

A. B. ELY.
Cotton Gin.

No. 63,373.

Patented April 2, 1867.

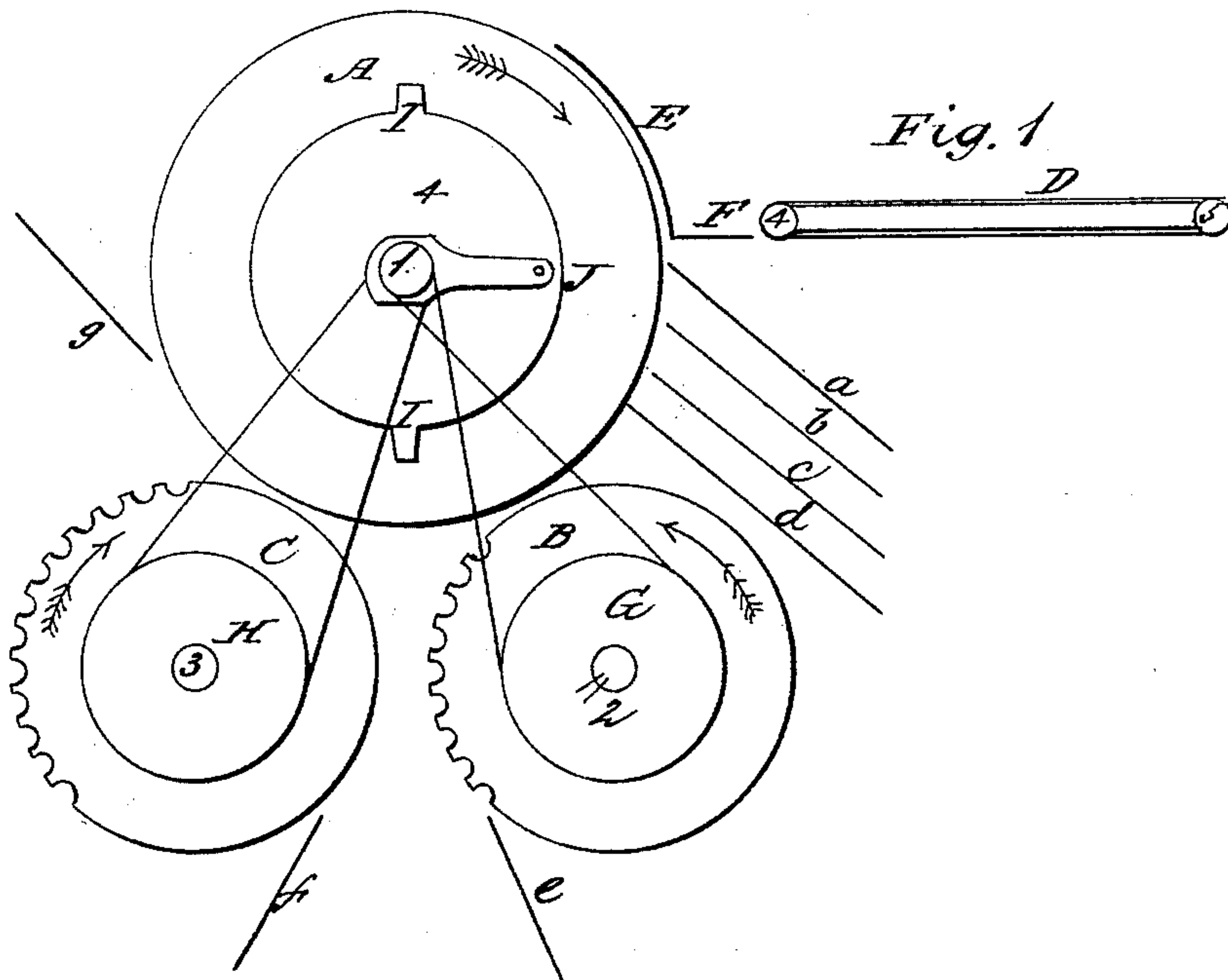


Fig. 2

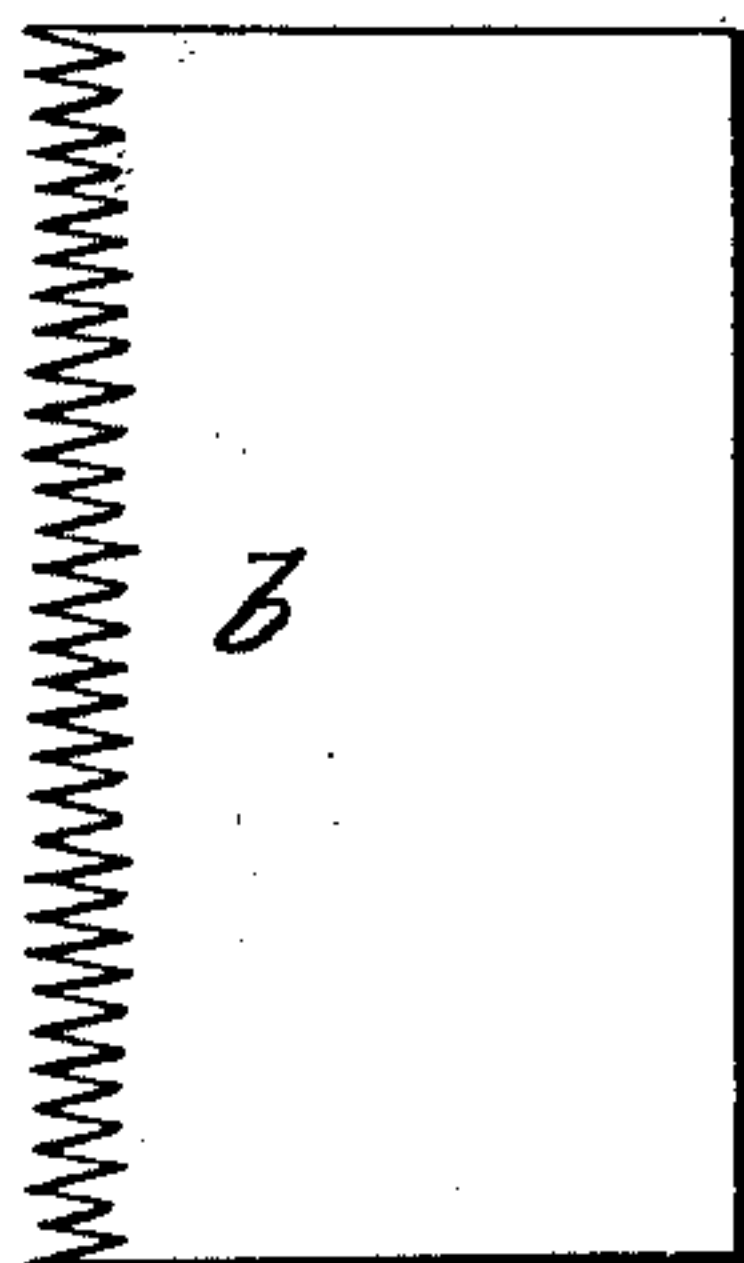


Fig. 5

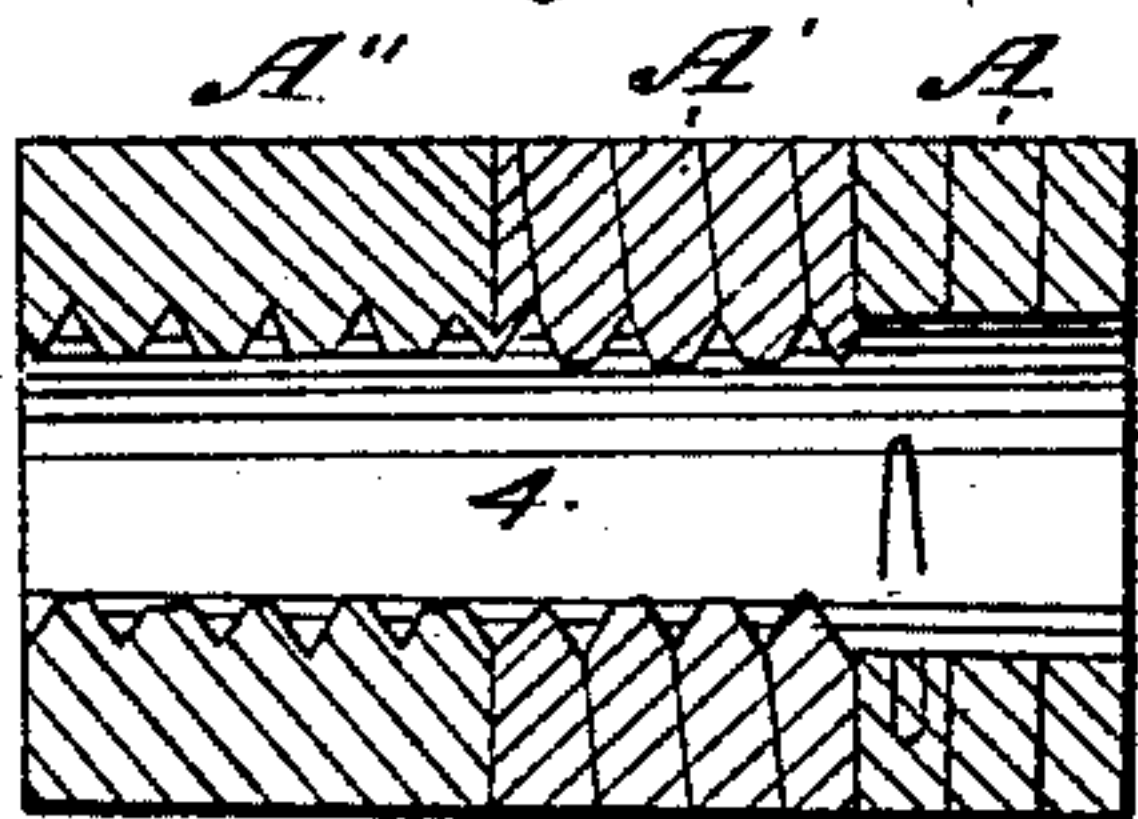


Fig. 3

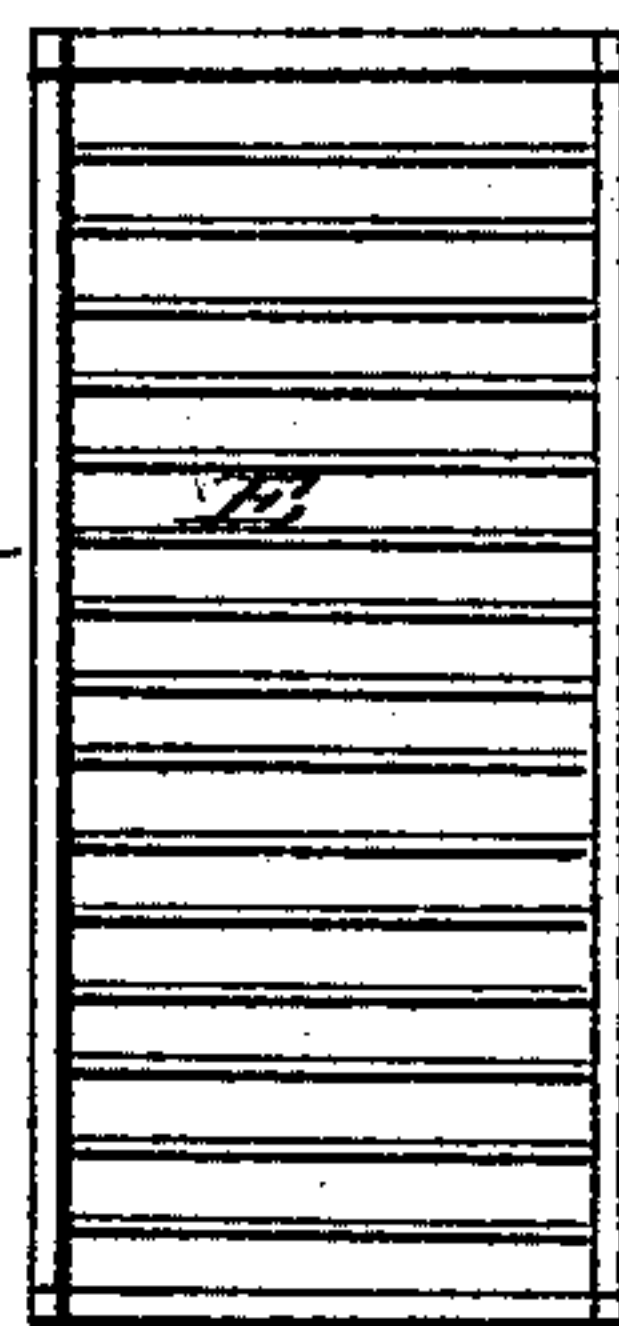
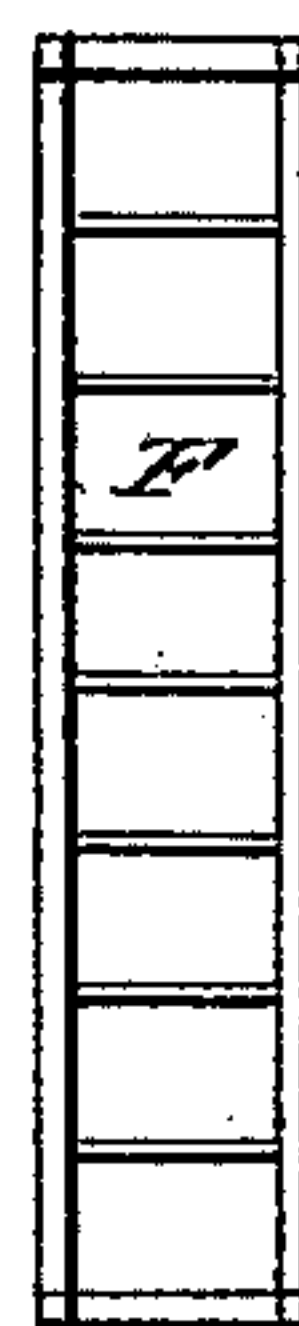


Fig. 4



Witnesses:

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United States Patent Office.

ALFRED B. ELY, OF NEWTON, MASSACHUSETTS.

Letters Patent No. 63,373, dated April 2, 1867.

IMPROVEMENT IN MACHINE FOR SEPARATING FIBROUS SUBSTANCES FROM THE SEEDS.

The Schedule referred to in these Letters Patent and making part of the same.

Be it known that I, ALFRED B. ELY, of Newton, in the State of Massachusetts, have invented certain new and useful Improvements in Machines for Separating the Fibrous Coverings from Seeds and Kernels, of which the following, with the accompanying drawings, is a full description.

Figure 1 is a sectional view of the machine.

Figure 2 is a view of one of the serrated plates.

Figures 3 and 4 are views of the grate bars.

The object of my inventions is more perfectly and simply to separate the seeds from cotton, and kernels from their fibrous coverings, and to clean fibrous materials from impurities; and the inventions consist mainly in the employment of elastic rolls in combination with various devices, the rolls seizing and carrying off the fibres, and the other devices detaining and removing the seeds, kernels, and impurities.

In the drawings, A represents an elastic roll, of rubber or other suitable material. The roll should be sufficiently compact and tenacious to resist abrasion, and sufficiently elastic not to cut or break the fibre or crush the seeds or burs. Rings of rubber and cloth or felt, or of porous leather, put upon a rod or shaft and compressed tightly, will form an excellent roll for the purpose. D is a feeding apron for feeding the material to the roll. F is a grating of bars, sufficiently far apart to allow seeds, kernels, and burs to fall through, but sufficiently near together to support the fibrous materials. E is a concave grating of bars, concentric with and nearly touching the roll A, the bars being sufficiently far apart to allow the fibres of cotton or wool to be drawn through by the action of the roll, and sufficiently near to prevent the larger part of the seeds and kernels, if not all, from passing through. *a, b, c, and d* are metallic plates, placed at an acute angle to the periphery of the roll A, and with straight edges, or with edges serrated, as in fig. 2. These edges are placed so near to the roll as to prevent the passage of seeds or burs while they do not prevent the passage of the fibres. For some purposes a single straight edge will answer; for others, a single serrated edge; for others, two or more of either or of both will be better. B is a hard roll, which may be made with a plain or a corrugated surface. For some purposes the plain will answer; for others, the corrugated will be better. In some cases even a roll partly plain and partly corrugated may be found advisable. This roll B runs towards the same direction as the roll A, but at a less rate of speed, the surfaces of the two rolls being near enough to prevent the passage of seeds, &c., but not to prevent the passage of the fibres. *e* is a metallic plate, straight or serrated edge, as may be applied to the roll B in the manner above described. C is a roll similar to B, but revolving towards a direction different from A, and having its plate or edge, *f*. *g* is another plate at the rear of the roll A. For some purposes the roll B operating with the roll A will be sufficient. For other purposes the roll C will be better, and for others the two will be found desirable.

The material being placed upon the apron and fed up to the grates, the revolution of the roll A will draw through and carry round the fibres, leaving behind the seeds or portions of them to fall down through the grates F. For some purposes this may suffice; for some purposes it may be found better to remove the grates E. The material to be cleansed having reached the roll A, and passing downward in the direction of the arrow, the seeds, &c., will be retarded and removed by the plain or serrated edges, *a b c d*, one or more, as they may be used. Without the use of these edges, or with, as may be desired, the material being seized and carried downward by the roll A, on reaching the roll B, will be retarded, the roll B revolving more slowly than A, so that the swift action of A will strip off the fibre from the seed, &c., which will be left behind to drop off as it accumulates. If the edges are not used the roll B may be placed nearer to the apron. If any of the fibres, with seeds, &c., attached, are carried onward by the roll B, the seeds still adhering to these will be met by the edge *e* and thrown off. Without the use of the edges *a b c d* and the roll B, or with them, or any of them, the material being carried by roll A to roll C, will be met by the counter-revolution of roll C, and while the fibres are carried forward by A, the seeds, &c., will be met and thrown back by C. If any fibres with seeds should be carried back and down by C, the seeds will be met by the edge *f* and thrown off. If the edges *a b c d* and roll B are not used, or some of them, the roll C may be placed nearer the apron. Any seeds, &c., still adhering to the fibres in the revolution of A will be met and thrown off by the edge *g*. Other and ordinary adjuncts, as clearers, doffers, &c., can be readily applied, and need not be described. J is a crank for turning roll A on shaft 1. I is a pulley on shaft 1, communicating, by belts, with pulleys G and H, on shafts 2 and 3 of rolls B and C.

For some purposes, as the removal of coarse husks or fibres from kernels, &c., the grates and edges may be dispensed with, and the rolls B and C, or either of them, so disposed that the rubbing surfaces shall separate and carry forward the fibrous material, leaving the kernels, &c., behind. The rolls may also be used to separate larger from smaller substances. In some cases the grate bars E, being made to embrace a sufficient portion of the periphery of the roll A, the feeding table or apron may be dispensed with, and the material being thrown directly upon this grating the fibres will be drawn through and the seed, &c., left behind.

A roll covered with leather and operating against a straight edge has been used, and I do not claim that. The leather so used has not been found to furnish the best surface for the purpose. It becomes too hard, especially for long-stapled material. While I have described elastic rolls, which I claim in combination with my other devices, I have not claimed any specific roll. I now propose to describe a roll and the method of fastening the same to the spindle, which I desire to claim as my own. The material is a composition or mixture of rubber and ground rags, or other suitable fibrous material, and this may be placed on the spindle in a roll or in rings, or wound round spirally, with or without the interposition of other substances. The spindle is made with a screw-thread upon its surface sufficiently high or deep to hold the elastic substance from turning on the spindle, or it is made with a spline on its surface, to take into a recess in the inner circle of the encircling rubber. Figure 5 shows the screw-thread and spline; fig. 1 also shows the spline or feather, I; A shows the material in rings; A' the material wound spirally, and A'' the material in a roll; 4 being the spindle.

What I claim, and desire to secure by Patent, in machines for separating fibres from seeds, &c., is—

1. An elastic roll, in combination with a concave grating E, substantially as described.
2. An elastic roll, substantially as described, in combination with flat plates *a b c d*, &c., whether one or more, and whether with plain or serrated edges, when arranged and operating substantially as set forth.
3. An elastic roll, substantially as described, in combination with hard rolls B C, or either of them, and whether smooth or corrugated, when arranged and operating substantially as set forth.
4. An elastic roll, in combination with flat plates *a b c d*, &c., whether one or more, and whether plain or serrated, and hard rolls B C, or either of them, whether smooth or corrugated, arranged and operating substantially as described.

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Witnesses:

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