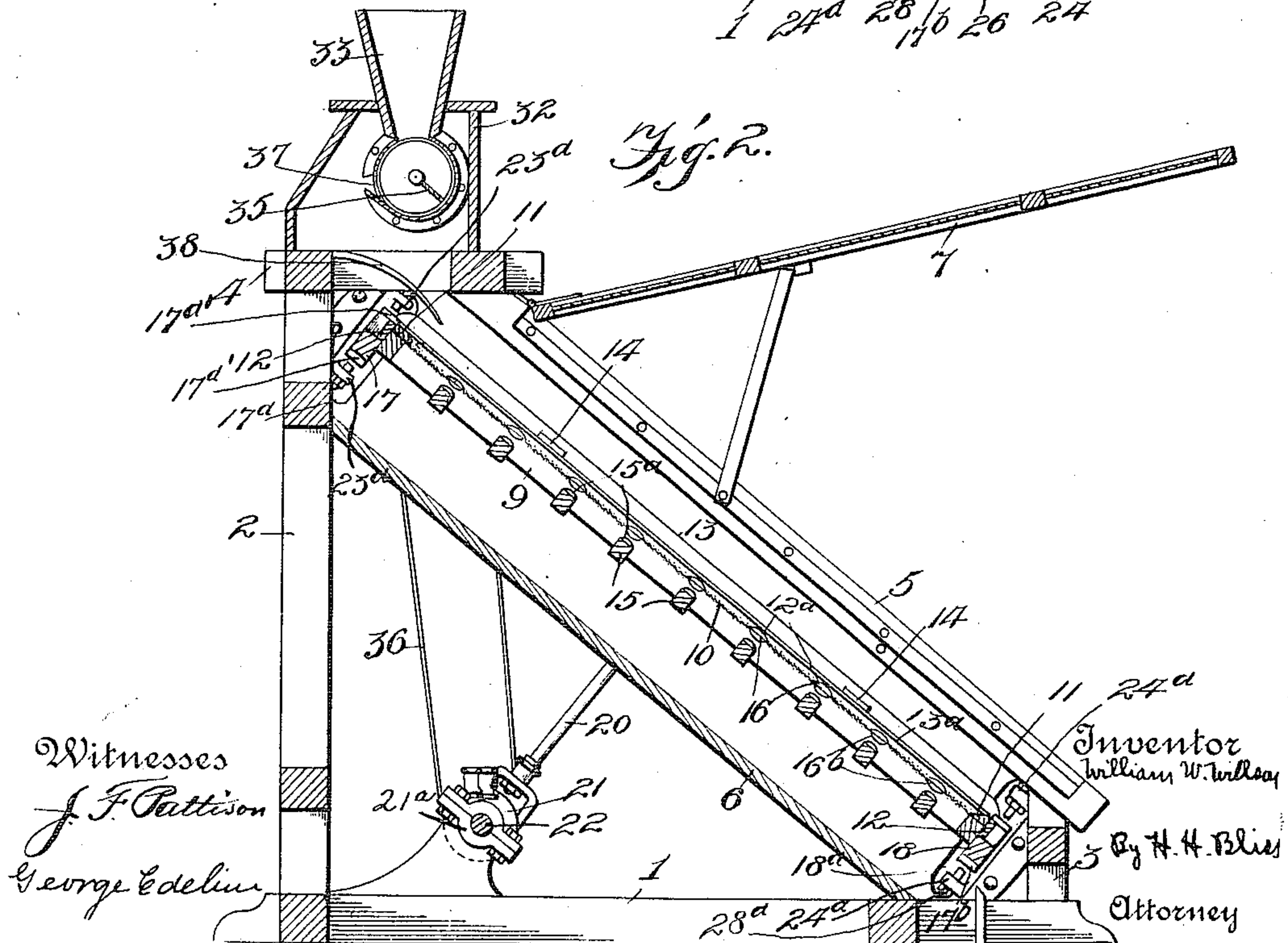
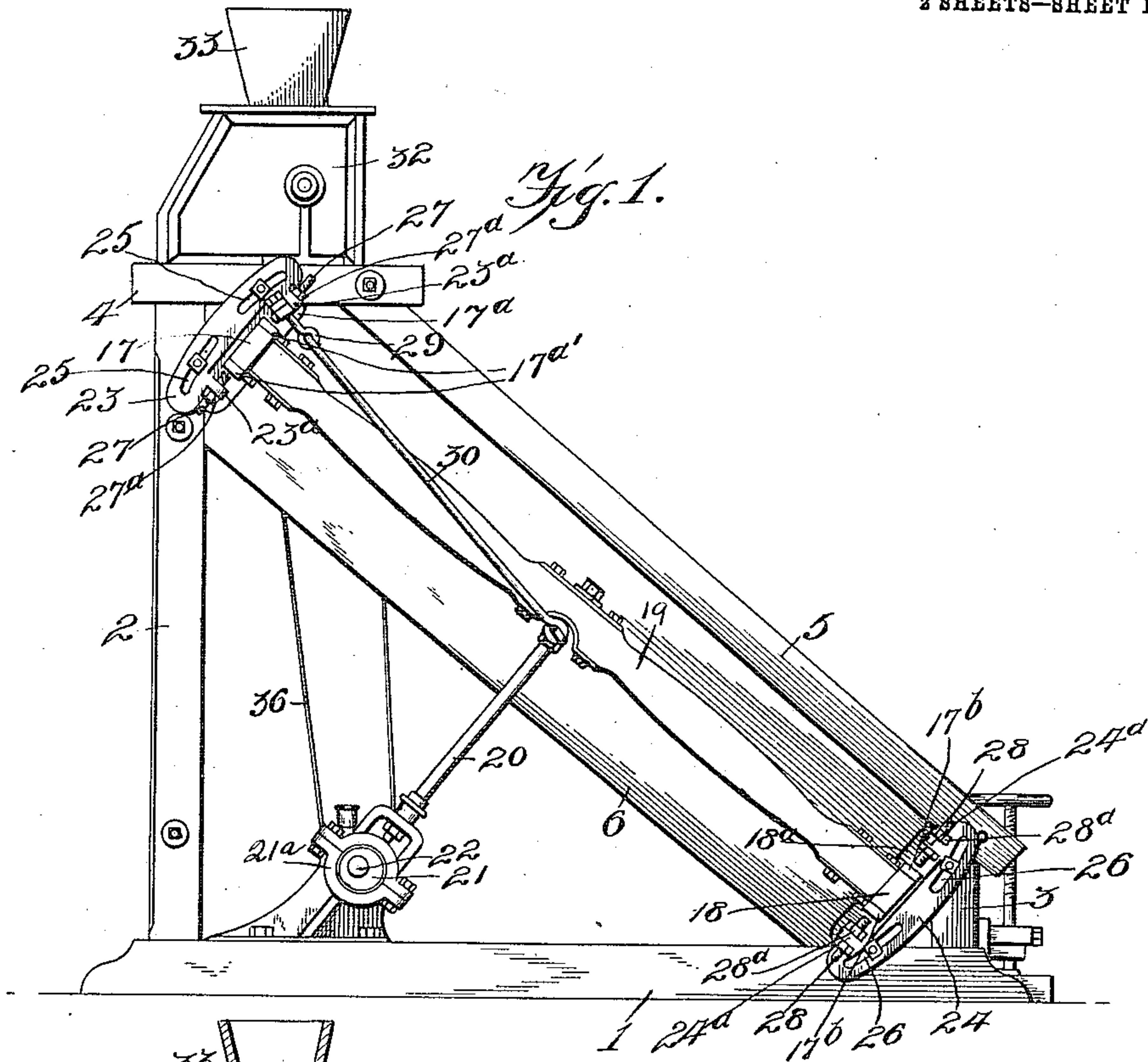


W. W. WILLSON.
SCREENING MECHANISM.
APPLICATION FILED SEPT. 7, 1907.

959,671.

Patented May 31, 1910.

2 SHEETS—SHEET 1.

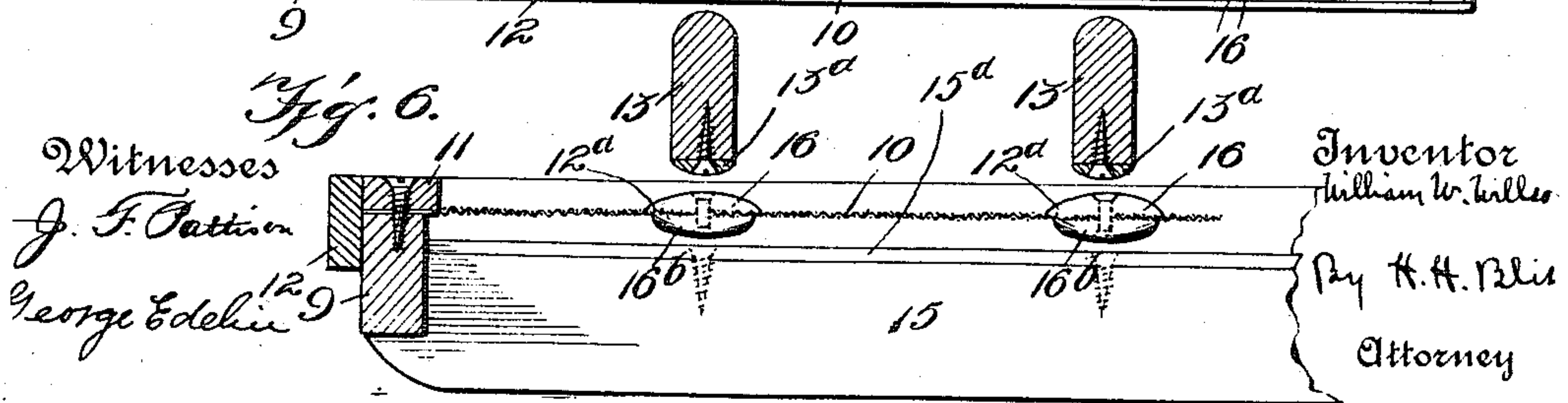
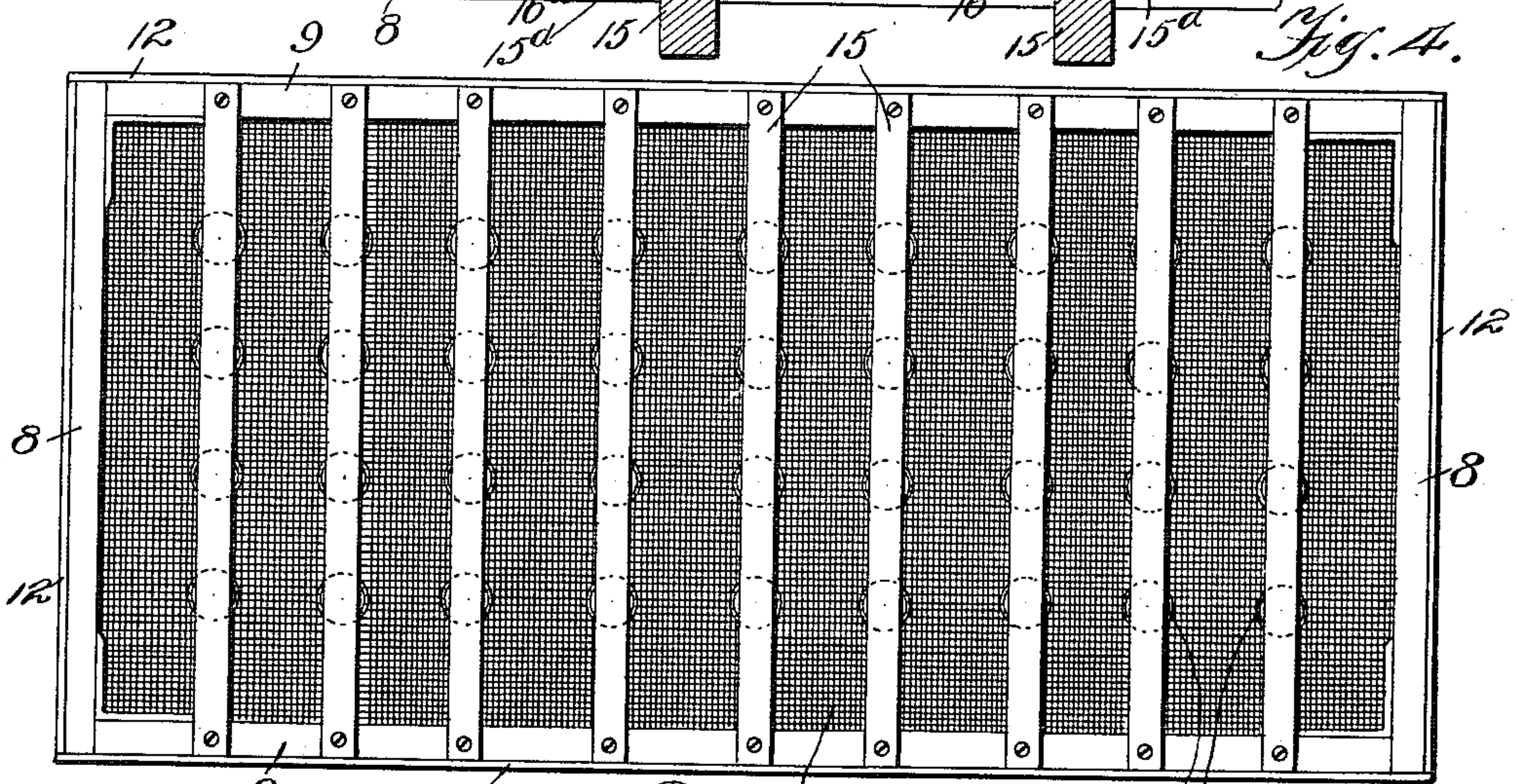
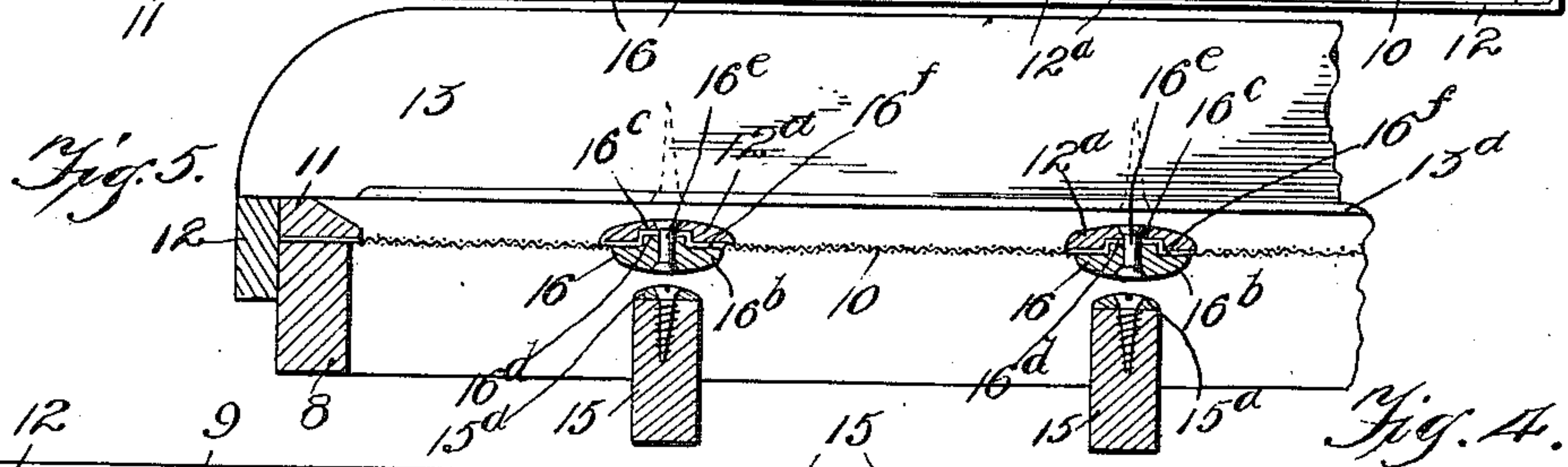
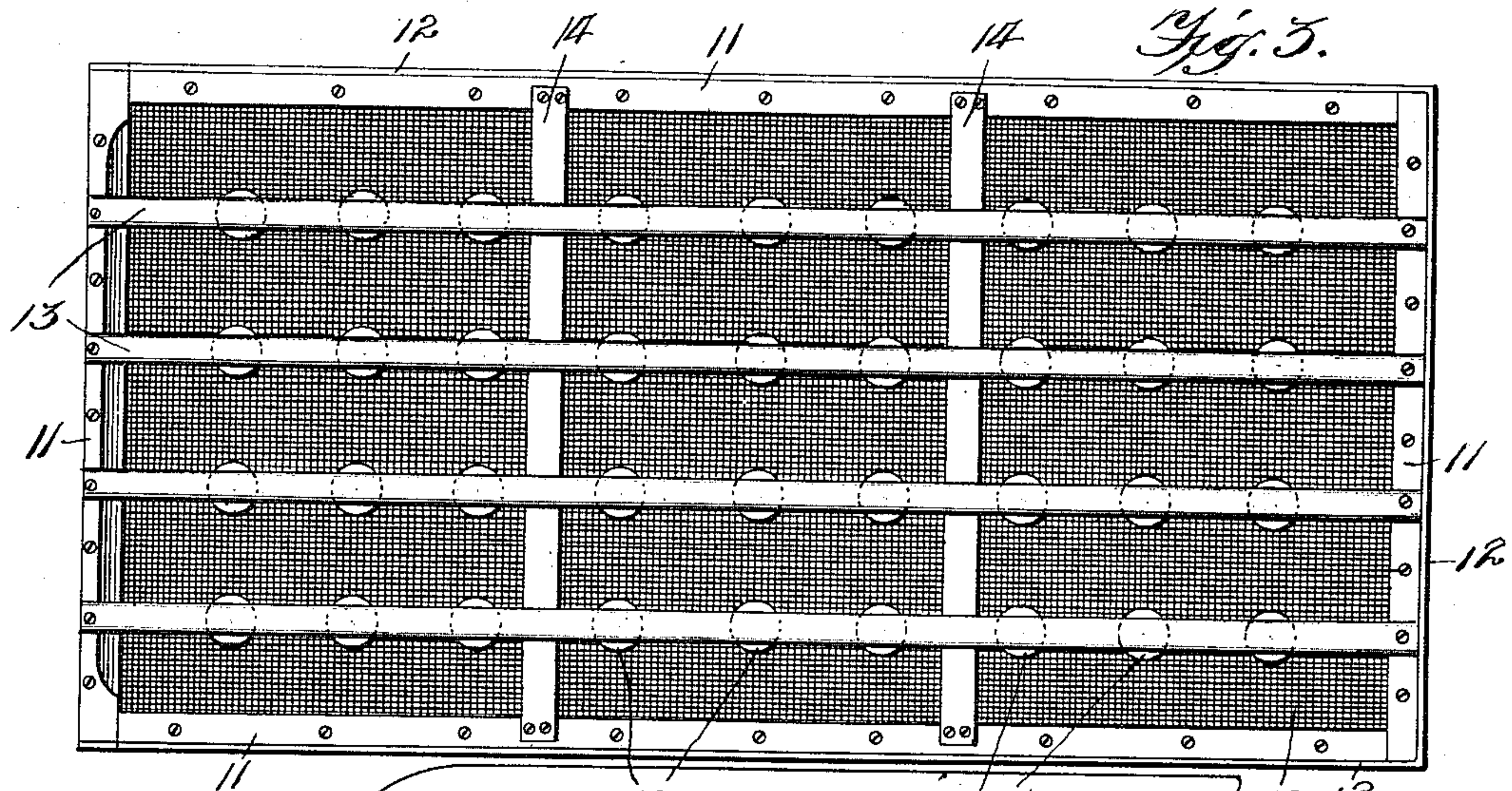


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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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SCREENING MECHANISM.

959,671.

Specification of Letters Patent.

Patented May 31, 1910.

Application filed September 7, 1907. Serial No. 391,849.

To all whom it may concern:

Be it known that I, WILLIAM W. WILLSON, citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Screening Mechanism, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in screens or sieves particularly screens of the class in which use is made of a movable frame arranged to be reciprocated bodily on lines transverse to the plane of the screen material.

Figure 1 is a side view of a screening mechanism embodying my improvements. Fig. 2 is a longitudinal vertical section. Fig. 3 is a top plan view of the screen frame detached. Fig. 4 is a bottom view of the same. Fig. 5 is a vertical section of some of the parts shown in Fig. 2, but on a larger scale and detached. Fig. 6 is a vertical transverse section of parts shown in Fig. 5.

The movable parts of the mechanism are mounted upon a framework having the bottom sills 1 united by suitable cross-girts, the longer rear-up-rights 2, the shorter front up-rights 3, the short horizontal top sills 4 and the inclined brace bars 5. In the framework thus formed there is arranged a forward and downward inclined box 6 having bottom and side walls but open at the top. The movable part of the separator is mounted above and approximately parallel to the bottom of this box and the top of the chamber which contains the screen, proper, is closed by a door or hinged cover 7.

The screen, proper, is formed of a frame having end-cross bars 8 and longitudinal side bars 9 rigidly secured together to form a rectangular holder for a screen fabric or mesh 10, which is firmly fastened upon the top edge of the bars 8 and 9 by means of the cleats 11. These cleats extend inward beyond the inner edges of the frame bars 8 and 9.

12 are cleats secured to the outer faces of the bars 8 and 9 those secured to the bars 8 forming off sets or shoulders extending across the screen-frame by which it can be supported upon its carrying frame.

13—13 indicate a series of bars secured to the upper side of the screen frame and extending from end to end thereof.

14—14 are tie strips or bars extending from one side bar 9 to the other and rigidly secured thereto in lines intermediate their ends.

15—15 are transversely arranged bars, on the under side of the screen fabric and rigidly secured to the frame bars 9—9. It will be seen that the transverse bars 15 lie in vertical planes which intersect the vertical planes of the longitudinal bars 13 at substantial right angles.

16—16 are bodies of solid material such as small blocks or buttons secured to the screen fabric and situated respectively at points in the lines of intersection of the aforesaid vertical planes. The buttons 16 are each formed in two parts or halves, 12^a and 16^b. Preferably each is circular in outline and has an inner flat surface and an outer convex surface. The flat surface of one part is recessed, as shown at 16^c and the other is formed with a projection 16^d adapted to fit in the recess. The two parts or halves are secured together by screws or rivets 16^e. Preferably the upper part or element 16^a is of somewhat larger diameter than the lower part so that its edges overhang those of the latter. Between these two parts there is interposed a layer or layers of felt, rubber or similar material 16^f to prevent the fabric from being cut or marred when the buttons are clamped tightly against it.

The lower edges of the top bars 13 are provided with metallic strips 13^a and the upper edges of the transverse bars 15 have similar strips 15^a.

When the screen frame is vibrating the screen fabric 10 is shaken or whipped up and down, and the buttons or knocker blocks 16 impinge alternately upon the upper bars 13 and the lower bars 15 with sharp blows, and these result in cleaning the meshes of the screen fabric and preventing it from being clogged. The frame to which the screen fabric is attached rests upon a carrier frame having the cross-end bars 17 and 18 at the top and bottom and the longitudinal bars 19. The cleats 12 at the upper and lower ends of the screen frame rest upon the bars 17 and 18. The latter project through apertures or slots 17^a—18^a in the sides of the box 6, and are caused to strike blows so as to jar the material moving downward on the screen. For this purpose, metallic plates 23 and 24 are secured to the outside of the boxing and

frame, one of each on each side of the machine. The plate 23 has lugs or ears 23^a and the plate 24 has similar parts at 24^a.

27—27 are screw-threaded rods held by 5 and adjustable in the ears or lugs 23^a on the upper plate and 28—28 are similarly threaded rods in the lugs 24^a on the down plate.

27^a and 28^a are lock nuts engaging with 10 the threaded rods 27 and 28 and adapted to lock them in position after adjustment. The cross-bars 17 and 18 of the shaking frame are provided with striker-blocks 17^a and 17^b opposite to the rods 27 and 28 and adapted 15 to contact therewith when the blows are struck, these rods acting as stops for engaging the ends of the screen at the top and bottom.

30 is a link rod flexibly connected by an 20 eye-bolt 29 to the upper part of the stationary frame, preferably to the plate 23, and at its lower end flexibly connected to the central part of the shaking frame. There is one of these links upon each side of the machine. 25 They operate to sustain the vibrating parts against sliding downward and accomplish this in such a way that there is free vibration of the screen bodily from end to end.

20 is a pitman or connecting rod connected 30 to the central part of the shaking frame and extending thence to the shaft 22, there being an eccentric 21 and a strap at 21^a. The power belt 36 serves to rotate the shaft 22.

The plates 23 and 24 are adjustable longi- 35 tudinally on lines transverse to the plane of the screen frame, they having slots 25—26 through which pass clamping screws. By this means the angle of inclination of the cleaning machanism can be modified to suit 40 different materials and conditions.

The material is supplied to the screen from 45 hopper 33 on a supporting structure 32 in which there is a conveyer 35, the trough or duct of which has a mouth 37 from which the material is delivered gradually. As it 50 falls it drops upon a distributing chute 38 which carries it to the upper part of the screen fabric and prevents its dropping among the parts, above the end of the screen frame.

What I claim is:

1. In a separator of the class described, the combination of the box or housing, the vibrating screen in the said box or housing 55 inclined to the horizontal, the carrying frame having the cross bars extending across the box or housing and the inclined bars outside thereof, the means for vibrating the screen bodily from end to end, the knocker 60 devices outside of the box or housing at the upper and lower ends of the carrying frame, the knocker blocks or buttons secured to the screen fabric and the knocker bars above and the knocker bars below the fabric and 65 adapted to be impinged on by the said

knocker blocks or buttons, substantially as described.

2. In a separator of the class described, the combination with a main frame, and a screen vibrating bodily from end to end 70 uniformly on lines transverse to the plane of the screen, of the knocker blocks or buttons secured to the screen fabric, the knocker bars above the screen fabric, and the knocker bars below the screen fabric, adapted to be 75 impinged upon by said blocks or buttons, substantially as described.

3. In a separator of the class described, the combination of the main frame or casing, the screen therein vibrating bodily from 80 end to end on lines transverse to the plane of the screen, the knocker blocks or buttons each formed in two parts or sections one part above and the other below the screen fabric and knocker devices above and knocker de- 85 vices below the screen fabric against which the knocker blocks or buttons on the fabric are adapted to impinge, substantially as described.

4. In a separator of the class described, 90 the combination with the main frame and the screen arranged to vibrate bodily from end to end, of the blocks or buttons each formed in two parts one above the screen fabric and one below it the linings inter- 95 posed between the parts of the knocker block and the fabric, the knocking devices above and the knocking devices below the fabric and adapted to be impinged upon by the knocker blocks or buttons, substantially 100 as described.

5. A separator provided with a main frame, a screen, means acting on the screen at about the center to impart a shaking motion to the screen, stops for engaging the 105 ends of the screen at the top and bottom, the knocker blocks or buttons secured to the screen fabric the bars above the screen fabric in the path of the knocker blocks, and the bars below the screen fabric in the path of 110 the knocker blocks, substantially as described.

6. In a separator of the class described, the combination with the main frame and 115 bodily vibrated screen mounted therein having the screen fabric, the frame to which said fabric is attached, the knocker blocks or buttons secured to the screen fabric, the knocker bars below the screen fabric secured to said frame and the knocker bars 120 above the fabric secured to the said frame, the knocker blocks or buttons being adapted to impinge upon the upper bars during the upward movement of the blocks or buttons and to impinge upon the lower bars during 125 their downward movement, substantially as described.

7. In a separator of the class described, the combination of the inclined rectangular vibratable carrying frame, the power trans- 130

mitting devices connected to the center of said frame, the screen frame detachably fitted to the carrying frame and having the screen fabric 10, the transversely arranged 5 knocker bars below the screen fabric, the longitudinally arranged knocker bars above the screen fabric, and the knocker blocks or buttons secured to the fabric and adapted to impinge upon the longitudinal bars and 10 the transverse bars, substantially as described.

8. In a separator of the class described, the combination of the screen, means for vibrating the screen along lines generally 15 perpendicular to the plane of the screen, the knocker blocks or buttons each formed in two parts or sections, one part above and the other below the screen fabric, the upper part being larger and overhanging the pe- 20 ripheral edges of the lower part, and knocker devices above and knocker devices below the screen fabric against which the knocker blocks or buttons on the fabric are adapted to impinge.

25 9. In a separator of the class described, the combination of the screen, means for vibrating the screen along lines generally

perpendicular to the plane of the screen, the knocker blocks or buttons each formed in two parts or sections, one part above and the 30 other below the screen fabric, the upper part being larger and overhanging the peripheral edges of the lower part, and knocker devices against which the knocker blocks or buttons on the fabric are adapted to impinge. 35

10. In a separator of the class described, the combination of the screen, means for vibrating the screen along lines generally 40 perpendicular to the plane of the screen, the knocker blocks or devices each formed in two parts or sections, one part above and the other part below the screen fabric, and one part recessed and the other part made with a mating projection adapted to securely 45 hold the screen fabric, and knocker devices against which the knocker blocks or buttons on the fabric are adapted to impinge.

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

WILLIAM WALTER WILLSON.

Witnesses:

FRANK T. TALBOT,

FRANK J. CONNOR.