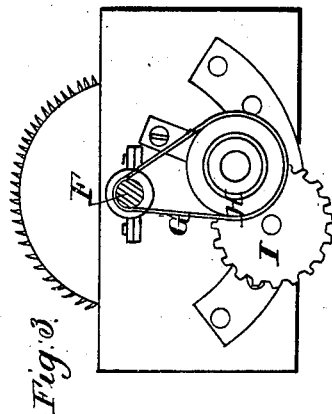
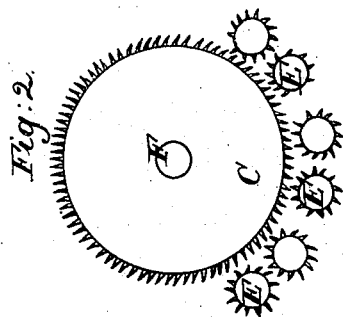
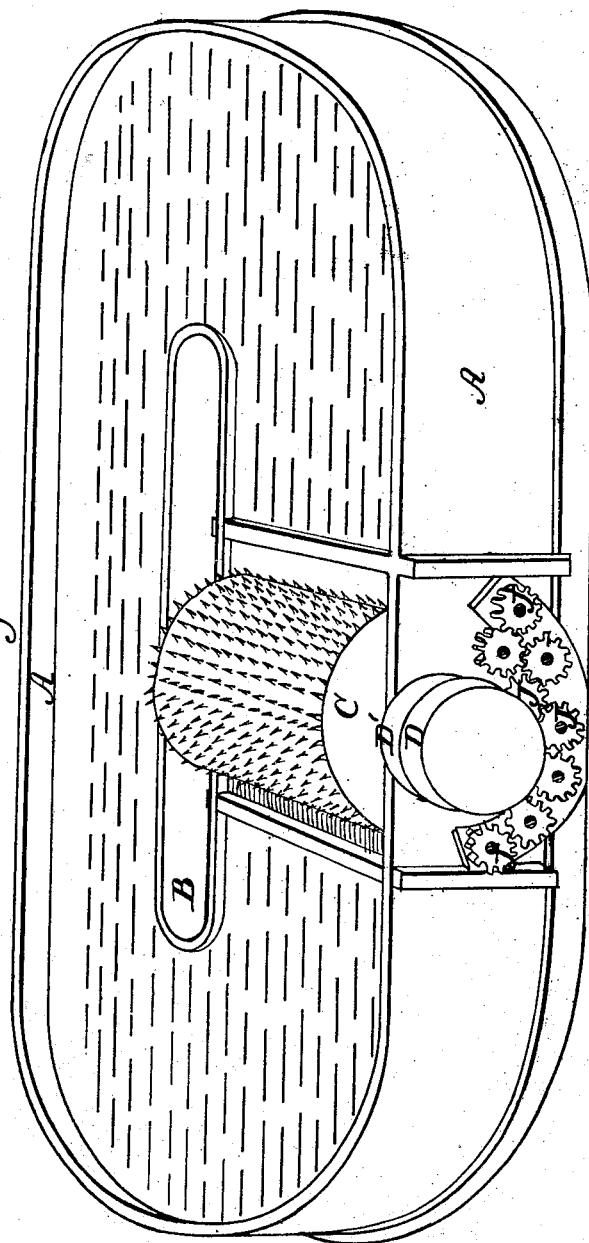


*R. Daniels.*  
*Rag Engine.*  
*N<sup>o</sup> 1,813. Patented Oct. 10, 1840.*



*Fig. 1.*



# UNITED STATES PATENT OFFICE.

REUBEN DANIELS, OF WOODSTOCK, VERMONT.

MACHINE FOR REDUCING WORN-OUT CLOTHS AND SILKS OF VARIOUS KINDS TO THE FIBROUS STATE, SO AS TO BE CAPABLE OF BEING MANUFACTURED INTO CLOTH.

Specification of Letters Patent No. 1,813, dated October 10, 1840.

*To all whom it may concern:*

Be it known that I, REUBEN DANIELS, of Woodstock, in the county of Windsor and State of Vermont, have invented an improved machine for reducing worn-out woolen cloth of various kinds to the state of wool, so as to admit of its being spun and woven, like other stock, and to produce yarn or cloth either alone or in combination with cotton or other fibrous materials, and also to reduce worn-out silk in the same manner; and I do hereby declare that the following is a full and exact description thereof.

I construct a vat or cistern similar to that used by paper-makers in the machine for grinding rags, and preparing stuff for the manufacture of paper, and within this vat, or cistern, I place a cylinder, which is to be made to revolve in the manner of the cylinder furnished with knives, or cutters, in the paper machine, but instead of knives, or cutters, said cylinder is to be set with wire points over its whole periphery. Below this cylinder I place six, or any other preferred number of small cylinders, furnished also with wire points, and having their axes parallel to that of the large cylinder; said small cylinders are so arranged as to form a concave of cylinders, their surfaces being adapted to that of the convexity of the large cylinder. This latter is to be driven by a band, or by any suitable kind of gearing, and the small cylinders may be made to revolve by gearing connected with the shaft of the large cylinder. There may be two or more sets of such cylinders employed in the same vat, if desired.

The vat, or cistern, may be sixteen or eighteen feet long, and about seven feet wide. The center of the vat is occupied by a longitudinal compartment, consisting of a double partition with circular ends, rising to the same height with the vat; this compartment may be eight or ten feet long, and two feet, more or less, wide. Around this the water is to flow during the operation of the machine, and the inside of it, which will be free from water, may be occupied by the gearing for driving the small cylinders which may be effected by motion given to them from the shaft of the large cylinder.

The large cylinder I have made of cast-iron, about two feet in diameter, and 26 inches long; this I have set with wire teeth, inserted in holes drilled into the cylinder

about one-fourth of an inch apart, one-eighth of an inch in diameter, and three-eighths of an inch long; they are not inserted vertically, but are inclined forward at an angle of about 30°. This cylinder may advantageously be turned with a velocity of 300 revolutions in a minute.

The small cylinders may be of metal, but they will answer if made of wood, with metallic shafts running through them; their length will be the same with that of the large cylinder, and their diameter three inches, more or less; they are to be set with wire teeth similar to those on the large cylinder, and in the same manner. These cylinders may revolve about six times per minute. The direction in which they move is the same which they would have were they turned by contact with the large cylinder.

Figure 1, in the accompanying drawing, is a perspective view of my machine.

A, A, is the vat; B, the middle compartment, around which the water, or other fluid, is to flow.

C, is the large cylinder, having fast and loose pulleys D, D', on its outer end. Fig. 2, is a section through the large cylinder C, and the small cylinders E, E, which form a concave under the large cylinder. In addition to these small cylinders I have essayed a stationary concave set with teeth, and having recesses along it to admit the small cylinders E, E, the teeth of which were in advance of, or nearer to those on the large cylinder than those on the stationary concave, but I am not aware that any advantage was derived from the use of said concave. Fig. 3, shows the arrangement which I have adopted for driving the small cylinders by motion communicated from the inner end of the axis of the large cylinder, the parts shown being contained within the center compartment B; F, is the axis of the large cylinder, upon which is placed a band G, passing around a whirl H, upon the axis of which there is a pinion that meshes into the small spur wheel I, which is fastened on the axis of one of the small cylinders, which gives motion to the other small cylinders by means of small wheels, or pinions, on the opposite ends of their axes, and intermediate, loose wheels on the outside of the vat, as shown at J, J; such gearing being well known, and in common use, does not re-

quire description, nor is it essential that this kind of gearing should be used, every machinist being aware that the desired effect may be attained by gearing arranged in  
5 various other modes.

The woolen or silk rags to be reduced may be divided into threads by toothed cylinders, or other apparatus, in modes well known, preparatory to their being put into  
10 the above-described machine, by which they are to be separated into their original fibers. This is to be effected in a much more perfect manner by operating upon them in water, or other fluid, than when not so  
15 treated, the twist being more effectually taken out of the fibers, which are thus brought into a state adapting them to be spun either alone, or in combination with other fibrous materials, and to be remanufactured into goods of various kinds.  
20

Having thus fully described the manner in which I construct my machine for reducing woolen rags, and also worn-out silks into fibrous stock, fit to be remanufactured,

it is to be understood that I do not claim the  
25 mere use of cylinders furnished with teeth, or points, for the purpose of tearing or reducing woolen, or other rags into fibers, but—

What I do claim as constituting my invention, and desire to secure by Letters Patent, is— 30

The use of cylinders furnished with teeth, or points, and operating under water, or other fluid, in a machine similar in its general form to that used by paper-makers in preparing their pulp, but combined with the concave of small cylinders E, E, and operating substantially in the manner of that  
35 herein fully described and made known. 40

In testimony whereof I hereunto set my hand this eleventh day of July, one thousand eight hundred and forty.

REUBEN DANIELS.

Witnesses:

THOS. P. JONES,  
W. THOMPSON.