

No. 877,336.

T. O. HELGERSON.
FANNING MILL.

APPLICATION FILED AUG. 31, 1905.

PATENTED JAN. 21, 1908.

3 SHEETS—SHEET 1.

Fig. 1.

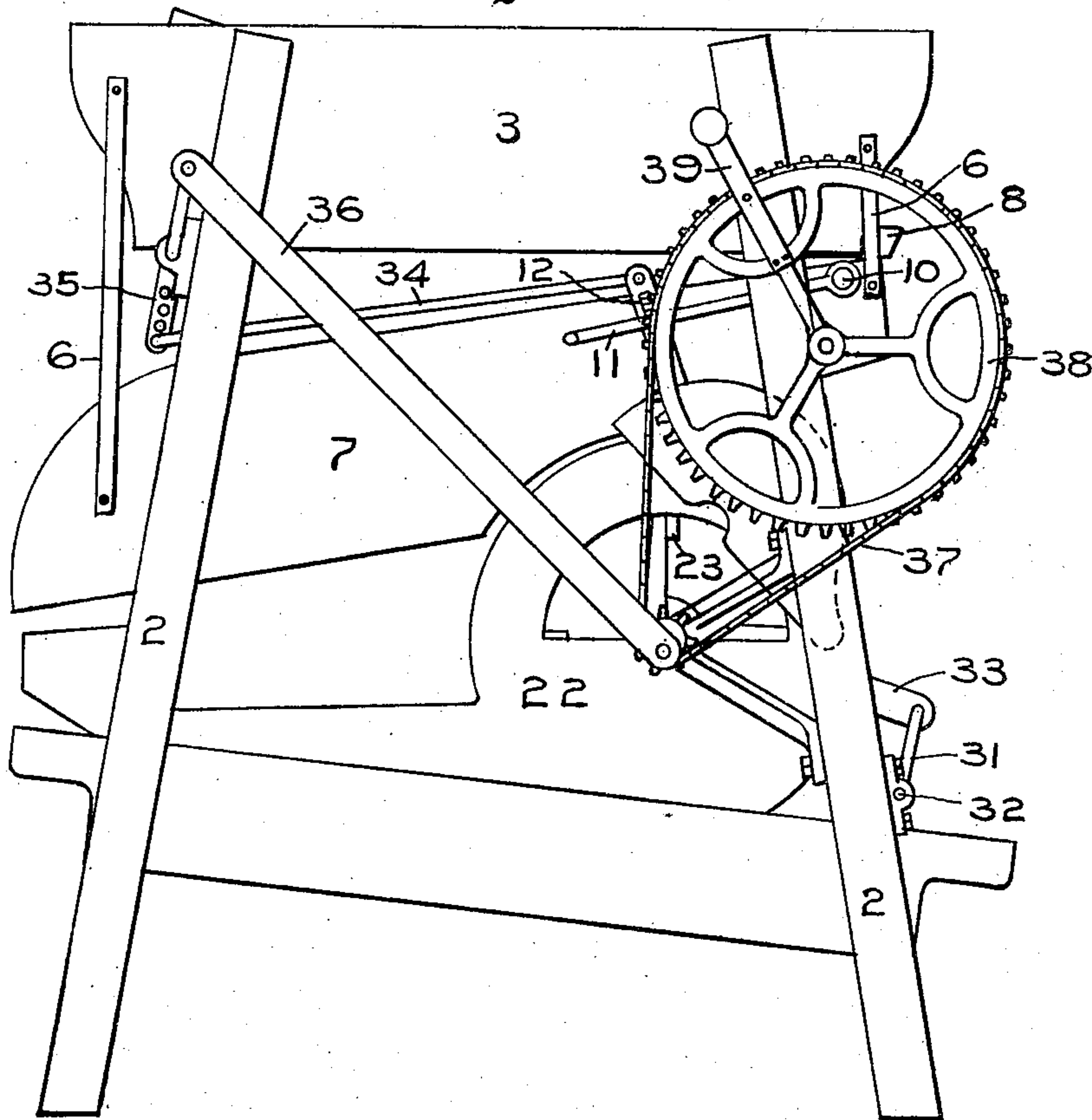
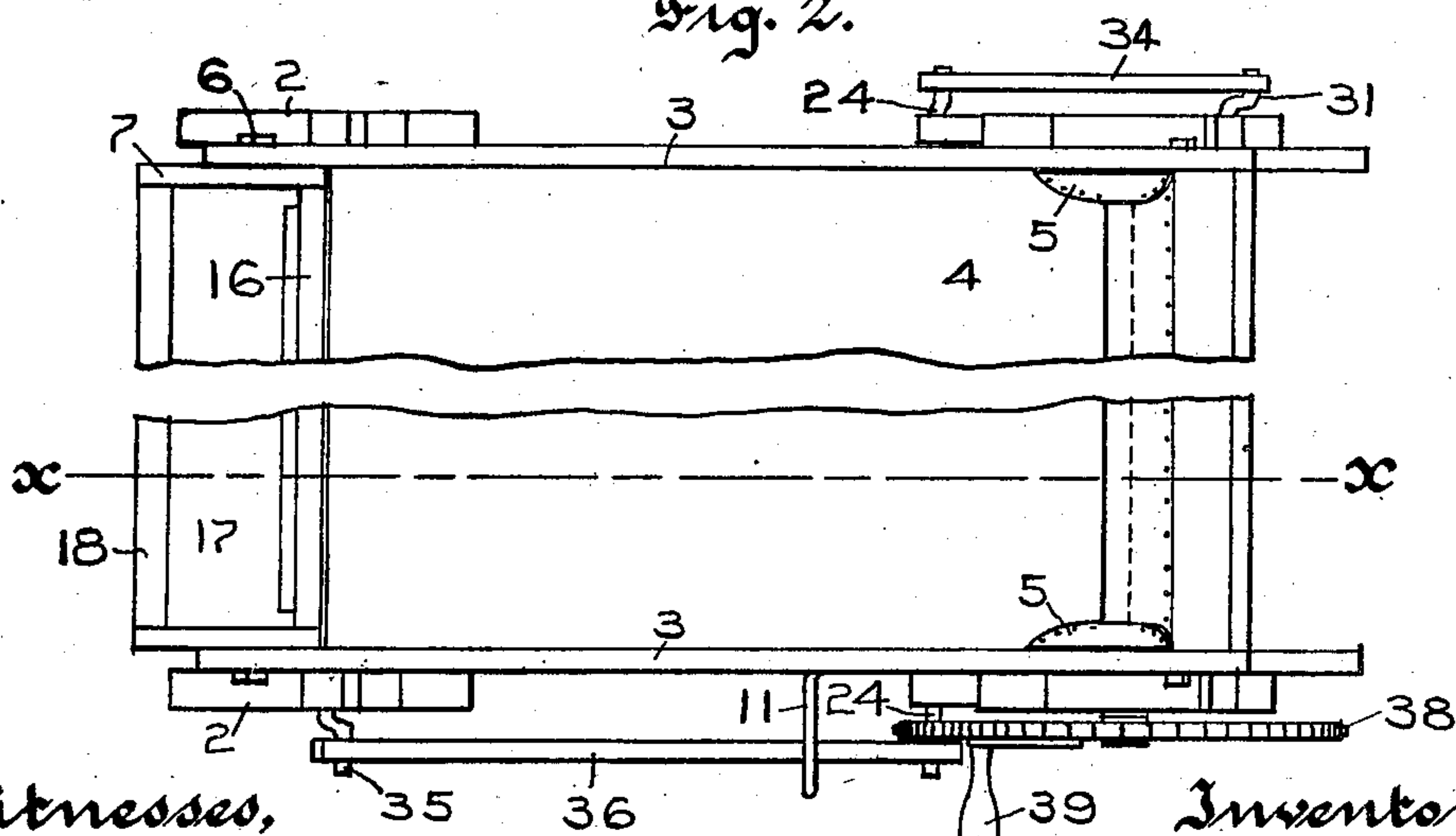


Fig. 2.



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3 SHEETS—SHEET 2.

Fig. 3.

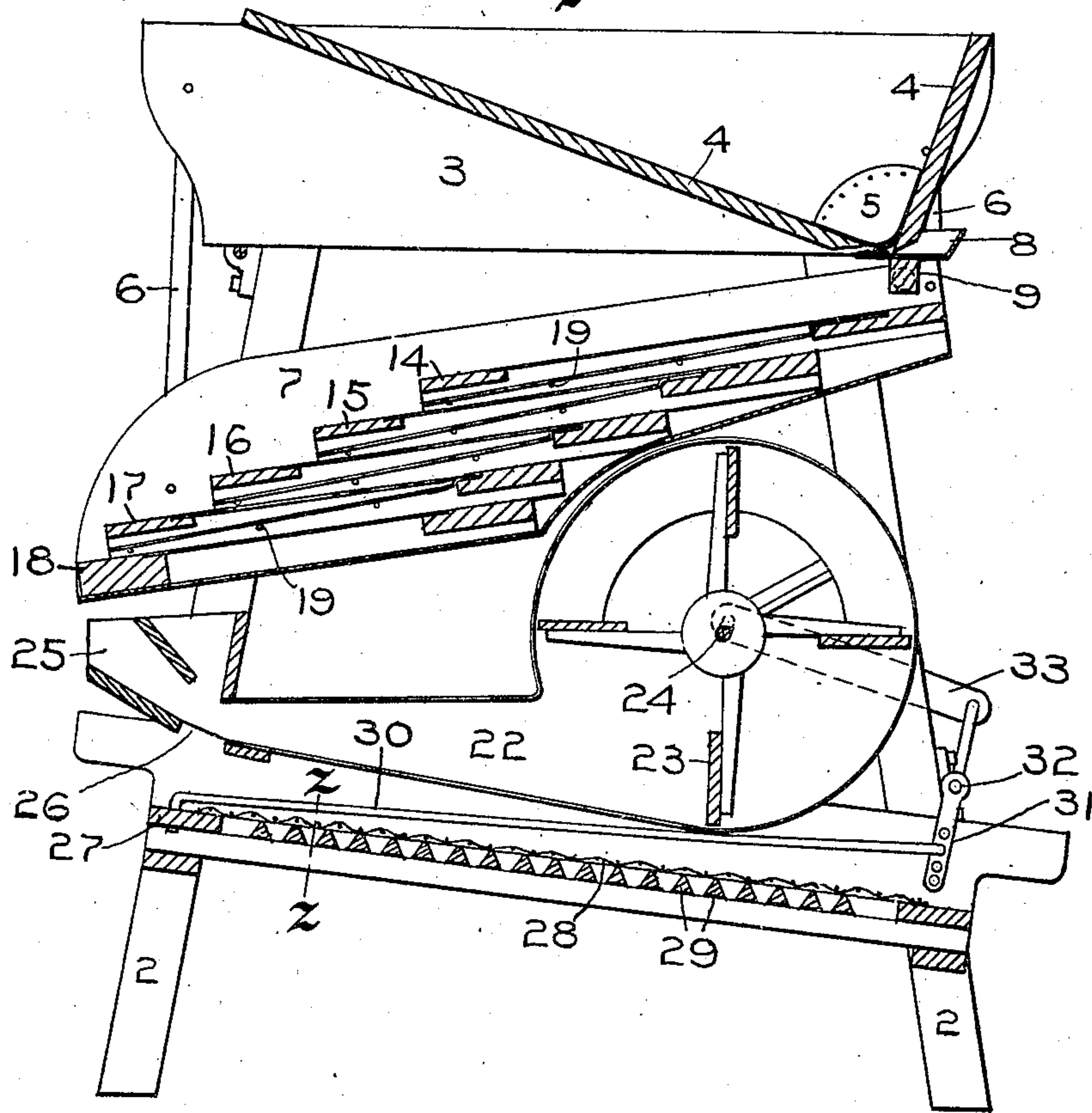


Fig. 4.

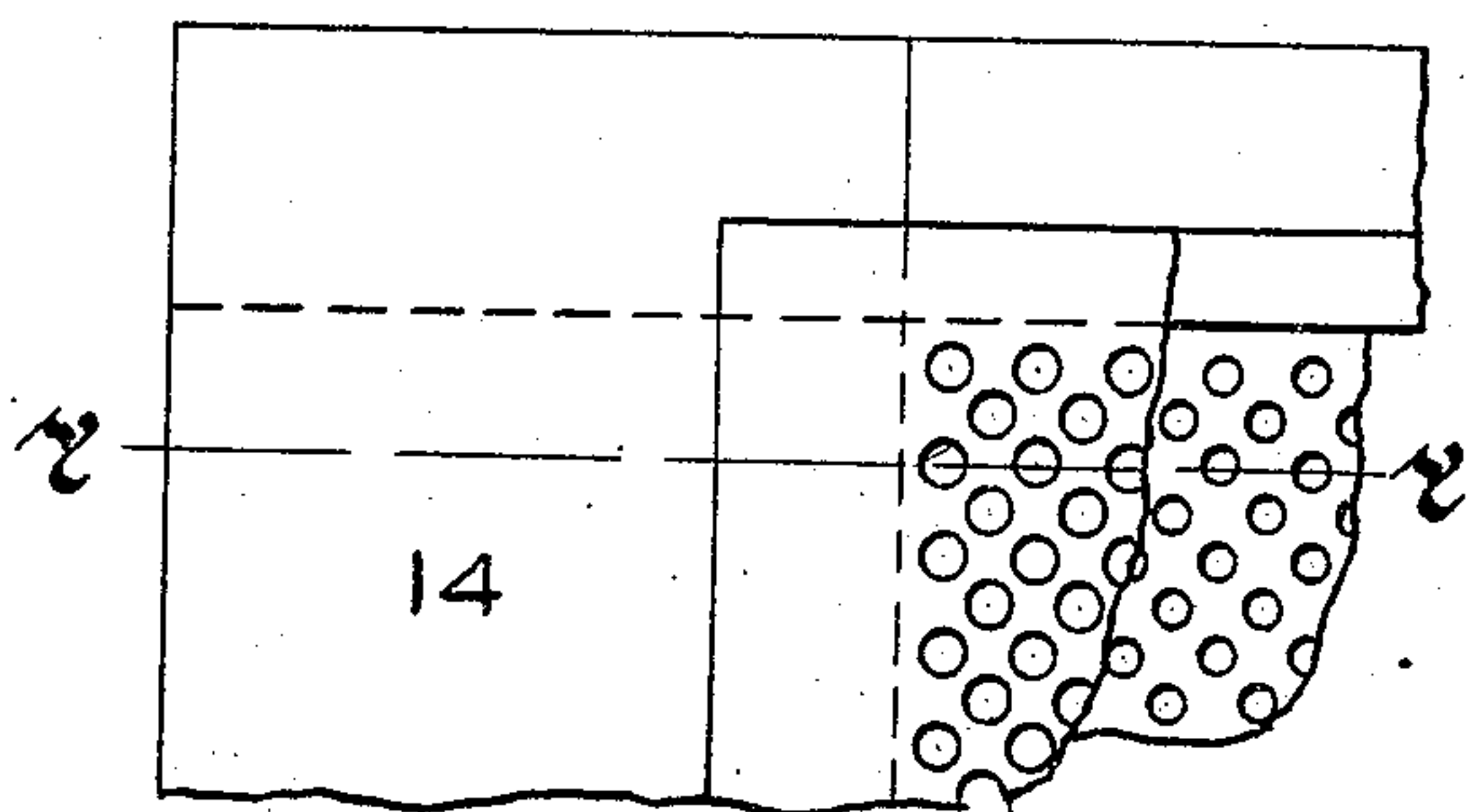


Fig. 5.

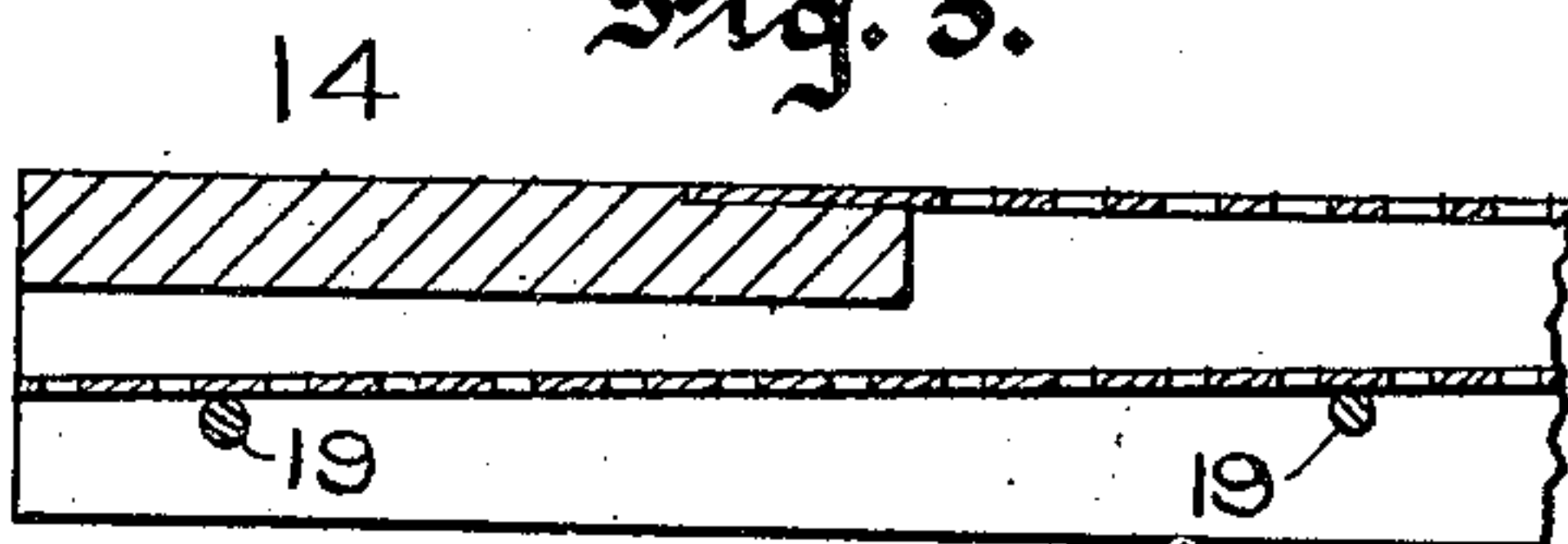
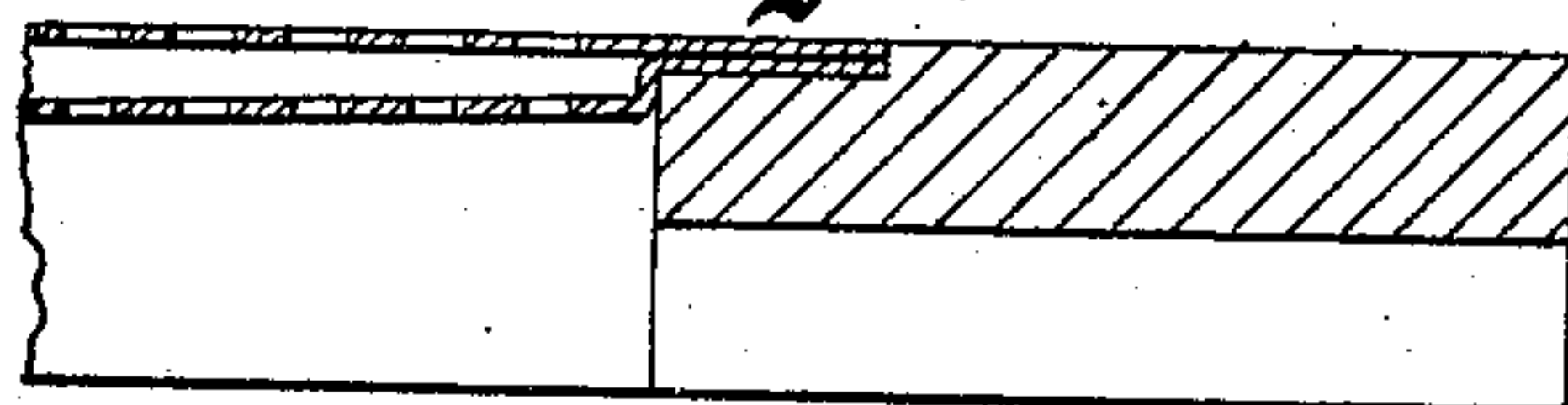


Fig. 6.



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3 SHEETS—SHEET 3.

Fig. 8.

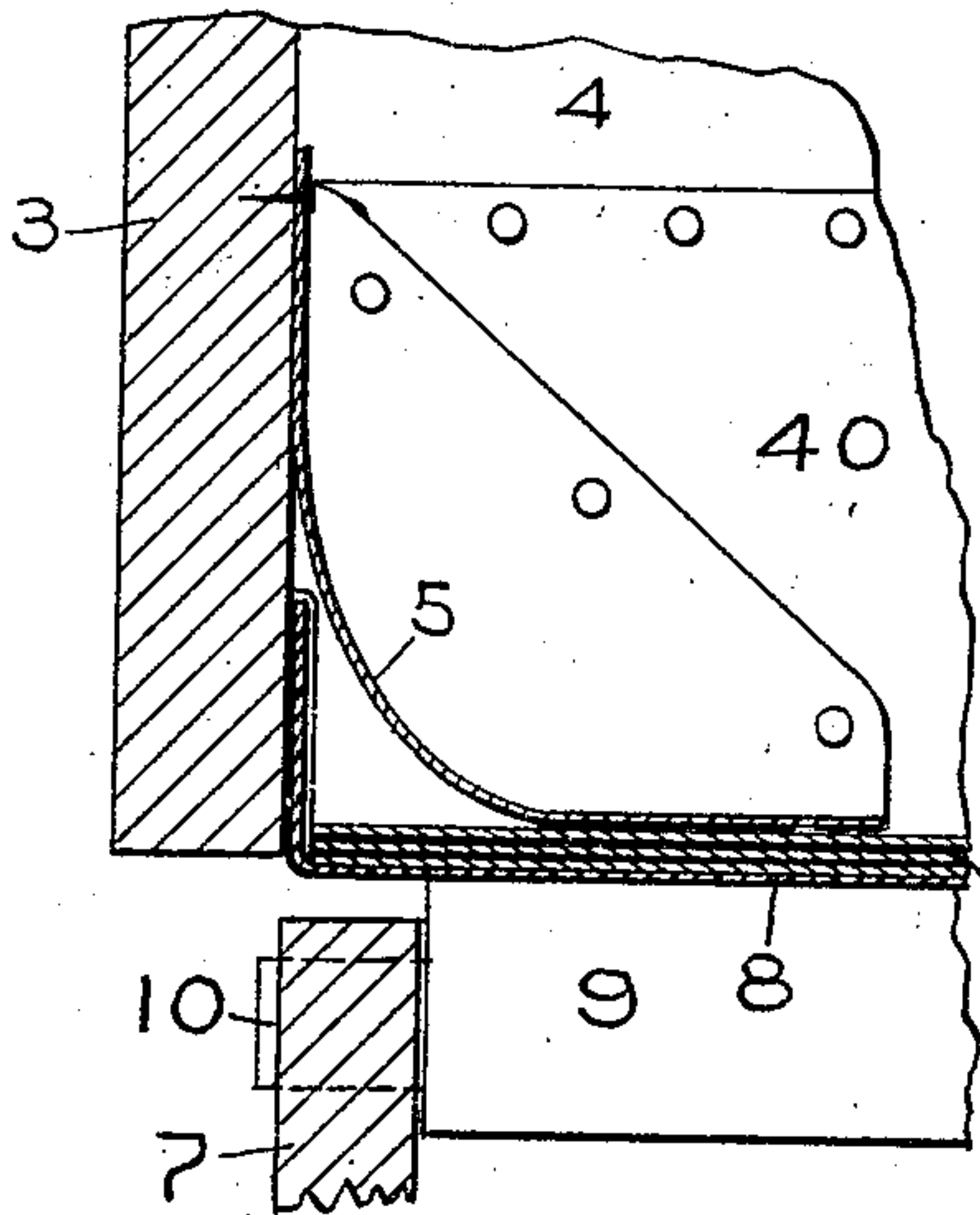


Fig. 7.

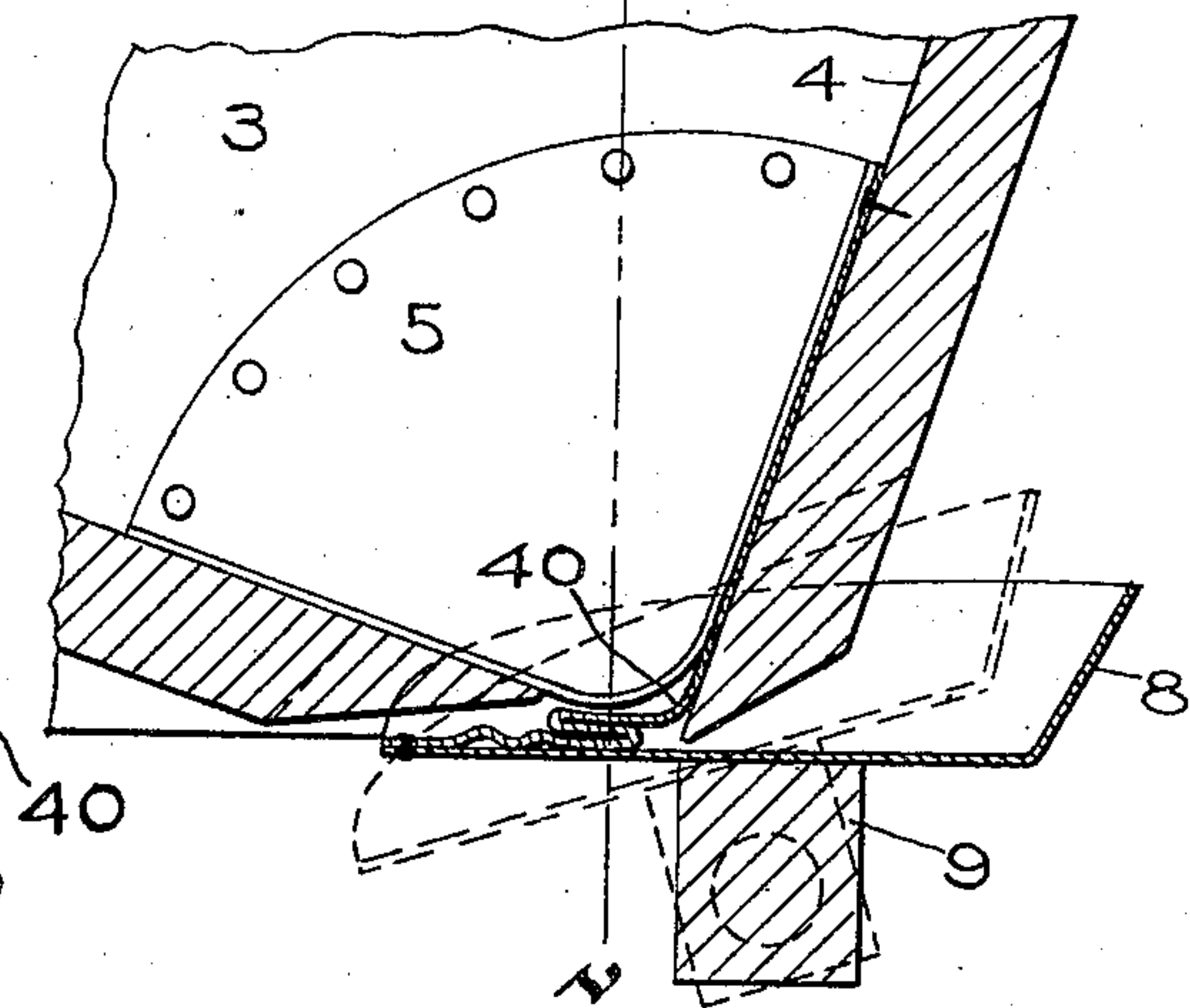


Fig. 9. Fig. 10.

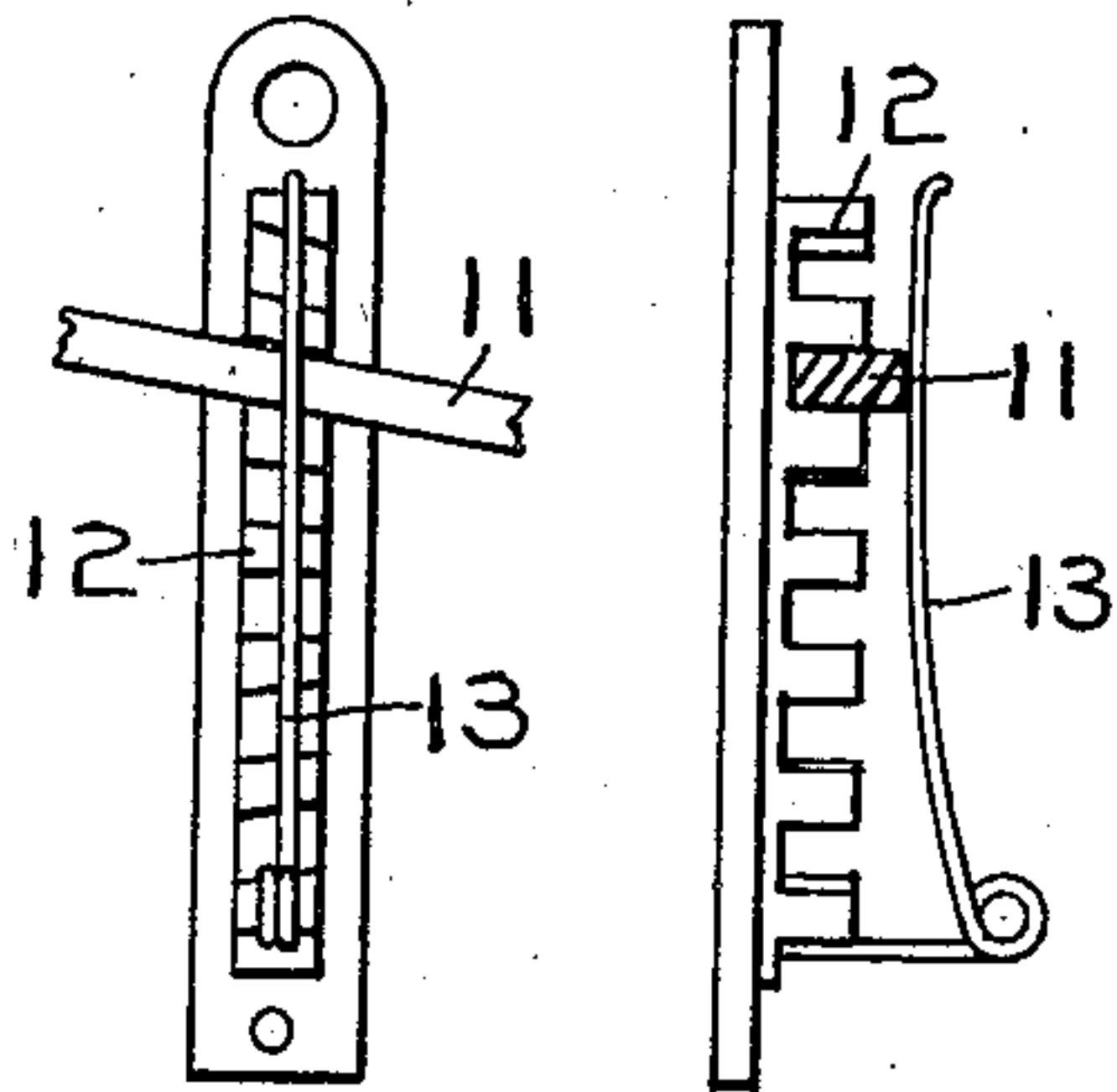


Fig. 11.

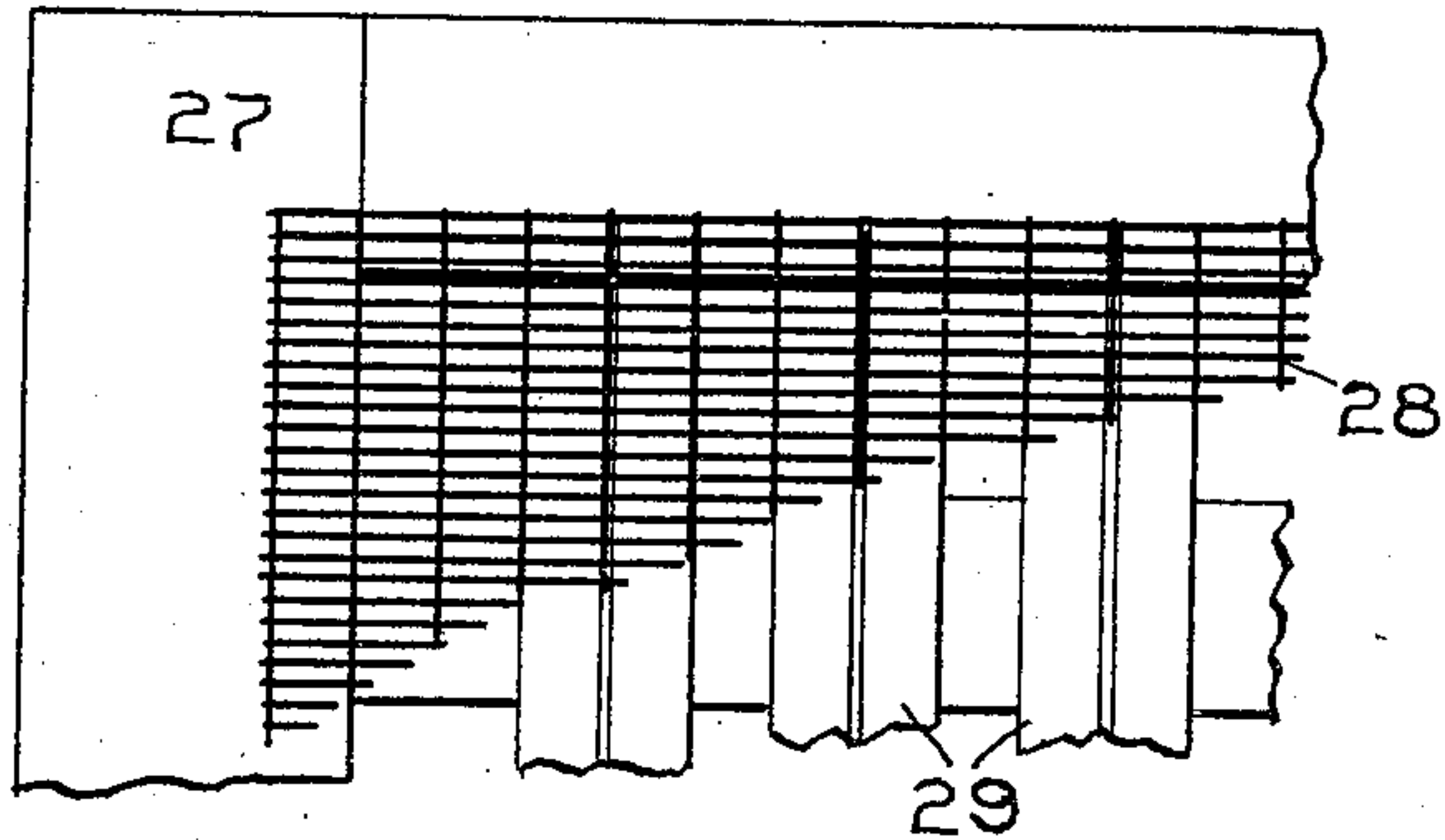
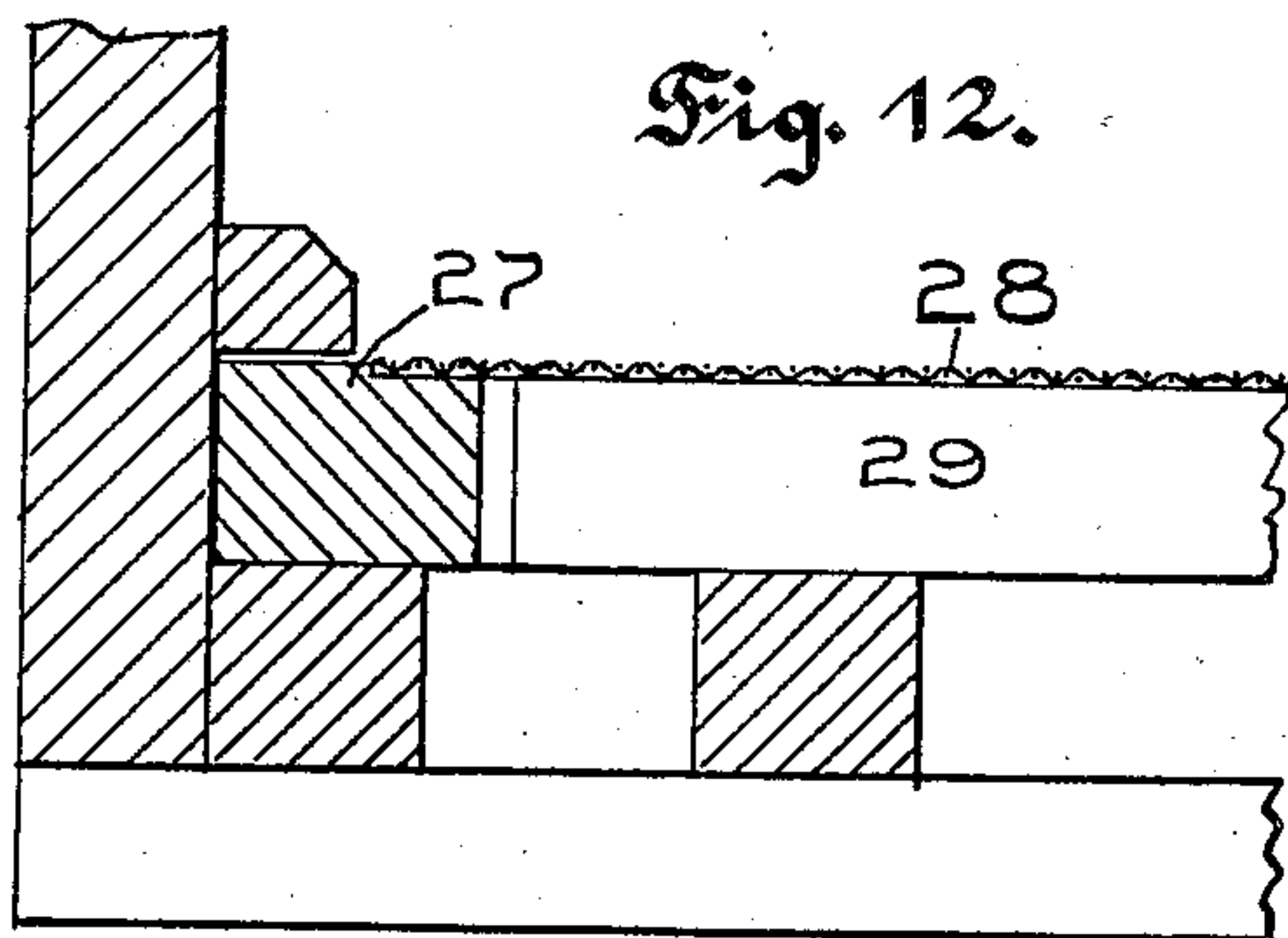


Fig. 12.



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UNITED STATES PATENT OFFICE.

THOMAS O. HELGERSON, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR OF ONE-HALF TO FOSSTON MANUFACTURING CO., OF ST. PAUL, MINNESOTA, A CORPORATION OF MINNESOTA.

FANNING-MILL.

No. 877,336.

Specification of Letters Patent.

Patented Jan. 21, 1908.

Application filed August 31, 1905. Serial No. 276,500.

To all whom it may concern:

Be it known that I, THOMAS O. HELGERSON, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Fanning-Mills, of which the following is a specification.

My invention relates to improvements in fanning mills designed for separating different sizes of grain and removing dirt and chaff and consists in the features of construction and combination hereinafter particularly described and claimed.

In the accompanying drawings forming part of this specification, Figure 1 is a side elevation of my improved fanning mill; Fig. 2 is a plan view of the same; Fig. 3 is a section on line $x-x$ of Fig. 2; Fig. 4 is a detail of a portion of the upper screen; Fig. 5 is a section on line $y-y$ of Fig. 4; Fig. 6 is a section upon the same line at the other end of the screen; Fig. 7 is an enlarged section of one end of the machine on line $x-x$ of Fig. 2; Fig. 8 is a section on line $v-v$ of Fig. 7; Figs. 9 and 10 are details of adjusting mechanism for a feed pan used in connection with the hopper; Fig. 11 is a top view of one end of the lower screen, and Fig. 12 is a section on $z-z$ of Fig. 3.

In the drawings 2 represents the standards of the frame. Supported by the upper ends of the standards are side walls 3 between which is arranged a fixed hopper 4. Secured in the sides of the outlet end of the hopper are guide plates 5.

Arranged below the hopper and supported from the side walls 3 by straps 6 is a screen supporting shoe 7. The straps 6 have pivotal support at their opposite ends with the side walls and shoe. Supported by the rear end of the shoe underneath the outlet opening of the hopper is a pan 8. The pan as shown is carried by a cross piece 9 having pivotal support 10 in the sides of the shoe, said cross piece carrying at one end an arm 11 which works in connection with the teeth of a rack 12 and is held in adjusted position by a spring 13. The arm 11 may thus be set to hold the pan at any desired tilted position as shown by dotted lines in Fig. 7 to regulate the outlet opening of the hopper. The pan as shown is provided with upwardly extending side and rear walls. Within the shoe are suitably supported a series of screen frames 14, 15, 16, 17 and 18. Each of the screen

frames 14, 15, 16 and 17 carries a pair of screens, the upper screen being secured in the upper faces of the front and rear cross bars of the screen frame, and the lower screen being supported in the rear cross bar of the frame, the forward end of the screen extending downwardly away from the upper screen and being loosely supported upon rods 19. A space is thus left between the front end of the lower screen and the front cross bar of the frame through which space the chaff and larger grain will pass to the screen below. The lowermost screen frame 18 is provided with but a single screen.

In Fig. 4 is shown a view of the upper screen frame in which the upper screen is shown with larger openings than the lower screen. The different screen frames may be provided as in Fig. 4 with screens of different openings or screens of the same size openings. Below the shoe is arranged a fan casing 22 inclosing a fan 23 mounted upon a shaft 24. The outlet end 25 of the fan casing opens at the front end of the lower screen frame. The front end of the fan casing is provided with an opening 26 through which the smaller grain passes from the lower screen 18 to a screen frame 27 suitably supported below the fan casing. The screen frame 27 is provided with a screen 28 of the form shown in Fig. 11, and slides upon a series of cross bars 29 which serve as scrapers for the screen. The screen frame 27 is adapted to be reciprocated by means of a bar 30 connecting the forward end of the frame with one end of a crank 31 having pivotal support 32, said crank being connected at its other end with the end of a lever arm 33 connected with the fan shaft 24. The shoe is adapted to be reciprocated by means of a rod 34 connecting the shoe with one end of a crank 35, the opposite end of the crank being connected by a bar 36 with the fan shaft. The fan shaft has chain and sprocket connection 37 with a large sprocket wheel 38 provided with an actuating handle 39.

In order to prevent the grain working back in the feed pan 8 I provide the flexible lining 40 connected with the rear wall of the hopper at its upper end and at its lower end connected with the forward edge of the feed pan, as shown in Fig. 7, the lining being loose enough to allow tilting movement of the pan.

In operation the grain is dropped into the hopper, the pan 8 being tilted to the desired

position to regulate the feed from the hopper to the screens. The machine being actuated by means of the handle 39 will reciprocate the shoe and lower screen frame 29. As the shoe reciprocates the pan being carried back and forth with it will receive and carry the grain from the hopper on to the top screen frame 14. The screens in the shoe will act as in the ordinary constructions to separate the large and small grain and to shake the chaff over the front ends of the screens. The downwardly inclined lower screens within the shoe will assist in separating the grain and chaff. As the machine is actuated the chaff will be blown by the fan from the front end of the machine and the smallest grain will pass through the opening 26 in the fan casing on to the lowermost screen 27. The remaining dirt and chaff deposited upon the lower screen 28 will be scraped therefrom by means of the cross bars 29.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is:—

1. A fanning mill comprising in combination a hopper, a shoe having swing support below the same, a screen frame supported in said shoe, upper and lower screens carried by said frame, the upper screen being supported at both ends in the screen frame, and the lower screen being supported at its rear end in the frame with its forward end loosely supported and directed away from the upper screen.
2. A fanning mill comprising a hopper, a shoe having swing support below the same, a plurality of screen frames supported in said shoe, and upper and lower screens carried by each of said frames, the upper screens being supported at both ends in said frames, and the lower screens being supported at their rear ends, in said frames, the forward ends of

said screens being loosely supported and directed downward away from the upper screens.

3. A fanning mill comprising in combination a hopper, a shoe having swing support below the same, a screen frame supported in said shoe, a feed-pan pivotally supported by said shoe below the outlet end of said hopper, said feed-pan having upwardly extending walls at both ends and along the rear side of said hopper and a flexible lining connected at one end with the rear wall of the hopper and extending to a point forward of the lower end of the front wall of the hopper.

4. A fanning mill comprising in combination a hopper, a shoe having swing support below the same, a plurality of screen frames supported in said shoe, a feed-pan carried by said shoe in connection with the outlet end of said hopper and a flexible valve arranged in the outlet end of the hopper preventing the contents of the hopper passing rearwardly or from the opposite ends.

5. A fanning mill comprising in combination a hopper, a shoe having swing support below the same, a plurality of screen frames supported in said shoe, upper and lower screens carried by each of said frames, the lower screens being directed away from the upper screens at their forward ends, a feed-pan carried by said shoe in connection with the outlet end of said hopper, and a flexible lining connected at its upper end to the rear wall of the hopper and extending to a point forward of the lower end of the front wall of the hopper.

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

THOMAS O. HELGERSON.

Witnesses:

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