

W. SCHWARTZ & P. KOENER.

TIME FUSE.

APPLICATION FILED JULY 31, 1906.

911,845.

Patented Feb. 9, 1909.

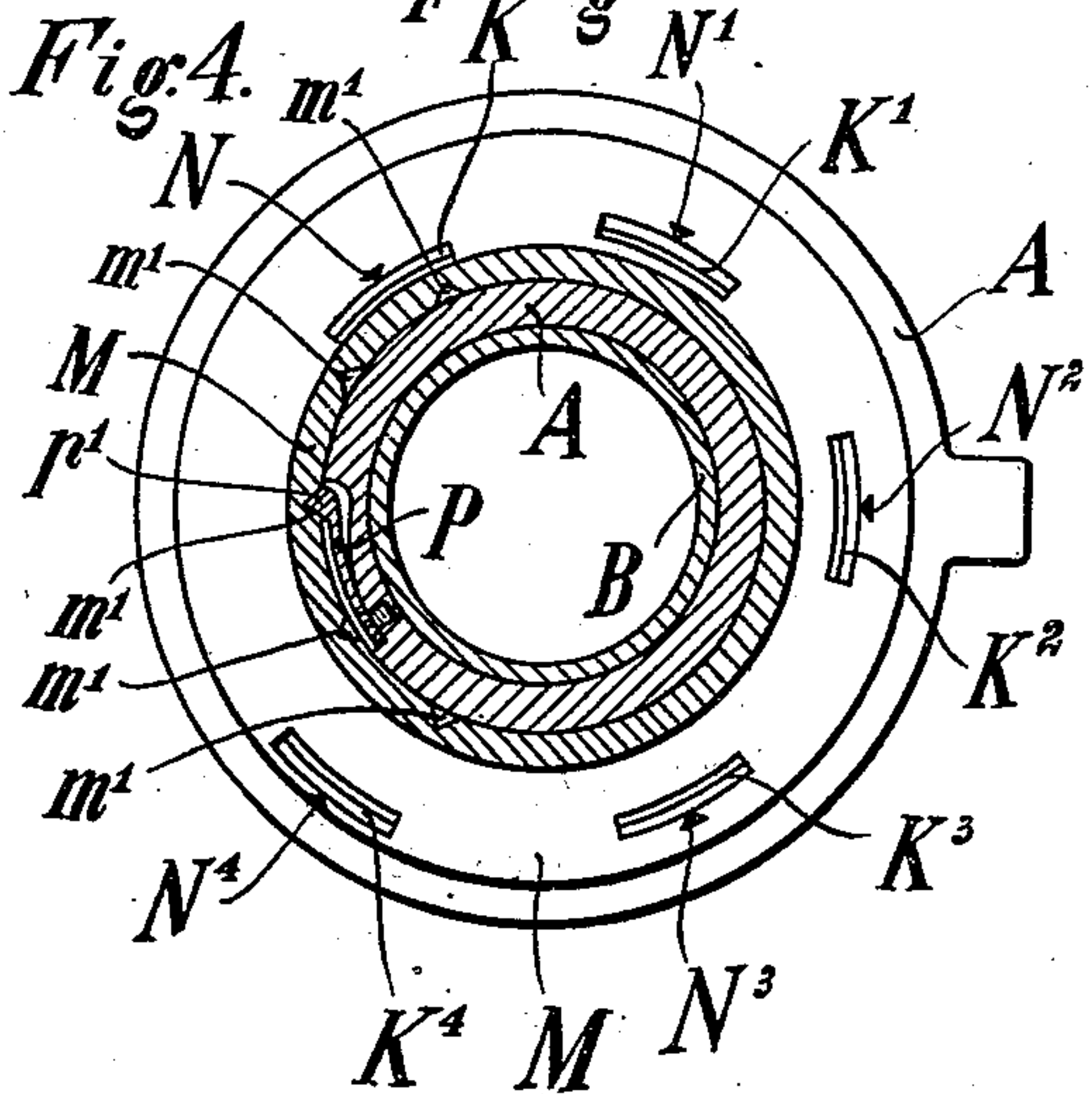
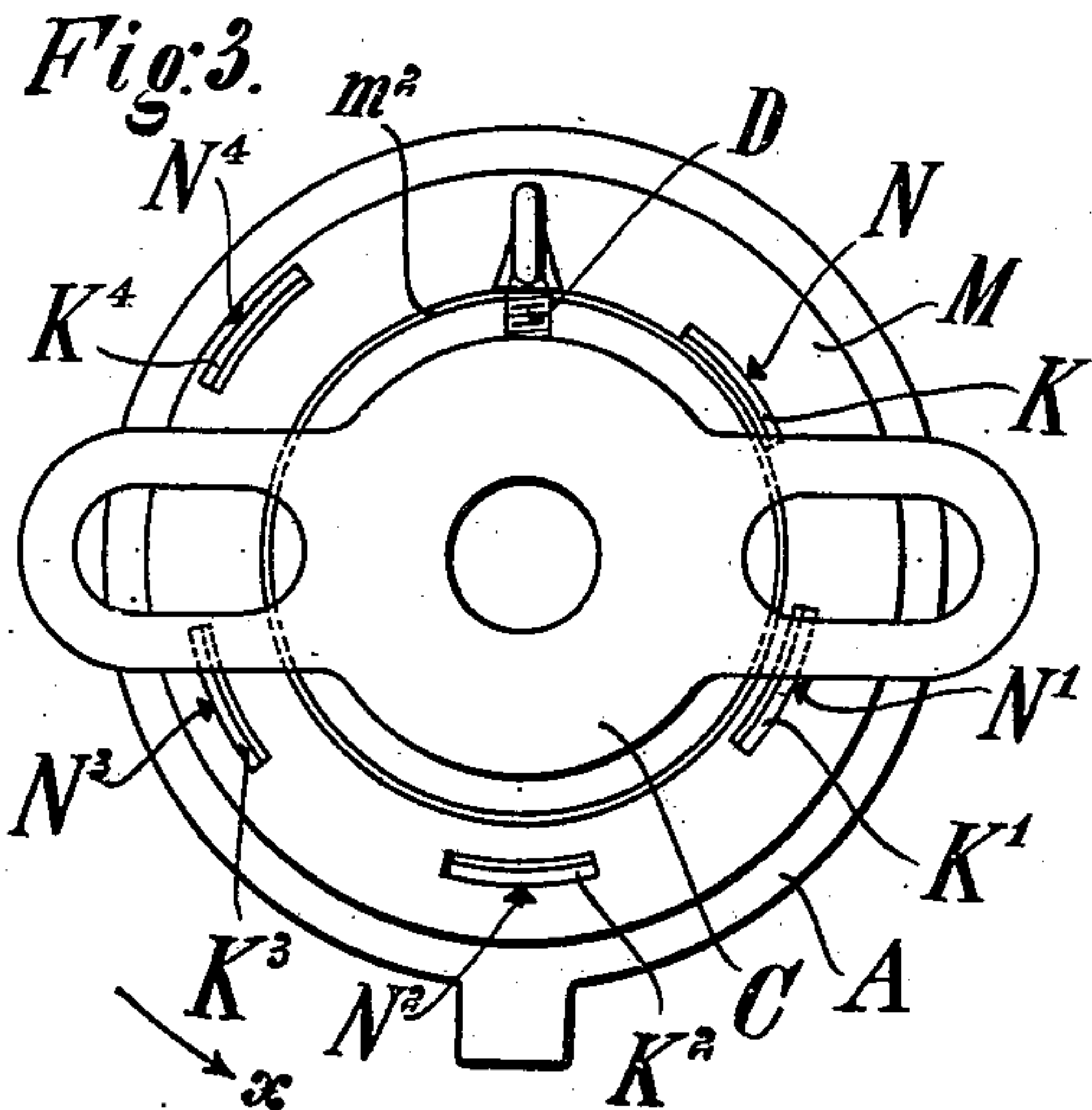
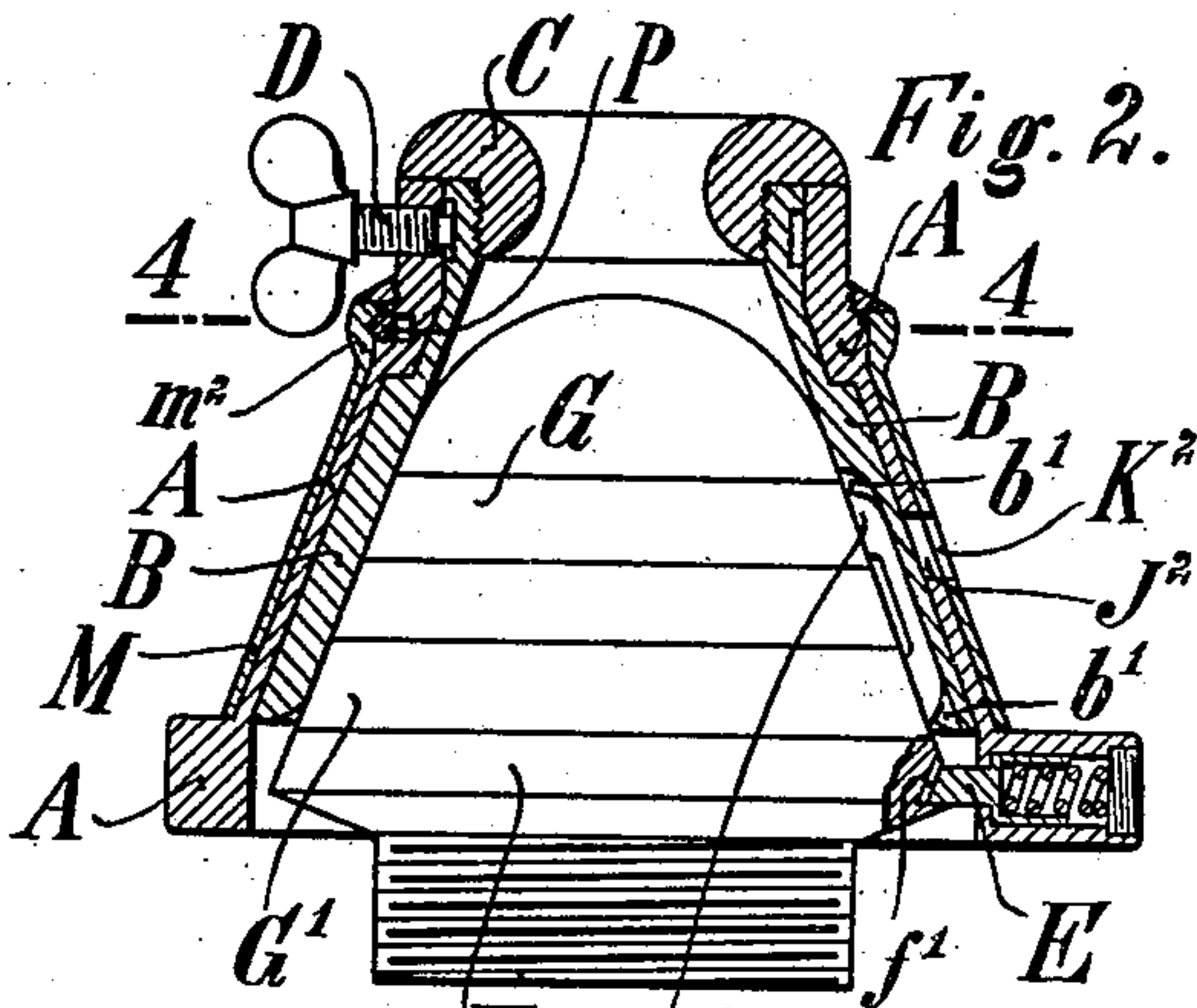
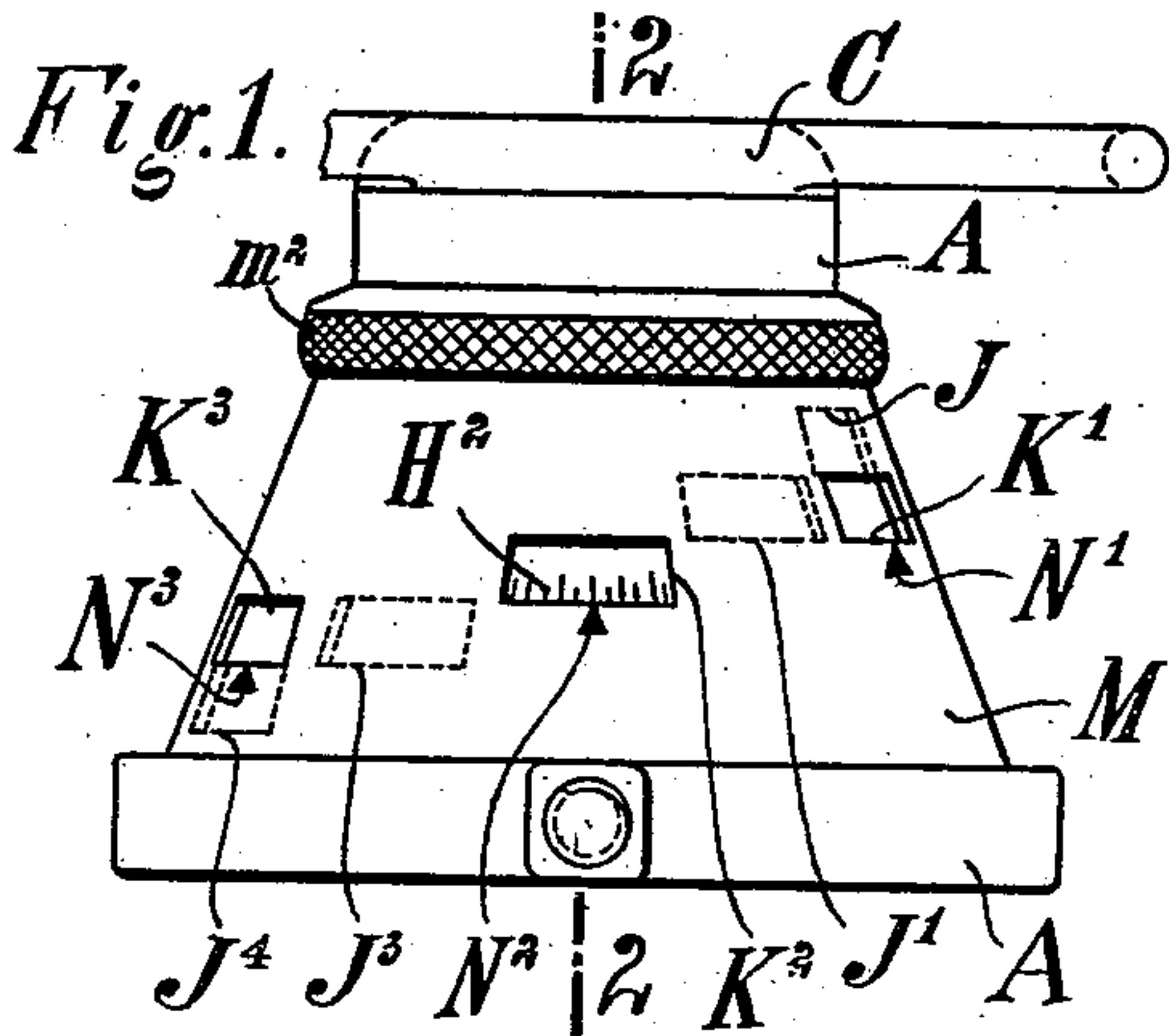


Fig. 5.

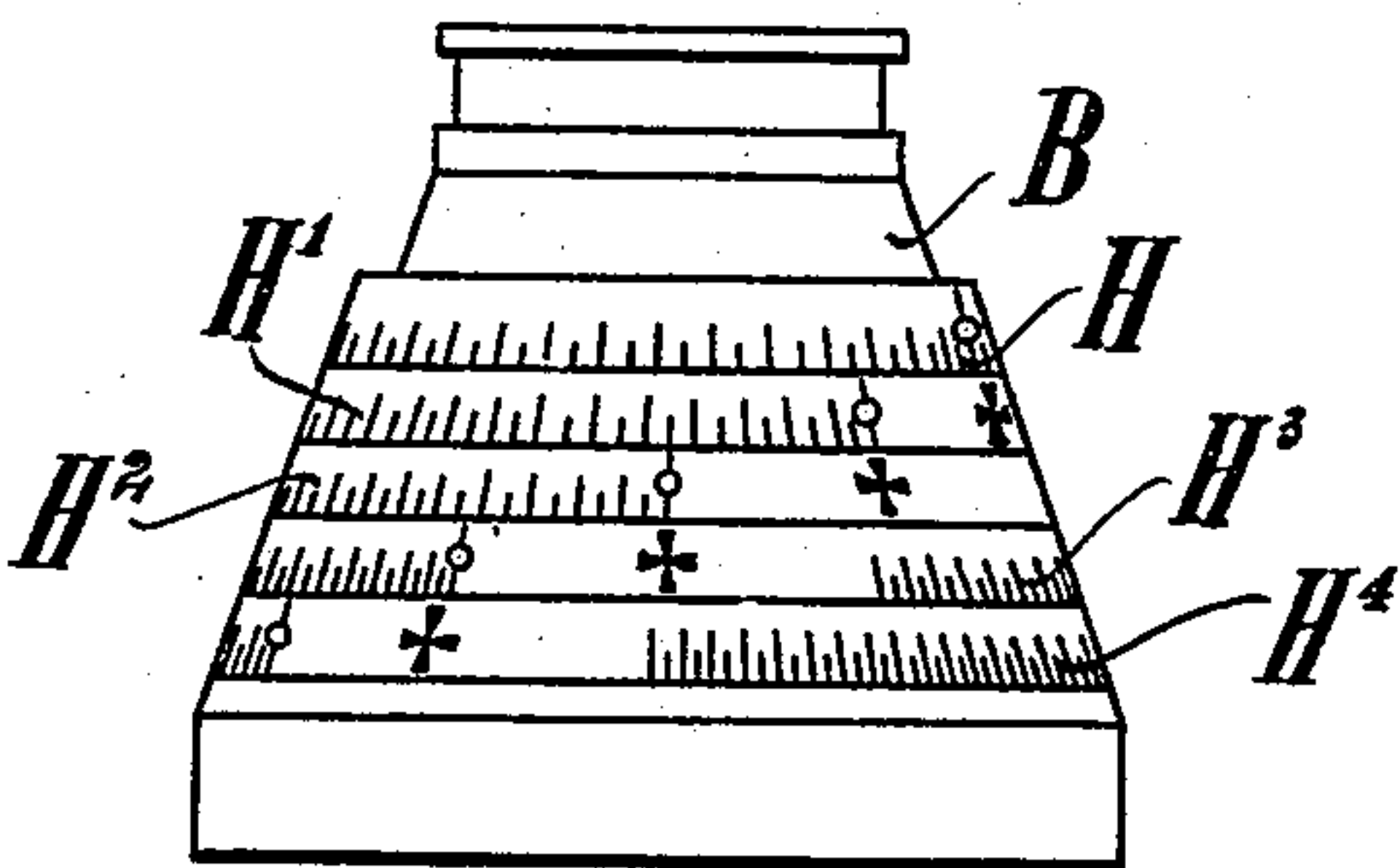
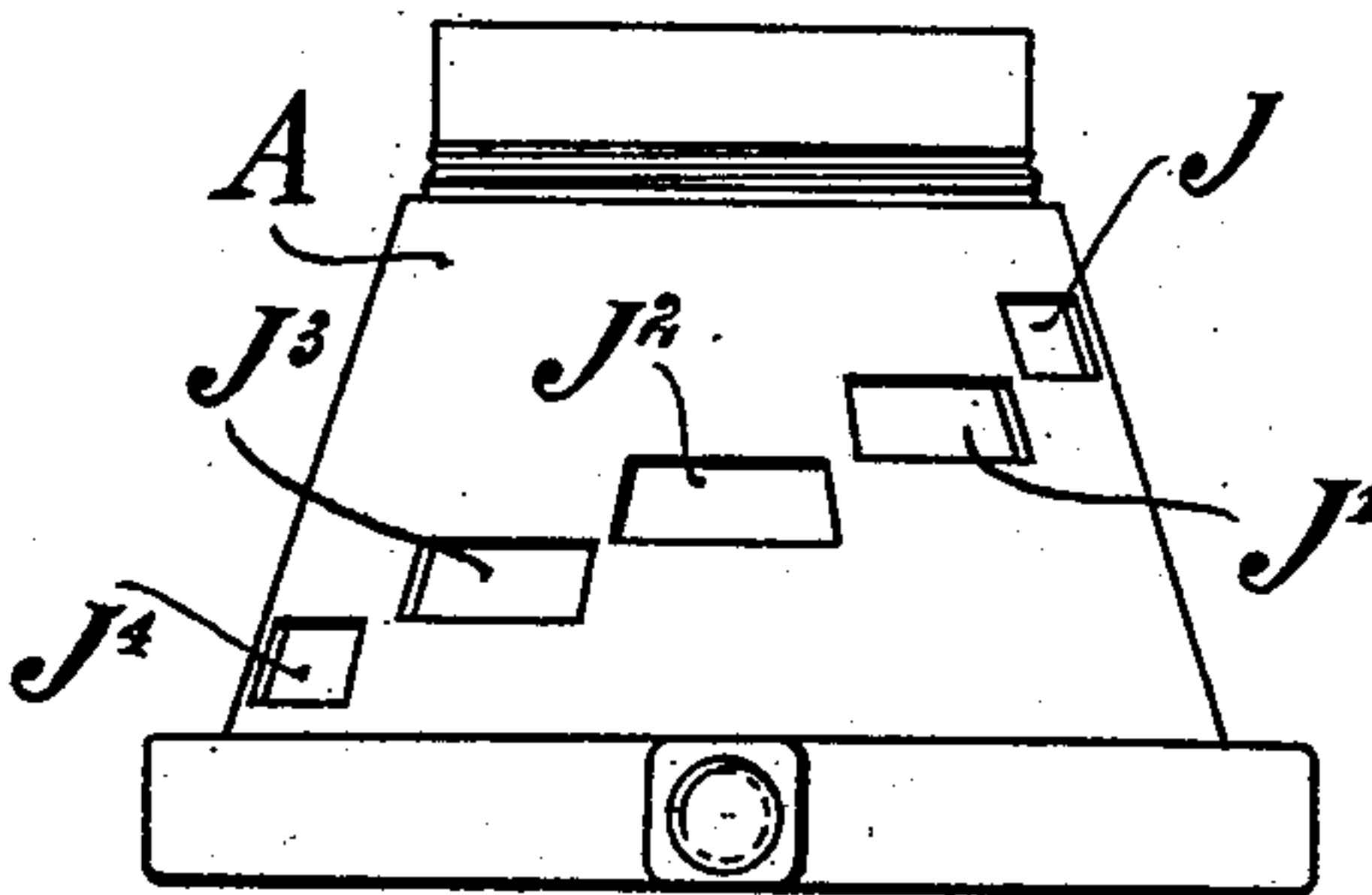


Fig. 6.



Witnesses
H. A. Totten.
M. C. Luckey.

Inventors,
Wilhelm Schwartz
Philip Koener.
by Knight Bros Attorneys

UNITED STATES PATENT OFFICE.

WILHELM SCHWARTZ AND PHILIPP KOENER, OF ESSEN-RÜTTENSCHIED, GERMANY,
ASSIGNORS TO FRIED. KRUPP AKTIENGESSELLSCHAFT, OF ESSEN-ON-THE-RUHR,
GERMANY.

TIME-FUSE.

No. 911,845.

Specification of Letters Patent.

Patented Feb. 9, 1909.

Application filed July 31, 1906. Serial No. 328,563.

To all whom it may concern:

Be it known that we, WILHELM SCHWARTZ and PHILIPP KOENER, residing at Essen-Rüttenscheid, Germany, both subjects of the Emperor of Germany, have invented a certain new and useful Improvement in Time-Fuses, of which the following is a specification.

The present invention relates to devices adapted for adjusting those time-fuses which are used in high-elevation guns, such as howitzers and mortars.

As is well known, driving charges of different weight are used for high-elevation guns, and heretofore when it was desired to adjust a shrapnel for such guns, the general procedure was to ascertain from a range or practice table the time of flight of the projectile corresponding to the particular driving charge and target distance, and subsequently to manually or by means of a tool, adjust the fuse to the particular time, the fuse being provided with a second-division. It would also have been possible to adjust the fuse without using any range or practice table, if a particularly formed adjusting device had been provided for each driving charge, but that would have been expensive and too much trouble.

The object of the present invention is to make the adjustment of the fuse for shrapnels of high-elevation guns independent of the use of the range or practice table without necessitating the provision of a number of fuse adjusting devices.

In the accompanying drawings, the invention is, by way of example, shown in the form of a fuse adjusting key.

Figure 1 is a side view of the adjusting key; Fig. 2 is a section on line 2—2, Fig. 1, looking from the left, the burning fuse being shown; Fig. 3 is a top view of Fig. 1; Fig. 4 is a section on line 4—4, Fig. 2, looking from above; Fig. 5 is a side view of a detail, and Fig. 6 is a side view of another detail.

A bush B, which is screwed to a handle C, is rotatably but non-slidably mounted in the approximately conical body A of the adjusting key. The bush B can be coupled in any angular position to the body A by means of a clamping screw D (Figs. 2 and 3). In the body A is slidably mounted a spring-pressed bolt E (Fig. 2) for which a notch f' is provided in the fuse base F. The bush B has a groove b' for a bridge g^2 which couples the

two rotatable composition rings G G' of the fuse together.

The above-described arrangement is old.

On the outer face of the bush B are inscribed as many distance-scales (H to H^4), in the present instance five, as there are driving-charge weights used in the same gun (see in particular Fig. 5), the scales being divided in such a manner that each driving-charge weight corresponds to one of the scales. Both in the body A and in a jacket M which is rotatably, but not slidably superposed on the body, one or more special windows are provided.

The windows of the body A (see also Fig. 6) are indicated by J to J^4 and the windows of the jacket M are indicated by K to K^4 . The windows are shaped and located in such a manner that, in five predetermined angular positions of the jacket M relatively to the body A, only one window in the jacket M registers with the corresponding window in the body A, or, in other words, that, in these angular positions, only one of the scales on the bush B is visible. In order to obtain this end, the windows in the jacket M and also those in the body A are displaced in the same direction relatively to one another, the angular distance between the window K to K^4 being twice that of the windows J to J^4 . A locking device is provided for yieldingly holding the jacket in the angular positions in which one of the windows in the jacket M registers with a window in the body A. The locking device consists of a spring P (see also Fig. 2) which is provided with a conical tooth p' (Fig. 4) and is secured in a recess in the body A, the tooth p' being adapted to enter anyone of five conical notches m' (Fig. 4) in the jacket M. At the lower edge of each window in the jacket M is provided a mark (N to N^4). The jacket M is provided with a milled rib m^2 (Figs. 1 to 3) to provide for the convenient turning of the jacket.

In the position of use of the parts which is shown in the drawing and in which the window K^2 registers with the window J^2 and the scale H^2 is visible (see in particular Figs. 1 and 2), the key can be used for adjusting the fuse for the charge which corresponds to the scale H^2 . If it is desired to fire with another charge, such as the one that corresponds to the scale H^3 , the jacket M is rotated relatively to the body A in the direction of the arrow x (Fig. 3) until the locking device

again comes into effect, in which position the window K^3 registers with the window J^3 and the scale H^3 is visible. The bush B is thereupon rotated by means of the handle C, if
 5 necessary, after the clamping screw D is released, into the angular position relatively to the body A and to the jacket M in which the mark N^3 points at the division line of the scale H^3 that corresponds to the distance of
 10 the target. Finally the bush B is coupled to the body A by means of the clamping screw D. The subsequent adjustment of the fuse takes place in the known manner. The invention is equally applicable to the so-
 15 called fuse adjusting machines.

Having thus described the invention, what we claim as new is:

1. In an adjusting device for time fuses, the combination with a member provided
 20 with a plurality of scales and having means for connecting it to a composition ring of the fuse, of two connected superposed parts secured to the first member and adjustable relatively to each other and to the first mem-
 25 ber, one of said parts being provided with a window for each scale and the other part being provided with a window and a mark for each scale and one of said parts having means for engaging the fuse body, the win-
 30 dows being so arranged that only one scale is visible at one time.

2. In an adjusting device for time fuses, the combination of two connected relatively rotatable parts, one carrying means for engag-
 35 ing a composition ring of the fuse and the other carrying means for engaging the base of the fuse, and one being provided with a plurality of scales, each corresponding to a predetermined weight of a driving charge,
 40 and the other being provided with a plurality of windows, one for each scale, and means adapted to cover the other windows

when one of the windows is exposed to cause only one scale to be visible at a time.

3. In an adjusting device for time fuses, 45 the combination of a bush carrying means for engaging the composition rings of the fuse and provided with a plurality of scales, a body adjustable relatively to the bush and provided with a plurality of windows, one 50 for each scale, and having means for engaging the base of the fuse, a rotatable jacket adjustable on said body and provided with a plurality of windows, one for each scale, and means for holding the jacket in various angu- 55 lar positions on the body; the windows on the jacket being so arranged relatively to the windows on the body that at any one time only one of the windows on the jacket can register with the corresponding window 60 on the body, whereby only one scale is caused to be visible at a time.

4. In an adjusting device for time fuses, the combination of a part provided with a plurality of scales and having means for 65 engaging the composition rings of the fuse; a second part rotatably arranged on said first part, having means for securing it in position on the first part and having means for engaging the base of the fuse, said second 70 part being provided with a plurality of windows, one for each scale, and a member rotatably arranged on said second part and adapted to cover the other windows when one of the windows is exposed. 75

The foregoing specification signed at Dusseldorf, Germany, this 29th day of June, 1906.

WILHELM SCHWARTZ.
 PHILIPP KOENER.

In presence of—

WILLIAM ESSENWEIN,
 ALFRED POHLMAYER.