

No. 692,430.

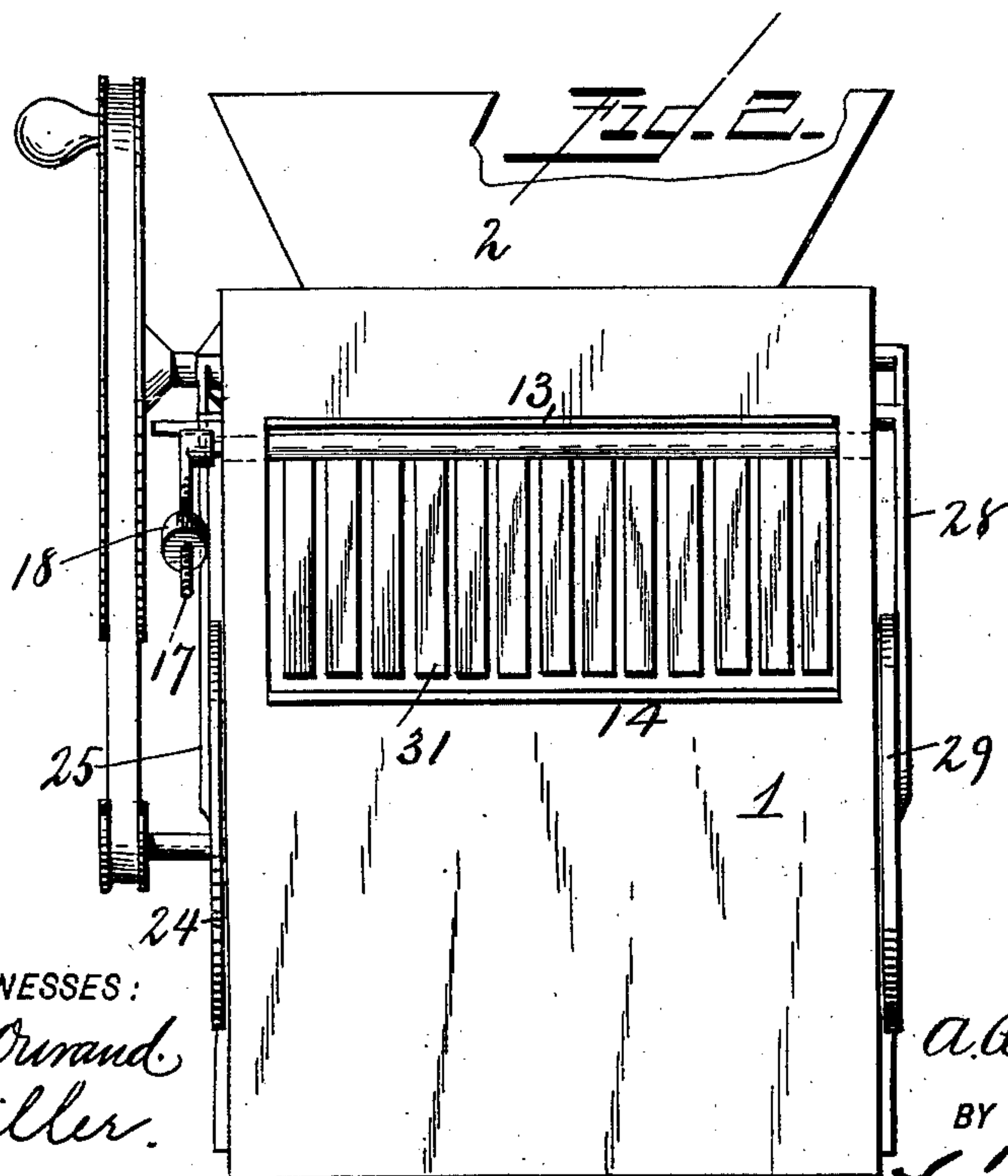
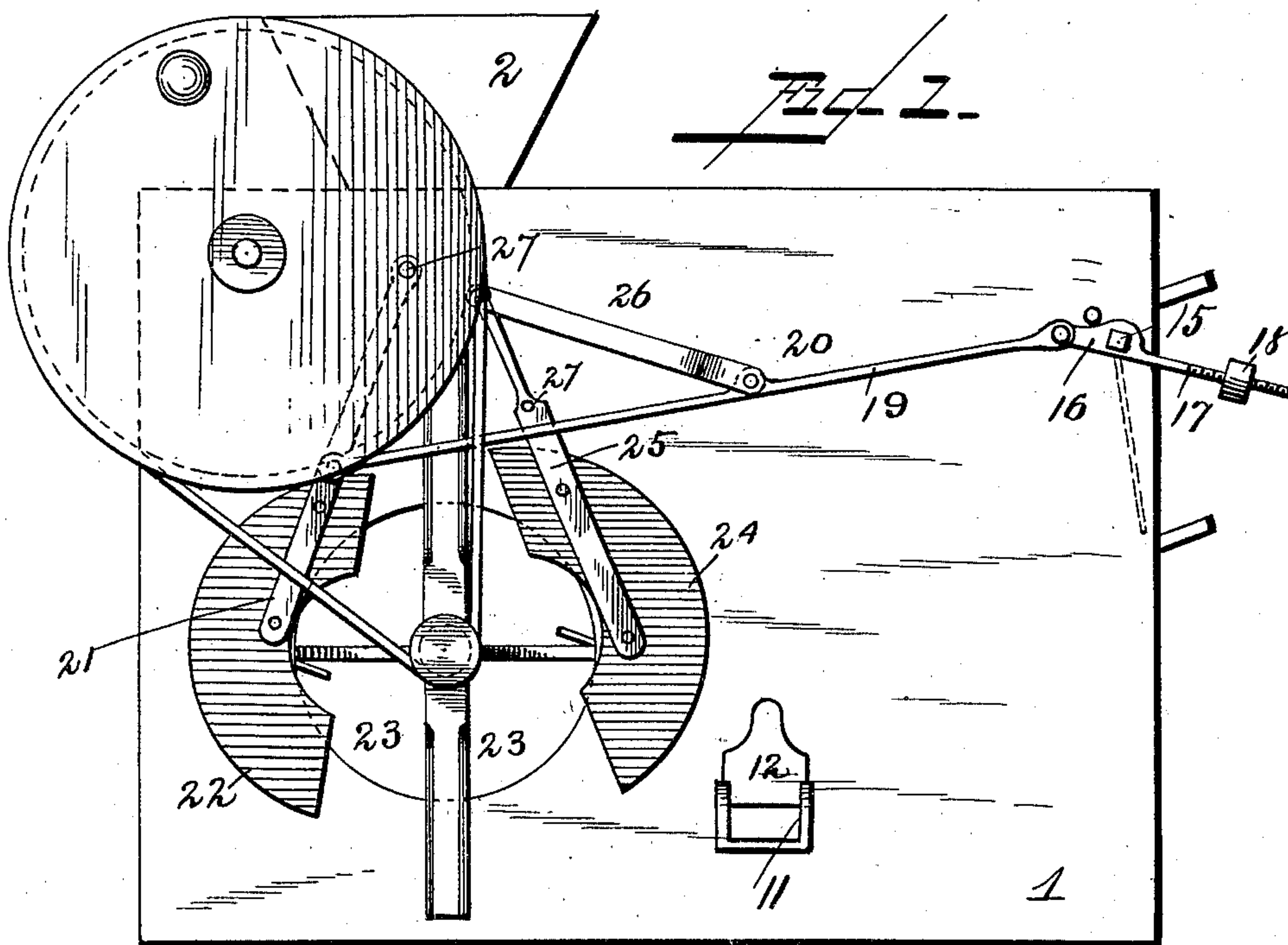
Patented Feb. 4, 1902.

A. G. CRITCHFIELD.
FAN OR BLAST REGULATOR.

(Application filed Sept. 10, 1900.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:
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INVENTOR
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BY
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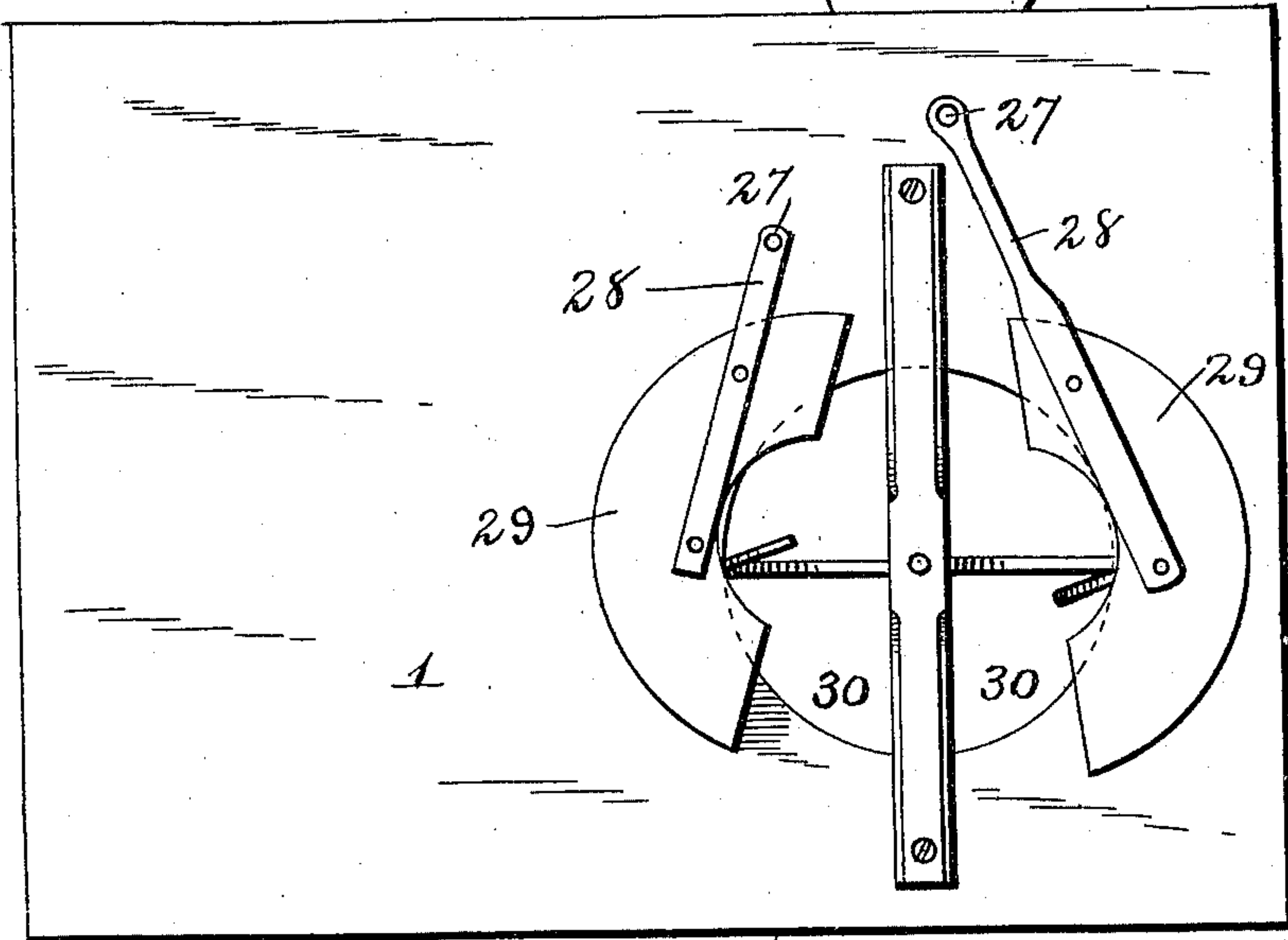
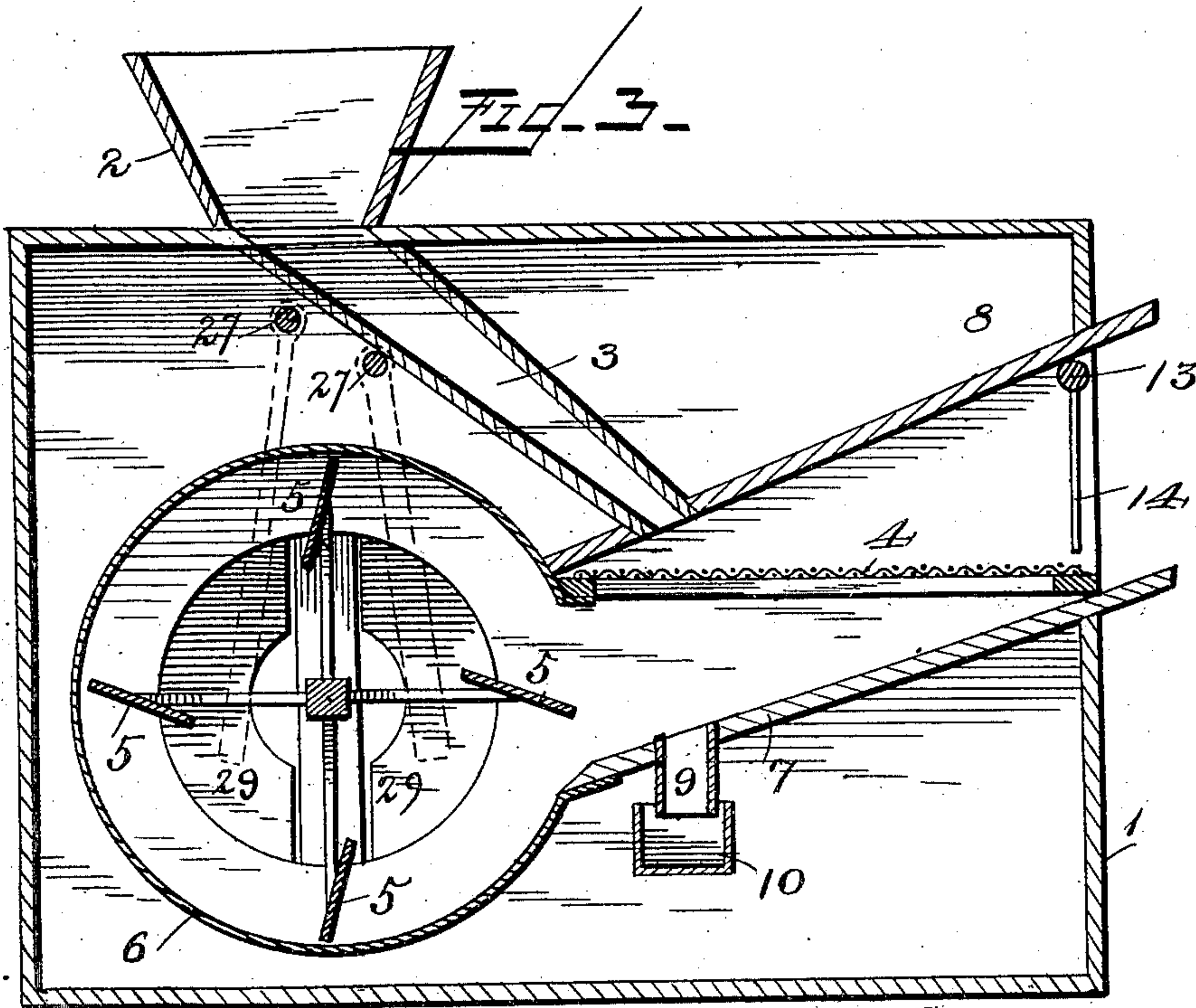
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WITNESSES:
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Fig. 4-

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UNITED STATES PATENT OFFICE.

ALBERT G. CRITCHFIELD, OF ALTO, WASHINGTON.

FAN OR BLAST REGULATOR.

SPECIFICATION forming part of Letters Patent No. 692,430, dated February 4, 1902.

Application filed September 10, 1900. Serial No. 29,563. (No model.)

To all whom it may concern:

Be it known that I, ALBERT G. CRITCHFIELD, a citizen of the United States, residing at Alto, in the State of Washington, have invented certain new and useful Improvements in Fan or Blast Regulators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to blast-regulators; and my object is to provide reliably efficient means whereby the quantity of air or the force of the blast of a grain cleaning and winnowing machine will be automatically regulated and controlled.

Further objects and advantages will be made fully apparent from the following specification, considered in connection with the accompanying drawings, of which—

Figure 1 is a side elevation showing my invention complete as applied to an ordinary fanning-mill. Fig. 2 is an end view of Fig. 1, taken from the right side. Fig. 3 is a central vertical section of Fig. 1, showing the arrangement of the interior portion. Fig. 4 is an elevation showing the opposite side of the machine from that presented in Fig. 1.

In order to conveniently refer to the several features of my invention and their co-operating accessories, numerals will be employed, the same numeral referring to a similar part throughout the several views.

While it will be understood that my invention will be found very desirable and useful in connection with all of the various purposes of cleaning and winnowing grain and will therefore be desirable for use upon threshing-machines and all kinds of grain-separators, I will in this application illustrate the use thereof in connection with an ordinary fanning-mill, it being understood that my invention may be readily applied with little change and adaptation to any variety of fanning-mill or any variety or manufacture of grain-separators.

Briefly stated, my invention consists in providing automatic means for controlling the blast directed against the grain to be cleaned in such a manner that when the grain is heavy or delivered in large quantities the blast will be correspondingly increased, and

when the grain is delivered in smaller quantities the blast or quantity of air directed against the same with a view to freeing it from all foreign substances—as weeds, trash, straw, or the like—will be automatically diminished, as will be hereinafter more clearly set forth.

Referring to the drawings, 1 indicates the body portion of a fanning-mill of the usual or any preferred construction provided with a hopper-section 2, having the usual or any preferred form of throat or delivery section 3, designed to connect or coöperate with the riddles 4, which are mounted in suitable supports and agitated, if desired, in the usual way in order to properly agitate the grain as it is passing across the path of the wind or blast.

The fan 5 may be of any preferred variety of construction and is provided with the usual housing 6 and preferably with the delivery-chute formed by the sections 7 and 8, as is common, and by this arrangement it is obvious by reference to Fig. 3 that the blast will be delivered to the grain from the under side of the riddle 4 and that the grain will therefore fall through the meshes of the riddle upon the inclined wall 7 and will fall down said inclined surface into the delivery-chute 9 and from thence into any suitable receptacle by means of the trough 10, leading to a convenient opening 11, as shown in Fig. 1, said opening being closed in the usual way by a sliding section or door 12, if desired, while the straw and other foreign substances will pass outward through the chute formed by the sections 7 and 8, as will be obvious.

In order that the requisite quantity of air or wind may be at all times automatically delivered to the grain and in order to insure that the amount of force of the blast will be varied according to the quantity of grain delivered to the riddle or sieve 4, I provide the mechanism comprising what I will term the “apron” or “damper” section, which consists of the shaft 13, properly journaled at each end in the walls or casing and provided with the normally-depending apron-section proper, 14, which is designed to lie across the mouth of the delivery-chute formed by the sections 7 and 8, as clearly presented in Figs. 2 and 3. In order that the position of the

apron 14 may be varied in accordance with the quantity of grain passing through the machine, I connect to the outer end 15 of the shaft 13 the arm 16, having the depending threaded stem 17, designed to carry the adjustable weight 18, as shown in Figs. 1 and 2. To the upper end of the arm 16 I pivotally secure the controlling-rod 19, having near its middle portion the ear-section 20, the free end of said shaft being pivotally connected to the lever 21, connected with the hood or cover 22, designed to lie over and cover one-half of the opening 23, leading to the fan, and therefore regulating the quantity of air passing through said opening. The size of the other half of the opening is regulated or controlled by the hood-section 24, which is also provided with the lever-section 25, pivotally connected at its free end with the link-section 26, the other end of the link-section being pivotally connected with the ear-section, as clearly shown in Fig. 1.

The hood-sections 22 and 24, with their respective levers, are pivotally mounted in position upon the rods 27, both of which extend entirely through the frame of the machine and protrude from the other side, and upon said protruding ends of said shafts I rigidly secure the upper ends of the levers or arms 28, the lower ends of which are attached to the hood-sections 29, which latter are respectively designed to cover one-half of the opening 30. Since the lever-sections 21 and 25 are rigidly connected to the ends of the shafts 27, it follows that when said lever-sections are moved said shafts will be partly rotated, thereby moving the levers or arms 28 and operating the hoods 29 in sympathy with the movement of the hoods 22 and 24. The apron-section, which may consist of a series of slightly-separated blades 31 or other preferred construction, is so disposed that it will by its own weight extend downward in a vertical plane, where its own weight will hold it until overcome by the blast. When the apron-section is extended downward, it is so connected by the system of levers just referred to with the hood-sections that said hoods will be moved outward from the center of the opening leading to the fan to the fullest extent, the result being that a full supply of air will be furnished to the fan. When the hoods are thus disposed in an open position, a very strong blast will be delivered by the fan against said apron, and since the escaping substances, as straw, weeds, or the like, will strike against said apron the force of the wind will move the apron outward, which will result in automatically drawing the hood-sections toward each other over the openings which they are designed to cover, thereby automatically releasing the quantity of air delivered to the fan and correspondingly reducing the force of the blast delivered to the riddles and the grain carried thereby. I preferably so dispose the threaded stem 17 with respect to the apron 14 that it

will extend substantially at right angles thereto, and it therefore follows that before the apron can be elevated the weight 18 must be lifted and that said weight will cause the depression of the apron when the force of the blast is reduced. The apron will always readily move in sympathy with the force of the blast, and it therefore acts as a governor or regulator, inasmuch as the slightest outward movement thereof will cause the hood-sections to move inwardly toward each other over the opening leading to the fan, and thus limiting the quantity of air supplied to the fan and reducing the quantity of air delivered to the riddles and the grain to the desired extent. Furthermore, it follows that should an excessive quantity of grain be delivered to the riddles a blast of limited force will not be able to pass through the mass of grain and the riddle, and the result will be that there will not be sufficient blast passing out of the delivery-chute to force the apron out of a vertical position, and said apron will therefore drop downward across the mouth of the chute, the result being that the hood-sections are opened wide to their fullest extent, thereby permitting the passing of a maximum amount of air to the fan, and thereby instantly increasing the force of the blast sufficiently to cause the same to pass through the mass of grain in the riddle and thoroughly cleanse the same; but should the force of the blast become too great it will force the apron outward, and thereby instantly cause the hood-sections to be closed over their openings.

By the arrangement I have just described it will be seen that I have provided means which will at all times be found to be thoroughly reliable for automatically regulating the extent or force of the blast, so that the requisite quantity of air or wind will at all times be delivered to the blade upon the riddles in the proportion necessary for the thorough cleansing of the grain. Should the supply of grain upon the riddle be very limited in character, the wind or blast will pass freely through the same and force the apron outward, and thereby automatically close the openings and shut off the supply of air to the fan, thereby limiting the amount of air introduced into the fan to the extent necessary to cleanse the limited supply of grain, and thereby prevent said grain from being blown out of the machine with the straw and other foreign substances, which would be the case if no regulator was provided.

With but few simple changes and adaptations my invention may be readily applied to use upon any variety of grain-cleaning apparatus, as previously set forth, and believing that the construction and manner of using my invention have been made fully apparent from the foregoing specification further description is deemed unnecessary.

What I claim as new, and desire to secure by Letters Patent, is—

1. The herein-described automatic blast-

regulator comprising the fan of a fanning-
mill, grain-separator or the like, an apron-
section normally depending across the deliv-
ery-chute at the outer end of the riddle, hood-
5 sections pivotally mounted independently of
each other for controlling the supply of air
admitted to the fan, an adjustable weight-
section coöperating with said apron-section,
10 a system of levers attached to the hood-sec-
tions and pivotally mounted independently
of each other, a rod pivotally connected with
the weighted section and with the supports
of the hood-sections, the pivots of the hood-
sections being in different planes with rela-
15 tion to the center of the opening leading to
the fan substantially as described.

2. The combination of the fan, a riddle, a
transverse shaft, an apron thereon mounted
so that its position shall be variable in ac-

cordance with the quantity of material pass- 20
ing through the machine, a counterbalanced
arm connected with the extended end of said
shaft, a substantially horizontally extended
controlling-rod pivotally mounted on said
arm, hood-sections, a link pivotally connected 25
to the controlling-rod, a lever attached to one
of the hood-sections and pivotally connected
with said link, and a pivotally-mounted lever
connected to the other hood-section and piv-
otally connected between its ends with the 30
inner end of the controlling-rod, all substan-
tially as shown and described.

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

ALBERT G. CRITCHFIELD.

Witnesses:

HARDY E. HAMM,
T. J. KINGSBURY.