

(No Model.)

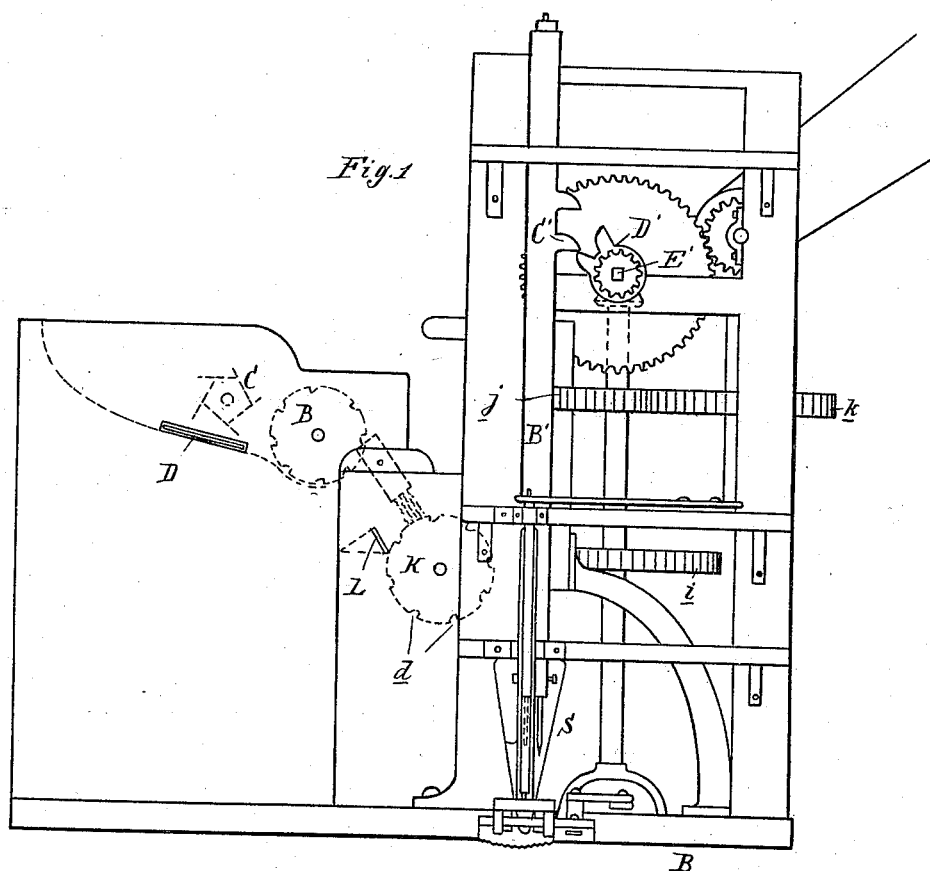
W. McCrum & R. F. Bruce.

5 Sheets—Sheet 1.

SHOE NAILING MACHINE.

No. 343,915.

Patented June 15, 1886.



Attest:
John Schuman.
Edmond F. Sculley.

Inventors:
William McCreum,
and
Richard F. Bruce.
by Atty *Thos Sprague*

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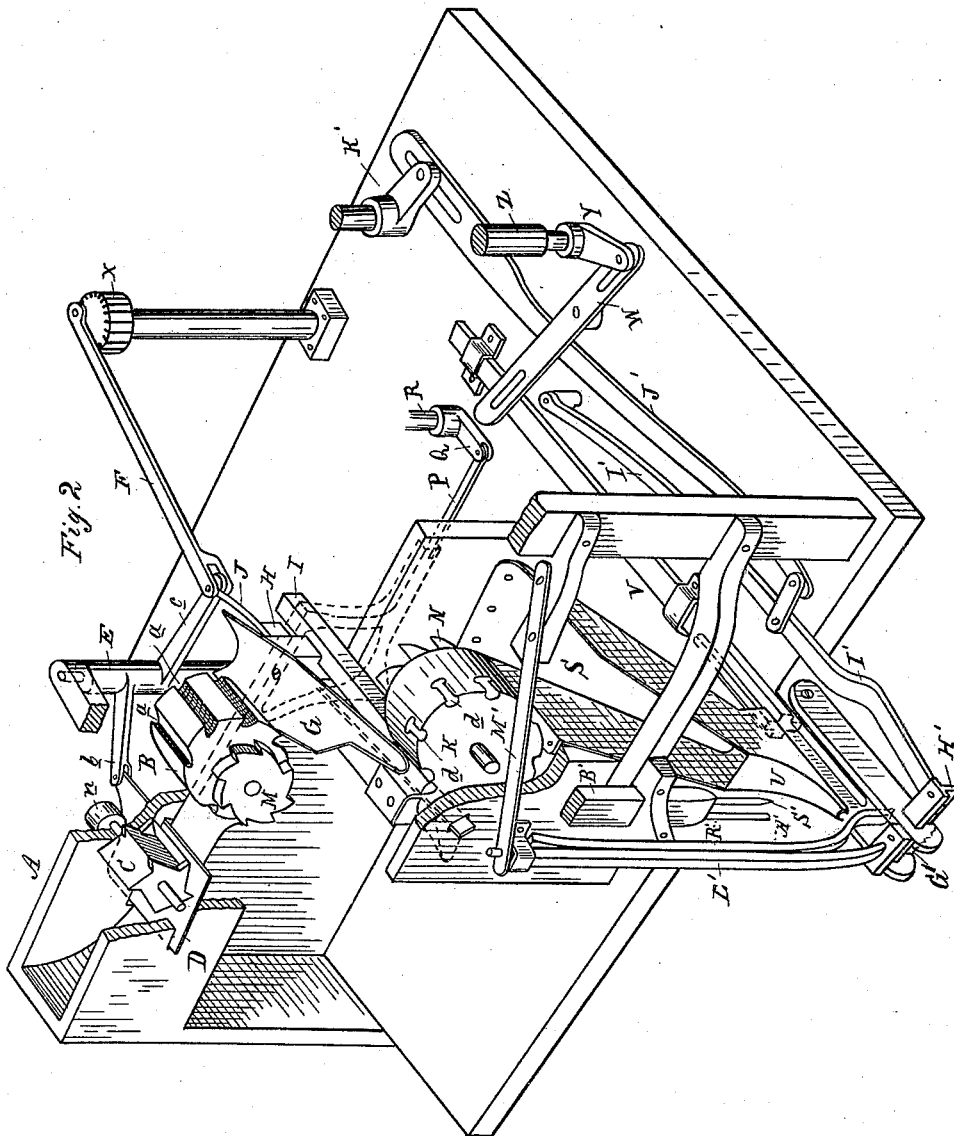
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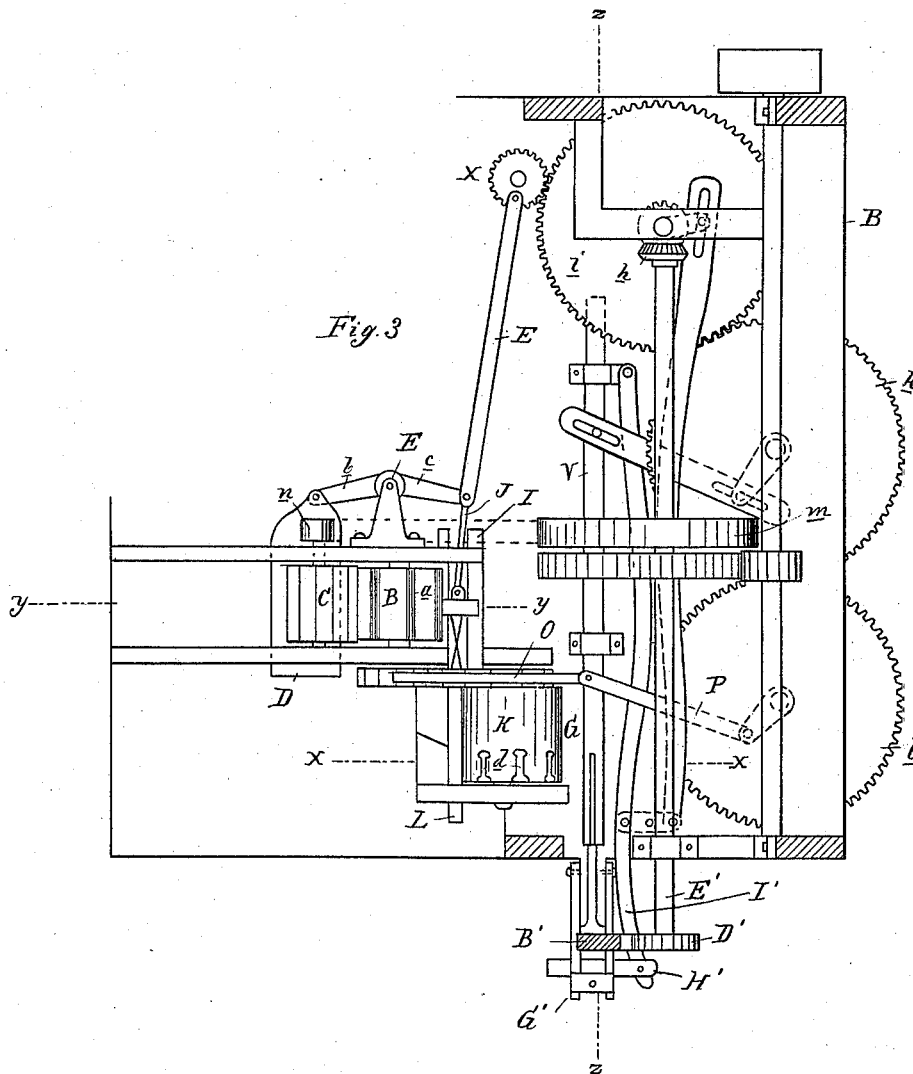
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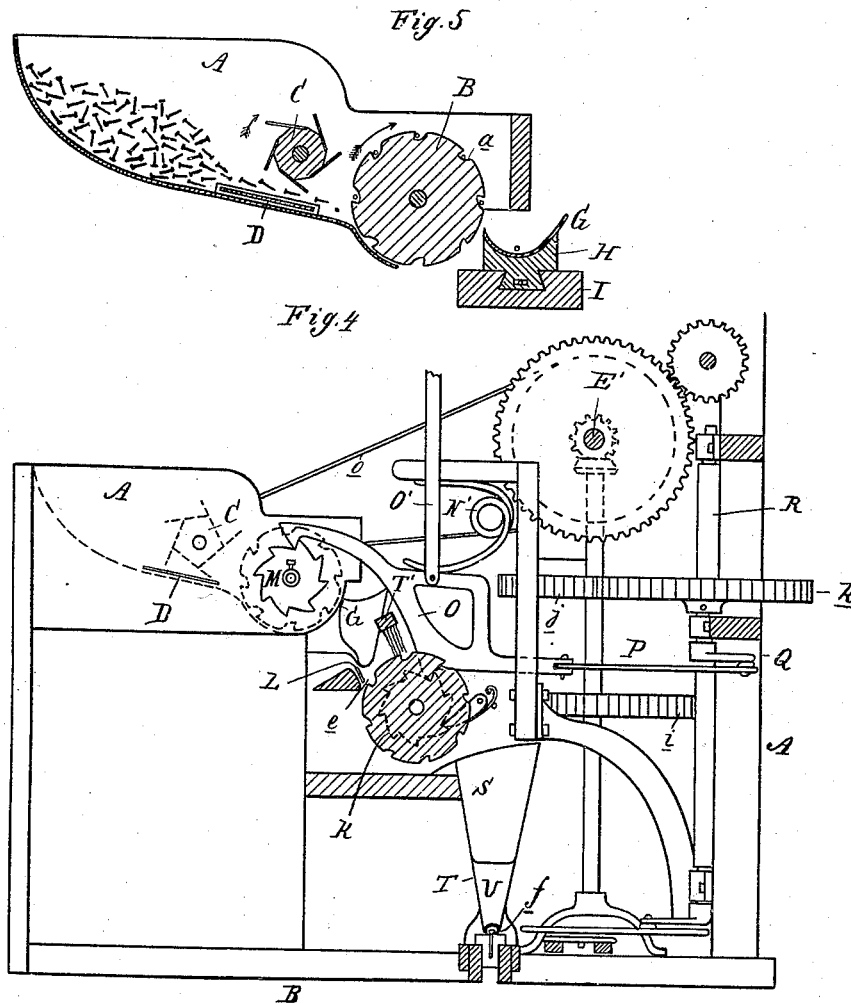
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5 Sheets—Sheet 5.

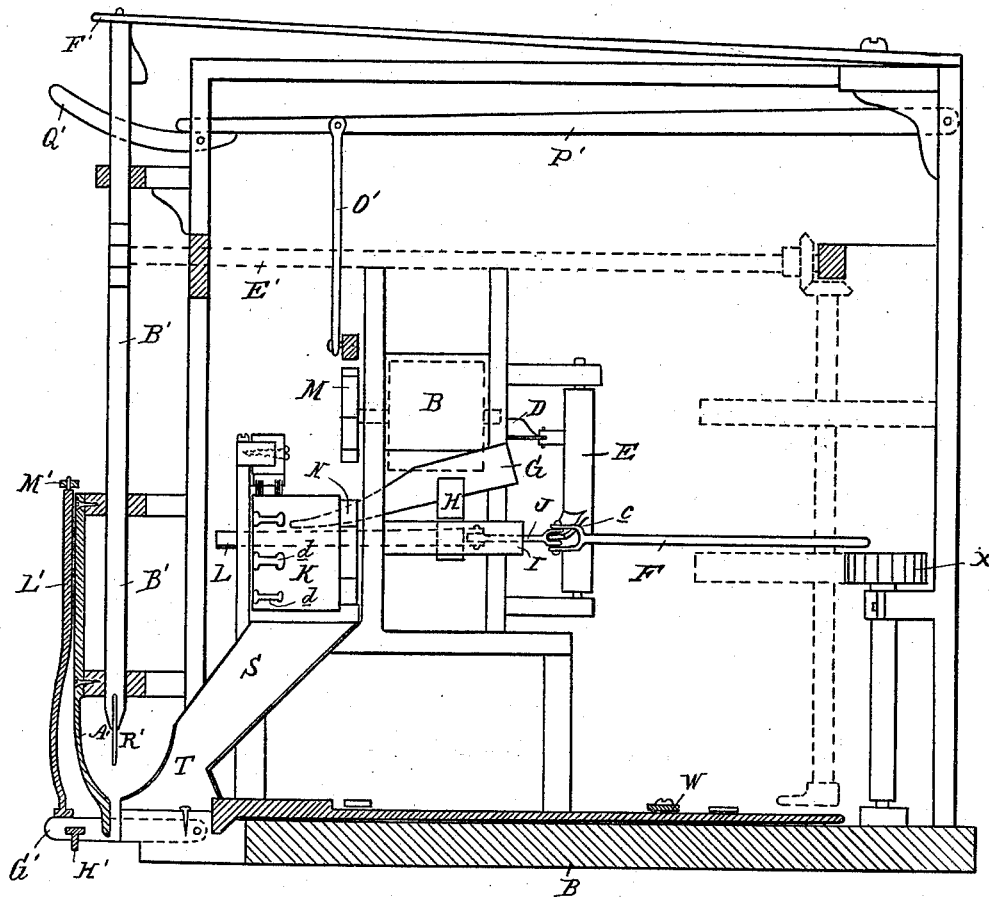
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Fig. 6



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UNITED STATES PATENT OFFICE.

WILLIAM McCURUM AND RICHARD F. BRUCE, OF DETROIT, MICHIGAN.

SHOE-NAILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 343,915, dated June 15, 1886.

Application filed November 21, 1885. Serial No. 183,570. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM McCURUM and RICHARD F. BRUCE, of Detroit, in the county of Wayne and State of Michigan, have invented new and useful Improvements in Shoe-Nailing Machines; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to certain new and novel improvements in machines especially designed for driving headed nails into the soles of boots and shoes.

The invention consists, first, in the peculiar construction of the mechanism for delivering the nails to the hammer singly and at stated intervals; second, in the peculiar construction and operation of the hammer; third, in the means employed for retaining the nail in a vertical position beneath the hammer; and, fourth, in the peculiar construction, arrangement, and combination of the various parts, all as more fully hereinafter set forth.

Figure 1 is a side elevation of our improved device. Fig. 2 is a perspective view showing the grouping of the different elements of our machine, all such other portions as would hide these parts being omitted or broken out. Fig. 3 is a diagram plan showing the power connection of the different movable elements. Fig. 4 is a vertical central section on line *x x*, Fig. 5 is a similar view on line *y y*, Fig. 6 is a similar view on line *z z*, Fig. 3.

In the accompanying drawings, which form a part of this specification, A represents a suitable hopper arranged to discharge at one end, and at the discharge end is journaled upon proper bearings a drum, B, in the periphery of which is formed a series of pockets, *a*. Within the hopper is journaled upon proper bearings a stelliform wheel, C, adapted to be driven by a belt from any convenient shaft. Below this wheel C is arranged an agitating-slide, D, one end of which is attached to the arm of the vertical rock-shaft E, the arm *c* of such rock-shaft being connected by the bar F to the geared crank-wheel X, arranged to be driven from any convenient connecting-power.

At the inner end of the hopper A is an open spout, G, secured upon a block, H, arranged

to be reciprocated in the guide-block, I, by means of a connecting-rod, J, from the arm *c* of the vertical shaft E. At the discharge end of this spout G is journaled in proper bearings a feed-drum, K, in the periphery of which, at one end, is formed a series of pockets, *d*, which, in the operation of the machine, are presented coincident with the discharge end of the spout.

L is a feed-bar attached to and reciprocating with the spout G. This bar projects beyond the outer end of the drum K, and is set at an angle, so as to form with the periphery of such drum a pocket, *e*, into which the nails are delivered from the spout. This bar slides upon the guide-block I, the latter being cut away upon the opposite side of the bar L, so as to form a throat through which nails may fall should the pocket *e* become too full or choked.

The drums B and K are provided with ratchet-wheels M N, respectively, arranged to be intermittently rotated by the reciprocating dog O, which is provided with two teeth or spurs, as shown, to engage with the respective ratchet-wheels, as hereinafter described, the dog being reciprocated by means of the connecting-rod P from the crank Q upon the vertical shaft R. To keep this dog in engagement with the ratchet-wheels, a spring, N', is employed.

O' is a rod connecting the dog O with a bar, P', one end of which is pivoted to the frame, while the opposite end rests upon a cam-lever, Q', and by means of which the dog may be raised so as to clear the ratchet-wheels, thereby stopping the rotation of the feed-drums.

S is a chute or spout, the enlarged open end of which is adjacent to and slightly below the periphery of the feed-drum K, while the lower and discharge end is contracted, forming a foot, T, and closed by a cap, U. The bottom of this foot is longitudinally slotted, and provided with the inwardly-projecting flanges *f*, the space between them being sufficient to allow the shank of a shoe-nail to fall through and hang by its head upon such flanges, as shown in Fig. 4.

Upon the bed of the device is arranged a slide, V, adapted to be reciprocated intermittently by means of the oscillating lever W, operated by the crank Y on the vertical shaft

Z. In the outward projection of this bar V its end pushes the nail in advance of it and out of the foot of the hopper against the free end of the spring-bar A', retaining it in such position until the hammer B' is intermittently vertically operated by means of rack-teeth C', secured to the hammer-shaft, which engage with the mutilated gear D', upon the main drive-shaft E'. This mechanism raises the hammer, the "blow" of the hammer being effected by means of a spring, F', the free end of which bears upon the upper end of the hammer-shaft, which compels a forcible and quick return of the hammer immediately upon the disengagement of the mutilated gear. The lower end of the hammer-shaft is provided with hammer head or bar R', and a punch, S'.

G' is a presser-foot, in which the feed-bar H' is horizontally-reciprocated by suitable mechanical means—such as the levers I' and J', arranged to be oscillated through the medium of a crank, K', upon one of the shafts of the device. This presser-foot is pivotally secured to the bed of the machine, as shown, and to the outer end of such foot is secured a vertical presser-bar, L', the upper end of which projects through a suitable guide and engages with a spring-bar, M', the function of which is to keep the presser-foot down upon the "work" beneath it, and which is supported upon a suitable "jack." As this jack forms no part of our invention, we neither show it nor describe it.

The driving mechanism is arranged as follows, although we do not desire to be confined to such arrangement: Upon the main shaft E', to which the power is applied, is a bevel gear, h, which meshes with a similar gear upon a vertical shaft carrying a gear-wheel, i, which drives the pinion X. Upon this shaft is another gear-wheel, j, which meshes with the gear-wheel k upon the vertical shaft that carries the crank-arm K'. This wheel j meshes with a similar wheel, l, upon the vertical shaft R, which carries the crank-arm Q. Upon the main shaft E' is a pulley, m, from which a belt, o, communicates motion to the pulley n upon the shaft of the wheel C in the hopper A.

In practice, the parts being constructed and arranged to be intermittently operated, substantially as hereinbefore described, the operator places a quantity of nails in the hopper A, and, the parts being in motion, the wheel C prevents a too rapid feed of such nails to the feed-drum B, while the agitating-slide prevents their choking, and passes a few nails at a time to the drum B, which in its rotation picks up the nails and drops them into the spout G. This spout being reciprocated horizontally, it delivers the nails into the pocket e, from which they are picked up, one at a time, by the pockets in the drum K, a brush, T', located above such drum, brushing off the surplus nails that might accidentally lodge in the pockets. This drum delivers the nails, one at a time, into the chute S, where they fall into the foot and hang by their heads, as shown in

Figs. 4 and 6. The shoe or boot to be nailed having been adjusted upon the jack, the hammer descends and drives the nail, which has previously been pushed forward by the slide-bar V into the sole of the boot or shoe, while the punch makes another hole to receive the next nail.

The parts should be so timed in their movements that the nails will be delivered into the chute, pushed under the hammer, and driven into the shoe in consecutive movements, without any interference or binding of the parts.

When it is desired to stop the feed of nails to the chute S, the outer end of the cam-lever Q' is depressed, which raises the bar P' and draws the dog O up out of engagement with the ratchets of the feed-drums.

What we claim as our invention is—

1. In a machine for the purposes described, the combination of a hopper and feed mechanism, constructed as described, within said hopper, with a laterally-reciprocating spout at the inner end of said hopper for delivering nails to a separating-drum, substantially as described.

2. In a machine for the purposes described, the combination, with the hopper, feed mechanism therein, laterally-reciprocating spout at the inner end of said hopper, and an up-ending device, of a hammer and a separating mechanism for delivering nails singly to said up-ending device, substantially as described.

3. In a shoe-nailing machine, the combination, with the drums B and K, of the reciprocating dog O, for intermittently rotating said drums, substantially as and for the purpose specified.

4. In a shoe-nailing machine, the combination of the hopper A, stelliform wheel C within said hopper, and agitating-slide D, substantially as and for the purposes described.

5. In a shoe-nailing machine, the combination, with the hopper A, stelliform wheel C therein, and the agitating-slide D below the said wheel, of the laterally-reciprocating spout G and the feed-drums B K, substantially as and for the purposes specified.

6. In a shoe-nailing machine, the combination of a hopper, A, provided with feed mechanism, substantially as described, with an intermittently-rotating feed-drum, B, and a laterally-reciprocating spout, G, for delivering the nails to a separating-drum, substantially as set forth.

7. In a shoe-nailing machine, the combination of the feed-drum K, spout S, reciprocating bar V, and spring-bar A', substantially as and for the purposes described.

8. In a boot and shoe nailing machine, the combination of the feed-drum K, spout S, reciprocating bar V, spring-bar A', and hammer-shaft B', provided with a hammer, R', substantially as set forth.

9. In a shoe-nailing machine, the combination of the presser-foot G' with the reciprocating feed-bar H', substantially as and for the purposes set forth.

10. In a shoe-nailing machine, the combination of the following elements: the feed-drums B and K, spout G, chute S, foot T, pusher-bar V, hammer-shaft B', presser-foot
5 G', and feed-bar H', when constructed, arranged, and operating substantially in the manner and for the purposes specified.

11. In a shoe-nailing machine, the combination of a hopper, a stelliform wheel, C, arranged within said hopper, and an agitating-
10 slide, D, also within said hopper below the wheel C, with the feed-drum B, substantially as and for the purpose specified.

12. The combination, with the feed-drum
15 K and spout S, having longitudinally-slotted foot T, of the reciprocating bar V, substantially as and for the purpose specified.

13. The combination, with the hopper A, stelliform wheel C, and agitating-slide D within said hopper, of the intermittently-rotating
20 feed-drum B, laterally-reciprocating spout G, and separating-drum K, substantially as described.

14. The combination, with the feed-drum B, laterally-reciprocating spout G, and separating-drum K, of the brush T', substantially as
25 and for the purpose specified.

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RICHARD F. BRUCE.

Witnesses:

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EDMOND J. SCULLY.