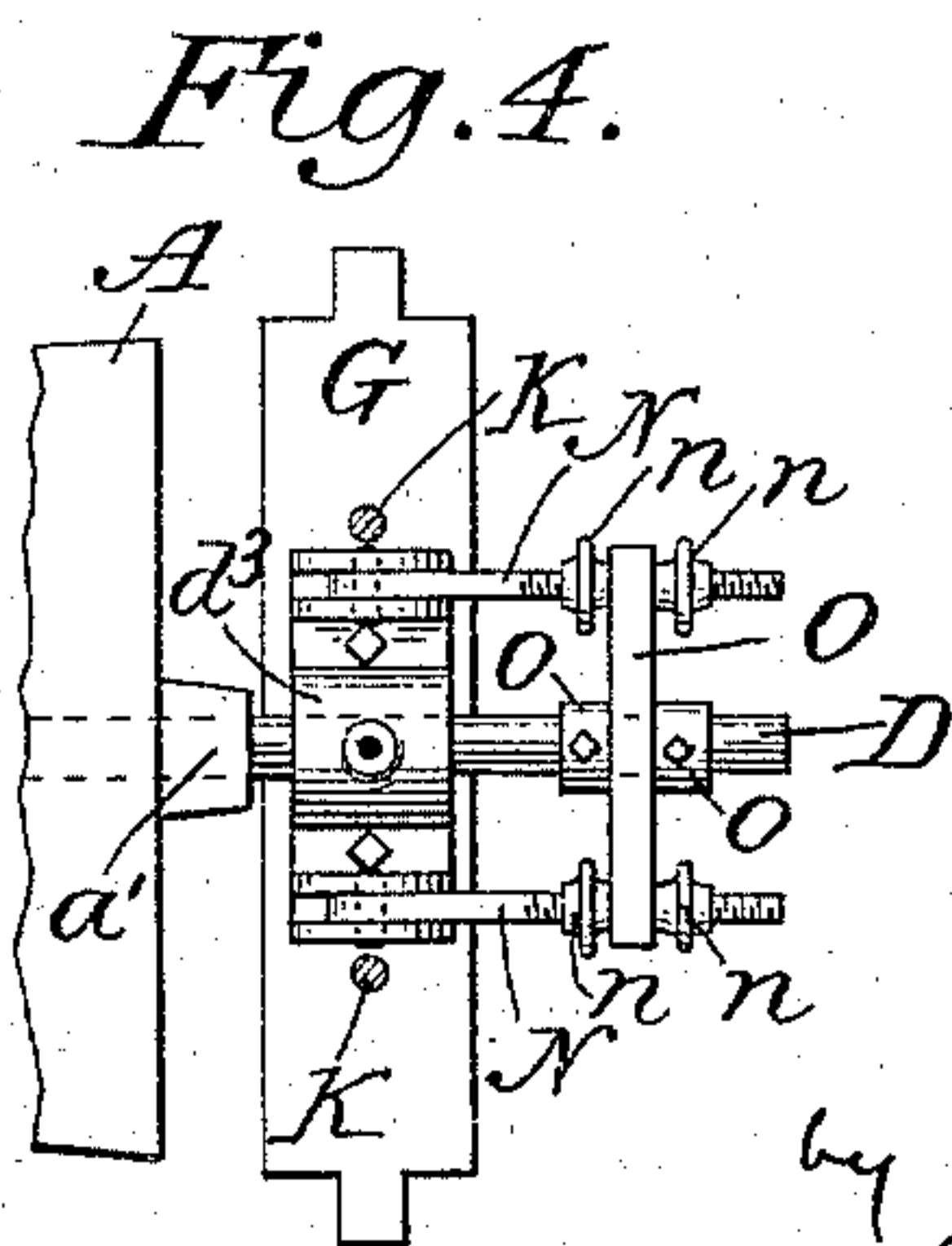
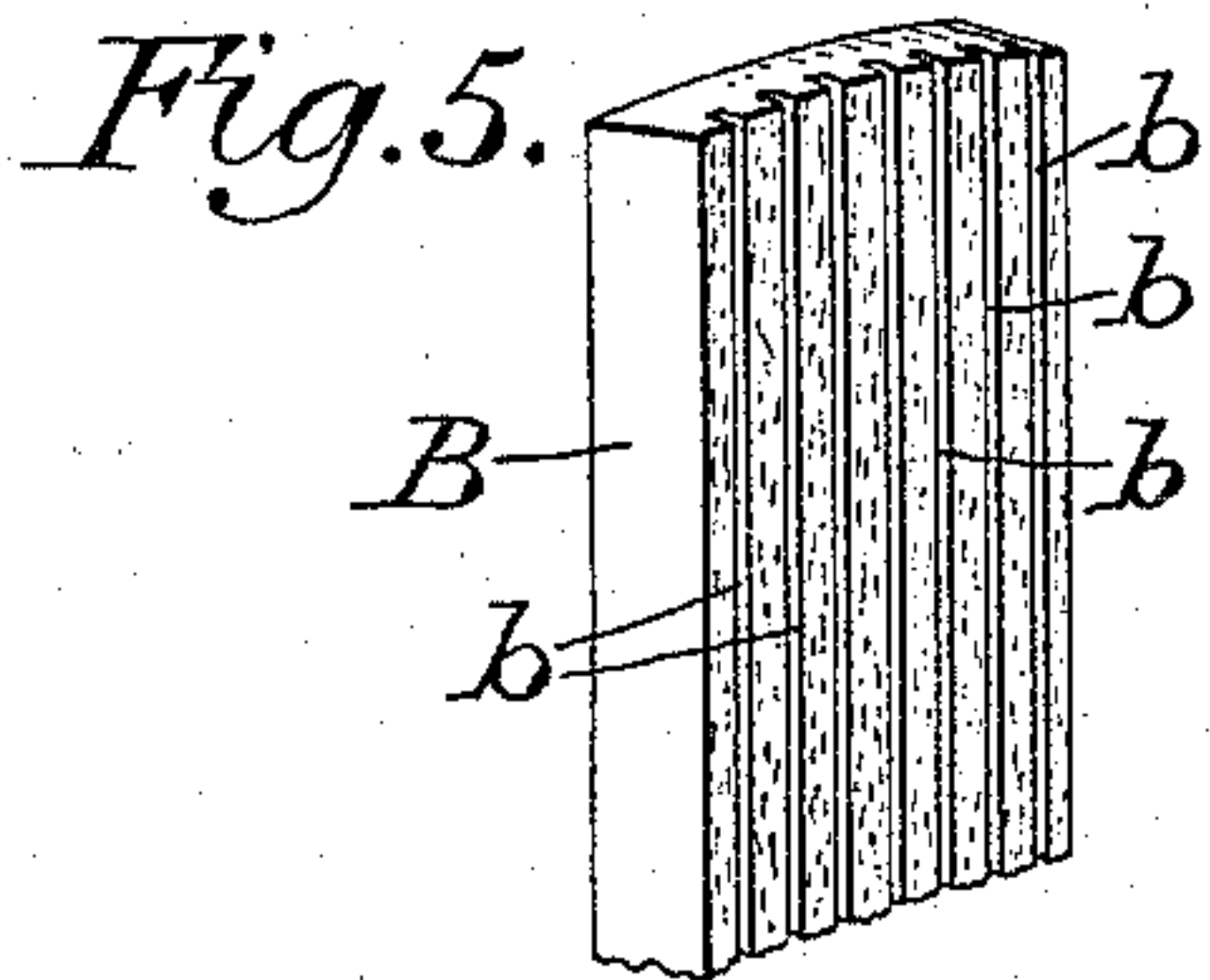
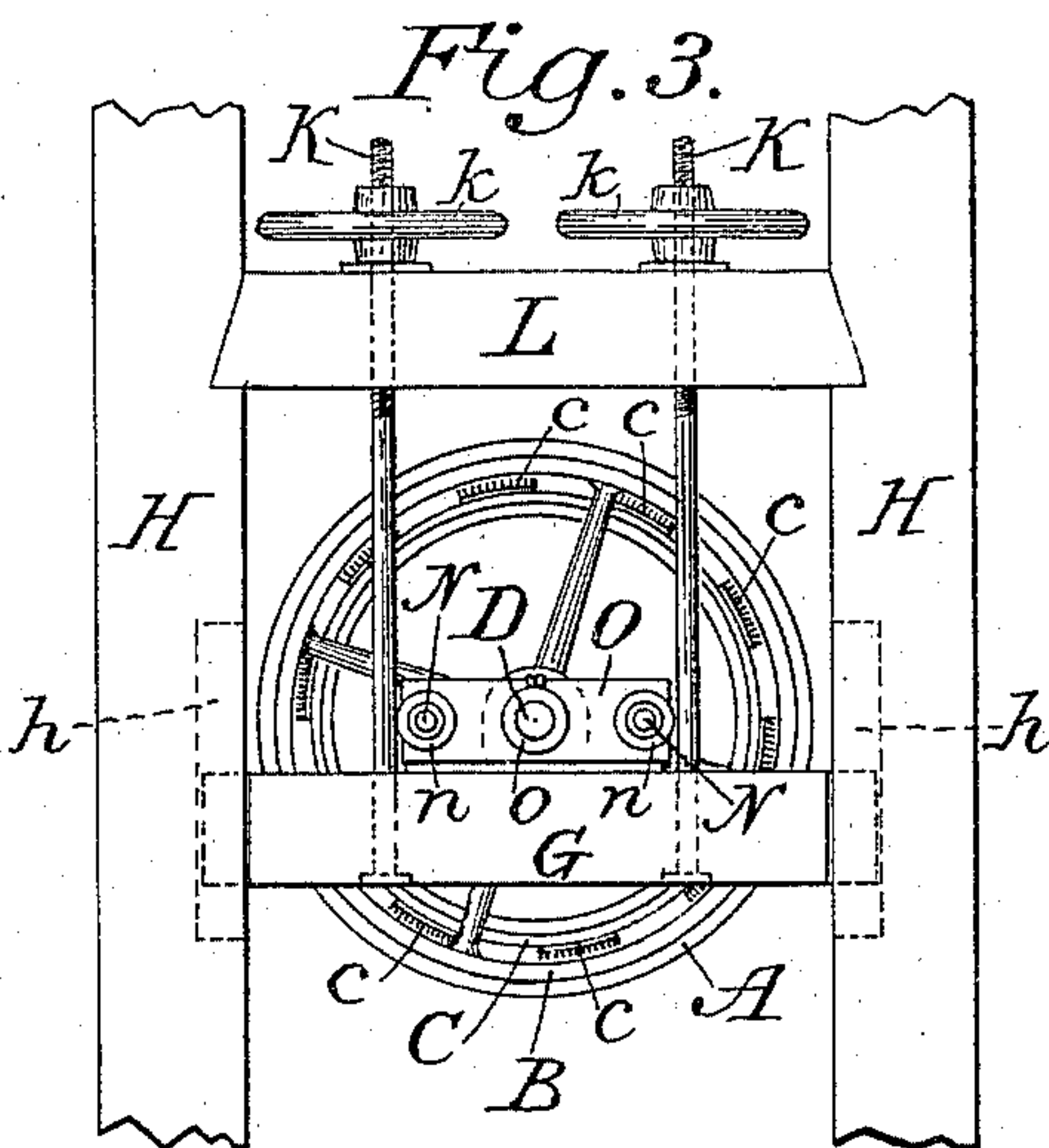
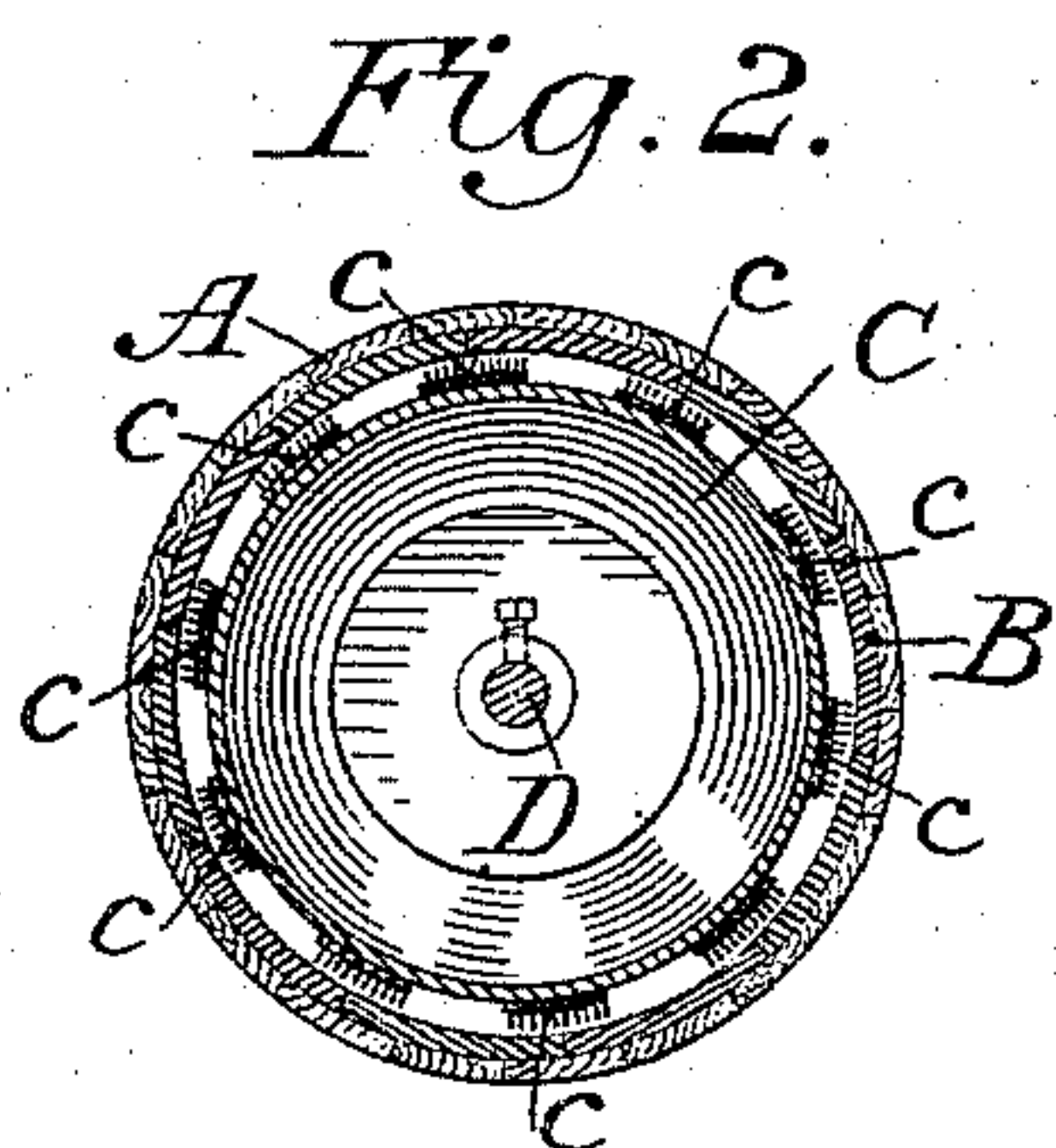
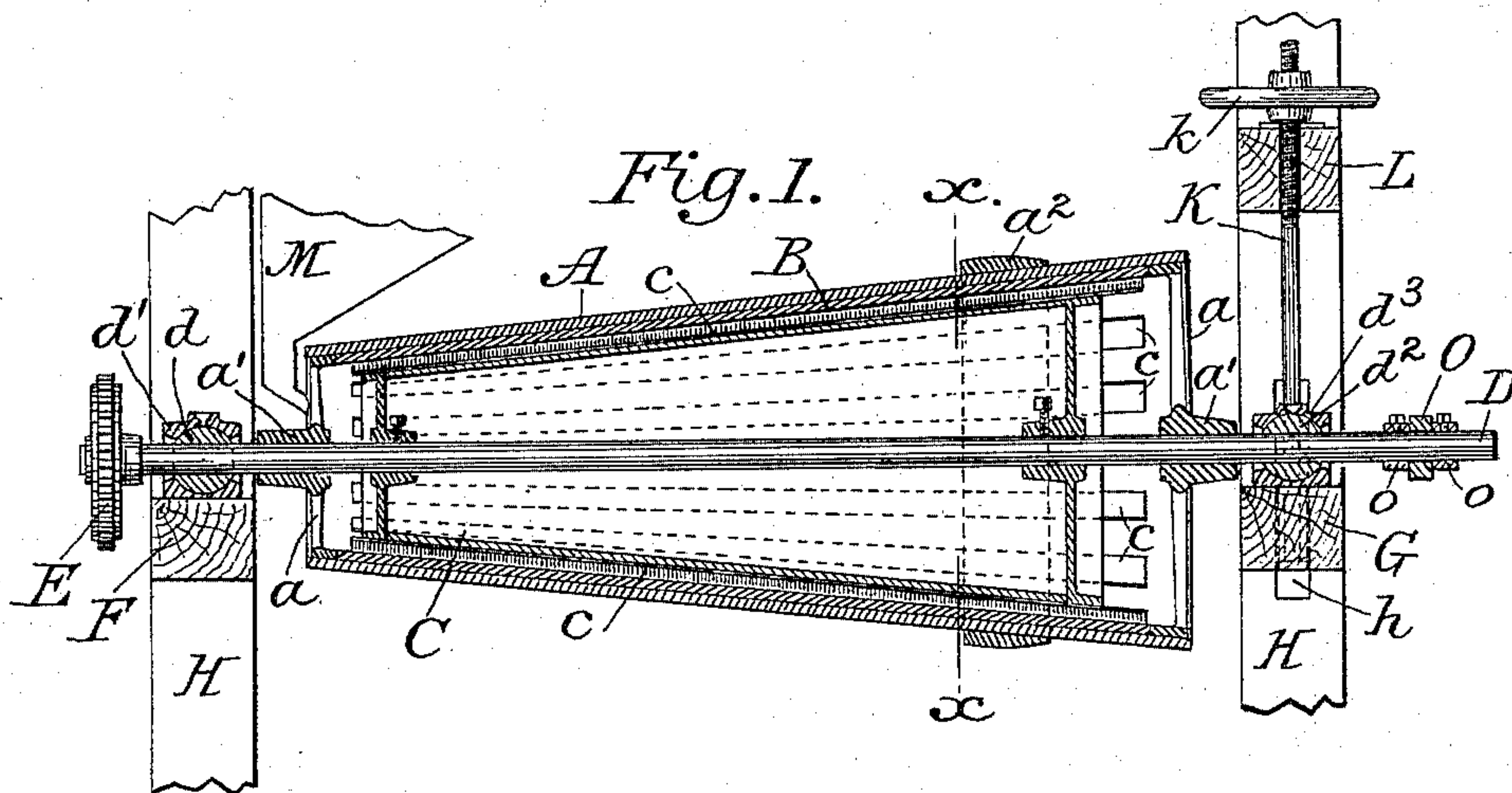


(No Model.)

E. RICHTER.
MACHINE FOR CLEANING MALT.

No. 488,403.

Patented Dec. 20, 1892.



WITNESSES:

A. H. Jespersen.
A. H. Hilder.

INVENTOR:

Ernst Richter
by William B. Greeley
ATTORNEY.

UNITED STATES PATENT OFFICE.

ERNST RICHTER, OF NEW YORK, N. Y., ASSIGNOR OF TWO-THIRDS TO ADAM SCHAEFER AND KARL FR. JENNE, OF SAME PLACE.

MACHINE FOR CLEANING MALT.

SPECIFICATION forming part of Letters Patent No. 488,403, dated December 20, 1892.

Application filed July 18, 1892. Serial No. 440,322. (No model.)

To all whom it may concern:

Be it known that I, ERNST RICHTER, a citizen of the United States, and a resident of the city, county, and State of New York, have
5 invented a new and useful Improvement in Machines for Cleaning Malt; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a
10 part of this specification.

My invention relates to machines of the general character of those sometimes used for cleaning grain and my object is to adapt such
15 machines specially for removing from malted grain both the husk and the germ.

My improvements relate particularly to the means for regulating the passage of the malt through the machine so that it may be subjected for a longer or shorter time as desired
20 to the action of the machine, and to the formation of the abrading surfaces whereby that part of the germ which lies within the husks is more certainly and completely removed.

In the drawings: Figure 1 is a vertical central section through so much of a grain cleaning machine as is necessary to enable the application of my improvements to be understood: Fig. 2 is a cross-section on the line x —
30 x of Fig. 1: Fig. 3 is an end elevation of the parts shown in Fig. 1: Fig. 4 is a detail view of parts shown in Fig. 3, and Fig. 5 is a detail view showing the formation of the outer abrading surface.

The machine comprises essentially an outer, conical shell A, having its concave surface lined with abrading material B, and an inner conical drum C, rotating within the shell A and having its convex surface armed with
40 abrading material which is preferably in the form of brushes c, c , disposed longitudinally. The drum C is fixed upon a shaft D which may be rotated in one direction through a chain-wheel E which is also fixed on the shaft.
45 The shell A is supported by spiders a, a , the hubs a', a' , of which having bearings on the shaft D, so that the shell may be rotated freely in the opposite direction to that in which the drum C is rotated, the shell being provided
50 for this purpose with a belt-pulley a^2 . The

shaft D has at one end a swing bearing d in a block d' which is supported by a fixed cross-piece F, while at the other end it has a swing bearing d^2 in a block d^3 which is carried by a vertically movable cross-piece G, the latter
55 having its ends fitted to ways h, h , in the vertical frames H, H. The cross-piece G is supported adjustably and to this end it is carried by screw-threaded rods K, K, which pass through a fixed cross-piece L and are provided
60 on the upper side of the cross-piece with hand-wheels k, k , which engage the threads of the rods.

Through the means just described the inclination of the cone and shell may be varied
65 to regulate the speed of the passage through the machine of the malt which is fed by the spout M.

The drum and shell are adjustable longitudinally with respect to each other, as usual, to regulate the action of the abrading surfaces and to take up wear but it is necessary that the adjusting means should be somewhat modified on account of the vertical adjustability of the end of the shaft J. Accordingly I attach loosely to the block d^3 and about
75 in line with the center of the bearing d^2 , two bolts N, N, which are screw-threaded to receive each two nuts n, n . A bar O, having an eye at each end to receive the respective
80 bolt N, is placed between the nuts n, n , and at its middle embraces the shaft D between two collars o, o , which are fixed thereon. The loose or hinge connection of the bolts to the block d^3 in the line of the bearing d^2 permits
85 the bolts and the bar to adjust themselves to every change in position of the cross-piece G.

The abrading material B on the inner surface of the shell A may be of natural or artificial stone of the proper degree of hardness
90 and of a suitable character, but in order to effect in a satisfactory manner my ultimate purpose, that is, the complete removal of the germ as well as of the husk of the malt, I have found it desirable to form the inner surface of the abrading material with a series of
95 longitudinal grooves b, b , which should be rectangular in cross-section, of a width about equal to the thickness of a grain of malt and of a depth somewhat greater. As the grains
100

of malt are rolled over this surface by the action of the shell and the cone the germs project into the grooves *b, b*, and are broken off or separated from the grains as the latter are
5 turned over.

I am aware that it has been proposed heretofore to secure strips of iron longitudinally upon the surface of the wooden shell of a grain-scourer as well as to provide the drum
10 of such a machine and the shell itself with rounded grooves parallel with the axis of the drum for the purpose of turning the grains over. Neither of the arrangements referred to is capable of effecting the result which I
15 have attained, that is to say, that thorough removal of the germ from the grain which is important to the carrying out of the method described in Letters Patent of the United States granted to Adam Schaefer and myself
20 on the 28th of June, 1892, and numbered 477,823. In order to effect this result I have found it necessary to form the grooves in the body of the stone with a width about equal to the thickness of a grain of malt but of a
25 greater depth so that the end of each grain, as it falls into the groove and is withdrawn and turned forward by the brushes, may be scraped with some force against the rear side

of the groove and the germ thereby more thoroughly removed than heretofore. 30

I claim as my invention:—

1. The combination of a shell, a drum, a shaft supporting said drum and shell, swing bearings for said shaft, a vertically adjustable support for one of said bearings, screw-
35 threaded bolts loosely attached to said support in the line of the bearing, a bar engaging said shaft, and nuts on said bolts engaging said bar, substantially as shown and described. 40

2. The combination with a drum having brushes on its surface and means to rotate said drum, of a shell inclosing said drum, said shell having an interior lining of stone with longitudinal grooves formed in its surface,
45 said grooves being rectangular in cross section and of a width less than their depth, substantially as shown and described.

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

ERNST RICHTER.

Witnesses:

W. B. GREELEY,
A. WIDDER.