(No Model.) 2 Sheets—Sheet 1.

C. H. LEGGETT.

DISCHARGE SPOUT FOR POWDER DISTRIBUTERS.

No. 568,776. Patented Oct. 6, 1896.

FIG. 1.

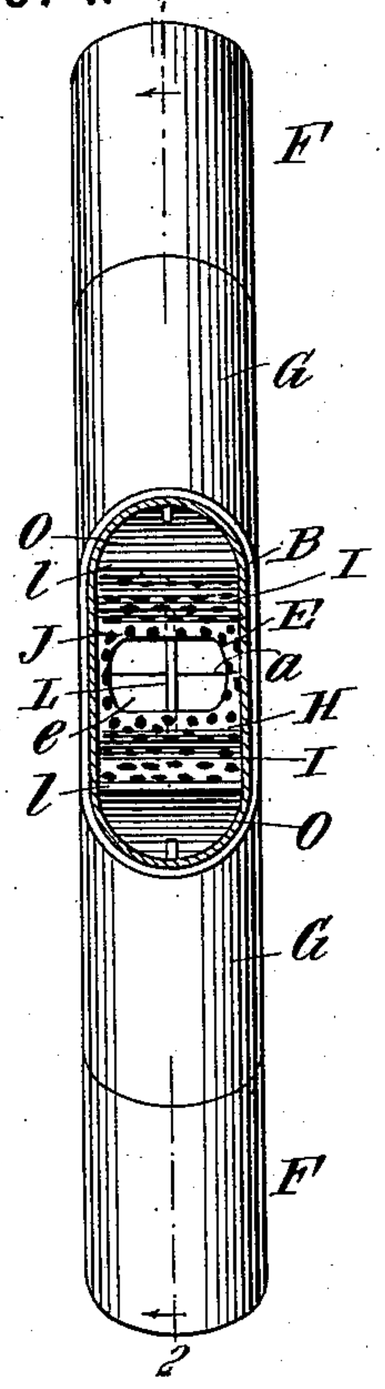


FIG. 2.

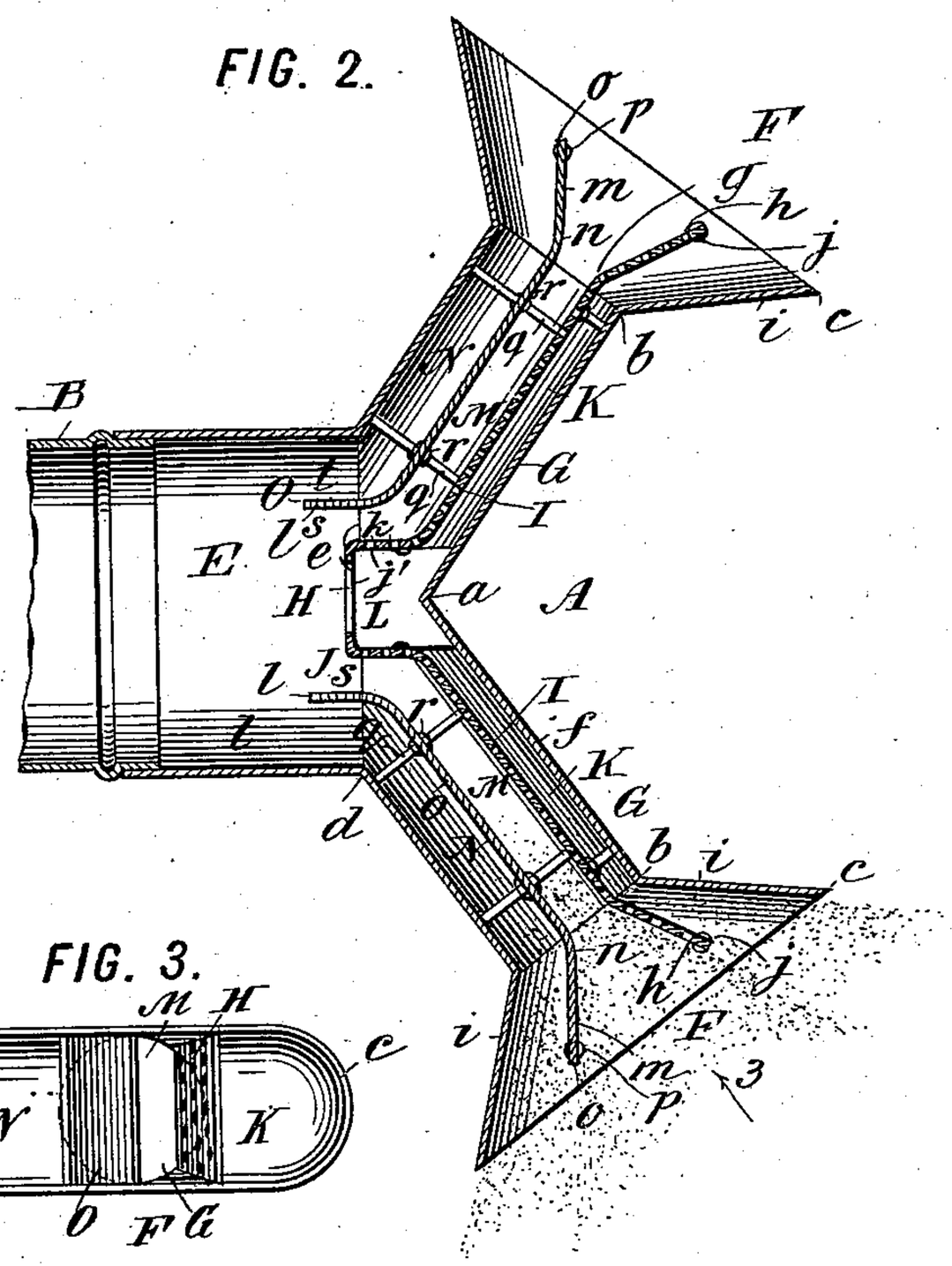


FIG. 3.

FIG. 4.

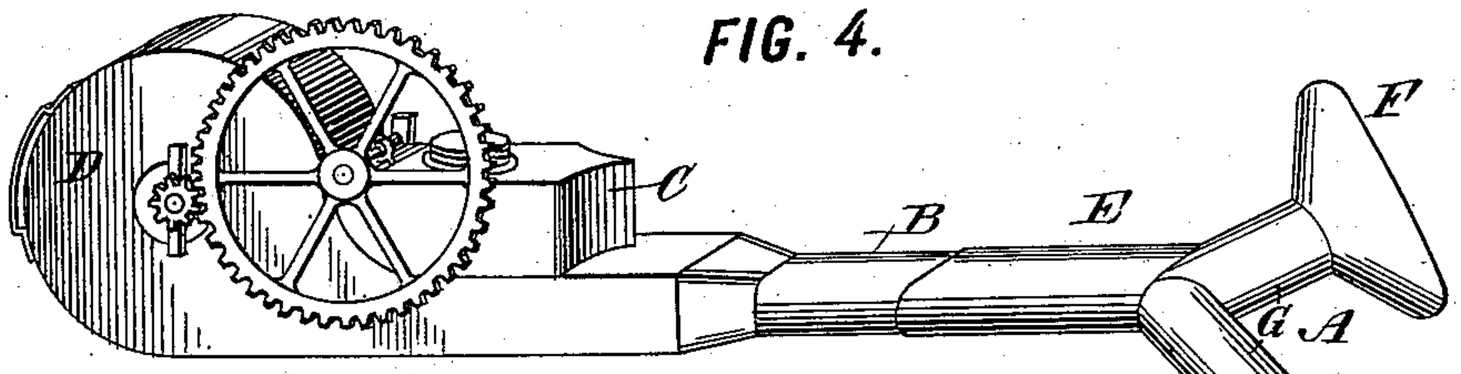


FIG. 5

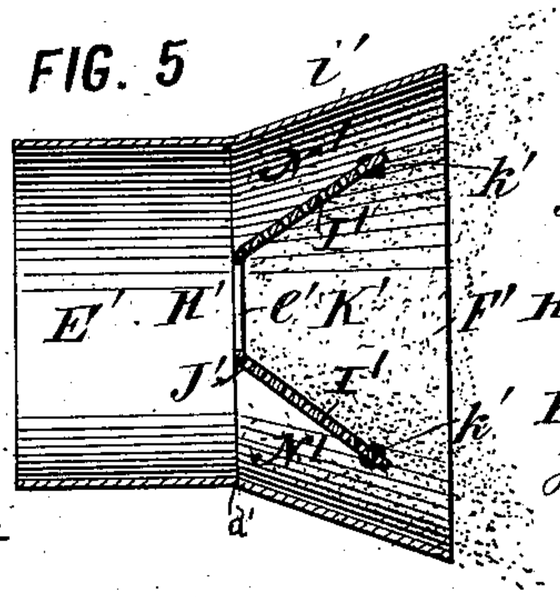
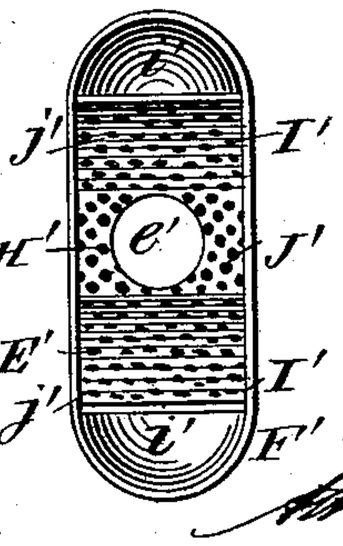


FIG. 6.



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(No Model.) 2 Sheets—Sheet 2.

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DISCHARGE SPOUT FOR POWDER DISTRIBUTERS.

No. 568,776. Patented Oct. 6, 1896.

FIG. 7.

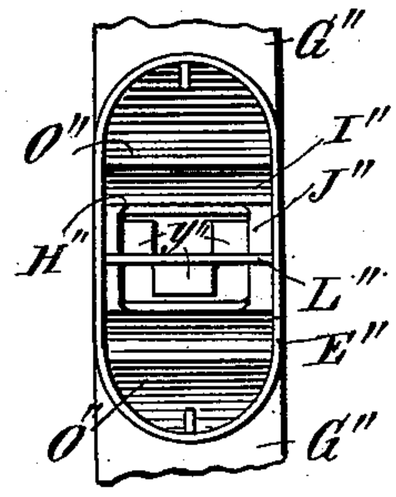

FIG. 8.

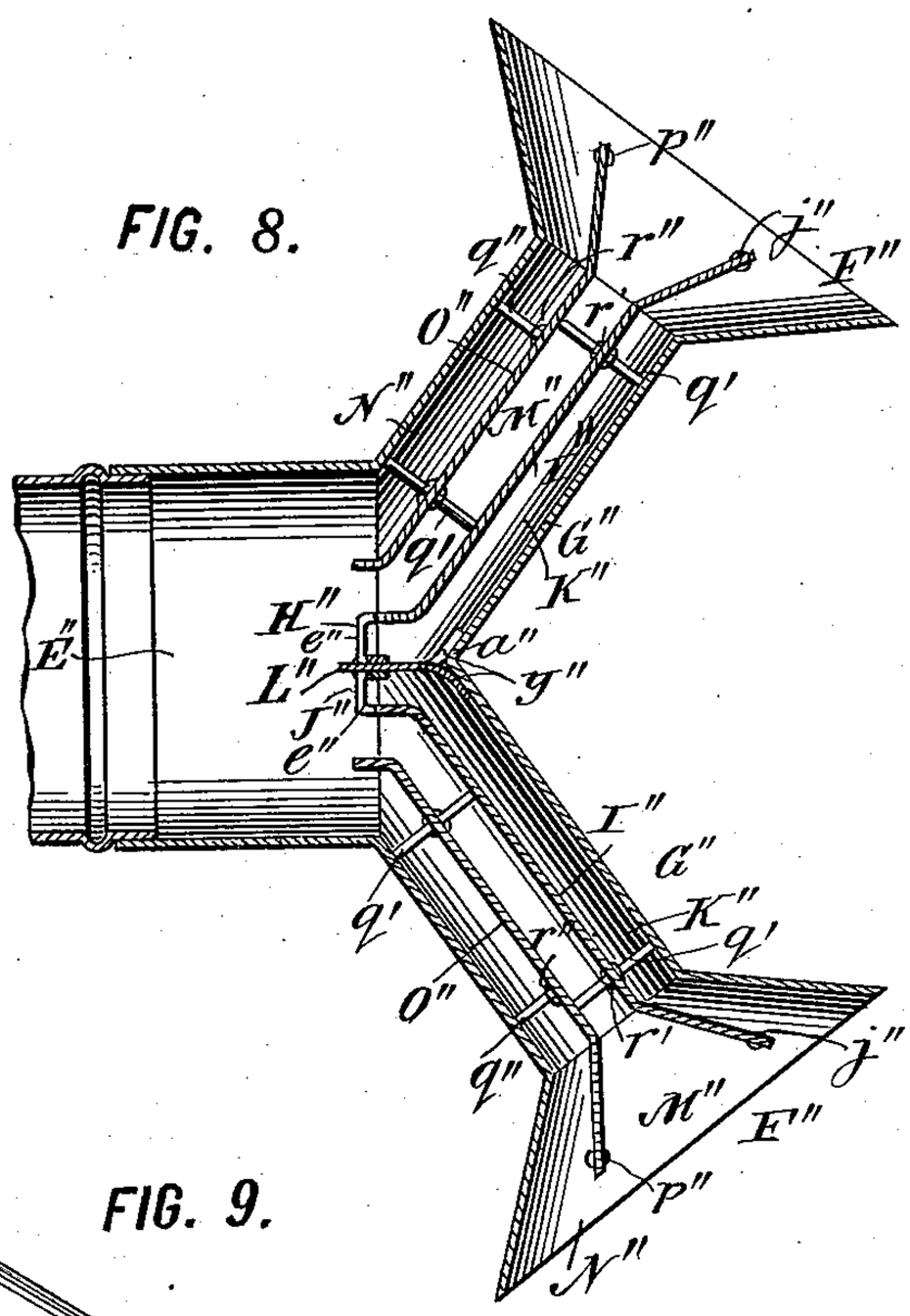

FIG. 9.

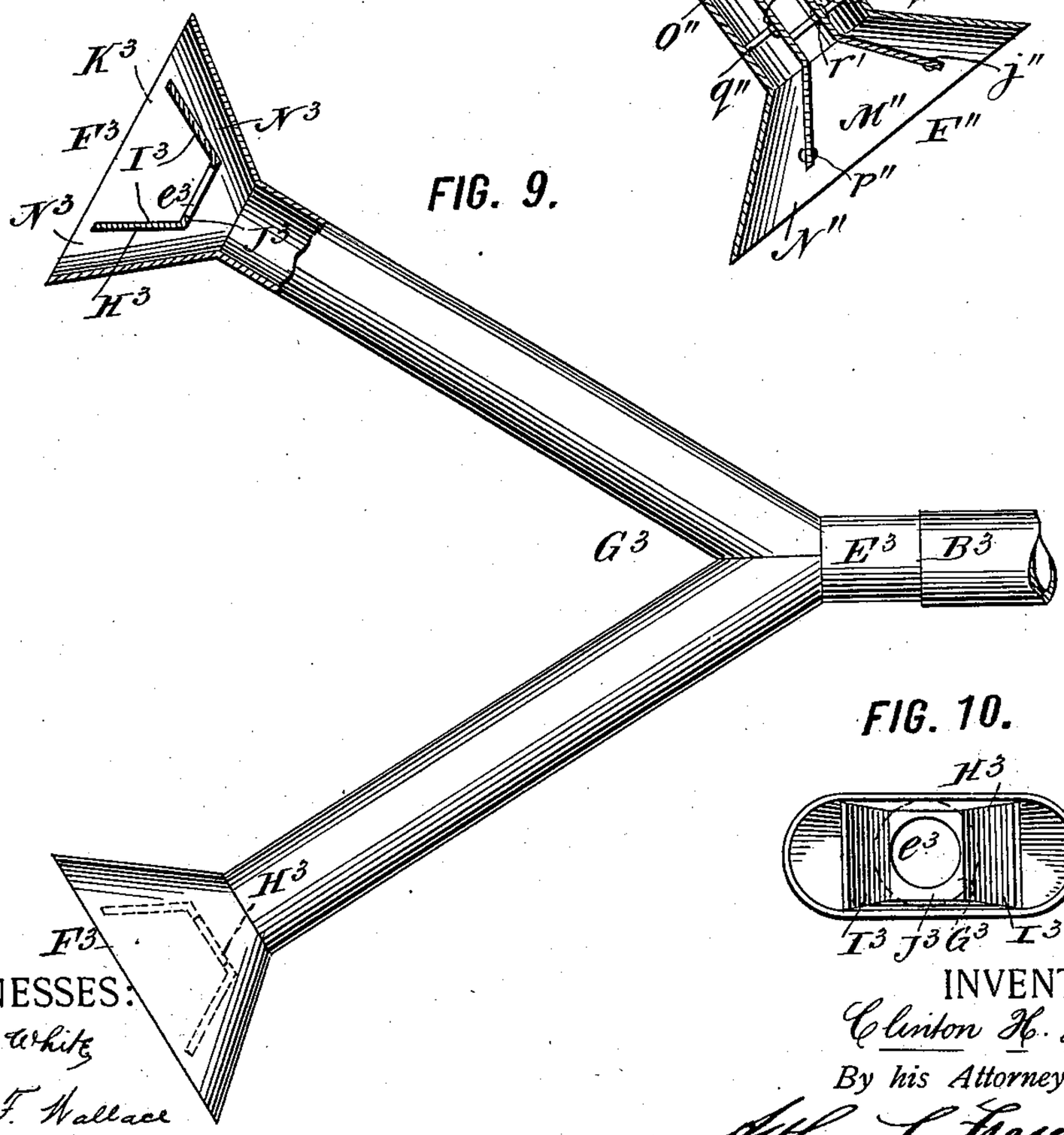

FIG. 10.

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UNITED STATES PATENT OFFICE.

CLINTON H. LEGGETT, OF NEW YORK, N. Y.

DISCHARGE-SPOUT FOR POWDER-DISTRIBUTERS.

SPECIFICATION forming part of Letters Patent No. 568,776, dated October 6, 1896.

Application filed December 12, 1895. Serial No. 571,967. (No model.)

To all whom it may concern:

Be it known that I, CLINTON H. LEGGETT, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Spouts for the Discharge-Pipes of Powder-Distributers and the Like, of which the following is a specification.

This invention relates to distributing-spouts for powder distributers, blowers, and analogous devices, and aims to provide improvements in such spouts.

Heretofore, particularly for powder-distributers for agricultural use, attempts have been made to provide a spout which would properly divide and distribute the stream of powder and air flowing from the distributer over the plant or vegetable on which the paris-green or other insecticide discharged was desired to be evenly applied, and devices have been employed for distributing the discharge from one powder-distributer simultaneously upon two rows of plants, this being accomplished by providing two diverging spouts. In such structures difficulty has been encountered from the fact that the amount of powder in the outflowing streams is liable to be unevenly distributed at the discharge, so that the major portion of the powder will leave one part of the spout, and the blast coming from the remainder of the spout will be comparatively free from powder.

My invention aims to provide improvements whereby a spout for one row or a plurality of rows can be used, which spout or spouts will give a discharge substantially uniform in its proportions of powder and air throughout all portions. To this end in carrying out the preferred form of this invention I provide this spout with one or more internal partitions, subdividing its interior into two or more conduits, which at their ends adjacent to the discharge tube or barrel of the powder-distributer are disposed and proportioned to receive substantially equal quantities of powder, and at their opposite ends in the spout are arranged to distribute the streams running through them with such relative degrees of diversion that the discharge of all through the spout will approximate a single uniformly forcible and evenly-divided diverging discharge, equally rich in powder throughout all its cross-sectional portions. These improvements are especially applicable to double spouts or those having two branches leading from a main discharge-pipe and terminating in two spouts, the one for use with one row and the other for use with the other row of plants; but they are equally applicable where but one spout is employed for use with one row of plants. I also provide certain structural features of improvement which will be hereinafter fully set forth.

In the accompanying drawings, which illustrate certain adaptations of my invention, Figure 1 is a rear elevation of a double spout for a powder-gun embodying the preferred form of my invention. Fig. 2 is a longitudinal section thereof cut on the line 2 2 of Fig. 1 and showing a fragment of the barrel of a powder-distributer to which the spout is applied. Fig. 3 is a front elevation of one of the spouts looking in the direction of the arrow 3 in Fig. 2. Fig. 4 is a perspective view, on a small scale, of a powder gun or distributer having the spout shown in the previous figures applied thereto. Fig. 5 is a longitudinal section showing a modification of my invention as applied to a single spout. Fig. 6 is a front end elevation thereof. Fig. 7 is a rear end elevation of a double spout, showing a modified form of my invention. Fig. 8 is a longitudinal section thereof. Fig. 9 is an elevation, one of the spouts being in longitudinal section, showing another modification of my invention; and Fig. 10 is a front end elevation of one of the spouts shown in Fig. 9.

Referring to Figs. 1 to 4 of the drawings, let A represent a spout; B, the barrel of a powder gun or distributer; C, the reservoir of the latter, and D the blower thereof. These parts may be of any usual or suitable construction, the blower forcing a stream of air through the barrel, the reservoir depositing a gradual stream of powder into this stream of air, and the spout receiving this combined stream and discharging it toward the object upon which it should be directed. The barral B may be of circular or elliptical cross-section, that shown in these figures being of oblong cross-section, having flat top and bottom sides and semicircular edge walls. The spout may have either a single or a double discharge, and consists of an inlet E, fitting

on the barrel, and one or more mouths F, opening from this inlet and discharging the stream therefrom. When more than one mouth F is used, the several mouths are united to the inlet-tube by diverging tubes G, made at their junction with a corner *a* opposite the center of the inlet-tube and extending thence to the mouths F, respectively, which mouths are of oblong cross-section, having flat top and bottom walls and semicircular side walls, which walls diverge from the point *b* of junction between the mouth and branch tube to the edge *c*, where the mouths open. The branch tubes are usually cylindrical in cross-section and are united to the inlet-tube on a line *d*, diverging therefrom with equal angularity.

According to the preferred form of my invention, I provide a main deflecting partition H, having angular diverging legs or side portions I extending outwardly from a central portion J, which preferably extends at right angles to the axis of the inlet-tube E and is disposed opposite the longitudinal center thereof. The portion J of the partition H is constructed with an inlet-aperture *e*, through which exists communication from the rear to the front side of the partition, and this aperture is disposed equidistantly at the sides of the angle *a* between the branch pipes G, so that the portion of the blast passing through this aperture will be equally divided by this angle between the two branch pipes. The legs I of the partitions constitute inner walls of a conduit K, the outer walls of which are formed by the circular walls *f* of the branch pipes. This conduit leads of uniform and arc-shaped cross-section to the mouth F at each instance, at the beginning of which mouth the outer end of each leg I is bent in *g* and extends forwardly in a straight portion *h* at an angle diverging from the angle of the adjacent wall *i* of the mouth, so that the outer extremity of each conduit K gradually increases in size from the inner toward the outer portion of the mouth. The outer ends *h* of the legs I are suitably fixed against movement, as by soldering them at *j* to the top and bottom walls of the mouths. The inner part J of the partition H is suitably held in place, preferably by a piece L, which is constructed with a V-shaped notch on its outer edge, engaging the corner at the junction of the branch tubes, and with rectilinear side and rear walls *j'*, fitting corresponding walls *k*, formed in the partition H at its center. The piece L is soldered to the partition H and loosely engages the tubes G in the construction shown. It is arranged intermediate of the top and bottom walls of the inlet-tube E.

The partition H is preferably composed of perforated metal or analogous material throughout its length, the perforations permitting an equalization of pressure and a corresponding modification of the discharge-currents on each side of the partition.

Preferably the partition H is disposed to make the conduits I equal. Only a relatively small proportion of the total cross-sectional area of the branches G and the inlet-aperture *e* is proportioned to gage the amount of feed of these conduits, so that only substantially the quantity of powder and air desired shall pass through them, and the remainder of the passage through each branch tube is divided into two other conduits, a central one M and a side one N, by a second partition O in each instance. Each partition O is preferably an imperforate metal wall extending from top to bottom of its branch tube, disposed slightly at rear of the center thereof, extending parallel with the axis thereof from the mouth to the inlet-tube, and at the latter having a bent portion *l* extending rearwardly parallel with the axis of the inlet-tube E and terminating within the latter. This portion is disposed relatively nearer to the portion J of the partition H than is the body of the partition O to the adjacent leg I of the partition H, so that each conduit M has a relatively small inlet from the inlet-tube E, while each conduit N has a relatively large inlet from the side of the inlet-tube E. At the junction of the mouth with the branch tube in each instance, the end *m* of each partition O is bent at an angle at *n*, extends thence angularly relatively to the adjacent side wall *i* of the mouth, and terminates at *o* within the latter, being held therein by being soldered at *p* to the top and bottom of the mouth. Thus the outlet of the conduit M diverges toward both sides of the mouth, while the outlet from the conduit N diverges only toward the adjacent side. The partitions O are loosely mounted rearwardly of their soldered ends and are preferably held in place by pins *q*, which are soldered at their centers at *r* to the partitions, and bear at their forward ends against the partition H and at their rearward ends against the adjacent wall of the branch tube G.

The discharge from the powder distributer or blower as it comes from the barrel B thereof usually varies in richness, being richest near the center of the barrel and poorest near the edges thereof in powder. Hence the described arrangement of the partitions and the intermediate inlets to their conduits is adapted for the purpose of equalizing the richness of the stream as it leaves the mouths, the contracted aperture *e* limiting the amount of powder passing through the conduits K to an amount substantially equal to that passing through either of the other conduits, the inlet *s* to each conduit M limiting the amount of powder entering such conduit to approximately that entering either of the others, and the inlets *t* for the conduits N sufficing to catch enough powder to send through each of these conduits an amount equal to that sent through any of the others. In each conduit the powder thus separated is enabled to uniformly distribute itself through the outflowing stream of air, and by the time the diverging mouth is reached a uniform diverging stream of pow-

der and air is discharged, as indicated in dotted lines in Fig. 1.

In the modification shown in Figs. 5 and 6 a simple form of the invention especially adapted to a single spout is shown. In these figures the inlet-tube E′ is united directly to the flat flaring mouth F′ at the point d', and but one partition H′ is employed. This partition is preferably composed of a perforated sheet bent into substantially angular form, having diverging legs I′ of less angularity than the adjacent side walls i' of the mouth, soldered near their outer ends at k' to the top and bottom walls of the mouth, converging toward their inner ends, and there connected by a central portion J′, extending at right angles to the axis of the tube E′ and having an aperture e' in line with the longitudinal axis of this tube. The outflowing stream through the spout is in this instance partially discharged through the side conduits N′ and partly through the central conduit K′, the amount going through the latter being determined by the size of the hole e'. The divergence of the streams through the conduits is determined by the relative angularity of the legs I′ and the extent of the angularity of the walls i'. The current escapes in a stream (indicated by the dotted lines) from the mouth of the spout. Variations in pressure between the conduits are equalized by the porosity of the partition H′, which permits a small excess of pressure to move from one conduit into another.

In Figs. 7 and 8 a double spout is shown, and a modified means for partitioning the spout in a manner similar to the construction shown in Figs. 1 and 2 is illustrated. In this construction the inlet-tube E″, branches G″, and mouths F″ are constructed as described with reference to Figs. 1 to 4. The partitions are of slightly-modified construction, the partition II′ here shown consisting of imperforate walls or legs I″, having at their adjacent ends portions J″, united to a vertical plate L″, which has oppositely-bent clips y'' embracing the angle a'' between the branches G″ to hold the partition in place. At each side of the plate L″ the partition has an aperture e'', through which powder and air may enter the conduit K″. The end of each leg I″ is attached to the inner wall of the mouth F″, where it terminates by solder or otherwise at j''. Near their outer ends each partition is traversed by a wire q', soldered at r' to it, and projecting into contact with the adjacent wall of the branch tube G″ at front and rearwardly into contact with a second partition O″, assisting to hold the two partitions in position.

Second partitions O″, extending through the branch tubes G″ substantially parallel with the partitions I″, are employed to divide these tubes into conduits M″ and N″. These partitions are substantially identical with those described with reference to Figs. 1 to 4, except that each near its outer end has a wire q'' soldered to it at r'' and projecting outwardly only into contact with the adjacent rear wall of the branch tube, while near its inner end each has a wire q', extending clear through it, soldered at its center to it, and bearing at one end against the side wall of the branch tube and at its other end against the partition I″. These wires suffice to hold the partitions in place, but at its end each partition O″ is preferably soldered to the adjacent wall of the mouth at p''. The outflowing streams in this construction will be substantially identical with those described with reference to Figs. 1 to 4, except that there will be no equalization between the conduits J″ and M″ by reason of the imperforate legs I″, and that the stream entering each conduit K″ will be isolated from the other by the imperforate vertical wall k'' and the plate L″.

A simple modification of the invention for a double spout is that shown in Figs. 9 and 10, wherein the double spout is adopted for use with a cylindrical barrel B^3, into which passes the cylindrical inlet-tube E^3, from which branch two plain tubes G^3, terminating in flattened flaring mouths F^3, within each of which is a single partition H^3, analogous to that described with reference to Figs. 5 and 6, except that its legs I^3 are imperforate, its portion J^3 being also imperforate except for the aperture e^3, through which aperture passes the flow to the conduit K^3, while the flow to the conduits N^3 passes at each side of the partition.

The soldering or other attachment provisions in the mouths is preferably adapted to be separable by the use of slight force, and the partitions are preferably otherwise unattached to either the mouths, branch tubes, inlet-tubes, or to each other, so that they can be readily removed, either one or all, as desired.

In use the spouts will be employed according to whether a single or double discharge is desired, or a flattened or cylindrical barrel is provided on the gun. Each discharge will be a wide, flat, diverging stream, substantially uniform in richness in all its parts.

It will be seen that my invention provides improvements which can be readily and advantageously availed of, and it will be understood that the invention is not limited to the particular details of construction and arrangement herein shown and described, since it can be availed of according to such modifications as circumstances or the judgment of those skilled in the art may dictate without departing from the spirit of the invention.

What I claim is, in spouts for the discharge-pipes of powder-guns and the like, the following-defined novel features and combinations, substantially as hereinbefore set forth, namely:

1. In a spout, an inlet-tube and a tubular flaring mouth, in combination with a parti-

tion having diverging legs extending longitudinally of and dividing the interior of the spout into a plurality of conduits, and having a large aperture between said legs and opposite said tube.

2. In a spout, an inlet-tube and a flaring mouth, in combination with a perforated partition having an aperture opposite said tube and between its legs and having legs extending longitudinally of and dividing the interior of the spout into a plurality of conduits.

3. In spouts of the described class, an inlet-tube and branch tubes leading diagonally therefrom, in combination with a vertical partition extending into said inlet-tube, and longitudinally of each branch tube and dividing the latter into longitudinal conduits.

4. In spouts, an inlet-tube and branch tubes leading diagonally therefrom, in combination with a partition within the spout having diverging legs, one in each of said branches, dividing the latter into longitudinal conduits.

5. In spouts of the described class, an inlet-tube and branch tubes leading diagonally therefrom, in combination with a perforated partition in each branch tube dividing the interior thereof into conduits.

6. In spouts of the described class, an inlet-tube E, branches G leading therefrom, and mouths F on said branches, in combination with a partition H having legs I in each of said branches, and partitions O, one in each of said branches, said partitions dividing said branches into a plurality of conduits.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

CLINTON H. LEGGETT.

Witnesses:

GEORGE H. FRASER,

CHARLES K. FRASER.