

No. 896,444.

PATENTED AUG. 18, 1908.

E. FLEMING.

CONTROLLING AND PROTECTING MEANS FOR VATS AND CAGES.

APPLICATION FILED JAN. 22, 1908.

3 SHEETS—SHEET 1.

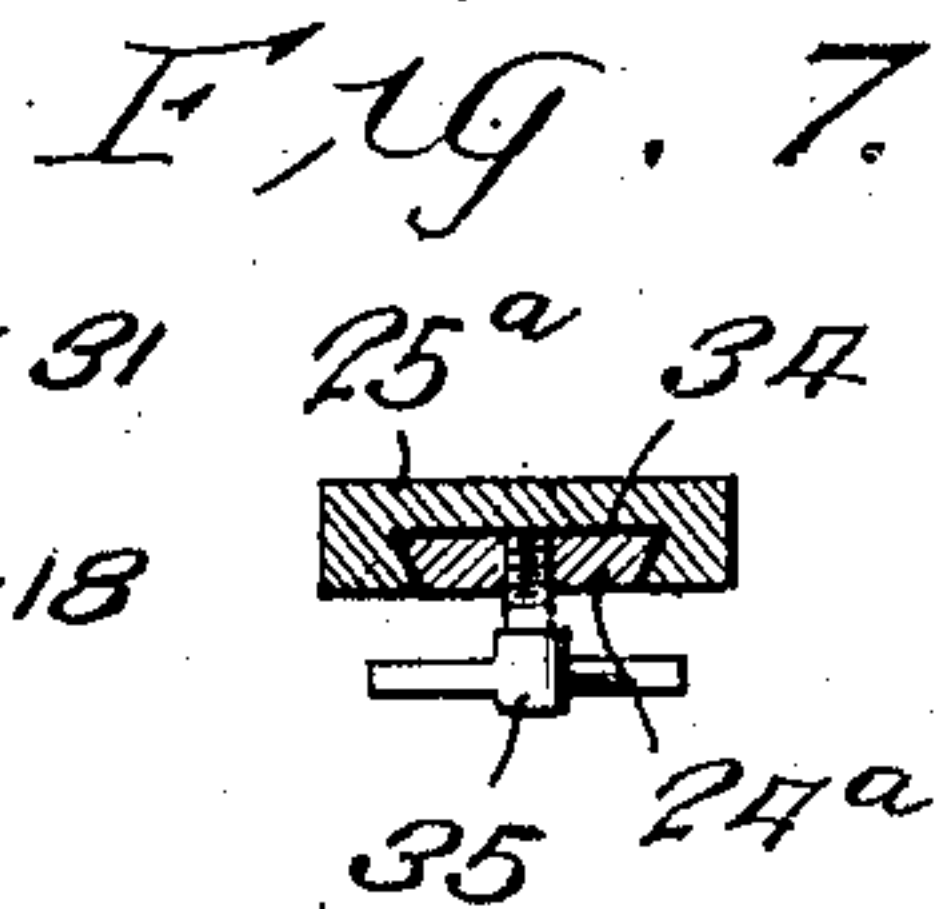
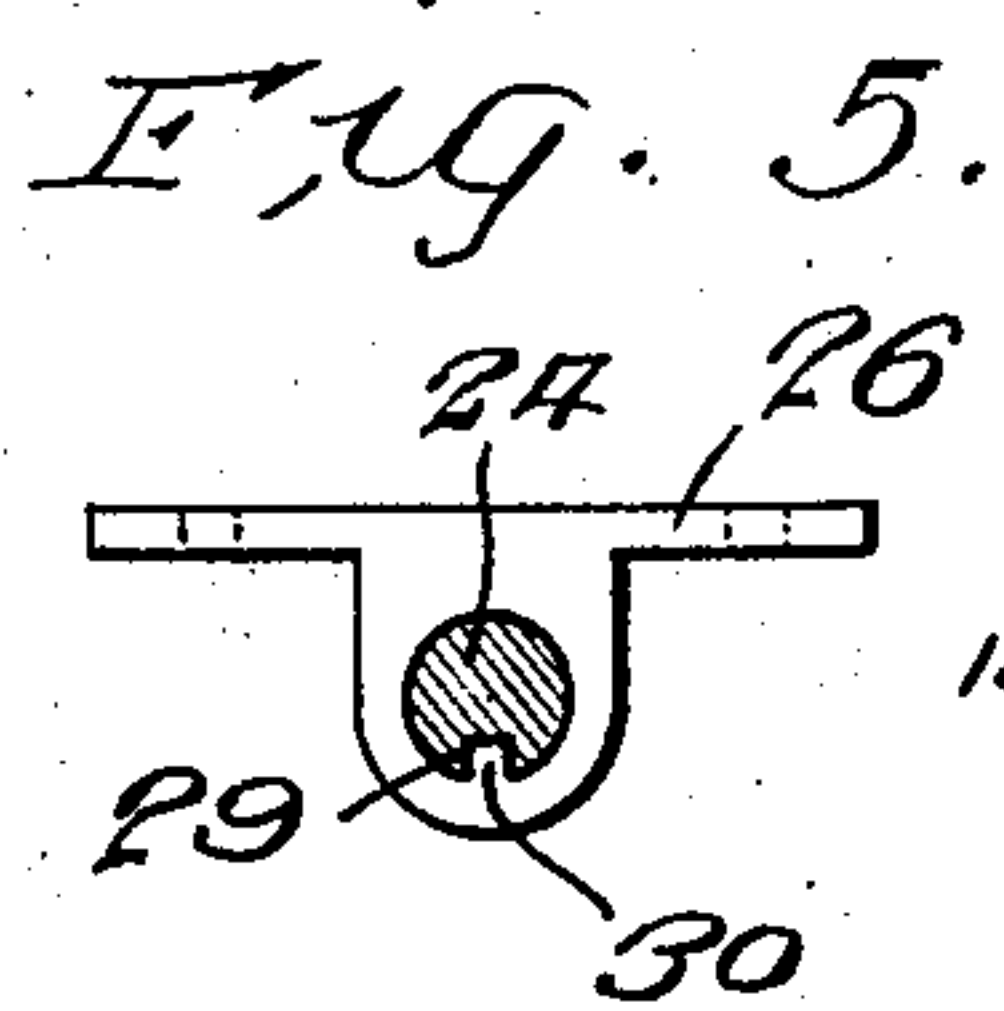
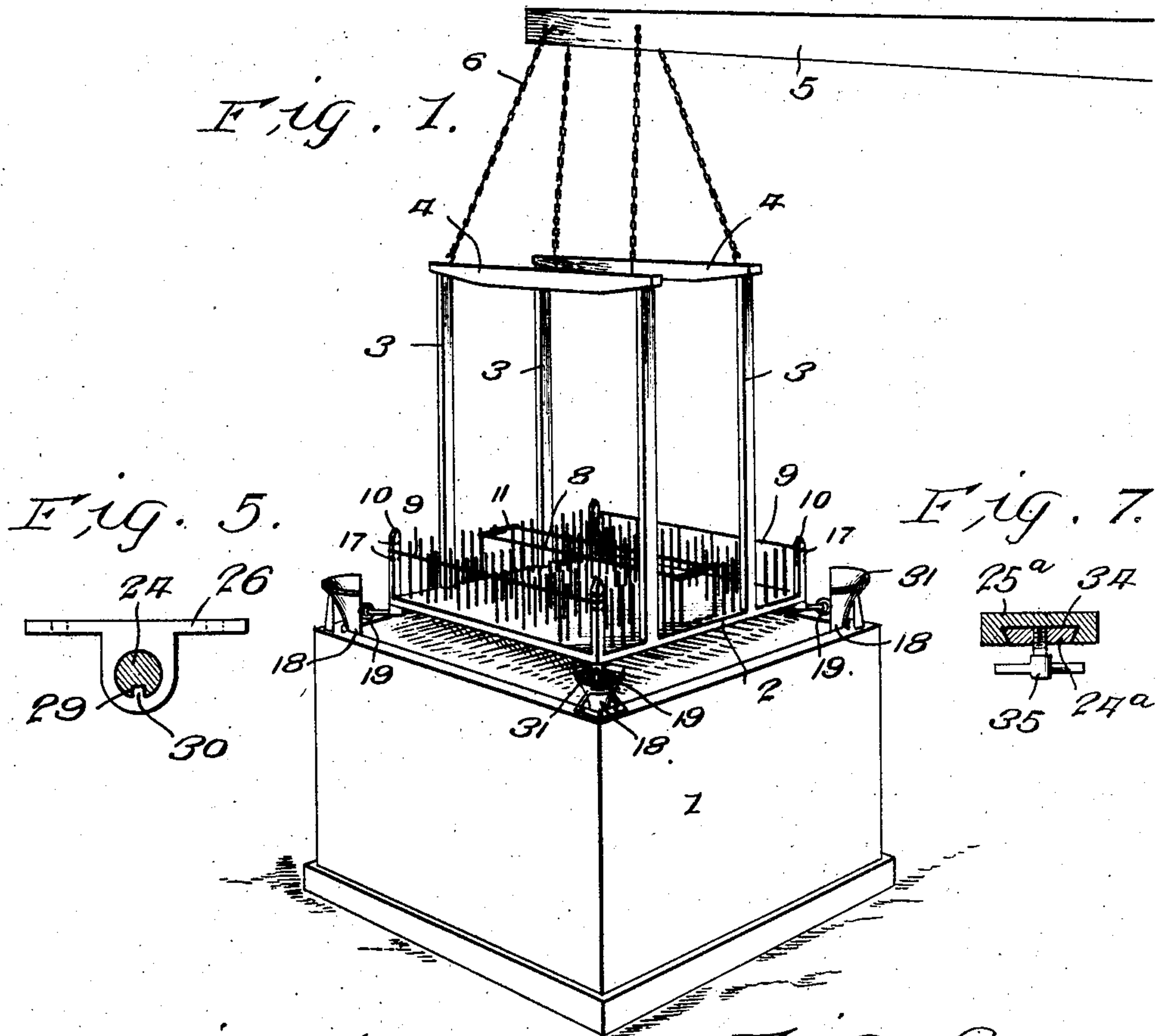
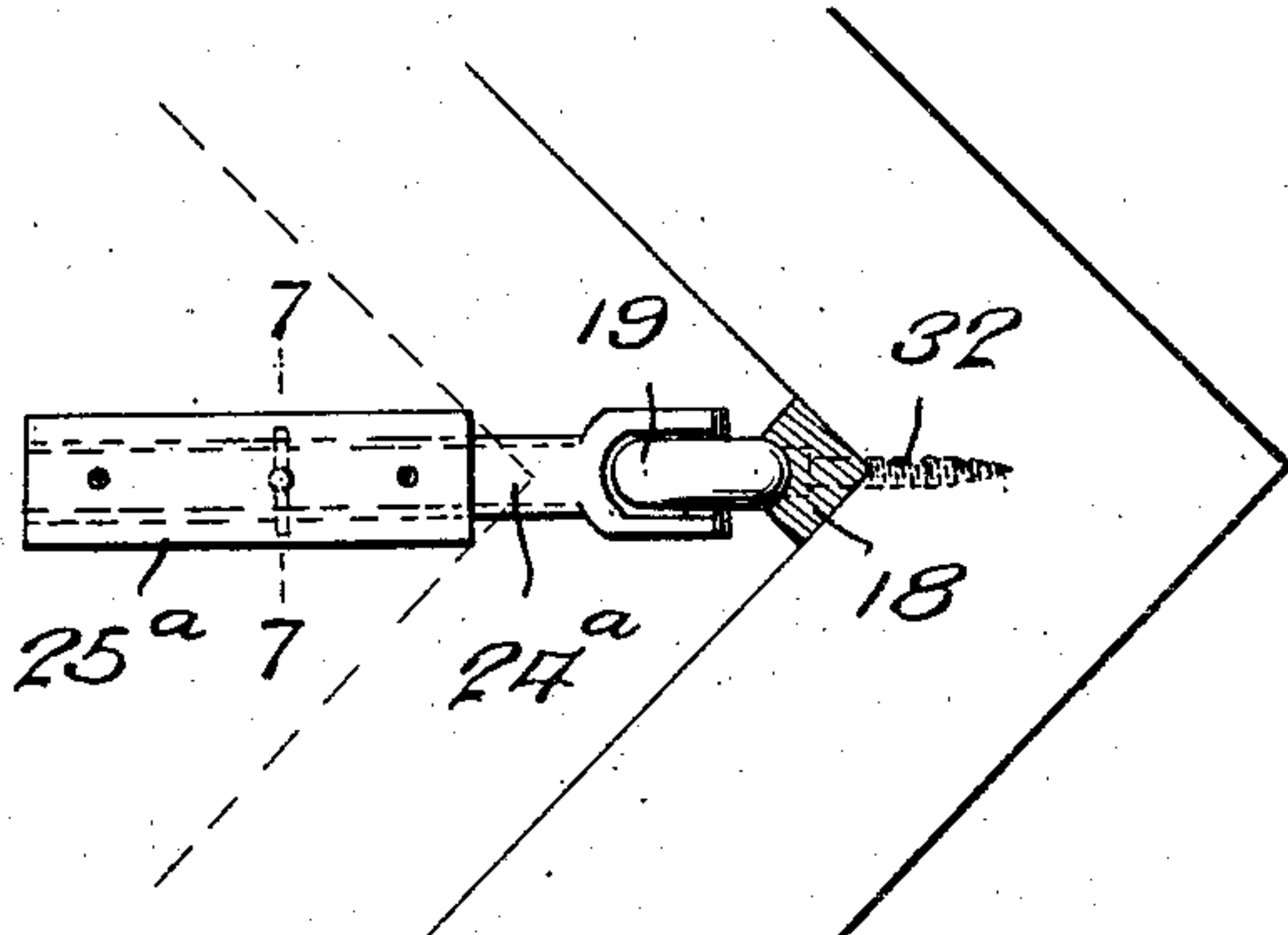
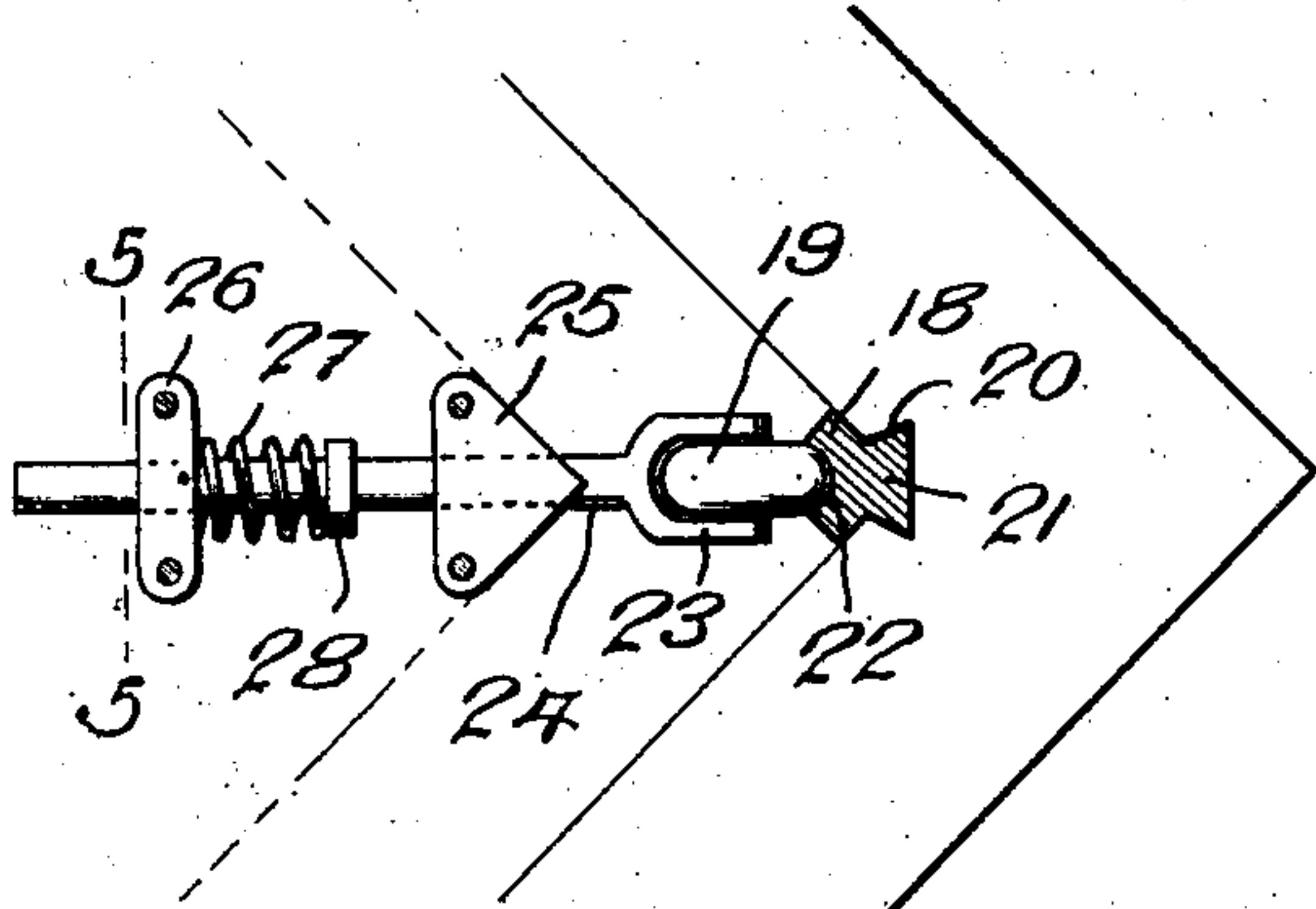


Fig. 4.

Fig. 6.



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3 SHEETS—SHEET 2.

Fig. 2.

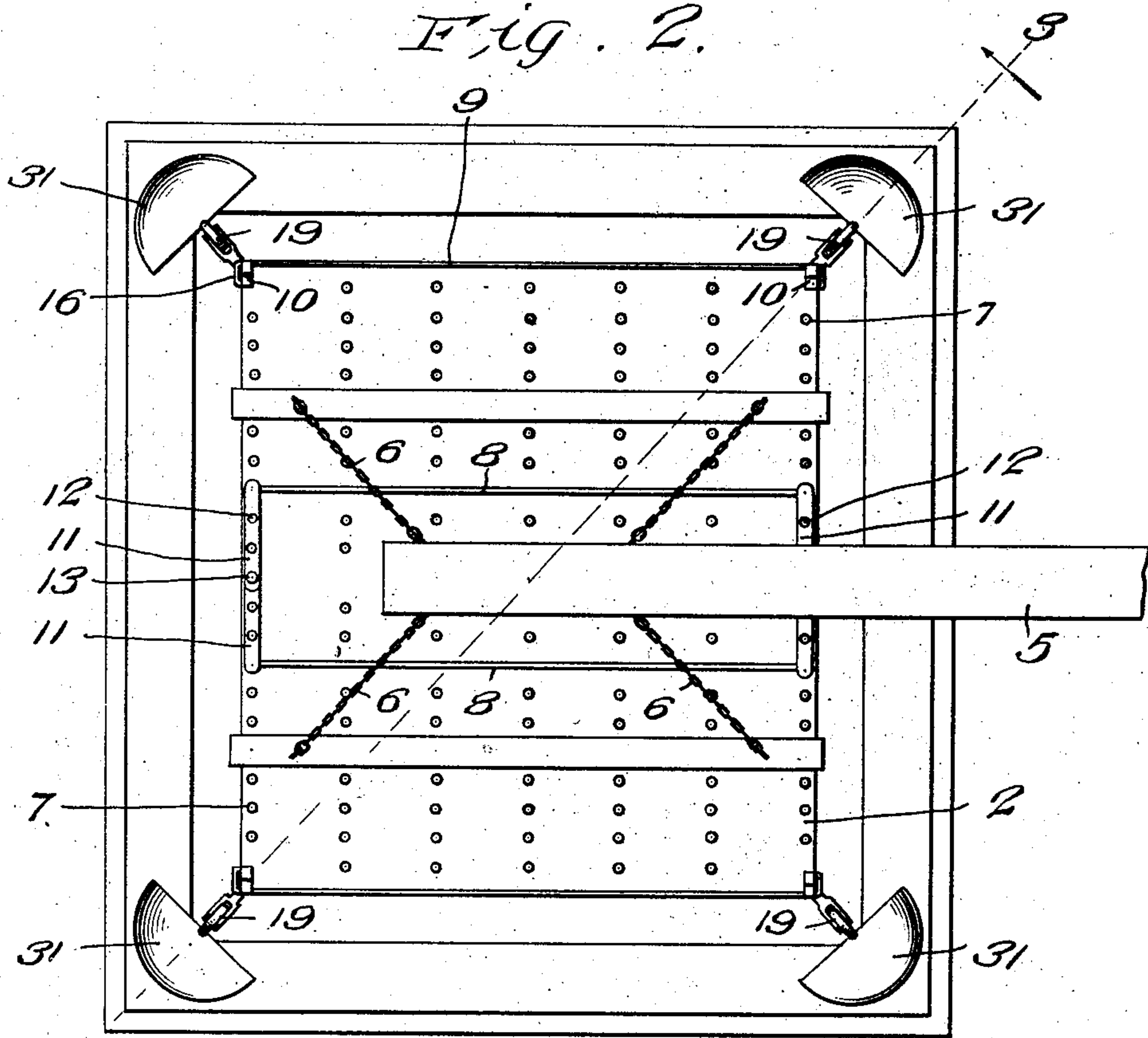


Fig. 9.

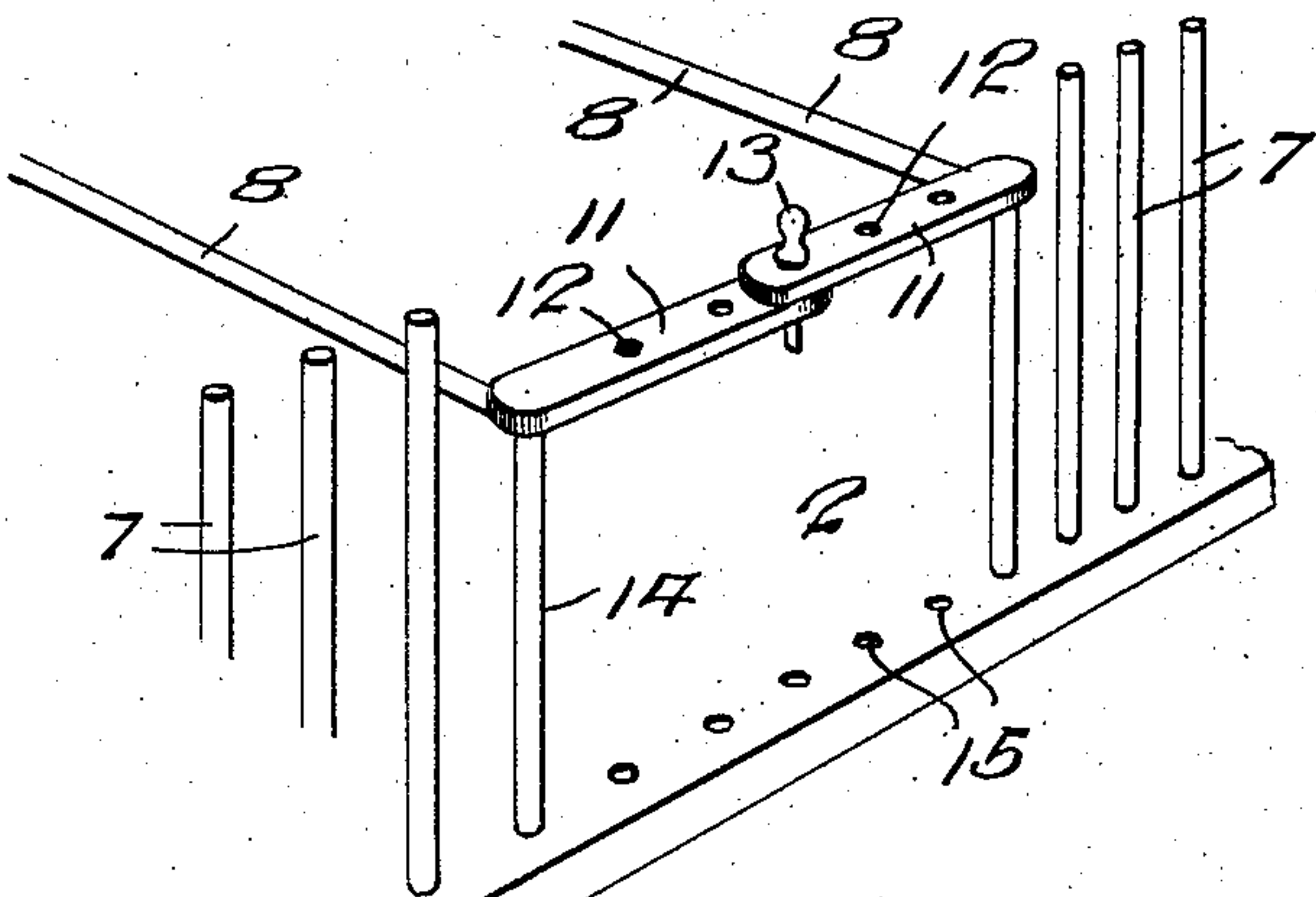
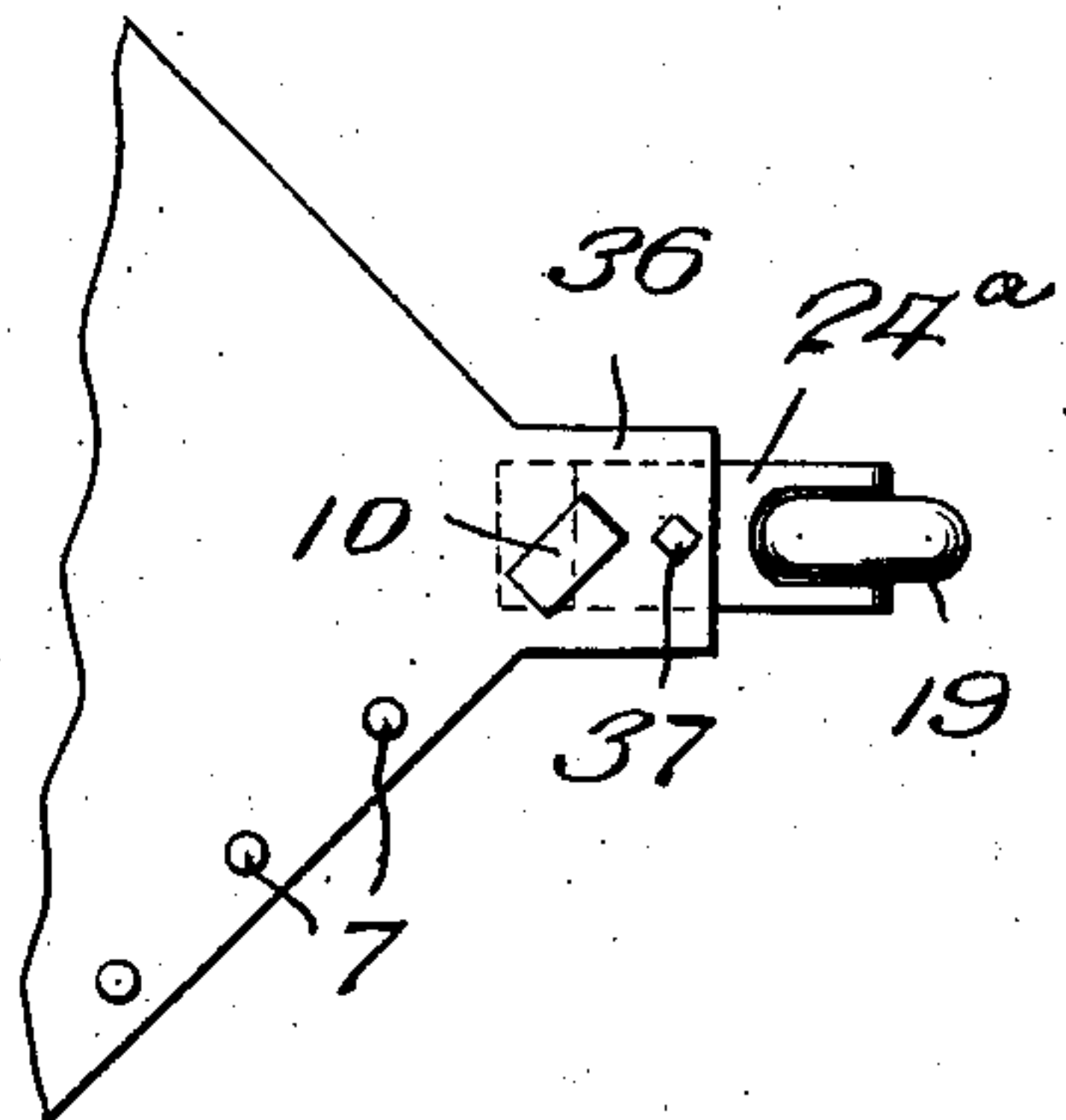


Fig. 8.



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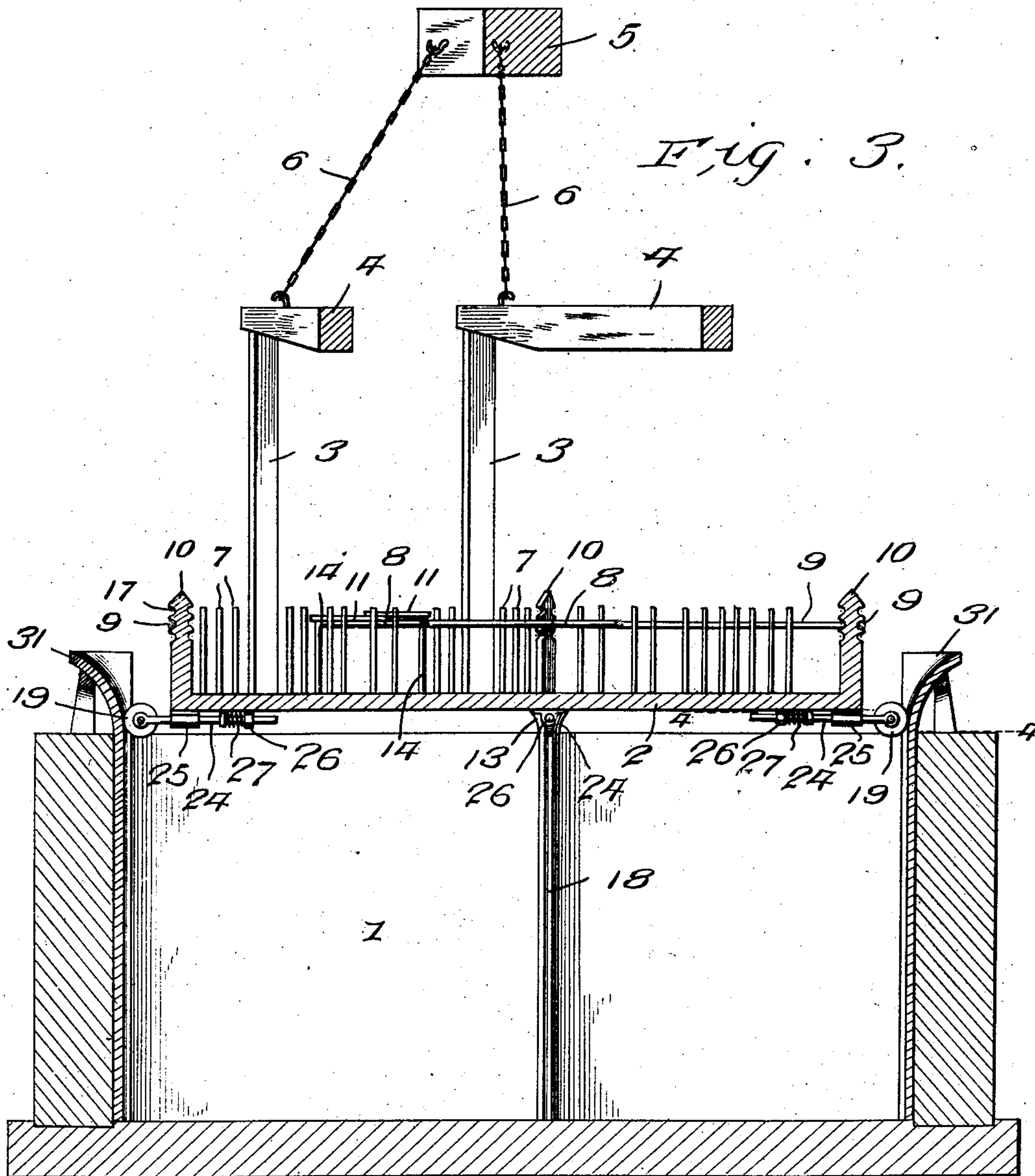
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

EDWARD FLEMING, OF STEUBENVILLE, OHIO.

CONTROLLING AND PROTECTING MEANS FOR VATS AND CAGES.

No. 896,444.

Specification of Letters Patent.

Patented Aug. 18, 1908.

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To all whom it may concern:

Be it known that I, EDWARD FLEMING, a citizen of the United States, residing at Steubenville, in the county of Jefferson and State of Ohio, have invented certain new and useful Improvements in Controlling and Protecting Means for Vats and Cages; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to new and useful improvements in controlling and protecting means for vats and cages and more particularly to that class adapted to be used in pickling or cleaning metal, such as plates or sheets designed to be coated with tin and my object is to provide means for positively centering the cage loaded with metal sheets or plates, as it descends into the vat.

The prime object of my invention is to provide a centering appliance for the cage.

A further object is to provide means for adjusting the sheet-holding rack, whereby sheets of varying length may be accommodated.

A further object is to provide means for securing the metallic sheets on the cage and in position to be entered into the vat and a still further object is to provide means for guiding the centering devices each into engagement with its respective track-way.

Other objects and advantages will be hereinafter referred to and more particularly pointed out in the claims.

In the accompanying drawings which are made a part of this application, Figure 1 is a perspective view of a vat and cage therefor, showing my improved controlling mechanism thereon. Fig. 2 is a top plan view thereof. Fig. 3 is a sectional view as seen on line 3—3, Fig. 2. Fig. 4 is a sectional view on an enlarged scale, as seen on line 4—4, Fig. 3. Fig. 5 is a sectional view as seen on line 5—5, Fig. 4. Fig. 6 is a view similar to Fig. 4 of a slightly modified form of centering device and track-way therefor. Fig. 7 is a sectional view as seen on line 7—7, Fig. 6. Fig. 8 is an enlarged detail plan view of one corner of the cage, showing a slightly modified form of means for securing the centering devices thereto, and, Fig. 9 is a detail, perspective view of the cage.

Referring to the drawings in which similar reference numerals designate corresponding

parts throughout the several views, 1 indicates a vat such as is commonly used for containing acids or cleaning fluid and 2 indicates a cage, on which is adapted to be placed certain metals for treatment in the vat, said cage having standards 3 extending upwardly therefrom, to the upper ends of which are secured cross bars 4. The cages 2 are suspended from cranes 5, such as are commonly employed in connection with hoisting engines, by means of cables 6, the upper ends of said cables being secured to the cranes, while the lower ends are secured to the cross bars 4. The metal treated in this manner is usually formed in sheets and the sheets are assembled in bundles and supported edge-wise on the cage by securing to the upper face of the cage a plurality of vertical bars 7, which are arranged in series across the face of the cage, the sheets of metal being held against longitudinal movement by means of laterally adjustable bars 8, at the central portion of the cage and vertically adjustable bars 9 at the ends of the cage, the latter bars being held in position by means of the posts 10 placed at the corners of the cage and it will be readily seen that when the sheets of metal are placed between said bars, they will be securely held on the cage.

As the strips of metal placed on the cage are of various lengths, the bars 8 are made laterally adjustable by attaching to their ends, telescoping plates 11, which plates are provided with registering openings 12, through which is adapted to extend a locking pin 13 and said bars are supported adjacent the upper edges of the sheets, by securing to the outer ends of the plates 11, supporting standards 14, which standards are adapted to be fixed to the plates and have their lower ends entered in sockets 15 in the cage 2, said sockets being so arranged that when the plates are adjusted to bring one of the openings in each of the plates in alinement with each other, the same operation will bring the standards in alinement with the sockets 15 in the cage.

The bars 9 are vertically adjustable on the posts 10 to accommodate the bars to sheets of metal of varying heights, the ends of the bars 9 having hooked terminals 16, which are adapted to engage notches 17 in the post 10 and hold the bars 17 in their adjusted positions.

After the sheets of metal are properly located upon the cage, said cage is elevated by

means of the crane 5 and swung in position over the vat 1 and then lowered into the vat to be treated with the fluids contained therein and in order to center the cage and cause the same to descend into the vat without engaging the sides thereof, I provide track-ways 18, which are located at any suitable point in the tank, but preferably at each corner thereof, with which are adapted to engage friction rollers 19, carried by the cage 2 and when the track-ways are placed in the corners of the vat, the friction rollers are correspondingly located at the corners of the cage.

As best shown in Fig. 4 of the drawings, the track-ways 18 are preferably secured to the vat 1 by forming dove-tail recesses in the wall of the vat and forming ribs 21 on the rear of the track-ways adapted to dove-tail with said recesses, while the forward faces of said track-ways are provided with semi-circular channels 22 adapted to fit the curved surfaces of the friction rollers 19 and said rollers are rotatably mounted between ears 23 on the projecting ends of shafts 24, said shafts being in turn mounted in bearing plates 25 and 26, on the lower face of the cage 2 and in order to permit said shafts to move longitudinally under extreme pressure, springs 27 are placed around said shafts and adapted to bear at one end against the bearing plates 26 and at their opposite ends against collars 28 carried by the shafts, the tension of said springs being such as to require very strong pressure at the outer ends of the shafts to cause them to yield.

To prevent the shafts from rotating in their bearings, said shafts are provided with grooves 29, which are adapted to receive lugs 30 on the bearing plates 26, said lugs when properly seated in the grooves, holding the shafts against rotation, but permitting longitudinal movement thereof.

When the cages are lowered into the vats, the friction rollers 19 are positively guided into the channels 22 by providing flared guides 31 at the upper ends of the track-ways, said guides being substantially semi-circular in cross section and gradually tapered until they merge into the track-ways 18, the largest portion of said guides being of such dimension as to receive the friction rollers, even when the cage is considerably out of alinement with the vat, thus insuring that the cage will descend into the vat if suspended substantially over the upper end thereof, thus obviating the necessity for special care.

As shown in Figs. 6 and 7 of the drawings, the track-ways 18 and shafts 24 may be secured in position in a slightly different manner from that shown in the preceding views and in this construction, the ribs 21 are omitted from the track-ways and said track-ways located in the corners of the vat and

secured therein by introducing bolts 32 through openings in the track-ways and into the walls of the vat, the heads of the bolts being counter-sunk to permit the friction rollers 19 to readily move upwardly and downwardly in the channels of the track-ways and, instead of forming the shaft circular, as shown in Fig. 4, said shaft is flattened, as shown at 24^a and the edges thereof beveled to fit a dove-tail way 34 in bearing plates 25^a carried at the corners of the cage 2. In this construction, the springs 27 are also dispensed with and the shafts 24^a fixed in their adjusted positions by means of binding screws 35, said screws being threaded into openings in the shafts 24^a and binding on the faces of the ways 34, thereby holding the shafts in a pre-determined position.

In Fig. 8 of the drawings, I have shown a still further modified means for supporting the friction rollers, and in this instance, the bearing plates are dispensed with and the ways to receive the shafts 24^a, formed in extensions 36 at each corner of the cage, said extensions being preferably formed integral with the cage and the shafts are held in their adjusted positions by introducing locking bolts 37 through the extensions 36 and into engagement with the shafts 24^a.

It has been the custom heretofore in operating devices of this class, to lower the cages into the vat without providing means for centering the same in the vat and unless extreme care is exercised, the cages strike the walls of the vat and materially rack the cage and vat and subject the cranes to a severe strain and if the cage is permitted to engage the walls of the vat in being removed, the engine employed for elevating the cage, is likewise subjected to a severe strain.

With this brief explanation, the utility and value of my improved mechanism will be readily apparent, as the strain upon the engine and parts attached thereto will be practically overcome and the life of the vat and cages greatly prolonged and it will likewise be seen that the extreme care in centering the cage over the vat will not be required in this construction, as the flared guides will cause the cage to enter the vat when the cage is approximately centered over the vat and further that the cage will be prevented from striking the walls of the vat when being removed therefrom, even when the crane is not centrally located over the cage.

What I claim is:

1. The combination with a vat and coöperating cage therefor; of track-ways, means to secure said track-ways to the vat, guides at the upper ends of said track-ways and means on the cage adapted to be engaged by said guides and directed into engagement with the track-ways, whereby the cage will be centered in the vat.
2. The combination with a vat and coöp-

erating cage therefor; of track-ways having channels therein, centering devices on said cage adapted to engage the channels in the track-ways and means at the upper ends of the track-ways adapted to guide the centering devices into the channels on the track-ways.

3. The combination with a vat, a cage adapted to cooperate therewith and centering devices on the cage; of track-ways, dove-tail ribs on said track-ways, said vat having recesses to receive said ribs and flared guides adapted to direct the centering devices into engagement with the track-ways.

4. The combination with track-ways having flared guides at their upper ends; of centering devices adapted to engage said track-ways and means to adjustably secure the centering devices to a movable object.

5. The combination with a vat; of a cage, means to raise and lower said cage in the vat,

a plurality of bars arranged in series across the face of the cage, laterally adjustable bars adjacent the center of the cage, telescoping plates at the ends of said bars having registering openings therein, a locking pin adapted to extend through said openings, supporting standards for said plates, sockets adapted to receive the lower ends of said standards, vertically adjustable bars at the ends of the cage, posts having notches therein and hook terminals on the vertically adjustable bars adapted to engage said notches and hold said bars in their adjusted positions.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD FLEMING.

Witnesses:

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I. A. BURSON.