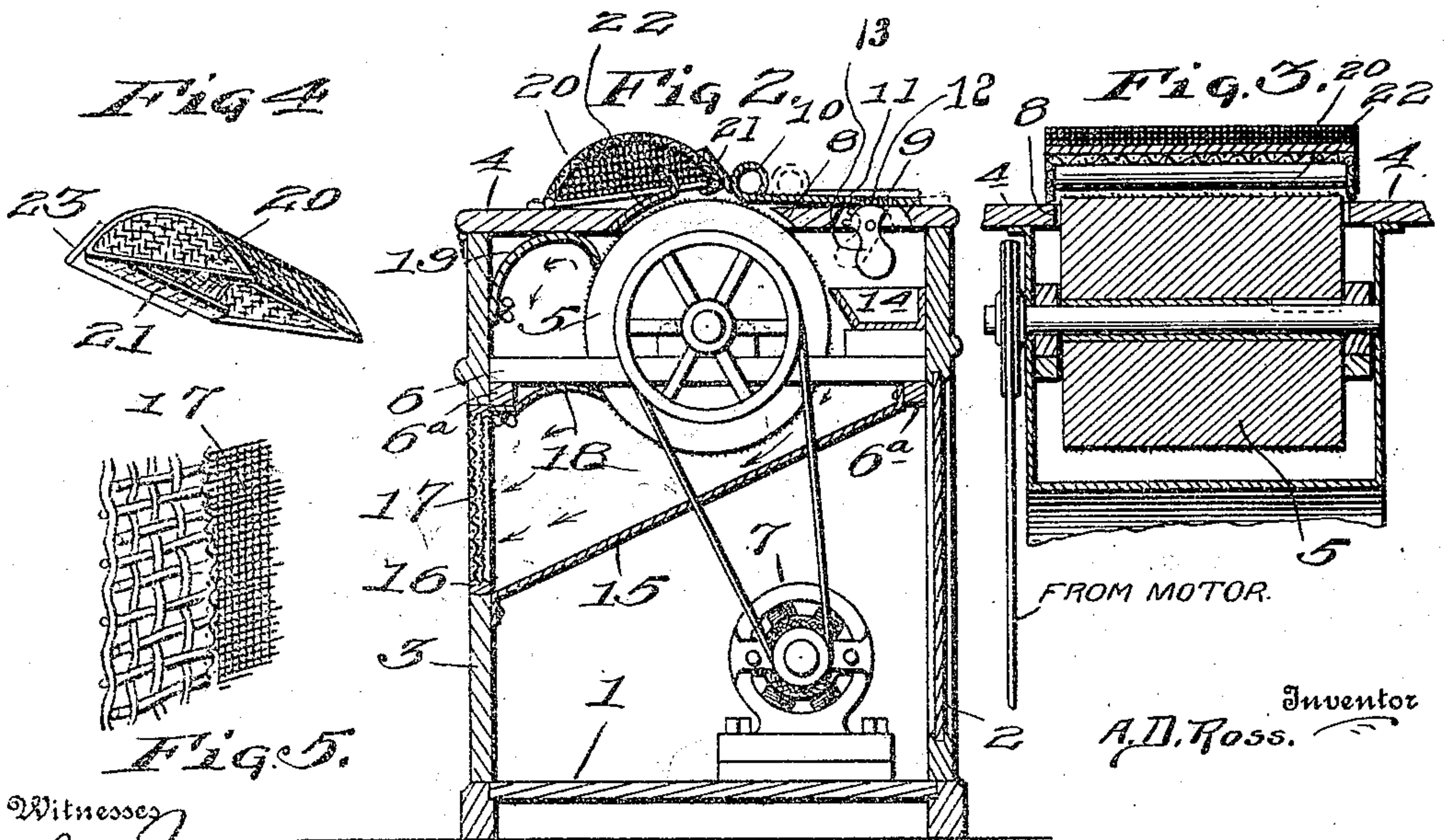
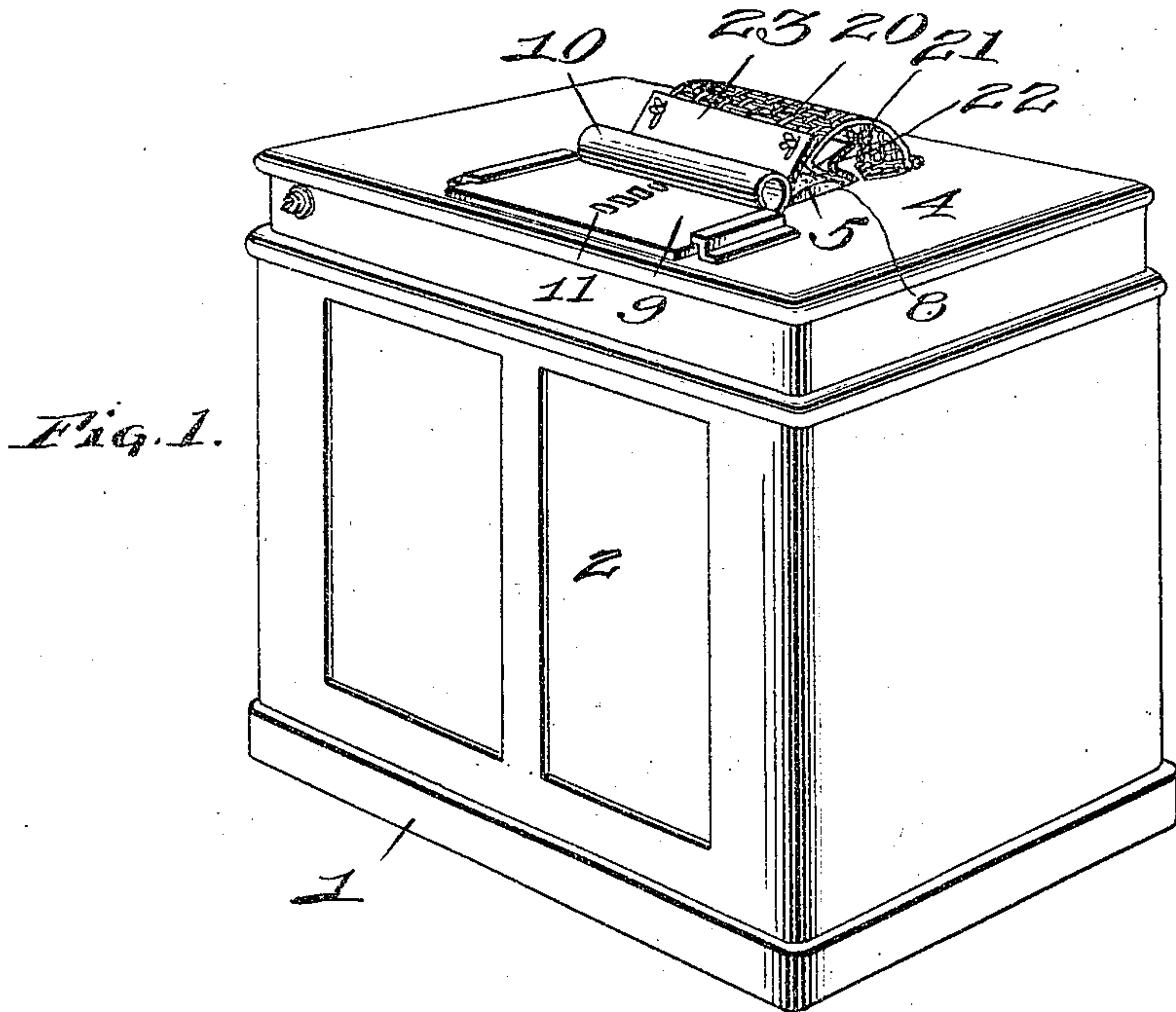


A. D. ROSS.
LETTER OPENING MACHINE.
APPLICATION FILED MAR. 28, 1908.



Witnesses
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UNITED STATES PATENT OFFICE.

ALEXANDER D. ROSS, OF CHICAGO, ILLINOIS.

LETTER-OPENING MACHINE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALEXANDER D. ROSS, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Letter-Opening Machines, of which the following is a specification.

This invention comprehends certain new and useful improvements in letter opening machines of that type that embody a revoluble cylinder or wheel with an abrasive surface or periphery designed to file off the edge of a sealed envelop.

Machines of this character have heretofore been commercially unsuccessful, owing to the paper filings or dust occasioned by their use and which has established unpleasant and unhygienic conditions which have not been compensated for by the rapidity and ease by which letters may be opened. This failure to control the dust and to eliminate the unhealthy conditions consequent upon such failure has been a factor which has heretofore rendered the successful introduction of these machines almost prohibitory, and my invention has for its primary object to overcome these defects and to provide a machine which will be practically dustless.

With these and other objects in view as will more fully appear as the description proceeds, the invention consists in certain constructions, arrangements, and combinations of the parts that I shall hereinafter fully describe and then point out the novel features in the appended claims.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a perspective view of my improved letter opening machine; Fig. 2 is a vertical transverse section thereof; Fig. 3 is a detail sectional view through the abrasive cylinder; Fig. 4 is a detail perspective view of one of the dust deflectors, and Fig. 5 is a detail fragmentary view illustrating the screen portion of the door of the dust collecting chamber.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The cabinet 1 of my improved letter opening machine may be of any desired size and

shape, preferably rectangular, and it embodies a front 2, a back 3, and a lid or top 4 which is preferably hinged at its rear edge.

An abrasive element, which in the present instance is in the form of a cylinder 5, which may be of any desired diameter and width, is journaled in the cabinet 1 to rotate about its central horizontal axis upon any suitable supports 6 secured in the cabinet as by the cross pieces 6^a. The cylinder 5 may be rotated in any desired manner, as by an electric motor 7 mounted in the cabinet and having any desired driving connection with the cylinder. The cylinder 5 has an abrasive periphery which is preferably composed of coarse Garnet paper, although it is to be understood that any abrasive surface may be employed.

The periphery of the cylinder 5 projects to any desired extent upwardly through and sweeps across an opening 8 formed in the top 4 of the cabinet, and a slide 9 is adapted to partially close said opening, said slide being formed at one end with a roll or curl 10 contiguous to the opening and being also formed with a longitudinally extending series of notches or indentations 11 designed to engage with the teeth 12 of the gravity actuated dog 13 mounted to swing in the cabinet underneath the lid, whereby to automatically move the slide 9 to its closed position.

14 designates a coin tray which may be in the nature of a box or trough, or a shelf, if desired, and which is secured in the cabinet at the front thereof just below the lid 4. This tray 14 is primarily designed to catch coins or other articles which may be loosely contained within the letters that are being opened, but it also has a secondary, and no less important function of intercepting the dust or paper filings from the package or bundle of papers being opened, the inner end of the tray extending close to the periphery of the cylinder, as clearly illustrated in the drawings.

Just below the coin tray 14, the sloping floor 15 of a dust box is secured in the cabinet, said dust box being a practically air tight chamber incasing the wheel or cylinder 5. The rear end of this dust collecting chamber is defined by a door 16 which is hinged to the rear of the cabinet to swing outwardly therefrom and which is preferably a frame occupying the entire rear end of the

dust box and paneled with thin muslin and wire netting, as indicated at 17.

A dust deflector 18 is secured within the cabinet in the dust collecting chamber, being
5 in the present instance fastened directly to one of the cleats 6^a, said deflector being preferably of sheet metal and curving upwardly and forwardly into close proximity to the periphery of the cylinder 5. Just above the
10 deflector 18 is a corresponding deflector 19 which is located just underneath the rear hinged end of the lid or top 4.

In addition to the tray 14 and deflectors 18 and 19, I have provided still another deflector designated 20 and preferably composed of a wire framing to which is secured a body portion of thin muslin and wire netting. This deflector 20 is semicylindrical as shown, with closed ends and is hinged along its rear
20 edge to swing upwardly and backwardly on the lid 4, said deflector being designed to project partially across the opening formed in the lid, and being provided with an inturned free edge 21 in proximity to the periphery of
25 the cylinder 5. Coacting with this semicylindrical deflector 20, is a guard 22 which is secured within the deflector 20 to the adjacent wall of the opening 8 and which curves forwardly, upwardly and thence rearwardly
30 as shown, so as to form with the adjacent portion of the deflector 20, a contracted throat to direct the dust laden air into the deflector 20. 23 designates a plate extension which has a slot and stud or screw con-
35 nection with the front edge of the deflector 20, so that more or less of the rear side of the opening 8 may be covered by said deflector, as desired.

In the preferred practical operation, or use
40 of my improved letter opening machine, a handful of letters is taken in both hands and they are smartly rapped on the top 4 so as to jar the inclosures to the bottom to bring their edges even. The letters are then
45 reversed with the top side down, that is, with the address towards the operator and upside-down. They are then shaken lightly until all of the edges are down evenly. The bundle of letters is then grasped with both
50 hands with the thumbs as close to the bottom as can be done with safety and they are then pressed downwardly between the deflector 20 and the roll 10 of the sliding plate 9, said plate being thereby slid towards the
55 operator so as to expose the portion of the abrasive periphery of the cylinder 5. The letters are then pressed very lightly against the cylinder with a sliding movement from left to right, or vice-versa, one slide being
60 sufficient, and they are reversed end for end and shaken even and given another slide. In this last operation, it will be understood that the address is up-side-down, as above, but away from the operator, so that by thus

reversing the letters, all portions of the en- 65
velops are pressed against the cylinder and the envelopes are thereby effectually opened. The instant the letters are removed, the weighted dog 13 slides the plate 9 back-
wardly again so as to close or extend over the 70
exposed portion of the cylinder 5.

It is of course to be understood that the cylinder 5 rotates very rapidly, and the dust or filings are a factor that is hard to control. This object is obtained by my machine, as by 75
the tray 14 which constitutes the first check. The tray 14 serves to check the dust or anything which passes through the throat of the machine constituted by the opening 8. Pass-
ing the tray 14, the dust laden air strikes 80
against the sloping floor 15 of the dust box and is impinged against the door 16 in the back of the cabinet, the reticulated or foraminous body portion of said door serving to confine the dust in the box while at the same time 85
permitting the air to escape. The greatest force of the dust laden air is thrown against the door 16, said door permitting the air to escape while the dust, or at least nearly all of it settles in the chamber upon the floor 15 90
thereof. If the rapidity of the disk 5 should cause some of the dust to be carried upwardly in the dust chamber, it will meet with the deflectors 18 and 19, and if any dust passes these points, it will be deflected into the 95
throat between the guard 22 and the semicylindrical deflector 20 and settle in the deflector back of the guard, while the screen-like character of the deflector will permit the air to pass freely therethrough. Hence it will 100
be seen that the dust and air is effectually separated and that the uncomfortable and unhygienic conditions that are incidental to the use of a machine of this character without
my improvements, are entirely eliminated. 105

Having thus described the invention, what is claimed as new is:

1. A machine of the character described, comprising a cabinet, an abrasive element mounted in said cabinet, the cabinet being 110
formed with a throat across which the abrasive element is arranged to sweep, said cabinet embodying a dust collecting chamber incasing said abrasive element, and a screen secured to the cabinet at one side of said 115
chamber.

2. A machine of the character described, comprising a cabinet formed with a throat, an abrasive element mounted to travel in said cabinet and arranged to sweep across 120
said throat, said cabinet embodying a dust collecting chamber and a door at the rear side of said chamber, said door embodying a screen.

3. A machine of the character described, 125
comprising a cabinet, formed with a throat, an abrasive element mounted to travel in said cabinet and sweep across said throat,

the cabinet embodying a dust collecting chamber incasing the abrasive element, and having a wall sloping downwardly and rearwardly underneath the same, and a screen at the rear side of said chamber.

4. A machine of the character described, comprising a cabinet embodying a lid formed with a throat, an abrasive element mounted to travel in the cabinet and to sweep across the throat, a deflector secured to said lid and arranged to project partially across the throat, and a guard secured to the lid within the deflector and spaced from the free edge thereof.

5. A machine of the character described comprising a cabinet formed with a throat, an abrasive element mounted to travel in the cabinet and to sweep across the throat, and a deflector secured to the cabinet and arranged to project partially across the throat, said deflector being provided with an adjustable extension at its free edge.

6. A machine of the character described, comprising a cabinet formed with a throat, an abrasive element mounted to travel in the cabinet and sweep across the throat, a slide secured to the cabinet, and means tending to

move the slide in a direction to extend across the throat.

7. A machine of the character described, comprising a cabinet formed with a throat, an abrasive element mounted to travel in the cabinet and to sweep across the throat, a slide secured to the cabinet and formed at one end with a roll contiguous to the throat, and means tending to move the slide in a direction to project across the throat.

8. A machine of the character described, comprising a cabinet, an abrasive element mounted to travel in said cabinet, said cabinet being formed with a throat adapted to expose a portion of the abrasive element, a slide secured to the cabinet and adapted to be moved in a direction to extend across the throat, said slide being formed with a series of notches, and a weighted dog mounted in the cabinet and formed with teeth meshing in said notches.

In testimony whereof I affix my signature in presence of two witnesses.

ALEXANDER D. ROSS. [L. S.]

Witnesses:

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