

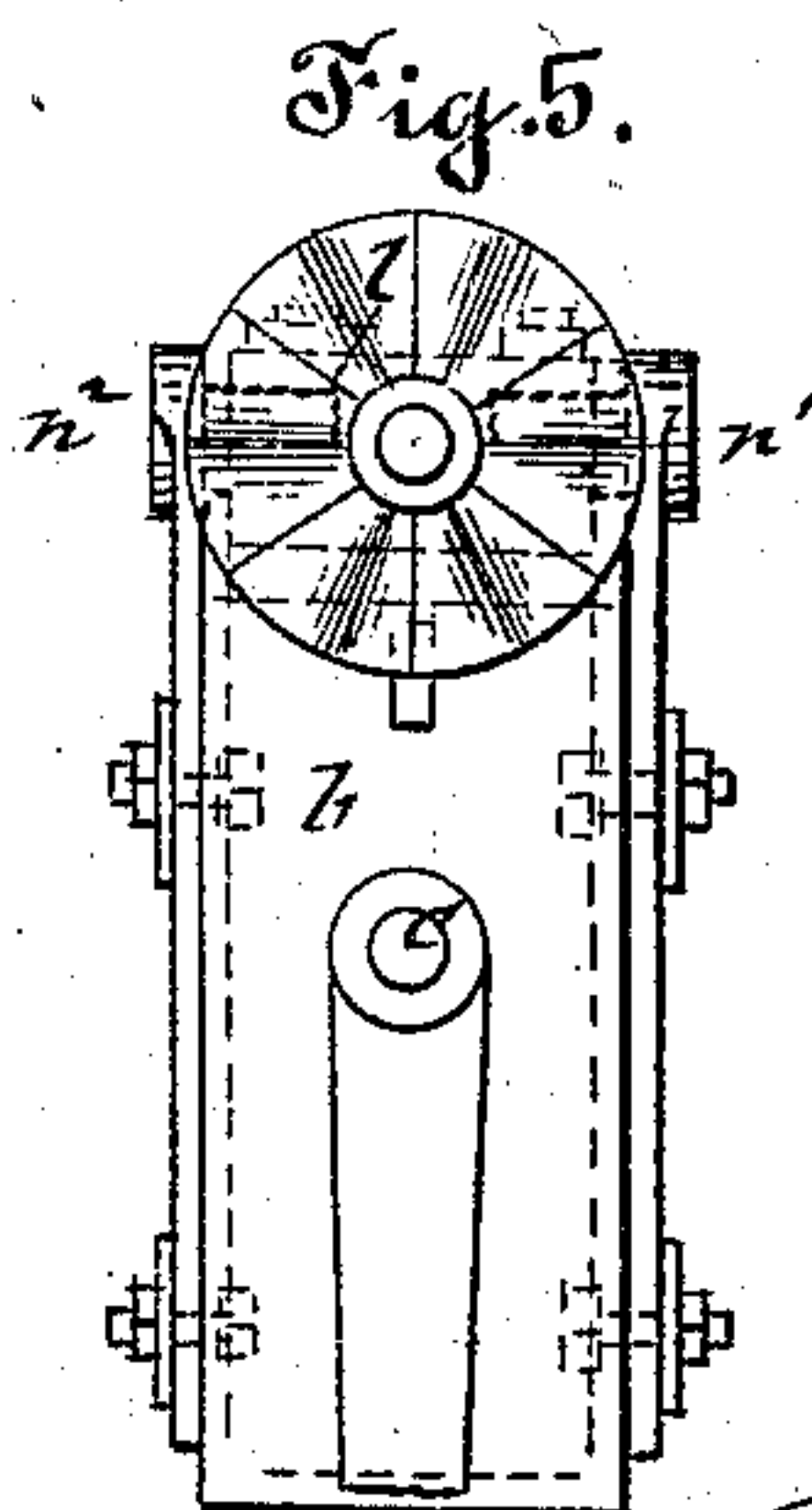
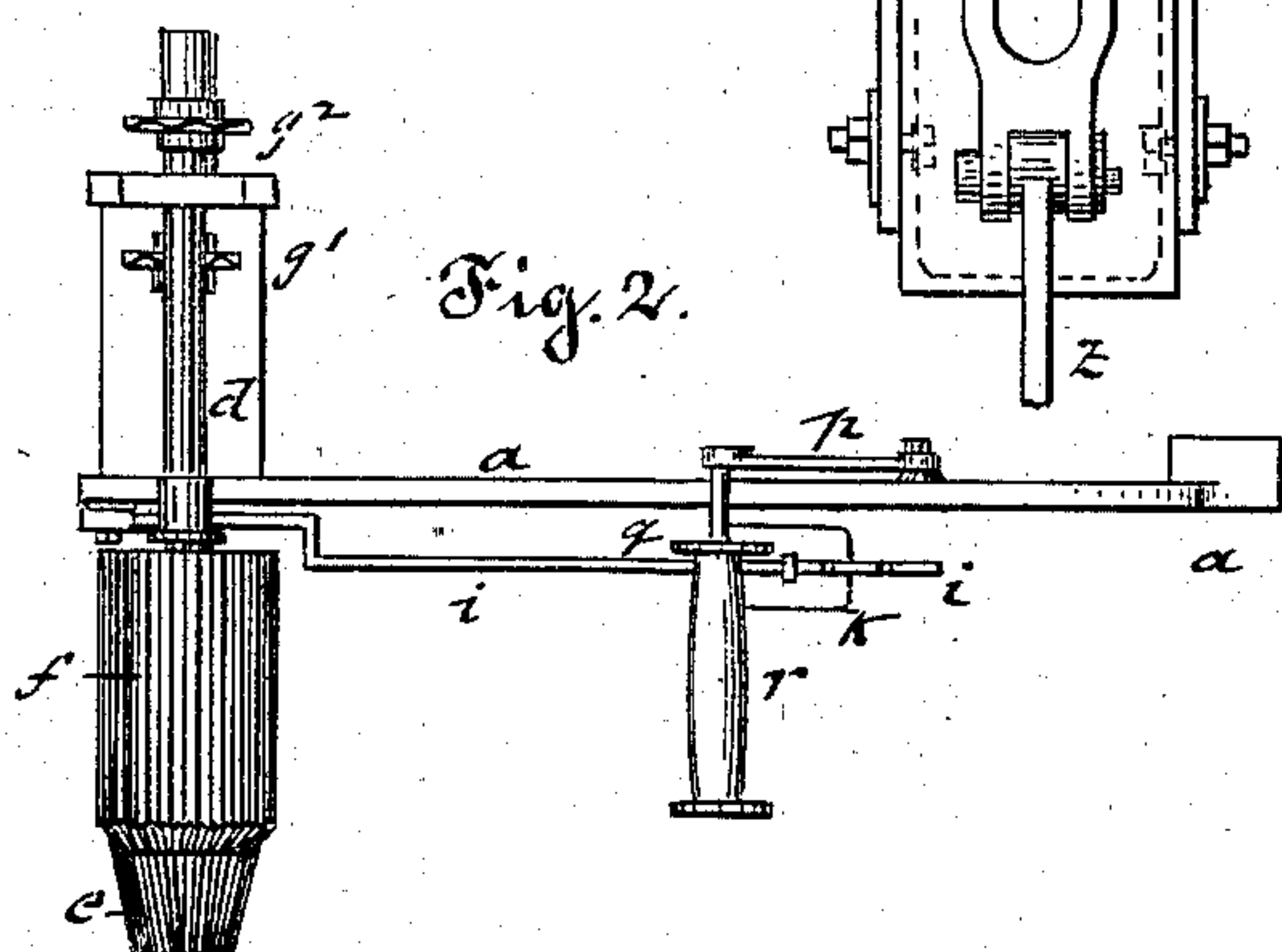
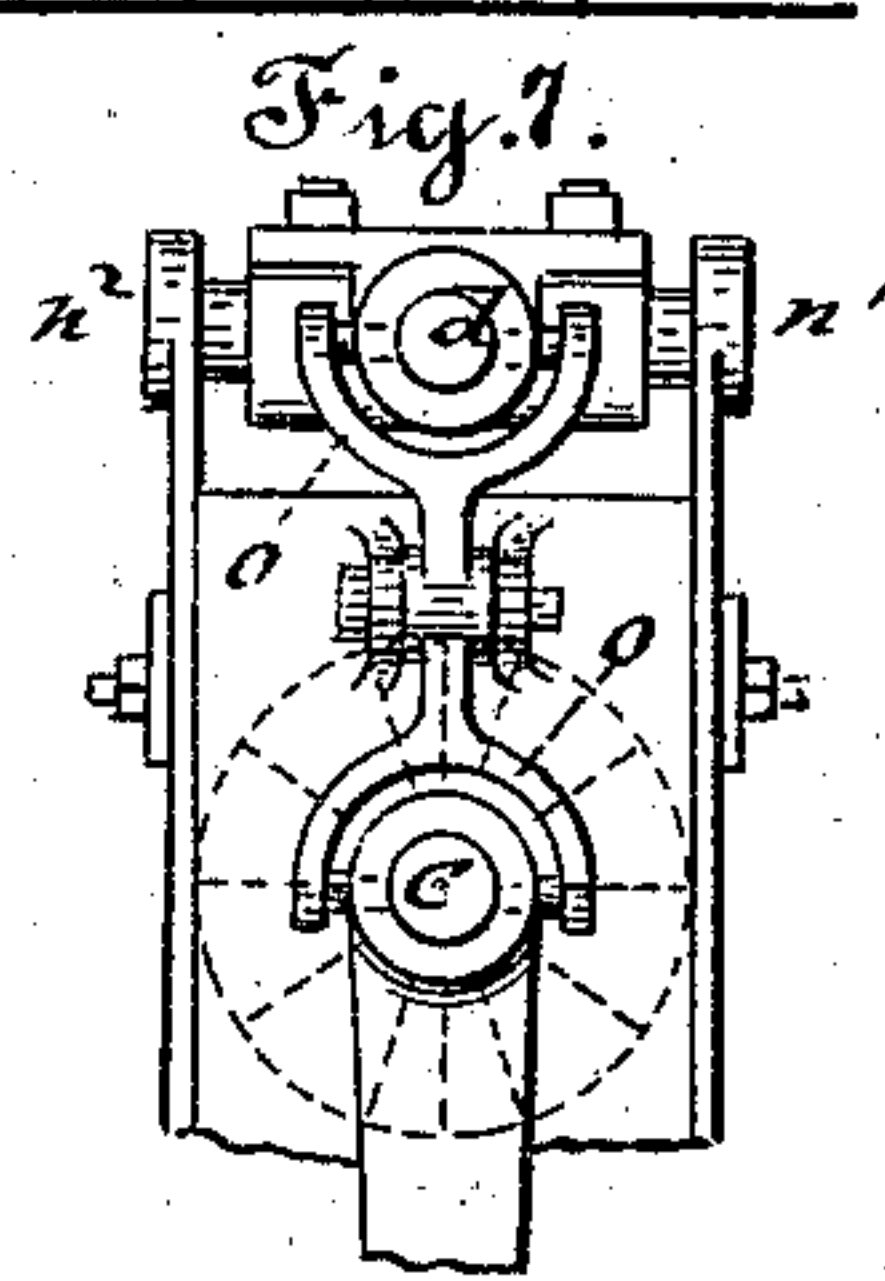
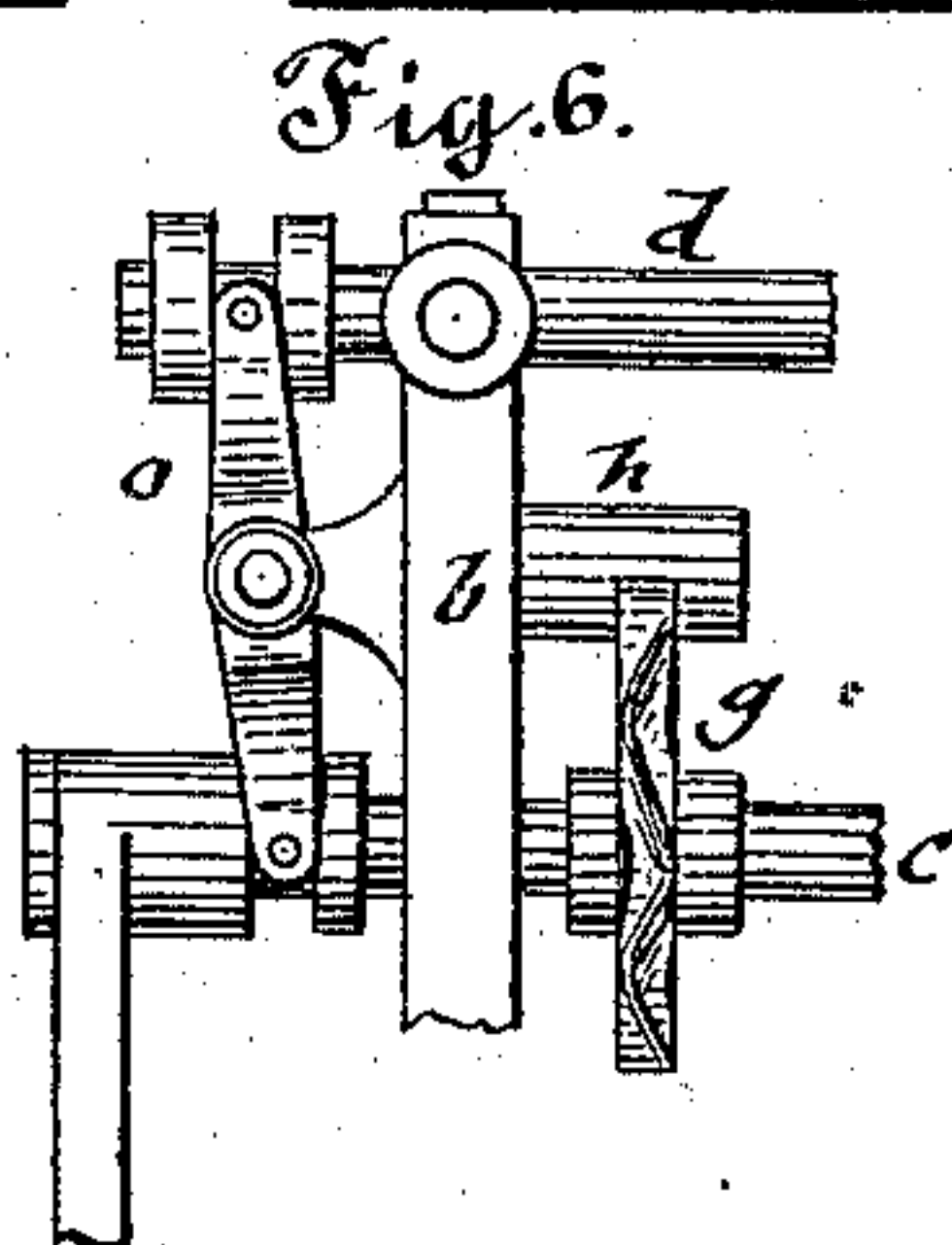
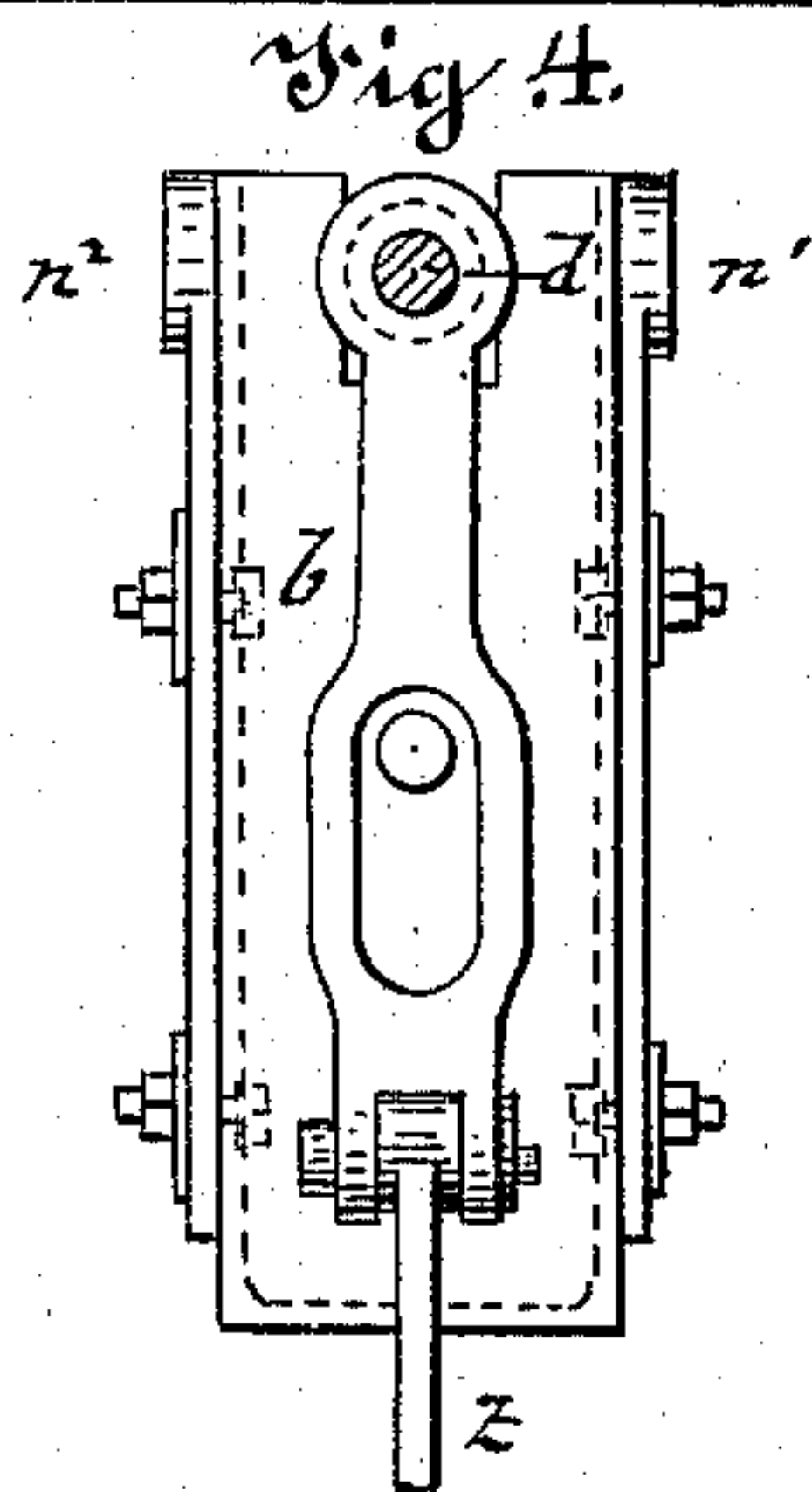
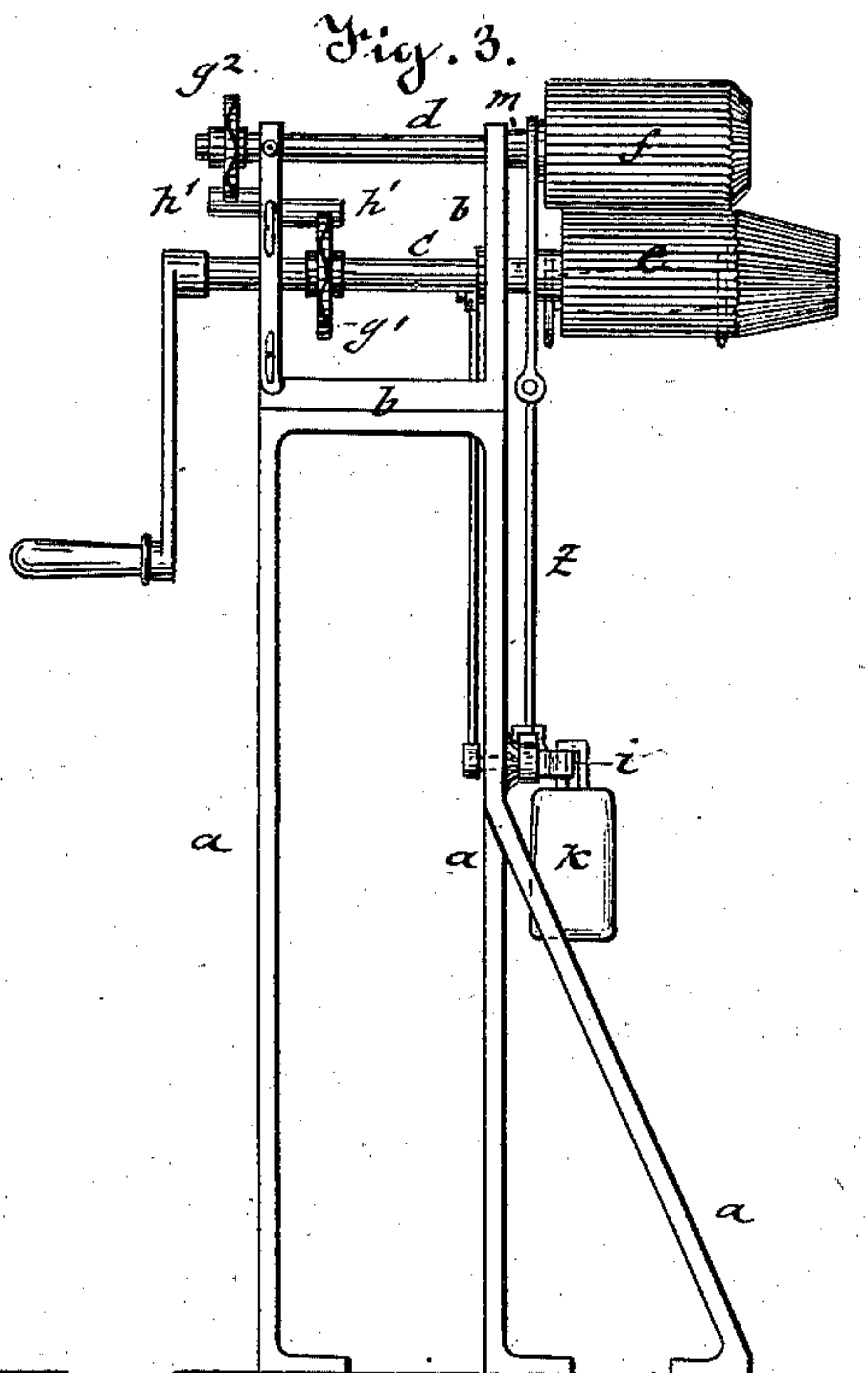
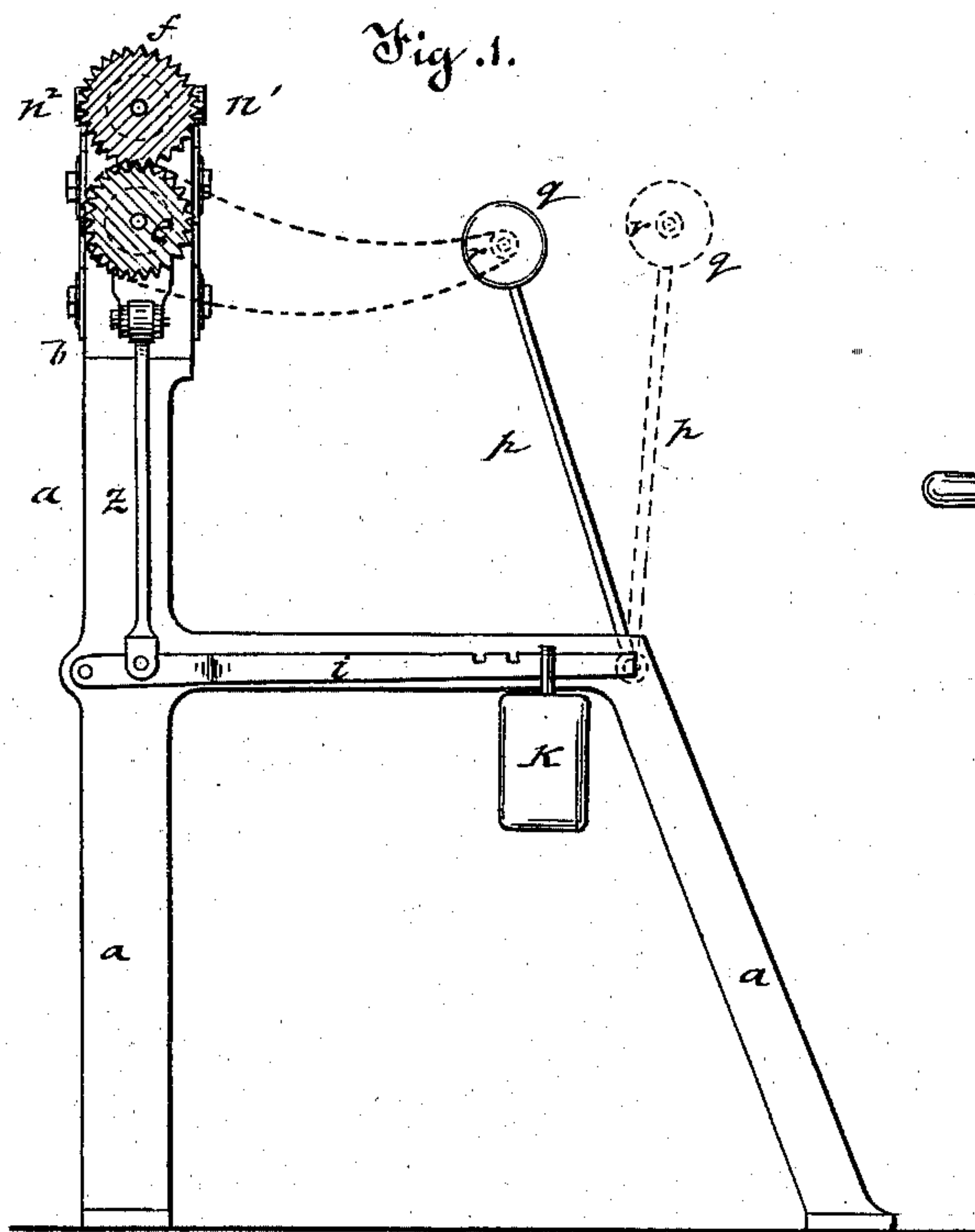
(No Model.)

J. BALSTER.

SOFTENING YARNS AFTER DYEING.

No. 255,833.

Patented Apr. 4, 1882.



WITNESSES:

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JOSEPH BALSTER, OF CHEMNITZ, SAXONY, GERMANY.

SOFTENING YARNS AFTER DYEING.

SPECIFICATION forming part of Letters Patent No. 255,833, dated April 4, 1882.

Application filed February 4, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH BALSTER, of Chemnitz, in the Kingdom of Saxony and Empire of Germany, have invented certain new and useful Improvements in Softening Yarns, of which the following is a specification.

It is known that yarn which has become hard in the dyeing or other preparation must be softened by beating before it can be worked up. This beating process occupies a long time and never completely fulfills the object in view, because each fiber of the yarn is not struck at every part.

The object of this invention is to effect the softening of the yarn by beating in a quicker, safer, and more regular manner than heretofore; and the invention consists of an improved process in which the hanks of yarn are exposed to the action of longitudinally-reciprocating and simultaneously-revolving friction-surfaces, and in which the dust is removed by frequently stretching the yarns during the operation.

The invention consists, secondly, of an improved apparatus having grooved rollers which are reciprocated longitudinally, or in the direction of their axes, and revolved simultaneously by transmitting mechanism to be more fully described hereinafter. The hanks are passed through between the rubbing-rollers, and are stretched from time to time by drawing back a lever which carries the spool upon which the hanks are placed.

In the accompanying drawings, to which reference is made, Figure 1 is an end elevation of the apparatus. Fig. 2 is a plan; Fig. 3, a side view. Fig. 4 shows the upper frame or standards of the apparatus, with the rollers removed, in section on line A B, Fig. 3. Fig. 5 is a rear view of the upper frame or standards, and Figs. 6 and 7 show a modified arrangement of the mechanism for effecting the longitudinally-projecting movement of the rollers.

Similar letters of reference indicate corresponding parts.

a is a frame which carries at its upper part the standards *b b*. The standards *b b* support in suitable bearings the shafts *c* and *d*, which are arranged parallel to and vertically above each other. One of the shafts is rotated by a

crank-handle, or by a belt and pulley, or by other suitable means. These shafts carry at their outer ends the rollers *e* and *f*, which are either grooved or smooth, and in the latter case they are by preference covered with coarsely-grained india-rubber.

On one or both of the shafts *c* and *d* are fixed the wave-wheels *g' g''*, the edges of which are bent or corrugated, as shown, and arranged to take into the notches *h' h''*, formed in fixed lugs *h* of one of the standards *b b*. The wave-wheels *g' g''* effect during each revolution several backward and forward movements or reciprocations of the rollers in opposite directions to each other, but in the direction of their axes.

The top bearing, *m*, of the standard *b* adjoining the upper roller is connected with a lever, *i*, by means of a coupling-rod, *z z'*, as shown in Figs. 3 and 4, the lever *i* being provided with an adjustable weight, *k*, whereby the roller *f* is pressed against the roller *e*.

In order to allow of the upward and downward movement of the roller *f*, and for the purpose of accurate adjustment, the bearings *l* of the second standard, *b*, are free to turn on a pin carried by the adjustable slotted side plates, *n' n''*, of standards, as shown in Figs. 3, 4, 5, 6, and 7.

In Figs. 6 and 7 is shown a modification of the mechanism for longitudinally moving or reciprocating the rollers, which arrangement is specially applied to rollers which are not grooved. In this arrangement only one shaft is furnished with the wave-wheel *g'*, and the longitudinally-reciprocating motion of this shaft is transmitted to the upper shaft by means of the double-forked lever *o*, which engages grooved rollers on the shafts *c* and *d*, so that the rollers must always move in longitudinal but opposite directions to each other, even if they do not revolve at the same speed—an arrangement which can easily be made in the case of smooth rollers.

The hanks of yarn to be treated are placed on the spool *r*, furnished with disk-shaped heads and carried by a fixed pin, *q*, at the upper end of a lever, *p*. The hanks are also passed over the conical projecting part *e'* of the lower roller, *e*, as shown in Fig. 3, and the rollers are then caused to be rotated. The

yarn follows the rotation of the rollers, is seized by the grooves of the same, and is rubbed so as to become pliable and soft by the longitudinally-reciprocating motion of the rollers. From 5 time to time the hanks are tightly stretched while they are being operated upon the rollers by quickly drawing back the lever *p*, which carries the spool *r*, as shown in dotted lines in Fig. 1, whereby the dust of the dyeworked 10 off the yarn by the rubbing of the rollers is removed therefrom.

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

1. The process herein described for softening 15 ing hard yarn, which process consists in passing the yarn between rubbing-surfaces to which simultaneously longitudinally-reciprocating and rotating motion is imparted, and removing the dust from the yarn by quickly stretching 20 the hanks while they are operated upon by the rubbing-surfaces, substantially as set forth.

2. The combination of the revolving rollers *e f*, supporting-standards *b b*, carrying the shafts *c d*, the bearing of the upper shaft, *d*, be-

ing pivoted to the outer standard, means for 25 longitudinally reciprocating the rollers, and a weighted lever connected to the bearing of the upper shaft on the standard adjoining the rollers, whereby the upper roller is pressed down upon the lower roller, substantially as specified. 30

3. The combination of the revolving and longitudinally-reciprocating rollers *e f* with a pivoted stretching-lever, *p*, carrying the spool *r* for the hanks, substantially as set forth.

4. The combination of the revolving and longitudinally-reciprocating rollers *e f*, the lower 35 of which has a conical extension, *e*, while the upper one is weighted, with a pivoted stretching-lever, *p*, carrying the guide-spool *r* for the hanks, substantially as specified. 40

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 1st day of November, 1881.

JOSEPH BALSTER.

In presence of—

OTTO THEUERKORN,
N. K. GRIGGS.