E. H. GILMAN.

SHREDDING MACHINE FOR PAPER STOCK.

APPLICATION FILED JULY 17, 1914.

1,201,035.

Patented Oct. 10, 1916.

2 SHEETS—SHEET 1.

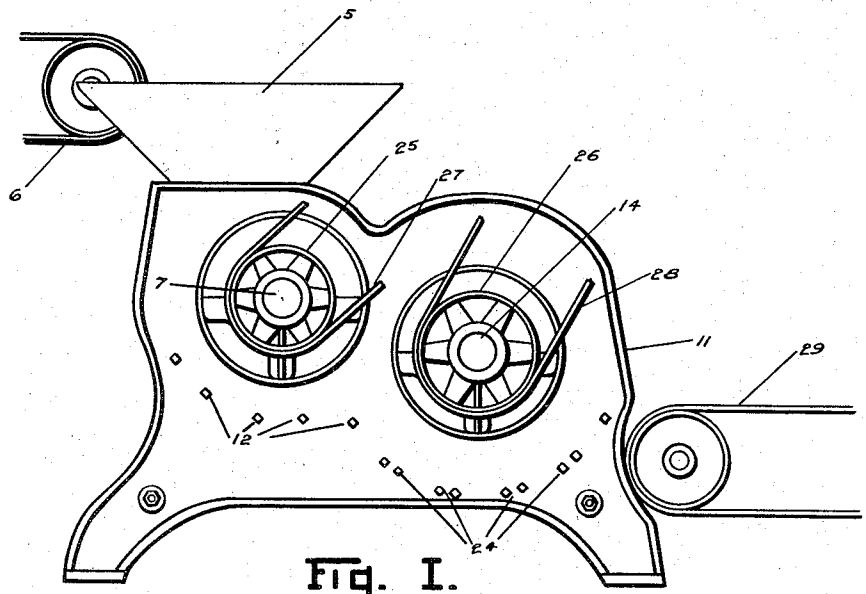



Fig. I.

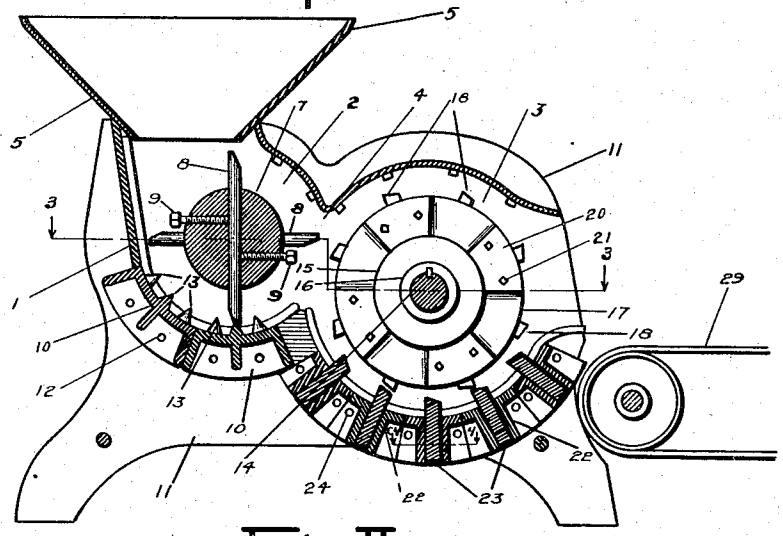



Fig. II.

Inventor

Witnesses

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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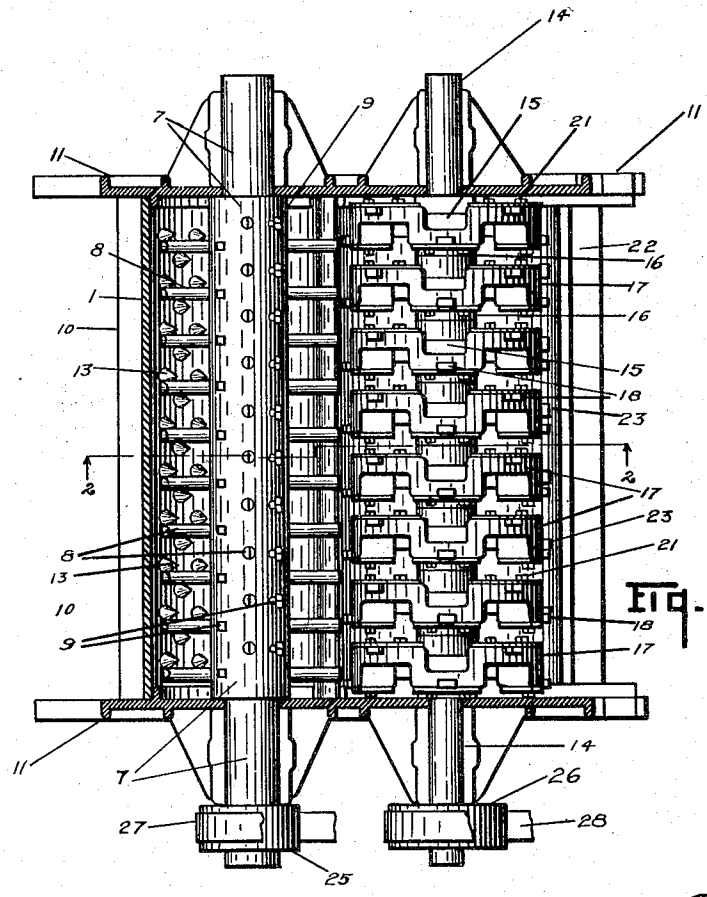



Fig. III.

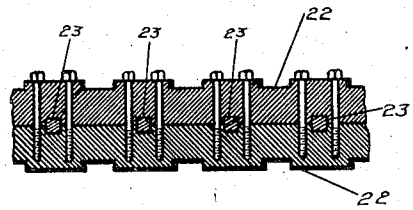



Fig. IV.

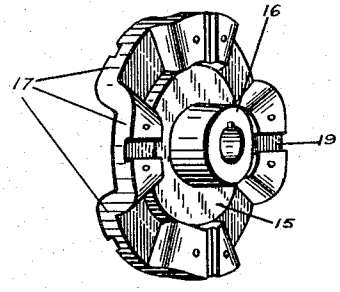



Fig. V.

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# UNITED STATES PATENT OFFICE.

ERNEST H. GILMAN, OF KALAMAZOO, MICHIGAN.

## SHREDDING-MACHINE FOR PAPER-STOCK.

1,201,035. Specification of Letters Patent. Patented Oct. 10, 1916.

Application filed July 17, 1914. Serial No. 851,447.

*To all whom it may concern:*

Be it known that I, ERNEST H. GILMAN, a citizen of the United States, residing at Kalamazoo, Michigan, have invented certain new and useful Improvements in Shredding-Machines for Paper-Stock, of which the following is a specification.

This invention relates to improvements in shredding machines for paper stock.

It has been a common practice in the preparation of books and magazines and bundles of sheets for use in the manufacture of paper stock to tear the sheets apart into comparatively small sections and loosen them so that the leaves or sheets would be more or less separated and not lie together as a compact mass. This work was done by hand and before the stock was fed to the shredding machine as shredding machines heretofore used were not adapted to successfully shred such material unless prepared as stated.

It is the main object of my invention to provide an improved shredding machine adapted for the shedding of books and magazines and similar compact masses of sheets of paper without previous preparation.

A further object is to provide an improved shredding machine adapted for this purpose which is simple and compact in structure, of large capacity and one which is durable in use.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing forming a part of this specification, in which:

Figure I is an end view of my improved stock shredder, the feed and delivery belts and the driving belts being broken away. Fig. II is a detail vertical section on a line corresponding to the broken line 2—2 of Fig. III. Fig. III is a detail view partially in horizontal section, on a line corresponding to the broken line 3—3 of Fig. II. Fig. IV is a horizontal section on a line corresponding to line 4—4 of Fig. II, showing details of the second concave. Fig. V is a perspective view of one of the cylinder members 15.

In the drawing similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, I provide a casing, designated generally by the numeral 1, having cylinder chambers 2 and 3 therein connected by the throat 4. The hopper 5 delivers to the first cylinder chamber 2 and the feed belt 6 delivers to the hopper.

In the first cylinder chamber is a cylinder 7 having cylindrical bar-like teeth 8 arranged radially therethrough and projecting at opposite sides. The teeth are retained by the set screws 9. These teeth 8 are of substantial length and are arranged in longitudinal rows and are substantially spaced in the rows.

The concave 10 which, in the structure shown, is formed in two sections, is secured in an opening provided therefor in the casing to the main frame 11 by the bolts 12. The concave is provided with conical teeth 13. These teeth are arranged in a staggered relation, as shown in Figs. II and III. They are disposed however so that the ends of the cylinder teeth 9 swing between them as the cylinder revolves.

The cylinder 7 delivers the stock through the throat 4 to the cylinder within the second cylinder chamber 3. The second cylinder, in the structure illustrated, comprises the shaft 14 having a series of cylinder members 15 mounted thereon. The hubs 16 of the cylinder members 15 are of such length that the cylinder members are suitably spaced. The peripheries of the cylinder members 15 are zig-zagged being provided with alternating offsets 17. Bar-like teeth 18 are secured in the radial grooves 19 provided therefor in the outer sides of the offsets 17 by the clip plates 20, the clip plates being secured by screws 21 at each side of the teeth. Thus arranged each cylinder member is equipped with a plurality of series of zig-zagged or staggered teeth.

The second concave is formed of a plurality of segment-like concave members 22 secured together in pairs, the bar-like teeth 23 being clamped between them. These concave members are secured in an opening provided in the casing by bolts 24 to the ends

of the frame. The teeth of the second cylinder are arranged so that the ends of the cylinder teeth clear, that is, they swing above and with their ends in a substantially spaced relation to the ends of the teeth of the concave. The concave teeth 23 are, in practice, not regularly arranged relative to the cylinder teeth.

The cylinder 7 is provided with a pulley 25 while the second cylinder has a pulley 26. These pulleys are driven by the belts 27 and 28 respectively and, in practice, at different rates of speed, the first cylinder being preferably driven at a higher rate of speed than the second. The material is delivered from the second cylinder to the delivery belt 29. In practice I prefer to deliver directly to a duster. In operating my improved machine the books or magazines are discharged by the feed belt 6 into the hopper 5 from which they drop into the first cylinder chamber. As the objects are carried by the teeth of the first cylinder across the conical toothed concave the leaves are torn apart and separated and the leaves are torn up to a greater or less extent. The main function, however, of the first cylinder is to separate the sheets or leaves of a book or magazine or other compact body of sheets destroying the binding and separating and loosening up the sheets. The material in this condition is fed by the first cylinder through the throat 4 to the second cylinder, by which the sheets are further torn in pieces. The material delivered from the second cylinder is ready to pass to the duster, which may be of any suitable kind, and as stated, in practice, I usually deliver directly from the second cylinder to the duster. My improved sheet shredder is very satisfactory and results in a great saving of labor as it has been customary to partially prepare the stock, as stated, by hand labor, women being commonly employed for the purpose at a wage usually about ten cents per hundred pounds.

My improved shredding machine will satisfactorily handle books, magazines and compact bundles of sheets as well as newspaper and other less compact material. It is of large capacity and is very durable in use.

I have illustrated and described my improved shredding machine in detail in the form in which I have embodied the same in practice. I have not attempted to illustrate or describe various modifications which I contemplate as I believe the disclosure made will enable those skilled in the art to which my invention relates to embody or adapt the same as may be desired. I desire however, to be understood as claiming my improvements specifically in the form illustrated as well as broadly within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a structure of the class described, the combination of a casing provided with a pair of cylinder chambers disposed one at the rear of the other and connected by a throat, a feed hopper delivering to the first cylinder chamber, a cylinder mounted in the first cylinder chamber and having relatively long teeth arranged in substantially spaced longitudinal rows, the teeth being substantially spaced in the rows, a concave coacting with said cylinder and having teeth disposed in a staggered relation and out of alinement with the cylinder teeth, the cylinder teeth being of such length that they swing between the concave teeth as the cylinder revolves, a second cylinder mounted in the shredding cylinder chamber, the first cylinder being adapted to deliver the material through said throat to the second cylinder.

2. In a structure of the class described, the combination of a casing provided with a pair of cylinder chambers disposed one at the rear of the other and connected by a throat, a feed hopper delivering to the first cylinder chamber, a cylinder mounted in the first cylinder chamber and having relatively long teeth, a toothed concave coacting with said cylinder, a shredding cylinder mounted in the second cylinder chamber, the first cylinder being adapted to deliver the material through said throat to the second cylinder.

3. In a structure of the class described, the combination of a casing provided with a pair of cylinder chambers disposed one at the rear of the other and connected by a throat, a feed hopper delivering to the first cylinder chamber, a cylinder mounted in the first cylinder chamber and having relatively long teeth arranged in substantially spaced longitudinal rows, the teeth being substantially spaced in the rows, a concave coacting with said cylinder and having teeth disposed in a staggered relation and out of alinement with the cylinder teeth, the cylinder teeth being of such length that they swing between the concave teeth as the cylinder revolves, a shredding cylinder mounted in the second cylinder chamber, the first cylinder being adapted to deliver the material through said throat to the second cylinder.

4. In a structure of the class described, the combination of a casing provided with a pair of cylinder chambers disposed one at the rear of the other and connected by a throat, a feed hopper delivering to the first cylinder chamber, a cylinder mounted in the first cylinder chamber and having relatively long teeth, a toothed concave coacting with said cylinder, a shredding cylinder mounted

in the second cylinder chamber, the first cylinder being adapted to deliver the material through said throat to the second cylinder.

5. In a structure of the class described, the combination of a casing provided with a pair of cylinder chambers disposed one at the rear of the other and connected by a throat, a cylinder mounted in the first cylinder chamber and having radially disposed relatively long cylindrical teeth arranged in substantially spaced longitudinal rows, the teeth being substantially spaced in the rows, a concave coacting with said cylinder and having conical teeth disposed in a staggered relation and out of alinement with the cylinder teeth, the cylinder teeth being of such length that they swing between the concave teeth as the cylinder revolves, a second toothed cylinder mounted in the second cylinder chamber and a toothed concave coacting therewith, the first cylinder being adapted to deliver the material through said throat to the second cylinder.

6. In a structure of the class described, the combination of a casing provided with a pair of cylinder chambers disposed one at the rear of the other and connected by a throat, a cylinder mounted in the first cylinder chamber and having relatively long teeth, a concave coacting with said cylinder and having teeth disposed in a staggered relation and out of alinement with the cylinder teeth, the cylinder teeth being of such length that they swing between the concave teeth as the cylinder revolves, a second toothed cylinder mounted in the second cylinder chamber and a toothed concave coacting therewith, the first cylinder being adapted to deliver the material through said throat to the second cylinder.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

ERNEST H. GILMAN. [L. S.]

Witnesses:
LUELLA G. GREENFIELD,
ANNIE E. PARRY.

**Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."**