons which form between them a downwardly and rearwardly inclined trough and which are composed of material having a napped surface to which wild oats will adhere and be carried upwardly out of the stream of grain passing down between the aprons. I preferably make the aprons of flannel 16 and to strengthen and render them more durable I secure the flannel upon canvas belts 17 by rows of stitching 18. Each of the endless aprons 16 passes over lower and upper rollers 19, 20 mounted upon the longitudinal edges of a board or frame 21 arranged between the two stretches of the apron. The lower roller 19 has its journals 22 mounted in bearings 23 which consist of bearing blocks 24 engaged with the lower edges of the board 21 and U-shaped straps 25 surrounding the journals 22 and blocks 24 and secured upon the board 21, as clearly shown in Figs. 5 and 6. The upper roller 20 has its journals 26 mounted in bearings 27 which are adjustable for the purpose of stretching the apron. The bearings 27 consist of blocks 28 slidable upon studs or rods 29 secured upon the opposite faces of the board 21 and projecting beyond the upper edge of the same. One of the studs 29 is screw-threaded and adjusting nuts 30, 31 are arranged upon the same above and below the bearing block 28 so that the latter may be adjusted for the purpose mentioned. The journals 22 of the lower rollers 19 are extended to form pivots for the two diverging apron-carrying frames or boards 21. Said extended ends of the journals 22 are mounted in spring-pressed bearings 32 arranged in the central portions of the two cross bars 12, 13 of the frame 2. Each of the bearings 32, as clearly shown in Fig. 7, comprises a bearing block 33 which is slidably mounted in a recess 34 formed in one of said cross bars. One of the journals 22 engages the curved end of the recess 34 and the other of said journals 22 is engaged by the curved end of the block 33. This block is arranged in one end of the recess 34 and is actuated by a coil spring 35 arranged in said recess between it and the adjacent end of the recess. Said spring forces said block, and hence the journal 22 engaged by the latter, in the direction of the other journal 22, and the lower rollers 19 are thereby held in yielding contact. A plate 36 secured upon the cross bar retains the block 33 and the spring 35 within the recess 34. It will be observed that this bearing 32 not only permits the journals of the lower rollers 19 to serve as pivots for the apron-carrying frames 21, but also presses the rollers together, so that the belts or aprons 16 are held in contact with each other at the bottom of the V-shaped trough formed between them.

In order to adjust the aprons 16 angularly with respect to each other, I preferably pivot, as at 37, upon the upper cross bar 12 on the frame 2, two brace bars 38

formed with series of apertures to receive removable pins, screws or the like 39 which adjustably connects said braces to the upper ends of the boards or frames 21.

This construction enables the aprons to be adjusted at any angle with respect to each other, as will be readily understood upon reference to Figs. 1 and 2 of the drawings.

In order to cause the two upwardly diverging stretches of the aprons to travel upwardly in opposite directions I secure upon the extended ends of the journals 22 at the front ends of the rollers 19, meshing cog wheels or gears 40, and upon one of said journals 22 which is extended beyond the other I provide a beveled pinion 41 which meshes with a beveled gear 42 upon the shaft 9. The latter may be rotated in any desired manner, but, as shown, I have provided a crank handle 43 upon one of its ends. The wild oats, chaff, dirt and the like, which adheres to the aprons 16 and is carried upwardly over the upper rollers 20, will drop off of the same and fall down within the support of frame 1. In order to deflect the oats, etc. toward the center of the frame, triangular-shaped deflector bars 44 are secured upon the upper surfaces of the longitudinal or side bars 11 of the frame 2, as clearly shown in Fig. 4. The oats, etc., that do not drop from the aprons are removed therefrom by scraper bars 45. These scrapers 45 are in the form of longitudinally extending bars of triangular shape in cross section mounted so that they will yieldably engage the lower stretches of the aprons. This mounting is preferably effected by providing in the ends of the bars 45 plates 46 apertured to receive screwbolts 47 which project through the boards or frames 21 and are adapted to serve as guide rods. Wing nuts 48 are arranged upon the threaded outer ends of the bolts 47 and between them and the apertured plates or ears 46 are confined upon said bolts coil springs 49 which hold the scraper bars 45 in yielding contact with the aprons.

From the foregoing description, taken in connection with the accompanying drawings, it is thought that the construction, operation and advantages of the invention will be readily understood without a more extended explanation.

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

1. In a separator of the character described, the combination of a main support, a transverse shaft at one end thereof, a frame having one of its ends pivotally mounted upon said shaft, means upon said support for adjustably supporting the free end of said frame, bearings upon said frame, boards, rollers mounted upon the longitudinal edges of said boards, the journals of the lower rollers being pivotally mounted in the bearings upon said frame, endless aprons upon said rollers and provided with nap surfaces, springs for pressing the lower rollers together, scrapers to co-act with the nap surfaces of said aprons, meshing gears upon the journals of said lower rollers, and gearing connecting the first-mentioned shaft with the shaft of one of said lower rollers, substantially as shown and described.

2. In a separator of the character described, the combination of a frame, bearings therein, longitudinally-extending boards, bearings upon the longitudinal edges of said

boards, rollers arranged upon the longitudinal edges of said boards and having their journals mounted in said bearings, the journals of the rollers of the lower edges of said board being pivotally mounted in the bearings on said frame, endless aprons upon said rollers and provided with nap surfaces, braces pivoted upon said frame, and adjustable connections between said braces and said boards for adjustably supporting the latter.

3. In a separator of the character described, the combination of a frame, bearings therein, longitudinally-extending boards, bearings upon the longitudinal edges of said boards, rollers arranged upon the longitudinal edges of said boards and having their journals mounted in said bearings, the journals of the rollers of the lower edges of said board being pivotally mounted in the bearings of said frame, endless aprons upon said rollers and provided with nap surfaces, threaded studs projecting from the outer faces of said boards adjacent to their ends, scraper bars slidable upon said studs and adapted to engage the outer stretches of said aprons, nuts upon said studs, and coil springs upon said studs between said nuts and said scraper bars for pressing the latter against said aprons.

4. In a separator of the character described, the combination of a frame, bearings therein, longitudinally-extending boards, bearings upon the longitudinal edges of said boards, rollers arranged upon the longitudinal edges of said boards and having their journals mounted in said bearings, the journals of the rollers of the lower edges of said boards being pivotally mounted in the bearings on said frame, endless aprons upon said rollers and provided with nap surfaces, means for pressing the lower rollers together, means for adjusting the bearings upon the outer edges of said boards, braces pivoted upon said frame and adjustably connected to said boards, longitudinally-extending, spring-pressed scraper bars arranged upon the outer faces of said boards and engaged with the outer stretches of said aprons, and means for rotating the rollers on the lower edges of said boards, substantially as shown and described.

5. In a separator of the character described, the combination of a main frame consisting of end uprights connected by longitudinal bars, the uprights at one end being formed with vertical series of transverse alining apertures, bearings upon the uprights at the other end of the frame, a transverse shaft journaled in said bearings, a vertically swinging frame pivotally suspended from said transverse shaft, a transverse rod extending across and engaged with the bottom of said swinging frame and having its ends removably engaged with the apertures in said end uprights to adjustably support the swinging frame in an inclined position, diverging endless aprons mounted upon said swinging frame and having nap surfaces and means for imparting the motion of said transverse shaft to said aprons.

6. In a separator of the character described, the combination of a main frame or support having bearings at one of its ends, a transverse shaft journaled in said bearings, a vertically swinging frame pivotally hung upon said transverse shaft, means for adjustably supporting the free end of said swinging frame, bearings upon the ends of said swinging frame, boards, rollers journaled upon the longitudinal edges of said boards, the journals of the lower rollers being mounted in said bearings on the swinging frame, endless aprons upon said rollers and provided with nap surfaces, a spring for pressing the lower rollers together, meshing gears upon the journals of said lower rollers and gearing connecting the first mentioned shaft with the shaft of one of said lower rollers, substantially as described.

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

JOSEPH S. EVAN.

Witnesses:

JOHN G. BETT,
GEORGE KREMER.