

No. 701,865.

Patented June 10, 1902.

A. T. FERRELL.

BRUSH ATTACHMENT FOR GRAIN CLEANING MACHINES.

(Application filed May 24, 1901.)

(No Model.)

2 Sheets—Sheet 1.

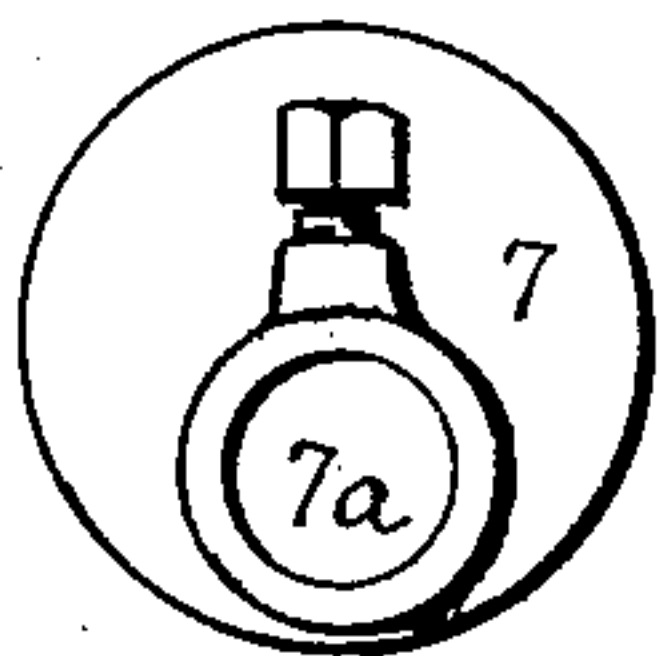
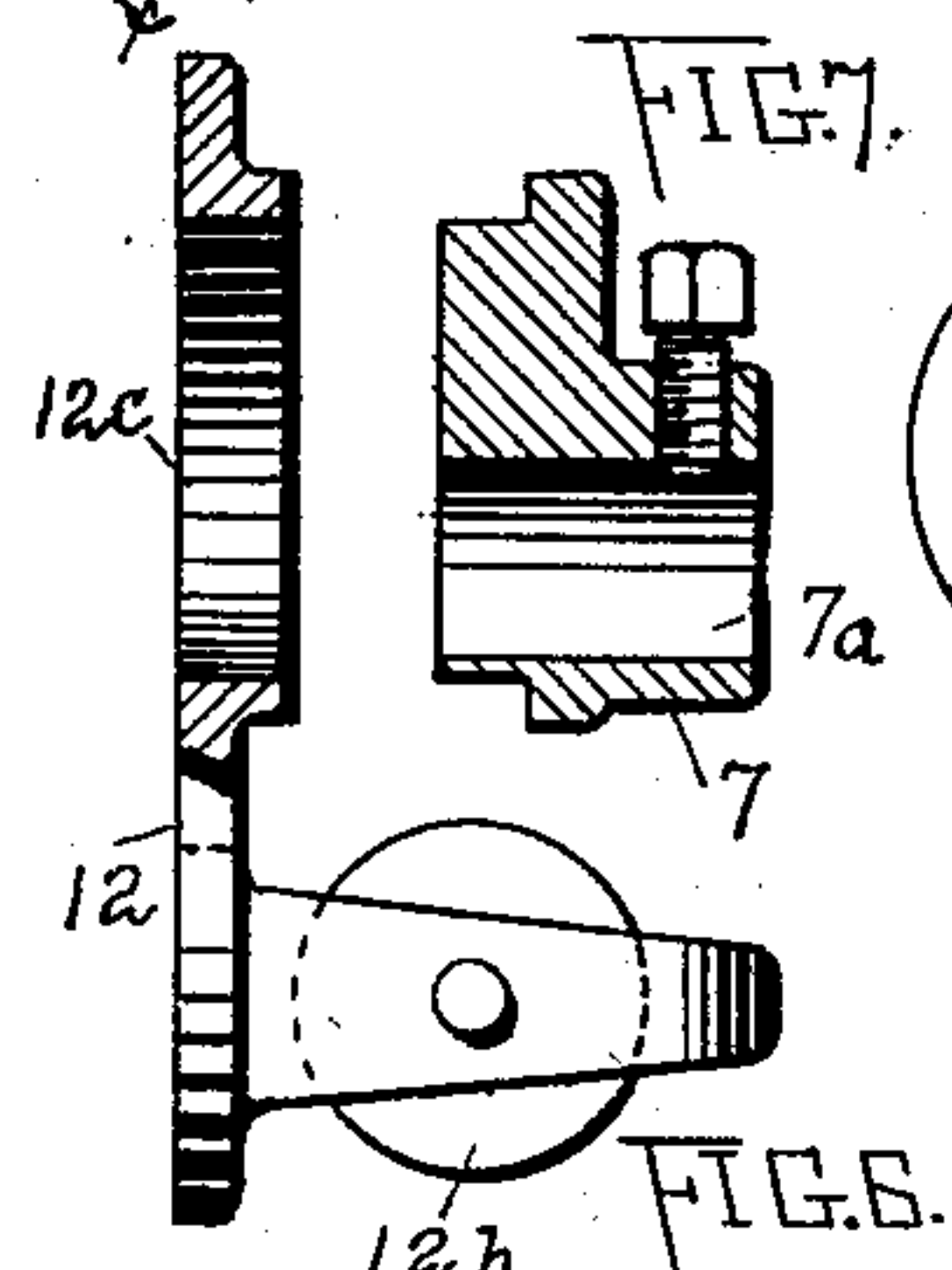
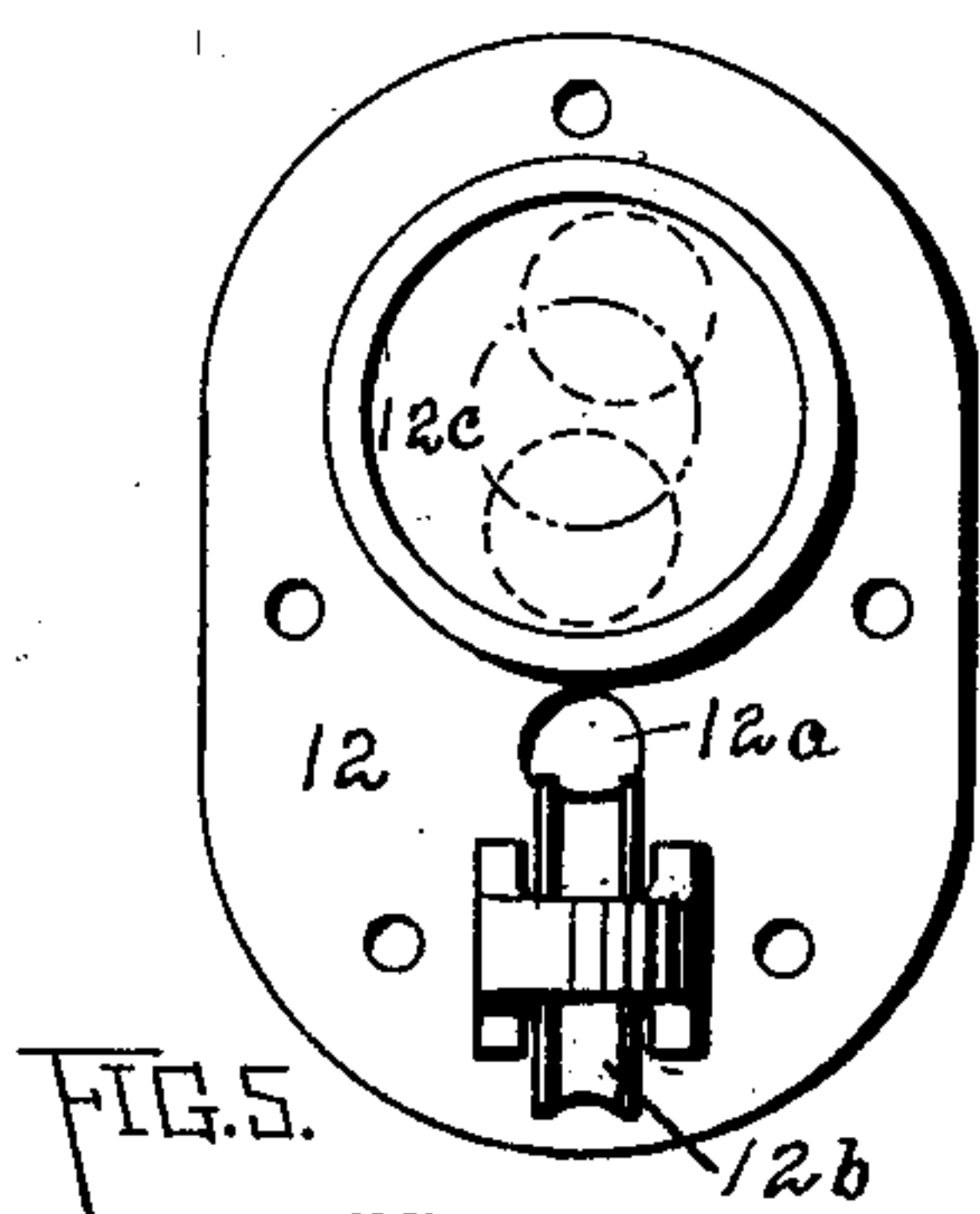
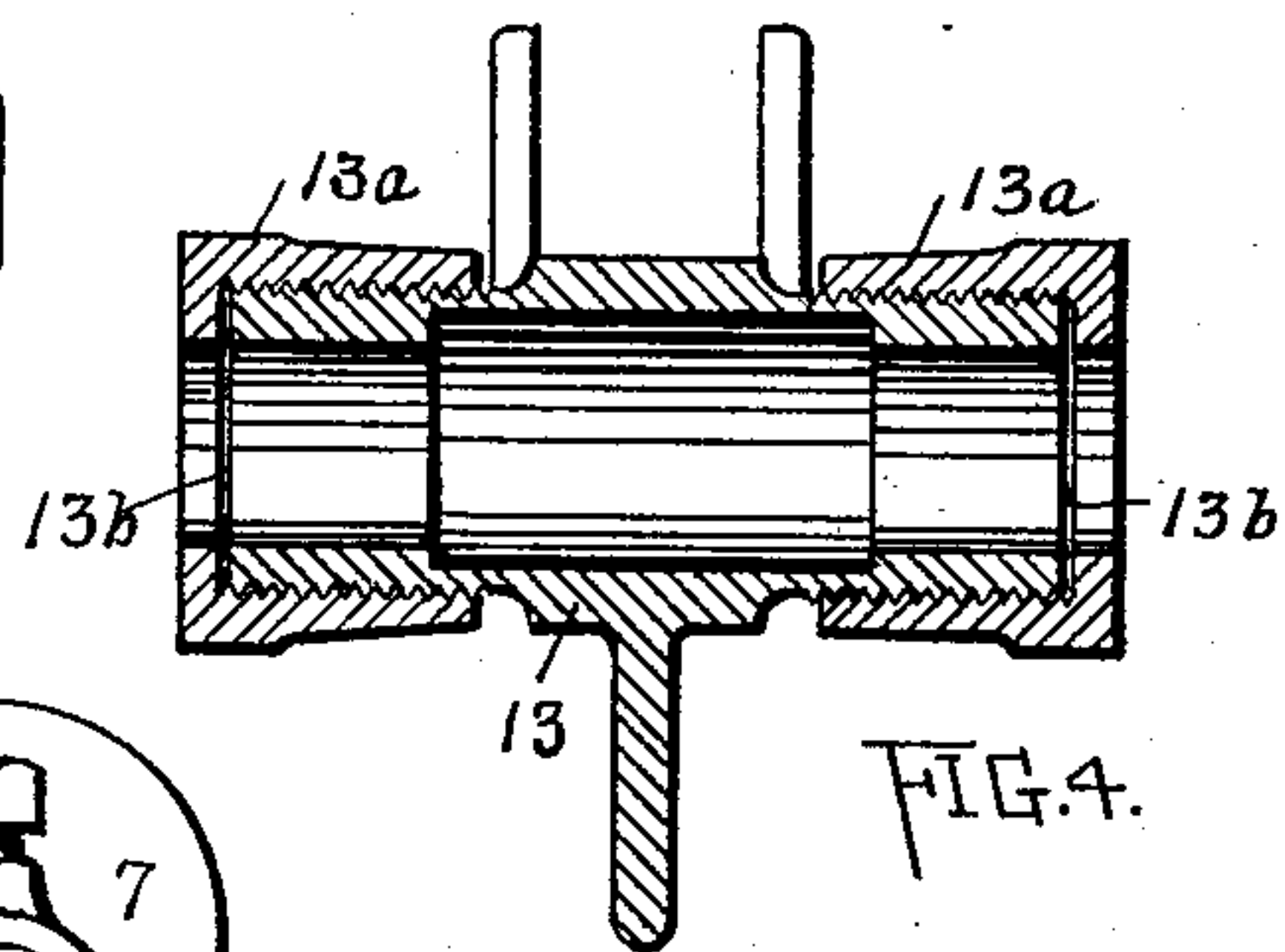
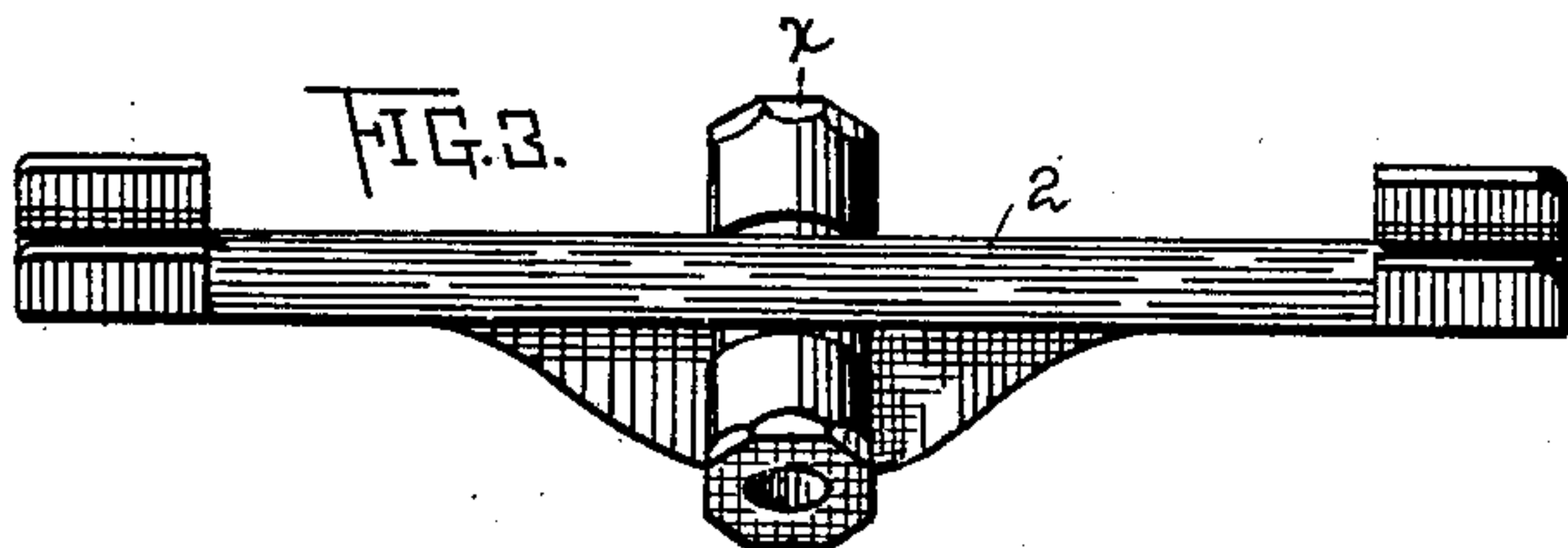
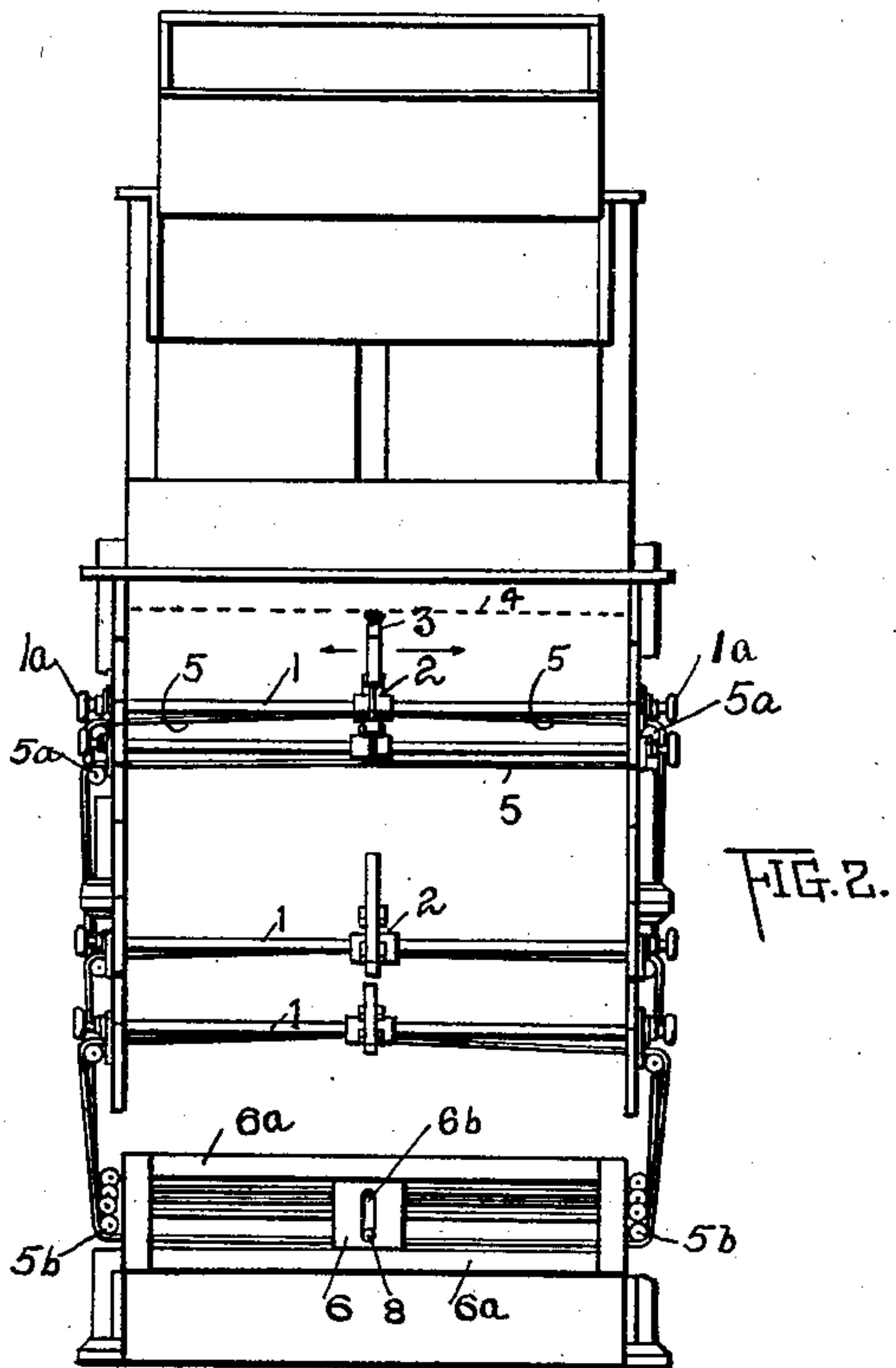
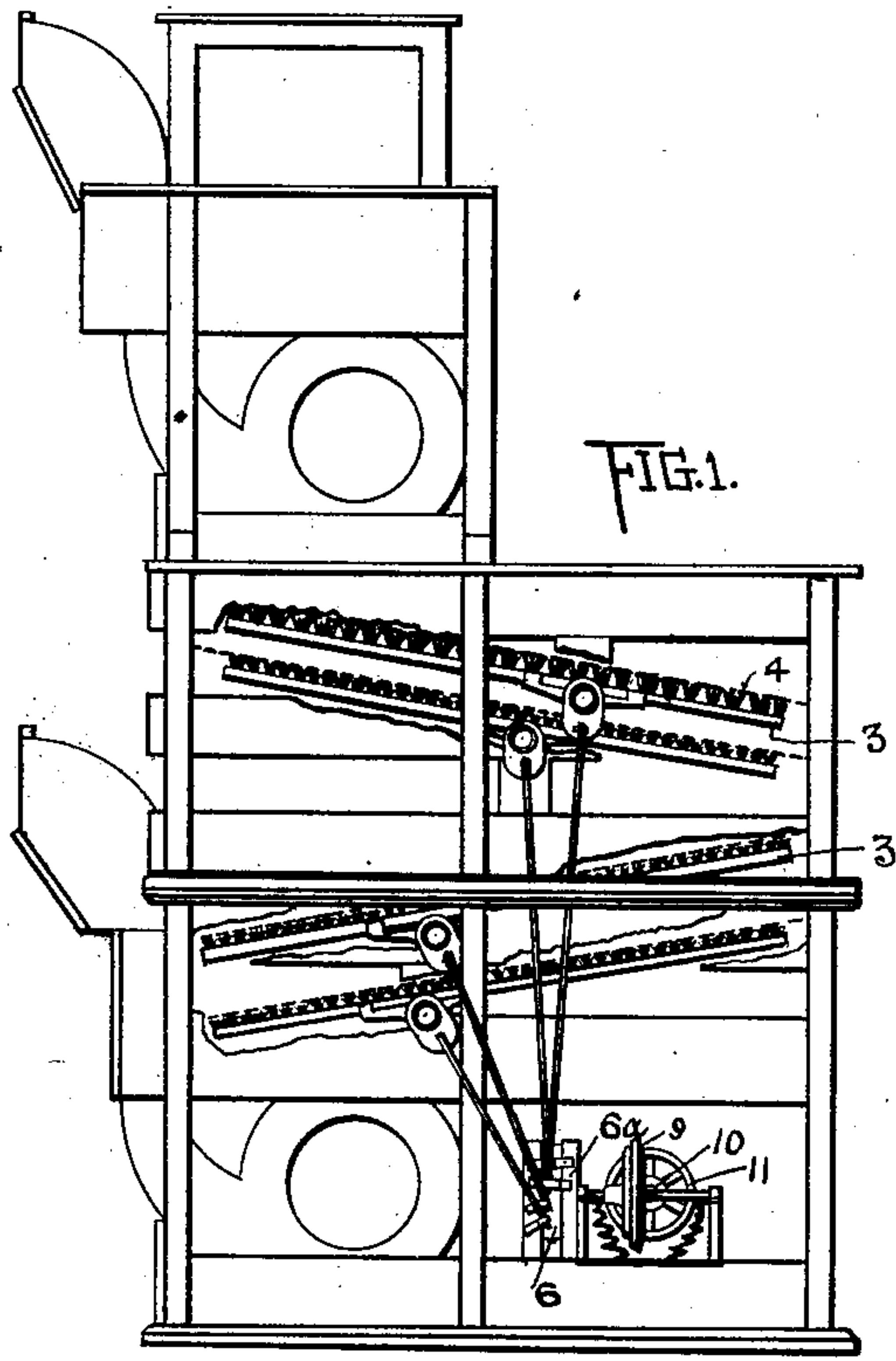


FIG. 8.

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2 Sheets—Sheet 2.

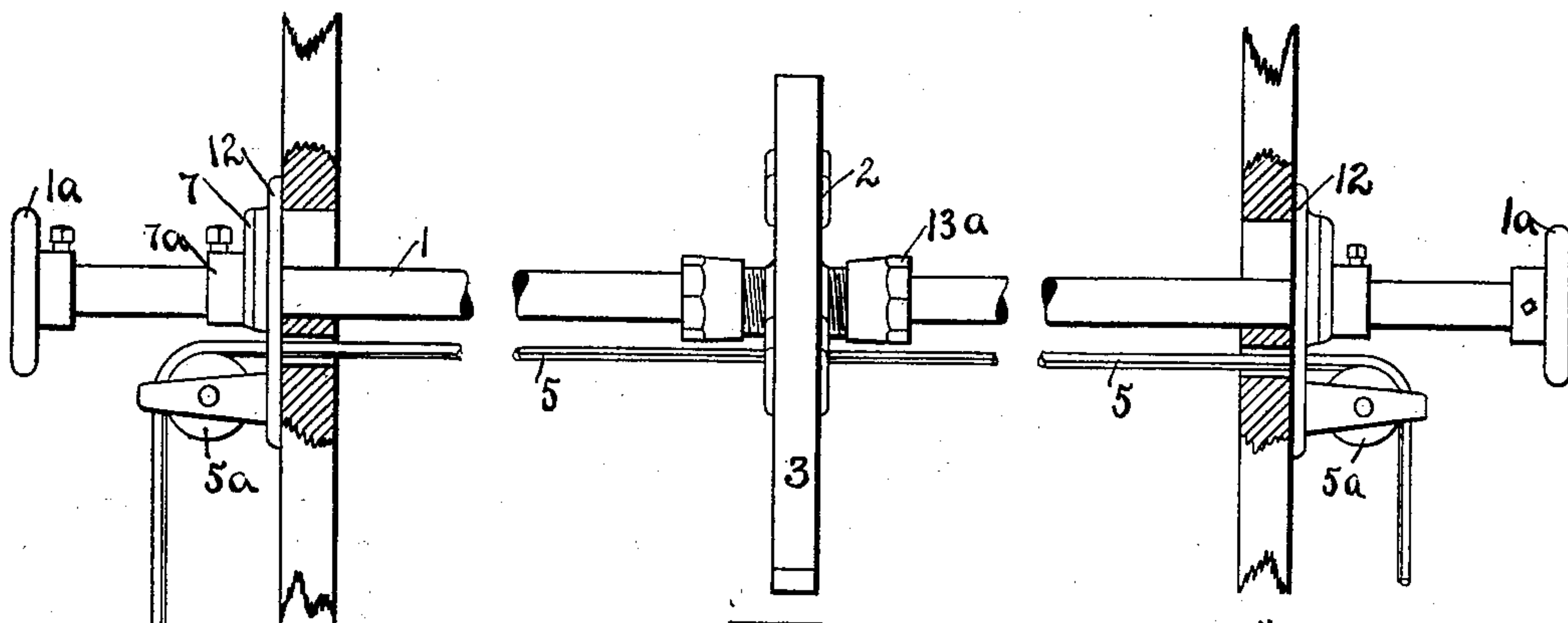


FIG. 8.

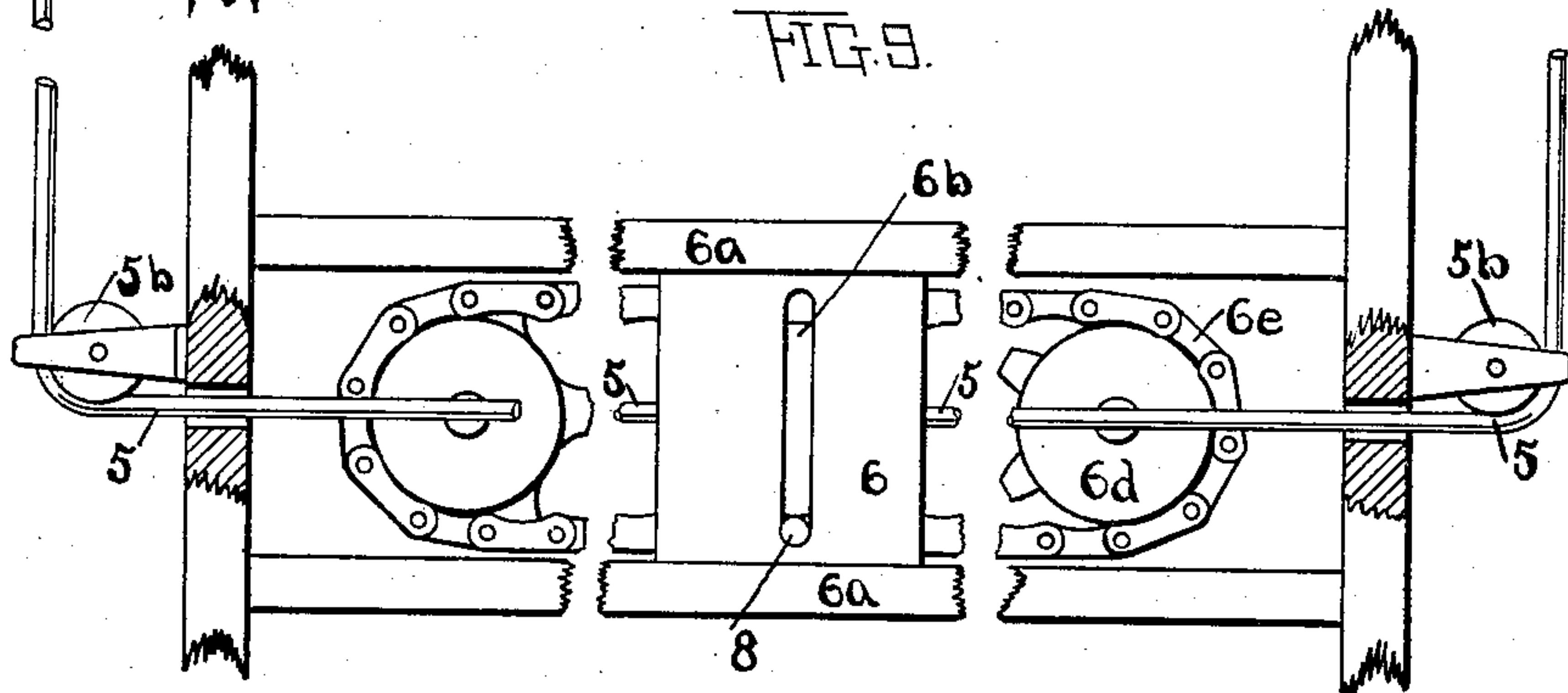
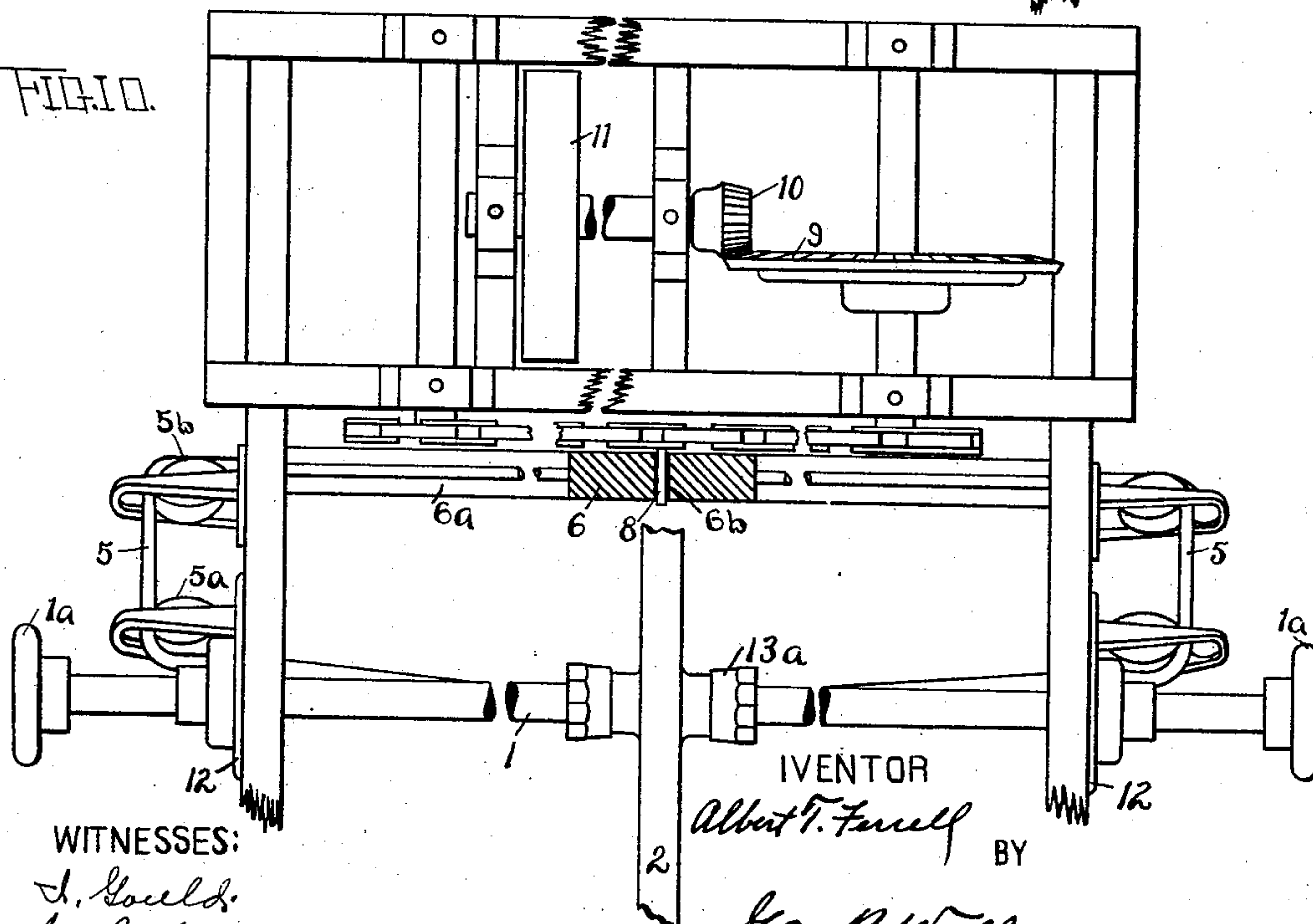


FIG. 10.



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# UNITED STATES PATENT OFFICE.

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## BRUSH ATTACHMENT FOR GRAIN-CLEANING MACHINES.

SPECIFICATION forming part of Letters Patent No. 701,865, dated June 10, 1902.

Application filed May 24, 1901. Serial No. 61,716. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT T. FERRELL, a citizen of the United States, residing at Saginaw, in the county of Saginaw and State of Michigan, have invented certain new and useful Improvements in Brush Attachments for Grain-Cleaning Machines; and I do hereby 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.

This invention is a traveling-brush attachment for cleaning the screens of grain-cleaning machines; and the invention consists in certain novel constructions and operation of parts, which will be fully set forth in this specification.

The objects of the invention are, first, to produce a device for operating the traveling brushes of a grain-cleaning machine, which will be simple in construction and operation and not liable to get out of order; second, to provide means for easily and quickly adjusting the pressure of the brush against the screen from outside the machine; third, to provide a mechanism for traversing the brushes back and forth across their screens, and to so construct it that it can be located in any convenient part of the machine where it will be accessible for renewal and repair.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a grain-cleaning machine embodying my invention, the frame of the machine being broken away in parts. Fig. 2 is a front elevation of the same. Fig. 3 is a perspective view of the sliding brush-bracket. Fig. 4 is an enlarged section on the line *x x* of Fig. 3. Fig. 5 is a front view of the shaft-bracket. Fig. 6 is a side elevation of the same, partly sectional. Fig. 7 is a diametral section of the shaft-carrying cam. Fig. 8 is a front view of the cam. Fig. 9 is a part-sectional front elevation of the brush-carrying device and the traversing mechanism that operates it. Fig. 10 is a part-sectional top view.

As is clearly shown in the drawings, the device consists in a shaft 1 below each screen and extending across the frame of the machine, each shaft carrying a slidable bracket 2, which supports the brush 3 and moves it

sidewise across the under side of the screen 4, which it is to clean.

The object of the shaft 1 is to form a support and guide for the transversely-moving brush. The brush is mounted in the bracket 2, which slides along the shaft 1 from side to side of the machine. The brush, which is usually made equal in length to the length of the screen, is supported intermediate its ends by the shaft 1, so that it may rotate sufficiently to automatically assume an even bearing throughout its length against the under side of the screen. The ends of the shaft 1 are supported by eccentric boxes, so that the shaft can be raised or lowered, thus raising or lowering the brush relatively to the screen, to regulate its pressure against the screen. The details of construction will be described further on in this specification.

In order to move the bracket 2 back and forth along the shaft 1, as above indicated, I connect the bracket with a traversing mechanism constructed in the following manner: Cords 5, parallel with the shaft 1, are fixed at one end to the bracket 2 and at the other end to the transversely-sliding block 6 of the traversing mechanism. This latter mechanism can be located in any convenient part of the machine-frame or outside it if desired. By pulling one of the cords 5 the bracket 2 is slid along the shaft 1 and the brush is moved along the screen to one side, and by pulling the other cord 5 the brush is moved back to the other side of the screen. This movement of the cords 5 is accomplished by moving the sliding block 6 back and forth in its frame 6<sup>a</sup>. The function of the sliding block 6 is to impart simultaneous reciprocating movement to the brushes in the machine. The cord 5 passes over a pulley 5<sup>a</sup> at each end of the shaft and over pulleys 5<sup>b</sup> at each end of the frame 6<sup>a</sup>.

As is shown in Figs. 1 and 2, any number of traveling brushes may be secured to and operated by a single sliding block 6. The sliding block is preferably actuated by the mechanism shown in Figs. 9 and 10, in which 6<sup>c</sup> and 6<sup>d</sup> are sprocket-wheels located near the ends of the frame 6<sup>a</sup> and carrying a continuous chain 6<sup>e</sup>. One link of this chain carries a laterally-projecting finger or rod 8, which engages the vertical slot 6<sup>b</sup> of the sliding block



6. Rotating either of the chain-wheels moves the sliding block along the frame 6<sup>a</sup> and imparts a corresponding transverse movement to the brushes connected therewith. When the sliding block reaches either of the chain-wheels, the link which carries the projecting finger passes around the wheel, and the horizontal movement of the block gradually ceases and then reverses as the finger 8 moves vertically in the slot 6<sup>b</sup>. By this means the brush is made to travel uniformly along the screen from one side to the other, gradually reducing its speed until it stops at the end of its travel and then gradually increasing the speed as it commences the return movement, thus avoiding all shock and noise in reversing.

In practice I prefer to actuate the sprocket-wheels from the main shaft or other moving part of the machine by a speed-reducing gear comprising a bevel-gear 9, driven by a pinion 10, which is operated by a pulley 11.

I prefer to mount the shaft 1 in the following manner: To each side of the machine-frame I secure a bracket 12, having an opening 12<sup>a</sup> for the passage of the cord 5 and carrying a pulley 12<sup>b</sup> to guide the cord. The bracket has a circular opening 12<sup>c</sup>, which serves as a bearing in which is revolubly mounted the shaft-carrying cam 7, having an eccentrically-located opening 7<sup>a</sup> to receive the shaft. The shaft has a hand-wheel 1<sup>a</sup> at each end, and by means of this hand-wheel the cam 7 can be revolved, raising or lowering the shaft as desired to adjust the pressure of the brushes 3 against the screen 4 and to facilitate the removal and replacing of the screen in the machine without injury to the brush by the screen-frame. This movement of the shaft 1 is clearly indicated by the dotted lines in Fig. 5.

In order to prevent particles of grain and dirt from adhering to the shaft 1 and causing the bracket 2 to bind as it passes back and forth along the shaft, I construct the bearing of the bracket 2 as shown in Fig. 4. The hub 13 is cored out or counterbored in the middle of its length, so as to come into contact with the shaft at its ends only. The ends of the hub are exteriorly threaded and a packing-gland 13<sup>a</sup> is screwed thereon. The space 13<sup>b</sup> between the packing-gland and the end of the hub is preferably filled with candle-wicking or similar packing and operates as in ordinary glands to keep the shaft clean and to prevent dirt from entering the hub. The packing is omitted from the drawing for the sake of clearness.

By the means above described I have produced a traveling-brush arrangement for grain-cleaning machines, which is simple in construction, has few moving parts, and can

be easily adjusted or repaired by mechanics of ordinary skill. When a number of brushes are used, it is not necessary to duplicate the driving mechanism, since one sliding block will operate as many brushes as desired, moving them all simultaneously and with uniform speed.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A screen-cleaning device comprising in combination: a brush-carrying bracket slidably mounted on a shaft in proximity to the screen; an eccentric-carrying bracket at each end of the shaft; an eccentric revolubly mounted in each of said brackets and supporting the shaft whereby the shaft and bracket can be adjusted toward or from the screen; a reciprocating block movable between guides; cords connecting the brush-carrying bracket with said block; sprocket-wheels near the extremities of travel of the block; a sprocket-chain on said wheels, carrying a laterally-projecting finger engaging a vertical slot in said block to traverse it along its guides; and means for rotating said sprocket-wheels, substantially as described.

2. In a screen-cleaning device the combination with a shaft parallel with the surface of the screen and having eccentrics near its ends whereby the shaft can be adjusted relatively to the screen; of a brush-carrying bracket slidably mounted on the shaft by means of bearings having packing-boxes, for removing dirt from said shaft; together with means for traversing said bracket along said shaft, substantially as described.

3. In a screen-cleaning device, a shaft arranged parallel with the surface of the screen; a brush-carrying bracket slidably mounted on the shaft; eccentrics near the ends of said shaft whereby the shaft can be adjusted relatively to the screen; and means for traversing the brush-carrying bracket back and forth along said shaft.

4. In a screen-cleaning device, the combination with a shaft parallel with the surface of the screen; of eccentrics near its ends whereby the shaft can be adjusted relatively to the screen; of a brush-carrying bracket slidably mounted on the shaft by means of a bearing intermediate its ends which permits a limited rotary motion around the shaft whereby the brush may assume an even bearing throughout its length against the under side of the screen, substantially as described.

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

ALBERT T. FERRELL.

Witnesses:

I. GOULD,

WILLIAM STEPHENS.