

No. 816,968.

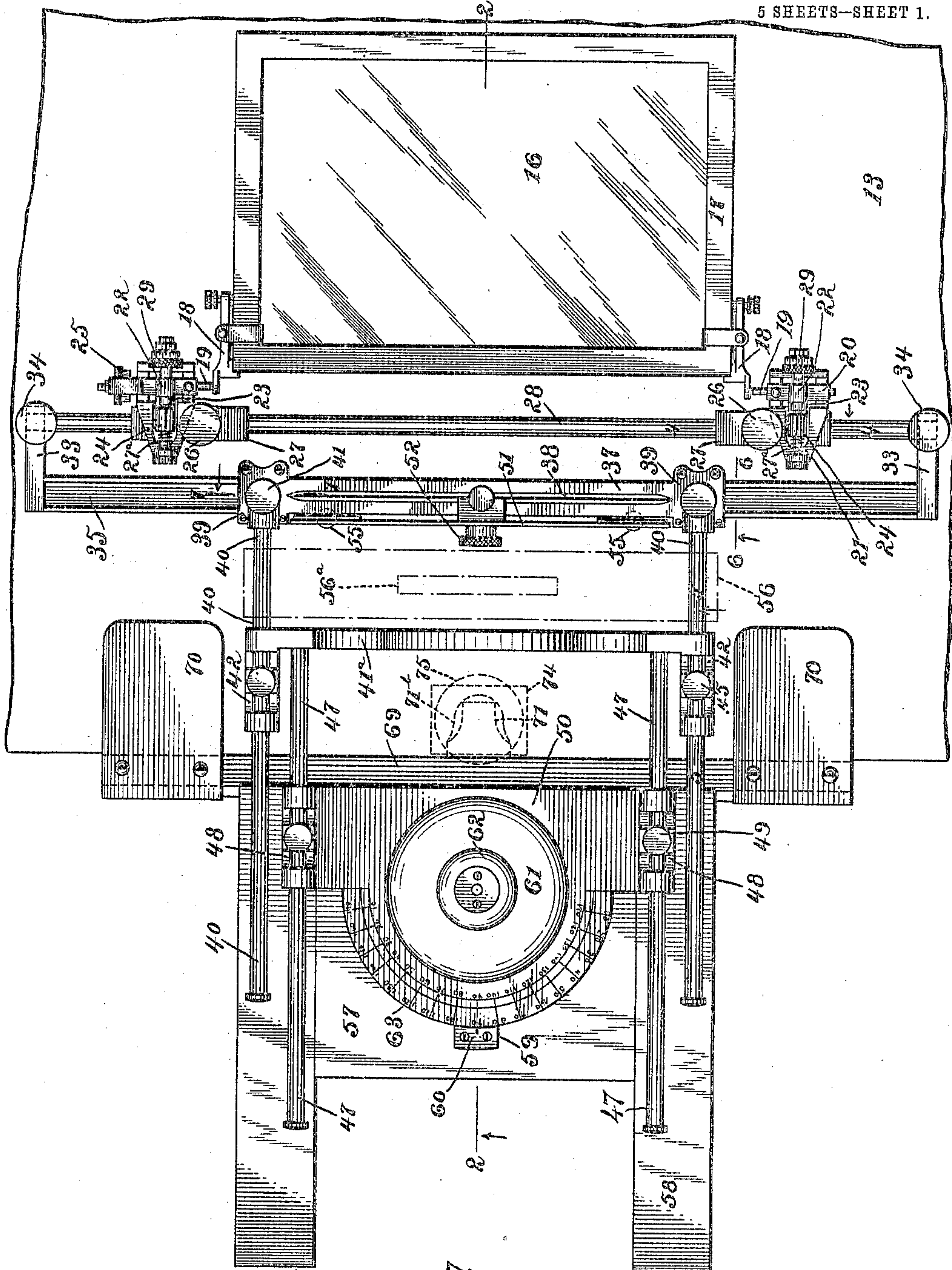
PATENTED APR. 3, 1906.

B. DAY.

UNIVERSAL ADJUSTER FOR PRINTING FILMS.

APPLICATION FILED AUG. 18, 1904.

5 SHEETS—SHEET 1.



WITNESSES:

J. A. Brophy
W. Harrison

FIG. 1

INVENTOR

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BY

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No. 816,968.

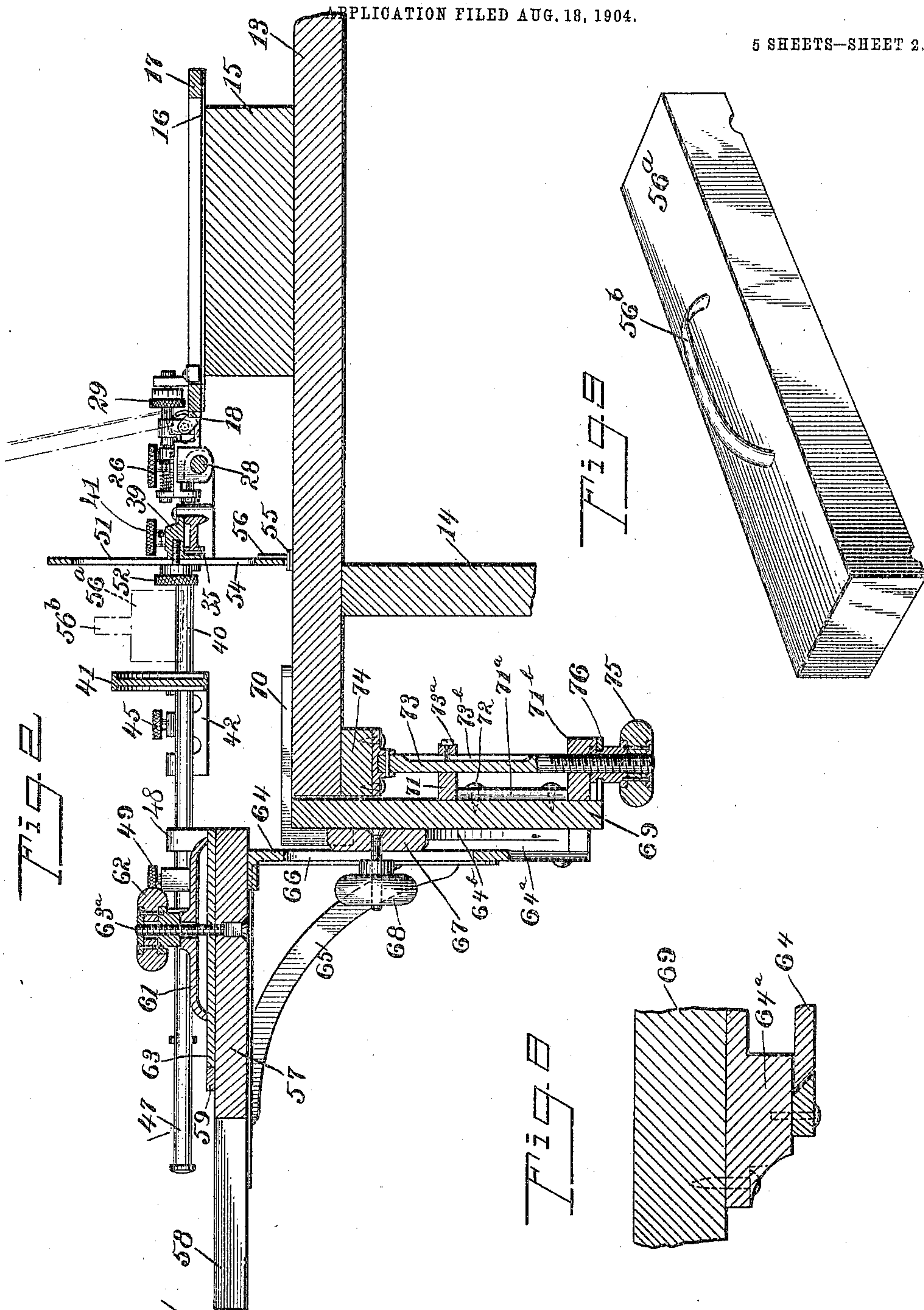
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5 SHEETS—SHEET 2.



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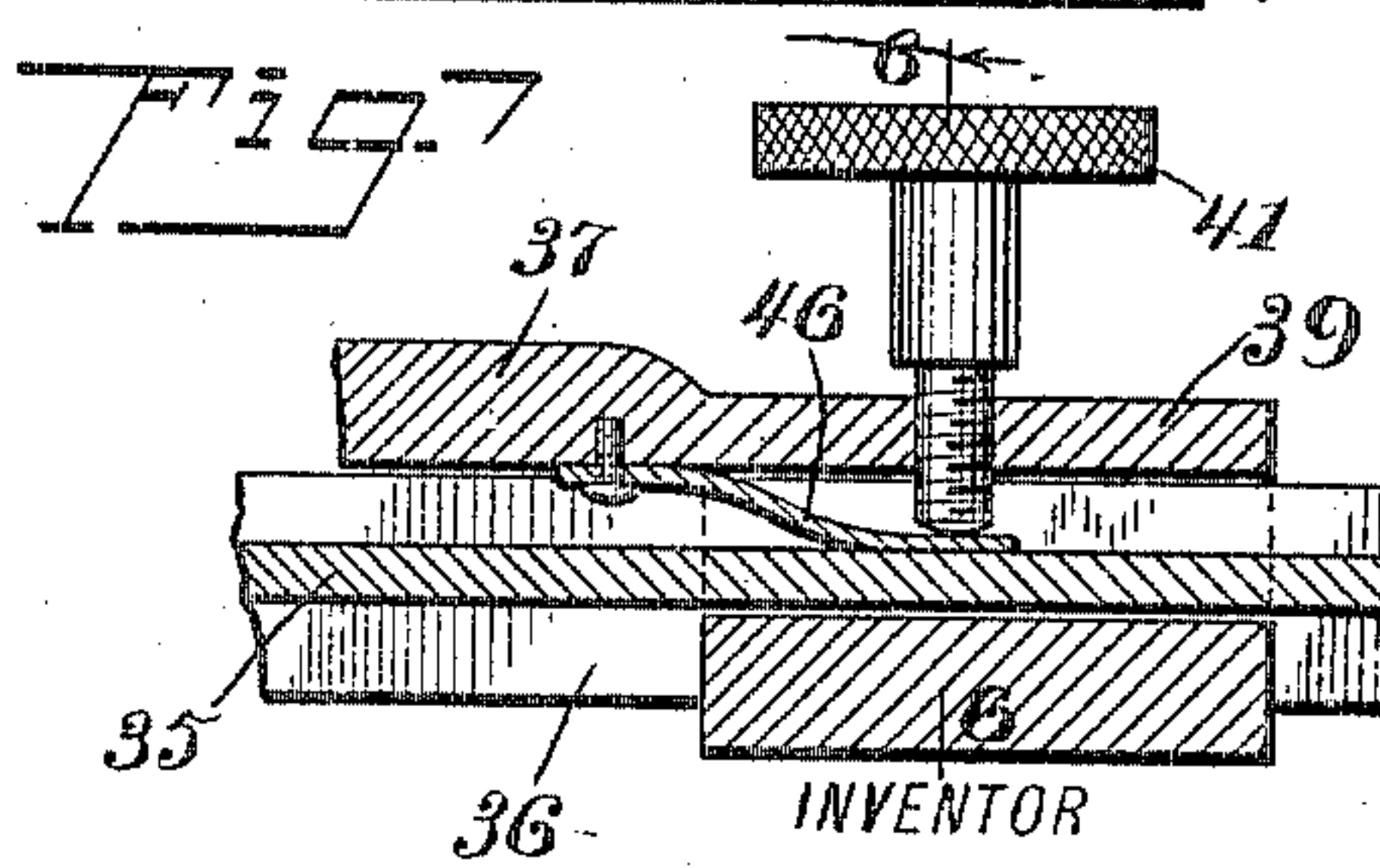
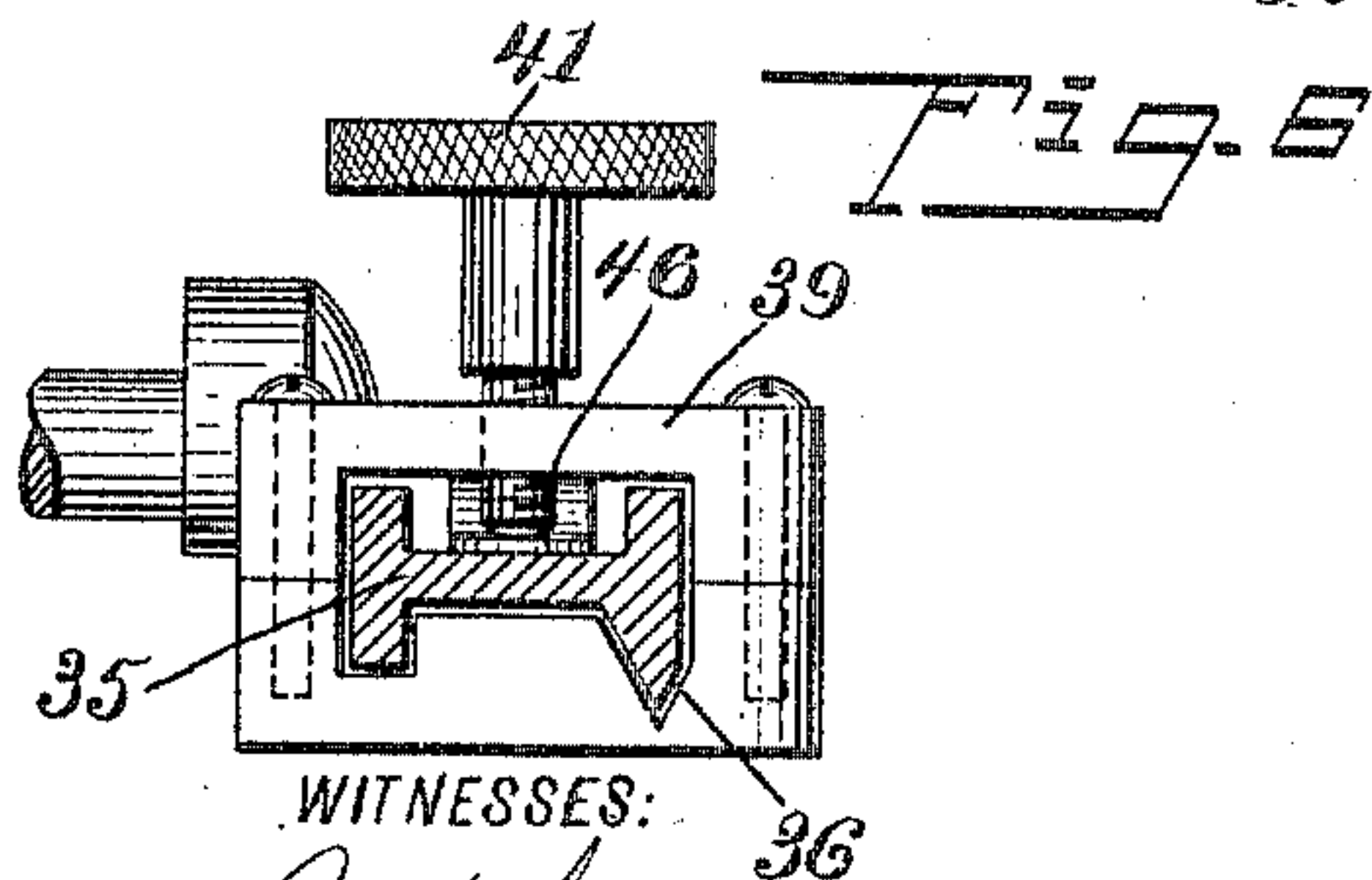
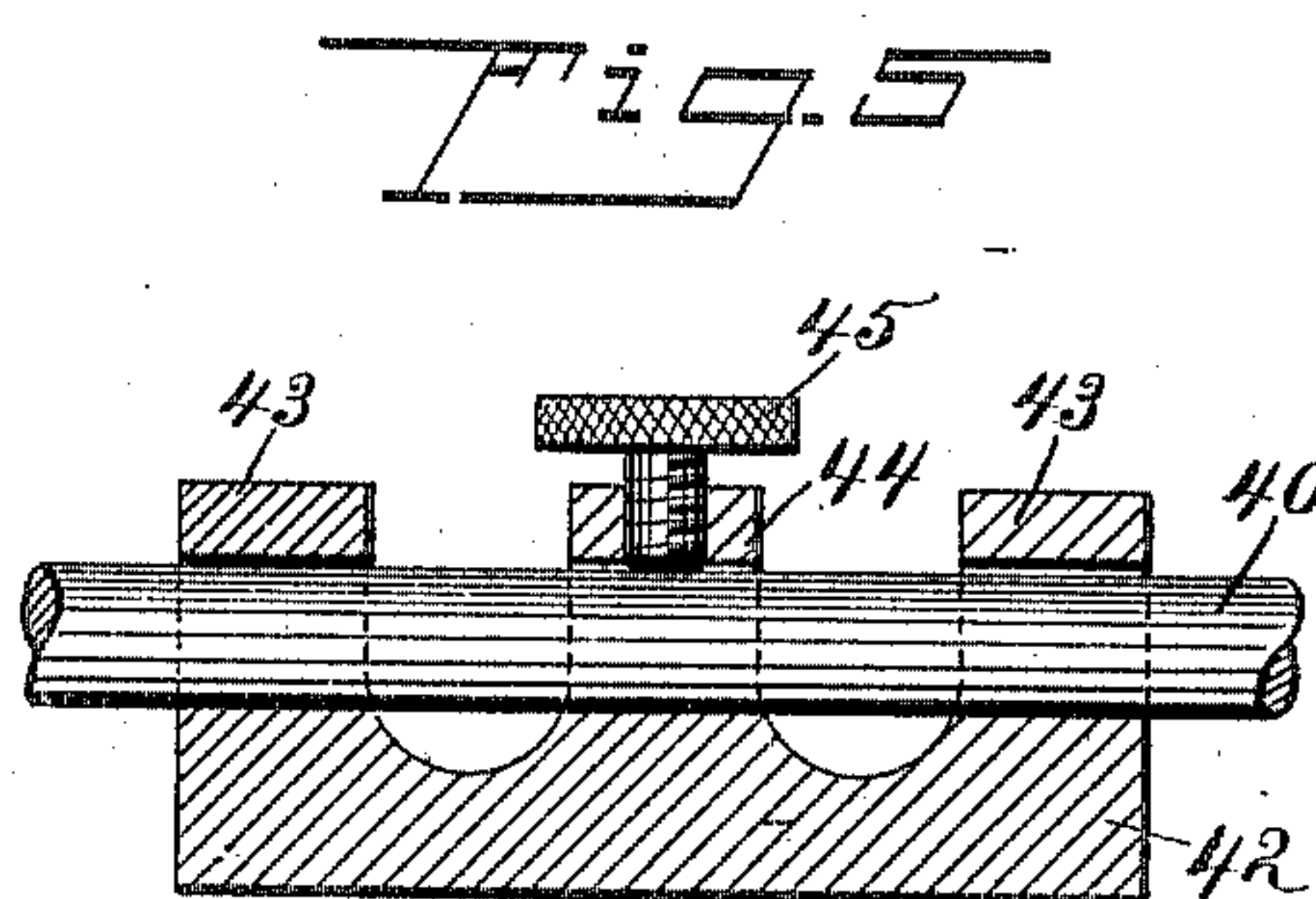
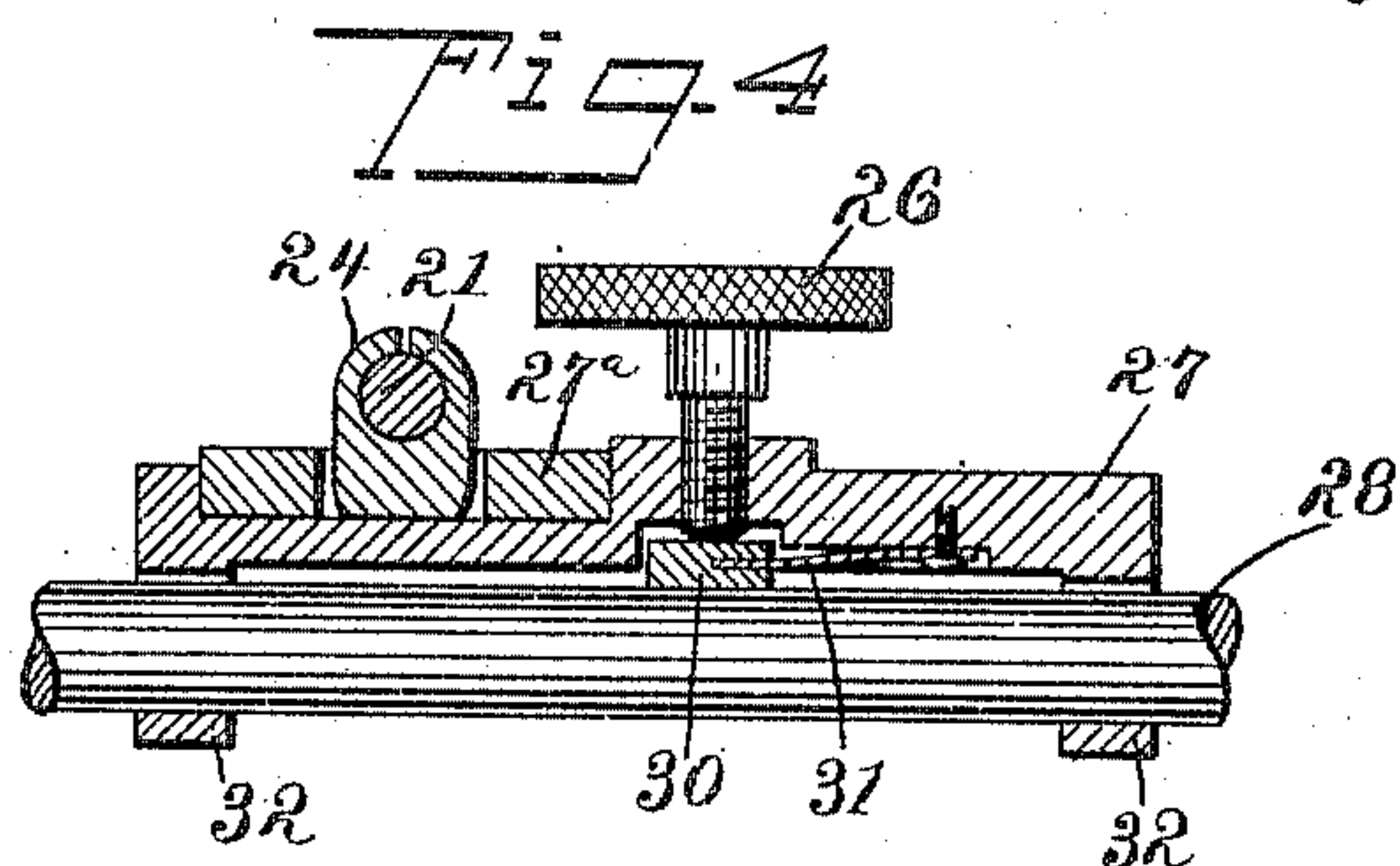
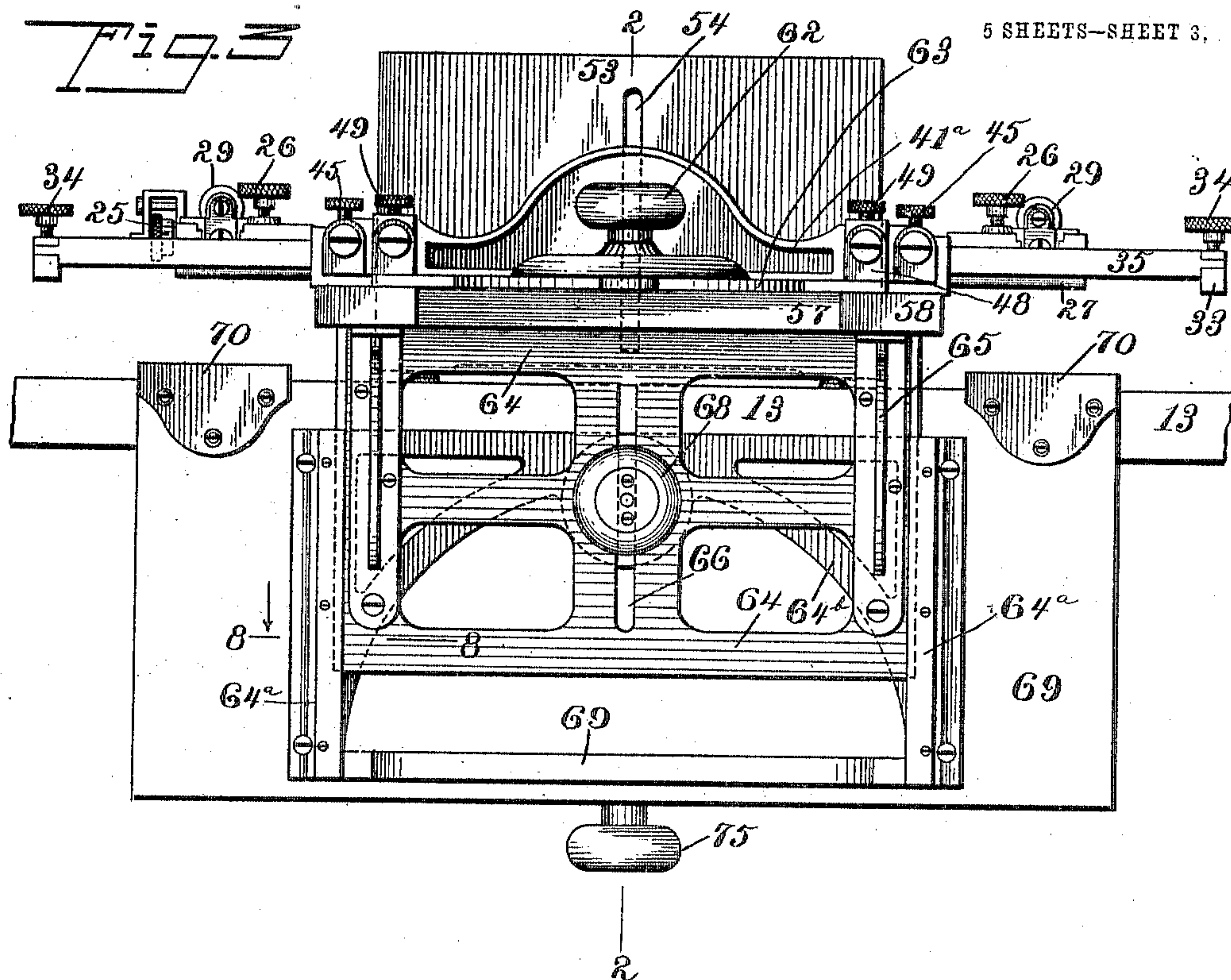
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5 SHEETS—SHEET 3.



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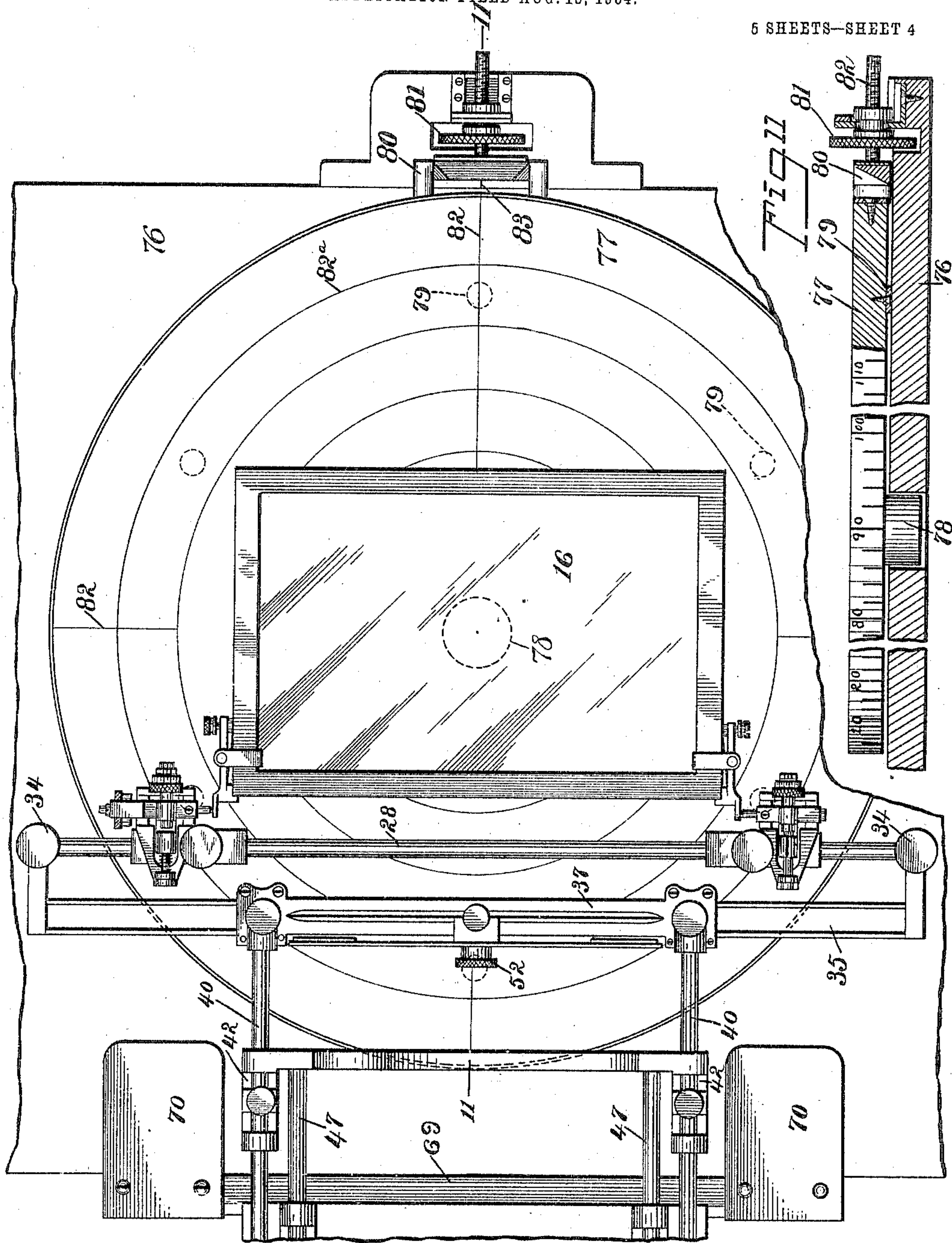
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5 SHEETS—SHEET 4



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5 SHEETS—SHEET 5.

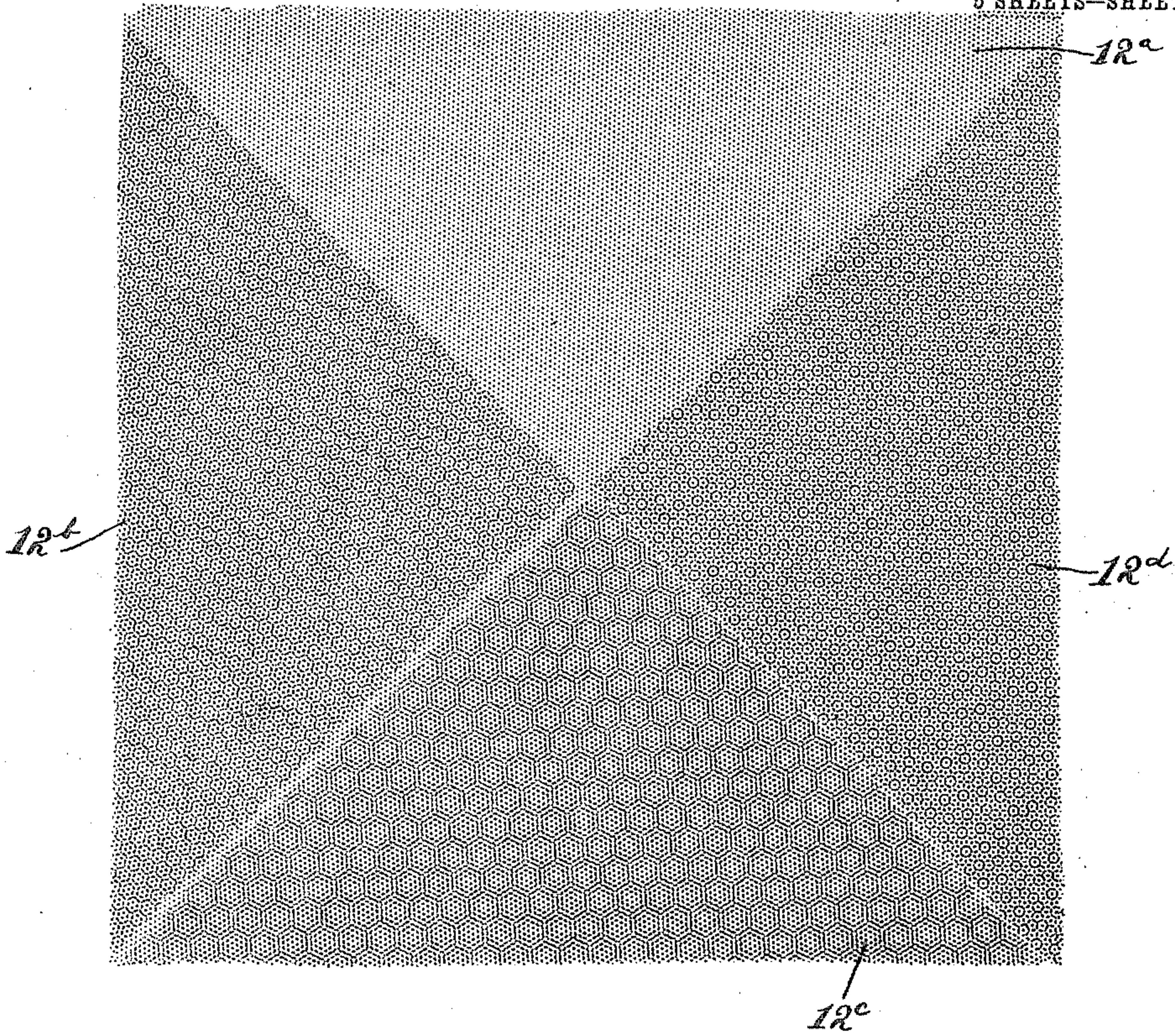


Fig 12

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UNITED STATES PATENT OFFICE.

BENJAMIN DAY, OF WEST HOBOKEN, NEW JERSEY.

UNIVERSAL ADJUSTER FOR PRINTING-FILMS.

No. 816,968.

Specification of Letters Patent.

Patented April 3, 1906.

Application filed August 18, 1904. Serial No. 221,240.

To all whom it may concern:

Be it known that I, BENJAMIN DAY, a citizen of the United States, and a resident of West Hoboken, in the county of Hudson and State of New Jersey, have invented a new and Improved Universal Adjuster for Printing-Films, of which the following is a full, clear, and exact description.

My invention relates to the manipulation of printing-films, one of which is inclosed in an appropriate frame, my more particular object being to secure precision in the handling of the film relatively to the work.

My invention further relates to certain means for adjusting the frame so as to bring it to a predetermined part of the work and for turning the frame and the work to different angles relatively to each other for the purpose of producing various changes in shading.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view showing the universal adjuster as mounted upon a table and ready for use. Fig. 2 is a vertical section through the same upon the lines 2 2 of Figs. 1 and 3. Fig. 3 is a rear elevation showing the mechanism viewed as from the left of Fig. 1. Fig. 4 is an enlarged detail in section upon the line 4 4 of Fig. 1 looking in the direction of the arrow. Fig. 5 is an enlarged detail section upon the line 5 5 of Fig. 1 looking in the direction of the arrow. Fig. 6 is a fragmentary section upon the line 6 6 of Fig. 1 looking in the direction of the arrow. Fig. 7 is a vertical section upon the line 7 7 of Fig. 1 looking in the direction of the arrow. Fig. 8 is a fragmentary horizontal section upon the line 8 8 of Fig. 3 looking in the direction of the arrow. Fig. 9 is a perspective view of the weight used for steadying the apparatus relatively to the work. Fig. 10 is a fragmentary plan view showing the apparatus used in connection with a revoluble board. Fig. 11 is a fragmentary side elevation of the revoluble board, certain parts being broken away for the sake of clearness; and Fig. 12 is a fanciful view showing a specimen of the work done by the mechanism.

A table is shown at 13 and is provided with its usual supports 14. Mounted upon this table is the work 15, which may be a stone, block, or other member and upon the upper surface of which the work is to be done. The

printing-film is shown at 16 and is provided with a design to be printed. This film is mounted in the usual manner within a frame 17, which is movable by means of hinges 18, so mounted as to rock upon centering-pins 19. The centering-pins are mounted in holders 20, provided with bearings 22 for engaging a revoluble spring-pressed member 21, the purpose of which is to adjust the slide 23, upon which the split bearing 24 is integrally mounted. An adjusting-screw 25 is used for the purpose of moving one of the centering-pins 19 relatively to the other. Thumb-screws 26 are revolubly mounted in spacing-blocks 27, movable on a rod 28 and carrying the centering-pins 19 and their several devices for adjusting the same. As the spacing-blocks 27 and the parts accompanying the same are fully described in my Patent No. 666,087 for "Safety adjuster for printing-films," no detail description of the same is necessary in the present application. By loosening the screws 26 the spacing-blocks 27 may be moved along the rod 28 to any desired point, so that the mounting of the printing-frame 17 upon the centering-pins 19 is comparatively easy, as will be seen from Fig. 1.

Rigidly mounted upon each spacing-block 27 is a substantially V-shaped frame 27^a, in which the bearing 24 is free to move when actuated by a screw 29. Each spacing-block 27 is provided with a friction-block 30, Fig. 4, which is clamped upon the rod 28 by pressure of the screw 26. A leaf-spring 31, connected with the spacing-blocks 27, normally supports the friction-block 30 out of engagement with the rod 28. Each spacing-block 27 is further provided with bearings 32, which loosely encircle the rod 28 and are tightened against the same when the screw 26 is rotated in the proper direction. The rod 28 is rigidly supported upon stub-arms 33 and clamped thereto by means of screws 34. The stub-arms are rigidly mounted upon a bar 35, provided with a comparatively sharp bearing edge 36 (see Fig. 6) and are encircled by heads 39, integral with opposite ends of a bearing-plate 37. This plate is strengthened by means of a rib 38, preferably integral therewith. Thumb-screws 41 are revolubly mounted in the heads 39 and engage the bar 35, so as to clamp the same firmly in any position desired relatively to its length—that is to say, the rod 35 may be slid endwise with in any desired degree, and thus clamped in two

places by the screws 41. The heads 39 are rigidly connected with the ends of rods 40, which slidably engage heads 42, as shown more particularly in Fig. 5. Each head 42 is provided with end bearings 43 and with a central bearing 44, the latter being provided with a thumb-screw 45, which clamps the rod 40 at a point centrally of the head 42. By this arrangement each head 42 presses upward against the lower side of the rod 40, so as to bind the same firmly at three different points. Interposed between the rod 35 and the screw 41 for clamping the same is a leaf-spring 46, attached to the bearing-plate 37 and projecting within the head 39, so as to have the screw 41 force the spring directly into engagement with the rod 35, as will be understood from Figs. 6 and 7. The heads 42 are rigidly mounted upon the outer ends of a connecting-plate 41^a and are preferably integral therewith. Secured rigidly to the connecting-plate 41^a are rods 47, which slidably engage heads 48, provided with screws 49 and being similar in construction to the heads 42. (Shown more particularly in Fig. 5.) A revoluble plate 50 supports the heads 48, so that the rods 47 and all the parts connected therewith may be turned to different angles. A vertical supporting-plate 51 is provided with a clamping-screw 52 for securing the supporting-plate 51 against the bearing-plate 37 at any desired height relatively thereto, as will be seen from Fig. 2. For this purpose the supporting-plate 51 is provided with a slot 54, engaged by the screw 52. The bottom of the supporting-plate 51 is provided with feet 55 and with braces 56 for the feet. These feet rest upon the table 13 or any analogous surface. A board 57 is provided, with tailpieces 58 rigidly secured thereto, as will be seen from Fig. 1. A plate 59 is mounted upon the board 57 and is provided with an indicating-mark 60. A clamp 61 engages the revoluble plate 50 and may be pressed downward upon the same by means of a knob 62, revolvably mounted upon a threaded screw 63^a. The revoluble plate 50 is provided with a graduated scale 63 and, together with the plate 59, having the indicating-mark 60, constitutes a protractor for determining the angle assumed by the printing-frame 17 with reference to the screw 63^a as the center. A slide 64 is mounted within a slideway 64^a and is provided with braces 64^b, integral therewith. Braces 65 support the board 57 relatively to the slide 64, so that when the slide moves upward or downward the board 57 is raised or lowered, as the case may be. The slide 64 is provided with a slot 66 and is held in place by a clamping-knob 68, which forces the slide against the clamping member 67, as will be understood from Fig. 2. The slideway 64^a is rigidly mounted upon a vertical board 69. Clamping-plates 70 are rigidly mounted upon this board and engage the top

surface of the table 13. Mounted rigidly upon the lower end of the board 69 is a bracket 71^a, provided with bearings 71 71^b, integrally connected therewith. This bracket is secured by means of fastenings 72 to the board 69. A sliding stem 73 is provided at its upper end with a clamping-block 74, which engages the under side of the table 13. The sliding stem 73 is guided by a screw 73^a, which engages a slot 73^b. The vertical stem 73 is threaded at its lower end, but does not revolve. It is engaged by a revoluble knob 75, provided internally, as shown, and held against vertical movement by means of a fixed collar 76, connected rigidly with the bearing 71^b.

The apparatus as a whole is mounted upon the table 13 by placing the clamping-plates 70 above the same and the clamping-block 74 below and turning the knob 75, so as to clamp the edge of the table firmly between these parts, as indicated in Fig. 2. The knob 68 is next loosened and the board 57 raised to any desired height commensurate with the height of the block or other piece of work 15, and the knob 68 is again tightened, so as to clamp the slide 64 rigidly in position. The knob 62 is now loosened and the protractor turned so that the film 16 rests upon the work 15 at the desired angle. The supporting-plate 51 is also adjusted relatively to the rods 40 by means of the screw 52. All of these parts being in position, the printing-film 16 now rests flatly upon the work 15. The frame 17 may be raised upon the centering-pins 19 and lowered so as to assume exactly the same position that it had at first. The film is now raised and then pressed downward upon the work in the usual manner, whereupon pressure is applied to the upper side of the film and the impression made upon the work. A weight 56^a, provided with a handle 56^b, is employed to hold the parts steady with reference to the work. If now it be desired to turn the film to a different angle relatively to the work 15, the protractor is used and the apparatus adjusted, whereupon another impression may be superimposed upon the first, so that the design printed upon the work will be composite in its nature, substantially as shown in Fig. 12. It will be noted that by virtue of the several adjustments above described the printing-frame 17 can be brought to any desired height relatively to the work or to any desired distance from the edge of the table by sliding the extension-rods 40 47 and may be caused to move radially by means of the sliding bar 35. It will also be noted that as the spacing-blocks 27 are slidable upon the rod 28 the printing-frame may be given a still greater lateral amplitude of adjustment. The result is that the printing-frame 17 can be adjusted in an infinite variety of ways.

In Figs. 10 and 11 instead of using the ta-

ble 13 (shown in Fig. 1) I use a table 76, centrally mounted upon which is a revoluble board 77, free to turn upon a pivot 78 and provided with fixed bars 79, which space the revoluble board from the table 76. A clamp 80 is actuated by means of a nut 81, revolubly mounted upon a screw 82, which is fixed firmly to the clamp and movable therewith in the general direction of the axis of the screw. The clamp 80 is provided with an indicating-mark 83, which may be brought into registry with a radial line 82 upon the revoluble board. The board is also provided with concentric circles 82^a for the purpose of aiding the positioning of the work.

By the use of the table 76 and the revoluble board 77 (shown in Figs. 10 and 11) a still further range of adaptability is given to the apparatus above described. Instead of moving the printing-frame 17 by means of the protractor the revoluble board 77 may be turned by hand and held by the screw 81, so as to bring the work which rests upon the revoluble board 77 to any desired angle relatively to the printing-frame 16.

In Fig. 12 is shown a specimen of the work done by the apparatus above described. At 12^a is shown a simple tint printed by the film upon paper from a stipple design. At 12^b is shown a print made from the same design, but superimposed upon itself at a different angle. At 12^c and 12^d are shown other impressions taken from the same design, the only difference being the variation of the angle at which the design is superimposed upon itself.

The angles to which the revoluble board is turned may be noted and a record kept of the same, so that the same result in superimposing a stipple tint on itself may be repeated at any future time. The slightest variation from this angle changes the character of the combination of a stipple tint with itself. Tints superimposed on each other form printed combination, the character of which can only be reproduced when the selected angles at which they were printed one on the other is known to the operator. Hence one operator might print a combination that it would be impossible for another operator to copy unless he knew the angles at which the first operator set the revoluble board when printing a stipple tint on top of a first impression of itself.

As may be seen from Fig. 10, the movements of the revoluble board are to some extent independent of the movements of the printing-film frame. The result is that the printing-film may be adjusted to different angles relatively to the center of the protractor, whereas by movements of the revoluble board the stone or other work may be turned to different angles relatively to the center of the board. This renders almost infinite the number of combinations and permutations for which the instruments may be used—that

is to say, the number of composite designs which may be produced by the joint action of the rotation of the revoluble board to different angles and the turning of the protractor to different angles is multiplied infinitely by the conjoint use of the revoluble board and the protractor.

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

1. The combination of a printing - film frame, a rod provided with mechanism for revolubly supporting the same, a sliding bar connected with said rod and adapted to move horizontally of its support, and means for clamping said sliding bar in different positions as thus slidably moved.

2. The combination of a printing - film frame, means for allowing the same to swing upon a center, a protractor, and extensible mechanism connecting said protractor and said printing-film frame together.

3. The combination of a board, means for slidably mounting the same so as to allow it to move vertically, a printing - film frame, mechanism connecting said board and said printing-frame together, a supporting member intermediate of said board and said printing-film frame for supporting said mechanism, and means controllable at will for adjusting said mechanism relatively to said supporting member.

4. The combination of a printing - film frame, a revoluble board with various angles noted thereon, means for holding the revoluble board in a fixed position at any given angle while printing, and a printing-film with a stipple or other design in relief on its printing-face, to produce by printing the design on itself at noted angles, combinations forming practically new tints which can only be copied by noting said angles and printing the design on itself at the exact angle at which the original was printed.

5. The combination of a printing-frame adapted to assume a definite position for printing the design, a member movable to different angles relatively to said frame when the said frame occupies said definite positions, means for indicating said angles, for the purpose of enabling a record thereof to be kept, and mechanism for temporarily securing said revoluble member at said different angles.

6. The combination of a printing-frame film, means for supporting said printing-frame film so as to allow the same to move pivotally upon a center and to approach the surface upon which the design is to be printed, a revoluble member supporting said surface and free to turn angularly in a plane substantially parallel with said surface, and means for determining the different angles to which said revoluble member is turned.

7. The combination of a printing - film

frame, means for supporting said printing-film frame so as to allow the same to move pivotally upon a center and to approach the surface upon which the design is to be printed, a revoluble member supporting said surface and free to turn angularly in a plane parallel therewith, means for holding said revoluble member fixedly in different angular positions, and a protractor for indicating said positions.

8. The combination of a printing-frame provided with a printing-film, extensible mechanism for supporting the same, and a protractor for turning said printing-frame to different angles for the purpose of superimposing tints at different angles relatively to each other.

9. The combination of a printing-frame, spacing-blocks for revolubly supporting the same, and means controllable at will for moving said spacing-blocks angularly in relation to each other.

10. The combination of a rod, means for supporting the same, spacing-blocks slidably mounted upon said rod and provided with centering-pins, and means for adjusting said spacing-blocks angularly in relation to each other upon said rods.

11. The combination of a printing-frame, means for revolubly supporting the same, a table disposed below said printing-frame, and a board mounted upon said table and revoluble independently of said printing-frame.

12. The combination of a table, a revoluble board mounted thereupon, means for clamping said revoluble board in different angular positions, a printing-film frame mounted adjacent to said revoluble board and adapted to engage work resting thereupon, said frame being provided with a printing-film, and means for adjusting said printing-film frame to different angles relatively to said table.

13. The combination of a frame, a printing-film mounted thereupon, mechanism for adjusting said frame to different angular positions, a revoluble member disposed adjacent to said frame, and means for adjusting said revoluble member to different positions independently of the positions assumed by said frame.

14. The combination of a frame, a printing-film mounted thereupon, means for supporting said frame so as to allow the same to move pivotally upon a center, and a revoluble member disposed adjacent to said frame and adapted to move to different angles relatively thereto.

15. The combination of a frame, a printing-film mounted thereupon, means for adjusting said frame to different angles reckoned from a common center, a protractor for indicating said angles, a revoluble member disposed adjacent to said frame and adapted to move to different angles relatively there-

to, and means for determining said last-mentioned angles.

16. The combination of a rod, means for supporting the same, spacing-blocks mounted upon said rod and provided with set-screws, leaf-washers mounted within said spacing-blocks and engaged by said set-screws, means for adjusting said spacing-blocks to different angles upon said rod, and a frame provided with a printing-film and supported by said spacing-blocks.

17. The combination of a rod, spacing-blocks mounted thereupon and movable to different angles upon the rod as a central axis, a registering apparatus connected with said spacing-blocks, extension apparatus connected with said rod for moving the same toward and from a predetermined point, and means for securing said rod in a predetermined position.

18. The combination of a backwardly forwardly sideably and circumferentially movable printing-film over a revoluble drawing-board with divisions on its periphery, means for holding this board in a given position while printing a stipple or other design on the work attached to the drawing-board from this printing-film, a protractor for noting the exact position of the printing-film and of the print made therefrom, and means for changing the positions of both printing-film and revoluble board so as to again print the design in a different relative position.

19. The combination of a readily attachable and detachable and slidable board or skirting-piece held in position at any desired place on the edge of a table by means of its two clamping-plates impinging on the upper edge, and its binding-screw and washer impinging on the under edge at a central point between the two clamping-plates as described, of a bracketed shelf secured to this board or skirting-piece by the slideways forming a part of it, and by means of which the shelf can be raised, lowered and held in any desired position at a level with, or at a level above the level of the table to which the board is clamped by means of a clamping-nut and a threaded stud fixed to the board and passing through the slotted lower member of the bracketed shelf; of a pivoted protractor-plate secured centrally on the upper surface of the bracketed shelf by means of a threaded stud, binding-nut and gong-shaped washer which permits the swerving of the protractor-plate to any recorded angle; of an extension-framework attached to and forming part of the protractor-plate to which it is attached by two three-membered studs drilled to receive two sliding rods, the central member of each stud being furnished with a set-screw to clamp the two rods in any desired position, these rods in turn to carry a flying bridge furnished similarly with two three-membered

studs and set-screws through which studs
 two other rods slide and carry a bridged
 clamping member steadied at its central part
 by a slotted plate attached to it by a thread-
 5 ed stud and set-screw which permits of its
 adjustment to the level of the bracketed
 shelf when raised above the level of the table,
 this bridged clamping member moving back-
 ward or forward by means of the sliding rods
 10 to and from the bracketed shelf having two
 bearing-boxes with set-screws; of a sliding I-
 shaped bar moving laterally forward or back-
 ward in the bearing-boxes of the clamping
 member and held fixed in any position by
 15 means of its set-screws; of arms at either end
 of the I-shaped bar projecting at right an-
 gles therefrom; of a rod carried by these arms
 in a position parallel with the I-shaped bar
 and secured by set-screws to the arms at the
 20 points where the rod passed through the arms
 at the drilled bearings, of right and left hand
 boxes slidably and revolubly movable on the
 rod, each box having drilled bearings at
 either end, and a central set-screw with a leaf-
 25 washer fitted to the rod to hold the boxes in
 position on the rod at the three bearing-
 points of each of them; of slotted recesses in
 these two boxes to receive the registering ap-

paratus for holding a printing-film frame with
 its printing-film in position over the work. 30

20. The combination of a horizontally, lat-
 erally, angularly and perpendicularly mov-
 able and extensible framework device as de-
 scribed, carrying a printing-film and its
 frame by means of a registering apparatus 35
 affixed therein and holding it in position to
 be printed from, and a pivoted revoluble cir-
 cular drawing-board secured to a table by a
 socket in which the pivot enters and by a
 clamping device bearing against its periphery 40
 and holding the circular drawing-board and
 the drawing upon a flat surface placed there-
 on in position to be embellished in such por-
 tions as may be required by printing thereon
 such portions of an inked printing-film as 45
 may be necessary to perfect the drawing
 when pressing on the back of the printing-
 film by means of a stylus or other pressing
 instrument.

In testimony whereof I have signed my 50
 name to this specification in the presence of
 two subscribing witnesses.

BENJAMIN DAY.

Witnesses:

W. P. SNYDER,
 ALBERT LOWTHER.