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C. R. PITRAT.
RHEOSTAT.

APPLICATION FILED AUG. 8, 1903.

NO MODEL.

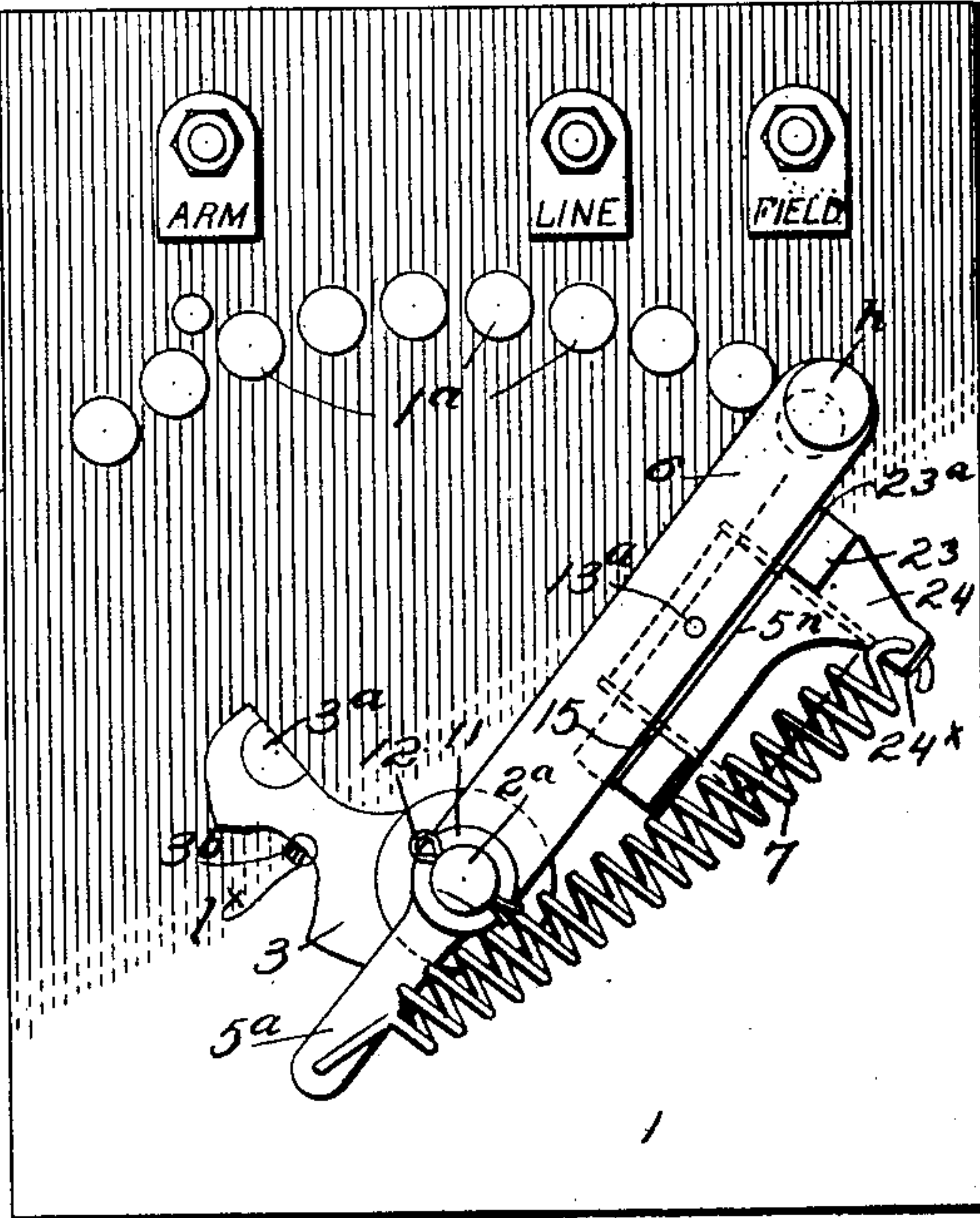
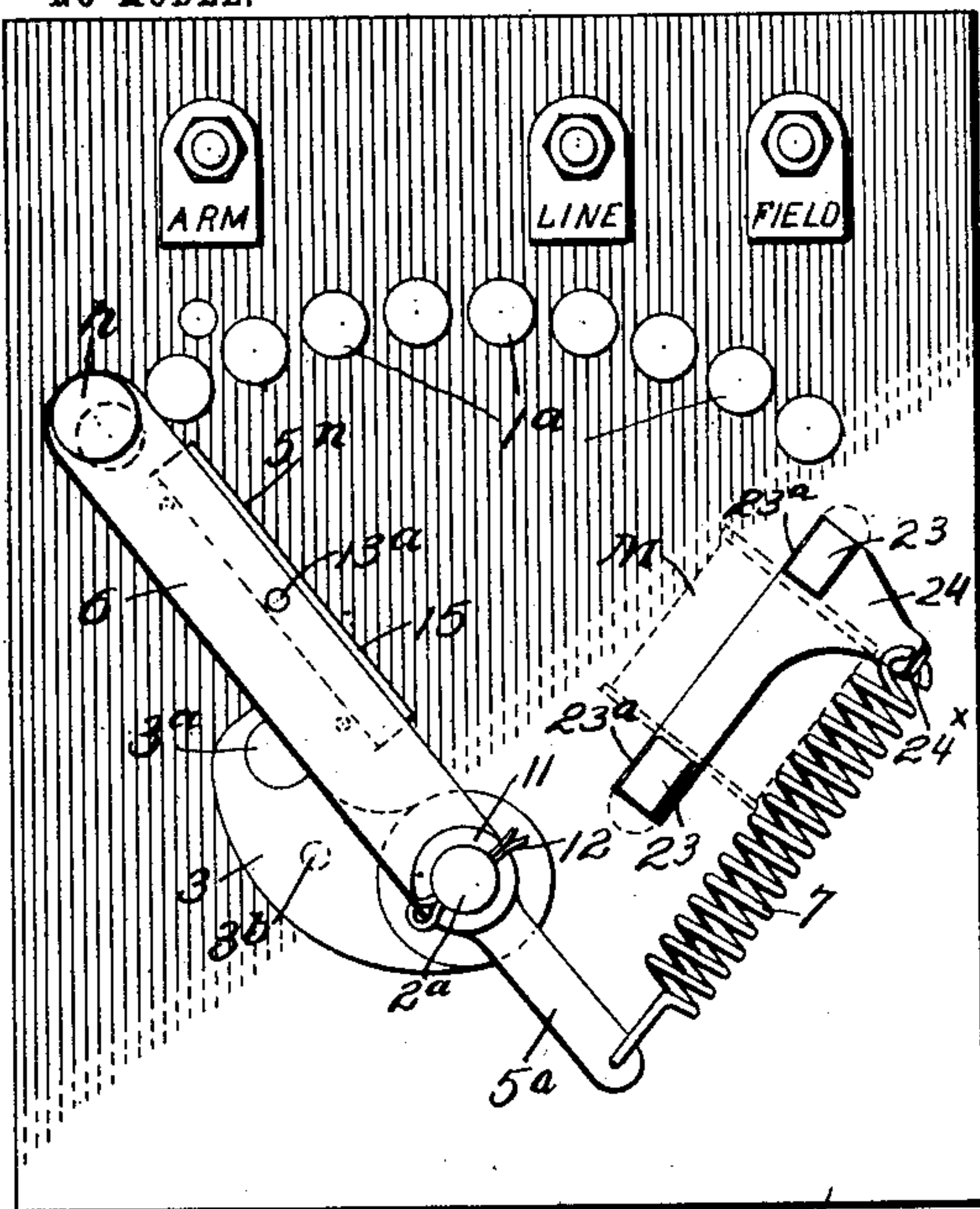
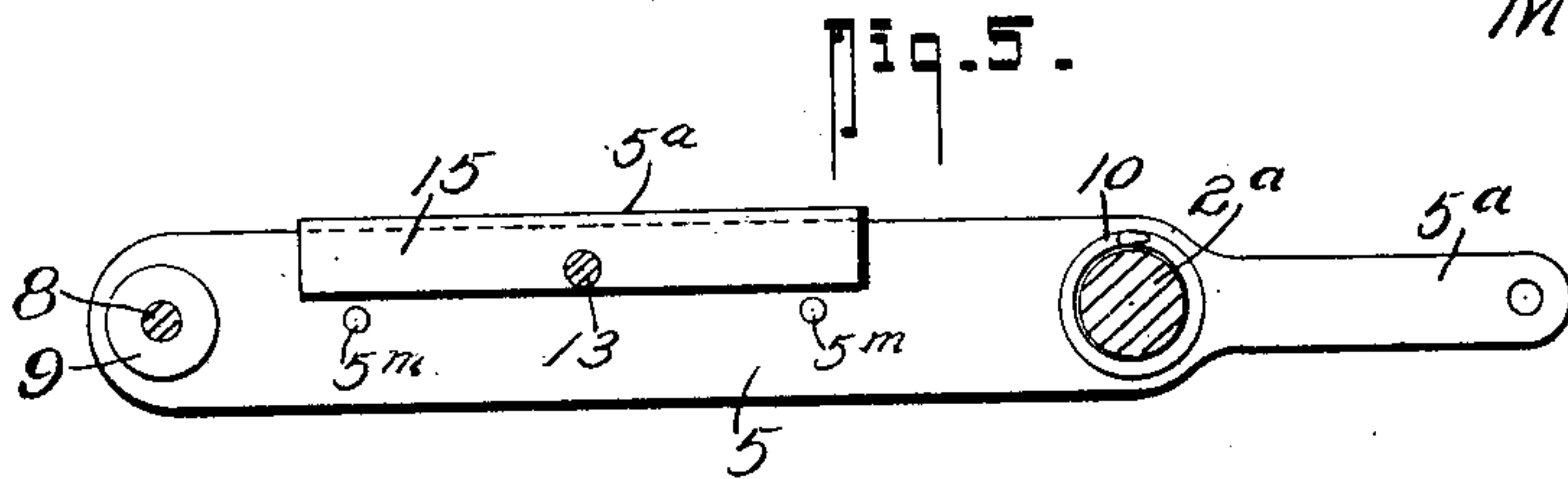
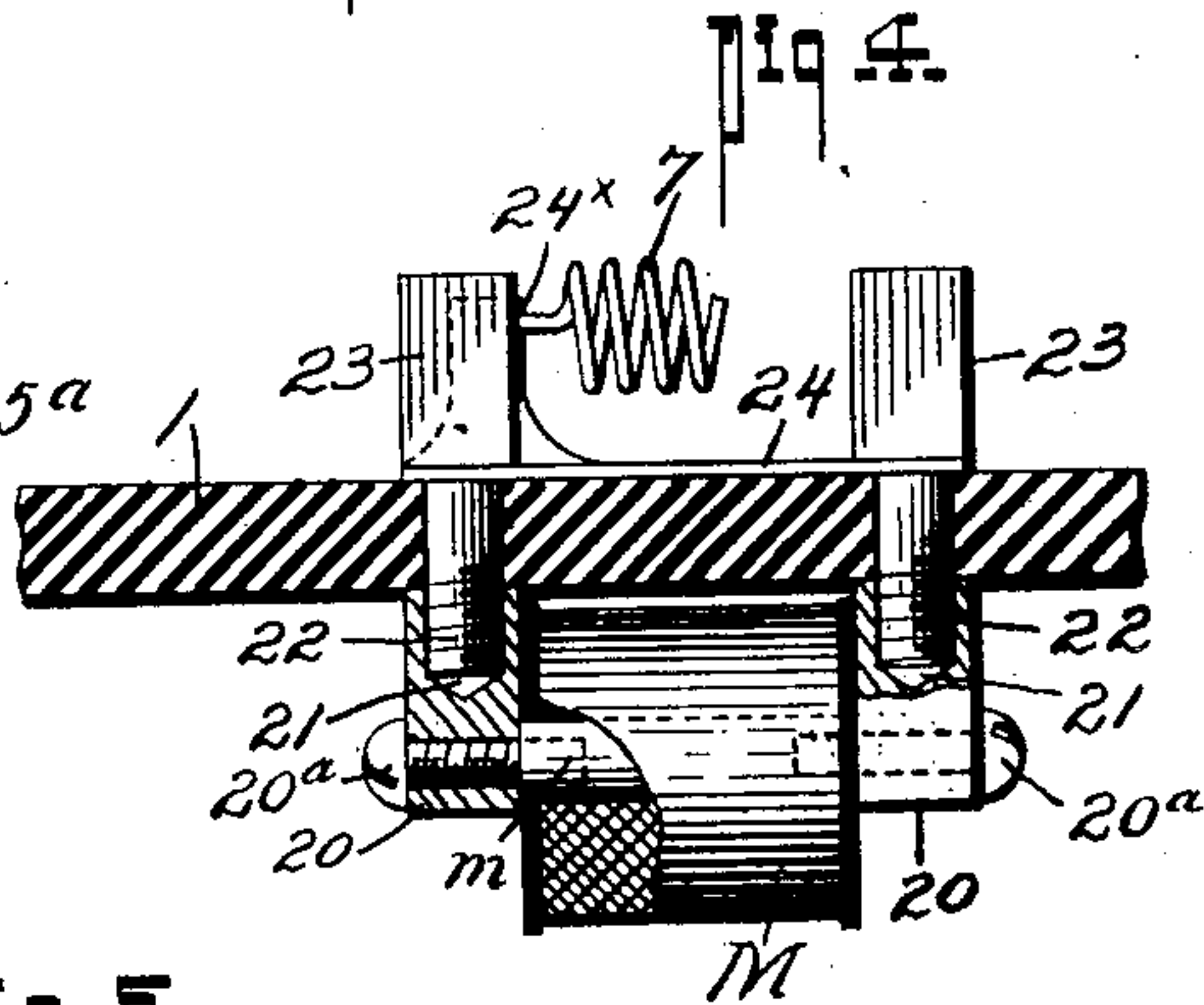
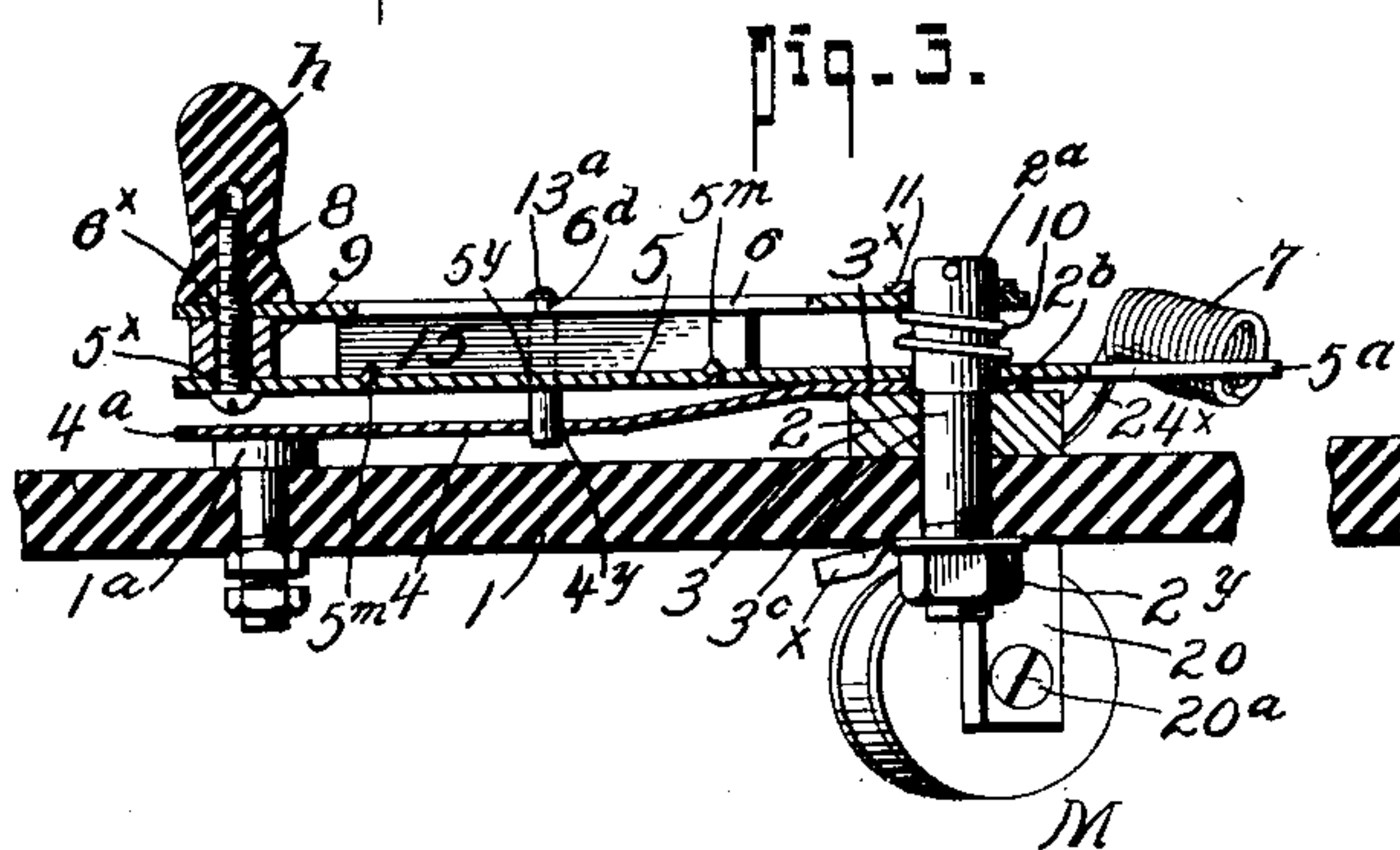


Fig. 1.

Fig. 2.



WITNESSES:

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RHEOSTAT.

SPECIFICATION forming part of Letters Patent No. 754,692, dated March 15, 1904.

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To all whom it may concern:

Be it known that I, CLAUDE R. PITRAT, residing at Amsterdam, in the county of Montgomery and State of New York, have invented certain new and useful Improvements in Rheostats, of which the following is a specification.

My invention relates to certain new and useful improvements in rheostats; and it primarily seeks to provide an improved contact-arm for rheostats and means for holding said contact-arm in its set position and means to return said arm to its normal position when the resistance is all cut out; and the invention consists in the novel structure and peculiar combination of parts, all of which will be first described in detail and then specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a top plan view of a portion of the rheostat, the contact-arm being shown in its normal position. Fig. 2 is a similar view, the contact-arm being shown in the position it assumes when the resistance is cut out. Fig. 3 is a cross-section taken practically on the line 3 3 of Fig. 1. Fig. 4 is a detail cross-section taken practically on the line 4 4 of Fig. 3, and Fig. 5 is a horizontal section taken on the line 5 5 of Fig. 3.

Referring now to the accompanying drawings, in which like numerals and letters of reference indicate like parts in all the figures, 1 designates the rheostat-box top, which is preferably constructed of slate or other non-conducting substance and upon which is mounted the concentrically-arranged resistance terminal contacts 1^a, arranged concentrically around the stud 2^a, hereinafter again referred to.

A plate 3, having a stop-lug 3^a, is secured to the top 1 by a bolt 2, having the stud 2^a, and by an integrally-formed stud 3^b, which takes into an aperture 1^x in the top 1. (See Fig. 2.) The bolt 2 has a shoulder 2^b, formed by a stud 2^a, which engages the top of the plate 3, and the shank of the bolt 2 passes through the aperture 3^c in the plate 3 and an aperture 1^c in the top 1 and is securely fastened by a nut 2^y, which also serves to hold

the contact-plate α , to which one terminal of the main circuit (not shown) may be secured, in position.

A spring contact-arm 4 is pivoted on the stud 2^a, with its pivot end in contact with the top surface of the hub 3^x of the plate 3, while its free end 4^a contacts with the contact-stud 1^a, as clearly shown in Fig. 3.

Pivotally secured to the stud 2^a and held in contact with the contact-arm 4 is a second arm 5, which runs parallel to the arm 4 and which has a projecting lever portion 5^a at its pivoted end, to which one end of the coil-spring 7 is secured.

The outer end of the arm 5 has an aperture 5^x, through which passes a long screw 8, which also passes upward through the threaded aperture 6^x of the third arm 6, held some distance above the arm 5 and which is pivoted at its inner end to the stud 2^a, as shown. To hold the outer ends of the arms 5 and 6 a proper distance apart, I place a washer 9 on the screw 8, and to hold the inner ends properly spaced apart I place a coil-spring 10 between the pivoted ends of the arms 5 and 6 around the stud 2^a, and the arms 4, 5, and 6 are held on the stud 2^a by the washer 11 and cross-pin 12, as clearly illustrated in Fig. 3. An insulating-handle h , having a threaded bore to receive the end of the bolt 8, serves as a lock-nut for the said bolt.

13 designates a lug, which has a reduced end passing through an aperture 6^d in the arm 6, and the said end is clenched to form a head 13^a, whereby the lug is fixedly secured to the said arm 6. The lug 13 passes downwardly through apertures 5^y 4^y of the arms 5 and 4 to hold the said arms to move in unison for a purpose presently explained.

Fulcrumed on the lug 13, between the arms 5 and 6, is what I term a "keeper" 15, constructed of soft iron or other magnetic material, and the said keeper is adapted to freely turn on the said lug 13, its turning movement, however, being limited by the stops 5^m 5^m, formed by extending the upper face of the arm 5.

M designates a magnet having a core m , to which is secured the end pieces 20 by screws

20^a or otherwise, and the said end pieces have threaded bores 21 to receive the threaded shanks 22 of the removable pole-pieces 23, which shanks pass through apertures in the plate 24 and through apertures in the top 1. The pole-pieces have flat contacting faces 23^a, which coöperate with the flat faces 5ⁿ of the keeper 15. The plate 24 has an integrally-formed bracket 24^x, to which the other end of the spring 7 is secured.

So far as described it will be seen that when the parts are in the position shown in Fig. 1 the arms 4, 5, and 6 will rest against the stop 3^a on the plate 3, with the spring contact-arm 4 in engagement with the first terminal 1^a, with all the resistance in circuit.

When the parts are in the position shown in Fig. 2, the resistance will be cut out and the magnet M will hold the arms 5 and 6 in the position shown by reason of the keeper 15 being in contact with the pole-pieces of the magnet M. As soon as the circuit is open the spring will return the parts to their normal positions. (Shown in Fig. 1.)

By providing the coil-spring 10, as shown, causes a perfect electric contact between the plate 3 and the arm 4, as well as permitting the arms 5 and 6 to be self-adjustable on the stud 2^a, and by pivoting the armature on the lug 13, as shown, insures a positive contact with the pole-pieces 23 of the magnet. By arranging the location of the plates 24 and 3 as shown the extension-spring will be at such angles to the arm that only a small amount of magnetic force is required to hold the arms in their proper position when the resistance is cut out, as shown in Fig. 2.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the advantages and complete operation of my invention will be readily apparent to those skilled in the art to which it appertains.

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

1. In a rheostat, a contact-arm consisting of a plurality of members, a keeper mounted between said members, an electromagnet for co-operating with said keeper, as specified.

2. In a rheostat, an electromagnet having pole-pieces, a contact-arm including a pair of parallel members, a keeper mounted between said members to coöperate and be self-adjustable with respect to said pole-pieces, for the purposes specified.

3. In a rheostat, an electromagnet having pole-pieces, a contact-arm including a pair of parallel members, a keeper pivoted between said members to coöperate and be self-adjustable with respect to said pole-pieces, for the purposes specified.

4. In a rheostat, a contact member pivotally secured to the base and including a contact-arm and a pair of supplemental arms,

means for joining said arms to move in unison, a self-adjustable keeper mounted between said pair of supplemental arms, an electromagnet for coöperating with said keeper to hold said arms to their adjusted position, one of said supplemental arms having an extension, a coil-spring secured to said extension, a bracket member secured to the rheostat-base, said coil-spring having its other end secured to said bracket member, for the purposes specified.

5. In a rheostat including a base, a pivot-stud mounted thereon, a contact member composed of a lower spring contact-arm pivotally secured at one end to the pivot-stud, a pair of supplemental arms likewise mounted on the pivot-stud and extending parallel to the contact-arm, means for holding said supplemental arms separated and in tight electrical engagement with said pivot-stud, a keeper mounted between said supplemental arms, the lowermost supplemental arm having its pivot end in contact with the pivot end of the contact-arm, for the purposes specified.

6. In a rheostat, a pivot-stud, a contact member composed of a lower spring contact-arm, and parallel-disposed supplemental arms likewise mounted on said pivot-stud, a washer mounted on said stud above the said arms, a coil-spring for holding said supplemental arms separated, with the upper arm in tight electric contact with said washer and the lower supplemental arm and the contact-arm in tight electric contact with the base of the said stud, for the purposes specified.

7. In a rheostat including a base, a pivot-stud mounted thereon, a contact member composed of a lower spring contact-arm pivotally secured at one end to the pivot-stud, a pair of supplemental arms likewise mounted on the pivot-stud and extending parallel to the contact-arm, means for holding said supplemental arms separated, a keeper mounted between said supplemental arms, the lowermost supplemental arm having its end in contact with the pivot end of the contact-arm, means for causing said supplemental arms to move in unison, said means including a lug passing through apertures in the supplemental arms, a keeper and a contact-arm, for the purposes specified.

8. A contact-arm for rheostats, including a plurality of parallel members, one of which has an extension, a coil-spring connected to said extension and with the base of the rheostat, for the purposes specified.

9. In a rheostat, a contact-arm, an electromagnet having pole-pieces, a bracket secured to the rheostat-base by said pole-pieces, a coil-spring secured to said bracket and said arm, for the purposes specified.

10. In a rheostat including a base, a pivot-stud mounted thereon, a contact member consisting of a lower contact-arm pivotally secured at one end to the pivot-stud, a pair of

supplemental arms likewise mounted on the pivot-stud and extending parallel to the contact-arms, means for holding said arms separated, a self-adjustable keeper mounted between said supplemental arms, the lowermost supplemental arm having its pivot end in contact with the pivot end of the contact-arms, means for causing said arms to move in unison, said means including a lug passing through apertures in the supplemental arms, the keeper and the contact-arm, the free ends of the supplemental arms being joined together, all being arranged substantially as shown and for the purposes described.

11. In a rheostat, a base portion, a plate having a pivot-stud and a stop-lug, secured to said base, a contact-arm pivotally secured to said stud with its pivoted end in contact with the said plate, a pair of supplemental arms pivoted to said pivot-stud and arranged parallel to said contact-arm, a coil-spring disposed around said pivot-stud between said supplemental arms, a washer secured to the pivot-stud above the supplemental arms, said coil-spring being adapted to maintain the said arms in tight electric contact with the washer and to maintain the lower supplemental arm and the contact-arm in tight electric engagement with the plate and with each other, a supplemental washer disposed between the free ends of the supplemental arms, a screw-bolt passing through said supplemental arms and said sup-

plemental washer, a handle secured to said bolt, said lower supplemental arm having an extension, a spring secured thereto, a keeper mounted between said supplemental arms, a lug carried by the upper arm and passing through apertures in the keeper, the lower supplemental arm and the contact-arm causing said arms to move in unison, an electromagnet mounted upon the under side of said base, pole-pieces mounted on the upper side of the base and having portions for connecting with the ends of the magnet-core, a plate having a bracket portion to which the spring connected with the extension of the lower supplemental arm is secured, said plate and said magnet being held on said base by said pole-pieces, all being arranged substantially as shown and described.

12. In a rheostat including a contact-arm, an electric magnet mounted on the under side of the rheostat-base, an apertured bracket member mounted on the upper side of the said base, pole-pieces having projecting portions adapted to project through said bracket member apertures, and through apertures in the rheostat-base, and to be secured to said electromagnet, all being arranged substantially as shown and for purposes described.

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Witnesses:

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B. OTTO WAGNER.