

No. 677,775.

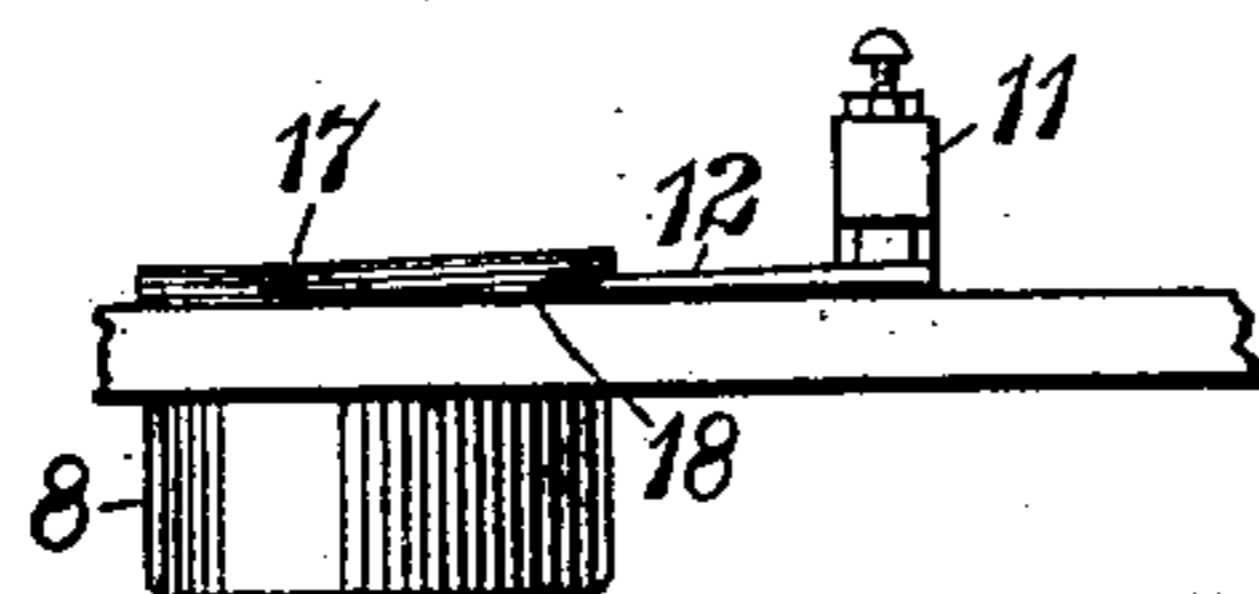
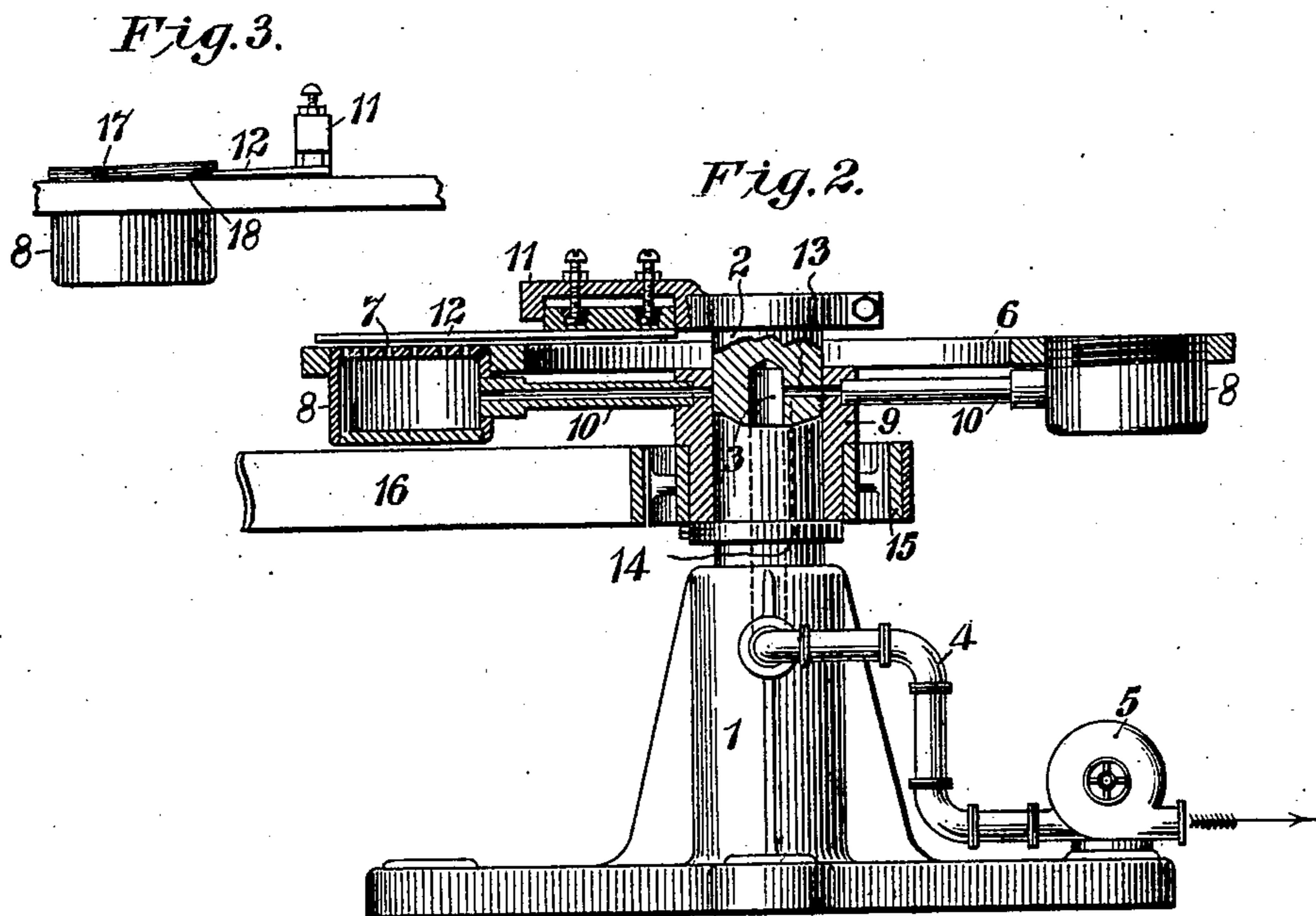
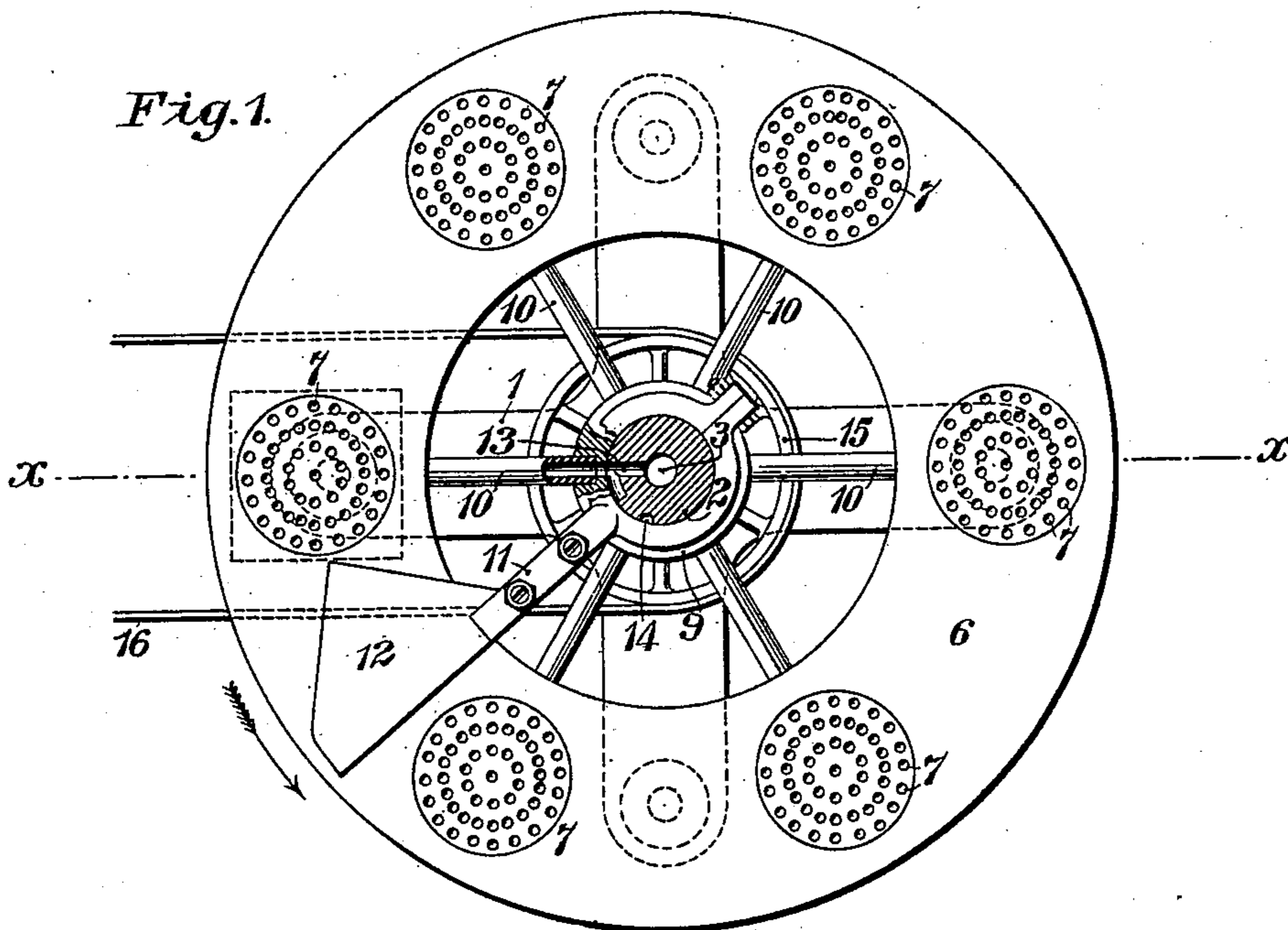
Patented July 2, 1901.

I. DE KAISER & C. W. HADFIELD.

MICA SPLITTING MACHINE.

(Application filed Oct. 22, 1897.)

(No Model.)



WITNESSES:

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UNITED STATES PATENT OFFICE.

ISAAC DE KAISER, OF PITTSBURG, AND CHARLES WM. HADFIELD, OF BRADDOCK, PENNSYLVANIA, ASSIGNORS TO THE WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY, OF PENNSYLVANIA.

MICA-SPLITTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 677,775, dated July 2, 1901.

Application filed October 22, 1897. Serial No. 656,013. (No model.)

To all whom it may concern:

Be it known that we, ISAAC DE KAISER, residing at Pittsburg, and CHARLES WM. HADFIELD, residing at Braddock, in the county of Allegheny and State of Pennsylvania, citizens of the United States, have invented a new and useful Improvement in Mica-Splitting Machines, (Case No. 758,) of which the following is a specification.

Our invention relates to machines for cutting or splitting material into sheets, and more particularly to machines for splitting mica, though not necessarily limited to such use.

The object of our invention is to produce a machine of the characters specified which shall be comparatively simple in construction and effective in operation.

It has been the usual practice prior to our invention to split mica into thin sheets, such as are used in the arts, by means of manually-operated knives. In cases where machines have been used for this purpose difficulty has been experienced in so supporting and maintaining the material in position that the splitting implement may perform its function in a satisfactory manner. It is the main purpose of our invention to provide a means for holding the material rigidly during the operation and for automatically releasing the severed sheet as soon as the splitting-blade has done its work. We propose to attain these results by producing a partial vacuum beneath the material to be operated upon and by restoring the normal atmospheric pressure as soon as the sheet has been severed from the main body of the mica.

In the accompanying drawings, Figure 1 is a view, partially in section, but mainly in plan, of a machine constructed in accordance with our invention. Fig. 2 is a view, partially in side elevation and partially in section, of the machine shown in Fig. 1. Fig. 3 is a detail side elevation of a portion of the machine.

The details of construction illustrated in the drawings are as follows:

1 is a supporting stand or base from which projects upwardly a stationary stud or shaft 2, provided with a longitudinal bore or pas-

sage 3, the lower end of which communicates with the pipe 4, leading to an air-pump 5, of any suitable construction.

Mounted upon the stationary shaft or stud 2 so as to rotate freely thereon is an annular supporting-table 6, provided with a series of annularly-arranged sets of perforations 7. The number of such sets of perforations may obviously be varied from that shown to suit the convenience of the builder or user of the machine. Each of these sets of perforations communicates with a receptacle or box 8, depending from the under side of the table, and each box communicates with the inner periphery of the hub 9, which surrounds the stud or shaft 2, by means of tubes or pipes 10, which serve as air-conduits and also as supporting-arms for the table 6. A horizontally-extending arm 11 is clamped upon the upper end of the stud or shaft 2 and is provided at or near its outer end with a knife or blade 12, which is preferably adjustable vertically, as indicated in the drawings.

The bore or passage-way 3 in the stud or shaft 2 communicates with the outer periphery of the stud on one side by means of a laterally-extending passage 13, which is preferably of sufficient width laterally, at least at its outer end, to insure open communication between each box or receptacle 8 and the air-pump 5 during the time the perforations communicating with such box are passing under the knife 12. When a set of perforations has passed the knife, the inner end of the corresponding pipe or tube 10 comes into communication with a groove 14 in the stud 2, one end of which is open, and therefore permits of the entrance of air to the corresponding receptacle or box 8, and thus restores the equilibrium of pressure on the two sides of the table at that point.

The table may be rotated by any suitable means, a pulley 15 upon the hub 9 and a belt 16, extending therefrom to a suitable driving-shaft, being shown for this purpose in the drawings.

The operation of the machine is as follows: Assuming that the table 6 is rotated by means of the belt 16 and pulley 15 in the direction indicated by the arrow in Fig. 1 and that the

blade 12 is adjusted vertically in order to sever a sheet of the desired thickness, a block or thick plate or sheet of material is placed upon the table over the set of perforations at the left and nearest the blade, and when such set of perforations reaches nearly the position indicated in Fig. 1 of the drawings the air-pump 5, acting through the passages 3, 13, and 10, will have exhausted the air beneath the material to such a degree that the atmospheric pressure from above will hold the same rigidly upon the table. The rotation of the table will therefore carry the material with it and cause the knife to separate a sheet of the desired thickness from the bottom, the upper portion of the material sliding over the knife to be again placed in position over a set of perforations for the purpose of severing another sheet from its bottom. A block 17, of mica or other material, is shown in position over one of the suction-boxes 8 in Fig. 3, a sheet 18 being indicated as partially separated from the block by means of the blade 12. As soon as the severed sheet passes the blade and arm the atmospheric pressure will be restored to the box beneath that set of perforations by the entrance of air through the groove 14 and pipe 10. The sets of perforations will thus be brought into position one after another, and the operation may be repeated indefinitely, the only attention necessary being the removal of the severed sheets and the placing of the material to be operated upon in position to be engaged by the knife as the table rotates.

While we have described a specific form of machine for practicing our invention, we desire it to be understood that the details of construction of such machine may be varied within wide limits without departing from the spirit and scope of the invention.

It will be understood that the knife may be the movable member or that the knife and table may be moved in opposite directions and that the knife may be adjusted to remove the top instead of the bottom layer of material.

We claim as our invention—

1. The combination with a table and a blade which are relatively movable, of means for producing an unbalanced atmospheric pres-

sure upon that portion of the table which is adjacent to the blade whereby material to be treated will be held firmly in position.

2. In a machine for splitting mica, the combination with a stationary blade and a movable table parallel to each other and means for producing a partial vacuum beneath the material to be treated whereby such material will be held in position by atmospheric pressure.

3. The combination with a blade and a relatively movable table provided with sets of perforations, of means for producing a partial vacuum beneath each set of perforations as it comes into position beneath the blade.

4. In a machine for splitting mica or analogous material, the combination with a splitting-blade and a table provided with sets of perforations and movable in a plane parallel and adjacent to said blade, of means for producing suction through each set of perforations as it comes into position beneath the blade.

5. The combination with a stationary splitting-blade and a perforated table the upper surface of which is parallel and adjacent to said blade, of means for rotating said table and means for producing a partial vacuum beneath the perforations in the table.

6. A clamping-support for sheet material comprising a table provided with sets of perforations and means for alternately producing and destroying a partial vacuum beneath each set of perforations.

7. In a machine for splitting mica, the combination with a table and means for rotating the same, of means for producing an unbalanced atmospheric pressure successively upon the upper surface of the table at different points and a knife or blade located parallel and adjacent to the upper surface of the table.

In testimony whereof we have hereunto subscribed our names this 20th day of October, A. D. 1897.

ISAAC DE KAISER.
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Witnesses:

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HUBERT C. TENER.