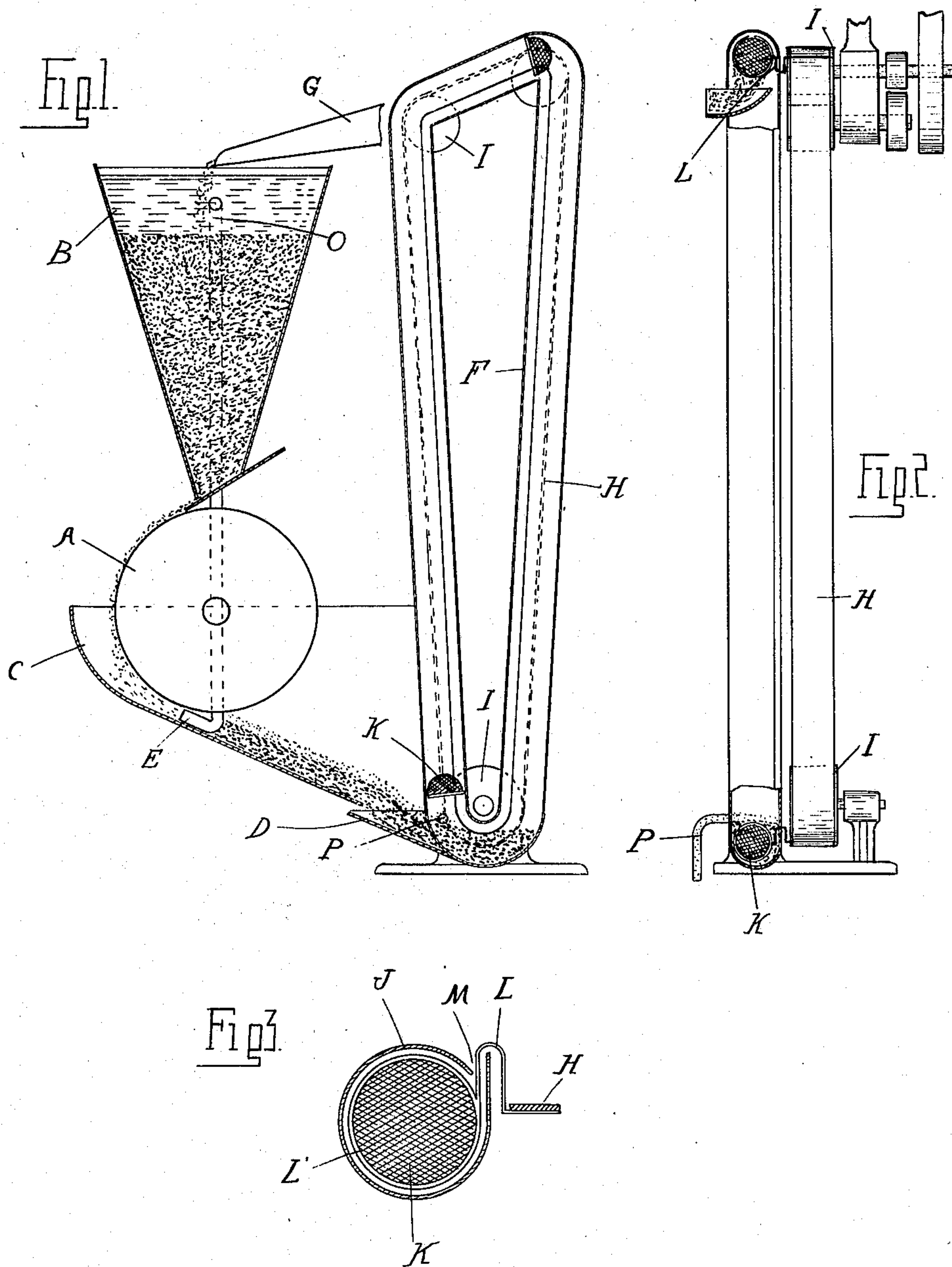


C. KLINGENBERG.
CUTTING APPARATUS.
APPLICATION FILED MAR. 28, 1908.

900,174.

Patented Oct. 6, 1908.



Witnesses
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UNITED STATES PATENT OFFICE.

CHRISTIAN KLINGENBERG, OF TOLEDO, OHIO, ASSIGNOR TO THE LIBBEY GLASS COMPANY,
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CUTTING APPARATUS.

No. 900,174.

Specification of Letters Patent.

Patented Oct. 6, 1908.

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To all whom it may concern:

Be it known that I, CHRISTIAN KLINGENBERG, a citizen of the United States of America, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Cutting Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The invention relates to cutting apparatus of that type in which abrasive material is fed upon the surface of a revoluble disk or wheel to form a cutter thereof, being more particularly adapted for use in glass cutting.

15 It is the object of the invention to provide automatic means for collecting, purifying and returning the abrasive material so that the same material may be repeatedly used for cutting.

20 To this end the invention consists in the construction as hereinafter set forth.

In the drawings—Figure 1 is a vertical longitudinal section through the machine; Fig. 2 is a side elevation, partly in section; 25 and Fig. 3 is a horizontal section through the elevator.

My improvement is applicable to any of the ordinary constructions of grinders, such for instance as illustrated, in which A is a 30 grinder wheel.

B is a hopper above the wheel for containing the abrasive material, such as silica sand, and from which a stream of this material is fed to the wheel A.

35 C is a receptacle beneath the wheel A for collecting the abrasive material discharged from the wheel, as well as the ground material from the work.

40 The material which collects in the receptacle C is a mixture of the unused abrasive material discharged from the wheel, finely pulverized abrasive material and the glass dust or grindings from the work. This mixture would not be suitable for reuse in grinding and it is therefore necessary to eliminate the pulverized abrasive material and the grindings. This I preferably accomplish by a water separation and preferably by the construction shown in which D 45 is an inclined chute forming an extension of the receptacle C.

50 E is a nozzle from which the stream of water is discharged across the chute D in an upward direction and inclined contrary to the direction of travel of the material in the

chute. This jet of water will cause a separation of the finer particles from the unbroken abrasive material, permitting the latter to continue its course down the trough D in the lower portion thereof, while the 60 fine material is raised to the top and floats as a scum above the other material.

By the construction just described, the abrasive material suitable for reuse is purified, but it is a further object of my invention to automatically return this material to the hopper B. As shown, this is accomplished by means of an elevator F which raises the material discharged from the trough D to a point slightly higher than the 70 hopper B, and then discharges it through a chute G into said hopper. On account of the abrasive nature of the material to be handled it is necessary to provide an elevator or conveyer which will not itself be 75 destroyed by the material. As shown, the elevator F comprises an endless belt or chain H, which runs over pulleys or sprockets I adjacent to a tubular casing J. To this endless belt is attached a bucket K, and 80 preferably a plurality of these buckets, adapted to travel within the tubular casing J. The attachment between the buckets K and the belt H consists of a shank L so shaped that it will pass into a longitudinal 85 slot M in the casing J, and within this casing is an annular portion L' rigid with or integrally secured to the shank. The buckets K are preferably formed of a porous fabric, such as canvas, secured to the annular 90 member L' and forming a bag or cup which will scoop up the abrasive material, but will permit the water to drain off. Thus the movement of the belt H will cause the buckets to successively elevate the material, and 95 at the upper end of the casing these buckets are reversed to discharge the material into the trough or chute G.

The construction of the buckets above described is important, inasmuch as cups 100 formed of rigid material would soon fill up with the abrasive which would adhere to the inner surface of the cup, and would be carried down again in the return leg of the conveyer. Such a result is avoided by 105 the use of buckets of canvas or other flexible material which, upon reversal, will separate from the abrasive and permit the latter to drop into the chute G.

The water for the jet from the nozzle E 110

may be furnished from any suitable source of supply but, as shown, it is drawn from the upper portion of the hopper B and passes through a conduit O to the nozzle. 5 This produces an unvarying pressure which will give a constant and predetermined velocity to the jet by producing uniform results in separation. The washed out fine material is discharged at suitable points, 10 such as through the aperture P in the lower portion of the conveyer casing E.

What I claim as my invention is:

1. The combination with a grinder, of an elevator for returning the abrasive material 15 discharged therefrom comprising a slitted tubular casing, an endless conveyer adjacent to but outside of said casing, a bucket within said casing and a support shank for said bucket passing out through the slit in said 20 casing and secured to said conveyer.

2. The combination with a grinder, of an elevator for returning the abrasive material discharged therefrom comprising a slitted 25 tubular casing, a conveyer belt adjacent to but outside said casing, a shank secured to said conveyer projecting inward through the slit in said casing, and a cup or bucket of flexible material secured to said shank within said casing.

3. The combination with a rotary grinder, 30 of a supply receptacle for the abrasive material thereabove, a receiving receptacle for the discharged abrasive material and grindings therebeneath, automatic means for purifying the discharged abrasive material and 35 means for returning the same to the supply

receptacle comprising a slitted tubular casing, an endless conveyer adjacent to but outside of said casing, a bucket within said casing and a support shank for said bucket 40 passing out through the slit in said casing and secured to said conveyer.

4. The combination with a rotary grinder, of a supply receptacle for the abrasive material thereabove, a receiving receptacle for 45 the discharged abrasive material and grindings therebeneath, automatic means for purifying the discharged abrasive material, comprising a water supply and a nozzle connected therewith and inclined contrary to 50 the direction of travel of the material in the receiving receptacle, and means for returning the purified material to the supply receptacle.

5. The combination with a rotary grinder, 55 of a supply receptacle for the abrasive material thereabove, a chute for the discharged abrasive material and grindings therebeneath, automatic means for purifying the discharged abrasive material therebeneath, 60 comprising a conduit connected with the supply receptacle, a nozzle attached to said conduit and inclined contrary to the travel of the material in said discharge chute, and means for returning the purified material to 65 the supply receptacle.

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

CHRISTIAN KLINGENBERG.

Witnesses:

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