(No Model.)

P. A. TAFEL

BOLTING AND SEPARATING MACHINE.

No. 426,879. Patented Apr. 29, 1890.

FIG. 1.

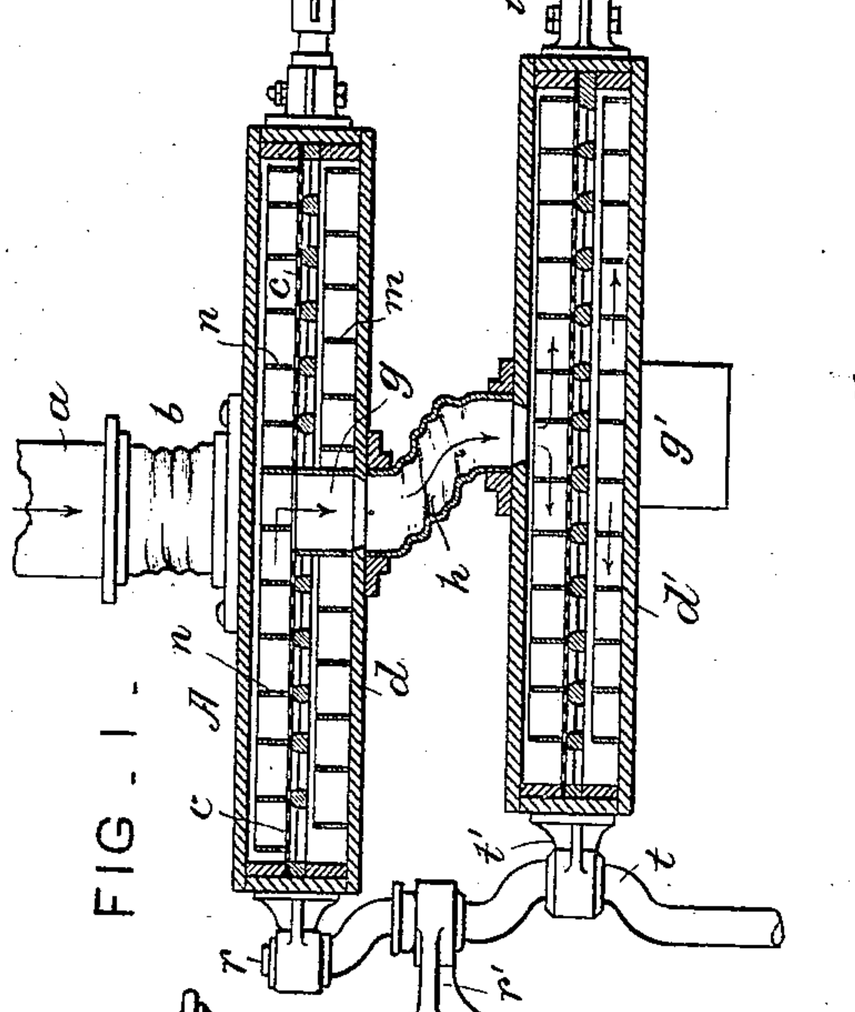


FIG. 2.

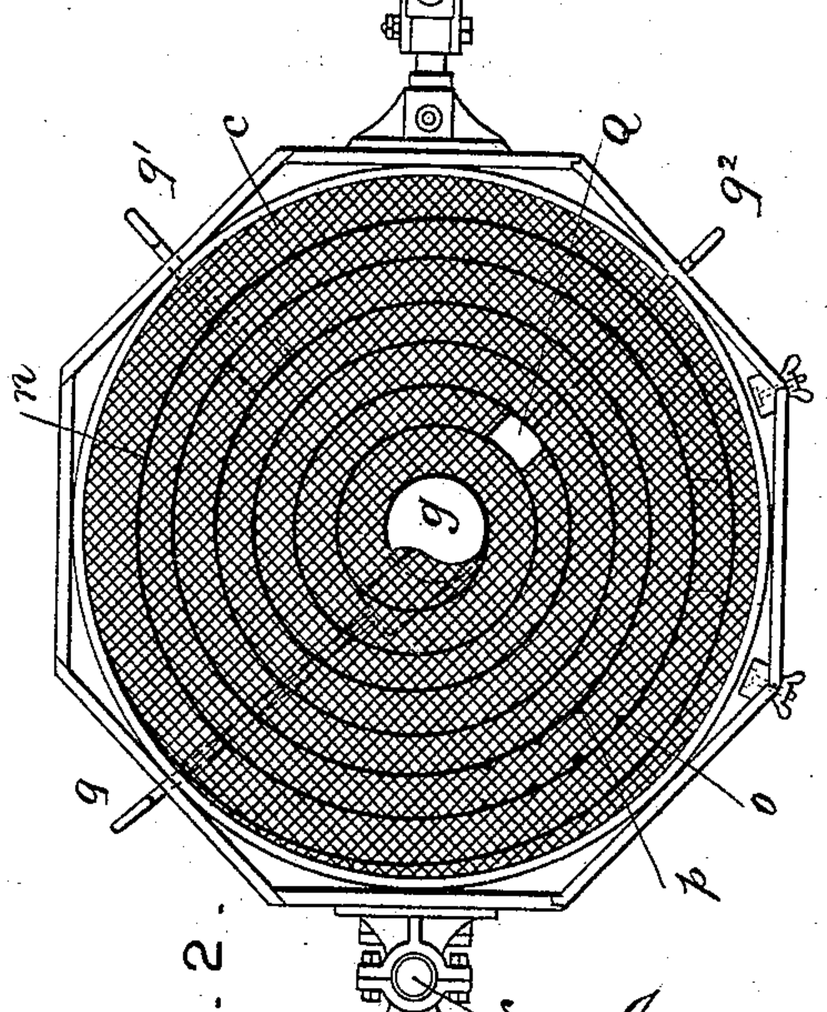


FIG. 3.

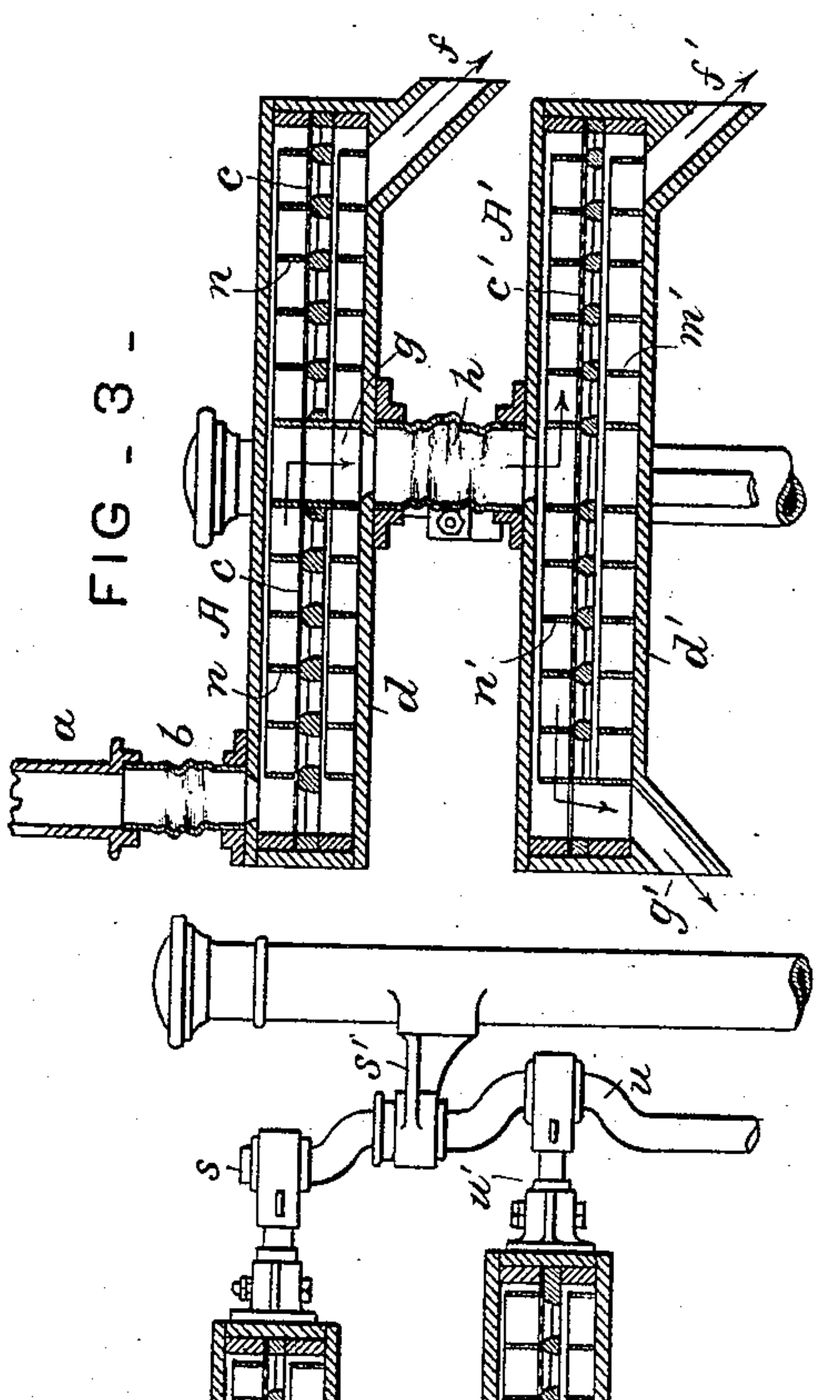


FIG. 4.

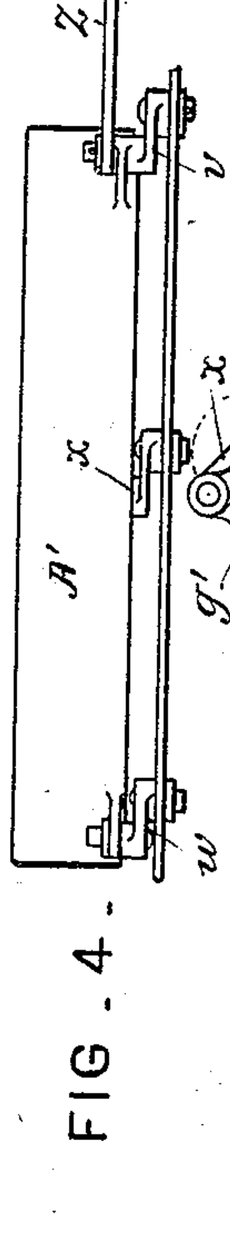
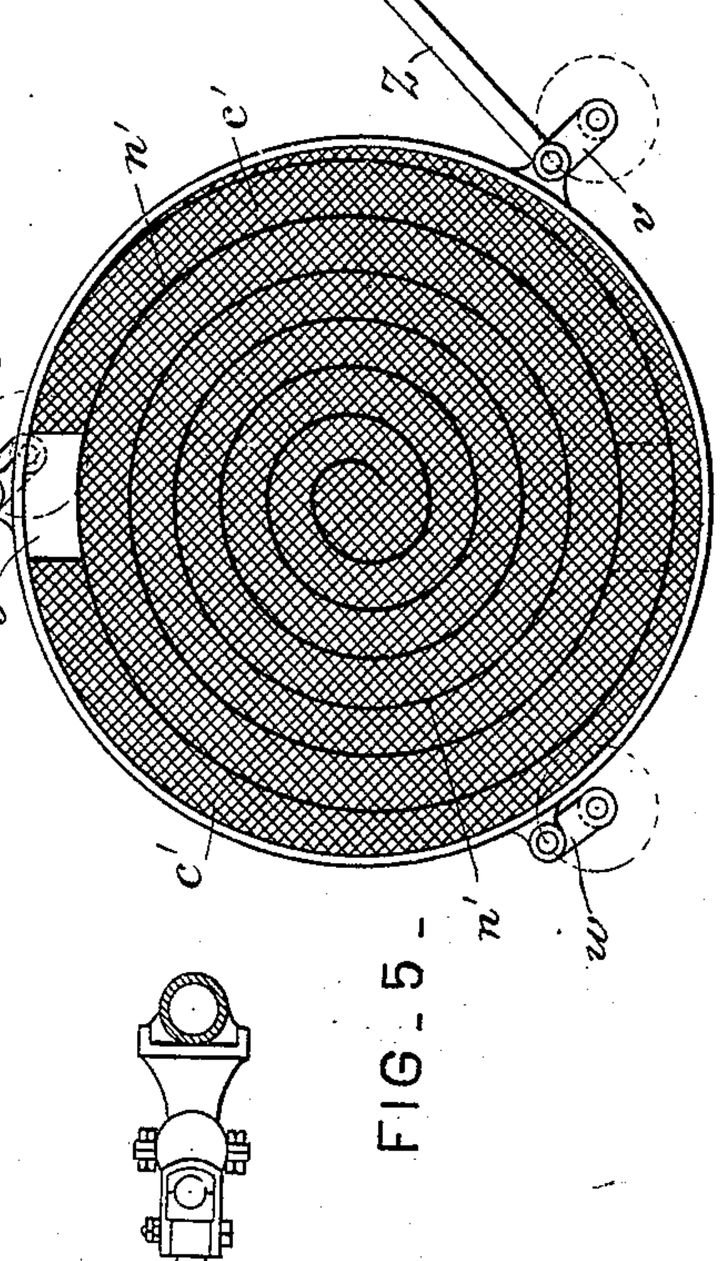


FIG. 5.



Attest { Geo. T. Smallwood. Wm. S. Hodges.

Inventor Philipp Adam Tafel By Paine Lord & Co. Attys.

UNITED STATES PATENT OFFICE.

PHILIPP ADAM TAFEL, OF AUGSBURG, BAVARIA, GERMANY.

BOLTING AND SEPARATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 426,879, dated April 29, 1890.

Application filed January 22, 1890. Serial No. 337,692. (No model.)

To all whom it may concern:

Be it known that I, PHILIPP ADAM TAFEL, a subject of the German Emperor, and a resident of Augsburg, in the Kingdom of Bavaria, Germany, have invented certain new and useful Improvements in Bolting and Separating Machines, of which the following is a specification.

My invention relates to improvements in machines for separating or bolting powdered or granular material by means of plain sieves, and the objects of the same are, first, to increase the effectiveness of the sieve by affording particular means for considerably extending the path of the material upon the meshed bottom, and, second, to impart to it the required eccentric motion. I attain these objects by arranging upon the meshed bottom of a preferably circular sieve for the passage of the material to be sorted or separated a continuous path of the form of an Archimedean or similar spiral, and by subjecting the sieve to the conjoint action of two or more parallel rotating cranks, which are pivoted to the frame of the sieve and adapted to impart to it the necessary motion to cause the material, while separated, to travel through the whole path prescribed by a spirally-formed wall. The result of the motion transmitted to the sieve is that the center and each point of the sieve is actuated to describe a circle the radius of which corresponds with the radius of the actuating-cranks. In accordance with the direction of the rotation of the employed cranks the sorting of the material may take place by feeding the same at the periphery and discharge the plump grains or extraneous matter at the center of the spiral into a separate spout or conversely. To avoid a too excessive extension or size of the sieve, it will be advantageous to pass the material to be sorted through a plurality of sieves.

In the drawings which serve to illustrate my invention, Figure 1 is a vertical section of a duplicated sieve made according to my invention; Fig. 2, a plane with removed cover to better show the interior of the sieve, and Fig. 3 a vertical cross-section of the same, while Figs. 4 and 5 illustrate a side elevation and a plan with removed cover of a single sieve actuated by three co-operating cranks.

Similar letters refer to like parts throughout the several views.

The frame or reel of the sieve is preferably of the form of a flat drum A A′, which is at half of its height provided with the actual meshed bottom *c c′*, respectively serving to sort the material according to the desired degree of fineness. Upon the said meshed bottom the wall *n n′*, respectively bent after the form of an Archimedean spiral or similar curved line, is erected, and in the outer thread of the upper drum A the material to be separated is entering through the tube *a* and the hose *b* connected with the supply-funnel.

In consequence of the motion imparted to the drum A by means of a pair of rotating cranks *r* and *s* and through the medium of brackets *r′* and *s′* the material to be separated is caused to travel along the spiral path to the central spout *g*. In this way an effective separation of the finer particles, which pass the meshes of the bottom *c*, takes place, while the plump grains and other extraneous matter are conveyed to the said central spout *g*, and either discharged there into bags or the like, or conducted through a hose *h* into the central portion of a second drum A′, which is arranged beneath and similarly constructed to the foregoing drum A, with the only difference that the material on the meshed bottom of the second drum is caused to pass the spiral way in a direction reverse to the former—that is to say, from the center to the periphery. The finer parts of the material having passed the meshed bottom *c* of the drum A are collected on the bottom *d*, and then conveyed either by means of a spiral path *m* wound in a direction opposite to that of the wall *n*, or by means of compartments radiating from the center of the drum into the spout *f* at the periphery of the drum, where they may be discharged for further treatment. In the second drum A′ the coarser parts of the material having passed the spiral way, bounded by the correspondingly-wound wall *n′*, are discharged at the periphery of the said drum into a spout *g′*, while the finer particles having passed the meshes of the bottom *c′* are collected on the plain solid bottom *d′* of the drum and conveyed by means of suitably-

arranged walls m' into the spout f'. The material thus separated may be drawn off into bags, casks, or other vessels, or it may be separately conducted for further treatment. In some cases I am also accustomed to arrange within the spiral path of the material to be sorted wedge-shaped projections o p on the faces of the spiral walls at suitable spaces, which are adapted to obstruct in a certain degree the progressive motion of the material upon the meshed bottom, and thus to increase the effectiveness of the latter.

In order to enable the material having passed either or both of the meshed bottoms c or c' to be drawn off according to its different degrees of fineness the bottoms d d', respectively, of the drums may be provided at different places with gates Q, which are to be operated by means of their respective handles q q' q^2 to be easily accessible from outside of the frames.

Instead of imparting the desired circular motion to the drums by means of one pair of cranks r and s, t and u, respectively, I sometimes prefer to suspend the drums between three or more parallel-arranged cranks v w x of equal radius, of which only one needs to be agitated, either by a gearing mounted upon its shaft or by connecting its crank-pin, through the medium of a pitman z, with a like parallel crank y of a separate rotating shaft, while the other cranks only serve as a guidance. I prefer this arrangement, in view of the omission of any dead-point position which will otherwise occur by the employment of two cranks at every time when the two cranks r and s or t and u, Fig. 1, will come in line. In case of employment of two cranks, however, it is advisable to situate the center or initial point of the said spiral path outside of the center of circular motion of the sieve, which will be easily obtained by giving the brackets r' and s', t' and u', respectively, unequal length, in order to sustain the progressive motion of the material in the spiral path.

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

1. As an improvement in bolting and separating machines, the drum herein described, having a central sieve, and upper and lower series of spiral passages having independent discharge-spouts, substantially as set forth.

2. As an improvement in bolting and separating machines, the upper and lower agitating-drums herein described, said upper drum having a central sieve, upper and lower series of passages, a central connection between said upper passage and said lower drum, and an independent discharge-spout for said lower passage, substantially as set forth.

3. As an improvement in bolting and separating machines, the upper and lower agitating-drums herein described, having each a central sieve and upper and lower series of spiral passages, and the connection between said upper passages of said drums, substantially as set forth.

4. In a bolting and separating machine, the combination of the crank-shafts, the drums connected thereto, having each a central sieve and upper and lower oppositely-extended spiral passages, the flexible connection between the upper passages of said drums, the independent discharge-spouts for said lower passages, and the independent discharge-spout for the upper passage of said lower drum, substantially as set forth.

5. In a bolting and separating machine, the drum having a sieve, a spiral passage, and sliding gates periodically arranged beneath said sieve, substantially as set forth.

6. In a bolting and separating machine, the drum having a sieve, and a spirally-arranged wall provided with opposite projections in the line of passage, as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 30th day of December, 1889.

PHILIPP ADAM TAFEL.

Witnesses:
PAUL VOGEL,
M. BOLINGER.