

(No Model.)

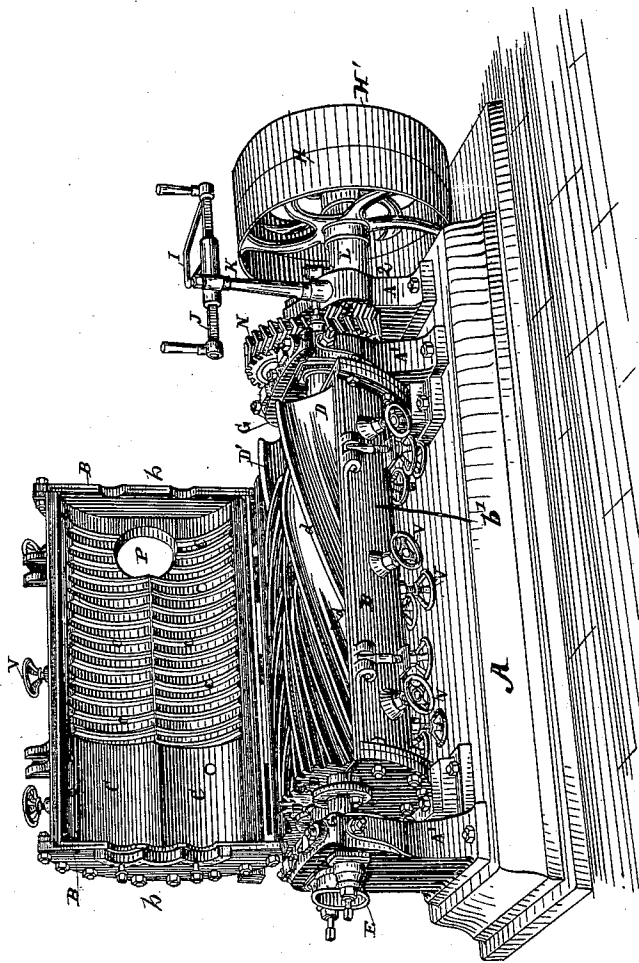
3 Sheets—Sheet 1.

M. H. SIMONET.  
GRINDING MACHINE FOR PAPER STOCK.

No. 484,056.

Patented Oct. 11, 1892.

Fig. 1.



Witnesses

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(No Model.)

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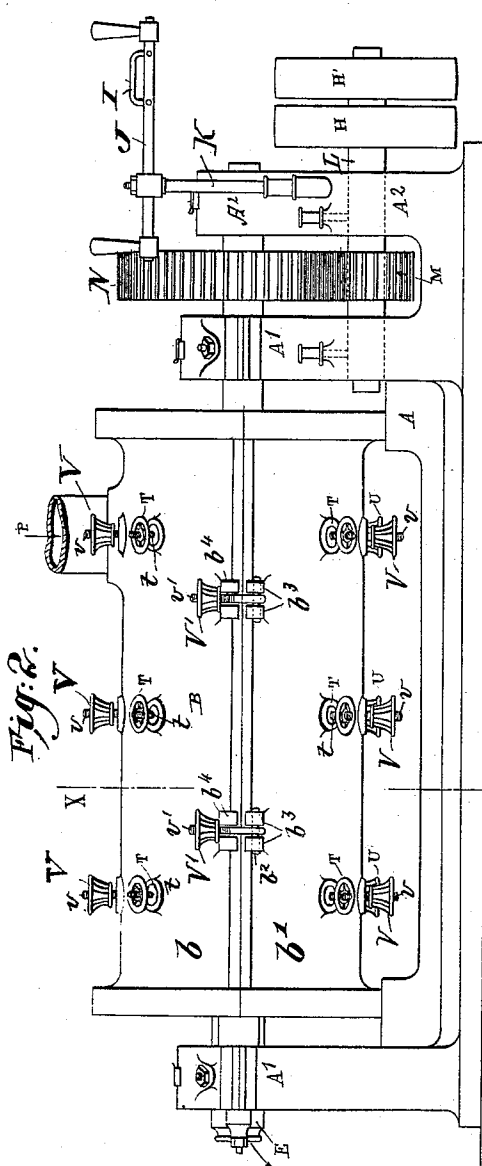
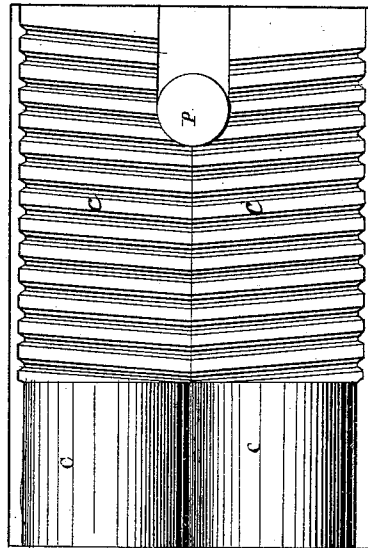


Fig. 2.

Fig. 5



Fig. 4



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(No Model.)

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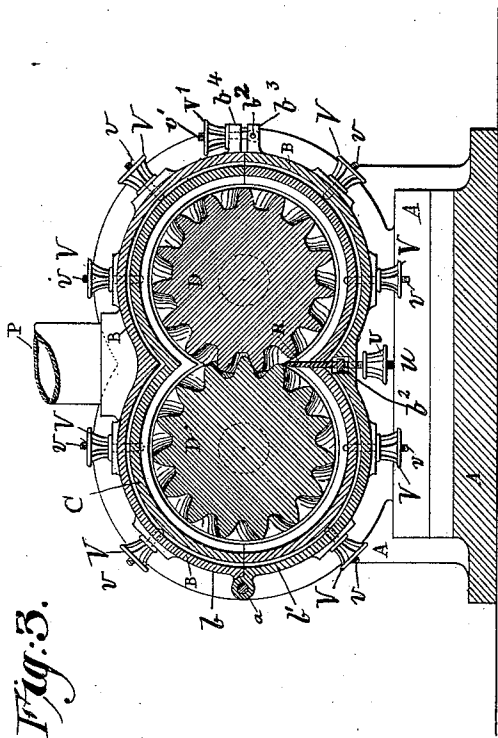


Fig. 3.

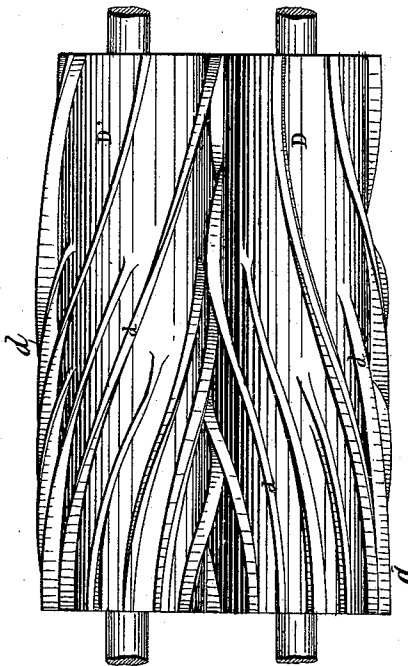


Fig. 6.

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# UNITED STATES PATENT OFFICE.

MAXIME HUBERT SIMONET, OF QUINTIN, FRANCE.

## GRINDING-MACHINE FOR PAPER-STOCK.

SPECIFICATION forming part of Letters Patent No. 484,056, dated October 11, 1892.

Application filed October 24, 1890. Serial No. 369,223. (No model.)

*To all whom it may concern:*

Be it known that I, MAXIME HUBERT SIMONET, a citizen of the French Republic, and a resident of Quintin, Department of the Côtes-du-Nord, France, have invented certain new and useful Improvements in Grinding-Machines for Paper-Stock; 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The invention relates to grinding, cutting, or mixing machines for comminuting or mixing any kind of materials—as, for instance, paper stock or pulp; and it consists in structural features and combinations of parts, as will now be fully described, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a machine embodying my invention, the reducing-cylinder being shown open. Fig. 2 is a side elevation, and Fig. 3 a transverse section on or about on line X X of Fig. 2. Fig. 4 is a top plan view of one of the grinding shells or plates detached, and Fig. 5 is an end elevation of the same. Fig. 6 is a top plan view of the reducing-rolls.

Similar letters indicate like parts wherever such may occur in the above figures of drawings.

A indicates the bed of the machine, provided with suitable bearing-standards A', A', and A<sup>2</sup> for the journals of the reducing-rolls and the driving-shaft.

B indicates the reducing-cylinder, which in cross-section has the form of a twin cylinder divided longitudinally, the upper half *b* being hinged to the lower half *b'*, which is seated on or secured to the bed A. Each of the twin cylinders contains a reducing-roll, (indicated by D and D'), whose journals have their bearings in the standards A', the journal of one of said rolls carrying a bevel-wheel N in gear with a like wheel M on the short driving-shaft L, that also carries the fast and loose pulleys H and H', the belt (not shown) being shifted from one to the other by a belt-shifter secured to the standard A<sup>2</sup>, in which and the standard A' the said shaft L has its bearings.

The belt-shifter consists of a rod or standard K, provided at its upper end with a sleeve in which works the belt-shifting rod J, provided at opposite ends with a handle and, as usual, with the shifting-loop I, that projects laterally from said rod, as shown in Fig. 1. Instead of the bevel-gear an ordinary gear may be used, as shown in Fig. 2. The upper half *b* of the reducing-cylinder B may be locked to the lower half in any convenient manner—as, for instance, by means of a locking-bolt *v'*, pivoted on a pin *b<sup>2</sup>*, that is secured to lugs *b<sup>3</sup>*, preferably on the lower half *b'* of the reducing-cylinder B, each bolt carrying a nut V', so that when said bolts are swung up between the lugs *b<sup>4</sup>* on the upper half *b* of said reducing-cylinder said nuts will have bearing on the lugs *b<sup>4</sup>*, as shown in Fig. 2.

The reducing-rolls D and D' are each provided with helically or spirally arranged reducing ribs or blades *d*, the number of which increases from the feed end of the rolls to the delivery end thereof, and in practice said reducing ribs or blades *d* are so arranged on the rolls D D' as to intermesh, so that one roll drives the other in an opposite direction, as clearly shown in Figs. 1 and 6. In the reducing-cylinder are adjustably seated reducing plates or shells C, which conform to the inner configuration of the upper and lower half of the reducing-cylinder B, said shells being provided with reducing ribs or blades *c* for about two-thirds of their length from the feed end thereof toward the delivery end. These ribs or blades have a slight pitch relatively to the axis of rotation of the rolls, so as to intersect the ribs or blades of said rolls at a greater or less angle, according to the degree of pitch given them, thus not only performing the function of shears in conjunction with the ribs or blades on the rolls D and D', but also materially assisting in moving or conveying the material fed to the machine from the feed to the delivery end.

P is the feed-pipe in the upper half *b* of the reducing-cylinder, and E is the discharge-pipe. The shells or plates C are adjustable toward and from the reducing-rolls by means of adjusting-bolts *v*, that carry each a nut V, said bolts being secured to the shells or plates and by means of set-bolts *t*, that work in screw-threaded openings formed in the re-

ducing-cylinder, each bolt  $t$  carrying a hand-wheel  $T$ , so that the degree of fineness to which the material is to be reduced may be readily adjusted.

5 The shell  $C$  in the lower half of the reducing-cylinder is slotted longitudinally, while the cylinder itself has a recess  $b^2$ , Fig. 3, said recess and slot being on a plane intersecting the twin cylinders vertically or the reducing-faces of the rolls, and in said recess  
10 is seated a cutter-blade  $R$ , that is  $T$ -shaped in cross-section and is adjustable toward and from the reducing-faces of the ribs  $d$  on rolls  $D$   $D'$  by means of set-bolts  $u$ , that work in  
15 screw-threaded openings in the reducing-cylinder, each of said bolts carrying a hand-wheel  $U$ . It will readily be comprehended that the material fed to the machine is gradually reduced by reason of the arrangement  
20 of the reducing ribs or blades  $d$  on the rolls  $D$  and  $D'$ , of which there are comparatively few at the feed end of the machine, their number increasing toward the delivery end. The cutting or reducing blade  $R$ , extending longitudinally of the reducing ribs or blades on the  
25 rolls, and the ribs or blades on the shells  $C$ , arranged at an angle to the longitudinal axis of the rolls, assist materially in the first reduction of the coarse material, so that the machine may be driven at a comparatively-high speed without danger of an overfeed and the consequent choking up.

I have stated that the shells  $C$  have reducing-faces covering but about two-thirds of  
35 their area. In practice I have found that this is sufficient, for the reason that the material after passing from between said reducing-faces is operated upon by the greatest number of reducing ribs or blades on the rolls and reduced thereby to the required degree of fineness. The machine is also admirably adapted  
40 for use as a mixing or kneading machine for all sorts of materials, as will be readily understood.

45 Having now described my invention, what I claim is—

1. In a machine of the class described, the combination, with a suitable bed and an enclosing casing mounted thereon and made in  
50 two sections pivoted together, said sections

having the shape described, of reducing-rolls revolubly mounted in said casing and provided with spirally-arranged ribs or blades, the number of which increases from the feed end of the rolls to the delivery end thereof, 55 reducing-plates adjustably mounted within the casing and partaking of the shape of the sections thereof and being provided with blades having a pitch relatively to the axis of the rolls, a longitudinal cutting-blade arranged vertically within the lower part of the casing and adapted to be adjusted relatively to the blades on the rolls, a feed-pipe communicating with the interior of the casing at one end thereof, and a delivery-pipe communicating with the interior of said casing at the opposite end of the latter, and means for rotating the rolls, as and for the purpose specified. 60 65

2. In a machine of the class described, the combination, with a suitable bed and an enclosing casing mounted thereon and made in two sections pivoted together, said sections having the shape described, of reducing-rolls revolubly mounted in said casing and provided with spirally-arranged ribs or blades, the number of which increases from the feed end of the rolls to the delivery end thereof, reducing-plates adjustably mounted within the casing and partaking of the shape of the 80 sections thereof and being provided with blades having a pitch relatively to the axis of the rolls, said plates being adapted to be adjusted toward and from the rolls independently of each other, a longitudinal cutting-blade arranged vertically within the lower part of the casing and adapted to be adjusted relatively to the blades on the rolls, a feed-pipe communicating with the interior of the casing at one end thereof, a delivery-pipe communicating with the said interior at the opposite end, and means for rotating the rolls, as and for the purpose specified. 85 90

In testimony that I claim the foregoing I have hereunto set my hand this 2d day of July, 1890. 95

MAXIME HUBERT SIMONET.

Witnesses:

FREDERIC MATRAY,  
JOSEPH SALING.