

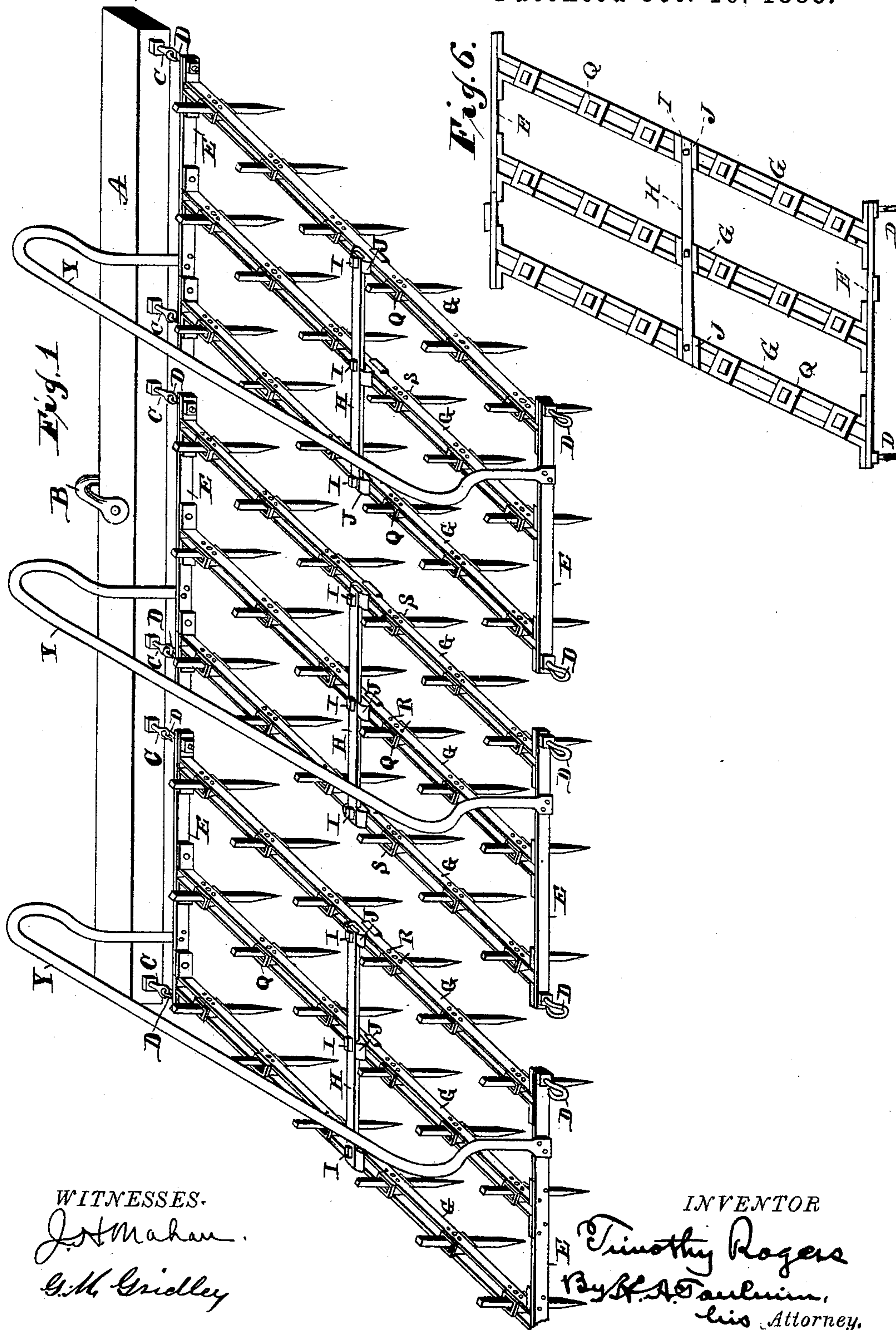
(No Model.)

2 Sheets—Sheet 1.

T. ROGERS.
HARROW.

No. 391,194.

Patented Oct. 16, 1888.



WITNESSES.

J. H. Mahan.
G. H. Gridley

INVENTOR

Timothy Rogers

By R. A. Sullivan,
his Attorney.

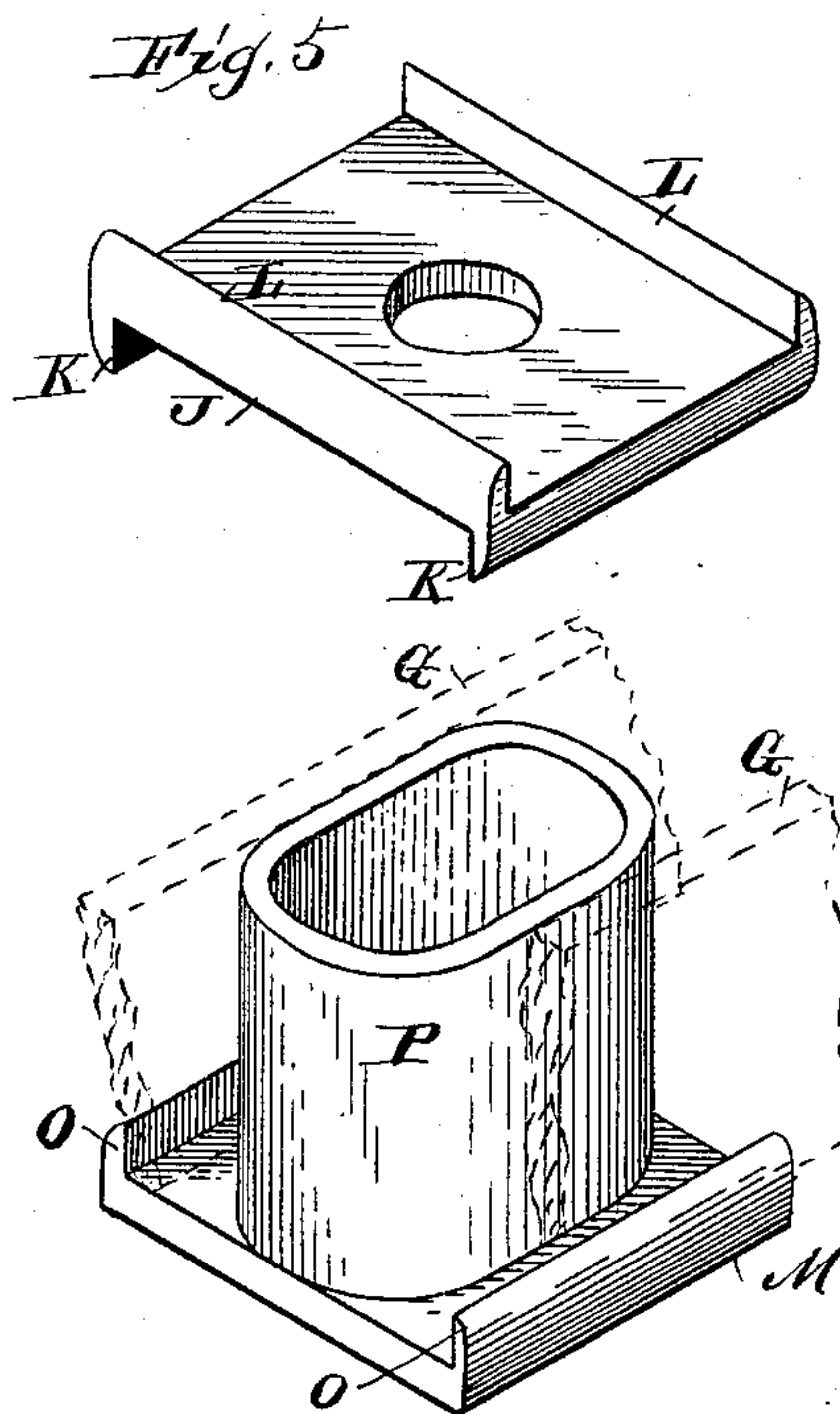
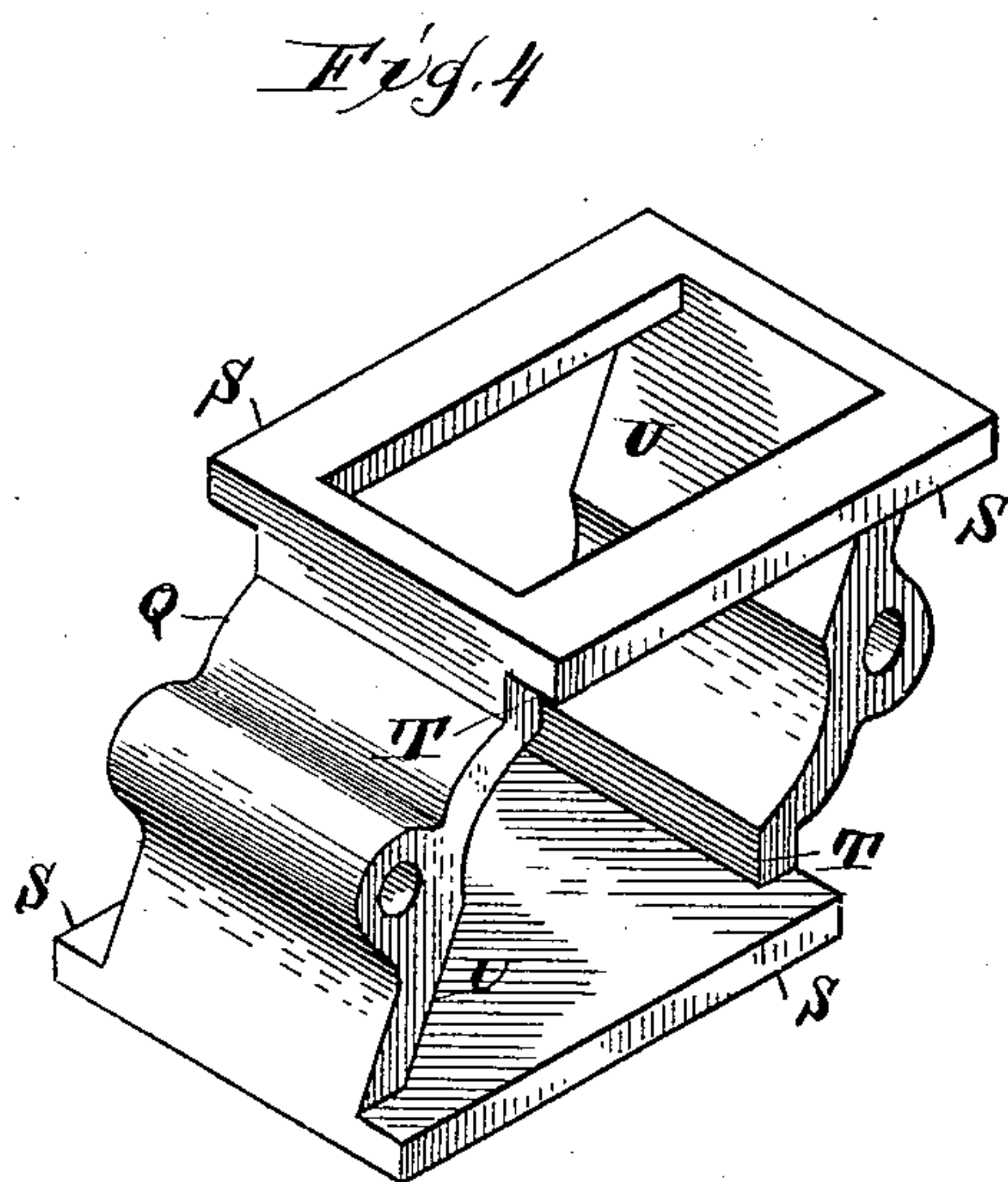
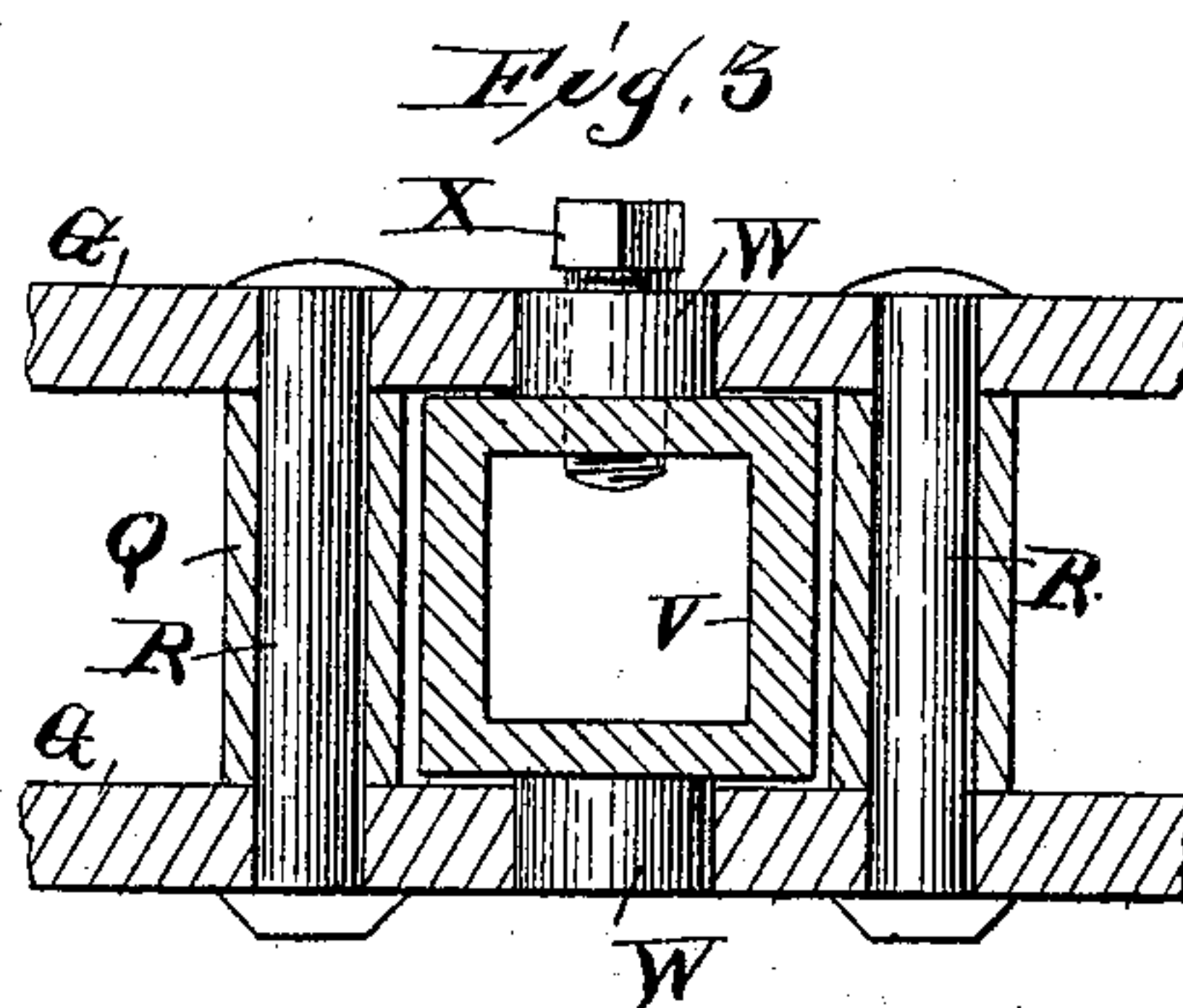
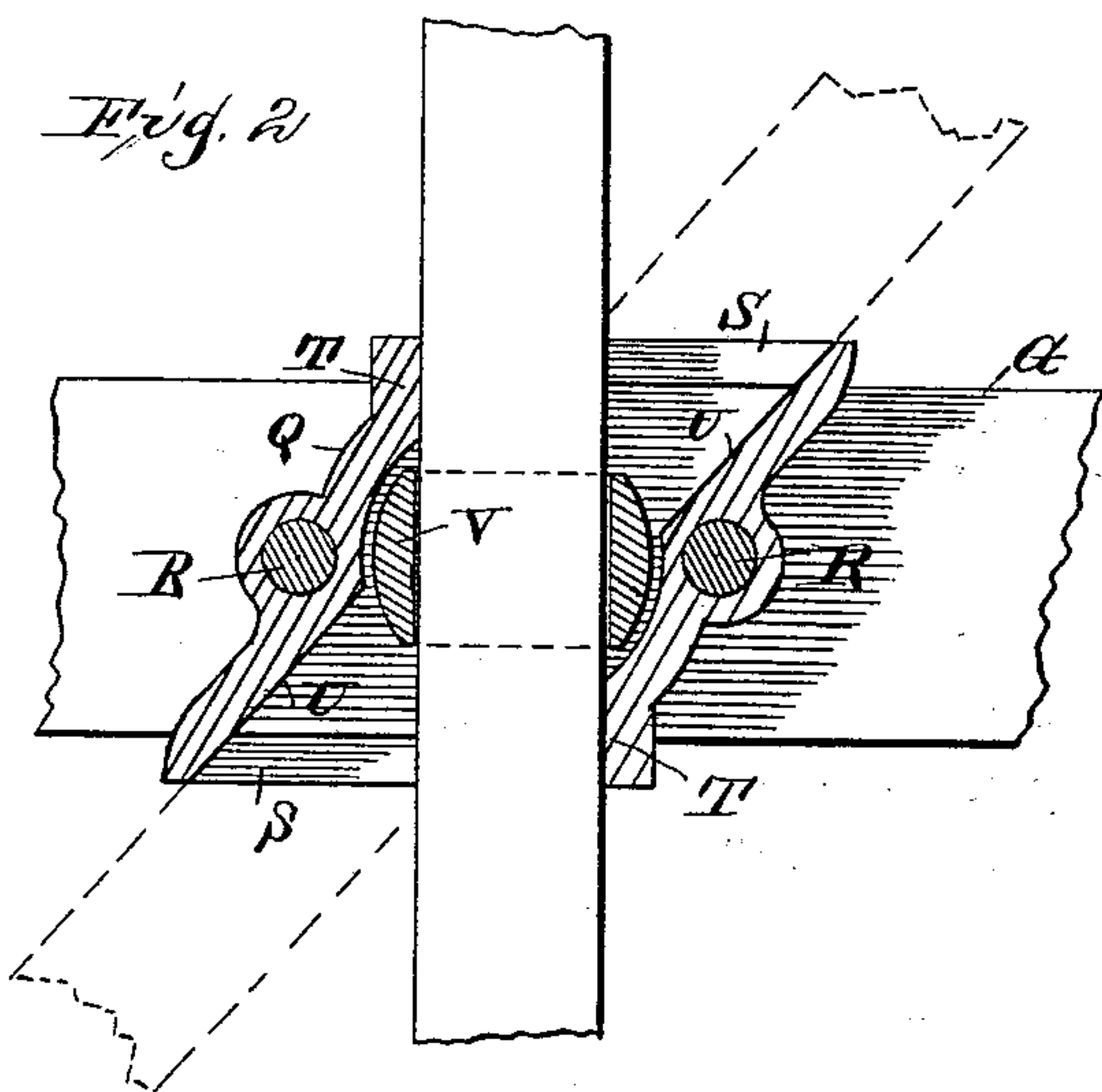
(No Model.)

2 Sheets—Sheet 2.

T. ROGERS.
HARROW.

No. 391,194.

Patented Oct. 16, 1888.



WITNESSES,
Jas. H. Mahan
G. M. Gridley.

INVENTOR.
Timothy Rogers,
By A. A. Toulmin,
his Attorney.

UNITED STATES PATENT OFFICE.

TIMOTHY ROGERS, OF SPRINGFIELD, OHIO, ASSIGNOR TO THE ROGERS FENCE COMPANY, OF SAME PLACE.

HARROW.

SPECIFICATION forming part of Letters Patent No. 391,194, dated October 16, 1888.

Application filed May 28, 1888. Serial No. 275,281. (No model.)

To all whom it may concern:

Be it known that I, TIMOTHY ROGERS, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Harrows, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in harrows, being of that class wherein the harrow is divided into several sections and the sections connected to a common draft-bar independently.

The object of the invention is to arrange the respective sections so that they may be drawn with either end forward, and to so connect the teeth with the beams of the sections as that the teeth will maintain a vertical position when one end is forward and will maintain an inclined or oblique position when the other end is forward.

Another object of the invention is to provide a runner for each section on the upper side thereof, so that by turning the sections bottom upward they will rest upon their runners, the arrangement of each runner with respect to its section being such as to about balance the weight of the section at either side of the runner.

Another object of the invention is to construct a peculiar coupling for attaching the teeth to the bars of the sections in such manner that the teeth are mounted upon a pivot and sustained by a stop, either in a vertical or oblique position, whereby the teeth can be turned and held from one of these positions to the other without manipulating bolts or removing parts of the structure, and in an easy and quick manner.

Still another object of the invention consists of certain features of construction hereinafter more fully described, and pointed out in the claims.

In the accompanying drawings, forming a part of this specification, and on which like reference-letters indicate corresponding parts, Figure 1 represents a perspective view of my improvements entire when made in several sections; Fig. 2, a sectional view of one of the tooth-couplings, showing a tooth and an adjacent portion of one of the bars composing the

tooth-beam; Fig. 3, a horizontal sectional view of the same parts; Fig. 4, a detail perspective view of one of the tooth-beams, showing the means for connecting the transverse braces thereto; Fig. 5, a perspective view of one of the tooth-couplings or sockets in detail; and Fig. 6, a plan view of one of the harrow-sections, showing the rhomboidal form thereof.

The letter A designates a stout draft-bar, made, preferably, of wood, and having near the middle thereof a convenient form of clevis, as suggested at B, and also having eyebolts C secured to it at suitable intervals for connection with the respective sections. Each end of each section has secured to it two hook-bolts, D, which engage the eyebolts C and form a flexible but strong connection. These hook-bolts are secured to the end pieces by passing through the ends thereof, and by means of a nut at either side of the end piece.

The object of the two nuts upon each hook-bolt is to admit of projecting the bolts more or less through the end piece, so as to draw one end of either end piece nearer to the draft-beam than the other end of the same end piece, whereby the rear ends of the harrow-sections are adjusted to different positions laterally, so as to bring the teeth of the one section more or less in line or out of line with the teeth of the other section, particularly those teeth carried by two adjacent bars of the adjacent sections. The result is that almost every part of the ground is engaged by one or more teeth.

Each section is composed of metallic end bars, E, and longitudinal bars G, each of the latter consisting of two separate strips of metal. One end of one strip is bent at an obtuse angle, and the other end at an acute angle to the body of the strip, and these ends are riveted or otherwise secured to the end pieces, E, save the two outer strips, which are held by the hook-bolts D. The result of the obtuse and acute angle bends is to give the harrow-sections rhomboidal form. I term the longitudinal bars "duplex tooth-bars."

The letter H designates a transverse brace, constructed, also, preferably of metal, and secured to the duplex tooth-bars by means of bolts and nuts I and a socket-plate, J. This plate has depending ribs K, which embrace the outer edges of the bars G, and also has trans-

verse ribs L, between which the braces H are fitted. A similar socket-plate, M, is fitted to the lower edges of the bars G and constructed with flanges O and vertical walls P, respectively, embracing the outer and inner edges of the bars G. The bolts already alluded to pass through these locking-plates and bind them firmly to the bars G, while the flanges K, O, and P hold the bars against lateral displacement. By means of these devices the connection between the braces H and the duplex tooth-bars is very strong and great rigidity is given the structure.

The letter Q refers to the tooth-sockets, the same being made preferably of malleable iron and consisting of a box-like structure adapted to fit between the bars G of each duplex tooth-bar, to be held therein by rivets or bolts R, and having upper and lower flanges, S, which embrace the upper and lower edges of said bars G. These sockets are constructed with two vertical walls, T, and two inclined walls, U, the former to hold the teeth in a vertical position and the latter to hold them in an inclined position. The intermediate portions of the front and rear walls of the sockets are preferably curved, as seen in Fig. 2, to more readily accommodate the sleeves V, having trunnions W fitted to turn in openings formed in the bars G. One of these sleeves has an interiorly-screw-threaded hole, into which is screwed a set-screw, X, by which the tooth is held within the sleeve, the sleeve, however, being free to rotate until the tooth is resisted either by the walls T or U. This will depend upon which end of the sections is connected to the draft-beam, for it will be seen that both ends of each section have the hook-bolts D.

Each section is supplied with a runner, Y, by which the harrow is supported when being removed from place to place. These runners consist of stout metallic bars of any suitable shape in cross-section, but preferably flat on the ground side, and have their ends secured by rivets or bolts to the end bars of the sections, as seen in Fig. 1. It has already been observed that the sections are in the form of rhomboids, which occasions the tooth-bars standing at other than a right angle to the draft-beam. The runners, however, are at right angles, or practically so, to the draft-beam, and are therefore secured near one end of one end piece and near the opposite end of the other piece, so as to about equally distribute the weight of each section at either side of its runner. To place the runners on the ground, the free ends of the sections are lifted and thrown over the draft-beam, which will also turn the beam over and bring the clevis B in position to be connected with the whiffletree.

Among the advantages of this harrow may be mentioned the fact that all the teeth of each section will automatically change their position from perpendicular to inclined by simply unhooking one end of the section and hooking the other end thereof to the eyebolts C; that teeth of ordinary kind, now generally on the market as hardware supplies, can be easily and quickly applied to the harrow; that the teeth can be readily removed for sharpening and then replaced; that the teeth can be readily adjusted up and down, so as to secure different lengths below the tooth-bars; that each bar G is a duplicate of every other bar G, needing only to be turned end for end to constitute rights and lefts, and can be made from the same former, which is economical; that by manipulation of four nuts the line of the travel of the teeth may be easily changed and the teeth of one beam brought more or less in or out of line with the teeth of another beam; that the sections may be readily placed upon their runners, and that the detail construction is cheap and durable.

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

1. In a harrow, the combination, with a tooth-bar consisting of two metallic strips, of a metallic box-like tooth-socket fitted between said strips, held by bolts or rivets, and provided with vertical and inclined walls, a rotatable sleeve mounted in said bars within the socket and provided with a set-screw, and a tooth within said sleeve engaged by said set-screw and adapted to fit against the vertical or inclined walls of the socket.

2. In a harrow, a rhomboidal section consisting of lengthwise tooth-bars, and end bars which secure them together, teeth mounted in the lengthwise bars, and a runner secured near one end of one end bar and near the opposite end of the other end bar, so as to stand approximately coincident to the line of progression to divide the weight of the section about equally on either side thereof.

3. In a harrow, a rhomboidal section consisting of end pieces, duplex tooth-beams composed of metallic strips having their ends bent at obtuse and acute angles, said ends being connected to the end pieces proper.

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

TIMOTHY ROGERS.

Witnesses:

JOS. H. MOHAN,
G. M. GRIDLEY.