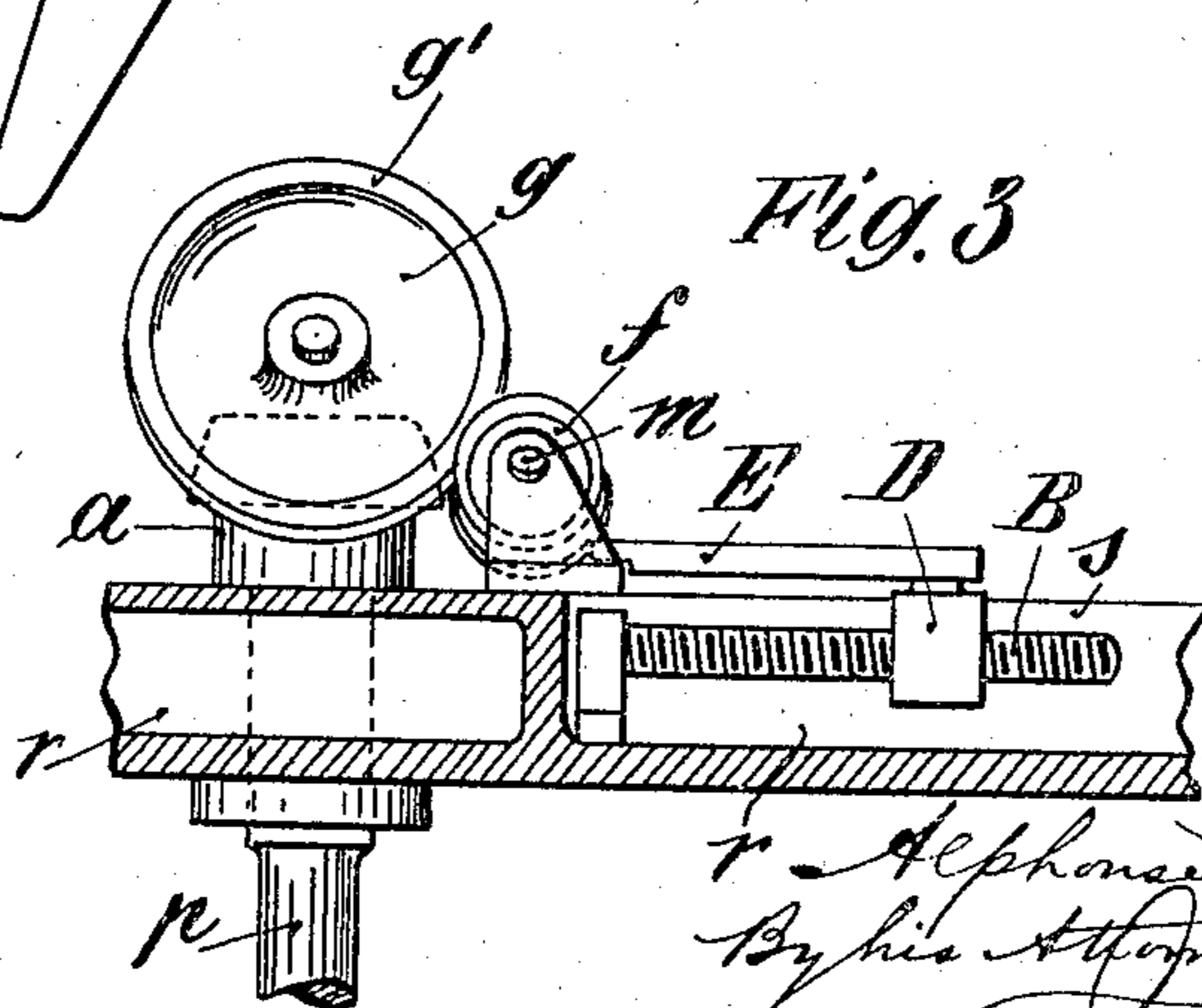
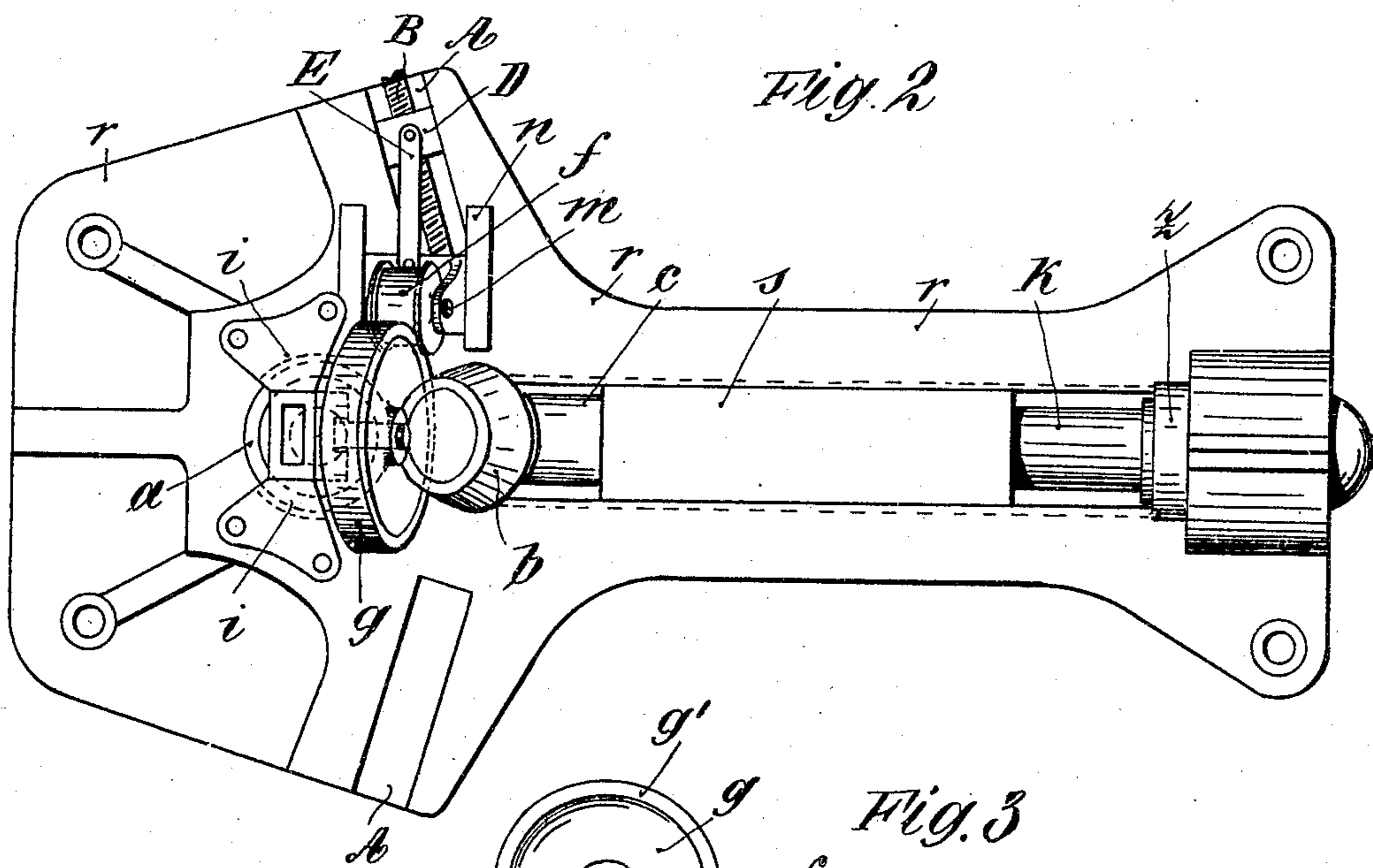
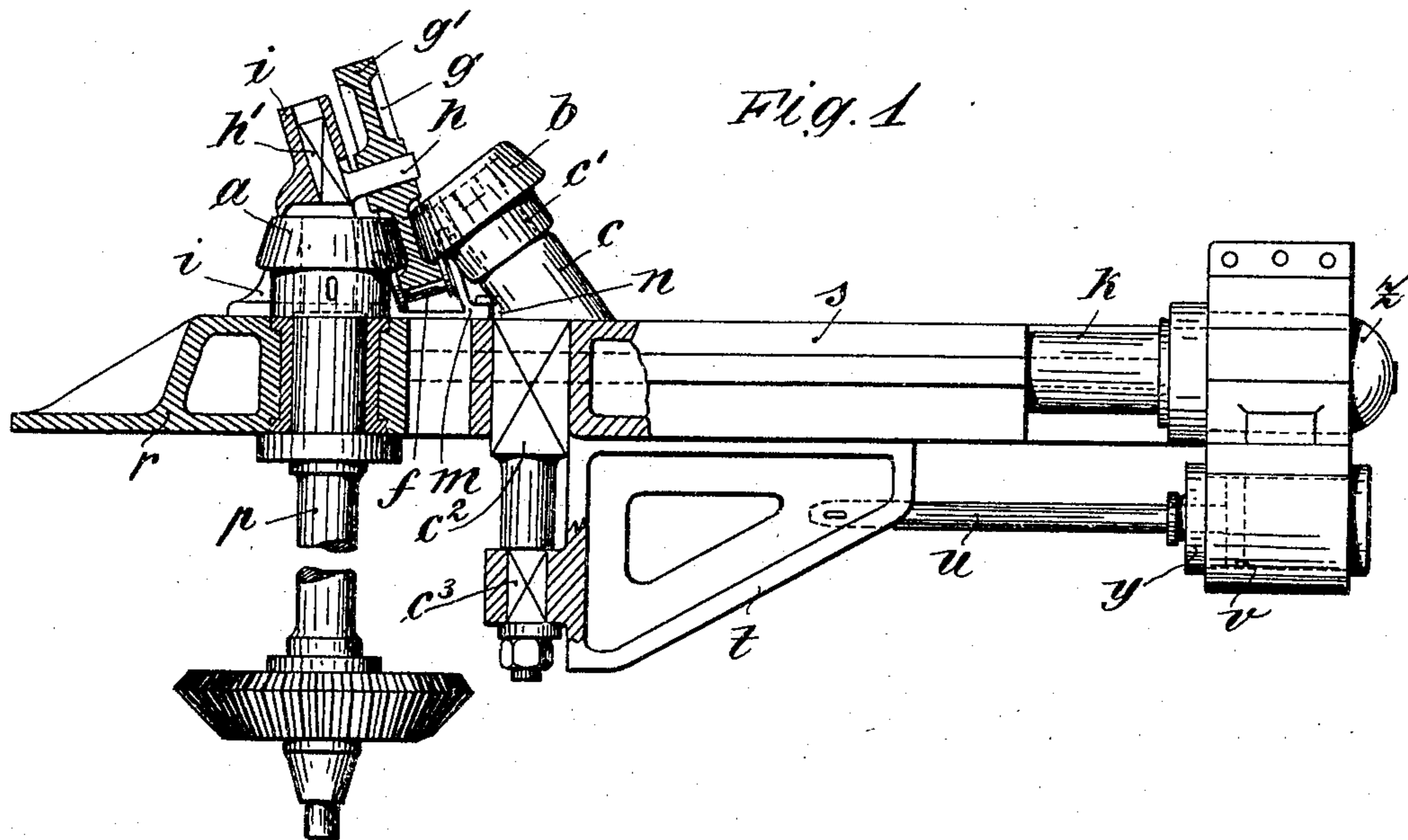


No. 794,171.

PATENTED JULY 11, 1905.

A. DE FONTAINE.
APPARATUS FOR ROLLING DISK WHEELS OR SIMILAR ARTICLES.

APPLICATION FILED FEB. 23, 1901.



Witnesses:

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR ROLLING DISK WHEELS OR SIMILAR ARTICLES.

SPECIFICATION forming part of Letters Patent No. 794,171, dated July 11, 1905.

Application filed February 23, 1901. Serial No. 48,403.

To all whom it may concern:

Be it known that I, ALPHONSE DE FONTAINE, director, a subject of the King of Prussia and Emperor of Germany, residing at Dr. Otto-
5 strasse 49^a, Dahlhausen-on-the-Ruhr, in the Kingdom of Prussia and Empire of Germany, have invented certain new and useful Improvements in Apparatus for Rolling Disk Wheels or Similar Articles, of which the following is
10 a full, clear, and exact description.

The apparatus forming the subject of the present invention and which is for rolling disk wheels and similar articles is intended exclu-
15 sively for use in rolling-mills in which the work is to be treated by means of conically-shaped rollers. A treatment of this kind has heretofore only been effected as a so-called
20 "finishing operation," because the blocks to be treated have always had to be forged as a preliminary operation, as the conical rollers served only to give the final shape to the work.

Now the apparatus forming the subject of the present invention is designed to effect the complete rolling out of the disk, so that the
25 preparatory forging of the blocks becomes superfluous. Rolling-mills of this kind have always been constructed heretofore in such a manner that the conical rollers were mounted on shafts arranged at an angle to each other,
30 so that the work which was already forged to the shape of a disk was fixed between the said rolls either vertically or horizontally, according to the position of the rolls. Apart from the fact that the construction of such
35 rolling-mills was very complicated in consequence of the angular position of the axes of the rolls it was necessary in order to enable accurate work to be produced to arrange one roller (generally the so-called "pressure-
40 roller," operated by hydraulic pressure) in an adjustable manner in its axial direction, so that the said roller should always be at the same height as the so-called "driving-roller" during the rolling operation. Now according
45 to the improvement hereinafter described the adjustability of the so-called "pressure-roller" is rendered superfluous and also the angular arrangement of the axes of the rolls

is entirely avoided. The consequence of this arrangement is that any rolling-mill frame, 50 and especially the frame of the twyer rolling-mill, which is to be found as a necessary constituent of the entire rolling-mill, can be utilized. This is a most important point, because such rolling-mill frames are to be found in 55 every large works. The improvement is substantially characterized by the fact that the so-called "driving-roller" is mounted horizontally on the driving-spindle, (which is arranged vertically in the usual rolling-mills,) 60 while the so-called "pressing-roll" is mounted obliquely upon the table which moves at right angles to the driving-spindle. With this arrangement of rolls the work is fixed, not horizontally or vertically, but obliquely— 65 that is to say, so as to be capable of vertical adjustment parallel to the sides of the rolls which operate upon it—the said work being carried by a supporting-spindle, which is ar- 70 ranged at right angles to opposite generatrices of the surfaces of the rolls and which is capable of being adjusted in its distance from the rolls. This last circumstance has two ad- 75 vantages: First, disks of different sizes can be rolled by means of one and the same pair of rollers, according to the vertical position of the supporting-spindle, and, second, by al- 80 tering the position of the supporting-spindle as to height during the operation the adjustability of the pressing-roller in its axial direction, which would otherwise be necessary, is obviated. In order to be able to roll the rim of the disk at the same time as the latter is being rolled out, a further suitably-shaped 85 roller is provided on the frame of the rolling-mill, and it is supported in an adjustable manner.

In the accompanying drawings, which illustrate my improvements, Figure 1 is a side elevation, partly in section, showing the rolling- 90 mill. Fig. 2 is a plan, and Fig. 3 is a cross-section thereof.

The frame of the rolling-mill is similar to that which is suitably employed for rolling 95 tires. It consists, substantially, of the frame 7, which serves to support the vertical driv-

ing-shaft p and also the hydraulically-operated carriage s with the piston k and the cylinder z . Upon the vertically-arranged driving-shaft p there is mounted in a horizontal manner the conically-shaped roller a , which is mounted on its shaft in the simplest manner, preferably by keying. The so-called "pressing-roll" b is mounted, on the contrary, obliquely on the carriage s , for which purpose there is employed a conically-shaped pin or journal c , upon the upper stepped end c' of which the roll b is mounted in a rotary manner, while the pin is fixed by means of its square parts c^2 c^3 to the carriage s or to a bracket t , bolted thereto.

The carriage s is moved in the frame r by means of the piston k by hydraulic power forward in the usual way, while the return movement of the carriage is effected by means of hydraulic power acting upon a piston v , that is guided in a cylinder y , preferably arranged below the cylinder z , by means of the piston-rod u , which is connected to the bracket t , or steam-power may be used for this purpose. The block to form the disk g is fixed between the opposite or facing sides of the two rollers a and b at an inclination to the horizontal sides of the rollers and so as to be adjustable as to height parallel to the sides of the said rollers. This is effected by mounting the block on a supporting-spindle h , which is arranged at right angles to the opposite generatrices of the surfaces of the rolls and which is guided adjustably as to height parallel in its distance from the rolls by means of its square part h' in the bearing-frame i . The bearing-frame i is preferably made to embrace roll a , so that the latter is contained almost completely in the bearing-frame, and it can be provided with any suitable adjusting device for adjusting the part h' of the supporting-spindle h during the working. This is effected, as above mentioned, in order to avoid the formation of steps in rolling out the disks, which could otherwise only be effected by mounting the pressing-rolls in an adjustable manner. For the purpose of forming the rim g' there must be provided a further and specially-formed roll f , the bearing m of which is mounted adjustably in guides n on the frame, so that the roll f is adjustable parallel in its distance from the work. It will be advisable for the purpose of enabling the bearing to be shifted during the working to connect it with the spindle B (which is also arranged in the block A in such

rolling-mill frames) by means of the carriage D and the press-rod E, so that by rotating the spindle B in the ordinary manner the roll f can be adjusted to the correct position for the purpose of forming the rim of the disk. 60

It will be noted that in the specific construction and arrangement as embodied in my invention and improvements the apparatus comprises, in association with a vertically-arranged driving-spindle, a horizontally-movable carriage and conically-shaped rolls mounted, respectively, on the driving-spindle and obliquely on the movable carriage, that the supporting-spindle which is adapted to carry the work is adjustable parallel to itself in the plane of the geometrical axes of the rolls and in the direction of the line which constitutes the bisector of the angle formed by the axes of the rolls, and that the roll for forming the rim is adjustable parallel in its distance from the work. 75

What I claim, and desire to secure by Letters Patent, is—

1. In an apparatus for rolling disk wheels and similar articles embodying a vertically-arranged driving-spindle, a horizontally-movable carriage and conically-shaped rolls mounted respectively on the driving-spindle and obliquely on the movable carriage, a supporting-spindle adapted to carry the work and adjustable parallel to itself in the plane of the geometrical axes of the rolls and in the direction of the line which constitutes the bisector of the angle formed by the axes of the rolls. 85

2. In an apparatus for rolling disk wheels and similar articles embodying a vertically-arranged driving-spindle, a horizontally-movable carriage and conically-shaped rolls mounted respectively on the driving-spindle and obliquely on the movable carriage, a supporting-spindle adapted to carry the work and adjustable parallel to itself in the plane of the geometrical axes of the rolls and in the direction of the line which constitutes the bisector of the angle formed by the axes of the rolls, and a roll in the plane of the work and adjustable in such plane in its distance from the work for forming the rim. 90 95 100

In witness whereof I subscribe my signature in presence of two witnesses.

ALPHONSE DE FONTAINE.

Witnesses:

OTTO KÖNIG,

J. A. RITTERSHAUS.