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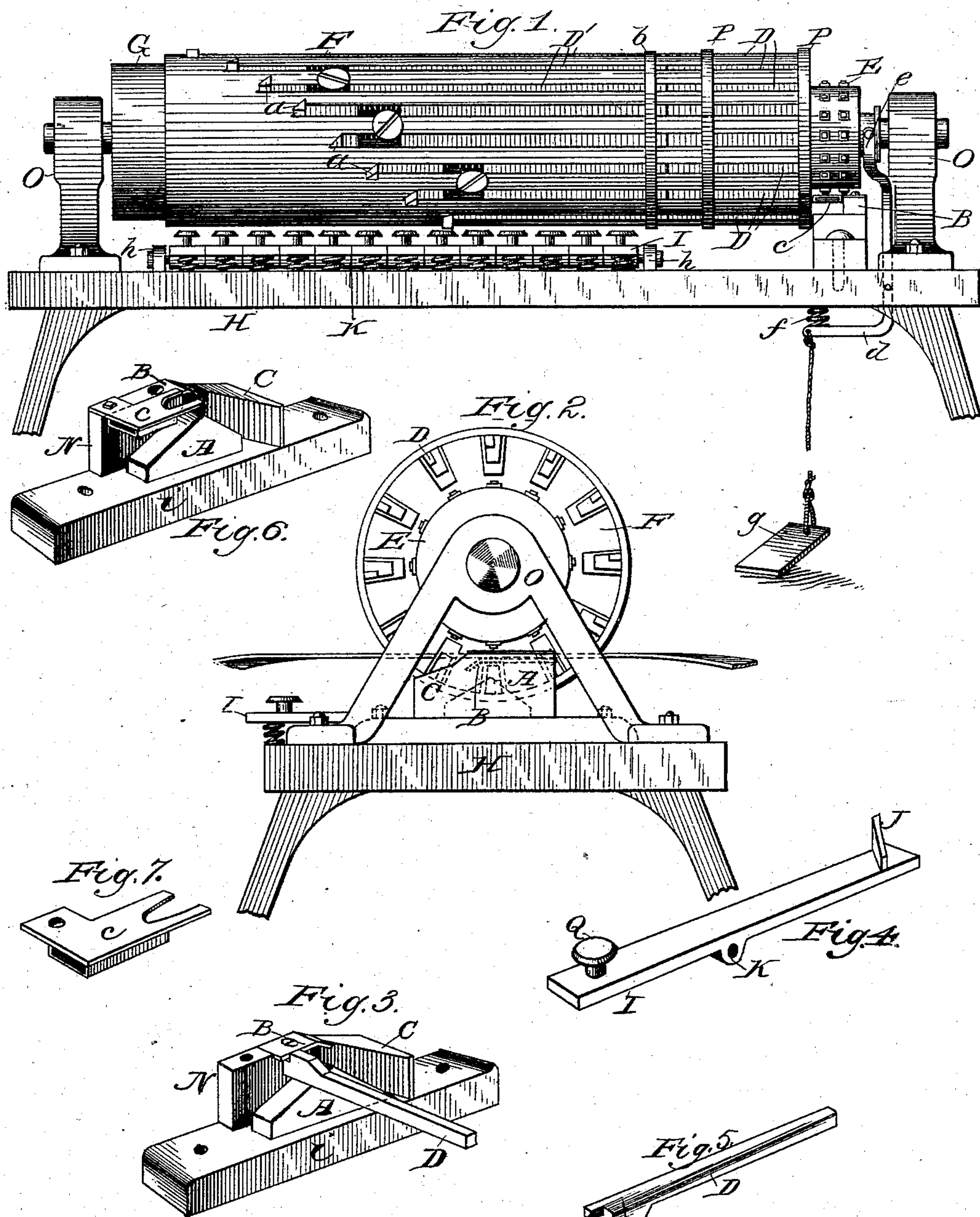
2 Sheets—Sheet 1.

M. H. DEMENT.

TYPE WRITING AND PRINTING MACHINE.

No. 282,174.

Patented July 31, 1883.



Witnesses
Othello R. Onokumbo.
Frank S. Blanchard.

Inventor:
Merritt H. Dement

(No Model.)

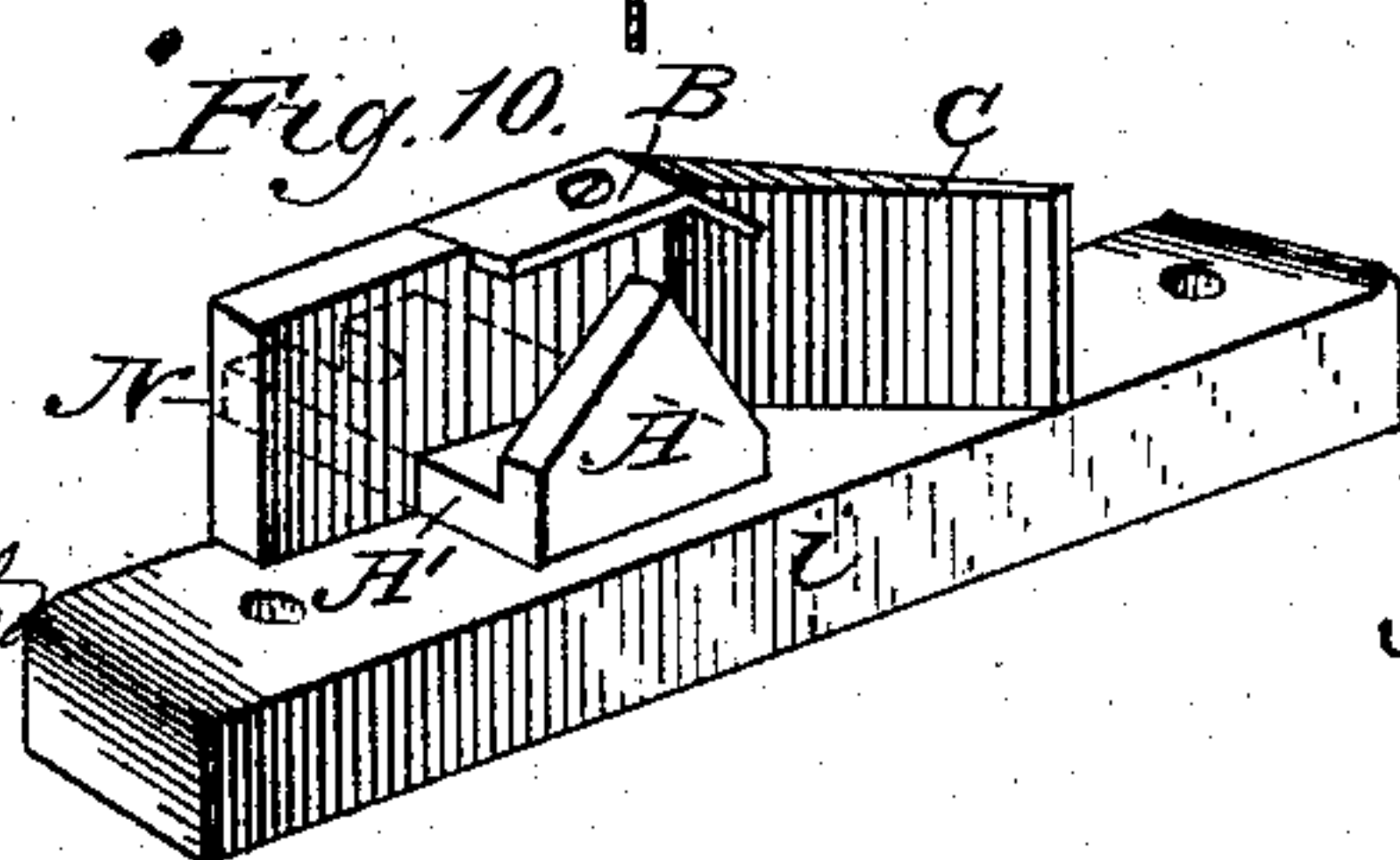
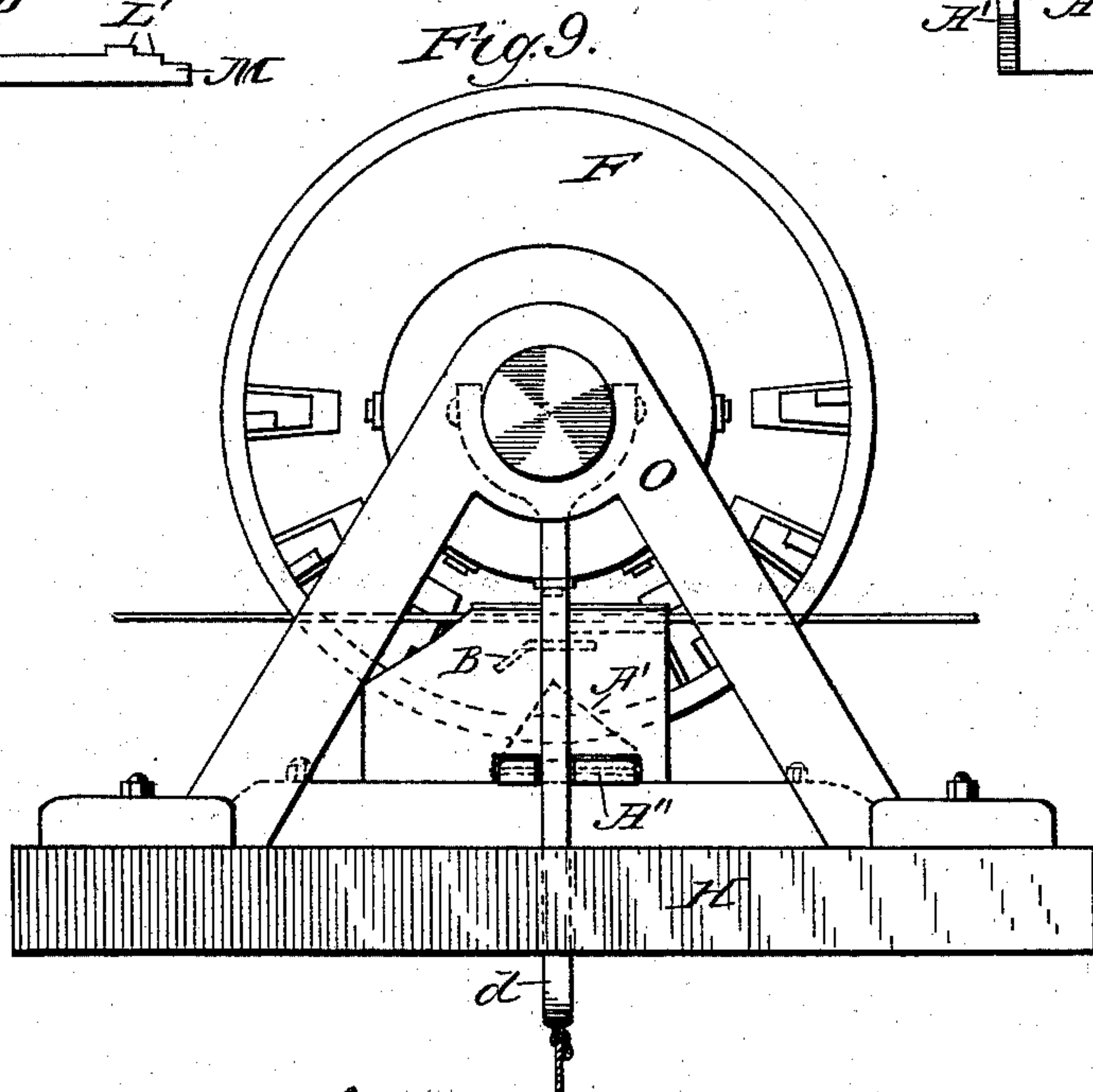
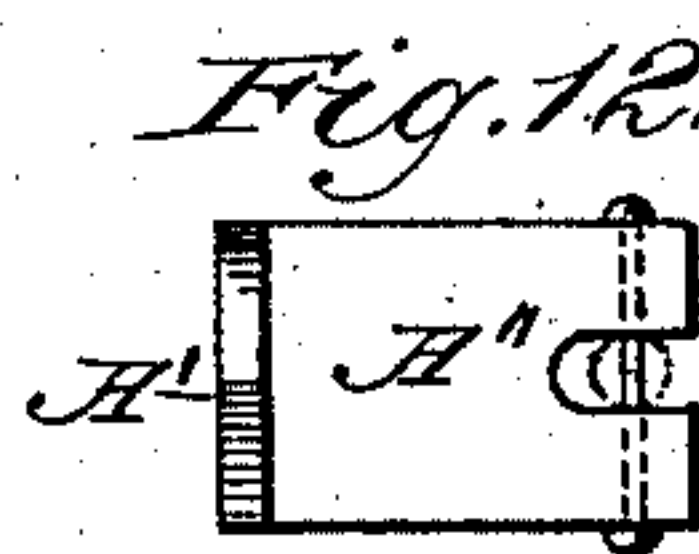
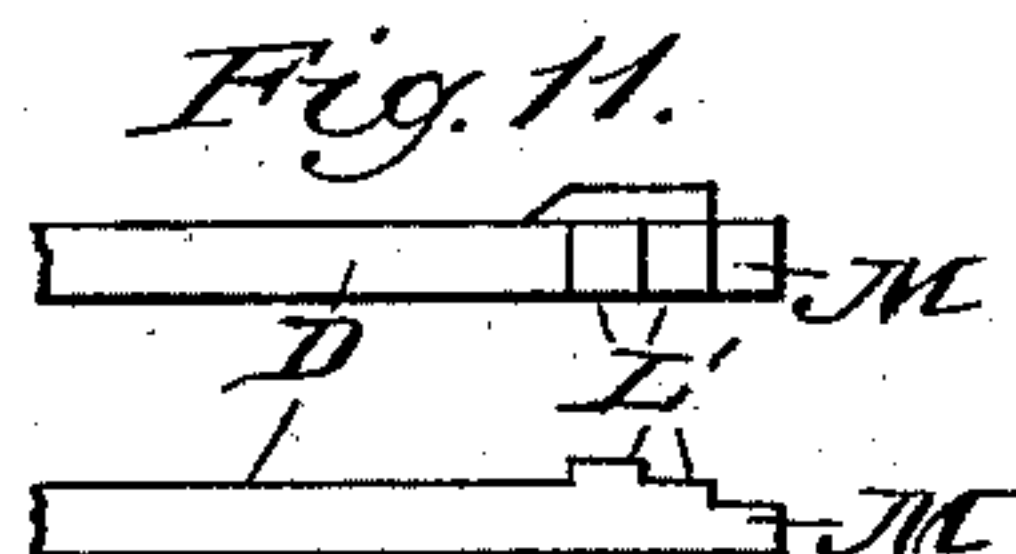
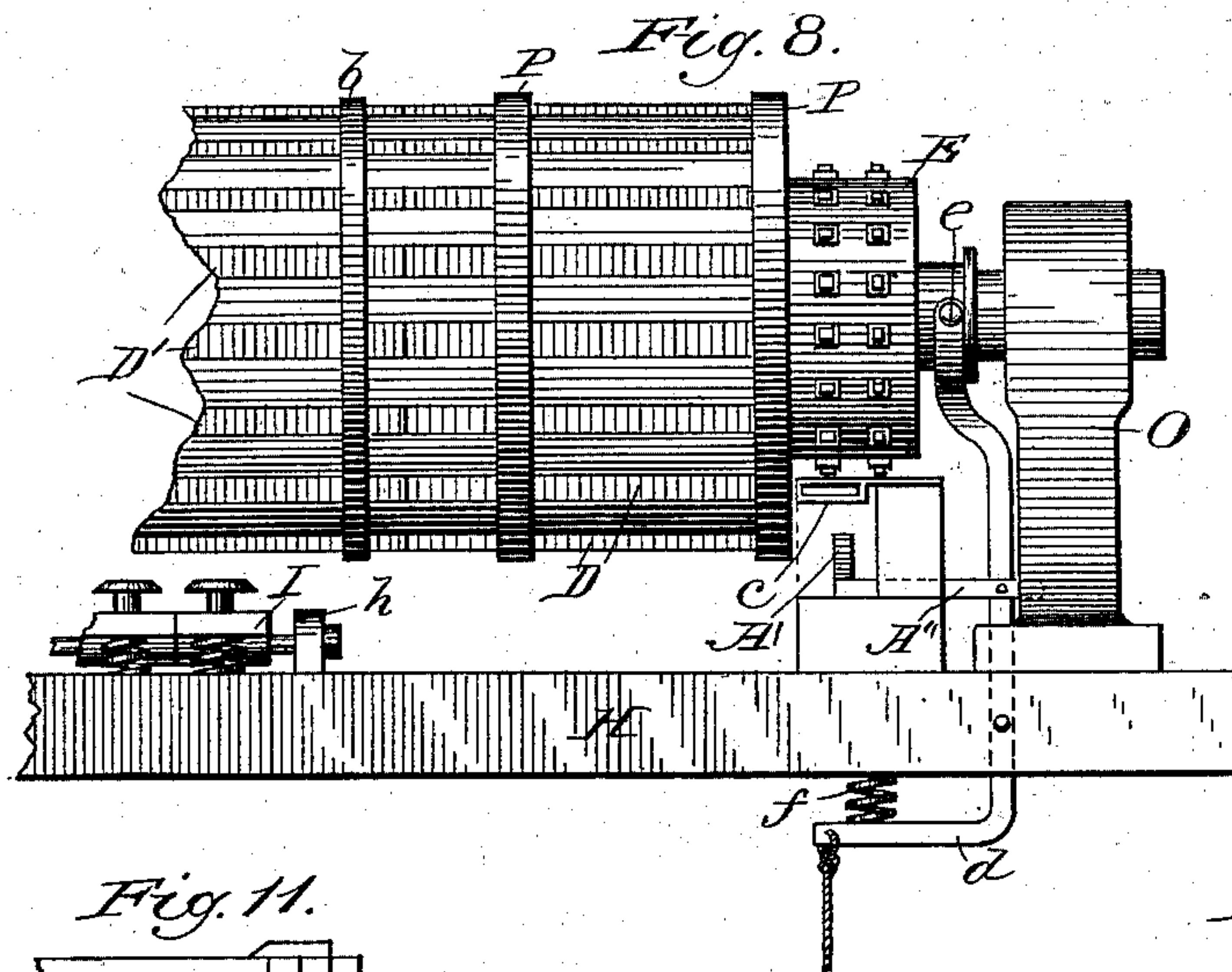
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Witnesses.

Will R. Onshun

Frank S. Blanchard

Inventor

Merritt H. Dement

UNITED STATES PATENT OFFICE.

MERRITT H. DEMENT, OF CHICAGO, ILLINOIS.

TYPE WRITING AND PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 282,174, dated July 31, 1883.

Application filed October 30, 1882. (No model.)

To all whom it may concern:

Be it known that I, MERRITT H. DEMENT, of the city of Chicago, county of Cook, and State of Illinois, have invented a new and useful Improvement in Type Writing and Printing Machines, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, which form a part hereof.

My invention relates to the devices and combinations as hereinafter described, and specifically pointed out in the claims.

My machine consists, mainly, of a revolving cylinder and type-wheel, keys, rods, and cams. The cylinder is placed upon a suitable shaft running in hangers secured to a table or base-plate, with a pulley at one end, by means of which power may be applied. Any desired number of longitudinal grooves are cut in the cylinder, in which are placed bars or rods capable of sliding, so as to protrude from the end of the cylinder over the type-ring. The type-ring may be constructed in various ways, the type being set radially in a ring or wheel which may be concentric with the cylinder, or on a separate shaft connected by gear-wheels, which make it revolve at the same rate as the cylinder. The bars are provided with cam-pins on their inner ends. A key-board consisting of the same number of keys as there are rods is placed beneath the cylinder. The key-bars are pivoted near their centers, so that by depressing one end the other end will be pressed against the cylinder. Each key-bar is provided with a cam-surface, which operates, when printing, upon the cam-pin of a particular rod and causes the rod to slide in the groove and protrude over the type-ring. Each bar, when protruded, covers the particular type designated by the key which has been depressed. Underneath the point where the rod ends protrude is placed a cam-plate, which the protruding rod will strike as it revolves, and by which it will be pressed upward. Between the cam and the type-ring is placed the paper strip, in a suitable groove, as a guide, with a forked spring above it. As the rods strike the cam and are thrown upward they press the paper strip upon the type, and an indentation is made therein by the type. The paper, meanwhile, is pulled along in its groove as long as it is held between the rod and the type.

The forked spring throws the paper from the type after the rod is released.

In a former application I have described and claimed the combination of the cylinder, sliding rods, and the cam for pressing the rods on the paper, and I make no claim therefor in this application.

To give each letter its proper space, I make the rods, or at least that portion which passes over the cam, of different widths, according to the widths of the letters they operate upon. It will be seen that the wider the rod the longer it will be in passing the apex of the cam, and hence the longer it will hold and the farther it will pull the paper, so that, in the case of the capital letter "W," a very wide rod is provided, while the lower-case, "i," will require a very narrow rod. Where several rows of type are used, each rod may have two or more places of different widths corresponding to the different letters upon which it operates. In such case the cam is made to slide in a groove, so as to bring it under the portion of the rod corresponding to the row of type to be operated upon. For instance, if the first rod shall operate upon the capital "A" in one row of type, the small "a" in the second row, and the "\$" in the third row, it will require to have three spaces of different widths to correspond to the widths of the three types, and the cam must be shifted so that the cam will operate upon the desired one of the three spaces. The cam is shifted by means of a lever or bar connected with the apparatus for shifting the type-ring, or by an independent connection with a pedal, upon which the operator's foot is pressed in shifting.

I prefer to make the cam upon the end of a plate, A", the other end connecting, by means of a slot and pin or other device, with the mechanism for shifting the type-ring, the under portion of the support for the cam B being cut away so as to form a groove, through which the cam-plate A" may slide. In this form the cam may be made narrower than when fixed, and will require to be shifted but a short distance to pass from one widened space on the bar to another.

The mechanism for shifting the type-ring may be constructed in a variety of ways. I prefer to use a grooved ring placed upon the shaft and connecting with the type-ring and

revolving with it. In connection with this is
 a yoke, in each arm of which is placed a pin
 fitting and running in the grooved ring. This
 yoke is formed upon the end of a shifting-bar,
 5 which is pivoted to the base-plate, and to which
 is fixed a horizontal arm extending under the
 base-plate, which is, in turn, connected with
 the pedal by means of a chain or cord or other
 suitable device. The end of the shifting cam-
 10 plate may be attached to this shifting-bar, so
 that the operator, in pressing upon the pedal,
 will shift both the type-ring and the cam at the
 same time. The type-ring being required to be
 shifted a farther distance than the cam, it is con-
 15 nected with the shifting-bar at a farther dis-
 tance from its pivot than the cam-plate, which
 requires less movement, inasmuch as the wid-
 ened spaces on the bars will be closer together
 than the type rows. This feature of a shift-
 20 ing cam will probably be only used on ma-
 chines when different-sized fonts of type are
 used. Where only one size is used, the Roman
 capitals and lower-case, with the ordinary
 punctuation-marks, may be placed in one row
 25 or ring and the Italic capitals and lower-case in
 the next row, and one set of bars and a fixed
 cam will answer, for the bar operating upon
 the Roman capital "A" will also operate upon
 the Italic capital "A," and so on through the
 30 alphabet; and it is only necessary to have the
 Italics so cut as to be of exactly the same width
 as the Roman letters. Figure 1 is intended to
 represent this form of the machine, although
 a full double alphabet is not shown in each row.
 35 In the grooves under each of the bars a spring
 is placed, to hold the bar in the proper position
 when not printing. Such springs have also been
 used to throw the bars off the paper after print-
 40 ing. These springs do not always retain the
 same elasticity, and the rods do not work up and
 down in the grooves with the same ease, and
 the result is that when a spring is weak or a
 rod works slowly it will not be promptly
 45 thrown from the type after printing, and will
 consequently drag the paper too far and give
 the letter printed upon too much space. To
 prevent this and secure absolutely accurate
 spacing, I place a cam in position immediately
 50 after the first cam, and where the rod will strike
 it after it shall have passed the first cam, and
 printed, and be taken off the paper promptly by
 positive action. In connection with this cam,
 the rods, for a space of about one-eighth of an
 55 inch (more or less) from the ends, are made of
 uniform width, and true to or even with the
 rear side of the rods as they revolve. This
 portion of the rod is not made quite so high as
 the part which presses the paper on the type,
 so as to leave room between it and the type
 60 for the cam to overhang it. The second cam
 is placed from the apex of the first cam just
 the width of the rods where they are of this
 uniform width, so that no matter how wide the
 rod may be it will not strike the second cam
 65 until it shall have finished printing, and then
 it is thrown at once from the paper.

To make blank spaces between words by

pulling the paper the required distance with-
 out puncturing the face of the strip, I place on
 the type-wheel, in the proper position to be 70
 operated upon by the rod connecting with
 the space-key, a blank type or pin with a flat
 or slightly-convex head of about the same
 height or a little shorter than the type-head.
 This may be milled or roughened. Then 75
 I place upon the inner side of the rod, or on
 that portion which presses upon the paper,
 one or more small pins or points or suitable
 milling, the operation being substantially the
 same as in printing a letter, except that the 80
 indentation is made on the reverse side of the
 paper, and by the rod instead of the type.
 This method of spacing between words is pref-
 erable to other methods, because it makes no
 indentations in the face of the paper into which 85
 the stereotyping-metal will run, and thus cause
 unnecessary prominences on the plate or bar
 when cast from the strip which will print. The
 rods, after printing, are returned to the cylin-
 90 der by a third cam placed after the other two
 cams in such a position that the ends of the
 rods will strike it and be pushed back by it.
 This is an improvement over the present mode
 of having a series of pins running in a double-
 grooved collar in which there is also a cam, 95
 for the reasons that the pins are liable to break
 off and clog up the groove, and the collar adds
 greatly to the friction and complication of the
 machine. By the improvement suggested the
 pins and collar are dispensed with entirely, as 100
 the cam operates directly upon the ends of the
 rods and there can be no breaking or clogging.
 To permit the rods to be depressed on the
 types, they are each provided with a joint, and
 the grooves in which they lie are made deeper 105
 at the printing end of the cylinder, the rods
 being held in their natural position, when not
 printing, by suitable springs, and prevented
 from going beyond by bands. In this there is
 no novelty, the same mechanism being already 110
 in use.

Where the type-ring is placed on a separate
 shaft connected by gear-wheels with the cylin-
 der-shaft, the same cams and rods may be used.
 The positions of the cams are reversed, the 115
 rods being pressed outwardly instead of in-
 wardly, and the paper guide and spring are
 placed between the outer edges of the rods and
 the type-wheel. The same results will be ac-
 120 complished in this way as where the cylinder
 and type-ring are concentric.

Referring to the drawings hereto annexed,
 Fig. 1 is a side elevation of my improved ma-
 chine. Fig. 2 is an end view with shifting-le-
 125 ver and yoke omitted. Fig. 3 is a detail view
 showing cams with spring *c* omitted. Fig. 4
 is a detail view of a key-bar, showing cam *J*
 and finger-tip *Q*. Fig. 5 is a detail view of a
 hammer. Fig. 6 is a detail view of the cams,
 showing paper-guide and forked spring in po- 130
 sition. Fig. 7 is a detail view of paper-guide
 and forked spring. Fig. 8 is a side elevation
 of a portion of the machine, showing modifi-
 cation of my invention, the cam *C* being omitted.

Fig. 9 is an end view of modification. Fig. 10 is a detail view, showing modification of cam A. Fig. 11 shows detail views of modification of hammers D. Fig. 12 is a plan view of modification, showing shifting cam A' and plate and manner of attachment to shifting-bar.

In Fig. 1, G represents the pulley; F, the cylinder; D', the sliding bars with cams *a a*; D D, the hammers; P P, the rings for holding hammers in place; *b*, a ring for holding one end of sliding bars in place, the other end being held by screws, as shown. E is the type-ring with two rows of type; *e*, the yoke or shifting-lever; *d*, the operating-arm of shifting-lever; *f*, the spring for returning lever to position after operating; and *g* the pedal. K is the point of pivoting of the key-bars I, and *h h* the supports for the bar upon which the key-bars are pivoted. B is the cam for throwing the bars from the paper. *c* is the paper-guide with forked spring attached. H is the base-plate.

In Fig. 2, A represents the printing-cam; B, the cam for throwing the bars from the paper after operating, and C the cam for returning the bars to position in the cylinder.

In Fig. 5, M is the portion of the bar operated upon by the cam B, and where the bars are of uniform width and true to the rear side thereof. L is the portion of the bar which passes over the cam A, and where the bars are made of different widths, corresponding to the widths of the types. In Fig. 3 a bar is shown in operation.

In Fig. 6, N is a plate which serves as a support for the paper-guide *c*, and also as a stop to prevent the bars from being thrown too far out by the operation of the cams J upon the key-bars; and *i* is the plate upon which the cams are secured.

In Fig. 11, L shows bar with two different widened surfaces, one for a wide letter and one for a narrower letter, the cam A', as shown in Fig. 8, being capable of shifting, so as to operate upon either surface of the bar. A' in Fig. 12 is the plate upon which the cam A' is made, and by means of which it is connected with the shifting-lever.

Certain devices herein shown, but not specifically claimed, are claimed in other applications by me now pending in the Patent Office, or will be claimed in applications which I may hereafter file.

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

1. The combination of the cylinder and series of bars of different widths with the fixed cam A, substantially as and for the purposes shown and described.

2. In a type writing or matrix machine, a cylinder and a series of bars of different widths, in combination with a cam, by means of which said bars are pressed upon the material operated upon, substantially as shown and described.

3. The combination of a cylinder, a series of bars of different widths, keys, type, and cam A, substantially as and for the purposes shown and described.

4. In a printing or type-matrix machine, the combination of a cylinder and a series of bars of different widths or thicknesses corresponding to the widths of the various types, and means, substantially as described, for actuating the bars, with a cam by which said bars are pressed against the material to be printed upon or indented, substantially as shown and described.

5. The combination of the revolving cylinder, type, and a series of bars, and means, substantially as described, for actuating the same, with the cam B, substantially as and for the purposes shown and described.

6. In a printing or type-matrix machine, a series of bars with means, substantially as described, for actuating the same and for pressing them upon the paper or material to be printed upon or indented, in combination with a cam for throwing them by a positive action from the paper after printing, substantially as shown and described.

7. In a printing or type-matrix machine, the combination of a cylinder and a series of bars of different widths or thicknesses at the point of contact with the cam A, corresponding to the widths of the various types, and of uniform width from the rear side of said widened space to the point of contact with the cam B, and said cam B, by means of which the bars are thrown from the paper immediately after the printing by a positive action, substantially as shown and described.

8. In a printing or type-matrix machine, the cam A', with mechanism, substantially as described, for sliding the same, in combination with bars of different widths having two or more spaces of different widths, corresponding to the widths of the various letters in the different rows of type, substantially as and for the purposes shown and described.

9. In a type-writing or type-matrix machine, the combination of a blank type or pin in the type-wheel with pins or milling on the corresponding rod, substantially as and for the purposes shown and described.

10. The improvement in the method of feeding the matrix-strip to produce spaces between words, which consists in making the feeding indentation on the reverse side of the strip, substantially as described, whereby the face of the strip is unaffected by such indentations.

In witness whereof I have hereunto set my hand, this 25th day of October, 1882, in the presence of two witnesses.

MERRITT H. DEMENT.

Witnesses:

AUSTYN H. GRANVILLE,
FRANK J. GRIDLEY.