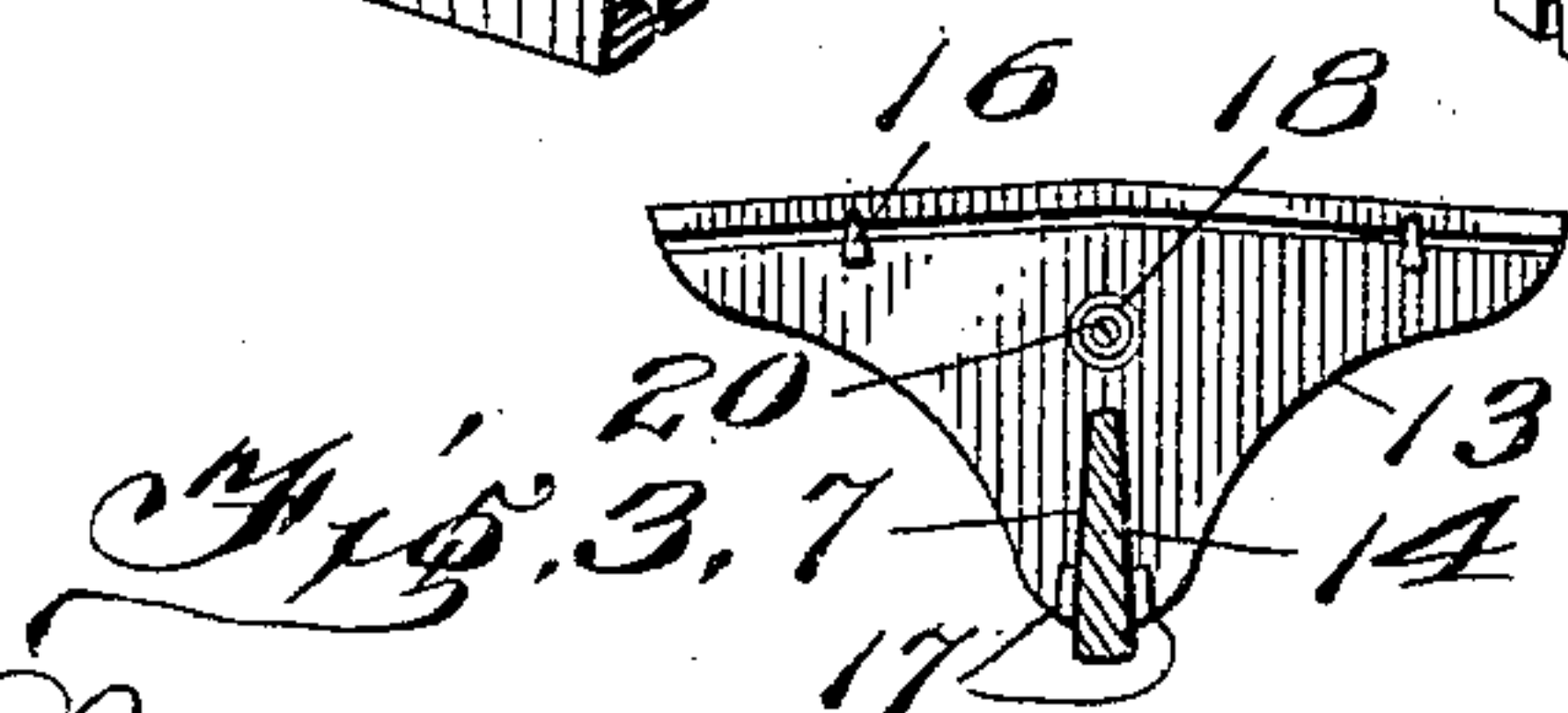
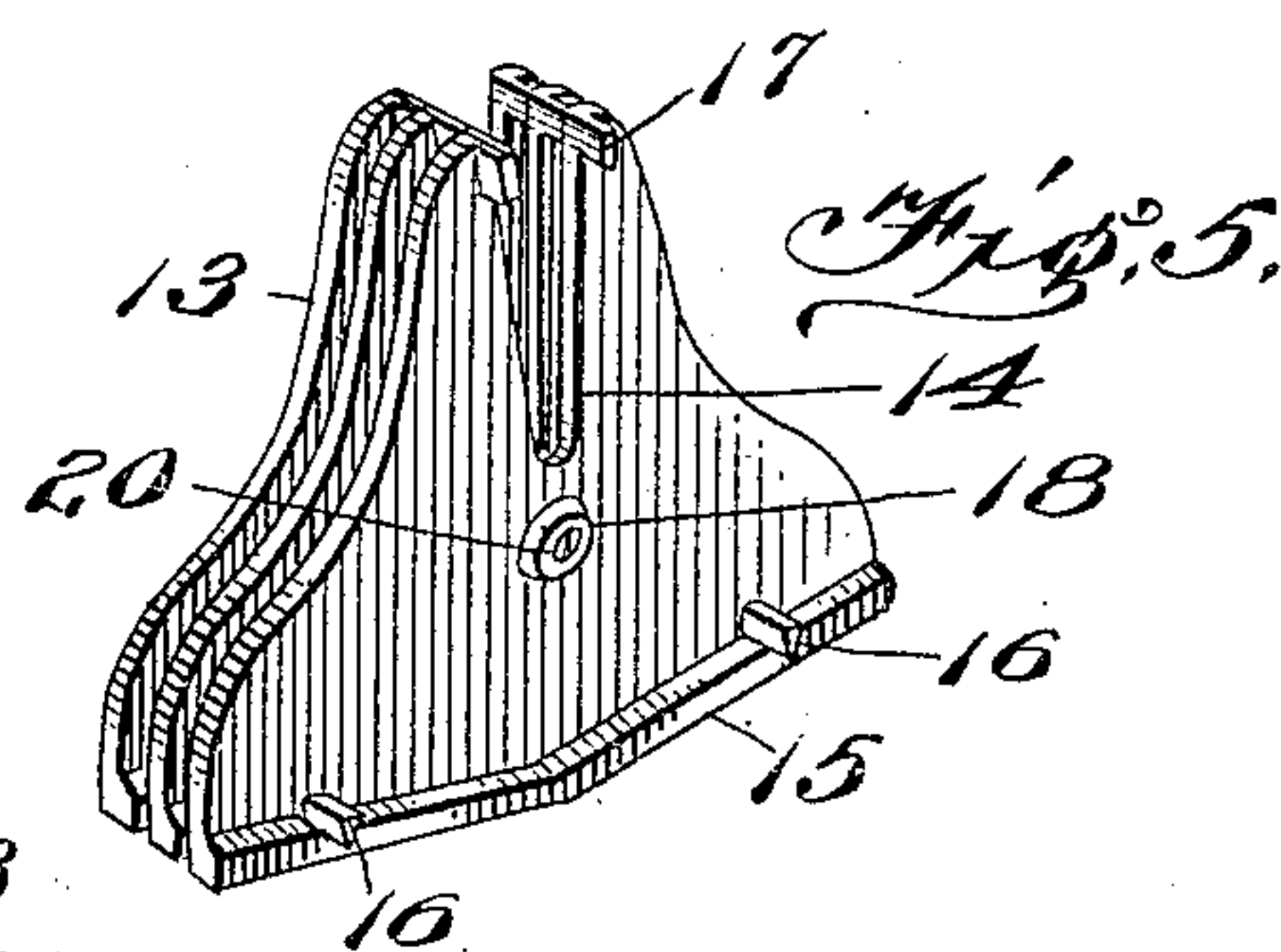
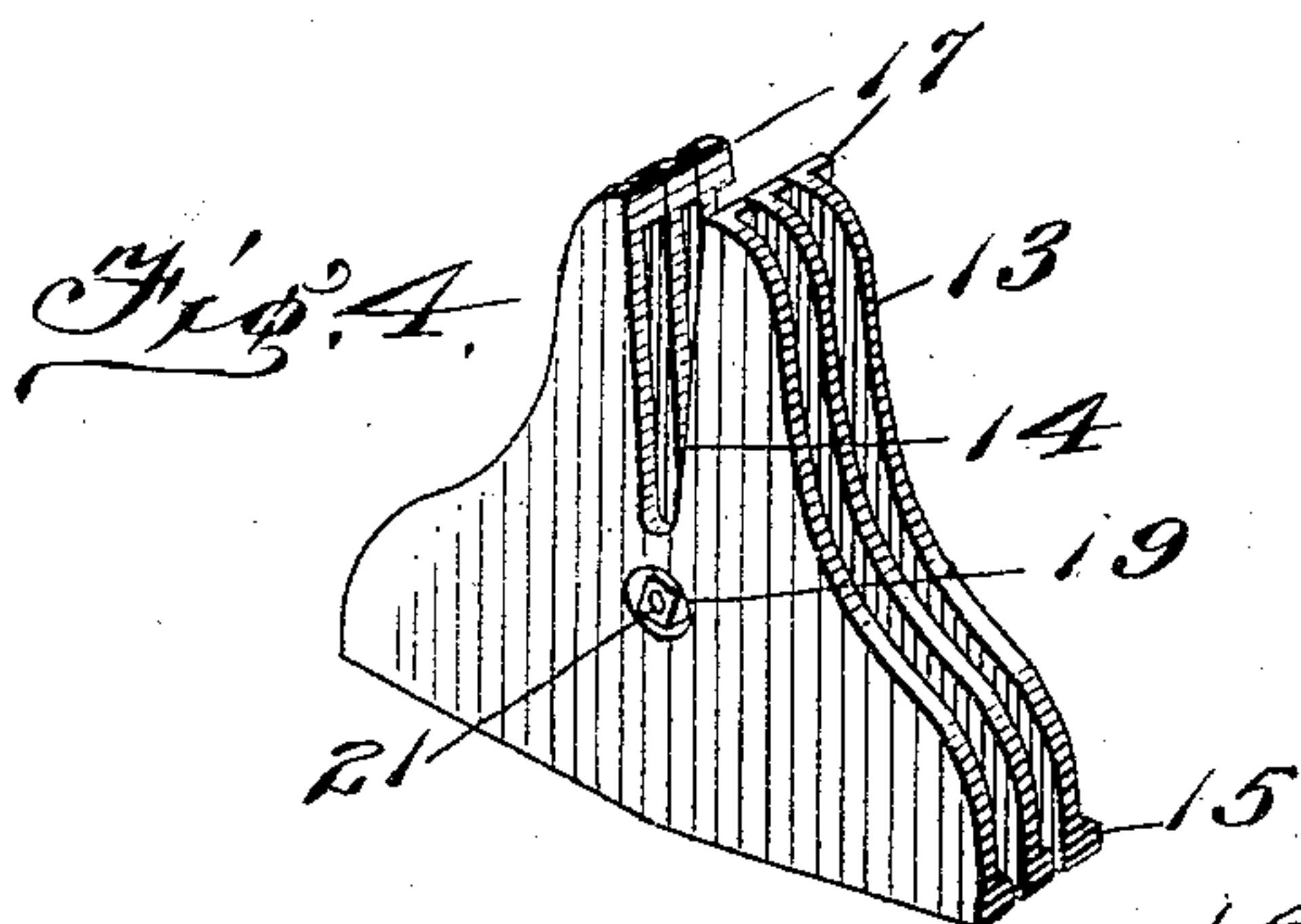
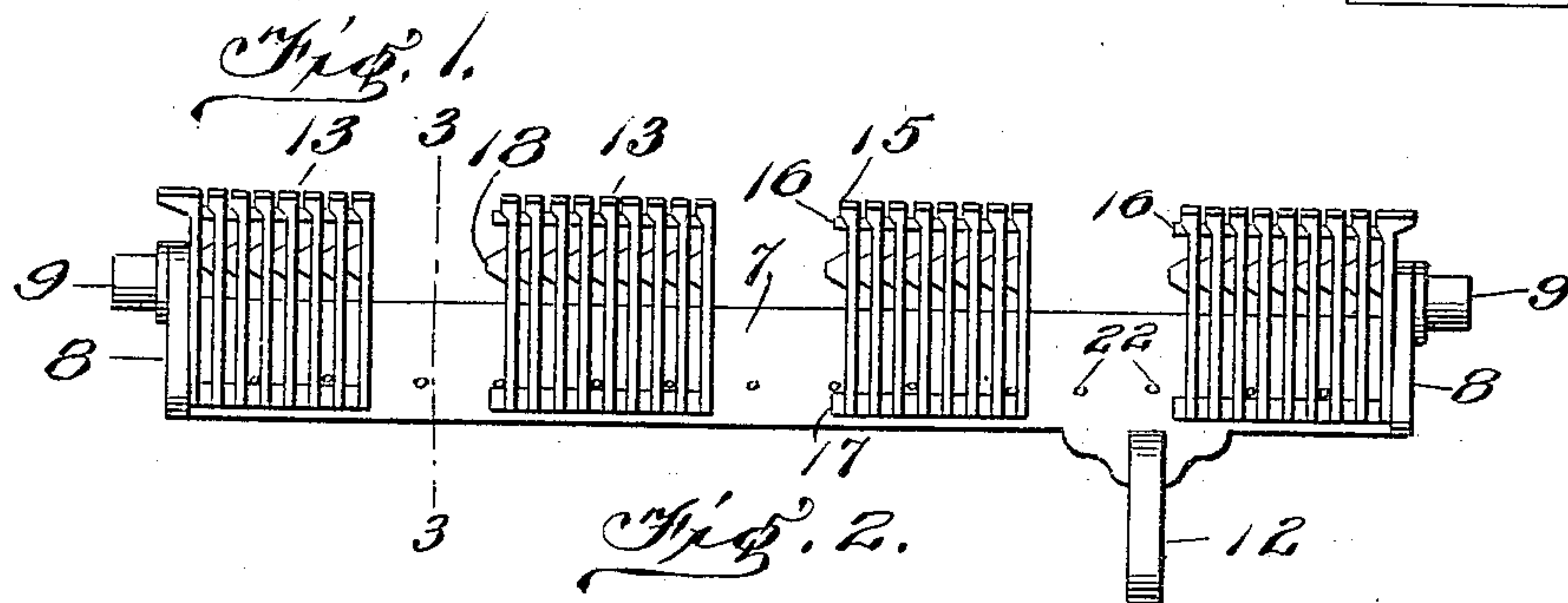
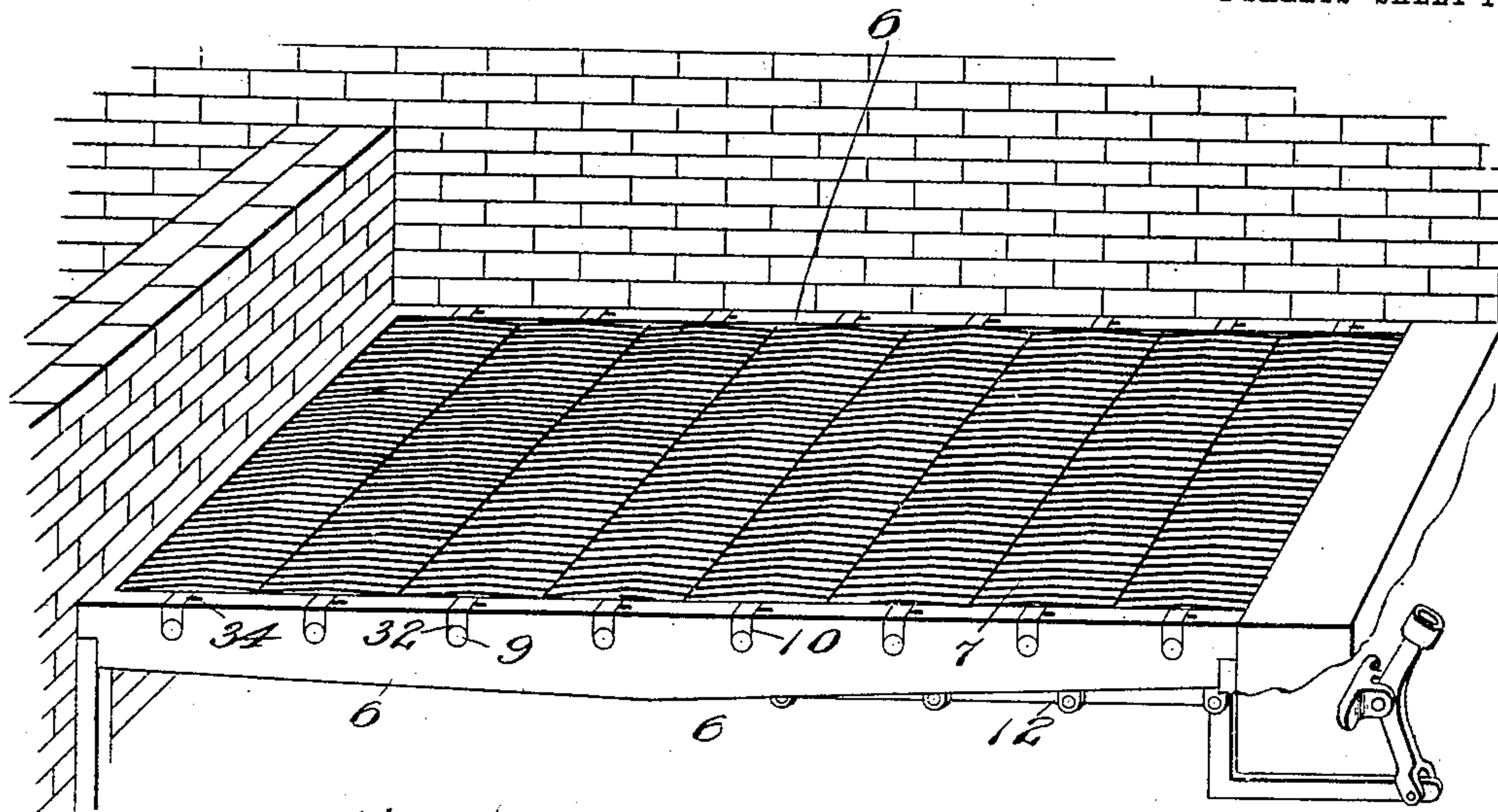


H. C. CHAMBERLIN.
FURNACE GRATE.
APPLICATION FILED MAR. 16, 1909.

946,488.

Patented Jan. 11, 1910.

2 SHEETS—SHEET 1.



Witnesses
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Harold Megraw

Inventor
Henry C. Chamberlin.

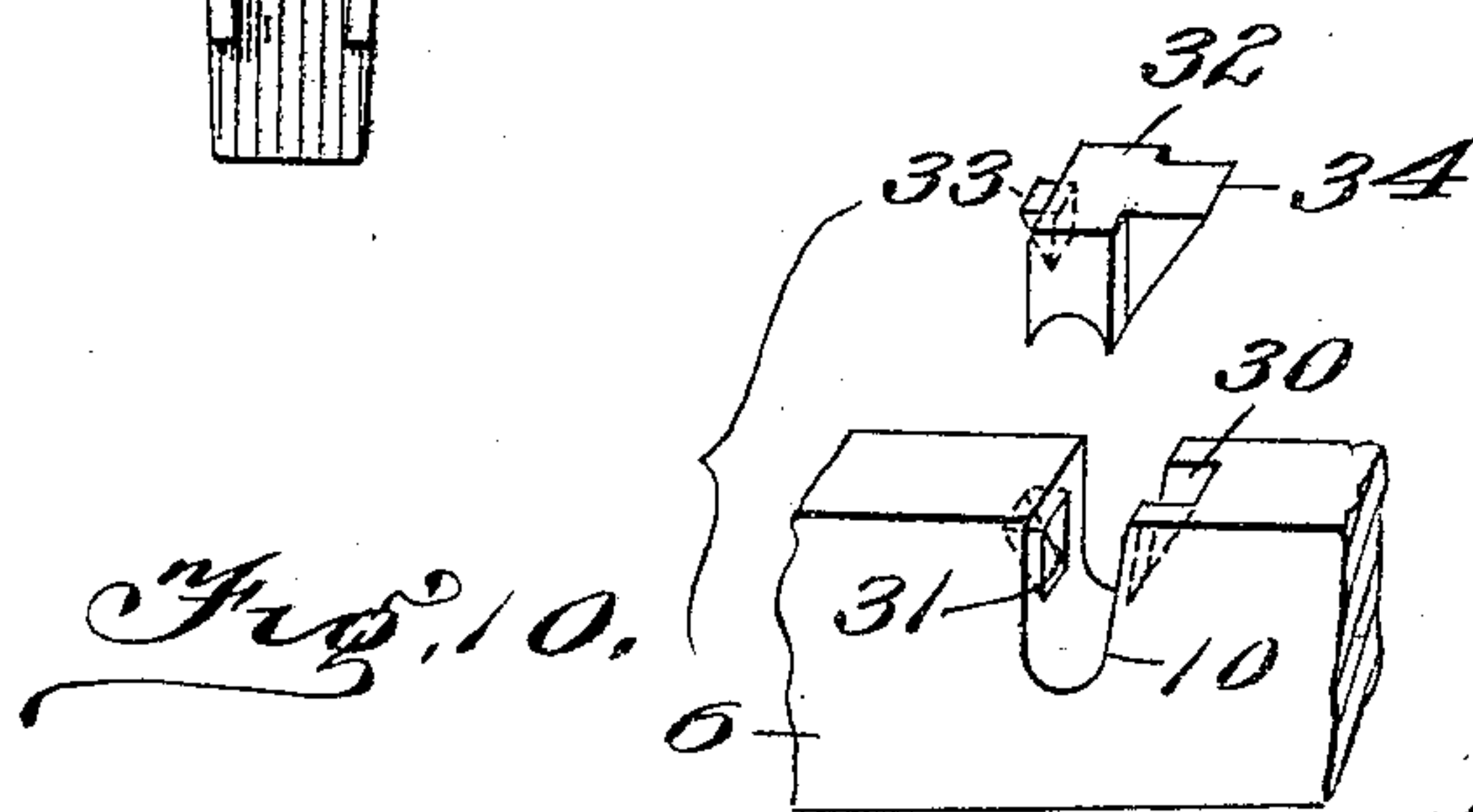
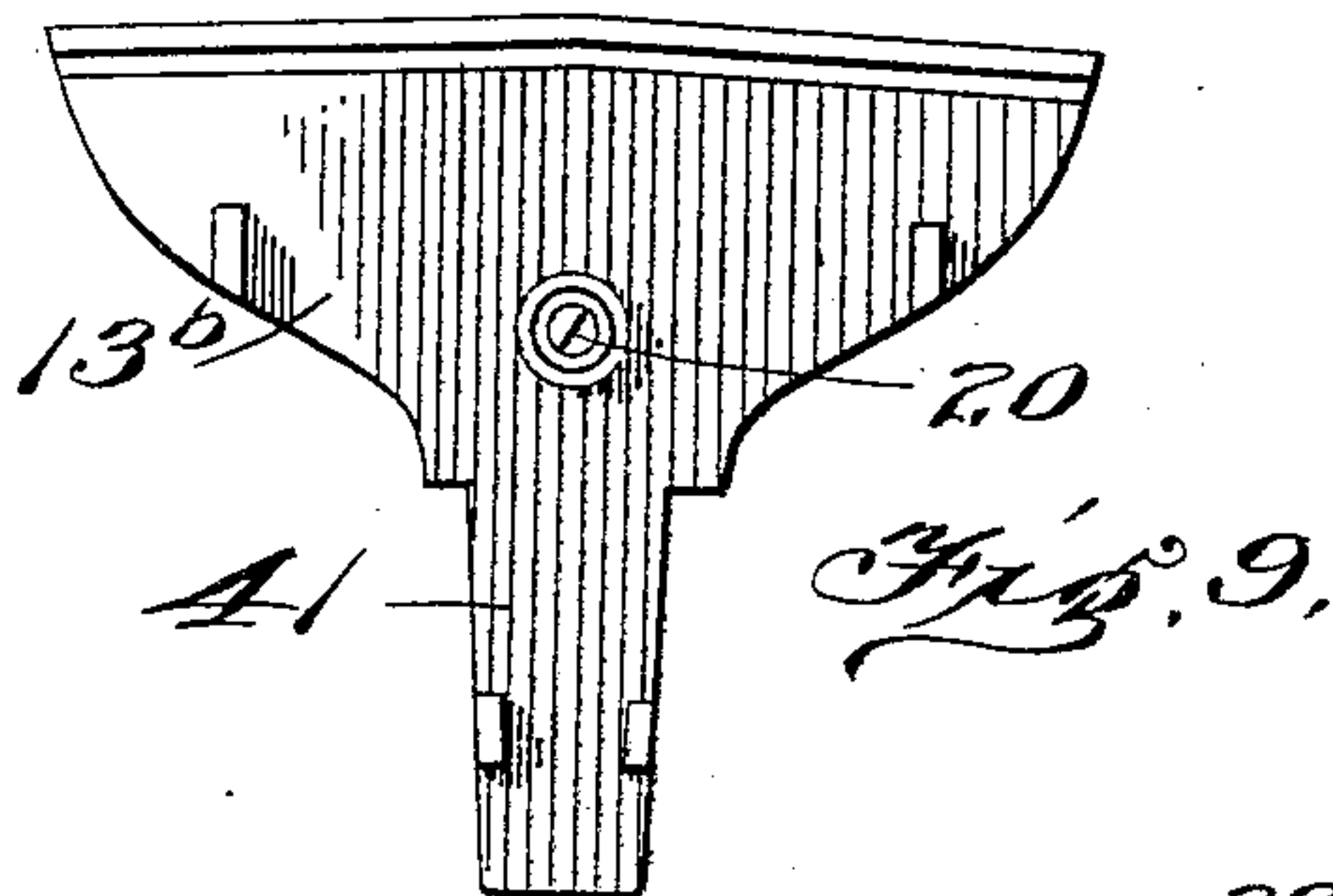
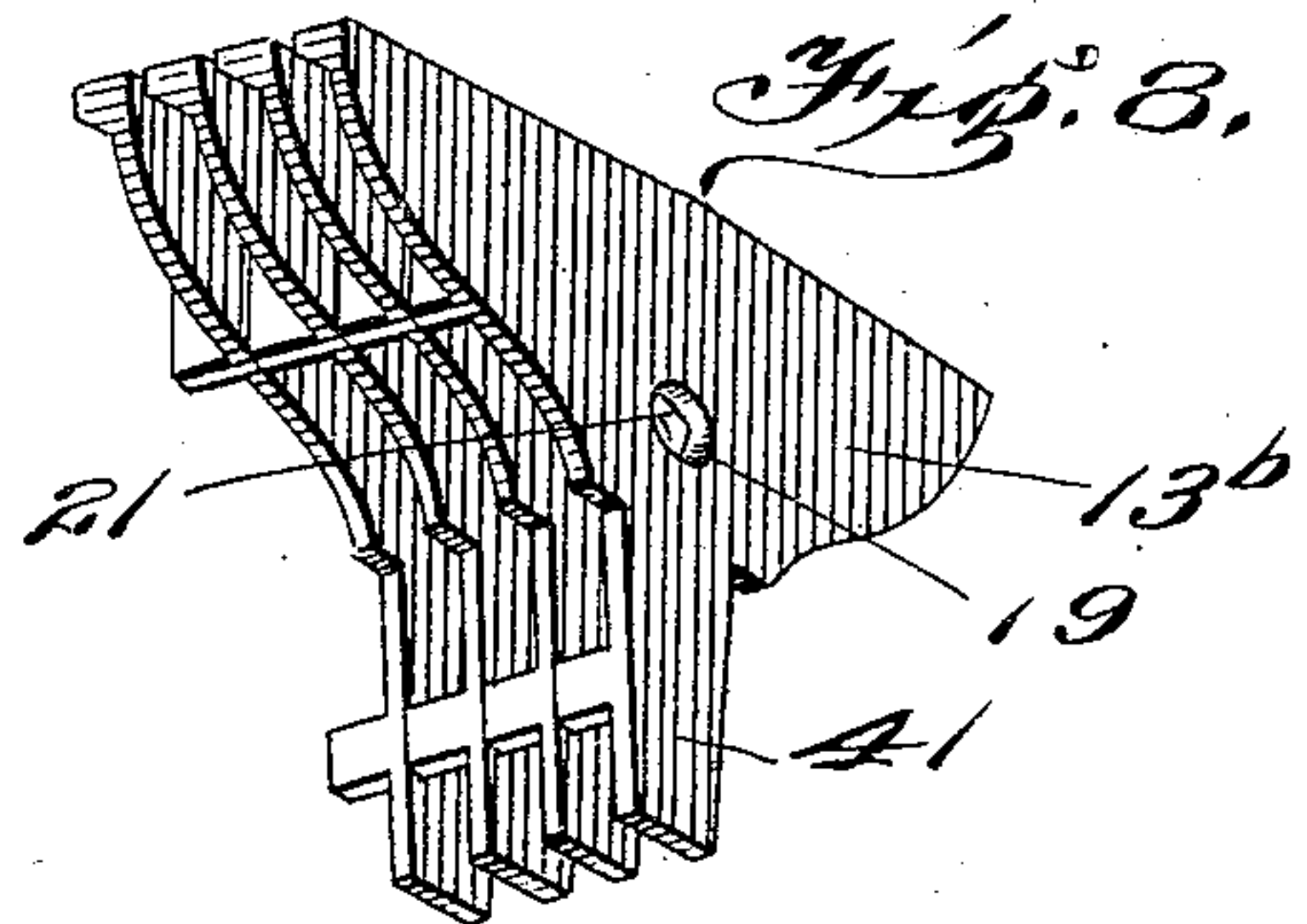
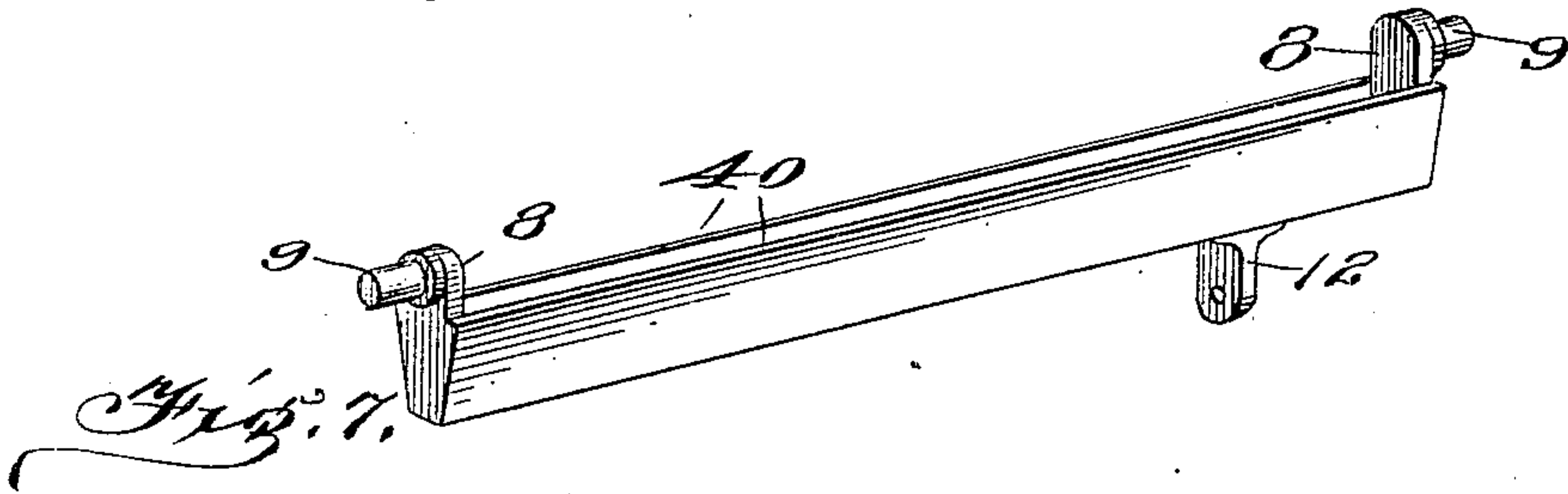
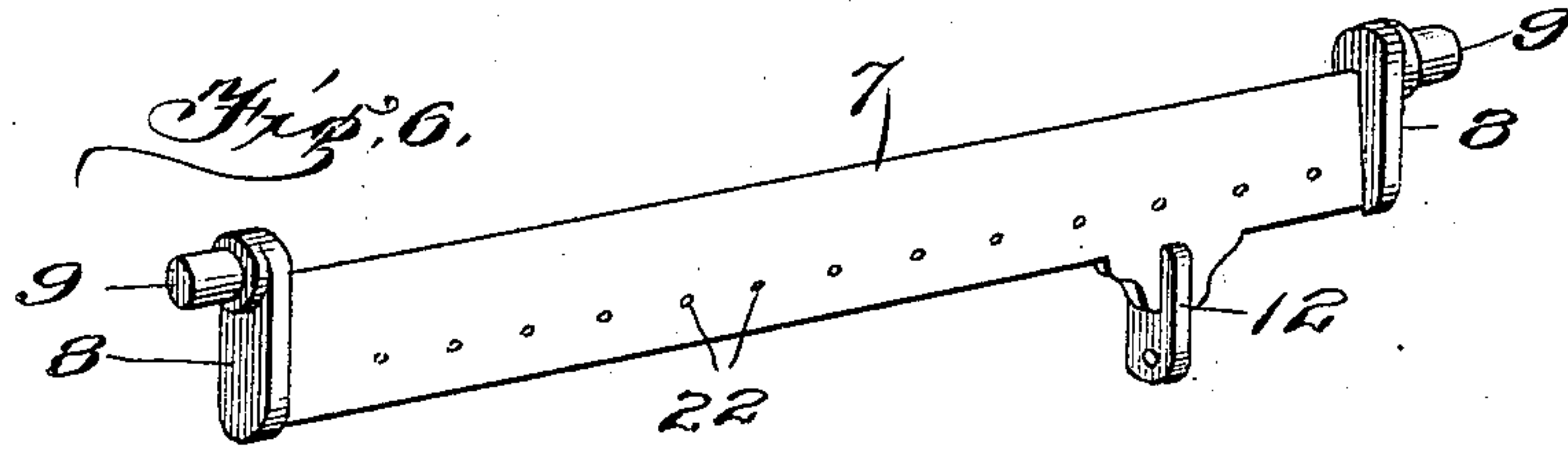
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

HENRY C. CHAMBERLIN, OF OLYPHANT, PENNSYLVANIA.

FURNACE-GRATE.

946,488.

Specification of Letters Patent.

Patented Jan. 11, 1910.

Application filed March 16, 1909. Serial No. 483,807.

To all whom it may concern:

Be it known that I, HENRY C. CHAMBERLIN, a citizen of the United States, residing at Olyphant, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Furnace-Grates, of which the following is a specification.

This invention relates to furnace grates of that type having rocking bars with removable fuel supports or grate-sections.

The object of the invention is to form an improved grate especially adapted for burning fine fuel and combining desirable features with respect to shaking, cutting and dumping, as well as with respect to the manner in which the sections are supported, the construction being such that any one or more of the sections can be removed without disturbing the others. Air spaces are provided in such manner that a large air supply is given, permitting at the same time the use of the finest fuel.

Further advantages with respect to the details of the grate will be hereinafter shown, described and referred to.

The invention is illustrated in the accompanying drawings in which—

Figure 1 is a perspective view of a grate constructed according to the invention. Fig. 2 is a side elevation of one of the grate bars with some of the fuel supporting sections thereon, others being omitted. Fig. 3 is a section on the line 3—3 of Fig. 2. Fig. 4 and Fig. 5 are details in perspective showing opposite sides of one of the sections. Fig. 6 is a perspective of one of the grate bars. Fig. 7 is a perspective of a modified form of grate bar. Fig. 8 is a perspective of a number or gang of grate sections assembled for use with the bar shown in Fig. 7. Fig. 9 is a side view of one of the sections shown in Fig. 8. Fig. 10 is a perspective view showing a locking device for holding the grate bars in the side bars.

Referring specifically to the drawings, 6 indicates the side bars or supports of the grate.

7 indicates one of the grate bars. This bar consists of a vertical web flat on opposite sides and slightly tapering toward the top. It has heads 8 at opposite ends provided with trunnions 9. These trunnions rest in recesses 10 formed in the side bars 6, the trunnions being located in substantial alinement with the upper edge of the bar 7.

Each bar has a depending arm 12 for the attachment of the rocking or shaking link, which may be of ordinary construction.

The fuel-supporting or grate-sections 13 are arranged upon the bar 7. Each section consists of a comparatively thin, flat plate which extends cross-wise of the bar, having a depending portion provided with a slightly tapered division or recess 14 of proper size and shape to fit upon the bar 7, so that the section will straddle the bar. Each section has at its upper edge a laterally extending rib or fuel support 15, to give surface to the grate. This projects on one side of the plate at the edge thereof, as stated. The plate is also provided, preferably on the same side, with space lugs or projections 16, these lugs or projections being located directly below the top rib 15. Projections 17 for the same purpose are also provided at the lower ends of the downwardly extending part or legs of the plate, on opposite sides of the recess 14. When the sections are assembled these projections space the same apart to give an adequate air supply, forming openings between the fuel supports, which openings extend the full length of said supports. Obviously the projections may be made of any size desired in order to space the projections apart the desired distance. The sections are also provided with interlocking tubular projections 18, similar to those described in my U. S. Patent No. 873,411, these tubular projections fitting in recesses 19 formed in the adjacent side of the next sections, when the parts are assembled on the grate bar. These tubular projections also allow the grate sections to be fastened together by means of a bolt 20, provided with a nut 21. By this means the sections may be removed in gangs or bunches containing as many sections as desired. Fig. 2 shows several bunches, of different sizes, assembled on the bar.

The bar is provided with small holes 22, and if desired, the assembled bunches or gangs of sections may be fastened to the bar by means of a nail, wire, or the like, as indicated at 23, inserted through the said holes, above the lower lugs 17. This will prevent the sections lifting from the bar, although in practice I have found that they will not lift under ordinary conditions, even without the fastening device. The end section 13^a has a top rib or fuel support of increased width, to overhang the heads 8 of the bar.

The trunnions 9 of the grate bars are held in position in the bearing recesses 10 by means of locking devices one of which is shown in Fig. 10. The recess 10 has at one side an inclined groove 30, and at the other side an under-cut notch 31. The locking block 32 is shaped to fit in the recess and when dropped therein it strikes on the trunnion 9, causing its projection 33 to catch in the notch 31, the lug 34 passing down the groove 30 and preventing lateral displacement, and the weight of the locking block causes it to fall in toward the side of the recess containing the notch 31 and locks the projection 33 therein by so doing, thereby making it self-locking, but it may be disengaged by manipulation.

In Figs. 7, 8 and 9 a modified form of bar and grate section is shown. In this, the bar is a channel bar, having two sides 40 with a space between. The sides converge downwardly forming a channel to receive the depending parts 41 of the grate sections 13^b. In other words in this form the bar is divided and the leg of the grate section fits between, whereas in the construction first described the grate section is divided forming two legs between which the bar fits. The spacing and interlocking projections on the modified form are similar to those in the other form, as well as the rib or fuel support at the top.

The devices shown have the advantages of simplicity of construction and ease of removal of any part or grate section. Thus any bunch of sections may be lifted off the grate bar without disturbing the remainder of the grate surface, and then by removing the bolt 20 any particular section can be removed and renewed, and then the bunch can be fastened together again and dropped into place on the grate bar. The grate bar does not have to be disturbed. The sections are made separate and are assembled in such sized bunch or number of leaves as best suits the local conditions. They can be put in singly if desired. The fire does not have to be removed from the fire-box to replace one or more of the sections, since this can be done by clearing the fire away from the section to be renewed and lifting the same out.

It is to be noticed that the web of the grate section or leaves extends transverse to the line of strain. This is important, inasmuch as when the grates are worked, the strain when breaking clinkers is parallel to the greatest width of the plate. This enables the plates to be made quite thin without weakening the same so that they will break in operation, the strain coming edgewise on the castings. This is true with respect to both of the forms shown. The fuel supporting ribs 15 being spaced apart along their entire length give a large air supply. For convenience of repair the grate is superior to those in which the whole grate bar has to be removed before any of the leaves can be taken off.

The lugs 17, in both forms, rest against the sides of the supporting bar and by their contact assist in preserving the correct alignment of the sections, which is particularly advantageous where thin leaves or sections are used.

I claim:

1. The combination with a grate bar, of groups of grate sections thereon, said groups being individually removable from the bar without disturbing other groups or the bar, each group comprising a plurality of spaced plates having registering recesses in their lower edges to receive the bar, registering holes above said recesses, and a tie bolt for holding the plates together extending through said holes.

2. The combination of a side bar provided with bearing recesses, each recess having a notch in one side and an inclined groove in the opposite side, said notch being closed at the top, grate bars having trunnions fitting in said recesses, and locking blocks slidable into the recesses above the trunnions and each having a projection on one side arranged to engage in said notch and under the closed top thereof, and a lug on the opposite side arranged to fit in said groove.

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

HENRY C. CHAMBERLIN.

Witnesses:

H. B. BUSH,
H. A. NYE.