

PATENTED APR. 25, 1905.

PNEUMATIC MOTOR FOR DRIVING MUSIC SHEETS.

5 SHEETS—SHEET 1.

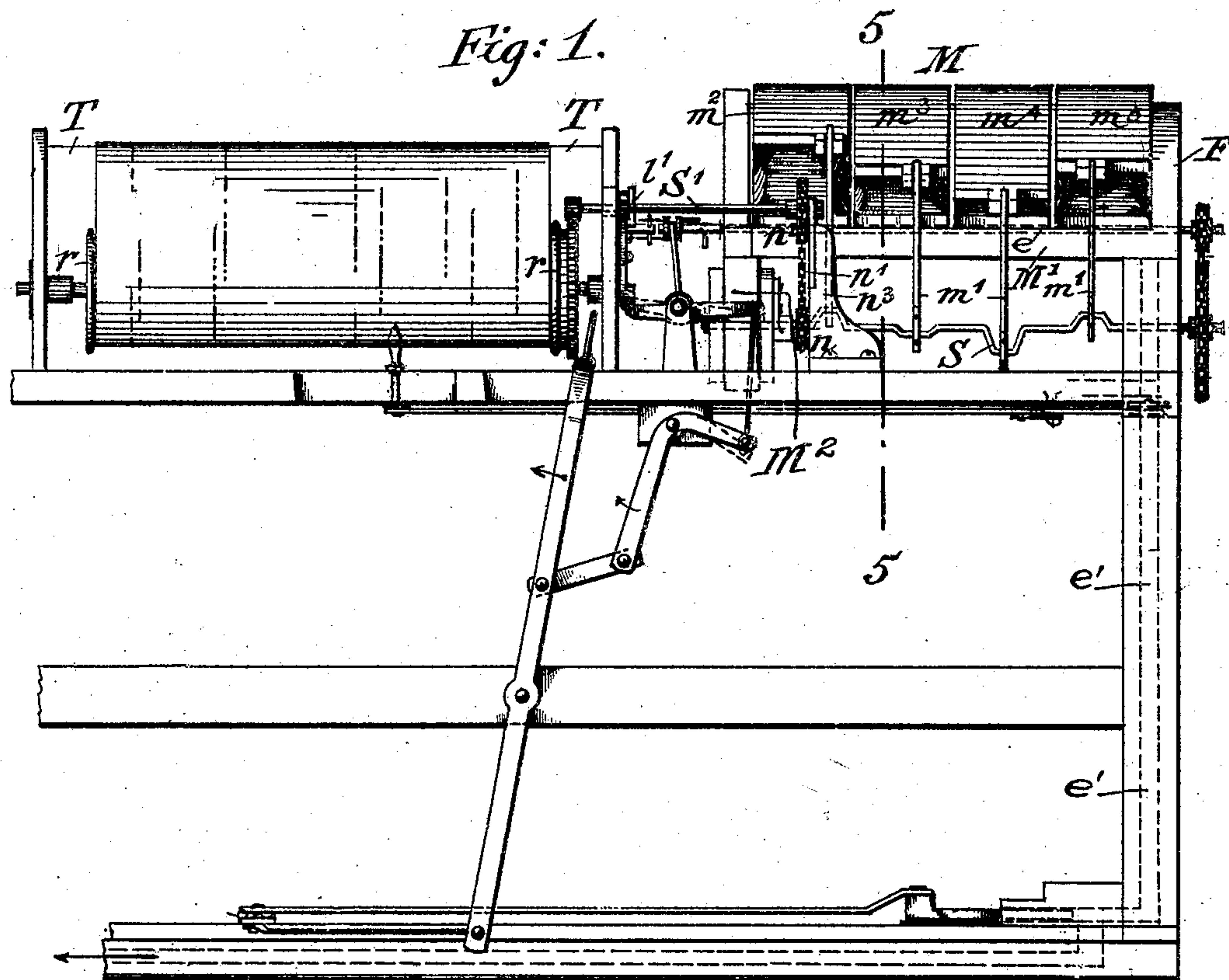
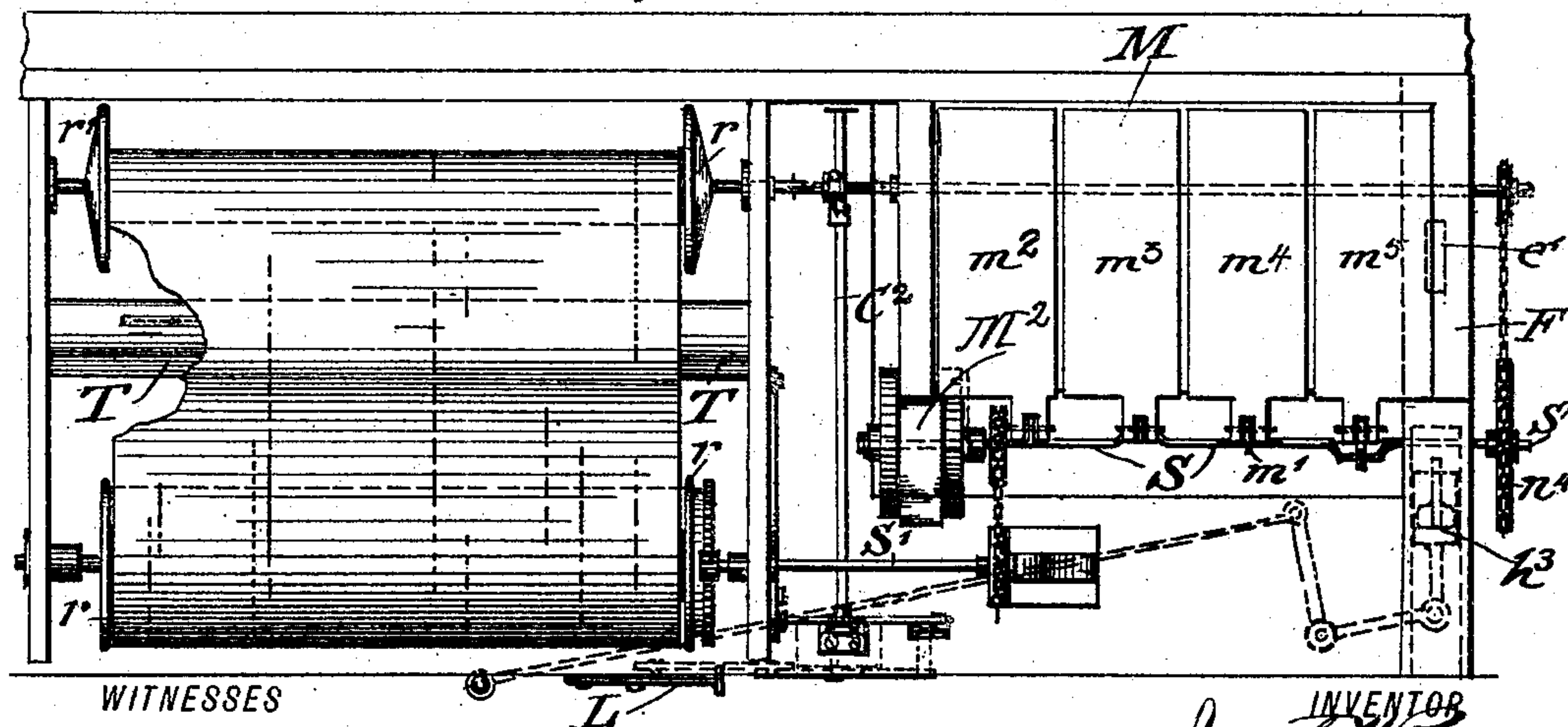


Fig: 2.



WITNESSES

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No. 738,387.

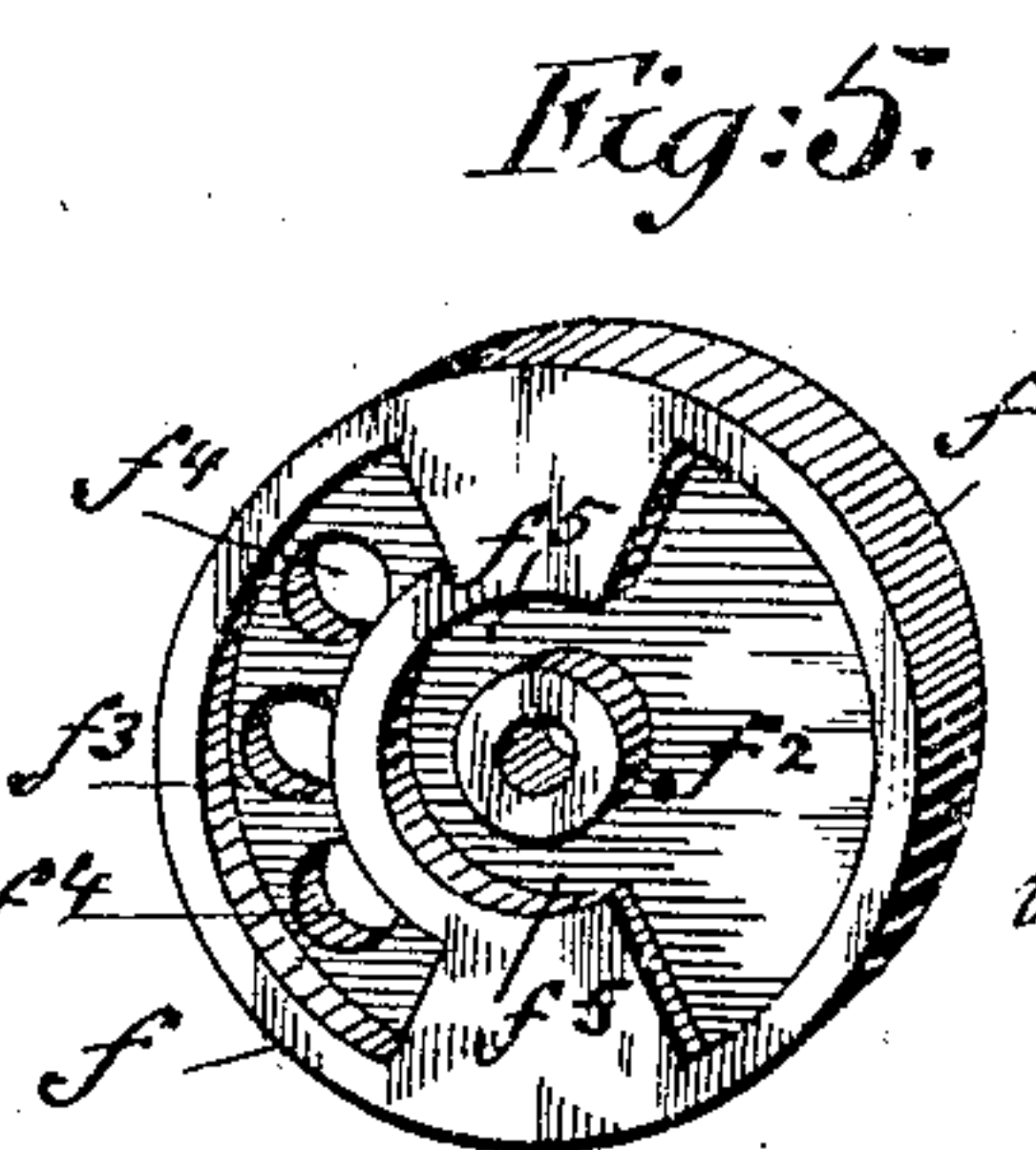
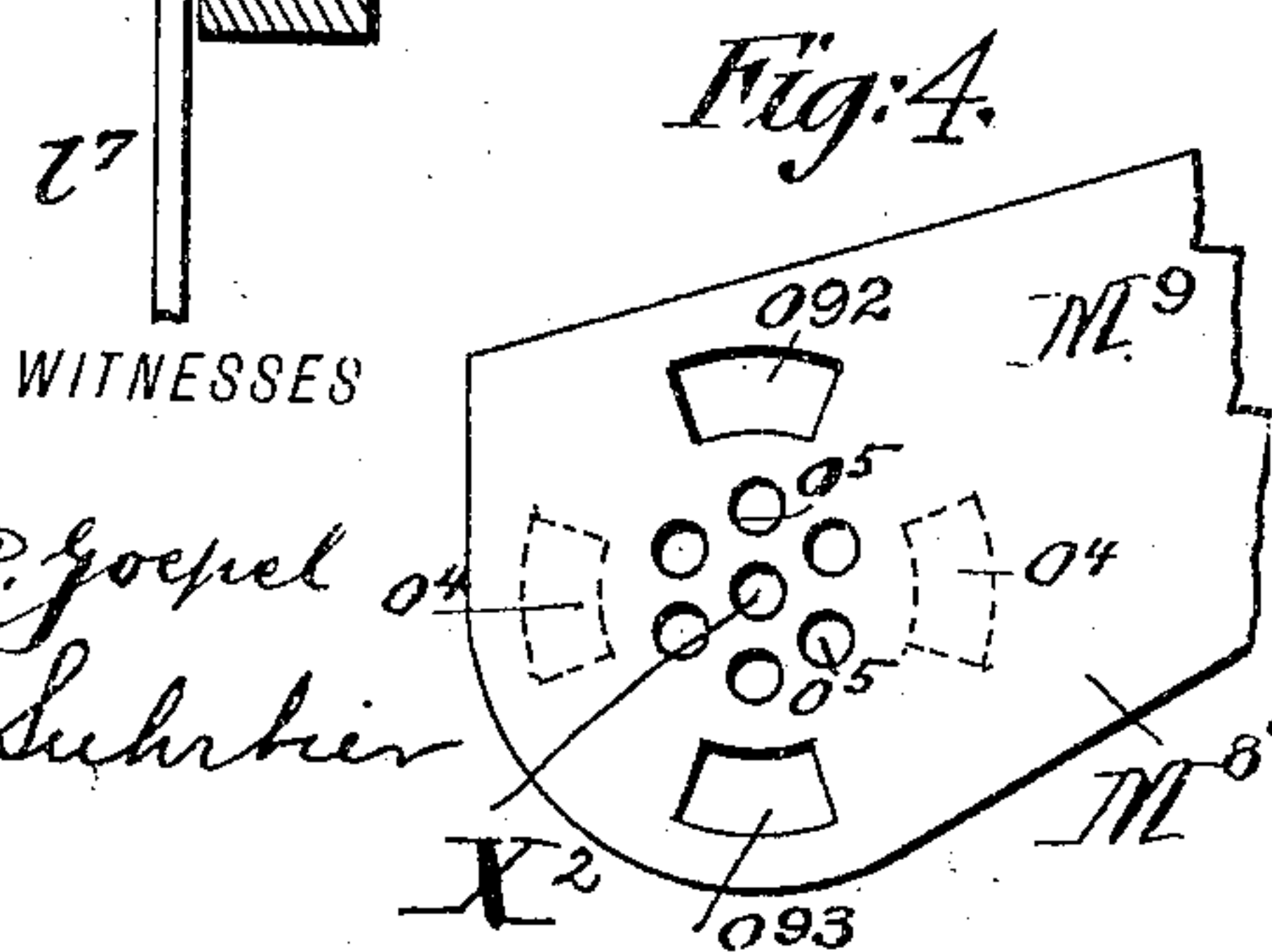
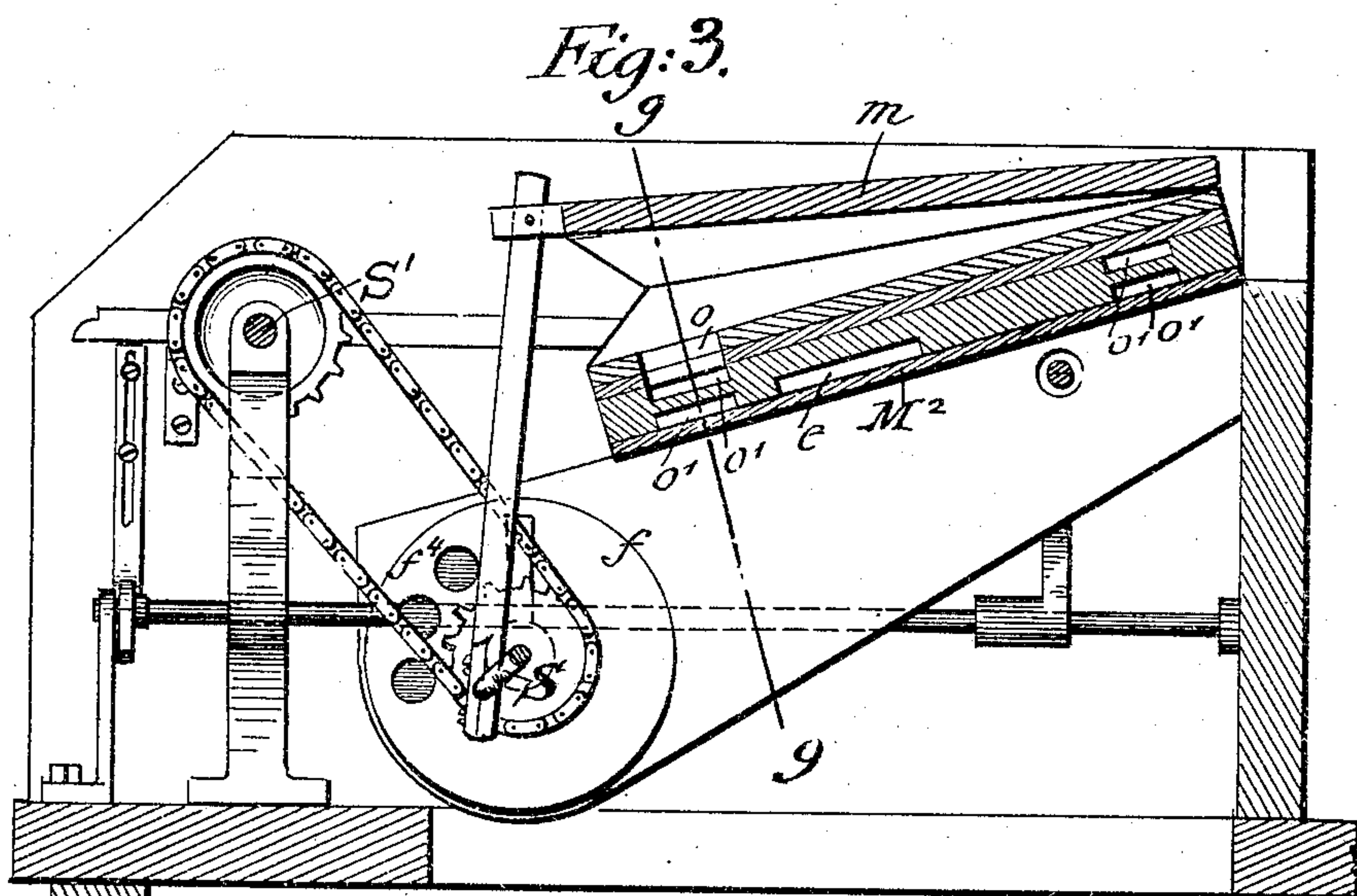
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PNEUMATIC MOTOR FOR DRIVING MUSIC SHEETS.

APPLICATION FILED MAY 21, 1903.

5 SHEETS—SHEET 2.



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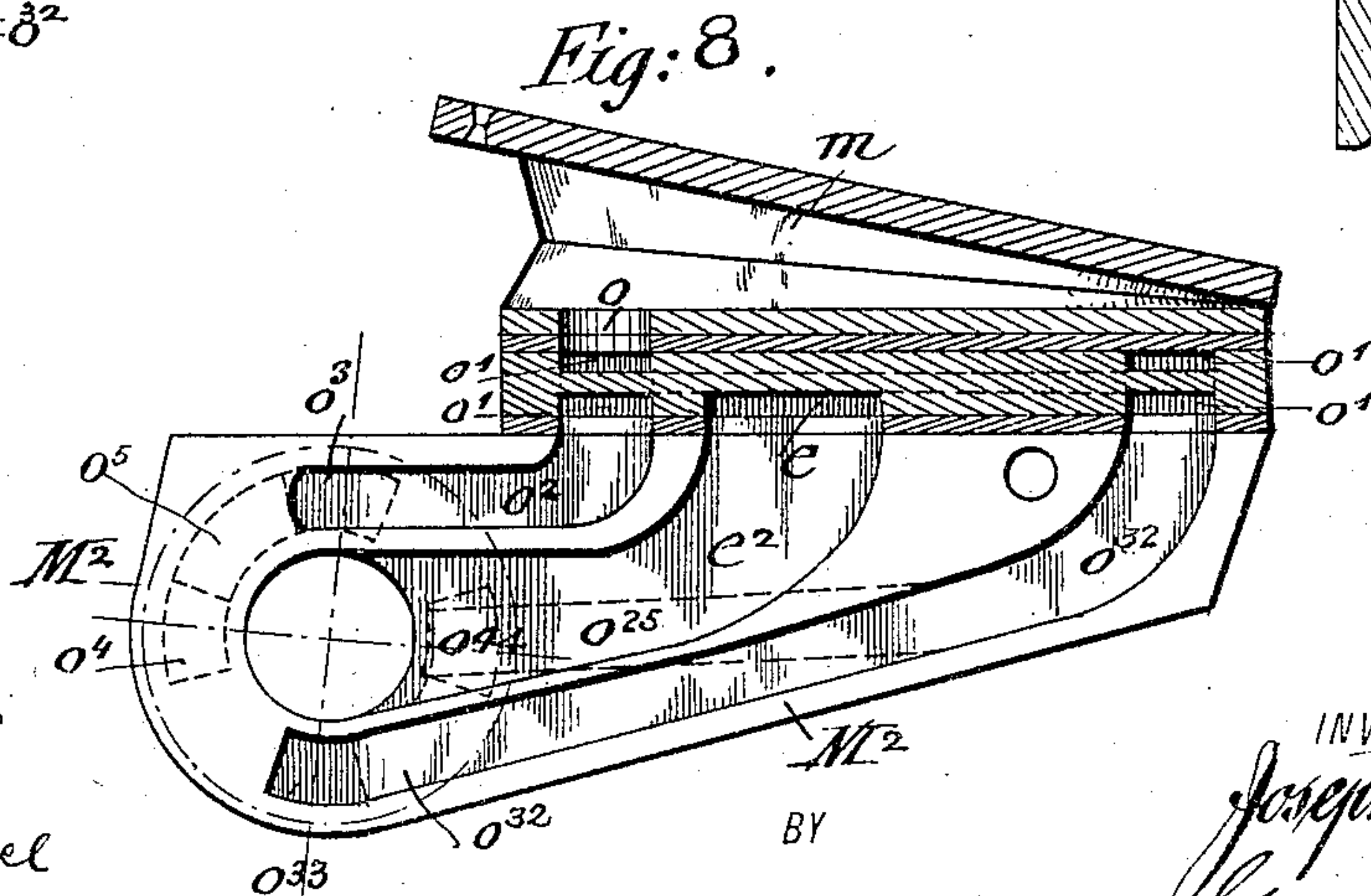
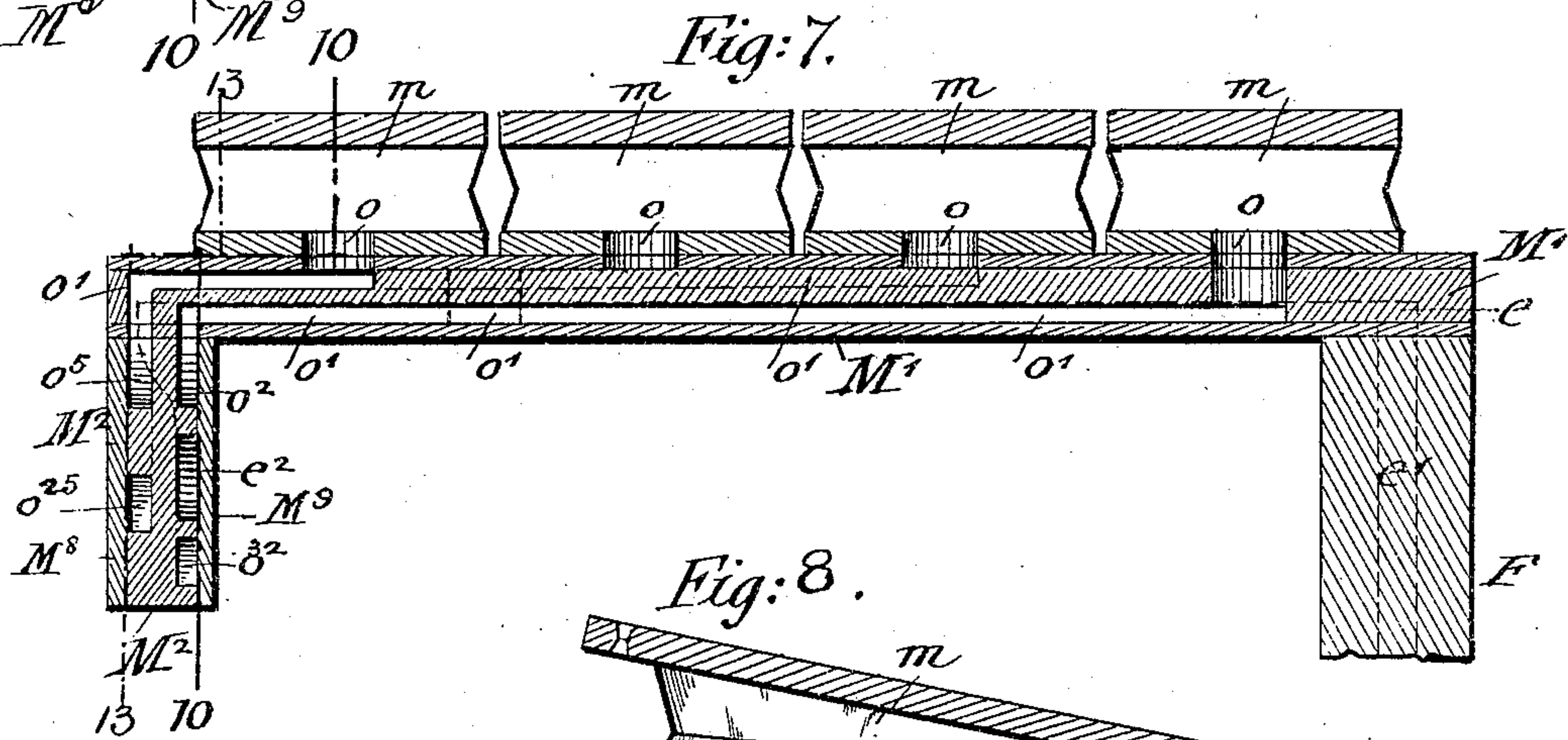
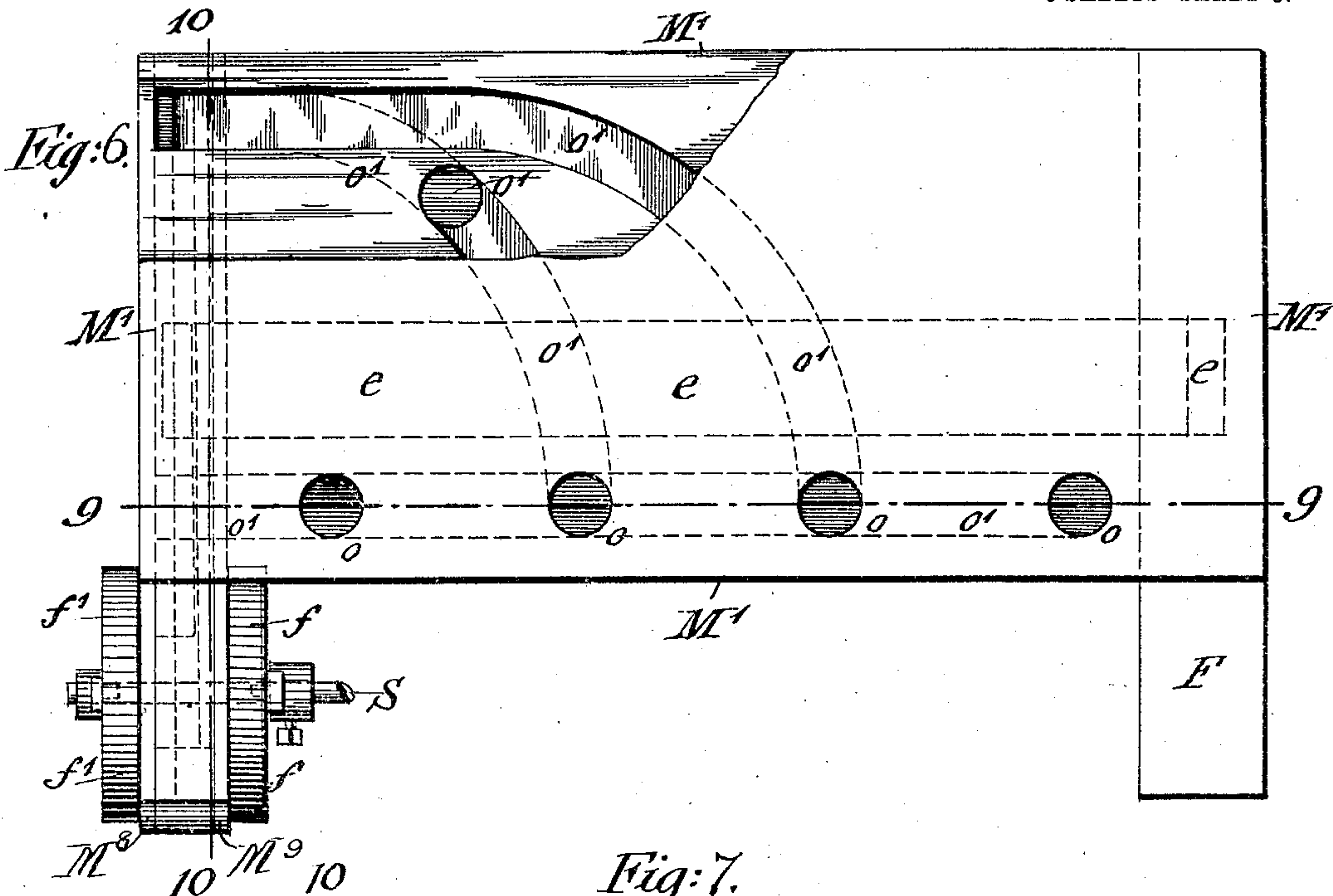
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6 SHEETS—SHEET 3.



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5 SHEETS—SHEET 4.

Fig: 9.

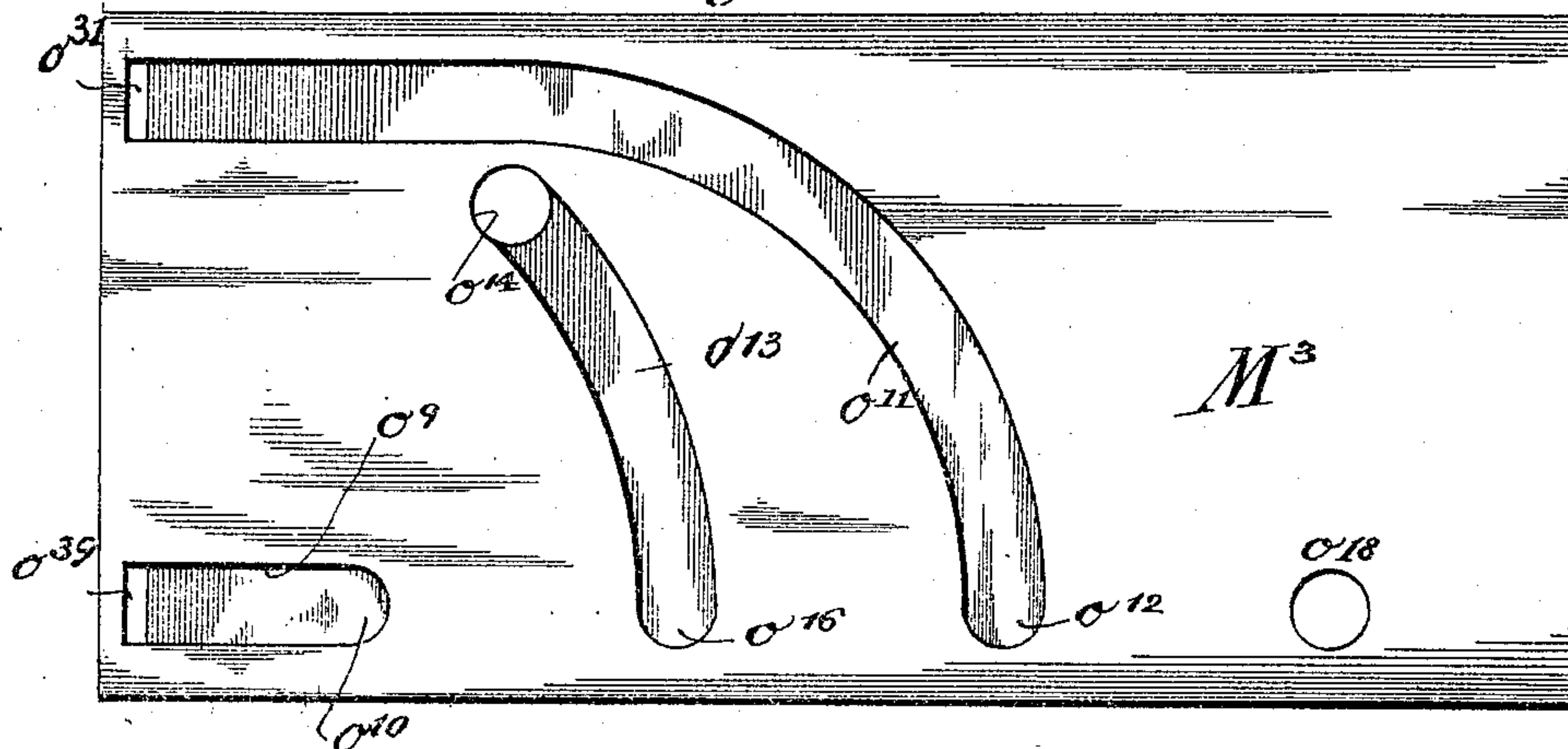


Fig: 10.

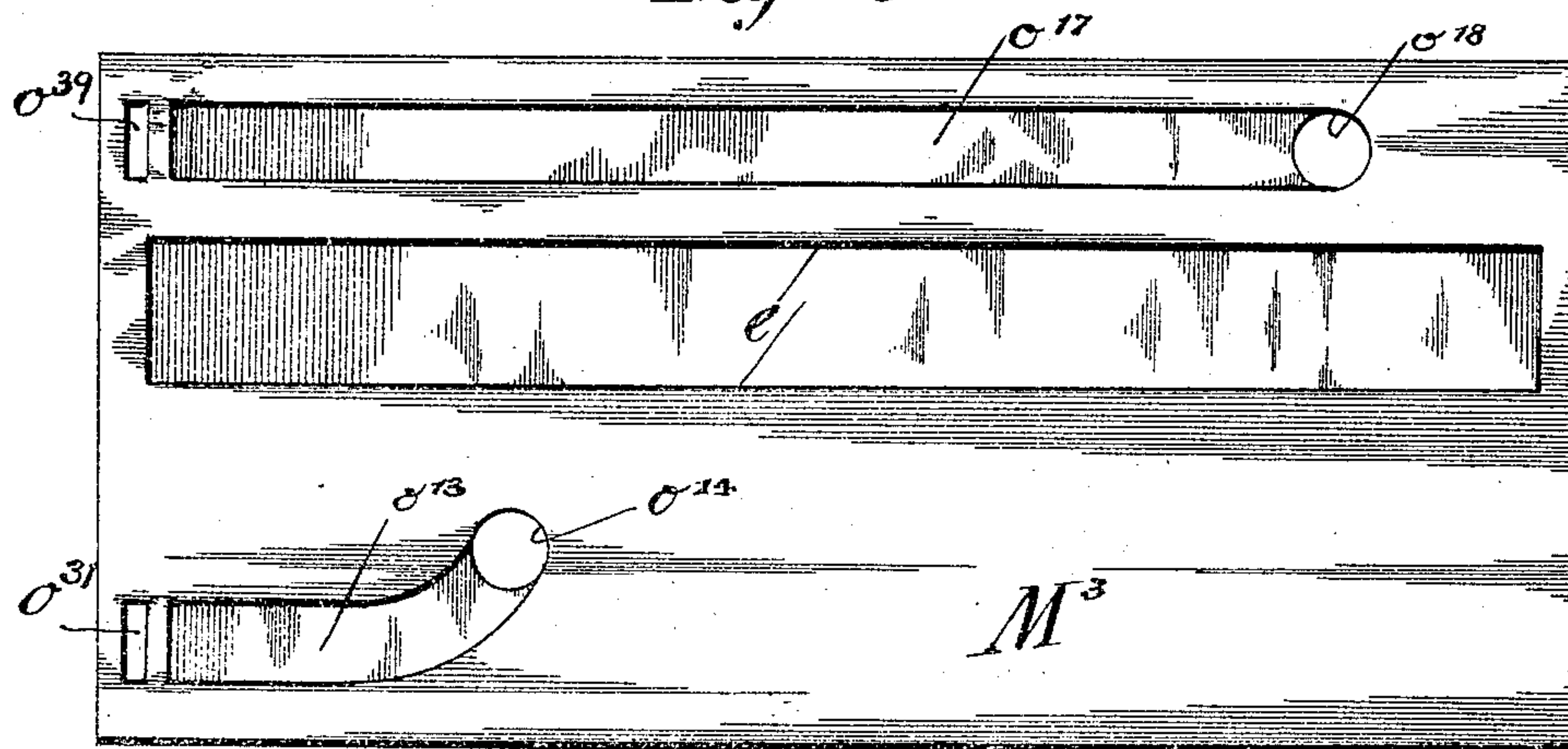
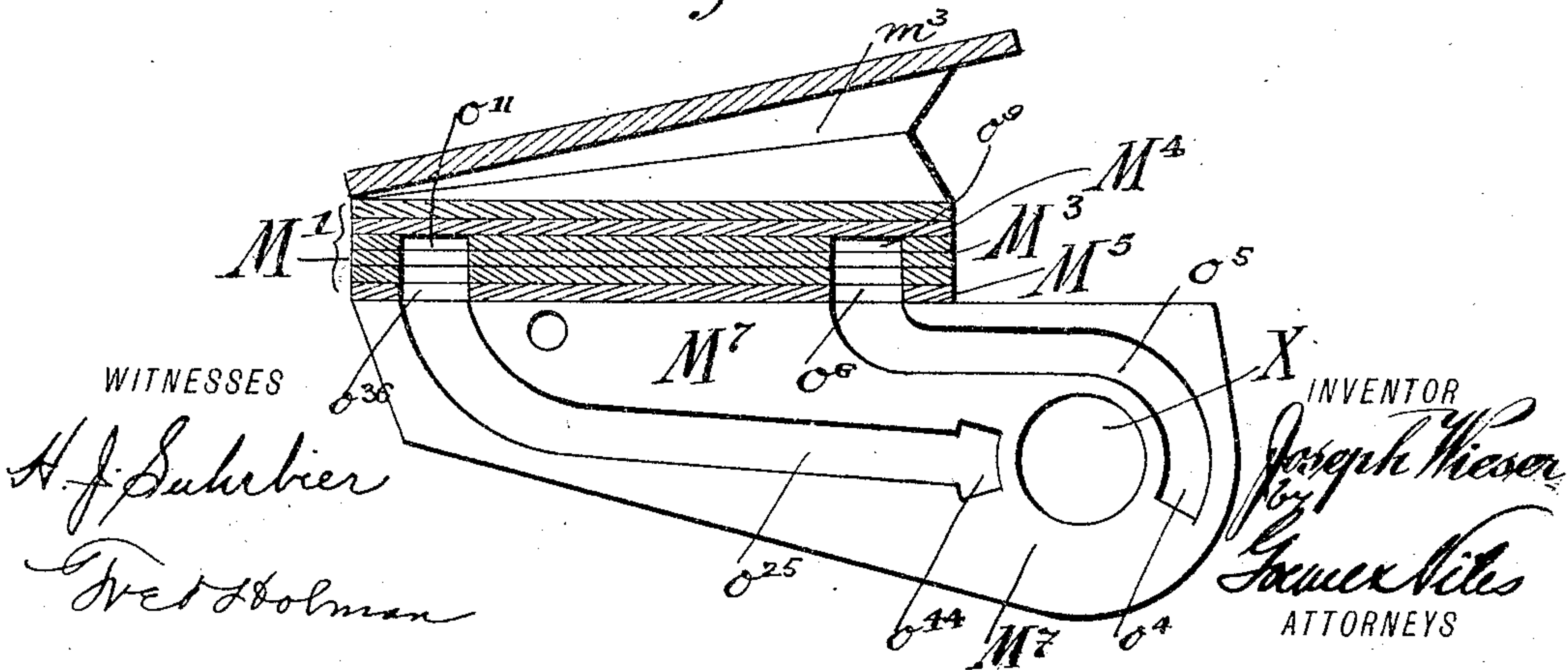


Fig: 11.



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5 SHEETS—SHEET 5.

Fig: 12.

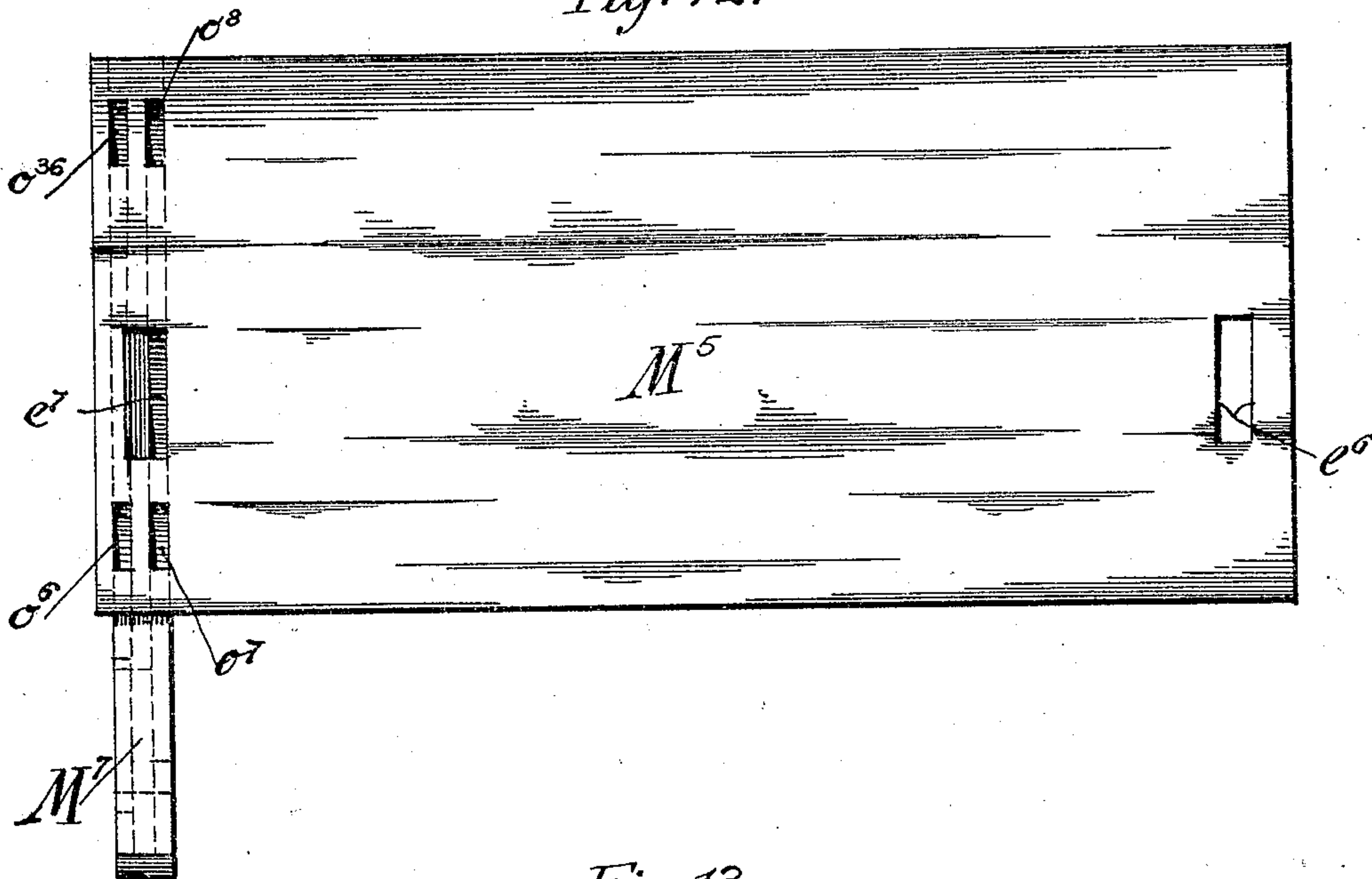


Fig: 13.

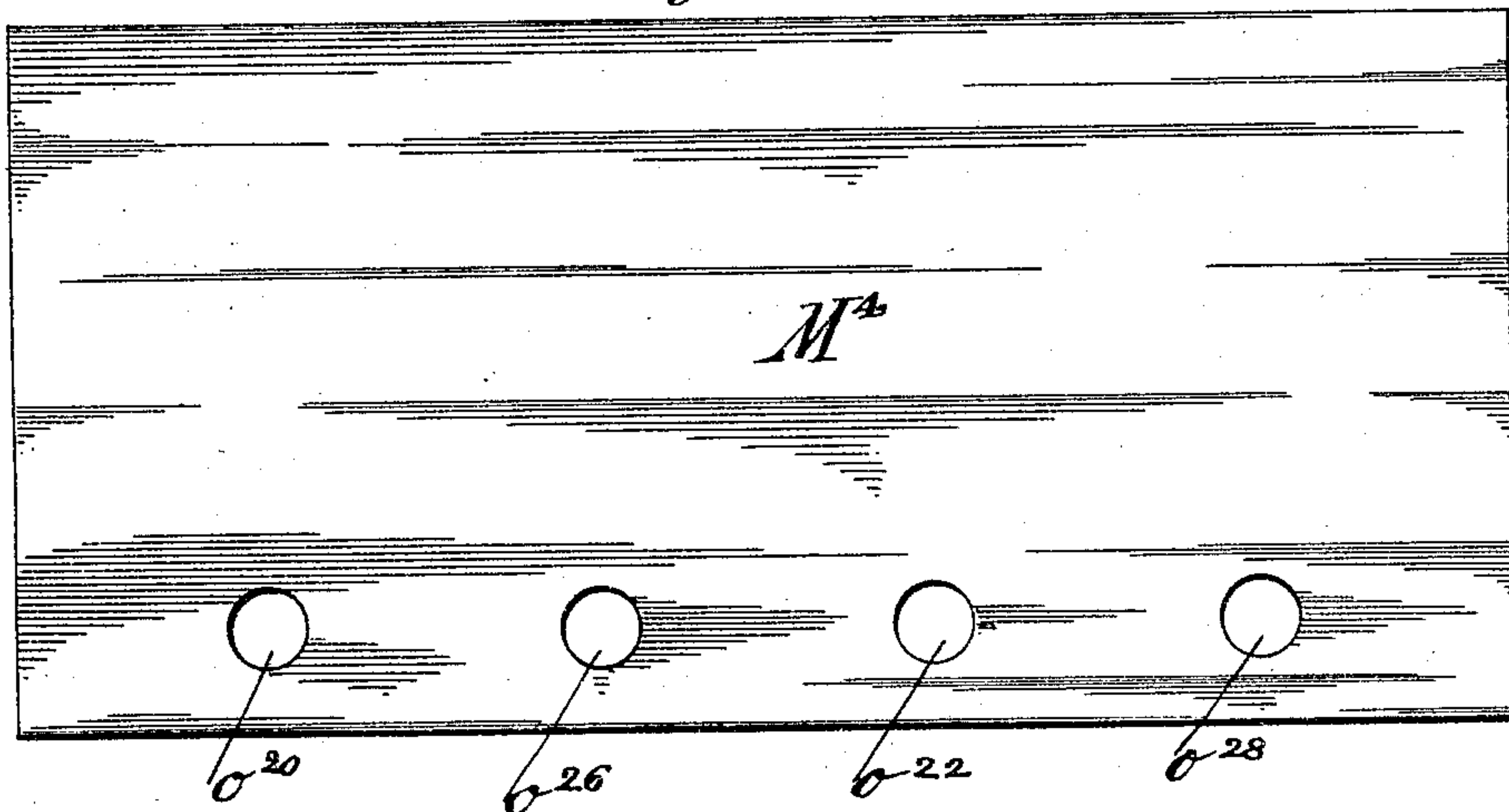
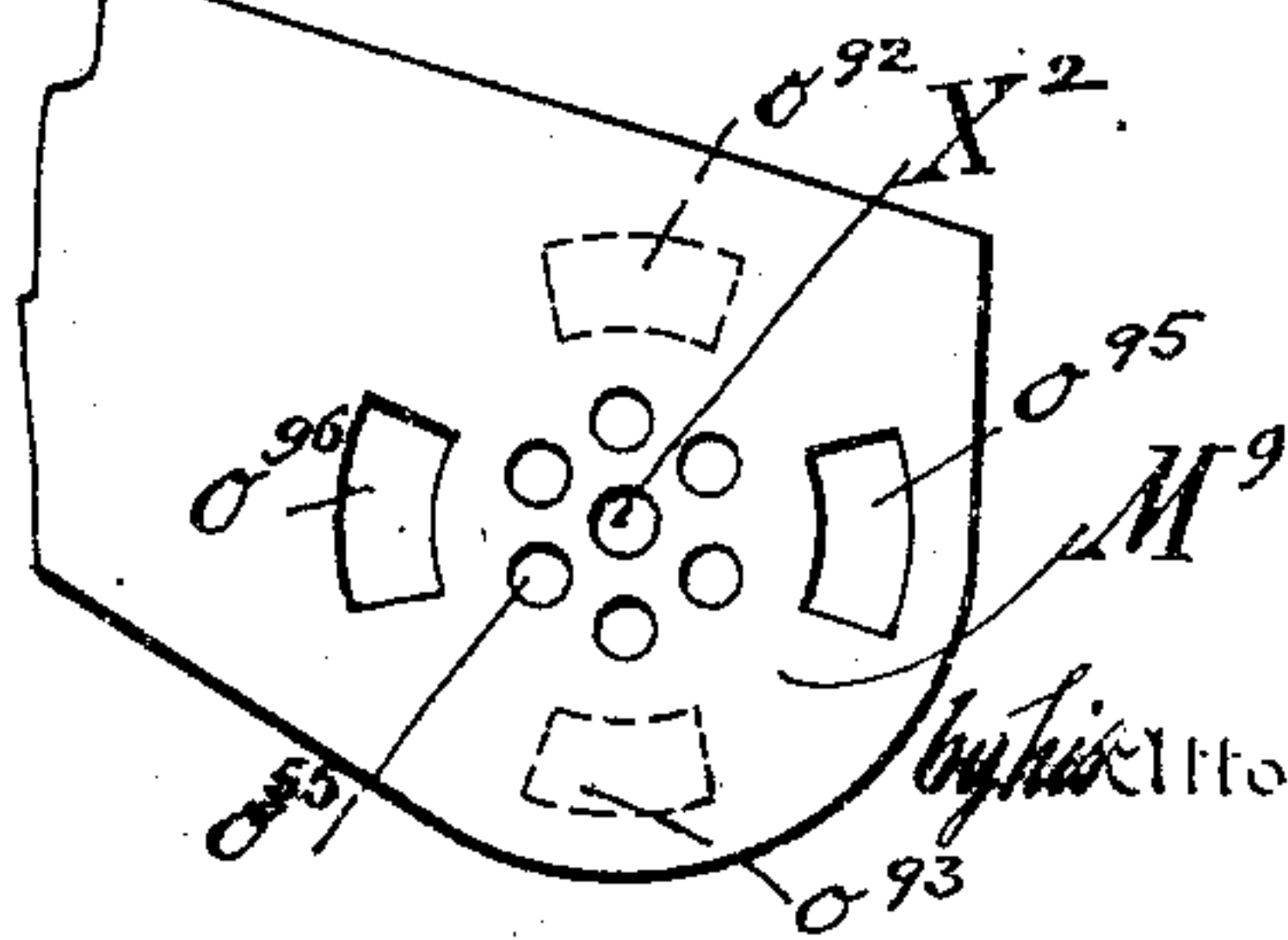


Fig: 14.



Witnesses
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UNITED STATES PATENT OFFICE.

JOSEPH WIESER, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO KARL FINK, OF NEW YORK, N. Y.

PNEUMATIC MOTOR FOR DRIVING MUSIC-SHEETS.

SPECIFICATION forming part of Letters Patent No. 788,387, dated April 25, 1905.

Application filed May 21, 1903. Serial No. 158,214.

To all whom it may concern:

Be it known that I, JOSEPH WIESER, a citizen of the United States, residing in New York, borough of Brooklyn, in the State of New York, have invented certain new and useful Improvements in Pneumatic Motors for Driving Music-Sheets, of which the following is a specification.

My invention relates to an improvement in pneumatic motors for actuating the music-sheet-driving mechanism by which the unwinding of the perforated music-sheet from its roll and the rewinding on the same after the piece of music has been played is accomplished in a quick and effective manner.

For this purpose the invention consists of certain novel features and combinations of parts, which will be fully described hereinafter and finally pointed out in the claim.

In the accompanying drawings, Figure 1 represents a front elevation of my improvement, showing the mechanism in position for unwinding the music-sheet from its roll while playing the piece of music. Fig. 2 is a plan view of Fig. 1. Fig. 3 is a vertical transverse section on line 5 5, Fig. 1. Figs. 4 and 5 are enlarged detail views of the rotary valve for actuating the individual bellows of the improved pneumatic motor. Fig. 6 is an enlarged plan view of the suction-channels for the bellows of the motor. Fig. 7 is an enlarged vertical longitudinal section through the motor on lines 9 9, Fig. 3. Fig. 8 is an enlarged vertical transverse section on lines 10 10, Figs. 6 and 7. Fig. 9 is a top view of the central part of the pneumatics-supporting blocks. Fig. 10 is a bottom view of the central part of the pneumatics-supporting block. Fig. 11 is a vertical transverse section on lines 13 13, Fig. 7. Fig. 12 is a plan view of the bottom board of the pneumatics-supporting block. Fig. 13 is a plan view of the top board of the pneumatics-supporting block, and Fig. 14 is a side view of the opposite side board.

Similar letters of reference indicate corresponding parts throughout the several views.

Referring to the drawings, M designates the improved pneumatic motor for actuating

the driving mechanism for the music-sheet for self-playing attachment for pianos and other keyed musical instruments. This pneumatic motor is composed of four pneumatics, m^2 , m^3 , m^4 , and m^5 , which are arranged side-wise of each other, the collapsible portions or lids being connected by pivot-rods m' with the cranked portions of the driving crank-shaft S, which is supported in suitable bearings in the upright side walls of the casing or second block M^2 . The cranks of the driving-shafts S are set off on the shaft S at angles of ninety degrees to each other, so that by the consecutive action of the four pneumatics on the crank-shaft one full rotation of the same is produced. The rotary motion of the crank-shaft S is transmitted by a sprocket-wheel and sprocket-chain transmission n n' n^2 to an intermediate shaft S' and thence to the music-rolls r , which carry the music-sheet over the tracker T. However, as this transmission mechanism forms no part of the present invention it will not be described in detail.

The four pneumatics m^2 m^3 m^4 m^5 , constituting the improved pneumatic motor, are supported in an inclined position in the supporting-frame upon a bottom block M' , in which is arranged a longitudinal suction-channel e , connected with a vertical channel e' in the side wall of the supporting-frame F of the self-playing attachment, said channel leading to the suction-bellows. At one end of the bottom block M' is arranged at right angles thereto a casing or second block M^2 , provided with an opening X, through which the crank-shaft S passes. The casing or second block M^2 consists of a central part M^7 , provided on either side with two grooves o^2 o^{32} , the lower ends of which are arranged diametrically opposite each other, while the other ends of these grooves terminate in the upper part of the central part M^7 . The two diametrically opposite lower ends of the grooves on one side of the central part M^7 are offset at right angles throughout to the diametrically opposite lower ends of the grooves on the opposite side of the central part M^7 , so that the ends of the grooves, alternately one end on

one side and one end on the other side, are arranged in a circle. Furthermore, one side of the central part M^7 is provided with a central suction-groove e^2 intermediately between
 5 the two grooves, which communicates at one end with the opening X, through which the shaft S passes, and terminates at its opposite end in the upper part of the central part M^7 .
 10 The grooves on each side of the central part M^7 by being covered with side boards $M^8 M^9$ form channels and will be referred to hereinafter as such.

The bottom block M' consists of three parts—a central part M^3 , a top board M^4 , and a bottom board M^5 . The bottom board M^5 is provided at one end with four square holes of the same size, as shown in Fig. 12, corresponding to the upper ends of the channels of the central part M^7 of the casing or second block M^2 , the lower ends of the channels being arranged diametrically with respect to each other. The bottom board M^5 is provided with two holes, one of which corresponds to the suction-channel e^2 of the central part M^7 of the second block M^2 , while the other corresponds to a vertical suction-channel e' in the side wall of the supporting-frame F. The top board M^4 of the bottom block M' is provided with four round holes corresponding to the
 20 several pneumatics $m^2 m^3 m^4 m^5$. The central part M^3 of this bottom block has upon its lower side a suction-groove e , which being covered by the bottom board M^5 forms a channel e^2 and connects the hole e^7 of this end of the
 25 bottom board M^5 with the hole e^6 of the other end of the bottom board M^5 . The hole e^6 corresponds to the vertical channel e' of the supporting-frame F. The central part M^3 of the bottom block M' is provided with other grooves,
 30 which, being closed by the top and bottom boards $M^4 M^5$, respectively, form channels, which will now be more fully described. The channels $o^2 o^{32}$ at that side of the central part M^7 of the second block M^2 at which the suction-channel e^2 is arranged have their lower ends $o^3 o^{33}$
 35 arranged at diametrically opposite points concentric to the shaft-opening X and their upper ends terminating in the upper part of the central part M^7 in communication with holes $o^7 o^8$ of the bottom board M^5 . The hole o^8 is in communication with a channel o^{17} in the lower side of the central part M^3 of the bottom block M' and extends approximately throughout the entire length of the same,
 40 terminating in a hole o^{18} of the central part M^3 of the bottom block M' and corresponding to a hole o^{28} of the top board M^4 , which communicates with the pneumatic m^5 . The hole o^7 , on the other hand, is in communication with the channel o^{13} of the lower side of the central part M^3 of the bottom block M' , which passes at o^{14} through the central part M^3 of the bottom block M' to the upper side thereof, continuing to a point o^{16} immediately
 45 below a hole o^{26} of the top board M^4 , which

communicates with the pneumatic m^3 . The channels $o^5 o^{25}$ at the opposite side of the central part M^7 of the second block M^2 have their ends $o^4 o^{44}$ arranged at diametrically opposite points equidistant from the shaft-opening X,
 50 and the line connecting the same is at right angles to the line connecting the ends $o^3 o^{33}$ of the suction-channel side of the said central part M^7 . The channels $o^5 o^{25}$ terminate in upper part of the central part M^7 in communication with holes $o^6 o^{36}$ in the bottom board M^5 . The hole o^6 is in communication with the hole o^{39} in the central part M^3 of the bottom block M' and with a short channel o^9 , terminating at o^{10} immediately below the
 55 hole o^{20} in the top board M^4 , which communicates with the pneumatic m^2 , while the other hole, o^{36} , is in communication with hole o^{31} of the central part M^3 of the bottom block M' and with a curved channel o^{11} , terminating at o^{12} , immediately below a hole o^{22} in communication with a pneumatic m^4 . By this arrangement, in which the second block or casing M^2 is disposed right angularly with respect to the bottom board M' , the motor may be easily
 60 built and taken apart for the inspection or the cleaning of the same. This may be done by simply removing the covers $M^8 M^9$ of the central part M^7 of the second block M^2 and the top boards M^4 and M^5 of the bottom board M' ,
 65 so that the various channels are readily accessible. The side board M^8 is provided with openings o^5 , arranged concentrically with respect to the shaft-opening X² in side board M^8 and with openings $o^{92} o^{93}$, corresponding to the lower ends $o^3 o^{33}$ of the channels $o^2 o^{32}$ in the central part M^7 of the second block M^2 . In the other side board, M^9 , similar openings o^{55} are arranged concentrically about a similar crank-shaft opening X² in said side board
 70 and with openings $o^{95} o^{96}$, corresponding to the lower ends $o^4 o^{44}$ of the channels $o^5 o^{25}$ in the central part M^7 of the second block M^2 .

Adjacent to each side of the second block M^2 and mounted on the shaft S are valves $f f'$, one of which is clearly shown in Fig. 5. These valves $f f'$ are rotated with a crank-shaft and are provided with sector-shaped recesses f^2 and segmental recesses f^3 , having at their inner faces outlet-openings f^4 , as shown
 75 in Fig. 5. The valve f' is attached to the crank-shaft S in such a manner that the central axis of its recesses $f^2 f^3$ is located at right angles with the central axis of the recesses $f^2 f^3$ of the valve f . The openings $o^5 o^{55}$ form communication between the atmosphere and a concentric channel f^5 at the inner end of the sector-shaped recesses f^2 of each valve $f f'$, so that the suction-channel e^2 of the casing or second block M^2 is placed alternately in communication of the suction-channel of each pneumatic and with the atmosphere, thus producing four successive movements or collapses of the pneumatics,
 80 and thereby four successive impulses on the

crank-shaft S. As these impulses are uniform and take place at regular intervals, a uniform rotary motion is imparted to the crank-shaft and thence by the intermediate motion-trans-

5 mitting mechanisms either to the music-sheet roll for moving the music-sheet over the tracker when the selection is to be played or to the winding-up roll for afterward rewinding the music-sheet.

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

In a pneumatic motor, the combination, with a plurality of pneumatics and a shaft operatively connected therewith, of a pneumatics-

15 supporting block comprising a central part provided with grooves at either side of the same and a groove in the lower side in communication with the wind-chest, a top board for said central part having openings in com-

20 munication with said groove and with the pneumatics, and a bottom board for said central part having openings at one end thereof, a second block at approximately right angles to said pneumatics-supporting block and pro-

25 vided with an opening and with grooves on

each side, each of said grooves communicating with one of the openings of said bottom board and terminating alternately one on either side of said second block and equidistant from the shaft-opening, and provided on 30 one side with a suction-groove connecting the suction-channel of the pneumatics-supporting block with the shaft-opening, side boards for said second block provided with openings corresponding to the ends of the grooves of said 35 second block and to the shaft-opening, and valves having recesses and air-inlets in their faces, said valves being mounted on said shaft on either side of said second block and adapted to successively connect the channels lead- 40 ing to the pneumatics alternately with the wind-chest and with the atmosphere.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

JOSEPH WIESER.

Witnesses:

PAUL GOEPEL,
C. P. GOEPEL.