

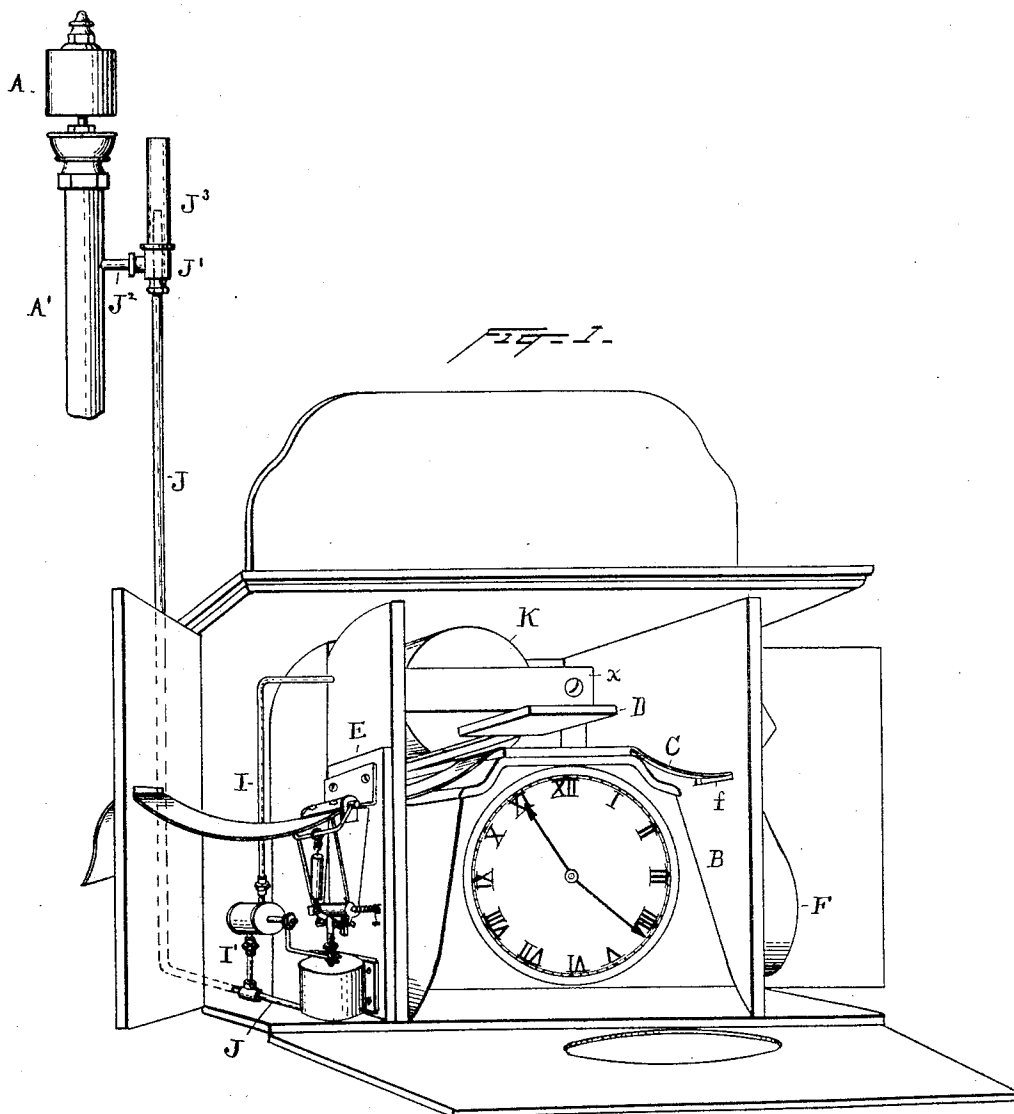
(No Model.)

2 Sheets—Sheet 1.

A. E. COLGATE.
SIGNAL RECORDING MECHANISM.

No. 579,221.

Patented Mar. 23, 1897.



Witnesses
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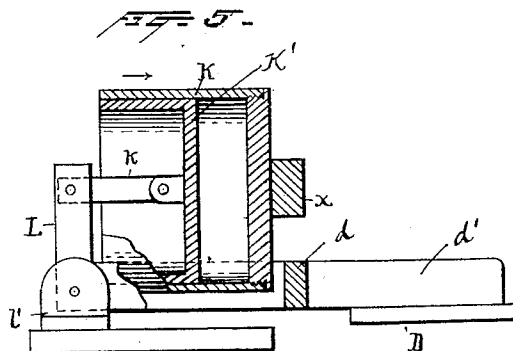
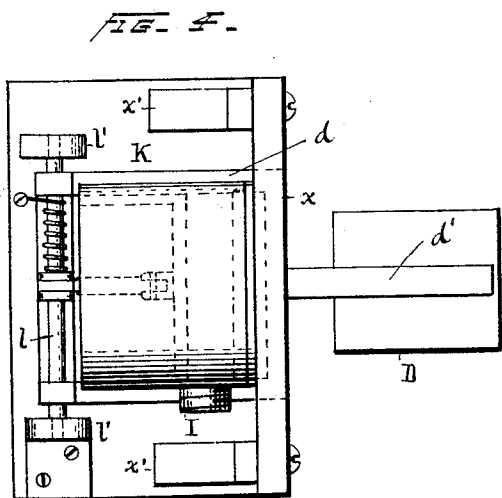
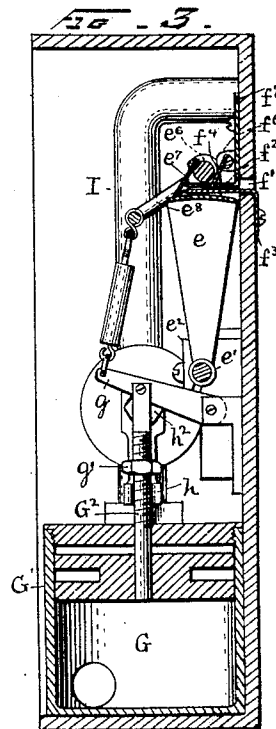
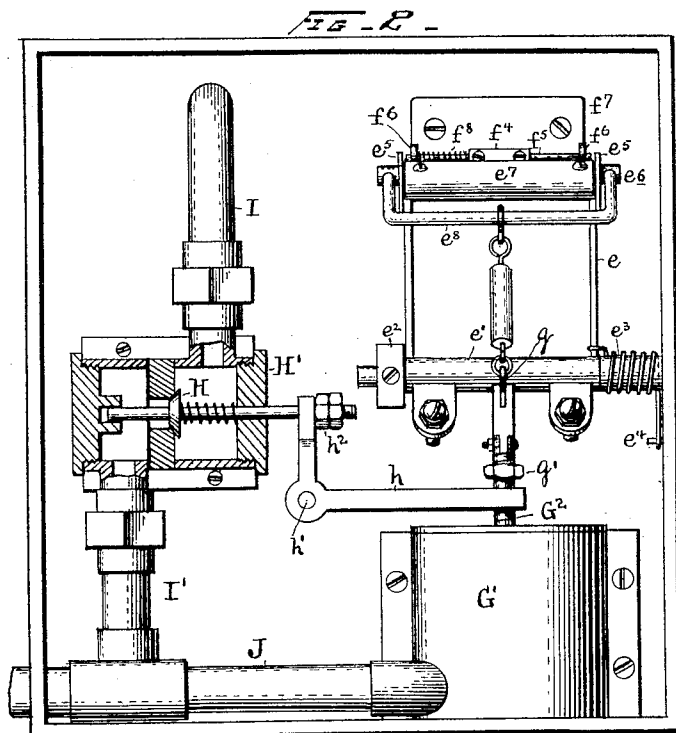
(No Model.)

2 Sheets—Sheet 2.

A. E. COLGATE.
SIGNAL RECORDING MECHANISM.

No. 579,221.

Patented Mar. 23, 1897.



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UNITED STATES PATENT OFFICE.

ARTHUR E. COLGATE, OF NEW YORK, N. Y., ASSIGNOR TO GEORGE J. SCHOEFFEL, OF BROOKLYN, NEW YORK.

SIGNAL-RECORDING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 579,221, dated March 23, 1897.

Application filed June 29, 1896. Serial No. 597,324. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR E. COLGATE, a citizen of the United States, residing at New York city, in the county and State of New York, have invented a certain new and useful Improvement in Signal-Recording Mechanism, of which the following is a specification.

The main object of my invention is to provide a simple and reliable mechanism for recording signals, such as the blast of a steam-whistle; and my invention is mainly designed for use on steamships, where it is desirable to record each blast of the whistle in order that a record may be obtained to which reference may be made in case of accidents.

In carrying my invention into effect I employ a time-stamp which, as is well understood, consists of a clock having date and time wheels and a stamp for forcing a strip of paper against the said wheels to produce a record thereon. In connection with such a time-stamp I employ a feeding device for the paper strip and an actuating device for the stamp whose movements are obtained, preferably, by pistons moving in cylinders through the air-pressure on one side of the piston upon the production of a vacuum on the other side of the piston. I produce the vacuum in the cylinders by extending a pipe connection therefrom into a pipe extending from the steam-pipe which leads to the whistle and between the whistle and the valve, and which branch pipe, when steam passes through the same, acts as a siphon to exhaust the air from the cylinders through the pipe extending into the branch pipe.

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

Figure 1 is a perspective view of my improved time-stamp and the pipe connections; Fig. 2, an elevation of the paper-feeding device and its operating mechanism and an elevation and partial section of the mechanism for controlling communication between the cylinder of the stamp-actuating piston and the exhaust-pipe; Fig. 3, a side elevation and partial section of the devices illustrated in Fig. 2, looking in the direction of the arrow; Fig. 4, a top plan view of the stamp and its actuating mechanism, and Fig. 5 a partial

elevation and a partial central vertical section of the same.

Referring to Fig. 1, A is the steam-whistle; B, the clock; C, the paper strip or tape upon which the record is made; D, the stamp, which forces the paper against the date and time wheels of the clock, and E is the paper-feeding mechanism.

The paper strip or tape C passes from a roll F through a slot *f*, cut in one side of the casing, and extends over the top of the clock B and across the face of the date and time wheels and through a slot *f'* at the opposite side of the casing. (See Fig. 3). At the slot *f'* the paper tape passes between two metal plates *f*² and *f*³, and in the plate *f*² is formed a slot through which extends a spring-pressed tongue *f*⁴, screwed to a spindle *f*⁵ and pivoted in bearings *f*⁶, formed on the upright portion *f*⁷ of the plate *f*³. The tendency of the spring *f*⁸, which actuates the tongue *f*⁴, is to hold the lower edge of the tongue *f*⁴ against the lower plate *f*³, so that when the paper tape is passed between the two plates *f*² and *f*³ the tongue *f*⁴ will be pressed against the tape and prevent any backward movement thereof, while the tape is free to be fed forward by the feeding mechanism.

The feeding mechanism E comprises a frame *e*, carried by a rod *e'*, which is pivoted in suitable bearings *e*² and *e*³. Coiled around the bearing *e*³ is a spring, one end of which is secured to a post *e*⁴, and the other end engages with the frame *e* and tends to turn the same to its normal position. The frame *e* has two arms *e*⁵, Fig. 2, which form bearings for a rod *e*⁶, which rod carries a gripping-plate *e*⁷. The paper tape after passing between the plates *f*² and *f*³ above referred to passes between the gripping-plate *e*⁷ and the upper part of the frame *e*, and the tape is fed forward by causing the gripping-plate *e*⁷ to grip the paper and by the same movement swing the frame *e* forward on its pivot and against the tension of its spring.

The paper-feeding mechanism is actuated by a piston G moving within a cylinder G'. (See Figs. 2 and 3.) The rod of this piston is connected to a pivoted lever *g*, which lever is connected, by means of a turnbuckle, to the frame *e*⁸, rigidly attached to the rod *e*⁶.

Thus it will be seen that when the lever *g* is drawn downward by the movement of the piston *G* the frame *e*⁸ will also be drawn downward through the connection with the lever *g*, which action will cause the gripping-plate *e*⁷ to firmly grip the paper and at the same time swing the frame *e* forward on its pivot, thus drawing the tape *C* forward the required distance.

The piston-rod *G*² at its upper end is screw-threaded and is provided with a nut *g'*, adapted to engage with a forked L-shaped lever *h*, pivoted at *h'*, the short arm of which lever engages with a nut *h*² on the stem of a valve *H*, (see Fig. 2,) which works within a valve-chamber *H'*. This valve controls communication between the pipe *I* and the pipe *I'*, which connects with the exhaust-pipe *J*, connected to the cylinder *G'*. The nut *g'* is so adjusted on the rod *G*² that it will not engage the arm *h* to open valve *H* until piston *G* has moved the tape forward to the desired extent.

The pipe *J* extends to the whistle and enters a three-way coupling *J'*. The coupling *J'* is screwed onto a short pipe *J*², which enters the steam-pipe *A'*. A pipe *J*³ is screwed into the coupling and surrounds the end of pipe *J*. The pipes *J* and *J*² are of about the same diameter, while pipe *J*³ is considerably larger in diameter, but not as large as the pipe *A'*. By this arrangement when the valve (not shown) in pipe *A'* is opened the escaping steam blows the whistle, and a portion escapes through pipes *J*² and *J*³, producing a siphon action which exhausts the air from pipe *J* and cylinders *G'* and *K*.

The pipe *I* leads to the cylinder *K*, which is supported by a cross-bar *x* and posts *x'*. A cup-shaped piston *K'* (see Figs. 4 and 5) works in cylinder *K*, and this piston is connected by a link *k* with the short arm of an L-shaped lever *L*. The long arm of this lever is preferably formed into a frame *d* and a projecting arm *d'*, carrying the stamp *D*. The object of frame *d* is to enable the parts to be brought closely together, so as to occupy as little space as possible above the clock. The lever *L* is carried by a spindle *l*, which is pivoted in bearings *l'*. The movement of the piston *K'* in the direction of the arrow, Fig. 5, draws the short arm of the lever *L* in the same direction, and hence moves the stamp *D* downward against the tape *C*. A spring *l*², coiled around the spindle *l*, is provided for the purpose of returning the parts just referred to to their normal positions.

The operation of the apparatus is as follows: Upon opening the valve (not shown) in the steam-pipe *A'* the escaping steam will blow the whistle and part of the steam will escape through the branch pipes *J*² *J*³, which exhausts air from the pipe *J* and produces a vacuum in the cylinder *G'* on the under side of the piston *G*, whereupon the air-pressure above the piston will force the same downward, actuating the feed mechanism, as above described, and upon the nut *g'* striking the

lever *h* the valve *H* will be opened, opening communication between the cylinder *K* and the exhaust-pipe *J*, whereupon a vacuum will be produced in the forward part of the cylinder *K* and the air-pressure behind the piston *K'* will force that piston forward in the direction of the arrow and operating the stamp *D*, as above pointed out. When the valve controlling the passage of steam in the pipe *A'* is closed, the siphon action in the branch pipes *J*² *J*³ will cease and air will be free to reënter the cylinders *G'* and *K*, whereupon the air-pressure at both sides of the respective pistons will become nearly balanced and the various springs referred to will return the different parts to their normal positions. The movement of the feeding device to its normal position does not disturb the position of the tape *C*, because on the backward movement the gripping-plate *e*⁷ releases its hold upon the tape and the backward movement of the tape is prevented by the gripping-tongue *f*⁴, as above explained.

It will be readily understood that the arrangement and construction of apparatus illustrated may be altered without departing from the spirit of my invention, the main object being to control the operation of the time-stamp by producing a vacuum by means of the escaping steam. For instance, the blow of the stamp *D* might take place first and the paper-feed after the blow by means of springs or a pawl-and-ratchet movement actuated upon the return movement of the stamp.

What I claim is—

1. In a signal-recording mechanism, the combination with the signaling device, of a time-stamp, mechanism for operating said time-stamp, and means for producing a vacuum upon the operation of the signaling device to permit the operation of said time-stamp mechanism, substantially as set forth.

2. In a signal-recording mechanism, the combination with the signaling device, of a time-stamp, a paper-feeding device, mechanism for operating said time-stamp and feeding device, and means for producing a vacuum upon the operation of the signaling device to permit the operation of said mechanism, substantially as set forth.

3. In a signal-recording mechanism, the combination with the signaling device, of a time-stamp, a piston operated by air-pressure for actuating said stamp, and means for producing a vacuum upon the operation of the signaling device to permit the operation of said piston, substantially as set forth.

4. The combination with a steam-whistle, of a time-stamp, mechanism for operating said time-stamp, and means for producing a vacuum through the escape of steam at the whistle to permit the operation of said time-stamp mechanism, substantially as set forth.

5. The combination with a steam-whistle, of a time-stamp, a paper-feeding device, mechanism for operating said time-stamp and

feeding device, and means for producing a vacuum through the escape of steam at the whistle to permit the operation of said mechanism, substantially as set forth.

5 6. The combination with a steam-whistle, of a time-stamp, a piston operated by air-pressure for actuating said stamp, and means for producing a vacuum through the escape
10 of steam at the whistle to permit the operation of said piston, substantially as set forth.

7. The combination with a steam-whistle, of a time-stamp, a paper-feeding mechanism, pistons working in cylinders for operating
15 said time-stamp and feeding mechanism, and an exhaust-pipe extending from said cylinders to the steam-pipe of said whistle, through which the air is exhausted from one end of
20 each cylinder to permit the air-pressure at the other end to actuate said pistons, substantially as set forth.

8. In a signal-recording mechanism, the combination with a time-stamp and a paper-feeding mechanism, of a piston operated by
25 air-pressure for actuating said feeding mechanism, a piston operated by air-pressure for

actuating the time-stamp, and a valve adapted to be opened by the movement of the first-named piston to permit the operation of the
time-stamp piston, substantially as set forth.

9. The combination with a steam-whistle, 30 of a time-stamp, a paper-feeding mechanism, a piston connected with the feeding mechanism, a piston for the time-stamp, an exhaust-pipe extending to the whistle, pipe connections from said exhaust-pipe to the chambers
35 of said pistons, a valve for the pipe connection leading to the piston-chamber of the time-stamp controlled by the movement of feeding-mechanism piston, and means for exhausting the air from one end of each cylinder
40 to permit the air-pressure at the other end to actuate the pistons, substantially as set forth.

This specification signed and witnessed this 23d day of June, 1896.

ARTHUR E. COLGATE.

Witnesses:

EUGENE CONRAN,
W. BEYER.