No. 635,588. Patented Oct. 24, 1899.

P. PONDORF.

APPARATUS FOR ARRANGING PROJECTILES, &c.

(Application filed Mar. 3, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

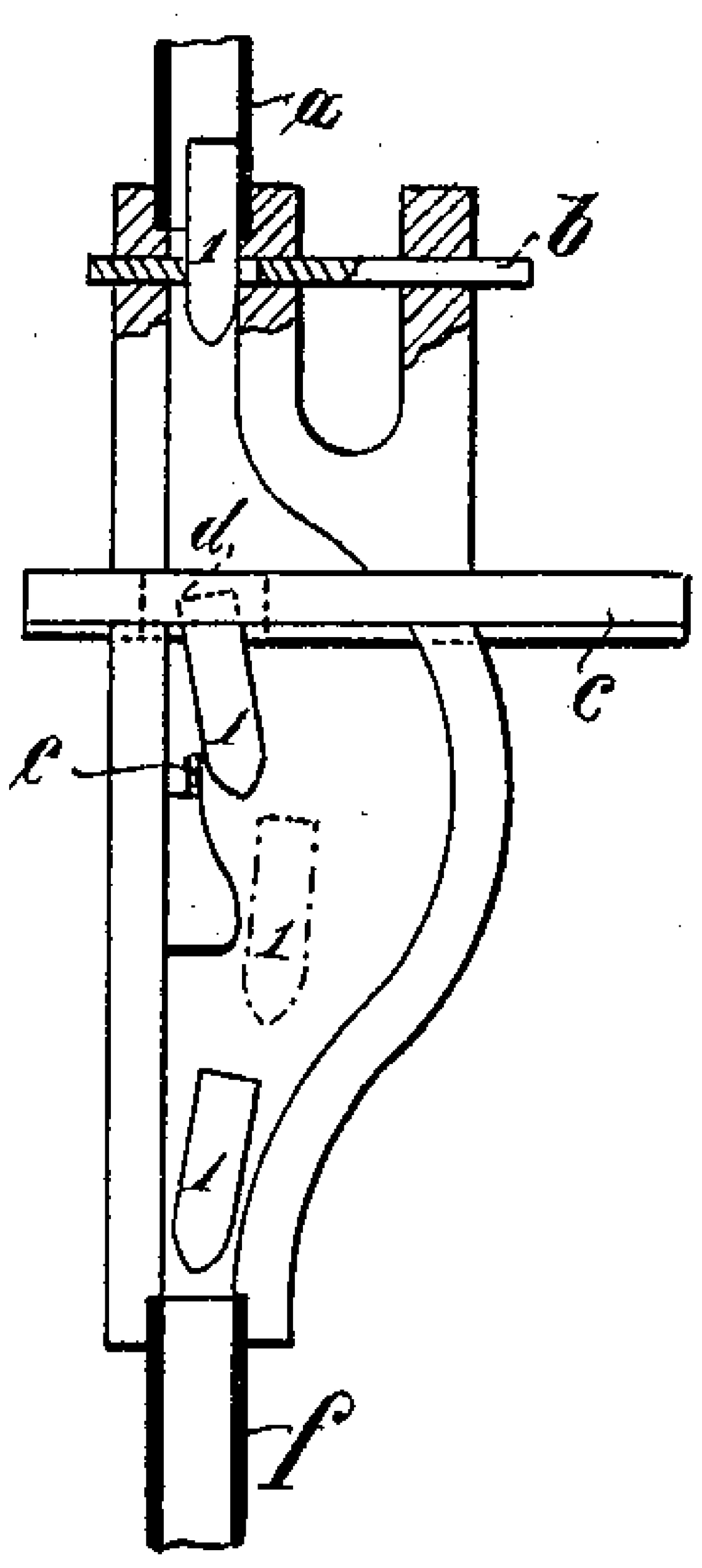


Fig. 2.

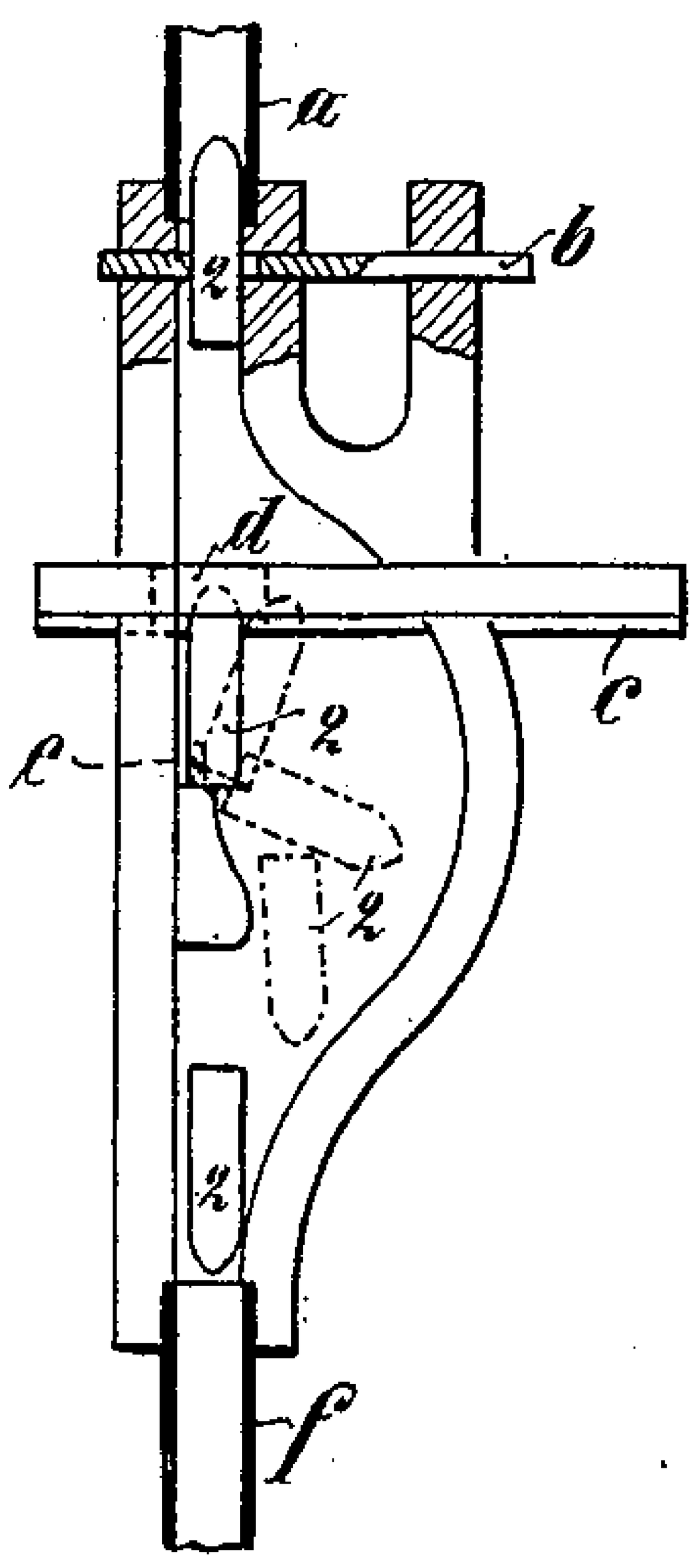


Fig. 3.

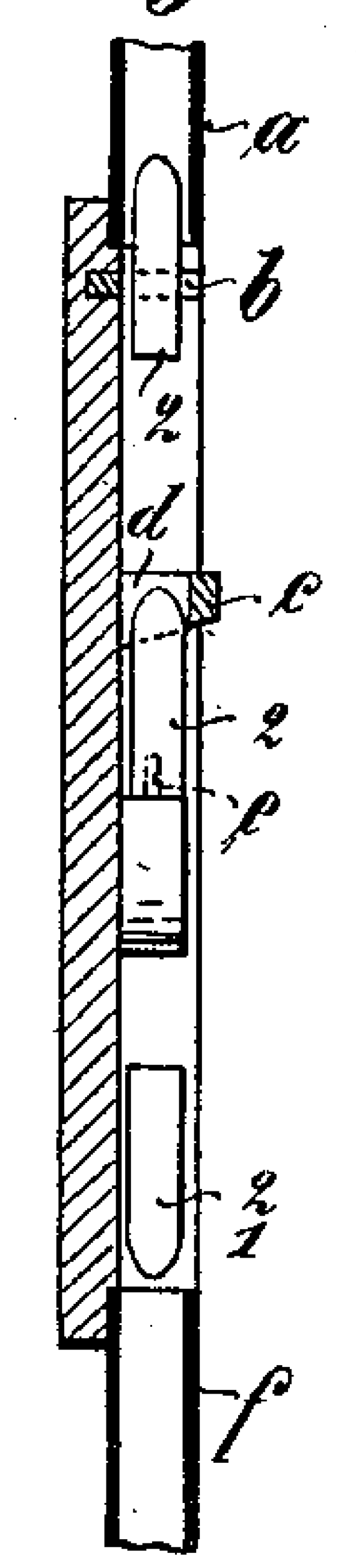


Fig. 4.

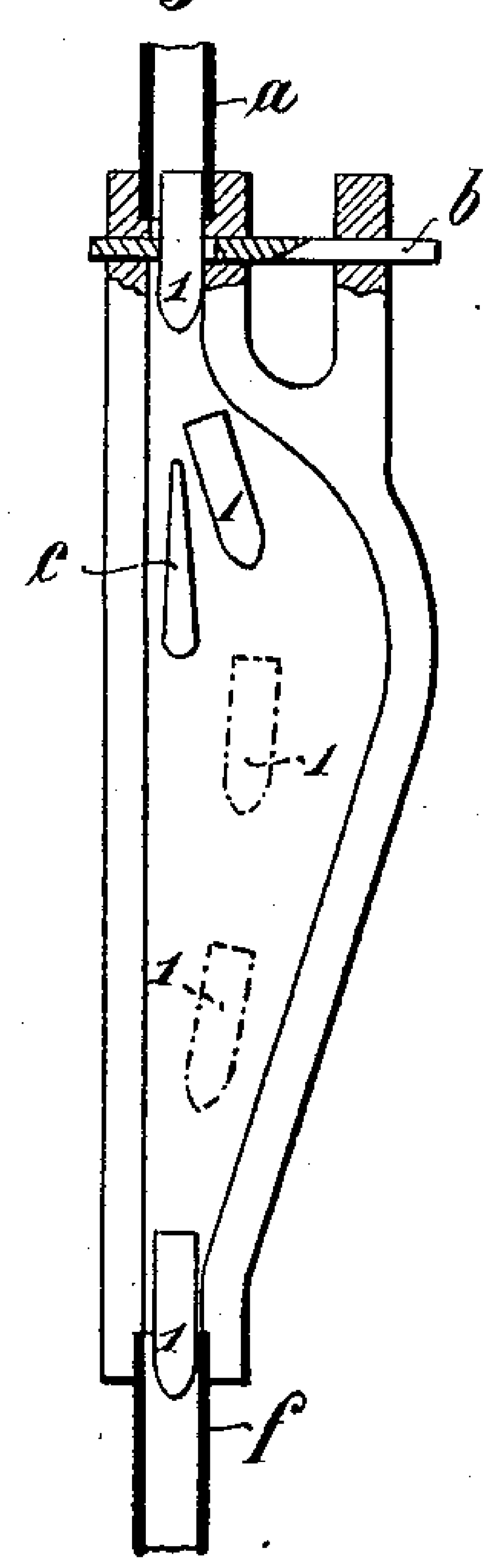


Fig. 5.

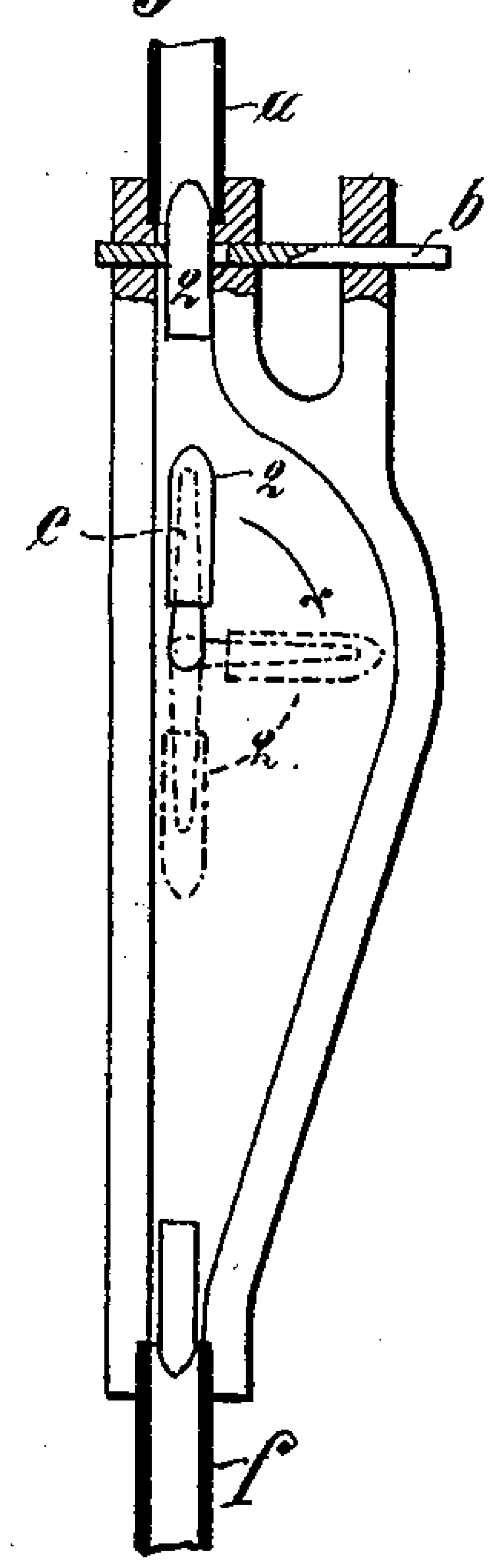
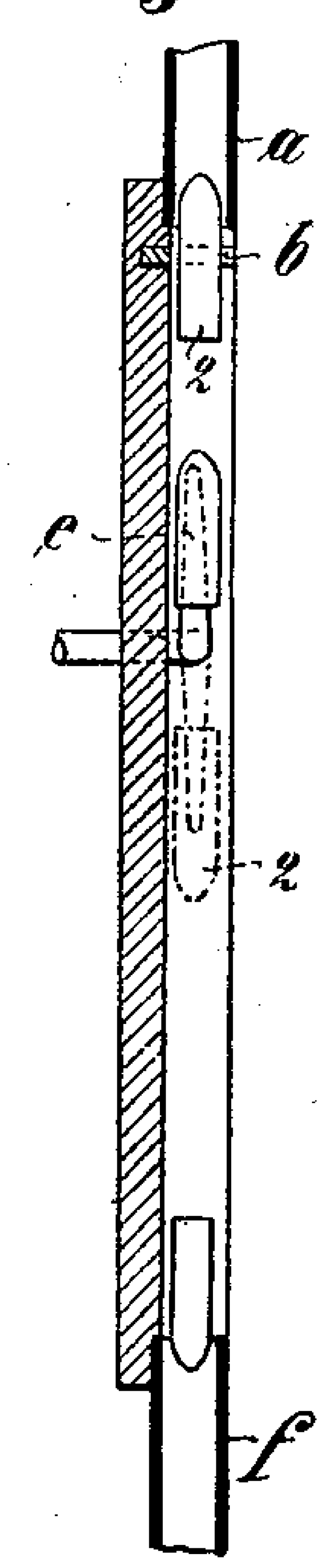


Fig. 6.



Witnesses

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Fig. 7.

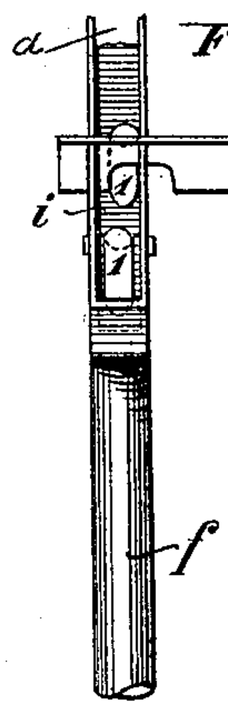


Fig. 8.

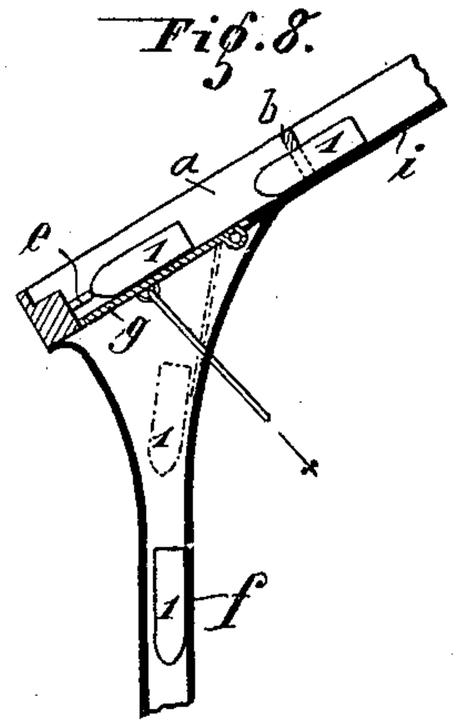
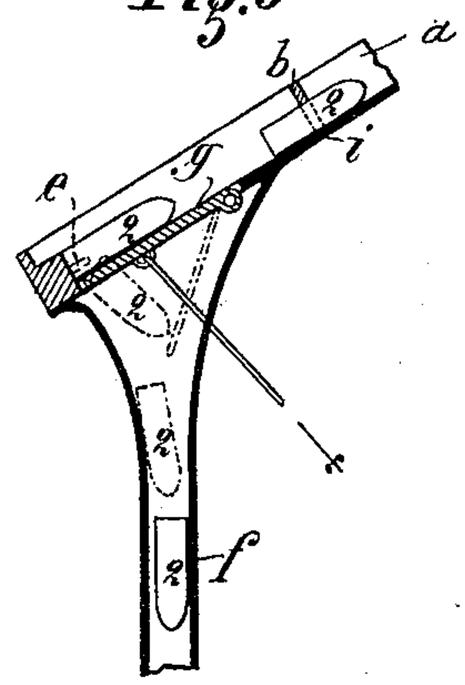


Fig. 9.



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UNITED STATES PATENT OFFICE.

PAUL PONDORF, OF GOESSNITZ, GERMANY.

APPARATUS FOR ARRANGING PROJECTILES, &c.

SPECIFICATION forming part of Letters Patent No. 635,588, dated October 24, 1899.

Application filed March 3, 1899. Serial No. 707,662. (No model.)

To all whom it may concern:

Be it known that I, PAUL PONDORF, manufacturer, a subject of the Emperor of Germany, residing at Goessnitz, Dukedom of Saxony-Altenburg, German Empire, have invented certain new and useful improvements in devices for controlling or regulating the position, direction, or arrangement of projectiles or like bodies open or recessed at one end; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The subject of this invention is a device for controlling the arrangement of projectiles, cases, or similar hollow or other bodies which are open or recessed at one end and are required to be automatically fed forward in a given position. The effect of the improved device upon the bodies in question, which are introduced into the apparatus without any regard to order and pointing in various directions, is such that during their further progress said bodies are all arranged in one uniform direction—namely, with their closed or pointed ends in advance.

The main feature of the present invention is the provision, in the path which the projectiles, cases, or the like are required to traverse, of a nose, stud, or catch adapted to intercept or arrest such of the bodies as may be traveling with the open or recessed ends downward or in advance, when a slide or pusher devised for the purpose or the said catch itself will tilt or turn them over into the required position before allowing them to proceed further; but those of the bodies which are descending or advancing with their closed or pointed ends first are not arrested by the said catch and their position remains unaltered as they advance past the same.

In the accompanying drawings, which show by way of example three forms which the device may assume, Figure 1 is an elevation, partly in section, of a device constructed according to the present invention, showing the action of the apparatus upon projectiles or bodies passing through the same with their closed or pointed ends first. Fig. 2 is a similar view, but showing the action of the apparatus upon projectiles or bodies passing through the same with their open or recessed ends first. Fig. 3 is a sectional view of Fig. 2, taken at right angles thereto. Figs. 4 and 5 are similar views to Figs. 1 and 2, but showing a modification in the tilting mechanism. Fig. 6 is a sectional view of Fig. 5, taken at right angles thereto. Fig. 7 is an end elevation representing a further modification of the device and showing its action upon projectiles traveling closed or pointed end first. Fig. 8 is a sectional side view thereof, and Fig. 9 is a similar view showing the action of the apparatus upon projectiles traveling with their open ends first.

In the form shown in Figs. 1 to 3 the cases, projectiles, or other bodies as they are delivered from the feeding-channel *a* are acted upon by a slide or valve *b*, which receives a reciprocating motion from any suitable means, so that it only allows one projectile at a time to drop out of the channel *a* into the mechanism which is to adjust or arrange its direction, while said slide or valve *b* intercepts the next following projectile or case and temporarily retains it. The projectiles or bodies thus admitted into the adjusting mechanism first drop through the aperture *d*, formed in the slide or pusher *c*, which also receives a reciprocating motion, and if said bodies are traveling with their pointed or closed ends first, as represented in Fig. 1, where said bodies are marked 1, they are merely diverted somewhat to one side by the stud, catch, or stop *e*, but in other respects retain their original position or direction and enter so directed into the discharge-channel. When, however, the bodies falling from *a* through the slide or valve *b* and through the aperture *d* of the slide or pusher *c* arrive with their open ends first, they are arrested by the said stud, catch, or stop *e*, as shown at Fig. 2, and are thereby detained at such a height that their closed or pointed ends engage or enter into the orifice *d* of the slide or pusher *c*. The slide or pusher *c* then receives an endwise movement, and thereby tilts the projectile or body, which in Fig. 2 is marked 2, when said body so tilted will be caused to fall over and take up successively the positions indicated in dot-and-dash lines in Fig. 2 and will enter the delivery-channel *f* with its closed or pointed end first.

The arrangement shown in Figs. 4 to 6 is in the main similar in its construction and operation to that hereinbefore described. In this example, however, no slide or pusher *c* for tilting the projectiles or bodies is provided, but in lieu thereof the stud, catch, or stop *e* is mounted upon an axis of motion and adapted to turn through an arc of one hundred and eighty degrees at each operation, as shown at Fig. 5. By these means the bodies 1, traveling with their closed or pointed ends first, are merely deflected to one side by the said stop or catch *e*, as shown at Fig. 4, and which in other respects does not affect their position, while the bodies 2, which enter with their open ends first, are caught upon and intercepted by the pivoted stud, catch, or stop *e*, and upon said catch *e* being rotated about its pivot through an arc of one hundred and eighty degrees in the direction of the arrow, Fig. 2, the bodies will drop off said catch *e*, with their closed or pointed ends first, into the delivery-channel *f*. The pivotal stud, catch, or stop *e* may be actuated by any suitable means. For example, it may be positively reciprocated through the required arc by a driven cam or other device through suitable connections, or the weight of the moving body may cause the stud *e* to tilt and turn over, and the latter may be counterweighted or acted upon by a light spring to restore it to its normal position.

In the arrangement represented in Figs. 7 to 9 the device is formed with an inclined chute or hopper *a*, leading from the charging-receptacle, which may be of any suitable construction, the stud, catch, or stop *e* being situated at the lower end of said chute or hopper *a*. Adjacent to the catch *e* is provided a hinged trap door or valve *g*, which is opened and closed automatically and serves as a support for the projectiles or bodies resting upon the catch *e*. The operation of this mechanism is as follows: Those projectiles or bodies 1, which slide down the chute with their closed or pointed ends first, take up their position in contact with the catch *e*, as illustrated in Fig. 8, and when the door or valve opens, as indicated by the dotted lines in Fig. 8, the projectile or body whose direction remains unaltered drops into the delivery-channel *f* with its closed or pointed end first. Those projectiles or bodies 2, however, which descend with their open ends first, are caught by the stud, catch, or stop *e*, so that when the door or valve *g* turns on its hinge and opens said bodies are also turned upon the said stop, as shown in Fig. 9—that is to say, they are tilted and turned over by their own weight, and consequently enter the delivery-channel *f* likewise with their closed or pointed ends first. Motion may be imparted to the door or valve *g* in any convenient manner—for example, by means of cams, levers, toothed gearing, or the like from the main shaft of the machine.

What I claim is—

1. In mechanism for controlling the arrangement of projectiles or other bodies having an opening at one end, the combination, with a feed-channel, and valve mechanism constraining the bodies to descend intermittently; of a catch arranged in the path of the said bodies and engaging with their openings when said openings are foremost, and means for turning over the said bodies endwise when they engage with the said catch, substantially as set forth.

2. In mechanism for controlling the arrangement of projectiles or other bodies having an opening at one end, the combination, with a feed-channel, and valve mechanism constraining the bodies to descend intermittently; of a stationary catch arranged in the path of the said bodies and engaging with their openings when said openings are foremost, and a tilting device operating to turn over the said bodies endwise and release them from engagement with the said catch, substantially as set forth.

3. In mechanism for controlling the arrangement of projectiles or other bodies having an opening at one end, the combination, with an inclined channel, and valve mechanism constraining the bodies to slide down the said channel intermittently; of a catch arranged in the path of the said bodies, and means for turning over the said bodies endwise when they engage with the said catch, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

PAUL PONDORF.

Witnesses:
OTTO KOLBE,
FRITZ MERTZ.