

No. 709,968.

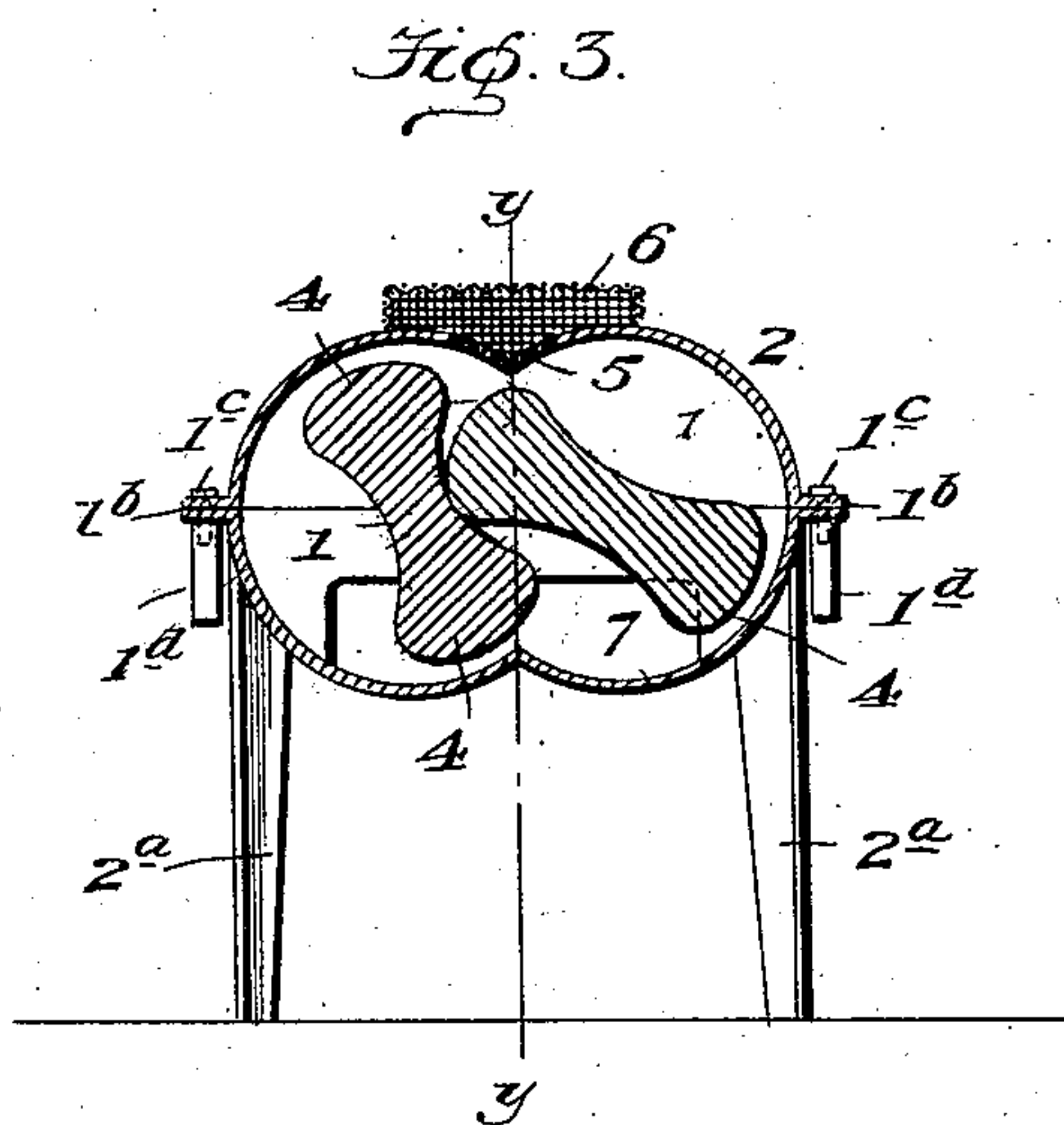
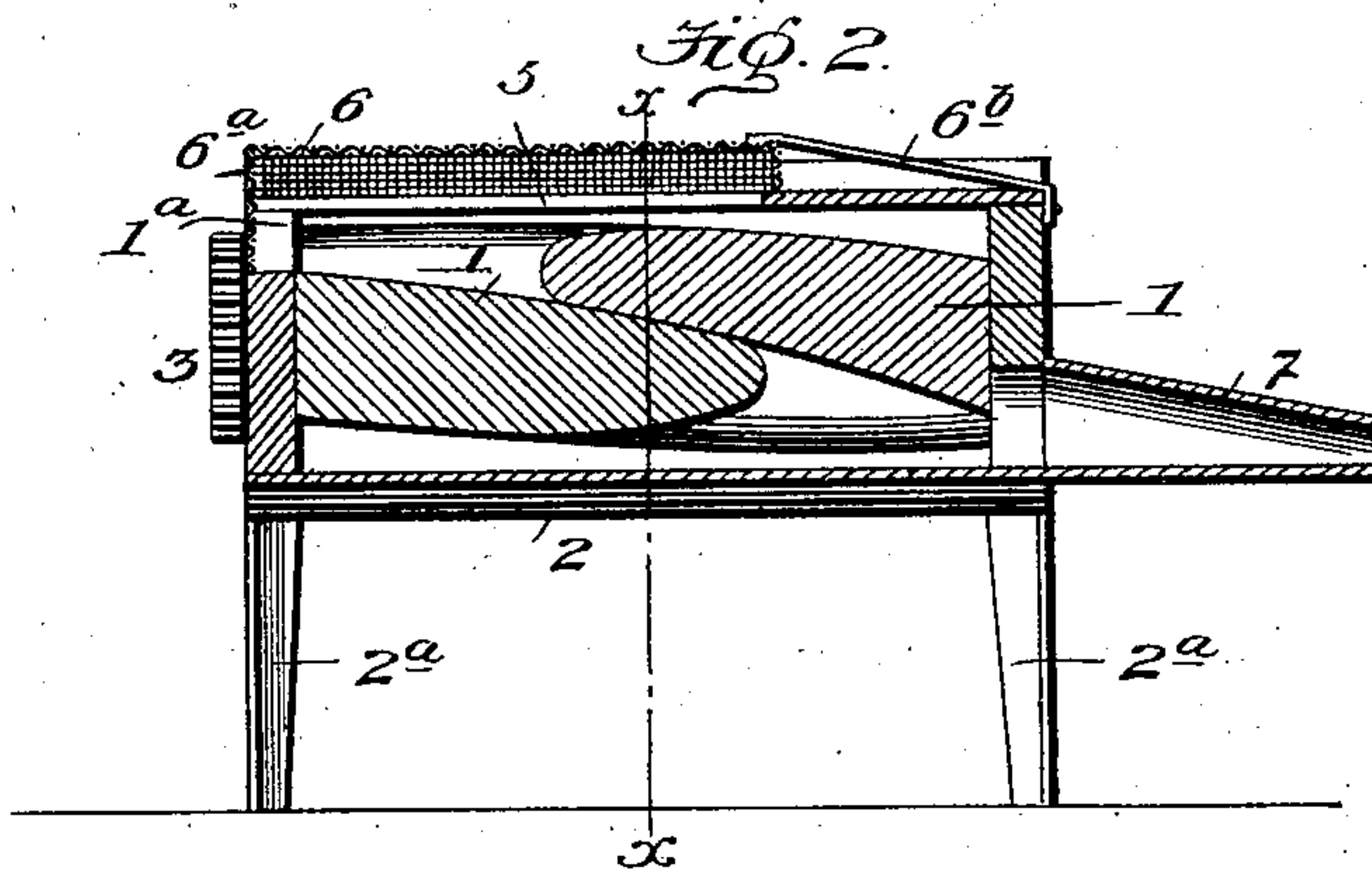
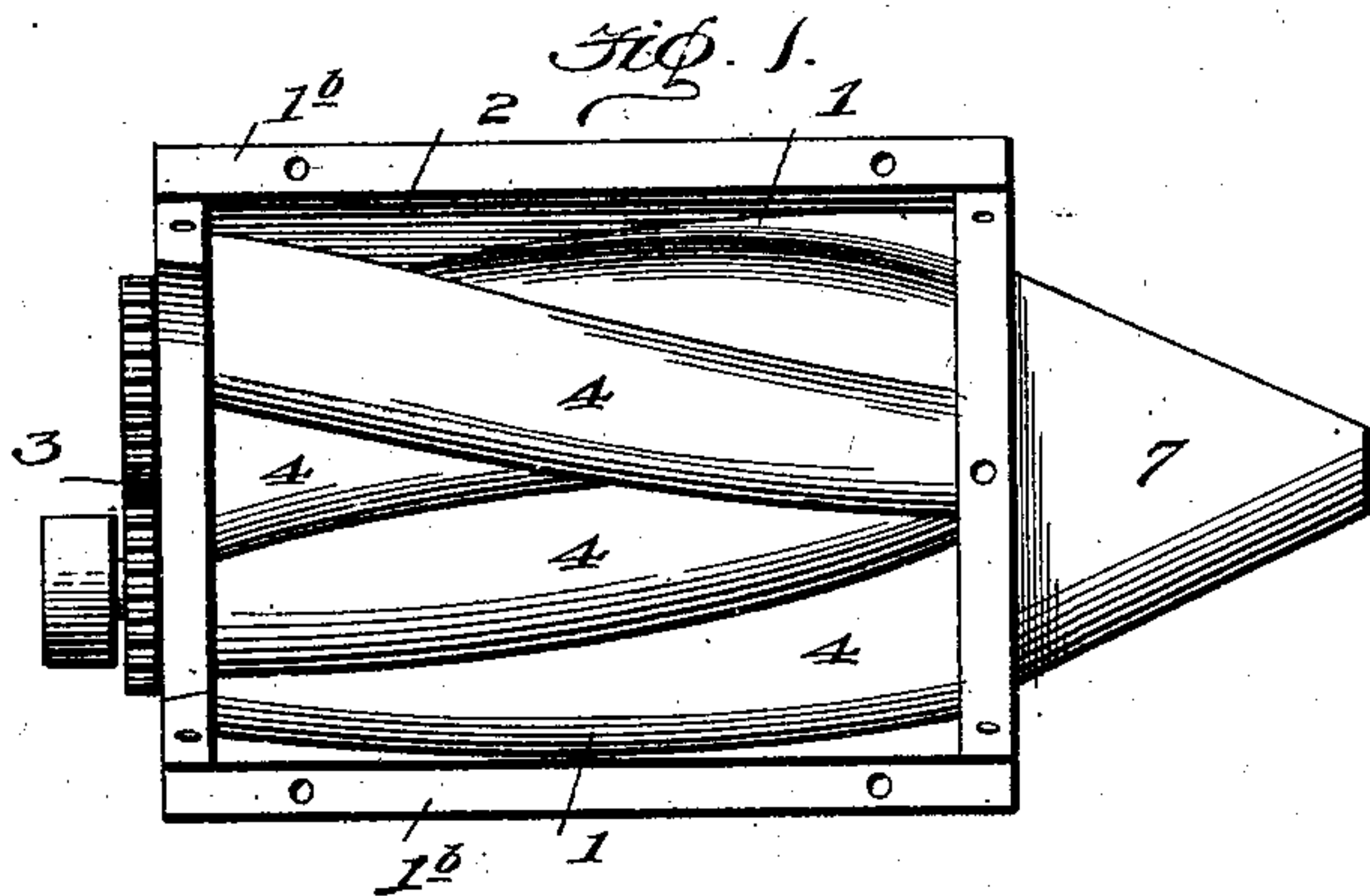
Patented Sept. 30, 1902.

C. M. DAY.
AIR PUMP.

(Application filed Apr. 10, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

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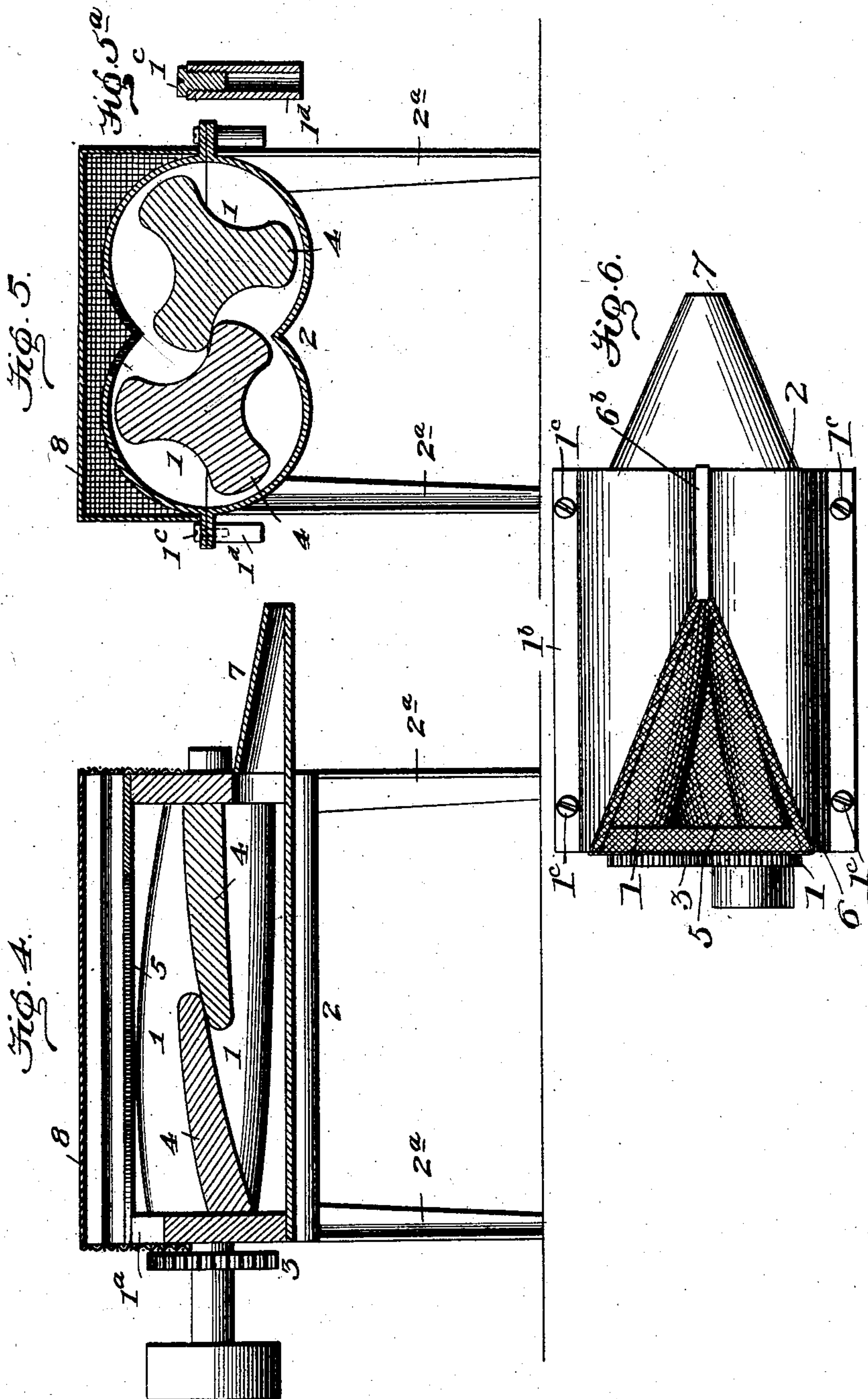
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UNITED STATES PATENT OFFICE.

CHARLES M. DAY, OF MALTABEND, MISSOURI, ASSIGNOR OF ONE-HALF TO
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AIR-PUMP.

SPECIFICATION forming part of Letters Patent No. 709,968, dated September 30, 1902.

Application filed April 10, 1900. Serial No. 12,366. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. DAY, a citizen of the United States, residing at Maltabend, in the county of Saline and State of Missouri, have invented certain new and useful Improvements in Air-Pumps; 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 improvements upon the subject-matter of Letters Patent for forge-blowers, No. 395,956, granted to John Day January 8, 1889.

It has for its object to greatly simplify construction and to facilitate and expedite operation, together with intensifying and rendering the blast more direct, and therefore more effective.

It consists principally of increased thread or blade area for the interacting screws or worms and of means to provide for the inlet of the air and the delivery of the blast more nearly in alinement or the same general direction to aid in creating or generating a direct blast and of the combination and arrangement of the parts, substantially as hereinafter more fully disclosed, and specifically pointed out by the claim.

Latitude is allowed herein as to details, as they may be changed without departing from the spirit of my invention and the same yet remain intact and be protected.

In the accompanying drawings, illustrating the preferred embodiment of my invention, Figure 1 is a plan view with the top portion of the casing removed. Fig. 2 is a cross-section taken on the line *yy* of Fig. 3. Fig. 3 is a longitudinal section taken on the line *xx* of Fig. 2. Fig. 4 is a longitudinal sectional view of a modification. Fig. 5 is a cross-section thereof. Fig. 5^a is an enlarged detailed view showing more fully the fastenings for connecting the casing-sections. Fig. 6 is a plan view showing more especially the V-shaped opening of the bladed-screw closure or casing and the gauze or foraminous guard therefor.

In carrying out my invention I employ, as in said patent, two twin screws or worms 1 1, which may be of wood, paper-pulp, metal, &c.,

suitably mounted or supported in a closure or casing 2, with a driving-pulley on one of the shafts of said screws and said shafts geared together, as at 3 3, to cause their simultaneous rotation and relieve them of frictional contact or impingement one upon the other. These screws or worms each comprise principally a central spiral core or body portion and radial spiral wings or blades 4 4, adapted to interfit or match each other, and of a joint cross-section and length to fit the closure or casing 2 practically air-tight, as in said patent. As herein shown, each screw or worm is preferably constructed with two blades or wings to reduce the amount of spirality or twist, thus enabling the making of the same more easily and lessening cost of manufacture. The closure or casing 2, unlike that shown in said patent, has preferably the inlet for the air arranged in one side and one end and is suitably mounted upon legs 2^a, secured thereto. Said closure has an outlet or discharge for the blast, generated by the screws or worms, arranged in its other end and opposite side, the inlet for the air and the outlet for the blast thus being arranged more nearly in alinement than in said patent to aid in creating or generating a direct blast through the casing or closure. The air-inlet is constructed, preferably, of a substantially V-shaped opening 5, with the divergent or widest portion at the end of the casing or closure 2 and its tapering or vanishing portion about centrally of said casing. Said casing or closure is cut away, as at 1^a, in the one end directly below the flared or widest terminal of the V-shaped opening 5 to provide for the admission of the air thereto, consequently therethrough, still nearer a point in alinement with the blast-discharge or the longitudinal plane of said casing or closure, to promote the direct delivery of the blast. Said opening is preferably covered by a gauze or foraminous guard 6 to exclude foreign or extraneous particles, as cinders, &c. The gauze or foraminous guard 6 has an inwardly-extending or vertical portion 6^a resting in contact with the double-arched upper portion of the casing or closure 1, with its wider end secured and arranged or depending opposite the cut-away portion 1^a of said closure to suit-

ably guard the same. The guard 6 has its tapered end connected to the casing 1 by a metallic strap 6^b, suitably secured to said end of guard and casing, respectively, thus holding its lateral vertical or inwardly-extending portion down upon the rounded upper portions of said casing and into the depression between said latter portions. The outlet for the blast is preferably formed of an elongated narrow opening, over which is arranged a tapered or conical discharge-chute 7, suitably secured to the casing or closure 2 and adapted to have connected to it a tube or pipe (not shown) for conducting the blast to the required designation—as, for instance, to a smith's forge, &c. By this arrangement the blower may be so disposed as to direct or apply the blast in any direction desired—laterally, upwardly, downwardly, or otherwise.

The casing or closure 1 may be, as shown, made in sections, said sections being preferably provided with meeting lateral flanges 1^b, suitably connected together, preferably by screws 1^c passing therethrough. Said screws themselves have applied thereto or screwed thereon interiorly-screw-threaded sleeves 1^d, depending sufficiently to provide for their convenient manipulation or turning, as will be readily understood.

In operation the screws or worms being rapidly set in motion the air is drawn into the casing or closure through the air-inlet by said screws or worms, and passing around

said worms or screws is delivered therefrom in the form of a blast through the discharge opening or outlet and utilized, as herein noted, for intensifying the flame or products of combustion of a smith's forge, for instance, or otherwise.

In the modification as disclosed by Figs. 4 and 5 I employ a substantially similar arrangement of twin screws or worms, each, however, having three or more blades or threads, with the air-inlet left directly open, and provide a removable cover 8, suitably supported upon or applied to the inclosing casing and having its ends preferably closed with gauze or foraminous material to permit of the inlet of air and yet bar out all foreign substances.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

In a device of the character described, the combination of a closure or casing and twin screws or worms, arranged in said closure, said casing or closure having an air-inlet in one side, and one end, and a blast-outlet in its other end and at or near its other side, substantially as set forth.

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

CHARLES M. DAY.

Witnesses:

ALFRED SHEPHERD,
EDWIN T. BASKIN.