

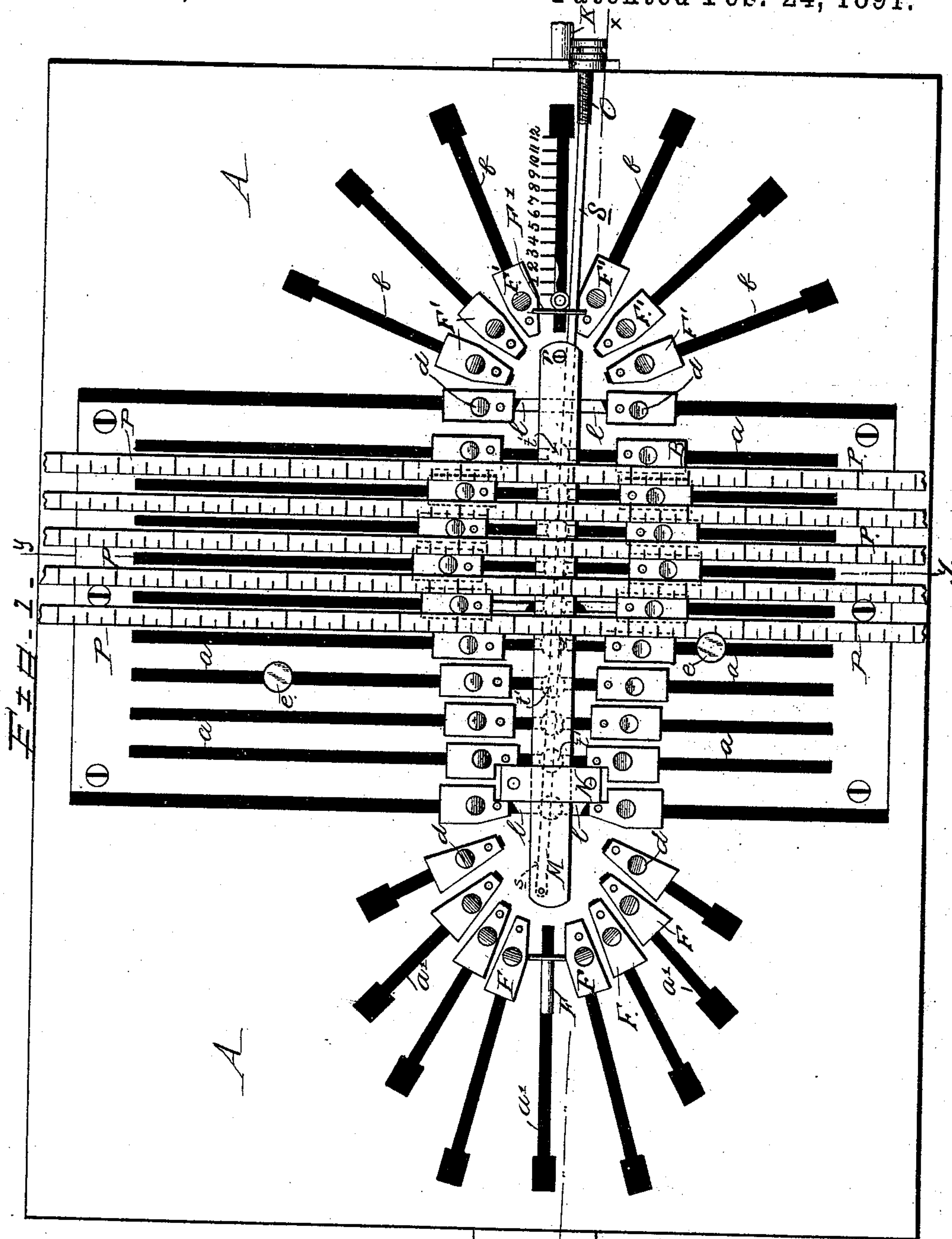
(No Model.)

3 Sheets—Sheet 1.

A. S. ADLER.
FOOT MEASURING MACHINE.

No. 447,098.

Patented Feb. 24, 1891.



Witnesses

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Josh Blackwood

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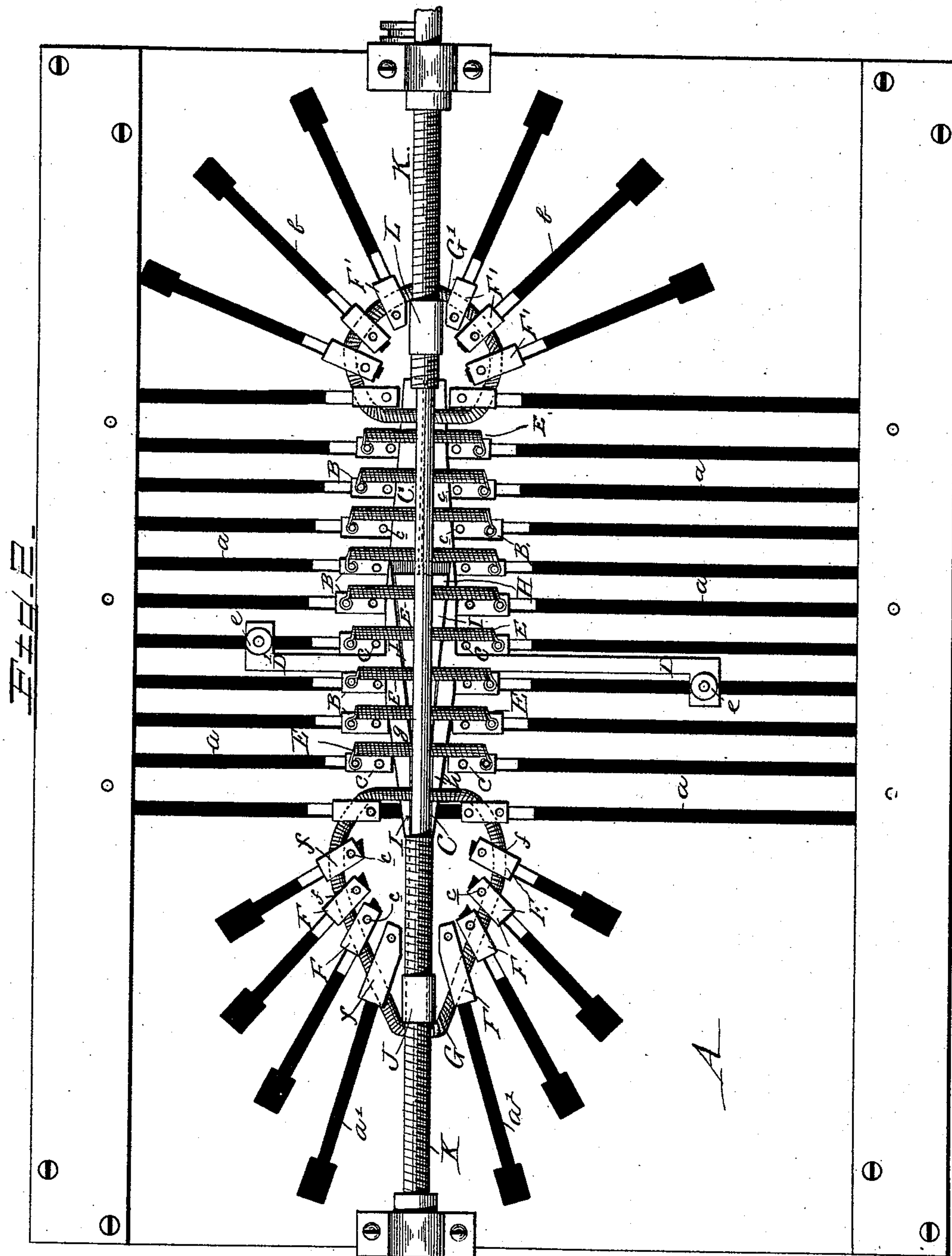
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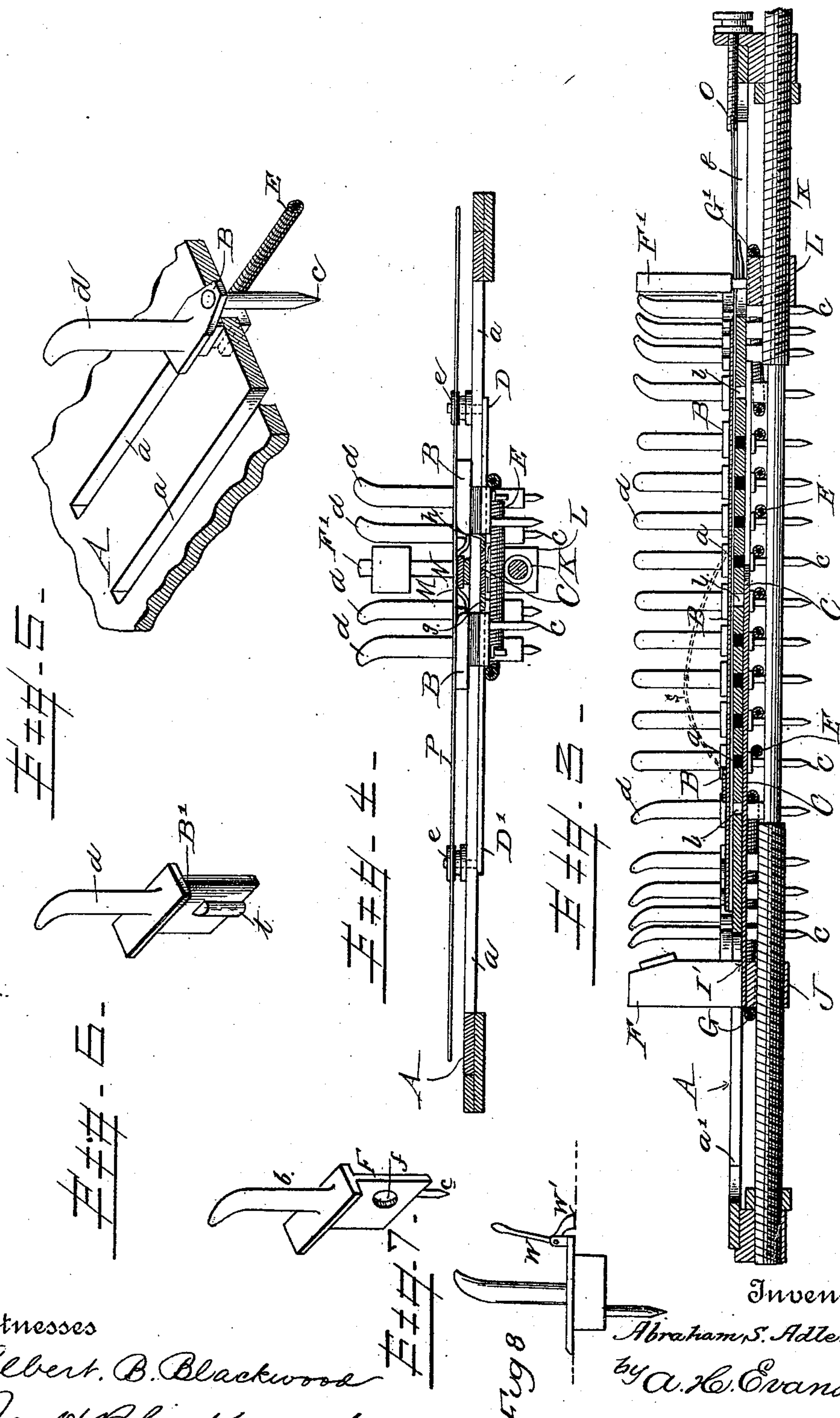
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Fig 8

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UNITED STATES PATENT OFFICE.

ABRAHAM S. ADLER, OF BALTIMORE, MARYLAND.

FOOT-MEASURING MACHINE.

SPECIFICATION forming part of Letters Patent No. 447,098, dated February 24, 1891.

Application filed April 12, 1890. Serial No. 347,671. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM S. ADLER, a citizen of the United States, residing at Baltimore city, State of Maryland, have invented certain new and useful Improvements in Foot-Measuring Machines, of which the following is a full and clear description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a top plan view of the bed-plate of a foot-measuring machine embodying my invention. Fig. 2 is a bottom plan view of the same. Fig. 3 is a longitudinal sectional view on the line *xx* of Fig. 1. Fig. 4 is a cross-sectional view on the line *yy* of Fig. 1. Figs. 5, 6, 7, and 8 are details to be referred to.

My invention relates to certain new and useful improvements in machines for taking the measurements of the human foot; and it consists in the constructions and combinations of devices which I shall hereinafter fully describe and claim.

To enable others skilled in the art to make and use my invention, I will now proceed to describe its construction.

In the accompanying drawings, A represents a bed-plate, whose surface is slotted transversely and radially at *a*, *a'*, and *b* in a manner substantially similar to that shown, described, and claimed in my former patent, No. 428,875, dated May 27, 1890.

Within the transverse slots *a* and radial slots *a'* and *b* are mounted to slide blocks B, whose sides may be grooved or channeled, as shown in Figs. 4 and 5, to receive the side walls of the slots, whereby the blocks are guided and held from displacement in the slots, and said blocks have projecting from their under surfaces pointed pins *c*, while from the upper surfaces of the blocks project the fingers *d*, between which the foot is held when the measurements are being taken. At the underside of the bed-plate is a plate C, whose combined outer walls may approximate the shape of the human foot, said plate being divided longitudinally into two parts or sections *g* and *h*, whose upper surfaces at one or more points are provided with lugs *l*, adapted to engage certain of the transverse slots of the bed-plate, whereby said sections may be moved outwardly in opposite directions by a mech-

anism I will now describe. These sections *g* and *h* are connected with rods D and D', which, after being secured to the sections, extend along the under side of the bed-plate toward the side of the machine and are provided with set-screws *e* or other holding devices. From this description it will be seen that when the rods are pulled apart the sections of the plate C are caused to separate and move in opposite directions to expand the sections of the plate sufficiently to enable the foot to be placed between the fingers *d* of the blocks.

The blocks B, which carry the pins, are arranged in pairs—that is, the blocks on one side are connected with those blocks on the opposite side directly in line with them by means of springs E, whose ends are fastened to said opposite blocks substantially in the manner shown in Fig. 2, whereby when the sections of the plate C are moved outward to expand the machine or to increase the distance between the fingers the springs are distended, and when the rods D D' are released these springs contract and draw the blocks inward against the foot. At the same time when in this latter or closed position these springs enable the blocks to yield to correspond to the irregularities of the foot.

The blocks F F' at the heel and toe portions of the machine are somewhat extended below the under surface of the bed-plate, and they have holes *f* in them at an angle and adapted to receive continuous springs G G', one of which G is located at the toe portion and is adapted to pass through all the blocks at that point, so that said blocks are practically bound together, while the other spring G' is at the heel portion and is passed through the blocks at that portion in the manner and for the purpose described for the other spring. Aside from the blocks at the heel and toe portions the remaining blocks are independent ones connected in pairs, as previously described.

The meeting surfaces of the sections *g* and *h* of the plate C are cut away to form a V-shaped opening H, and in said opening is placed a sliding V-shaped plate I, whose inclined sides bear against the inclined walls of the opening H, and said plate has a projecting rod or tongue I', which extends forwardly between and beyond the sections *g*

and *h*, and has its outer end connected to a nut J, fitted upon a screw-rod K, that extends longitudinally through the machine and has its ends provided with right and left threads, as in my former patents. The nut J carries the toe-piece, and a similar nut L upon said screw at the opposite end carries the heel-piece, and the two nuts are so disposed that the continuous springs E at the heel and toe portions bear against their ends, whereby when the screw is turned the nuts are caused to move in opposite directions to carry the heel and toe pieces outward in their respective slots, and as the springs E bear against said nuts it is obvious that as the nuts move outward the springs are distended and bear against the walls of the openings *f* in the blocks at the heel and toe portions to cause the blocks with their pins and finger-pieces to move outward in their slots. When the screw is turned to move the toe and heel pieces outward, as just described, the movement of the nut J is transmitted to the V-shaped plate I between the sections of the plate C, and this plate I, being wedge-shaped, it forces the sections *g* and *h* apart to cause their outer walls to press the side blocks outwardly in their slots.

In order that the instep measurement may be accurately taken, I employ a spring-plate M, which lies on top of the bed-plate and has one end secured thereto at *r*, while the other end is unattached, and after being passed through a guide-plate N, secured to the bed-plate near the free end of the plate M, is secured to one end of a rod or flexible strip *s*, whose outer end is attached to a screw-rod O near the end portion of the machine.

Secured to the plate M, or simply loosely lying thereon, if preferred, are transverse straps P, suitably graduated and extending between the fingers toward opposite sides of the machine and designed to be passed over the instep and forward part of the foot to take the correct measurement thereof. From this description it will be seen that when the heel and toe pieces and blocks carrying the fingers and pins are adjusted against the foot, as previously described, the screw-rod O is turned, thereby drawing upon the flexible strip or rod *s*. This movement tends to pull the free end of the spring-plate M rearward, and as the opposite end of this plate is rigidly held the spring-plate is caused to curve upwardly at its central portion (see dotted lines in Fig. 3) to fit under the hollow of the foot. This plate M therefore operates with the straps to insure a perfect instep measurement.

The mechanisms described are simple in construction, not liable to be disarranged, and may be used in connection with the base, frame and connections shown, described, and claimed in my former patent, No. 428,875, dated May 27, 1890, and, if desired, may also be used with or without the diagram shown

in the Patent No. 322,238, granted to me July 14, 1885.

If desired I may employ the blocks B' (shown in Fig. 6) and which will be provided with lugs *t* on their sides to permit them to be inserted through enlarged openings *t'* in the slots and then retained in the slots. When these blocks B' are used, I may dispense with channels or grooves in their sides, as the lugs prevent the blocks falling out of the slots.

The operation of the machine is substantially as follows: When a foot is to be measured, the screw K is turned to move outward the heel and toe pieces and the blocks which are connected to them by means of the springs E, the sections *g* and *h* being also moved outward to press the side blocks aside. As it is desired to make the distance between the fingers greater than the width of the foot to enable the latter to be placed readily between said fingers, I then draw upon the rods D D' to fully expand the machine and secure the blocks in this outward position by means of the set-screws with which the rods D D' are provided. The foot being now placed in position between the fingers, the screw is turned to cause the heel and toe pieces to move inward against the ends of the foot to determine the correct length of the foot, which is made known by any well-known form of gage or scale on the bed-plate or otherwise. The set-screws *e* are now released to permit the springs E to draw the blocks B and sections *g* and *h* inward against the sides of the foot, after which the instep measurement is taken and the correct outline of the foot is made upon the underlying diagram or sheet by the pins *c* in the manner set forth in my former patent before referred to.

In the detail Fig. 8 I show one of the blocks having a lever W pivoted to its upper flange portion, said lever having a foot portion W', by which the block may be held against inward movement by the spring or otherwise, as the foot portion W' of the lever operates as a cam against the bed-plate to prevent the block being pressed inward along its slot. This construction is desirable when it is necessary to adjust any one or more of the blocks independently of the others.

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

1. In a foot-measuring machine, the combination, with a bed-plate, of independent pins movable thereon at the toe portion and a flexible connection surrounding said pins, whereby they are bound together.

2. In a foot-measuring machine, a bed-plate, in combination with independent pins movable thereon at the heel portion of the machine and a continuous spring surrounding said pins and causing them to move together.

3. In a foot-measuring machine, a bed-plate having laterally-moving blocks provided with pins and fingers, in combination with radial-

ly-moving blocks at the heel and toe portions of the machine and continuous springs surrounding the heel and toe block, substantially as described.

5 4. In a foot-measuring machine, a bed-plate having laterally-moving side pins and radially-moving end pins, in combination with springs connecting opposite side pins in pairs and other springs surrounding the heel and
10 toe pins in series.

5 5. In a foot-measuring machine, a bed-plate having laterally and radially moving blocks provided with pins and fingers, in combination with springs connecting opposite side
-5 blocks in pairs and other springs passing through openings in the radially-moving blocks, whereby said blocks move together in series, substantially as described.

20 6. In a foot-measuring machine, a bed-plate having laterally-moving pins mounted thereon, in combination with the plate C, divided longitudinally into sections *g* and *h*, rods connected with the sections of the plate for moving them outward in opposite directions, and
25 springs connected with the pins for drawing said sections together.

30 7. In a foot-measuring machine, the bed-plate and the laterally and radially moving blocks provided with pins and fingers, in combination with springs connecting the laterally-moving blocks in pairs and other springs connecting the radially-moving blocks in series, a two-part plate C, having rods for drawing them apart, and set-screws for holding
35 the plate open, substantially as described.

40 8. In a foot-measuring machine, the bed-plate, the laterally and radially moving blocks, and springs connecting them, in combination with the divided plate C, having a V-shaped opening, rods connected to the sections of the plate, a V-shaped plate within said open-

ing, and a screw having nuts near opposite ends provided with heel and toe pieces one of said nuts being connected with and moving the V-shaped plate, substantially as described. 45

9. In a foot-measuring machine, the bed-plate, the laterally and radially moving blocks, and continuous springs surrounding the radially-moving blocks, in combination with a screw having nuts traveling thereon to ex- 50
pand the springs, whereby the blocks are moved radially, substantially as described.

10. In a foot-measuring machine, a bed-plate slotted transversely and radially and blocks mounted to slide in said slots and provided with pins and fingers, in combination 55
with a plate C, whose outer edges approximate the shape of the human foot, said plate being divided longitudinally into sections, and slide-rods for moving the sections in opposite di- 60
rections, substantially as described.

11. In a foot-measuring machine, a bed-plate and sliding blocks with pins and fingers, in combination with a spring-plate having straps for taking the instep measurement, 65
said plate being connected with a screw-rod for curving it upward under the hollow of the foot.

12. In a foot-measuring machine, a bed-plate having sliding blocks provided with pins 70
and fingers, in combination with the spring-plate secured rigidly at one end only, a flexible strap secured to the free end of said plate, a screw-rod for arching the spring-plate under the hollow of the foot, and measuring- 75
straps extending transversely across the spring-plate between the fingers, substantially as described.

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Witnesses:

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