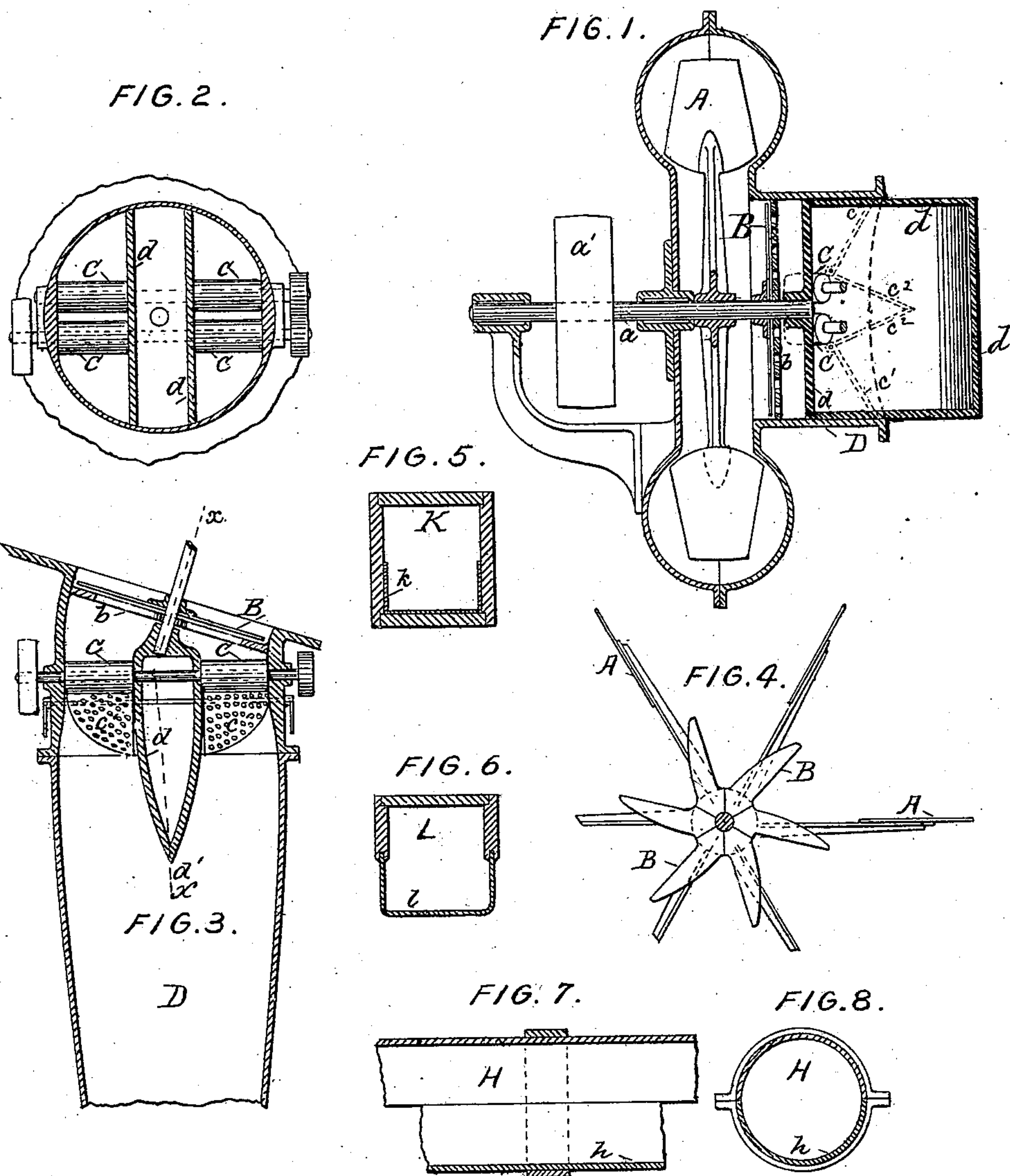


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Machine for Cutting and Conveying Wood Shavings.

No. 227,316.

Patented May 4, 1880.



WITNESSES.

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Henry L. Goodwin

INVENTOR.

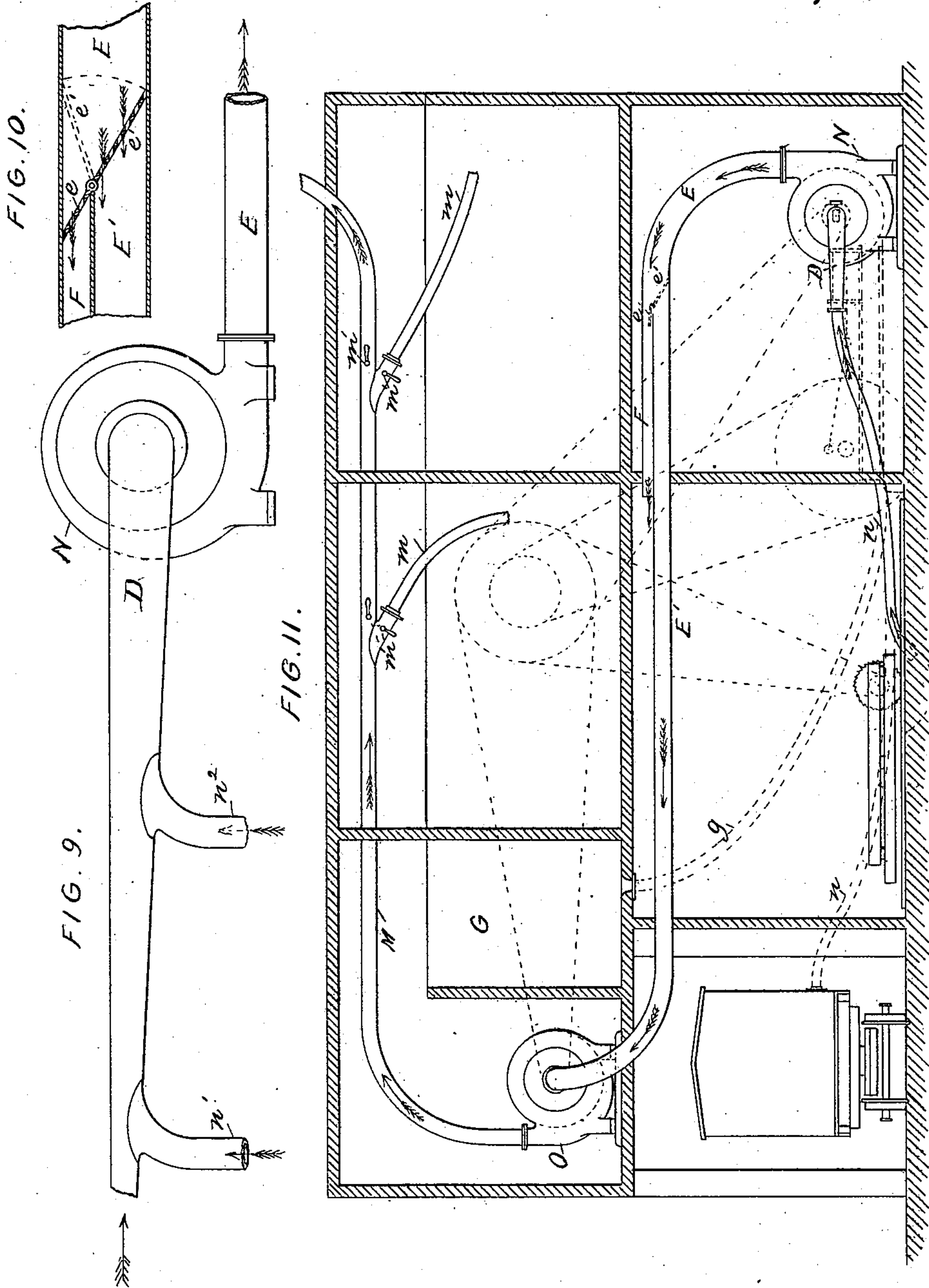
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UNITED STATES PATENT OFFICE.

HENRY D. STOVER, OF NEW YORK, N. Y.

MACHINE FOR CUTTING AND CONVEYING WOOD SHAVINGS.

SPECIFICATION forming part of Letters Patent No. 227,316, dated May 4, 1880.

Application filed September 9, 1879.

To all whom it may concern:

Be it known that I, HENRY D. STOVER, of the city, county, and State of New York, have invented certain new and useful Improvements in Machinery for Cutting and Conveying Wood Shavings and other Material, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings, which form a part thereof.

The object of my invention is to provide improved machinery for preparing, conveying, discharging, and storing grain, sand, shavings, and other granulated or partly-disintegrated material; and it consists in the construction, arrangement, and combination of exhaust fan-blowers with certain auxiliary and operative mechanism, as hereinafter more fully set forth.

In the annexed drawings, Figure 1 is a longitudinal section of an exhaust fan-blower with feeding and cutting mechanism, taken on the line *x x*, Fig. 3. Fig. 2 is a view of the feeding mechanism in the mouth of the induction-pipe. Fig. 3 is a sectional plan of Fig. 2. Fig. 4 is a longitudinal elevation of the fan and cutting mechanism. Figs. 5, 6, and 8 represent cross-sections of conveyers. Fig. 7 is a longitudinal section of Fig. 8. Fig. 9 is a longitudinal elevation of an exhaust fan-blower with induction and eduction pipes. Fig. 10 is an enlarged longitudinal section of a conveyer, showing double discharge-pipes provided with valves; and Fig. 11 shows the various parts of my invention in operative connection.

The precise location of the feeding and cutting mechanism within the induction-pipe is immaterial, as the said mechanism may be driven by separate shaft and pulleys, if desired. I prefer to arrange them, however, as near as practicable to the fan A and drive them directly from its shaft and pulley *a a'*.

When using a rotary cutter for the purpose of cutting long fibrous material, such as hay, straw, &c., to facilitate its passage, I prefer to make it of several blades, as at B, and fasten it directly to the main driving-shaft *a*. The fan A and cutters B thus revolve in parallel planes.

The conveyer or induction-pipe D, in which the feed-rolls C operate, connects with the

outer casing of the blower at an angle, as shown in Fig. 3, to allow the knives B to cut material across the longitudinal fibers thereof at other than a right angle. While this is being done the perforated diaphragm *b* holds the material against the cutting action of the knives B, the horizontal slots in said diaphragm permitting the material to be fed to the cutters.

The conveyer D is divided internally by the double partition *d*, which forms an apex or point at *d'*, the purpose of which is to prevent the passage of material to the cutters B at their center or inside the line of their effective cutting action.

The feed-rolls C find end bearings in the pipe D and partition *d*, and may be driven by any suitable mechanism.

The relative position of the feed-rolls and cutters is optional, as they may be placed in any other suitable position. The cutting apparatus may also be used without the feeding apparatus, and may be placed and operated at any desired angle at any point within the induction-pipe.

When the feed-roll mechanism is used a pair of flap-valves may be employed. These valves are so arranged that when they are placed in the position shown at *c'*, Fig. 1, any material being operated upon that is too large to pass through the perforations in said valves will be compelled to pass between the feed-rolls C, and when the material is of such nature as shall not require the action of the feed-rolls the flap-valves may be brought together at their outer ends, as shown at *c''*, to prevent the passage of material through them and allow its free and unobstructed passage above and below to the exhaust-fan.

After the material is drawn into the exhaust fan-blower N through the flexible feed-pipes *n* and the conveyer D, Fig. 11, it is forced or blown up by the fans into the conveyer E. This conveyer is provided with the branch pipes E' and F, having suitable double-hinged valves *e e'*, which control the openings thereto.

The lower valve, *e'*, may be perforated, if desired, and yet prevent the passage of chaff and light straws, which, owing to their comparative lightness, are separated by the blast from

the heavier particles and discharged through the branch pipe F when the upper valve, *e*, is open, as shown in Fig. 11.

Should the blast be too strong and the solid grains be carried thereby into the chaff and dust-pipe F, the perforated valve *e* may be raised and closed, as shown in Fig. 10 in full lines.

If the material conveyed does not need cleaning, the upper valve, *e*, may remain closed and the lower valve, *e'*, raised and left open, as shown in dotted lines in Fig. 10, when all the material will be carried at once into the pipe E'.

The pipe or conveyer E E' may terminate, if desired, in suitable storage-bins, or it may lead to an auxiliary fan-blower, as shown in Fig. 11.

The auxiliary exhaust fan-blower O is used to assist the lower fan-blower, N, in raising the material to the required height. A number of these auxiliary fans may be successively employed with their pipe-connections, one above the other, as occasion may require.

In the drawings the flexible discharge or delivery pipes *m*, controlled by valves *m'*, are shown leading from the upper conveyer, M, and emptying its contents into storage-bins at the desired point.

The pipe *g*, leading from the bottom of the tank or bin G to the induction-pipe *n* of the exhaust fan-blower N, shows a mode of rapidly emptying one bin into another, or of discharging its contents into any receptacle in any position.

The conveying-pipe D is made tapering with a gradual enlargement at its mouth near the entrance to the fan, which facilitates the passage of the material and the free action of the feed-rolls and the cutting-knives. When made in this way its downward incline internally allows a feed to the exhaust-fans, which is greatly assisted by the gravity of its contents. I have also found it useful to line the conveying-pipes partially or wholly with glass, porcelain, or other suitable smooth-faced hard material for the same purpose. Instead of lining the pipes in this way, they may, if de-

sired, be constructed partially or wholly of said material.

In the drawings, Fig. 5 shows a pipe, K, of square cross-section, partly lined with said smooth material *k*. Fig. 6 shows a pipe, L, in which the lower half, *l*, is wholly composed of said material. Figs. 7 and 8 show views of a cylindrical pipe, H, made in halves, the lower half of which at *h* is entirely composed of smooth-faced material. The general form of these conveying and induction pipes, whether cylindrical or otherwise, is immaterial, their tapering or inclined outlets and smooth internal surfaces being the essential features of their construction.

What I claim as my invention is—

1. In combination with an exhaust-fan, A, cutters B, and induction-pipe D, the double partition *d*, with point or apex *d'*, arranged within the induction-pipe, as shown, for the purpose of preventing the passage of material to the cutters at their center or inside the line of their effective cutting action, substantially as set forth.

2. In combination with an exhaust-fan, A, cutters B, feed-rolls C, and induction-pipe D, the flap-valves *e'* *e''*, for the purpose of directing the passage of material through or deflecting it past or from the feed-rolls, substantially as specified.

3. In combination with exhaust fan-blowers N and O, constructed and arranged as shown and described, the conveyers E and M and tapering glass-lined induction-pipe D, enlarged at its mouth next the fan, and set at such an angle as will permit a feed of its contents by gravity, substantially as specified.

4. In combination with the exhaust fan-blower N, the pipe E, with branches E' and F, controlled by suitable valves *e* *e'*, all arranged and operating as shown and described, for the purpose of separating the chaff, substantially as specified.

H. D. STOVER.

Witnesses:

SAMUEL F. HAY,
HENRY L. GOODWIN.