

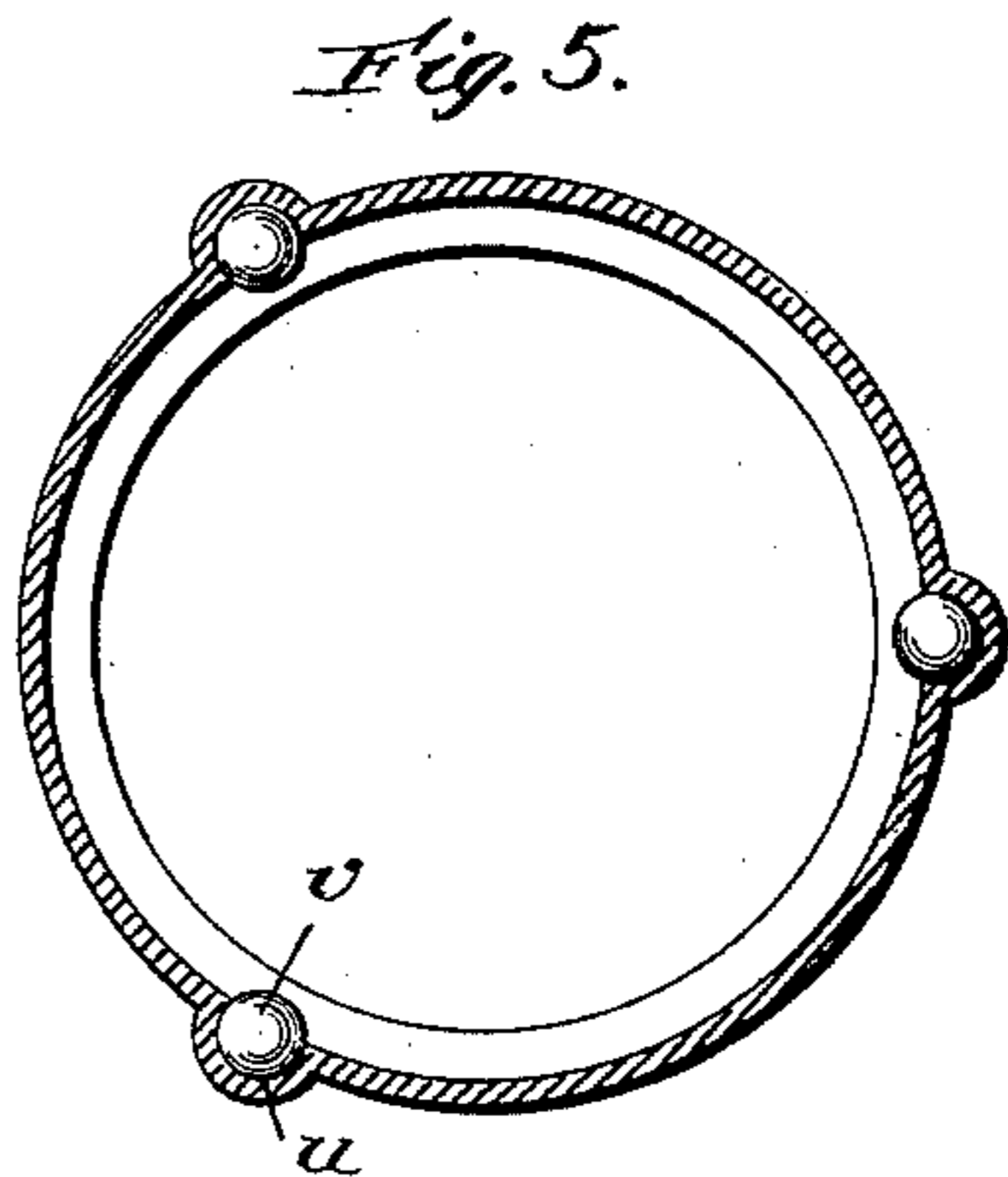
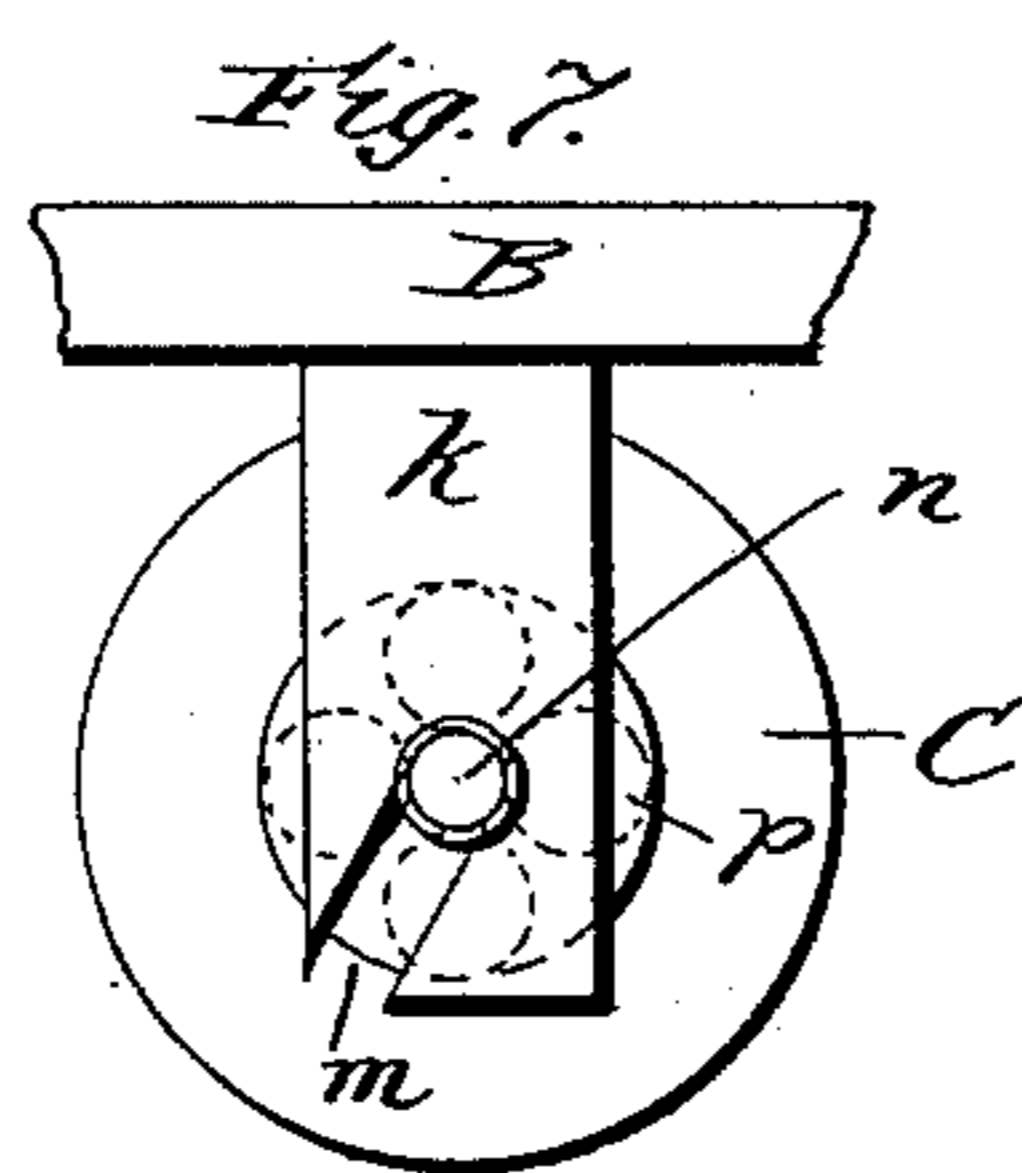
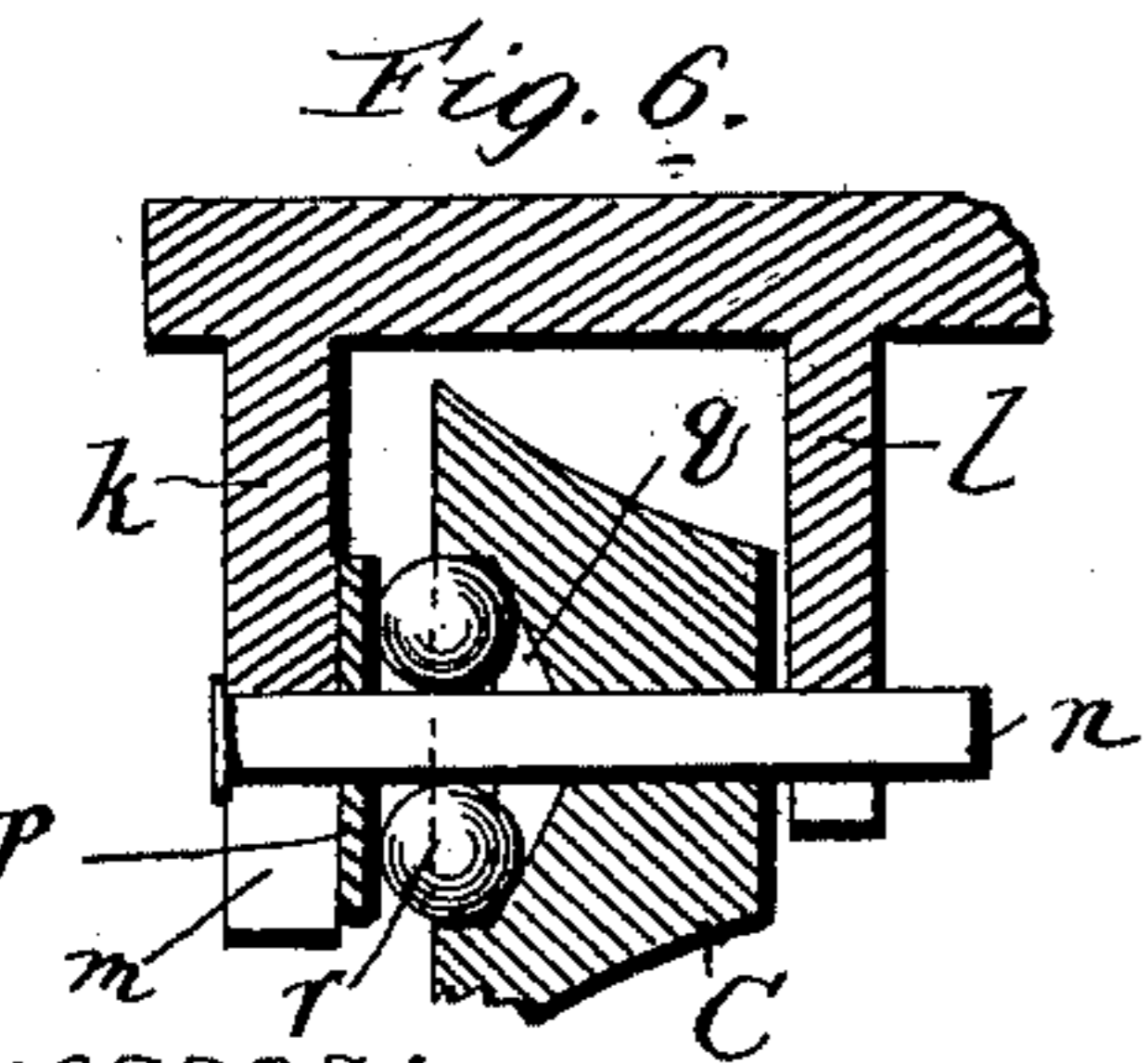
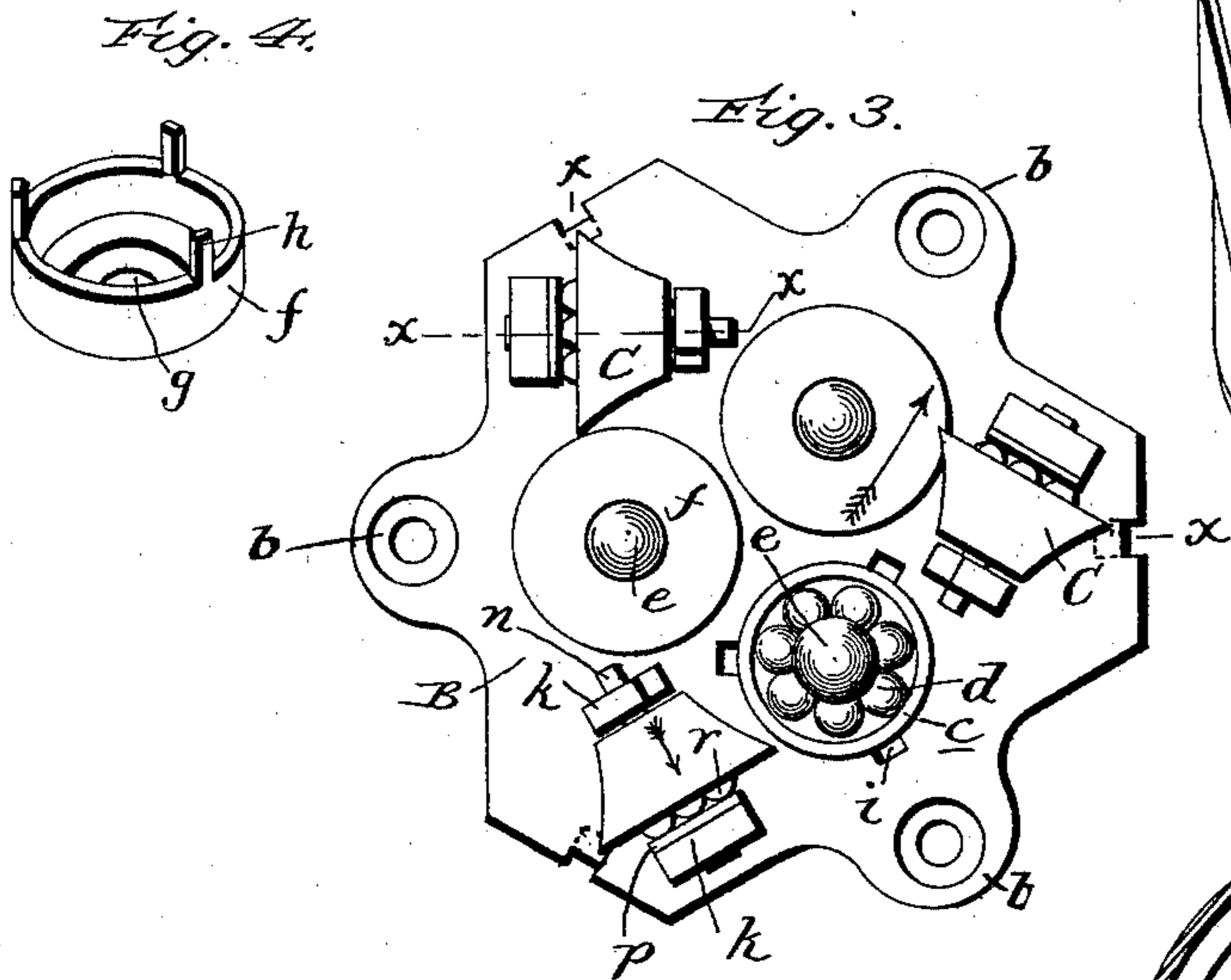
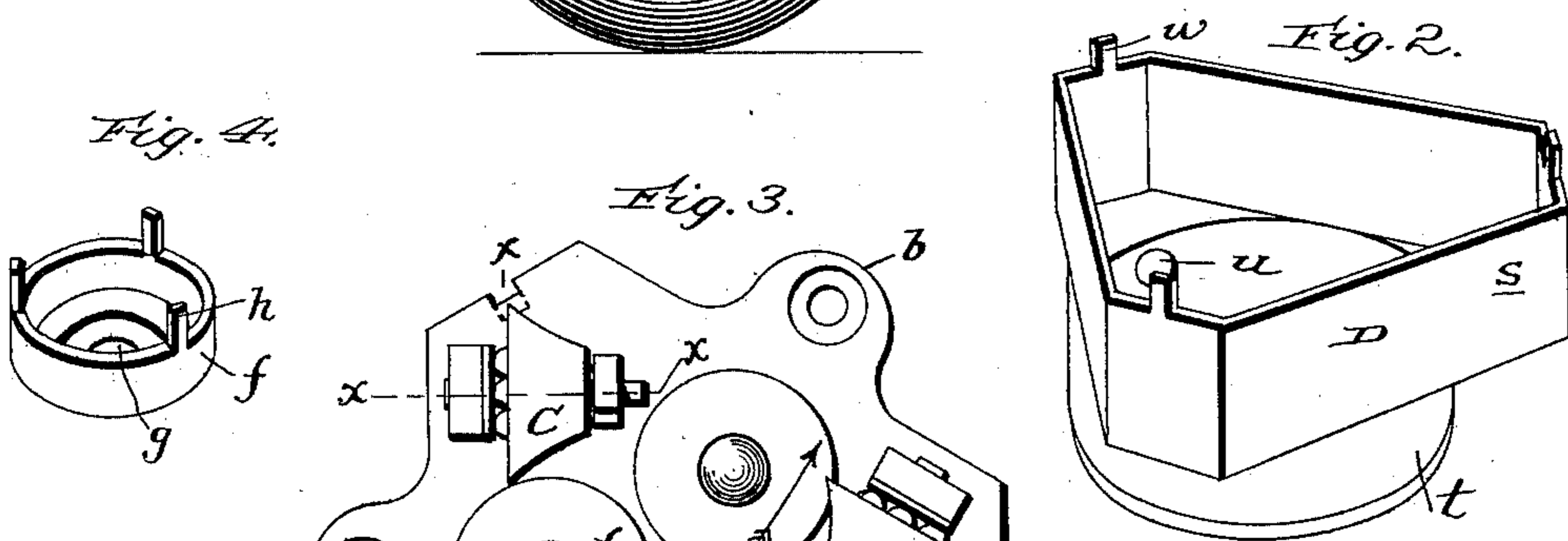
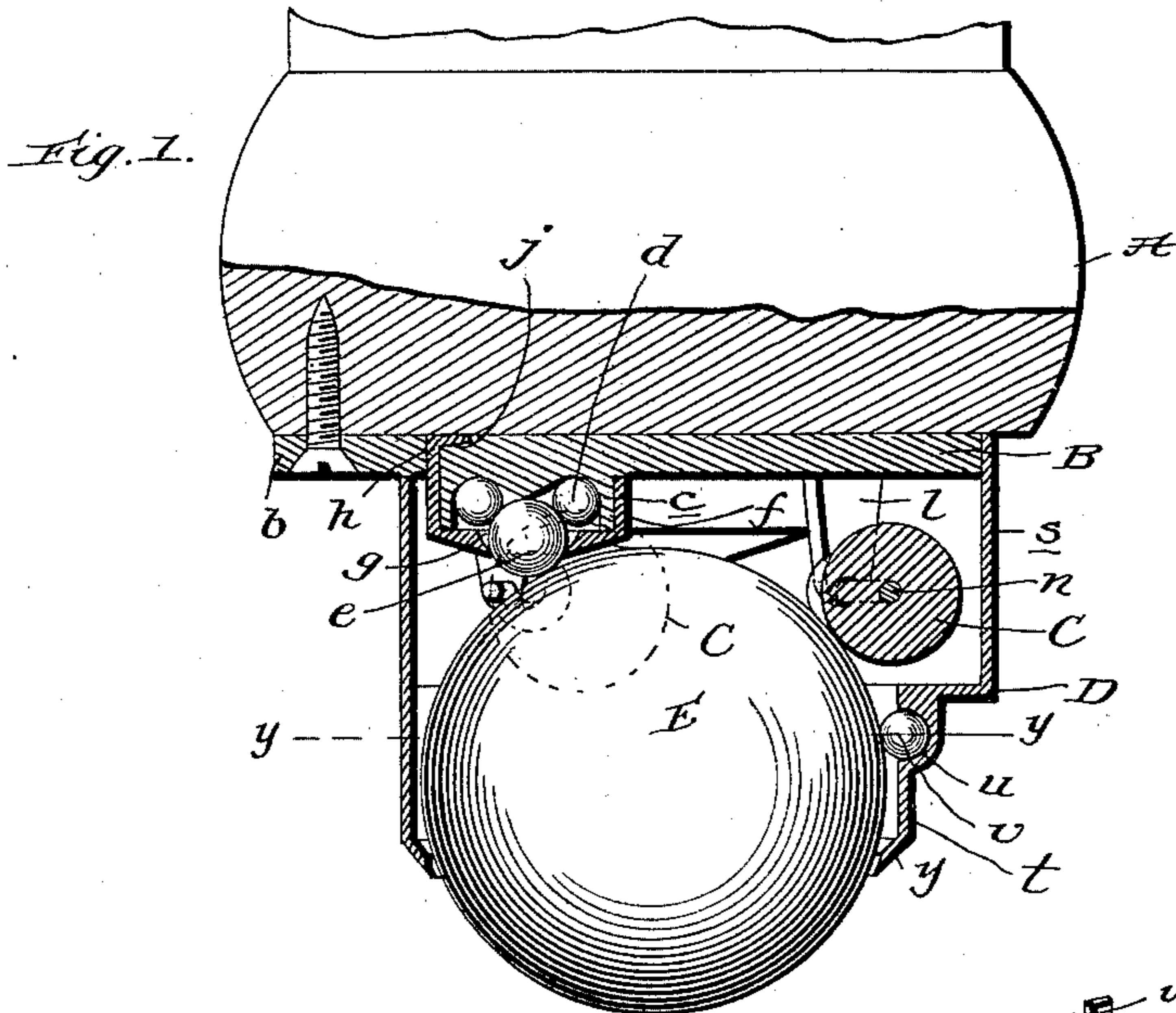
No. 612,849.

Patented Oct. 25, 1898.

K. A. KLOSE.
BALL CASTER.

(Application filed Jan. 8, 1898.)

(No Model.)



Witnesses:
C. H. Pauder
J. H. Kerney

Inventor
K. A. Klose
By *James P. Cheeky*
Attorney

UNITED STATES PATENT OFFICE.

KARL AUGUST KLOSE, OF DES PLAINES, ILLINOIS.

BALL-CASTER.

SPECIFICATION forming part of Letters Patent No. 612,849, dated October 25, 1898.

Application filed January 8, 1898. Serial No. 666,062. (No model.)

To all whom it may concern:

Be it known that I, KARL AUGUST KLOSE, a citizen of the United States, residing at Des Plaines, in the county of Cook and State of Illinois, have invented new and useful Improvements in Casters, of which the following is a specification.

My invention relates to casters, and contemplates the provision of a caster designed more especially for use on pianos and other very heavy articles of furniture to the end that they may be easily moved when desired.

The invention will be fully understood from the following description and claims when taken in conjunction with the annexed drawings, in which—

Figure 1 is a vertical section of my improved caster in its operative position upon the leg of a piece of furniture. Fig. 2 is a detail perspective view of the casing of the caster. Fig. 3 is an inverted plan view of the caster with the casing, the principal ball, and the casing of one ball-race removed. Fig. 4 is a detail perspective view of the casing of one ball-race. Fig. 5 is a detail horizontal section taken in the plane indicated by the line *y y* of Fig. 1. Fig. 6 is a detail section taken in the plane indicated by the line *x x* of Fig. 3 and illustrating one of the antifriction-rollers and its bearings, and Fig. 7 is a detail end elevation of the same.

In the said drawings similar letters designate corresponding parts in all of the several views, referring to which—

A designates the leg of a piece of furniture, and B designates the body-plate of my improved caster, which is preferably of the form shown in Fig. 3, with three (more or less) apertured lugs *b* for the passage of screws which connect it to the lower end of the leg, as shown. This plate B is provided at its under side, about its center, with three annular ball-races *c*, which are each designed to receive a circular series of small antifriction-balls *d* and a single larger ball *e*, the latter being arranged in the center and having its bearing against the plurality of small balls, as shown. Each ball-race *c* is inclosed by a casing *f*, having a central aperture *g*, through which a ball *e* protrudes, and a plurality of upwardly-extending lugs *h*, that are designed to be passed through apertures *i* in the body-

plate B and have their ends bent against the walls of the recesses *j* in the upper side of said plate after the manner shown in Fig. 1, so as to connect the casing to the plate. The body-plate B is also provided with three (more or less) pairs of hangers *k l*, which have inclined notches *m* adjacent to their lower ends designed to receive shafts or arbors *n*, on which antifriction-rollers C are loosely mounted, as shown. These rollers C are preferably of truncated cone shape with slightly-concave peripheries, and they are preferably arranged opposite the spaces between the ball-races *c* and with their large ends at a greater distance from the center of the body-plate than their small ends. A washer *p* is loosely arranged on each shaft or arbor *n* and against the outer hangers *k*, and a ball-race *q* is formed in the outer end of each roller C to receive antifriction-balls *r*, which are designed to bear against the washers *p* and reduce the friction incident to the end thrust of the rollers, as presently described.

D designates the casing of the caster, which is preferably formed in one piece of sheet metal, although it may be cast when desired. This casing D comprises an upper portion *s*, of the shape shown in Fig. 2, and a lower annular portion *t*, and it is provided at the upper end of the portion *t* with sockets *u* to receive balls *v*, and is also provided at the upper end of its portion *s* with tongues *w*, which are designed to take into the notches *x* of and be brazed or otherwise connected to the body-plate B.

When desirable, the inner walls of the notches *x* may be beveled or inclined, as illustrated by dotted lines in Fig. 3, and the tongues *w* of casing D may be bent inwardly against the same.

As better shown in Fig. 1 of the drawings, the casing portion *t* is provided at its lower end with an inwardly-directed flange *y*, which serves to prevent the principal ball E of the caster from dropping out of the casing when the caster is lifted from the floor or other base on which it bears. The said ball E, which is of the proportional size shown, normally rests loose in the casing D and bears against the balls *v* and the balls *e*, as shown in Fig. 1, whereby it will be seen that the

friction between the ball and the casing and between the ball and body-plate is reduced to a minimum and that in consequence the ball is enabled to freely turn, so as to permit of the piece of furniture to which the caster is connected being moved with very little effort. The principal ball E also normally bears against the antifriction-rollers C, and in consequence when the piece of furniture to which the caster is connected is moved the rear roller C, with reference to the direction in which the caster moves, will receive the pressure of the ball E and take the same off the casing D. For instance, if the caster were moved in the direction indicated by the large arrow in Fig. 3 the pressure of the principal ball E would be against the roller or rollers C at the rear of the large arrow and the said rollers C would be thrust outwardly or in the direction indicated by the small arrows. The friction incident to such end thrust of the roller will be reduced to a minimum by the antifriction-balls *r*, and consequently it will be seen that while the said roller will receive the pressure of the principal ball it is adapted to freely rotate and thereby materially reduce the friction incident to such pressure.

The antifriction-rollers C are highly desirable for the reasons stated when the caster is applied to a very heavy piece of furniture. When, however, the caster is to be applied to a piece of furniture of medium weight, the said rollers C and their appurtenances may be omitted, in which case the roller E would bear against the balls *e* and *v* alone.

Having thus described my invention, what I claim is—

1. In a caster, the combination of the body-plate having a plurality of horizontal, circular ball-races grouped about its center, an outer casing suitably connected with the body-plate, casings covering the ball-races and connected with the body-plate and having central apertures, antifriction-balls *d* arranged in the races, larger balls *e* bearing against the balls *d* and protruding through the central apertures of the casings, and the

principal ball arranged in and depending below the outer casing so as to rest on a floor or other base and bearing against the balls *e*, substantially as specified. 50

2. In a caster, the combination of the body having depending hangers arranged in pairs about its center, shafts journaled in said hangers, cone-shaped antifriction-rollers mounted on the shafts and having their outer ends arranged at a greater distance from the center of the body-plate than their inner ends, an outer casing suitably connected with the body-plate, the principal ball arranged in and depending below the outer casing so as to rest on a floor and adapted to bear against the antifriction-rollers, and antifriction-balls suitably interposed between said principal ball and the body-plate, substantially as specified. 55 60 65

3. In a caster, the combination of the body having the circular ball-races arranged about its center and also having hangers arranged in pairs about its center, shafts journaled in said hangers, cone-shaped antifriction-rollers mounted on the shafts and having their outer ends arranged at a greater distance from the center of the body-plate than their inner ends, antifriction-balls interposed between the outer ends of the rollers and the adjacent hangers, an outer casing suitably connected with the body-plate and having the sockets *u*, casings covering the ball-races and connected with the body-plate and having central apertures, antifriction-balls *d* arranged in the races, larger balls *e* bearing against the balls *d* and protruding through the central apertures of the casings, antifriction-balls *v* arranged in the sockets *u* of the casing, and the principal ball arranged in and depending below the outer casing and bearing against the balls *u* and *e* and adapted to bear against the antifriction-rollers, substantially as specified. 70 75 80 85

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses. 90

KARL AUGUST KLOSE.

Witnesses:

CHAS. E. JONES,

GEO. M. WHITCOMB.