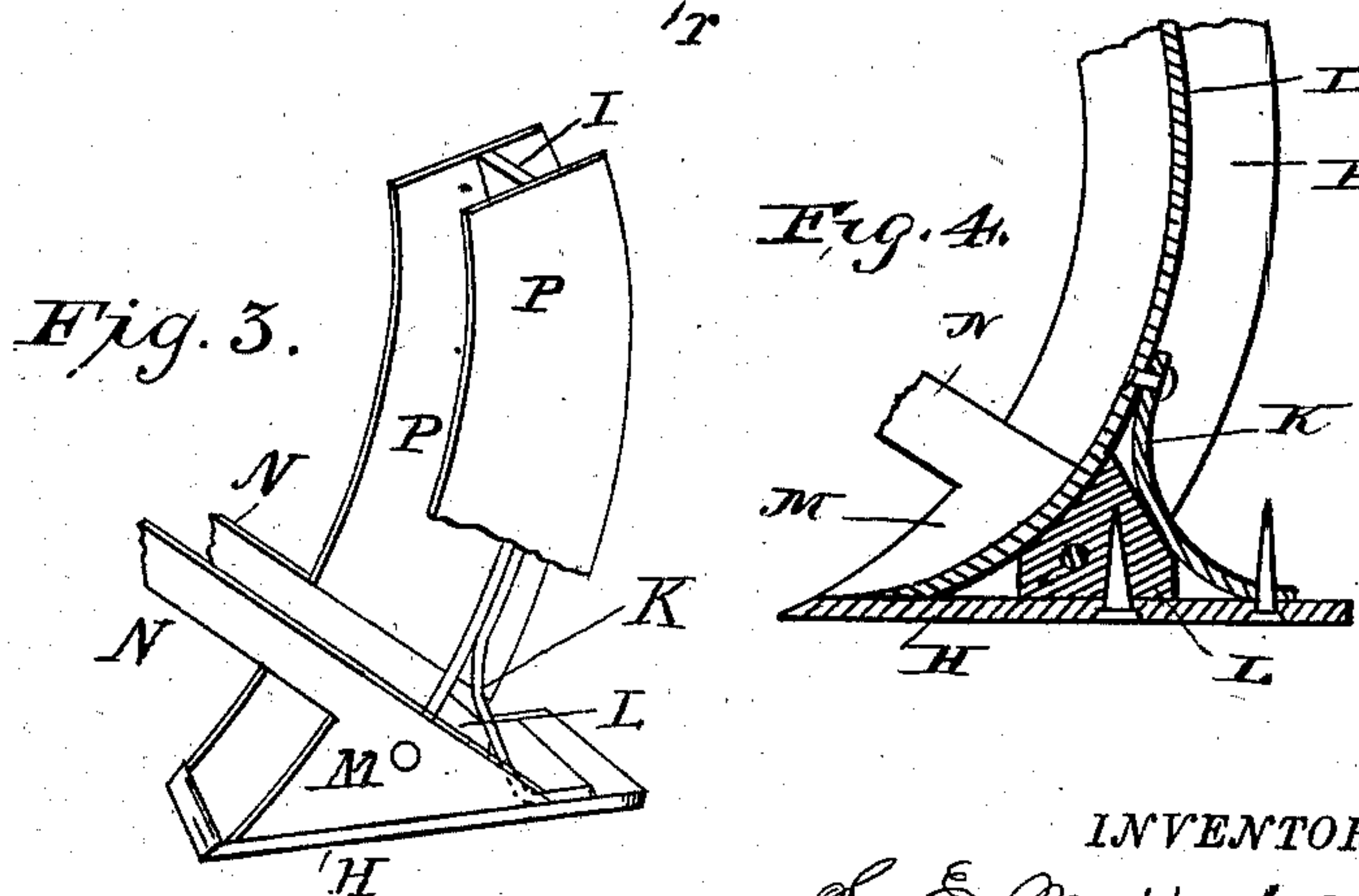
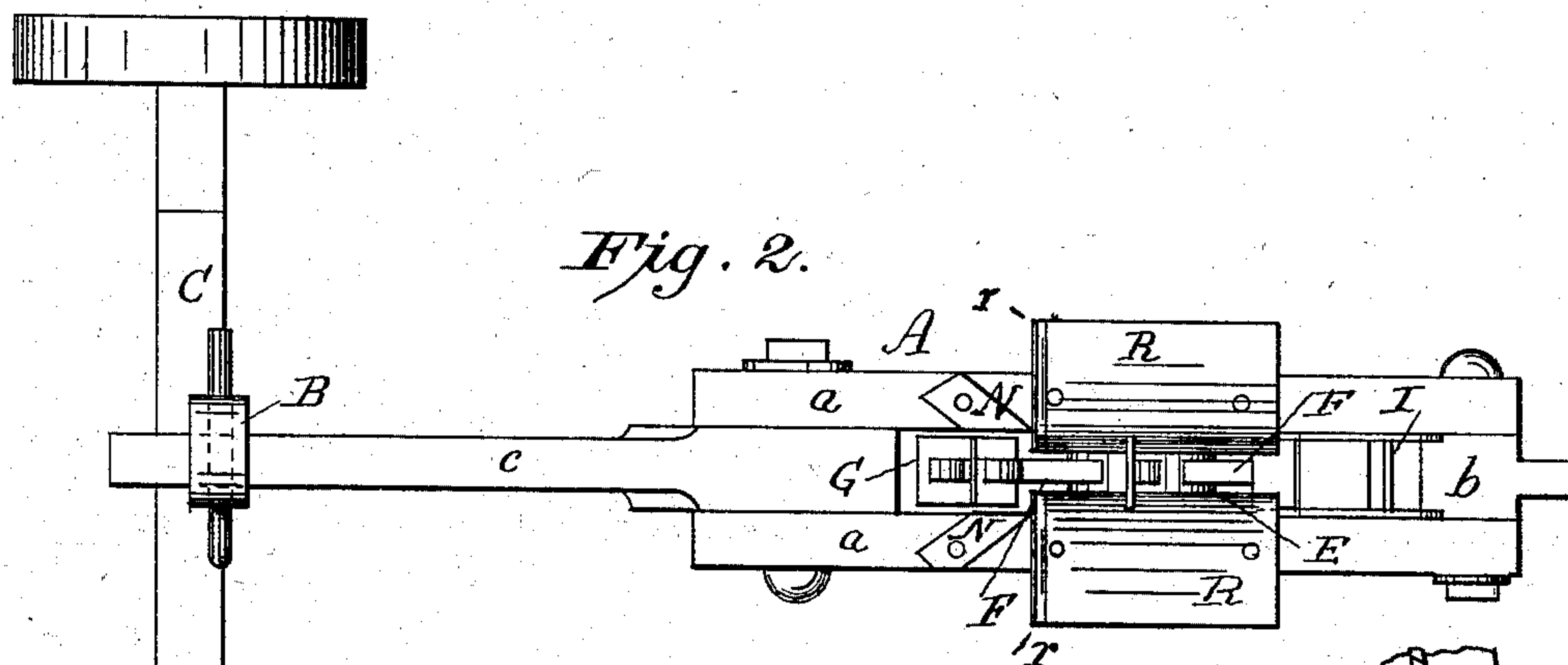
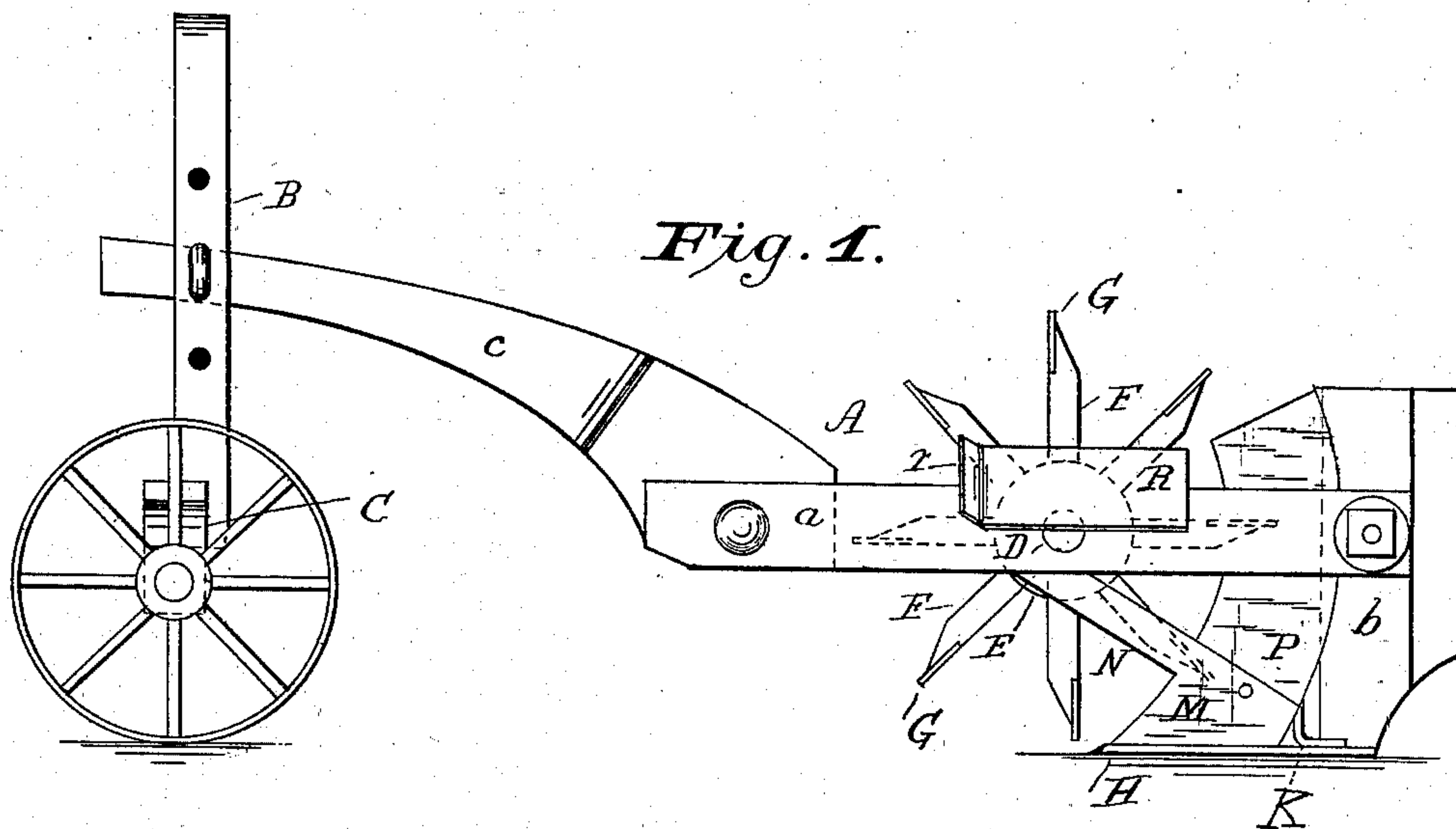


(No Model.)

S. E. & J. MORRAL.
DITCHING MACHINE.

No. 255,000.

Patented Mar. 14, 1882.



WITNESSES

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UNITED STATES PATENT OFFICE.

SAMUEL E. MORRAL AND JOHN MORRAL, OF MORRAL, OHIO.

DITCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 255,000, dated March 14, 1882.

Application filed December 14, 1881. (No model.)

To all whom it may concern:

Be it known that we, SAMUEL E. MORRAL and JOHN MORRAL, of Morral, in the county of Marion, and in the State of Ohio, have invented certain new and useful Improvements in Ditching-Machines; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

This invention relates to certain improvements in ditch-digging machines; and it has for its objects to provide an apparatus that will be simple and cheap in construction, and which will cut and loosen the soil and automatically remove it in the formation of the ditch, as more fully hereinafter specified. These objects we attain by the apparatus illustrated in the accompanying drawings, in which—

Figure 1 represents a side elevation of our improved apparatus; Fig. 2, a top view of the same; and Fig. 3 a detached perspective view of the mold-board and cutters; and Fig. 4 is a vertical longitudinal sectional view of the ditching mechanism.

The letter A indicates the frame of the apparatus, which consists of two parallel beams, *a*, bolted at the rear to an upright, *b*, and at the front to a beam, *c*, which is adapted to be secured to a vertical standard, B, rising from the truck C,

Between the two beams is mounted loosely on a suitable shaft, D, a hub, E, which is provided with a series of radial arms or spokes, F, to which are attached the spades or shovels G.

The letter H indicates a metallic shoe secured to the bottom of the upright *b* by means of a bolt or otherwise.

The letter I indicates a curved mold-board, located at the rear of spade-wheel, the upper end of said board being secured to the upright *b*, and the lower end to the forward part of the shoe H.

The letter K indicates a brace, secured to the rear of the mold-board and to the shoe for strengthening the connection, and the letter L a block interposed between the mold-board, shoe, and brace, for the purpose hereinafter described. The mold-board is curved so as to

be parallel with the line described by the outer edges of the rotating spades, which are arranged to travel close up to the front face of the said mold-board as they rotate.

The letter M indicates two cutters, one located at each side of the shoe, the said cutters being secured to the block L by means of a bolt or otherwise. The cutters are provided with inclined braces N, which are secured to the beams *a*.

The letter P indicates two segmental shields, located one at each side of the mold-board, which prevent the soil from being discharged before reaching the upper end of the mold-board.

The letter R indicates two inclined plates, one secured to each beam at opposite sides of the spade-wheel. These have their forward edges upturned, as indicated by the letter *r*.

The operation of our invention is as follows: When the apparatus is drawn forward the shoe and cutters loosen the soil, and the spades carry it up along the face of the mold-board and discharge it at the top onto the inclined plates, by which it is discharged at each side of the machine.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In combination with the parallel beams *a*, draft-beam *c*, and upright B, the revolving spade-wheel E F G, the curved mold board I, the shoe H, the brace K, and block L, and the cutters M and laterally-delivering plates R, the whole arranged substantially as and for the purposes specified.

2. In combination with the shoe, mold-board, and cutters, the brace secured to the rear of the mold-board and to the shoe, and the block interposed between the shoe, mold-board, and brace, to which block the cutters are bolted, substantially as specified.

In testimony whereof we affix our signatures, in presence of two witnesses, this 17th day of November, 1881.

SAMUEL E. MORRAL.
JOHN MORRAL.

Witnesses:

J. P. BARNTHOUSE,
W. A. SHOWN.