

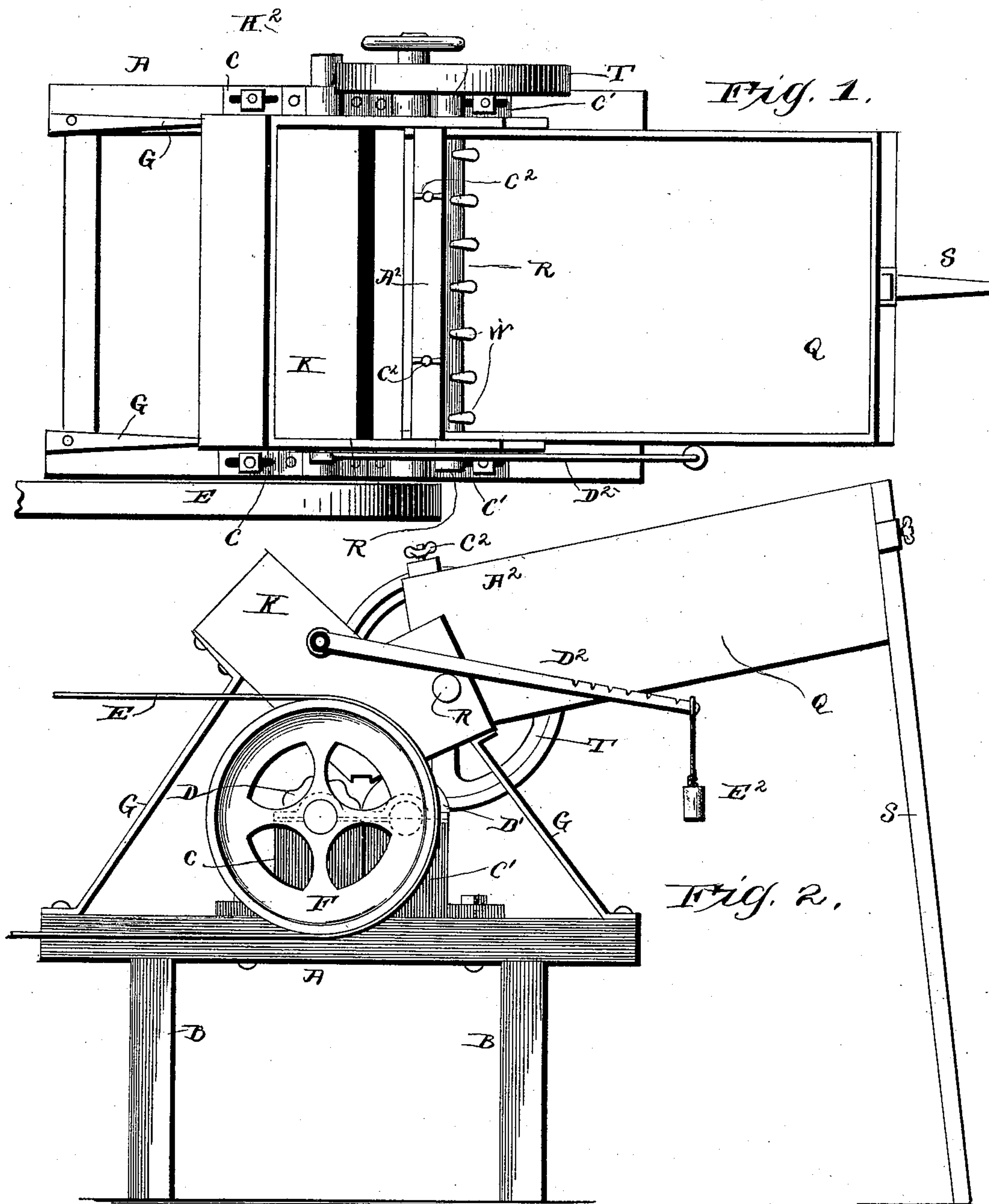
(No Model.)

2 Sheets—Sheet 1.

G. W. SIMMONS.
COTTON SEED CRUSHER.

No. 407,373.

Patented July 23, 1889.



Witnesses

Wm. Bagger

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George W. Simmons Inventor

By his Attorneys

C. A. Snow

(No Model.)

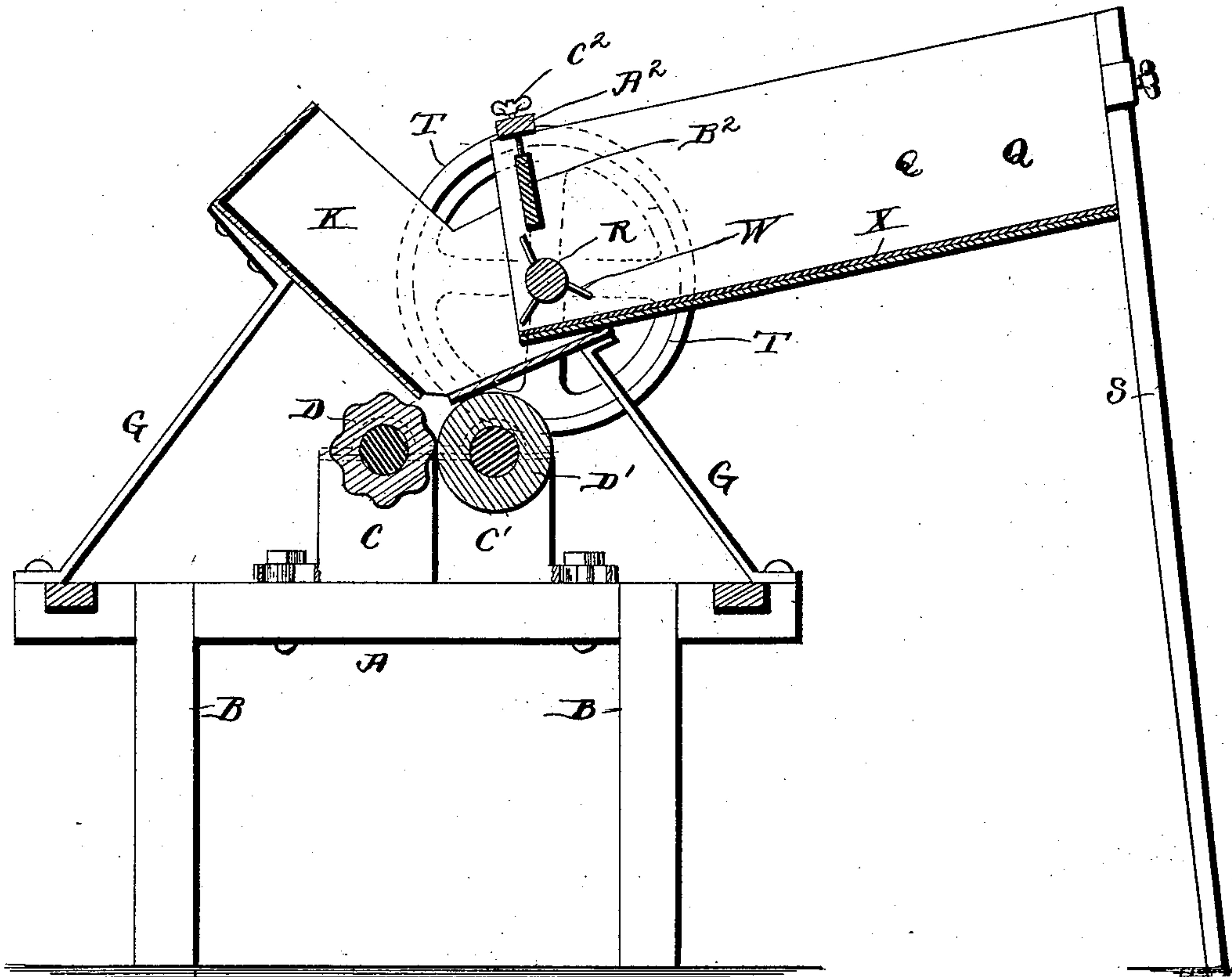
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Fig. 3.



Witnesses

Thos. A. Over
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UNITED STATES PATENT OFFICE.

GEORGE WASHINGTON SIMMONS, OF CONYERS, GEORGIA.

COTTON-SEED CRUSHER.

SPECIFICATION forming part of Letters Patent No. 407,373, dated July 23, 1889.

Application filed February 16, 1889. Serial No. 300,102. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WASHINGTON SIMMONS, a citizen of the United States, residing at Conyers, in the county of Rockdale and State of Georgia, have invented a new and useful Improvement in Cotton-Seed Crushers, of which the following is a specification.

This invention relates to an improved machine for crushing and degerminating cotton-seeds for fertilizing or feeding purposes, and its object is to provide a device of this class which shall be simple in construction, durable, and which shall not be in danger of being clogged or choked, even when run at a high rate of speed.

With these ends in view the invention consists in the construction and arrangement of the crushing-rolls, the hopper, a secondary feed-hopper, and a rotary feeding device for conveying the seed from the secondary into the main hopper, all as will be hereinafter fully described with reference to the drawings, in which—

Figure 1 is a top view of my improved seed-crushing device. Fig. 2 is a side view of the same. Fig. 3 is a longitudinal vertical sectional view.

The same letters refer to the same parts in all the figures.

A designates the frame of the machine, which is composed of stout beams suitably bolted or otherwise secured together and mounted upon legs B B. At one end of the frame, upon the upper sides of the side pieces of the same, are secured the boxes C C', in which the crushing-rolls are journaled. Said boxes are preferably made of cast-iron and lined with Babbitt metal in the usual manner. Adjustment of the boxes to the journaled ends of the rolls may be had by inserting pieces of sheet-iron or mill-board between the upper and lower parts of the boxes in the customary manner, and for the purpose of regulating the distance between the rolls one or both of the boxes C C' may be made longitudinally adjustable upon the sides of the frame, as shown in Fig. 1 of the drawings. The rolls, which are designated by letters D D', may be constructed of cast-iron, and they may either be smooth or longitudinally grooved or fluted, or one of the rolls may be

smooth and the other grooved, or they may be simply rough-turned, whichever may be found most desirable. In the drawings one smooth and one fluted roller have been shown. The shaft of the roll D is provided at one end with a band-wheel F, to which motion may be transmitted from any suitable operating machinery by means of a belt or band E. Motion is, when the machine is in operation, transmitted from the roller D to the roller D' by the frictional contact between the rollers and the material passing between them.

K is a suitably-constructed hopper, which is secured directly over the crushing-rolls, it being connected to the frame by means of braces G G. Arranged above the hopper K, between the sides of the same, and connected pivotally thereto by means of a transverse shaft R, is a secondary hopper Q, which consists of a box open at the end, which is arranged between the sides of the hopper K. The outer or front end of the box or hopper Q is provided with an adjustable prop or support S, by means of which the said box Q may be adjusted at any desired angle or inclination, it being, as will be seen, connected pivotally with the hopper K. Motion is conveyed to the shaft R by means of a friction-wheel T mounted thereon and bearing against one of the rolls D or D', which, if desired, may be provided with a contact-sleeve of rubber or other suitable material. The shaft R is provided with a series of radial spoon-shaped arms W W, which, when the said shaft is revolved, serve to take the seed from the box or hopper Q and throw it into the hopper K, where it will be immediately seized and acted upon by the rollers D D'. The rotation of the shaft R may be in either direction, so as to throw the seed under or over the said shaft. For the purpose of causing the seed to reach the shaft R constantly and without interruption the bottom of the box Q should be perfectly smooth, and to attain this condition I prefer to provide it with a false bottom X, made of zinc or other suitable sheet metal, as will be seen in Fig. 3 of the drawings. The hopper Q is provided at its discharge end with a cross-bar or yoke A², from which a gage-board B² is suspended by means of set-screws C² for the purpose of regulating the quantity of material which is

fed from the upper into the main hopper. One end of the shaft R extends beyond the side of the hopper and supports a brake-bar D², which is pivoted to one side of the hopper K and provided at its free end with an adjustable weight E², by means of which the pressure of the brake-bar upon the shaft R may be regulated, so as to cause the said shaft to revolve at greater or less speed, and consequently supply the material to the hopper K in greater or less quantity, as may be desired.

The operation of this invention will be readily understood from the foregoing description, taken in connection with the drawings hereto annexed. The seed being placed in the box Q will slide down to the shaft R, by the spoon-shaped projections upon which it will be filled evenly and constantly into the hopper K, the feed extending over the entire width of the hopper, so that the seed will be distributed evenly to the crushing-rolls. One of these rolls is, as has been stated, to be rotated by friction, and in order to give the necessary start it may be provided at one end with hand-wheel H², as shown in the drawings. The feed may be regulated partly by raising or lowering the free end of the box Q, thus causing the seed to flow toward the shaft R more or less rapidly, and partly by raising or lowering the gage-board B². The machine is not liable to get choked, because the quantity of seed passing into the hopper K from the supplementary hopper may be so regulated as to not exceed the capacity of the crushing-rolls D and D'. It will also be seen that the rolls do not act to grind the seed, but merely to crush it sufficiently to destroy the germ. The seed treated in this way will not heat in bulk, as it is liable to do when ground fine. Consequently there is no loss of ammonia, and the seed will retain its good qualities for an indefinite length of time.

It may sometimes be found desirable to apply power direct to both of the roller-shafts, and in such case I propose to omit the hand-wheel H² and substitute a band-wheel driven from a pulley upon a counter-shaft, which is to be suitably mounted upon the frame, and which in turn is driven by a belt from a pulley upon the roller-shaft, to which direct motion is imparted.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. In a machine for crushing seed, the combination of the crushing-rolls, a hopper secured above the same, and a secondary hopper connected pivotally to the main hopper, a shaft passing through the sides of the said hoppers, connecting them pivotally, and having a series of radial spoon-shaped project-

tions, and mechanism for rotating the said shaft when the machine is in operation, substantially as set forth.

2. In a machine for crushing seed, the combination of the crushing-rolls, a hopper arranged above the same, a secondary hopper consisting of a box which is open at one end and connected pivotally at the said open end to the main hopper, a transverse shaft extending through the sides of said hoppers, connecting them pivotally, as described, and having radial spoon-shaped arms, and a prop or support attached adjustably to the free end of the said secondary hopper, which may thus be adjusted at any desired inclination, substantially as set forth.

3. In a machine for crushing seed, the combination of the crushing-rolls, a hopper arranged above the same, a secondary hopper consisting of an open-ended box pivoted between the sides of the main hopper, a transverse shaft extending through the sides of the hoppers, connecting them pivotally, as described, and having radial feed-arms, and a vertically-adjustable gage-board arranged at the open end of the supplementary hopper, substantially as set forth.

4. In a machine for crushing seed, the combination of the crushing-rolls, the main hopper, the supplementary hopper, the feed-shaft having radial spoon-shaped feed-arms connecting the latter pivotally to the main hopper, and a brake-arm pivoted to one side of the main hopper, bearing against the upper side of the feed-shaft, and provided at its free end with an adjustable weight, substantially as and for the purpose set forth.

5. In a machine for crushing seed, in which one roll is arranged to be rotated by frictional contact with the other roll and with the material passing between said rolls, the combination, with the said rolls, of a hand-wheel secured upon one end of the shaft of the loose roll, which projects at one side of the frame, substantially as and for the purpose set forth.

6. In a machine for crushing seed, the combination of the crushing-rolls, the main hopper, the supplementary hopper connected pivotally to the main hopper, a transverse shaft extending through the sides of said hoppers, connecting them pivotally, as described, and having radial feed-arms, and a friction-wheel mounted upon the said feed-shaft and bearing against the shaft of one of the crushing-rolls, substantially as herein set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

GEORGE WASHINGTON SIMMONS.

Witnesses:

J. S. JOHNSON,
JOHN ZACHRY.