

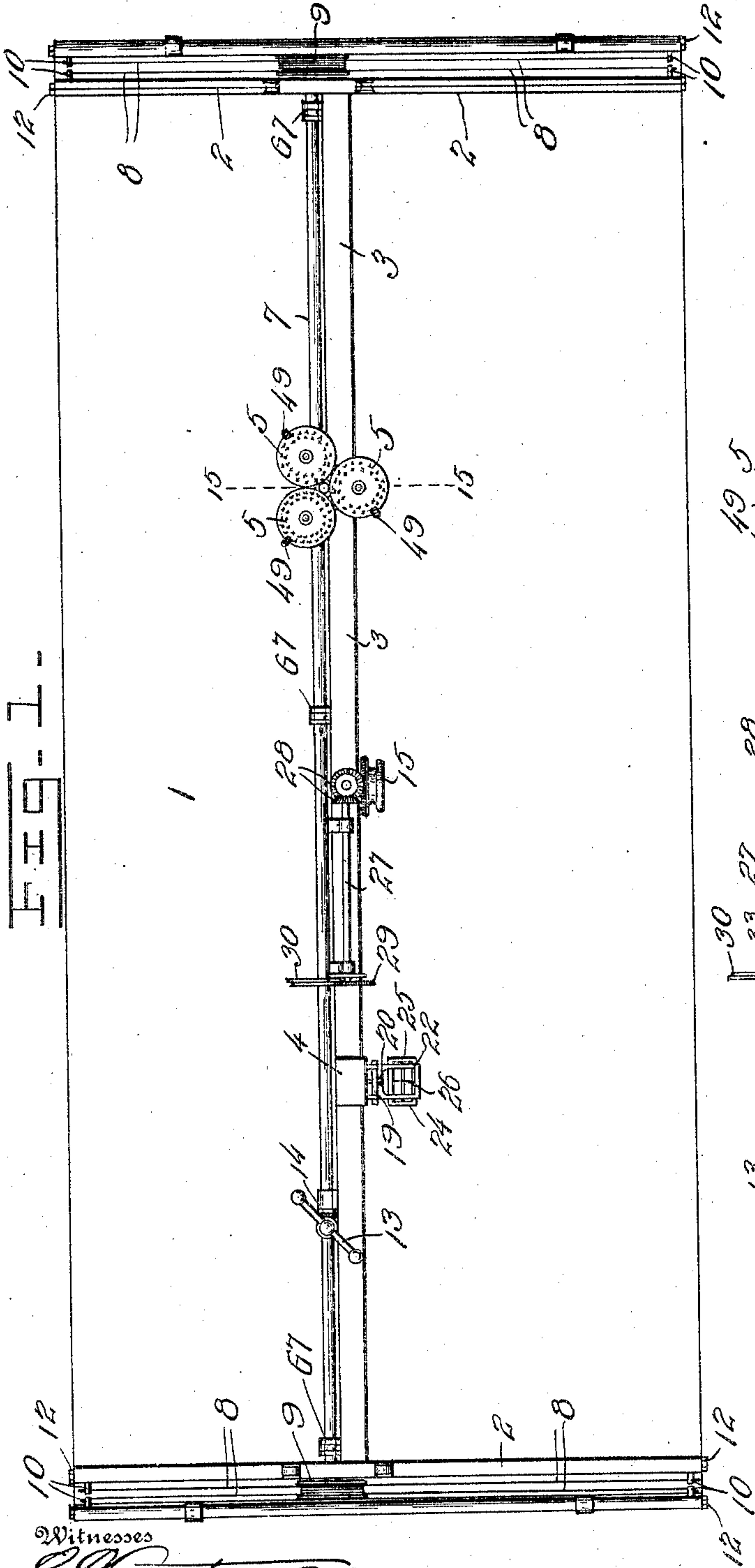
V. L. OURDAN.
ENGRAVING MACHINE.

APPLICATION FILED JAN. 15, 1908.

929,700.

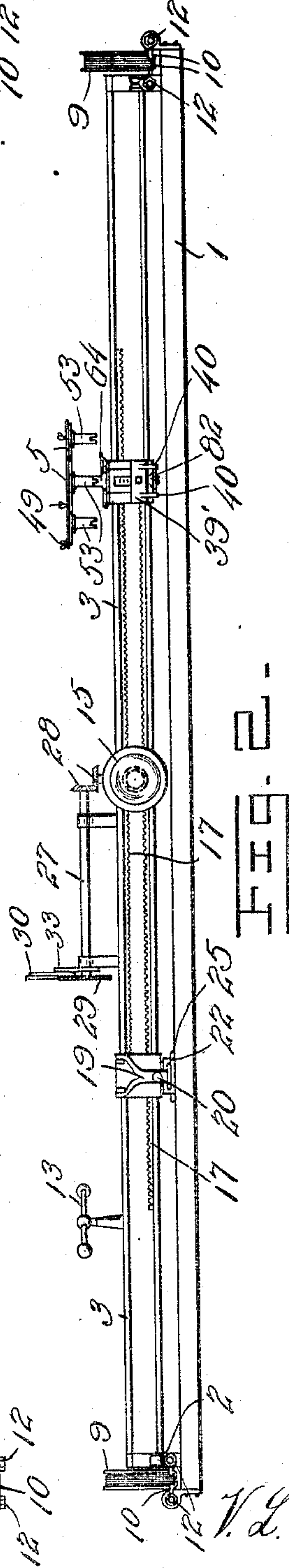
Patented Aug. 3, 1909.

4 SHEETS—SHEET 1.



Witnesses
L. L. Kuntz
G. Wedemeier

By



Inventor

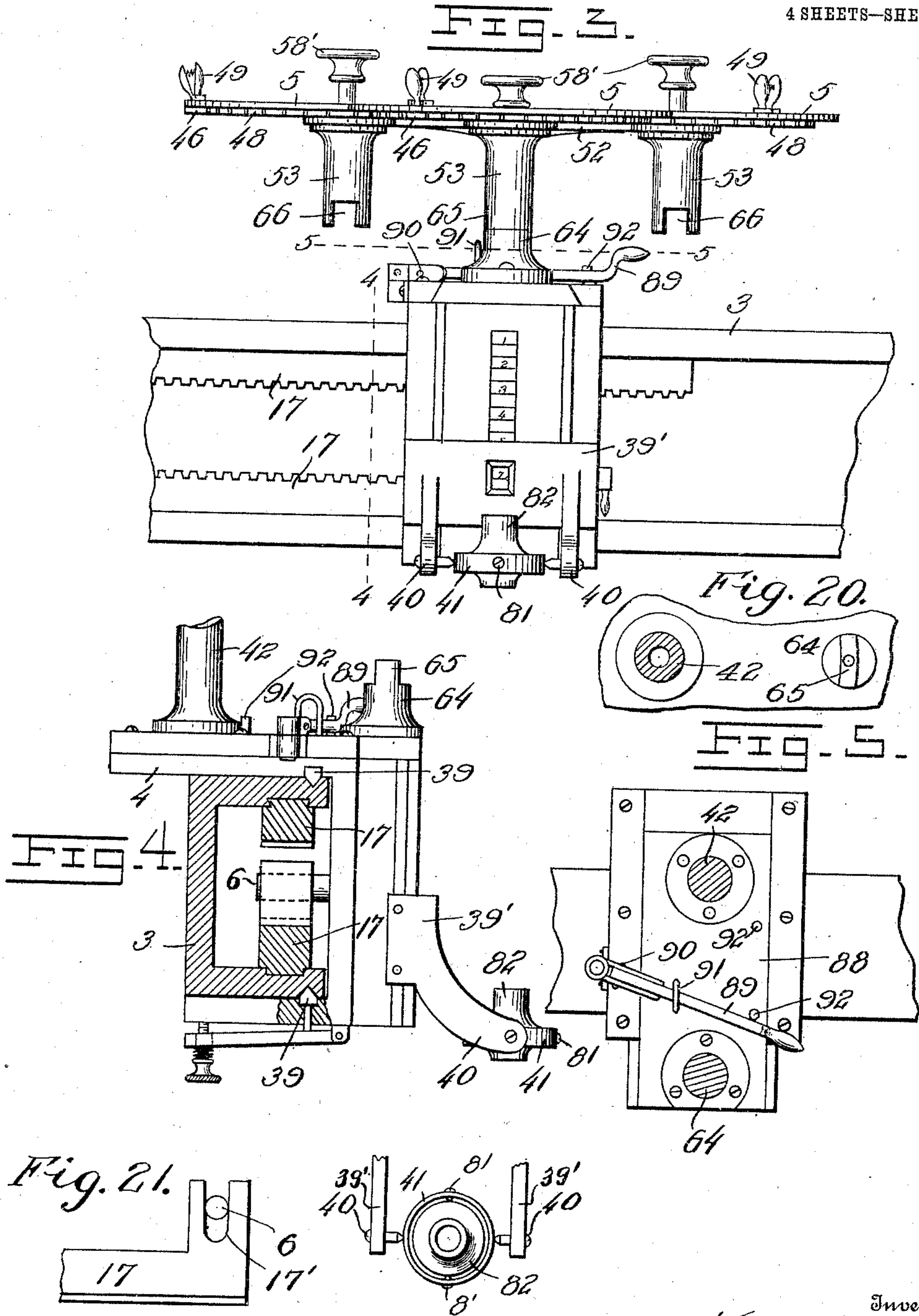
V. L. Ourdan
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4 SHEETS—SHEET 2.



Witnesses
H. A. Armstrong
G. W. Deaneier

FIG. 17.

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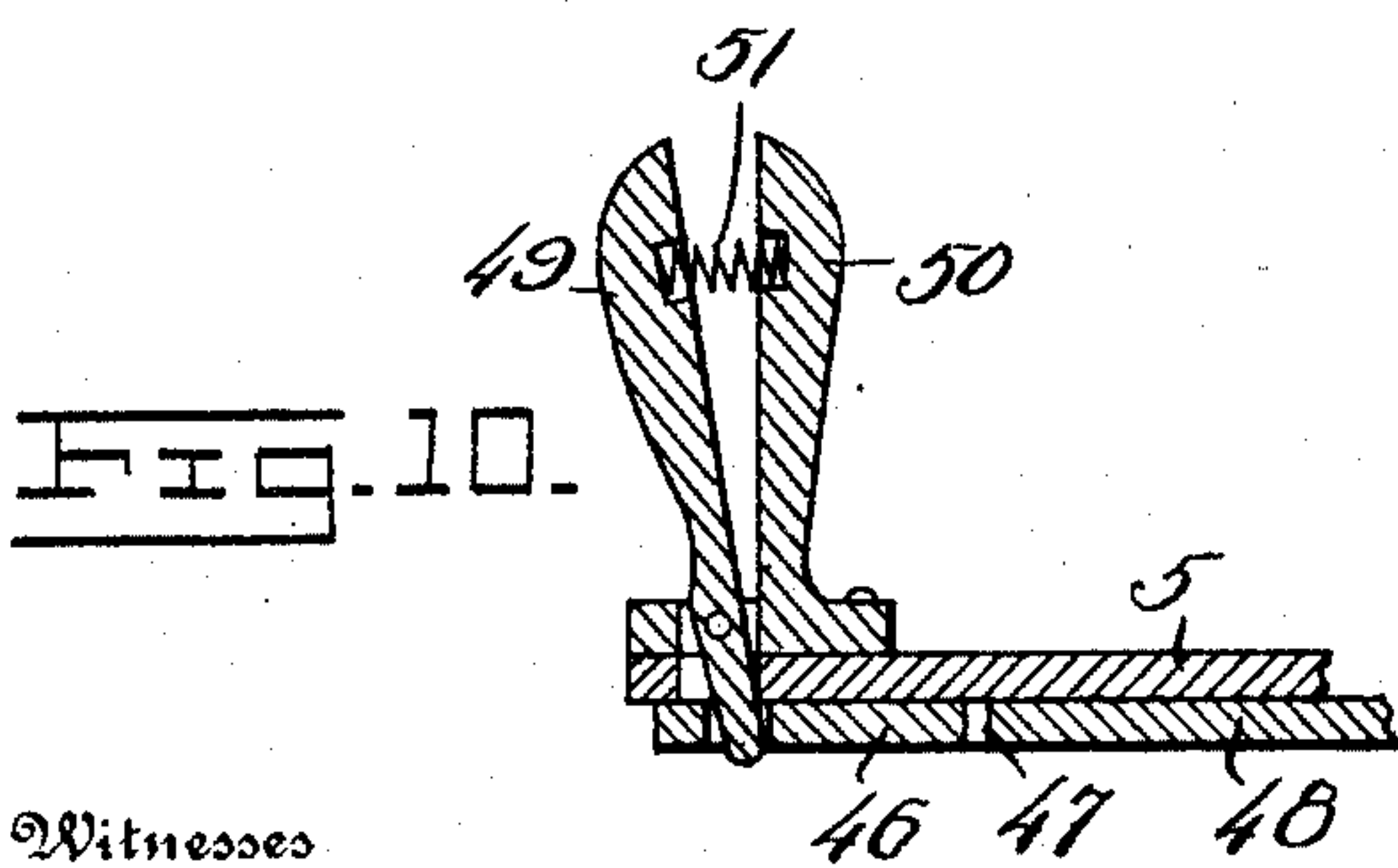
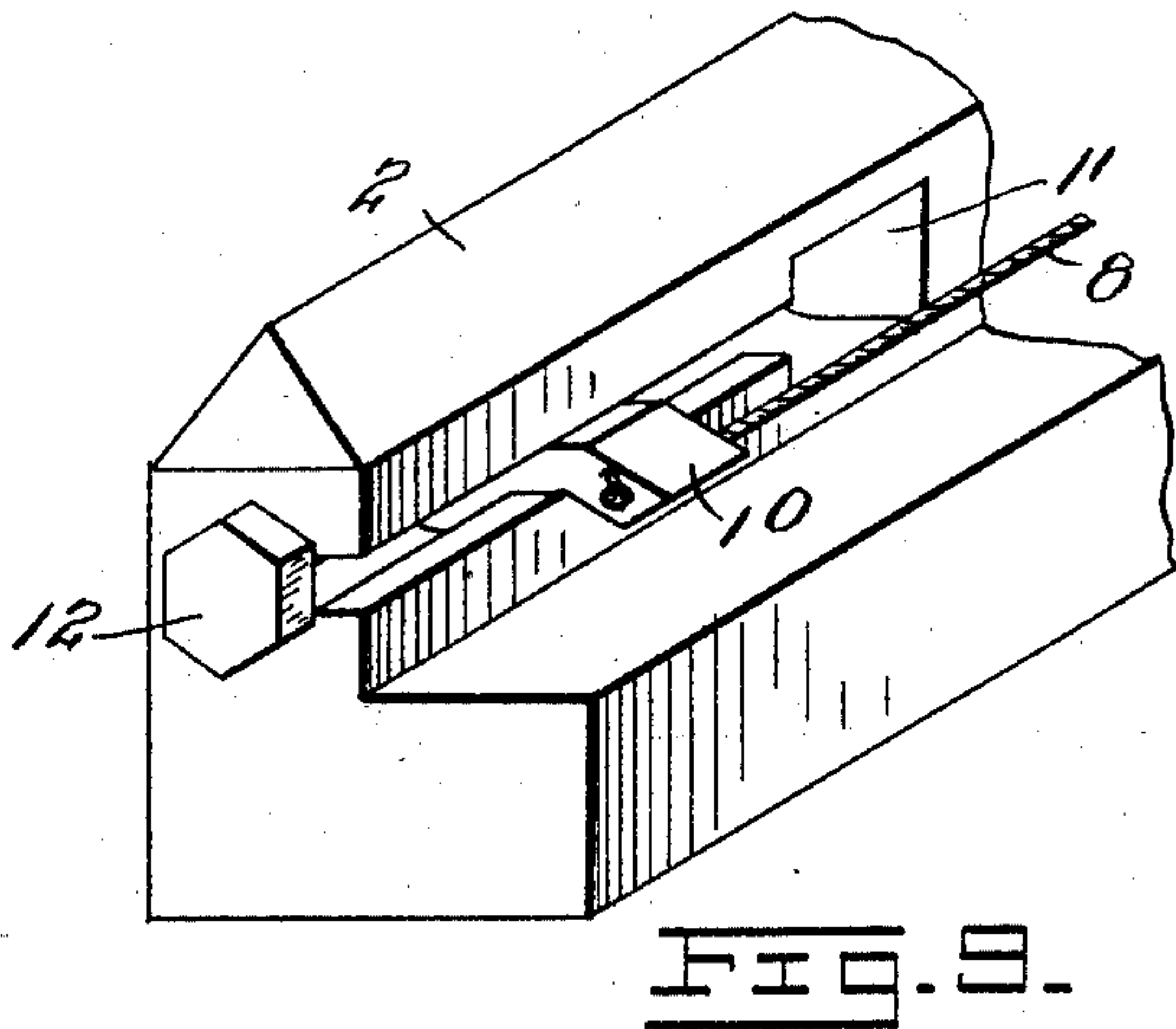
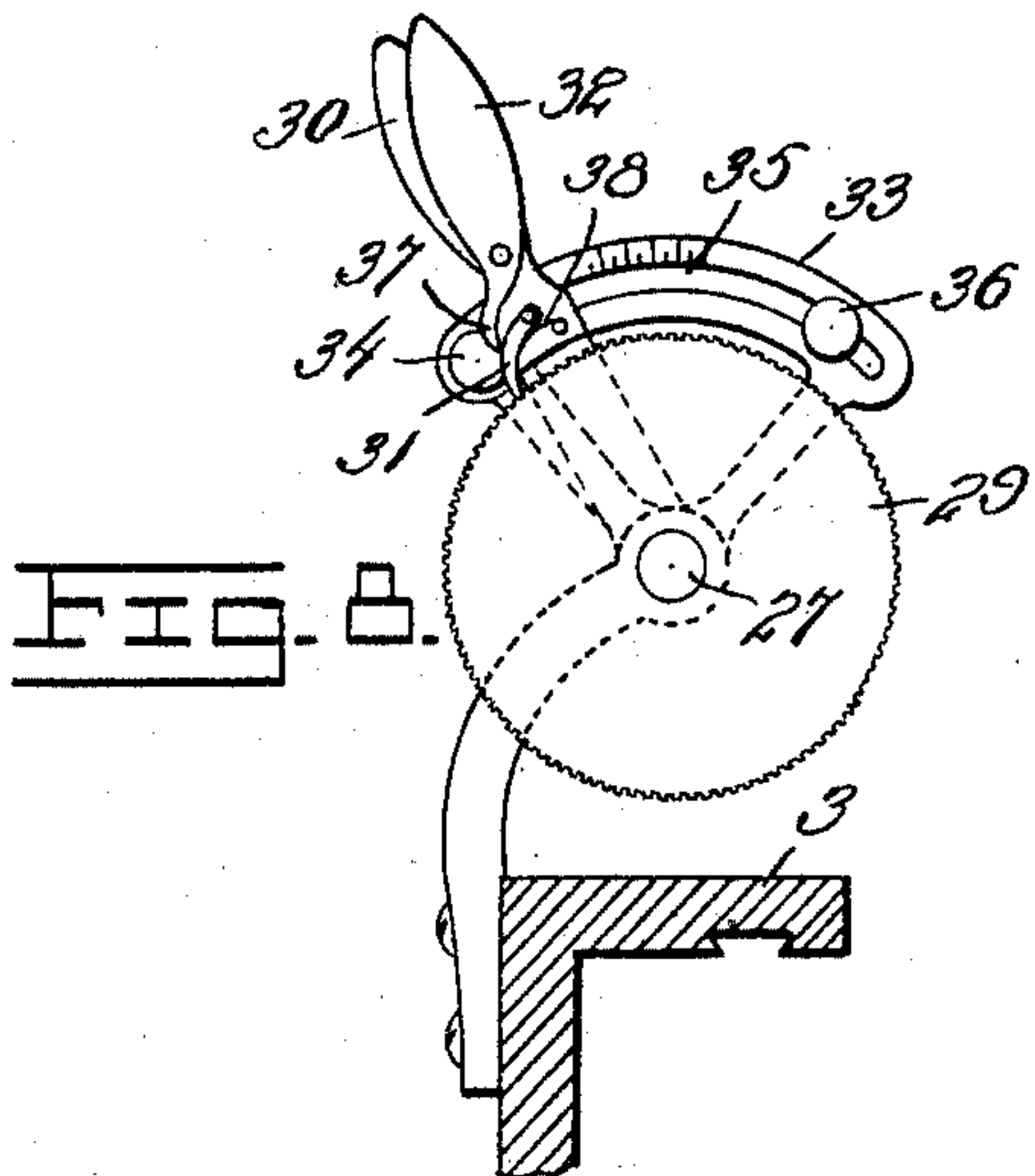
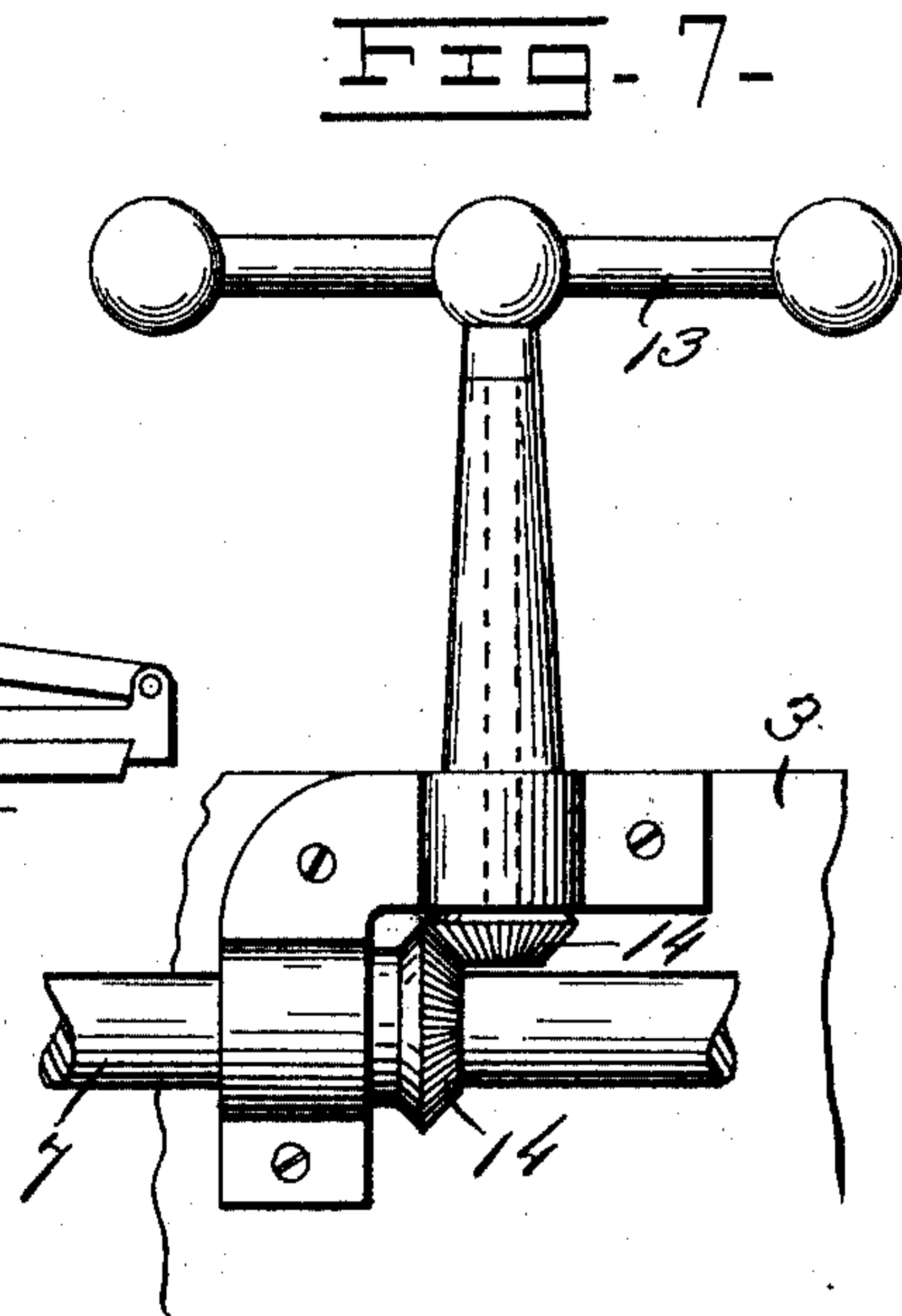
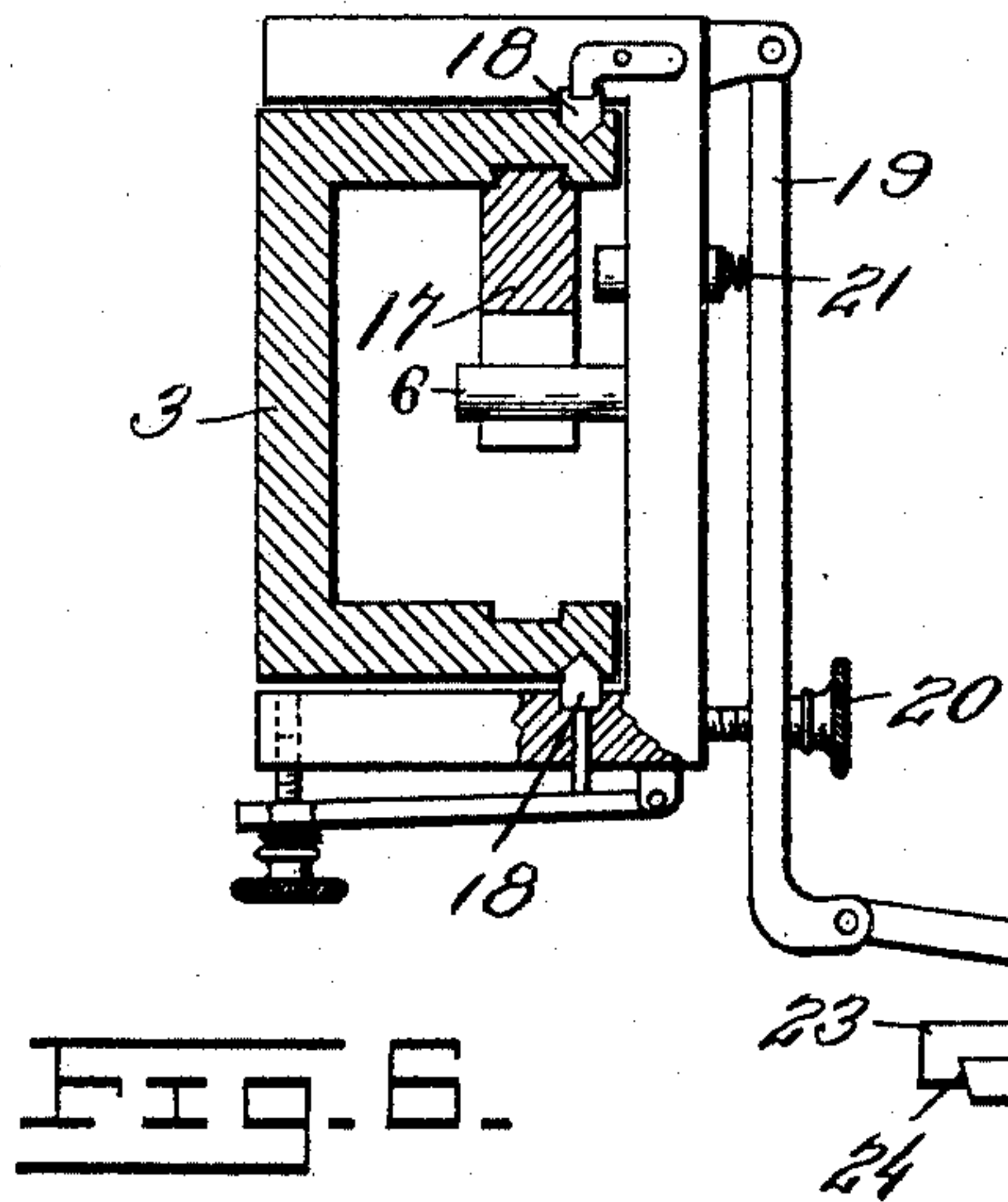
Howard A. Coombs
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4 SHEETS—SHEET 3.



Witnesses
A. L. Cunningham
G. Wedemeyer

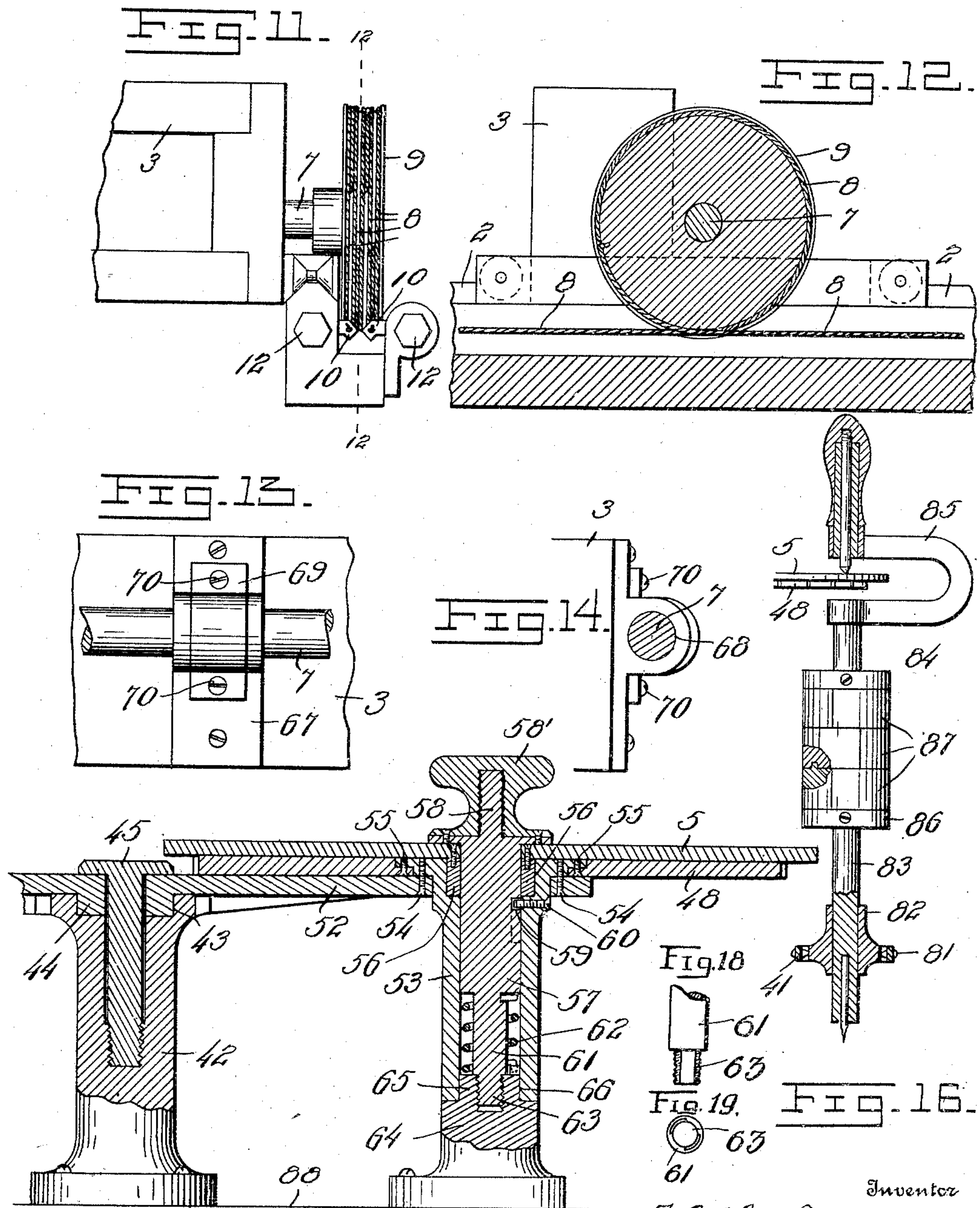
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4 SHEETS—SHEET 4.



Witnesses
R. L. Cunningham
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UNITED STATES PATENT OFFICE.

VINCENT L. OURDAN, OF WASHINGTON, DISTRICT OF COLUMBIA.

ENGRAVING-MACHINE.

No. 929,700.

Specification of Letters Patent.

Patented Aug. 3, 1909.

Application filed January 15, 1908. Serial No. 411,001.

To all whom it may concern:

Be it known that I, VINCENT L. OURDAN, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Engraving-Machines, of which the following is a specification.

My invention relates to engraving-machines and more particularly to machines of the type for which I was granted a patent jointly with C. A. Kolb on August 26, 1890, the same being numbered 435,243.

The present invention consists in certain improvements to be hereinafter described and claimed, on the said patented machine, which is used for engraving numerals, letters and symbols on charts.

The following detailed description will serve to point out wherein the present improvements lie, and is to be read in connection with the accompanying drawing, in which,

Figure 1 is a plan view of the entire machine, Fig. 2 is a front view of the same, Fig. 3 is a front view of the pattern-plates and carriage, Fig. 4 is a partial side-view of the carriage, the bridge and racks being sectioned on line 4—4 of Fig. 3. Fig. 5 is a plan-section taken on line 5—5 of Fig. 3, Fig. 6 is a side-view of the stationing-indicator and its slide, Fig. 7 is an enlarged detail view of the feeding-mechanism for the bridge, Fig. 8 is a similar view of the micrometer feed mechanism for the carriage and slide, Fig. 9 is an isometric-view of one end of one of the ways for the bridge. Fig. 10 is a detail section of the locking device for the pattern disks, Fig. 11 is a detail front view of one end of the machine, Fig. 12 is a side view of the same, taken through the drum on line 12—12 of Fig. 11, Figs. 13 and 14 are detail views of the pillow-blocks for the bridge feed-shaft. Fig. 15 is a sectional view of the pattern-disk mechanism, taken on line 15—15 of Fig. 1. Fig. 16 is a side elevation and sectional view of the engraving-tool and its pivotal guide. Fig. 17 is a plan view of the universal pivot-support of the engraving-tool. Fig. 18 is a detail elevation of the bolt shown in Fig. 15, Fig. 19 is an end view of the same. Fig. 20 is a fragmentary plan view of part of the slide carrying the pattern-disk supports, and Fig. 21 is a detail of the end of one of the racks.

The essential features of this machine, which it has in common with the machine of

the said patent, are the base or table, the ways at the ends of the table, the cross-rail or bridge sliding on said ways, the carriage, carrying the pattern-disks (the patented machine, however, had but one disk), the stationing slide, means for moving said carriage and slide simultaneously in opposite directions, means for sliding the bridge on its ways and means for pivotally supporting the engraving-tool.

The particular improvements in the present machine are—1, the provision of wire-cords and drums, for sliding the bridge, instead of lead-screws; 2, the provision of three instead of one pattern-disk, the disks being mounted on a revoluble frame so that any one of them can be brought into operative position; 3, the means for delicate adjustment of the pattern-disk carriage and stationing slide; 4, the means for adjusting the cross-lines on the stationing indicator; 5, the means for pivotally supporting the engraving-tool, and 6, certain details of construction, whereby greater speed and accuracy are obtained.

The base or table 1 supports the chart to be copied and the plate to be engraved and the bridge 3 is slid back and forth on ways 2 at the ends of said table by means of the shaft 7, on the ends of which are mounted the grooved drums 9, 9, to the periphery of each of which are secured the ends of four wire cords 8, 8, which are wound around the drum in pairs in opposite directions. Two of these cords are secured at their other ends to adjustable blocks 10, 10, in the ends of the ways 2, while the other two cords are similarly secured at the other ends of the ways. Fig. 9 shows one of the cords 8, secured to block 10, slidably mounted in a recess 11 in the end of the V-shaped way 2. The block 10 has a screw-threaded aperture in which engages the bolt 12, by means of which the tension of the cord can be adjusted. It is desirable that the cords should all have the same tension and this is accomplished by vibrating them until they all give out the same note. The bridge can be brought and maintained in perfect right angles with the ways by proper adjustment of the cords. The shaft 7 is rotated by the handle 13, through bevel-gears 14, see Fig. 7.

It will be obvious that, by turning the handle 13 and shaft 7 in one direction or the other, the bridge 3 will be slid back or forth over the table. Furthermore the bridge

can be moved by pushing it with the hand, which was not possible when lead-screws were used and the adjustable cords provide a permanent means for taking up any slack.

5 The carriage and slide are moved back and forth along the bridge in opposite directions by the hand wheel 15 in the center of the bridge, which actuates a pinion indicated in dotted lines in Fig. 1, in mesh with the racks 17, one
10 of which is connected to the pattern-disk carriage and the other to the stationing slide. The manner of connecting the racks 17 to the carriage and slide respectively, is identical and is illustrated in Figs. 4, 6 and 21, the end of the
15 rack projecting upwardly and being slotted, as shown at 17', for the reception of a pin 6 projecting from said carriage or slide, as the case may be. This construction enables the carriage and slide to be readily removed and
20 replaced in operative relation to said racks. Thus by turning said hand-wheel in one direction, the carriage and slide are caused to approach each other, and, by turning it in the other direction, they are caused to move
25 apart, each moving always the same amount as the other. For fine adjustments, the pinion on the shaft of handle 15 is rotated from shaft 27, mounted above the bridge, through bevel-gears 28, three of which only are shown,
30 said shaft carrying at its end the ratchet-wheel 29, see Fig. 8. On shaft 27 adjacent to said ratchet is loosely mounted a lever 30, to which is pivoted a pawl 31 and a supplementary handle 32. An arm or bracket 33
35 projects from the bearing of shaft 27 and has a stop-pin 34 at one end for the lever 30 and a segmental slot 35 in which is adjustably secured another stop-pin 36. The lever 32 has a nose 37 bearing on the pawl 31, which
40 is pressed thereagainst by a spring 38, and by bringing the upper end of said handle into coincidence with the upper end of the lever 30 (the two ends being of the same shape) the pawl is pressed downwardly into engage-
45 ment with the teeth of the ratchet. Thus by rocking the lever 30 back and forth against the stops and working the handle 32, both of which operations are performed by the fingers of one hand, the ratchet is turned a pre-
50 determined amount and the positions of the pattern-disk carriage and the stationing indicator slide are finely adjusted.

The stationing-slide is shown in Fig. 6. It is provided with removable gibs 18, by
55 which it slides on the bridge 3 and one of which is spring-pressed as shown to take up wear. To the upper part of the slide is hinged the bracket 19, set screw 20 and spring 21 serving to adjust the same. Another
60 bracket 22 is pivoted to bracket 19 at its lower end and a frame 23 is hinged to bracket 22. In frame 23 is formed a dove-tail recess 24, in which is slidably mounted another frame 25 inclosing a glass plate on which the

cross lines 26 are marked. Frame 25 fits
65 snugly in the recess 24 and is moved by hand for lateral adjustment, while the bracket 19 is swung forwardly or backwardly for adjustments at right angles thereto. The provision of bracket 22 enables frame 25 to lie
70 flat on the table or chart. The said adjustments are necessary as is well known to engravers to compensate for the unavoidable differences in dimensions between the plates being engraved and the charts which are
75 liable to shrink or expand.

The pattern-disk carriage has gibs 39, similar to those of the stationing slide, by which it slides on the bridge, see Fig. 4. Adjustably mounted on the front of said carriage is the sliding bracket 39', carrying
80 brackets in which are secured the trunnions 40 for the ring 41, which in turn carries trunnions 81, located 90° from the trunnions 41, which support the sleeve 82 in which the
85 shank 83 of the engraving-tool 84 is slidably supported. The construction just described constitutes the pivotal guide for the tool, and the latter, which is suspended by its
90 goose-neck end 85 from the pattern-disk, has a collar 86 on its shank on which are supported one or more removable weights 87. By adjusting the slide 39' up and down, the
95 ratio between the upper and lower parts of the tool are varied and consequently also that between the pattern and the work.

On the top of the carriage is mounted a slide 88 carrying a column 42, the upper end of which is recessed at 43, see Fig. 15, to
100 form a bearing for the three-armed revoluble support 44, each arm of which rotatably supports one of the three pattern-disks 5. The support 44 is secured to the column 42 by means of the headed bolt 45.

Each pattern-disk can be rotated by hand
105 to bring the different figures or symbols thereon to the front and is locked in adjusted position by a spring-actuated dog 46, see Fig. 10, which engages one of a series of
110 notches 47 formed in an index wheel 48, secured non-rotatably below each disk. A split handle 49, one section 50 of which is secured to the disk and the other section of which is pivoted to said section 50, a spring
115 51 being interposed between said sections, serves to withdraw and insert the locking dog. The means of supporting each pattern-disk from its arm of the support 44 and the means for locking each arm in the position in which its disk is in operative relation
120 to the engraving-tool, are illustrated in Fig. 15, and as all three disk supports are similar it will be sufficient to describe one of them. The arm 52 of the support 44 has a circular
125 aperture in which is supported a depending hollow post 53, secured to the arm by screws 54; the index-wheel 48 is secured to the head or flange of said post by screw 55. The pat-

tern-disk 5 is centrally apertured and has a depending journal 56 secured thereto, surrounding said aperture, said journal fitting in a bearing recess in the post 53. Through the central aperture of the disk, its journal and the hollow post 53 extends a bolt 57, provided at its top with a reduced screw-threaded end 58, on which is secured a head 58'. Said bolt has further an L-shaped slot 59, in which takes a pin 60 secured in the post 53, a reduced portion 61, surrounded by a spring 62, and a further reduced end 63, on which is cut a mutilated screw-thread.

On the top of the slide 88, near the front, see Figs. 4 and 15, is mounted a short column 64 the top sides of which are cut away leaving a projection 65 which fits corresponding recesses 66, milled in the bottom of the posts 53. The sides of said projection and recesses are of course formed on the arcs of concentric circles the center of which is the axis of the column 42.

In the top of the column 64 is a central aperture threaded with a mutilated thread corresponding to that on the end 63 of the bolt 57, and when the post 53 is brought directly over the column 64, the bolt 57 is depressed until the pin 60 reaches the bottom of the vertical portion of the L-slot 59, and is then turned a quarter of a revolution, causing the said mutilated screw-threads to engage and hold the arm and disk securely in position for the engraving-tool to reproduce on the plate being engraved any of the symbols on said disk. The spring 62 is secured at one end to the bolt 57 and at the other to the post 53, so that it acts as a torsion spring as well as a compression spring. To release the post 53 from the column 64, the bolt 57 is of course rotated in the opposite direction and raised, the spring 62 serving to hold it up clear of the aperture in said column. The support 44 can then be turned to bring another disk in operative position relatively to the engraving-tool, where it is secured by its bolt 57 in the manner described.

The slide 88, mounted in ways extending from front to rear on the carriage, is moved and held in either of two positions by a lever 89, pivoted at 90 on the carriage and engaging the slide by a pin and slot connection 91. The lever is pivoted for vertical movement as well as for horizontal and stops 92 are pivoted to hold said lever and consequently the slide also in a forward or rearward position. This enables two concentric rows of symbols to be used on each pattern-disk as indicated by the dotted circles in Fig. 1, each position of said lever corresponding to the operative position of one of said rows. Obviously there may be more or less than two rows.

To maintain the shaft 7 tight in its bearings I have found the construction of pillow-block, shown in Figs. 13 and 14 very prac-

tical. It consists of a solid block 67 bored out at 68 for the shaft and not provided with a removable cap as usual. The center of the block has a slot in it, in which fits a section 69, having a semi-circular bearing formed in it to fit on the outside of the shaft, and secured to the block 67 by screws 70. When the shaft shows any play in its bearings it is only necessary to tighten up the screw 70, causing the section 69 to press the shaft snugly against the inner halves of the apertures in the block, thus taking up all wear, and preventing unintentional movements of the bridge during the operation of engraving.

The method of operating this machine is the same as that of the machine described in the said Patent No. 435,243, and it is therefore believed unnecessary to add here any further description of the manner in which this machine is used.

Having thus described my invention, what I claim is:—

1. An engraving machine, comprising a table having tracks along two opposite edges, a bridge mounted on said tracks, a tool-carriage and positioning slide on said bridge, means to move said carriage and slide simultaneously in opposite directions, a shaft journaled longitudinally on said bridge, drums on the ends of said shaft, cords, rigidly attached to one end of each of said tracks, passing around said drums, blocks slidable in holes formed in the other end of said tracks, the other ends of said cords being attached to said blocks and means to adjust said blocks in said tracks.

2. In a machine of the class described, the combination with the movable bridge and the carriage for supporting the engraving-tool, of a revoluble support on said carriage for a plurality of pattern-disks, each of which can be brought into operative position relatively to the engraving-tool and means to lock said support in such position.

3. In a machine of the class described, the combination with the movable bridge and the carriage for supporting the engraving-tool of a support revolubly mounted on said carriage and provided with a plurality of arms each rotatably supporting a pattern-disk, and means to lock each of said arms in position to bring its disk in operative relation to the engraving-tool.

4. In a machine of the class described, the combination with the movable bridge and the carriage for supporting the engraving-tool of a support revolubly mounted on said carriage and provided with a plurality of arms each rotatably supporting a pattern-disk, a hollow post depending from each arm and slotted at the bottom, a column on said carriage having its top shaped to fit said slots and provided with an internal screw-

thread, a bolt mounted in each of said posts and correspondingly screw - threaded and spring tending to hold said bolts raised.

5 5. In a machine of the class described, a rotatable support for a plurality of pattern-disks having a plurality of rows of symbols thereon, means to hold said support with any one of said disks in operative position, and means to move said support backwardly or
10 forwardly to bring any of said rows into operative position.

6. In a machine of the class described, the combination with a rotatable pattern-disk of a fixed notched index-wheel under the
15 same, and means to lock the disk in any of said notches comprising a slidable pin carried by the disk and a split handle, one part of which is mounted on the disk and the other part of which is pivoted to said first
20 part and engages said pin, and a spring interposed between said parts.

7. In a machine of the class described, the combination with a slidable bridge of a carriage, carrying a plurality of pattern-disks,
25 slidably mounted on said bridge, a stationing-indicator also slidably mounted on said bridge, a handle at the center of the bridge to move said carriage in opposite directions and a micrometer ratchet-mechanism
30 mounted above said bridge for moving said carriage and slide predetermined amounts.

8. In a machine of the class described, a pattern-disk carriage and a stationing-indicator slide, racks removably attached to the
35 same, a pinion engaging both of said racks, a shaft operatively connected to said pinion, a ratchet fast on said shaft, a lever pivoted on said shaft and carrying a pawl adapted to engage said ratchet, a spring normally holding

said pawl out of engagement, a handle piv- 40
oted on said lever and engaging said pawl and stops for said lever.

9. In a machine of the class described, the combination with the pattern-disk carriage and the engraving tool-holder, of a slide on 45
the front of the carriage carrying pivot points, a ring supported on the latter, a guide-bearing trunnioned on said ring, the said bearing constituting the pivotal guide for the said engraving-tool holder. 50

10. In a machine of the class described, the combination with the slidable bridge, of a shaft running longitudinally thereof and carrying drums at its ends around which
55 cords are wound so that by rotating said shaft the bridge is moved one way or the other, bearings on said bridge for said shaft, the same comprising blocks through which the shaft passes, said blocks being cut away
60 in the center and having half-bearings adjustably mounted therein, whereby the resistance to rotation of said shaft can be increased or diminished.

11. In a machine of the class described, the combination with the pattern-disk car- 65
riage, a slide thereon, and a pattern-disk supported on said slide, of an engraving tool supported wholly by the engagement of its upper end with the pattern-disk, and a pivot-
70 guide for said tool comprising a cylindrical bearing universally pivoted on said slide.

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

VINCENT L. OURDAN.

Witnesses:

HOWARD A. COOMBS,
M. A. WOOD.