(No Model.) 2 Sheets—Sheet 1.

F. N. ETHRIDGE.

MAIL MARKING MACHINE.

No. 533,640. Patented Feb. 5, 1895.

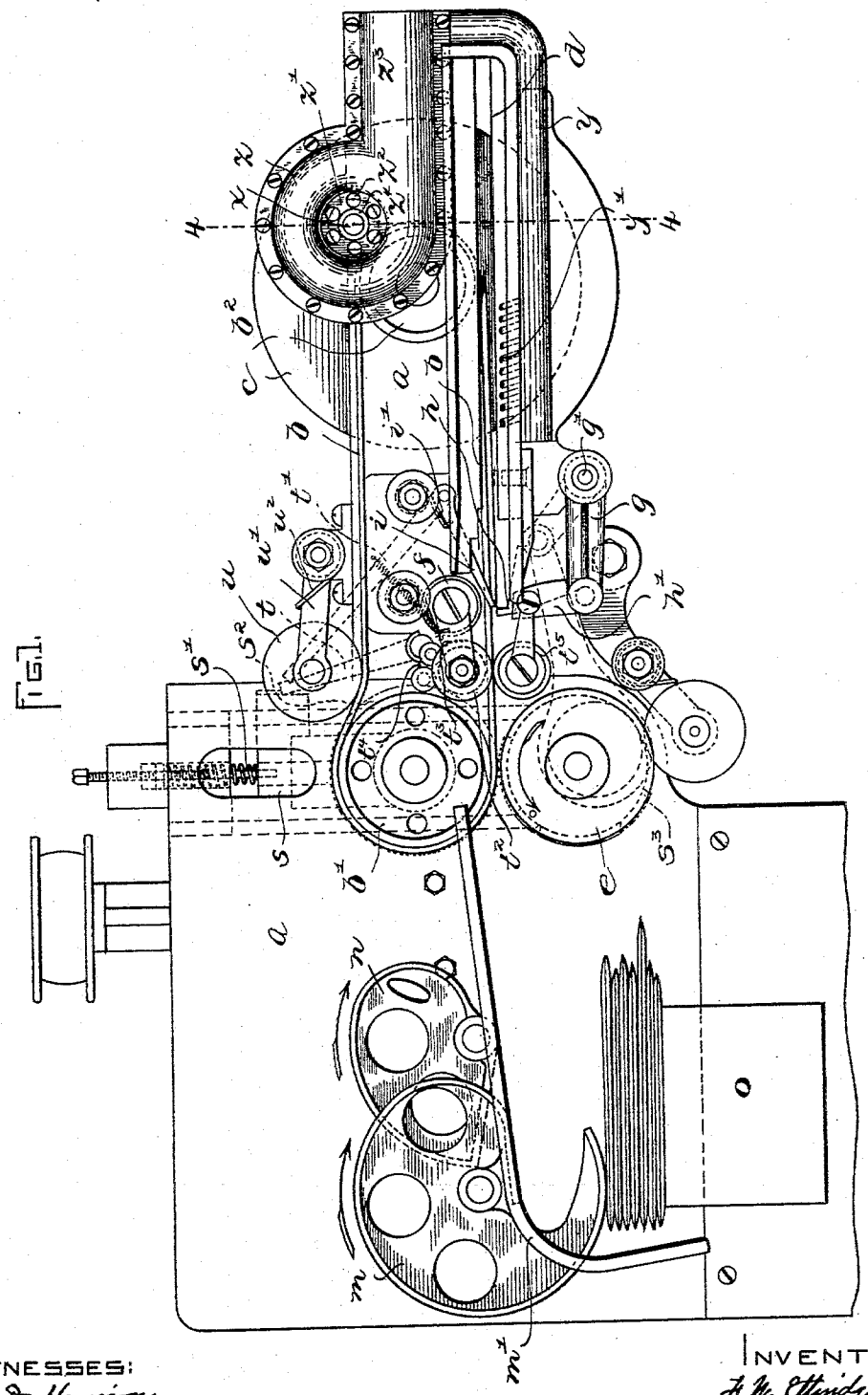

FIG. 1.

WITNESSES:
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Rollin Abell.

INVENTOR:
F. N. Ethridge
by Wright, Brown & Quinby
Attys.

(No Model.) 2 Sheets—Sheet 2.

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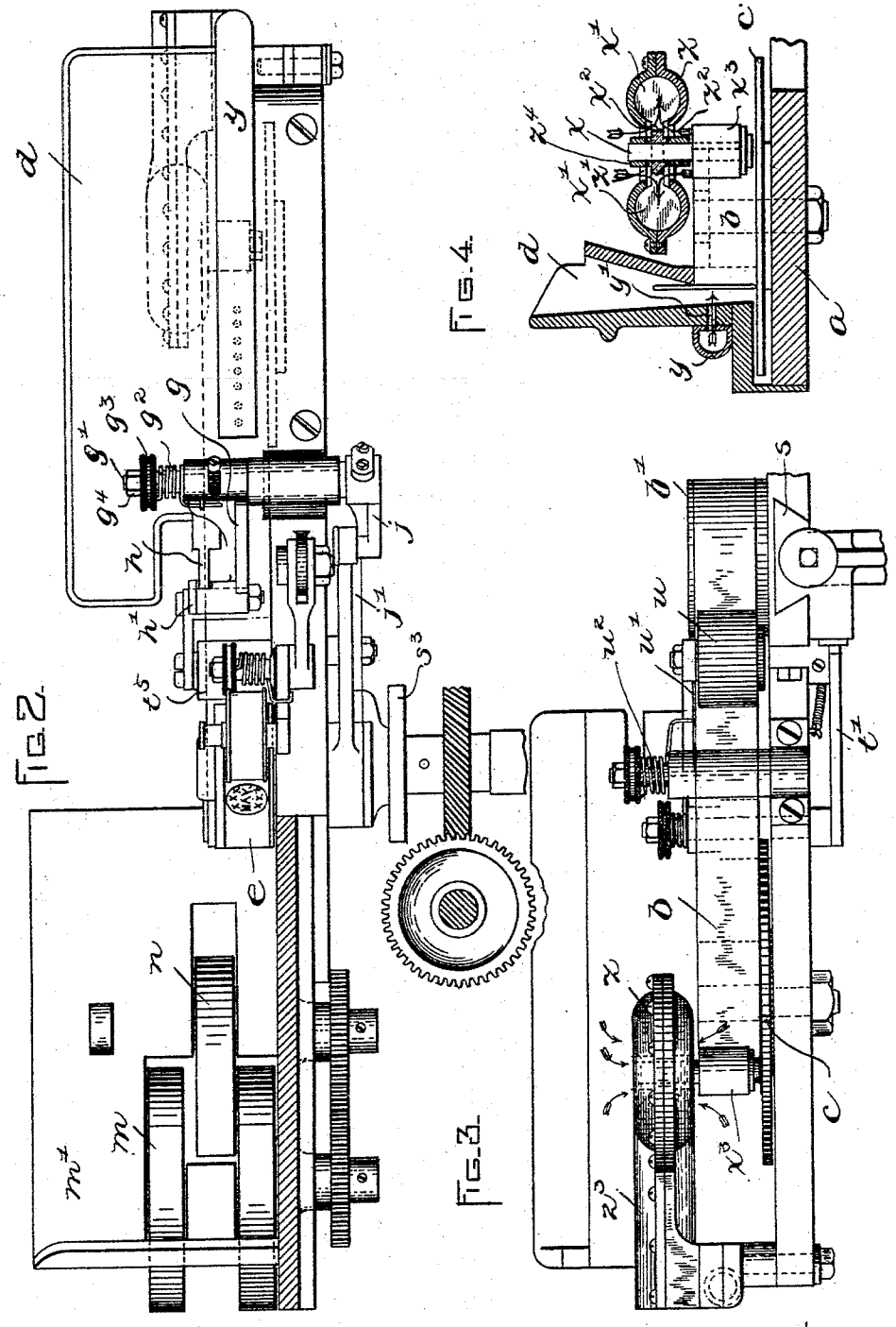

Fig. 2.

Fig. 4.

Fig. 3.

WITNESSES:
A. D. Hanson.
Robbin Abell.

INVENTOR:
F. N. Ethridge
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Attys.

UNITED STATES PATENT OFFICE.

FRANK N. ETHRIDGE, OF BOSTON, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO ALBERT LEAVITT AND J. Q. A. WHITTEMORE, OF SAME PLACE.

MAIL-MARKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 533,640, dated February 5, 1895.

Application filed June 7, 1894. Serial No. 513,723. (No model.)

To all whom it may concern:

Be it known that I, FRANK N. ETHRIDGE, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Mail-Marking Machines, of which the following is a specification.

This invention relates to that class of mail-marking machines in which the mail-pieces are taken from a hopper to the marking devices by an endless belt or conveyer against which they are intended to stand vertically.

The object of the invention is to provide means for causing the mail-pieces to stand closely against the belt or conveyer, and to this end consists in the novel arrangements recited in the appended claims.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 shows a top plan view of a machine embodying the invention. Fig. 2 shows a side elevation looking from the lower side of Fig. 1. Fig. 3 shows a side elevation of part of the machine as viewed from the upper side of Fig. 1. Fig. 4 shows a section on line 4—4 of Fig. 1.

The letter, *a*, designates the horizontal supporting bed of the machine, and, *b*, the letter-conveying belt which is carried by pulleys, b' and b^2. The mail matter is deposited in a hopper, *d*, and one stretch of the belt occupies an opening in one side of the hopper so as to present itself to the letters in the latter. See Fig. 4.

In order to hold the mail-pieces closely against the belt in a vertical plane, I employ the following described means: Suitably mounted on the frame-work of the machine is a two-part casing bolted together through marginal flanges. At one part, *z*, this casing is of annular form and cylindrical in cross-section, and has interior flanges, z', with orifices, z^2, providing access for air to the inside of the casing. The remaining portion, z^3, of this casing is a straight conduit leading from the annular part. At the center of the annular part of the casing a vertical bearing, z^4, is formed, and a spindle, *x*, is journaled in this bearing, and has affixed to it a number of circular blades, x', closely fitting the annular part of the casing and having reduced shanks, x^2, extending between the interior flanges, z'. This fan is driven from the belt, *b*, by means of a pulley, x^3, affixed to the spindle, *x*, and frictionally engaged with the belt so that in the operation of the machine the fan is continuously driven and air is taken thereby through the orifices, z^2, and discharged through the conduit, z^3. A pipe, *y*, communicates with the outer end of said conduit, and is carried over one side of the hopper, *d*, against which it closely fits. The location of the pipe is directly opposite the belt, *b*, and a line of orifices, y', is made through the pipe and the side of the hopper so that the air discharged by the fan will be directed against the belt or intervening matter. This air-blast will hold mail-pieces closely against the belt, and thus do I attain the object primarily stated.

The remainder of the machine forms no part of the present invention, but is covered in other applications filed by me. It will therefore be sufficient to briefly enumerate the parts.

The letter, *c*, designates a horizontal table carried by the pulley, b^2, and forming the bottom of the hopper, *d*, said table tending constantly to advance the letters and also take them against the belt.

The letter, *h*, designates a fixed timing stop projecting beyond the end of the hopper and against which the mail-pieces are made to abut. A push-piece, h', is arranged to work past said stop and is operated in regular time to move the mail-pieces free of the stop. Said push-piece is carried by an arm, *g*, having a limited movement on a stud, g', and held by a spring, g^2. The arm has a collar embracing the stud and formed with a slot receiving a pin fastened in the latter, as shown in Fig. 2, and the spring is of spiral form and surrounds the stud, being fastened at one end to the arm and at the other to a tension-adjusted button, g^3, rotatable on the stud and locked by a nut, g^4, engaging a threaded end of the latter. An arm, *j*, affixed to the stud, g', is connected with a pitman, j', formed to embrace an ec-

centric on the journal of the marking cylinder, *e*, which is positively driven. Through these means the pusher is oscillated.

The mail-pieces are deflected against the stop, *h*, by a finger, *i*, affixed to a spindle and yieldingly held in the letter-path by a spiral spring, *i'*, mounted on a stud in the same manner as the spring, g^2.

The pulley, *b'*, is supported by a slide, *s*, actuated by a spring, *s'*, in a direction to move the belt into contact with the marker, *e*. A plain peripheried disk, s^2, on the journal of the pulley, *b'*, is in juxta relation with a cam-disk, s^3, on the journal of the marker, *e*, which arrangement causes the belt to be separated from the marker during the passage of the blank part of the marker.

To prevent marking of the belt when no letter is in, the following arrangement is employed: A detent, *t*, engages an arm on the slide, *s*, to prevent movement of the slide toward the marker, and is impelled by a spring into locking position. A second detent, *t'*, affixed to the same spindle as the finger, *i*, engages a shoulder of the detent, *t*, so as to hold the same locked until the finger is displaced by a letter. A roller, t^2, is arranged to be moved by the letter and is carried by pivoted arms, t^3, spring-held in the same manner as the arm, *g*. Said roller acts against a short lever, t^4, which in turn acts against detent, *t*, to disengage it from the slide. An idler, *f*, is opposed to the pusher, *h'*, and an idler, t^5, is opposed to the roller, t^2.

The belt is maintained taut by a roller, *u*, carried by a pivotal arm, *u'*, and impelled against the belt by a spring, u^2, of the same arrangement as the spring, g^2.

After the mail-pieces leave the marking devices, they are received by a stacker which comprises cam-disks, *m*, having letter-receiving throats, and working through openings in a wall, *m'*, and an auxiliary cam-disk, *n*, which acts with the disks, *m*, to stack the letters against a sliding block, *o*.

What I claim as my invention is as follows:

1. In a mail-marking machine, the combination of a flat endless conveyer whose acting stretch extends in a vertical plane, a horizontal support for the edges of mail-pieces standing beside said conveyer, and an air-blower having its nozzle directed toward the conveyer whereby an air-blast therefrom acts to hold the mail-pieces against the conveyer.

2. In a mail-marking machine, the combination of a flat endless conveyer whose acting stretch extends in a vertical plane, a horizontal support for the edges of mail-pieces standing beside said conveyer, an air-blower having its nozzle directed toward the conveyer whereby an air-blast therefrom acts to hold the mail-pieces against the conveyer, and connections between the conveyer and the air-blower whereby the latter is driven.

3. In a mail-marking machine, the combination with an endless conveyer, and a hopper, of an air-blower and a conduit leading therefrom and having a row of orifices opposite the conveyer.

4. In a mail-marking machine, the combination with an endless conveyer, and a hopper having orifices in the side opposite the conveyer, of an air-blower and a conduit leading therefrom and having a line of orifices registering with those in the hopper.

5. In a mail-marking machine, the combination with an endless conveyer and rotary supports therefor, of an air-blower comprising an annular casing having air-inlet openings and a rotary fan composed of blades fitting the casing and a spindle to which said blades are affixed and which carries a pulley in frictional contact with the conveyer; and a conduit leading from the air-blower and arranged to direct blasts of air against the conveyer.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 1st day of June, A. D. 1894.

FRANK N. ETHRIDGE.

Witnesses:
A. D. HARRISON,
F. P. DAVIS.