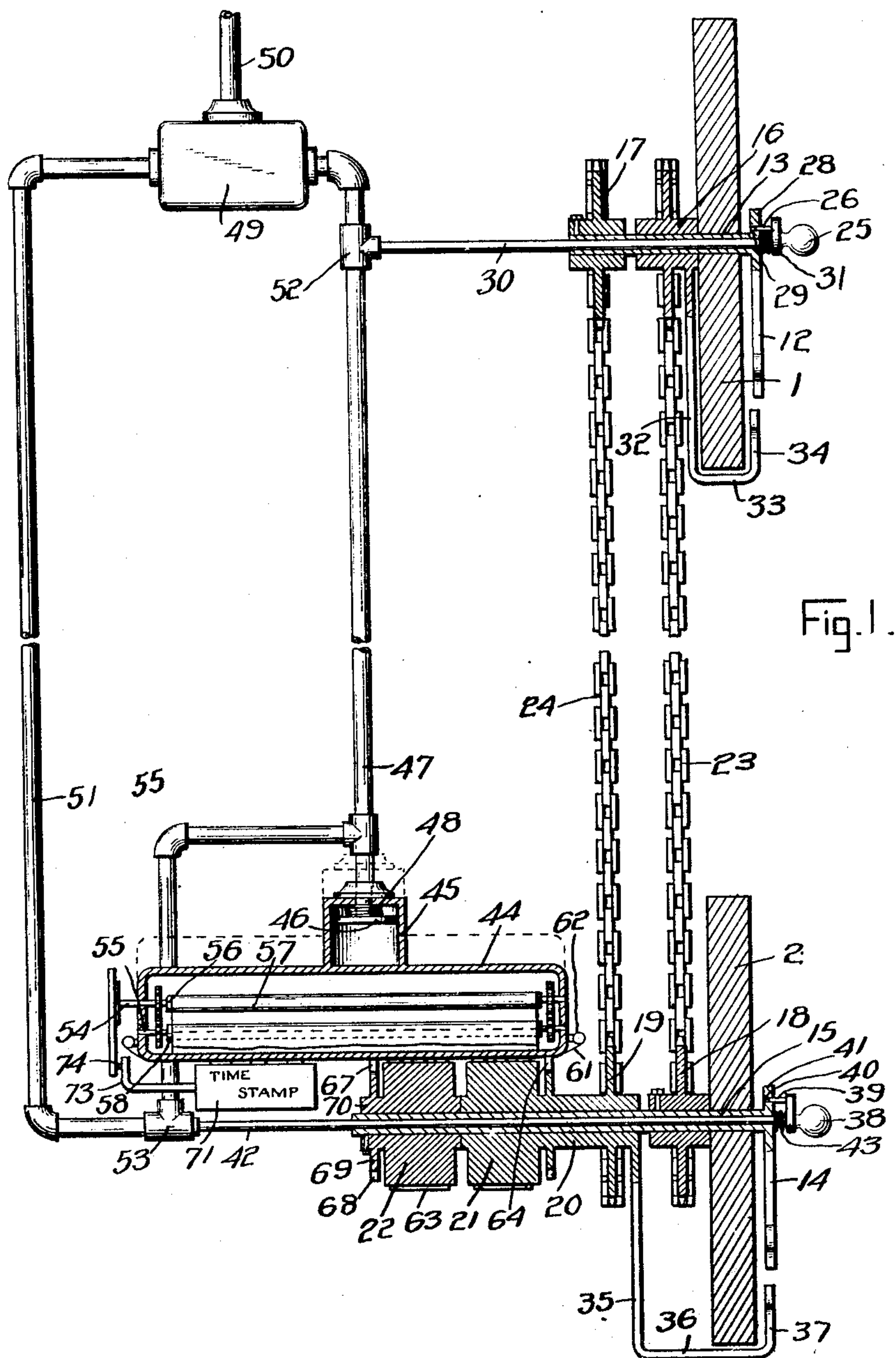


SHIP'S TELEGRAPH RECORDER.

APPLICATION FILED MAR. 26, 1909. RENEWED AUG 13, 1910.

Patented May 9, 1911.

2 SHEETS—SHEET 1.



WITNESSES

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991,504.

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2 SHEETS—SHEET 2.

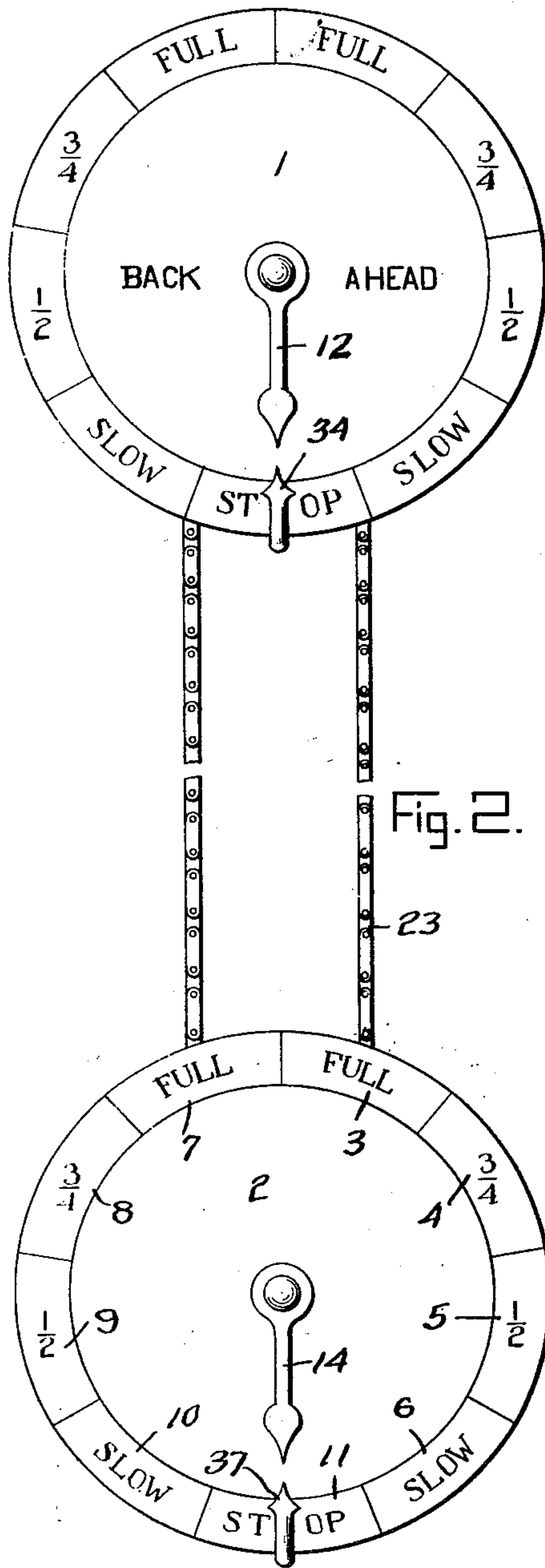


Fig. 2.

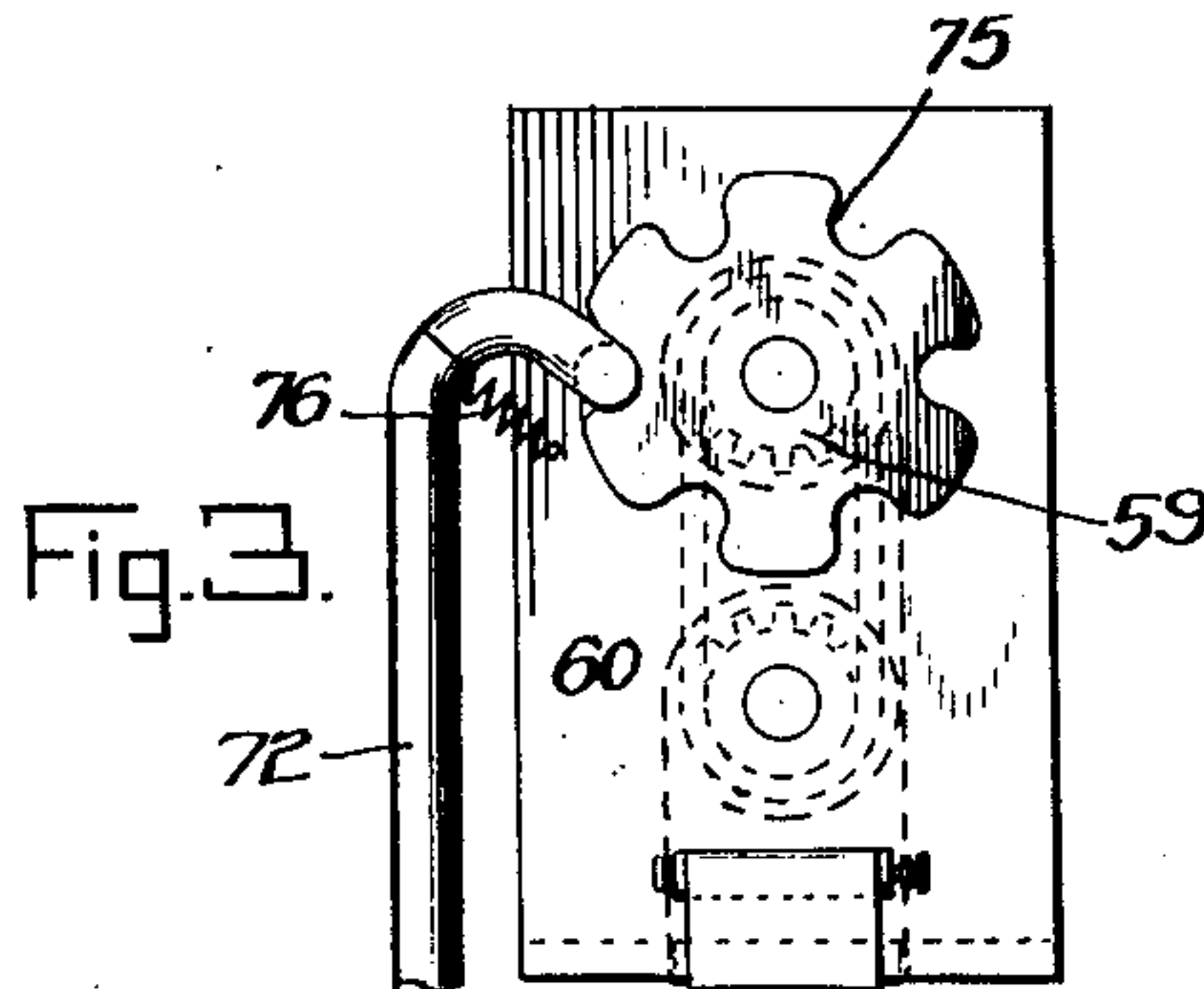


Fig. 3.

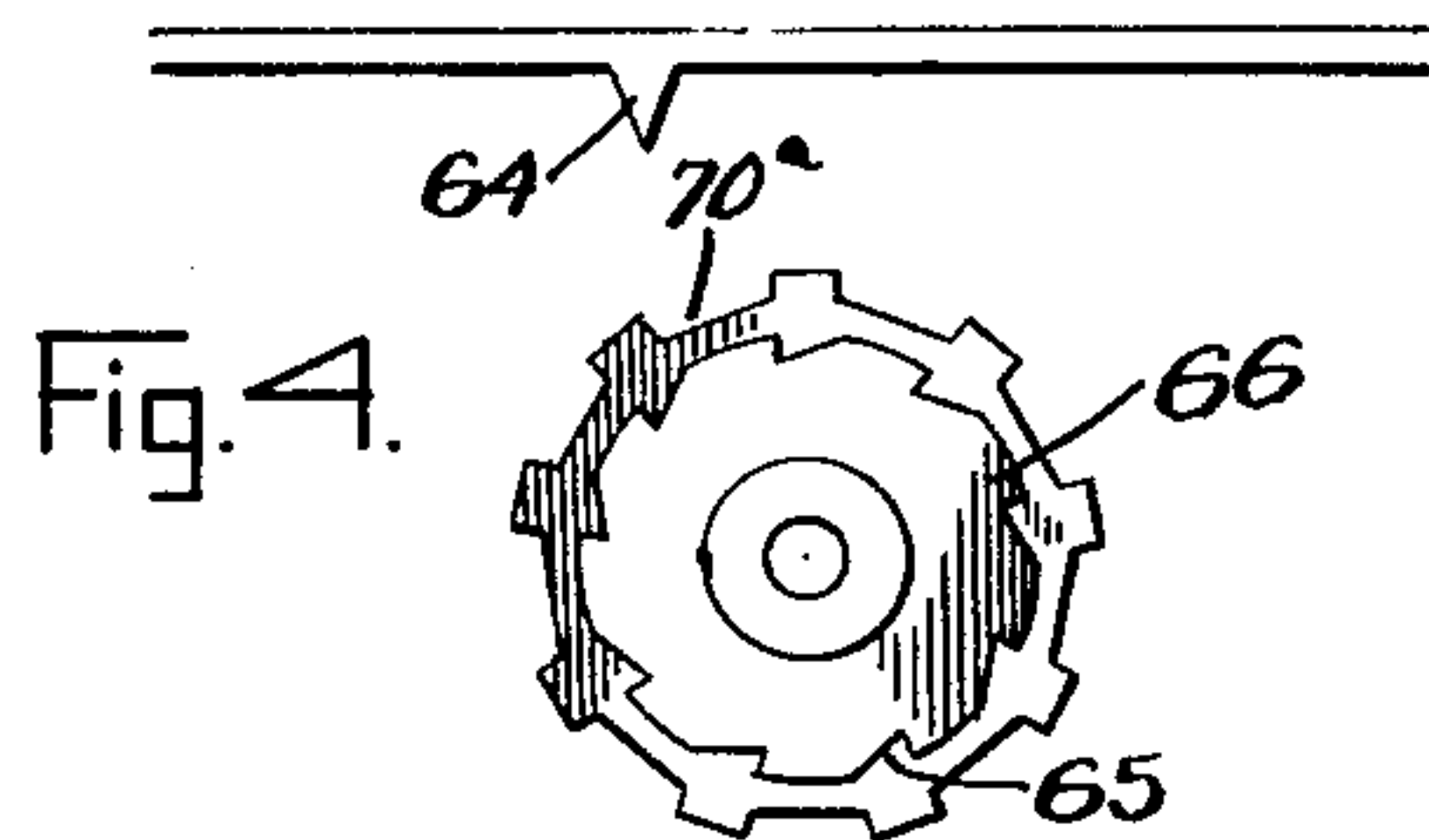


Fig. 4.

Fig. 5.

Date	Time	Response Engine Room	Order Bridge
09-12-14	A4:26:45		1-2 A
	A4:26:50	1-2 A	
	A4:28:00		Full A
	A4:28:04	Full A	
	A6:04:21		Slow A
	A6:07:14	Slow A	
	A6:09:02		Stop
	A6:09:09	Stop	
	A7:10:22		Slow A
	A7:10:40	Slow A	
	A7:11:01		3-4 A
	A7:12:04	3-4 A	
	A7:14:08		Full A
	A7:14:18	Full A	
09-12-15			
09-12-16			
09-12-17			
09-12-18			
09-12-19			
09-12-20			
09-12-21	A11:14:02		3-4 A
	A11:14:06	3-4 A	
	A11:46:01		Slow A
	A11:46:07	Slow A	
	A11:51:01		Stop
	A11:51:07	Stop	

WITNESSES
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SHIP'S-TELEGRAPH RECORDER.

991,504.

Specification of Letters Patent.

Patented May 9, 1911.

Application filed March 26, 1909, Serial No. 485,924. Renewed August 13, 1910. Serial No. 577,086.

To all whom it may concern:

Be it known that I, EDWARD A. HENKLE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Ship's-Telegraph Recorders, of which the following is a specification.

This invention relates to ship's telegraph recorders and the object thereof is to provide means in a manner as hereinafter set forth for making a permanent record of an order from an officer of a vessel to an engineer, as well as the time when said order is given and for making a permanent record of the response by the engineer to indicate to the officer the receipt of the order by the engineer, as well as the time of acknowledgment by the engineer.

Furthermore, the invention aims to provide means whereby a complete and permanent record will be made of all orders given by an officer to an engineer during the maneuvering of a vessel so as to accurately set forth the time of the receipt of the order by the engineer and whether said orders have been correctly carried out at the proper time and which will cause the engineer to be unusually careful so that he will correctly carry out the orders given thereby overcoming any liability of accident, and which will also settle disputes as to the orders given and received as well as to the time the order is given and the order is received.

Further objects of the invention are to provide a ship's telegraph recorder which shall be simple in its construction, strong, durable, efficient in its use, accurate in its records, capable of being conveniently disposed and attached to a ship's telegraph and inexpensive to manufacture.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts hereinafter referred to and illustrated in the accompanying drawings, wherein is shown, by way of example, a ship's telegraph recorder in accordance with this invention, but it will furthermore be understood that changes, variations and modifications can be resorted to which come within the scope of the claims hereunto appended.

In describing the invention in detail, ref-

erence is had to the accompanying drawings, wherein like characters of reference denote corresponding parts throughout the several views, and in which:

Figure 1 is a sectional elevation of a ship's telegraph recorder in accordance with this invention. Fig. 2 is a front elevation of a ship's telegraph used in connection with the recording mechanism. Fig. 3 is a detail illustrating means for shifting the record tape. Fig. 4 is a detail illustrating the centering means for one of the printing wheels, and, Fig. 5 is a view of a portion of a record tape showing the record thereon.

In connection with the invention it will be stated that that portion of the device which is operated by the navigating officer is preferably arranged at the bridge of the vessel and that portion of the device operated by the engineer is arranged within the engine room. Although the recording mechanism is shown arranged in operative relation with respect to that portion of the device positioned in the engine room, yet if desired, the recording portion of the apparatus can be arranged at the bridge.

Referring to the drawings by reference characters, 1 denotes a navigating officer's dial, and 2 an engineer's dial. The dials are provided with corresponding indications, the indications upon one-half of each dial being for orders given for "ahead" as at 3, 4, 5 and 6; the other half of each of the dials is provided with a series of inscriptions for orders for "astern" or "back" as at 7, 8, 9 and 10. Each of the dials is provided with an inscription as at 11 to indicate "stop." With the dial 1 there is associated a pointer 12 mounted upon a shaft 13 and with the dial 2 there is associated a pointer 14 mounted upon a shaft 15, the latter being of greater length than the shaft 13. Loosely mounted upon the shaft 13 is a sprocket wheel 16 and fixed to the said shaft 13 is a sprocket wheel 17. Fixed to the shaft 15 is a sprocket wheel 18 and loosely mounted upon the shaft 15 is a sprocket wheel 19 having an extended hub 20 provided with a printing wheel 21. Fixed to the shaft 15 is a printing wheel 22 which is arranged at the side of the printing wheel 21. The printing wheels 21 and 22 form elements of the recording mechanism and will be hereinafter more specifically referred to. The sprocket wheel 16 is con-

5 nected to the sprocket wheel 18 by a chain
 23 and the sprocket wheel 17 is connected to
 the sprocket wheel 19 by a chain 24. By
 such an arrangement, it is evident that when
 10 the shaft 13 is rotated, the sprocket wheel
 17 will be carried therewith and which will
 rotate the sprocket wheel 19 upon the shaft
 15 owing to the chain connection 24. When
 the shaft 15 is rotated, the sprocket wheel
 15 18 will be carried therewith and which will
 rotate the wheel 16 owing to the chain con-
 nection 23 between the wheels 16 and 18.
 The shaft 13 is rotated through the medium
 of a handle or knob 25 which is provided
 with a lug 26 extending in an opening 28
 20 formed in a protuberance 29 at the outer
 end of the shaft 13. The handle 25 is car-
 ried on the outer end of a valve shifting rod
 30 which extends through the shaft 13, ro-
 tates with said shaft 13, and is capable of a
 longitudinal movement. Interposed between
 the ends of the shaft 13 and the handle or
 knob 25 and surrounding the rod 30 is a
 25 coiled spring 31, the function of which is
 to normally retain the rod 30 projected, that
 is in the position as shown in Fig. 1. The
 purpose for which the rod 30 is intended
 will be hereinafter more specifically referred
 to. Formed integral with the hub of the
 30 wheel 16 and depending at the rear of the
 dial 1 is an arm 32 which terminates in an
 L-shaped projection 33, the latter having its
 free end terminating in a pointer 34 which
 is arranged at the front of the dial 1.
 35 Formed integral with the hub 20 of the
 wheel 19 is a depending arm 35 which is
 arranged at the rear of the dial 2 and ter-
 minates in an L-shaped projection 36, the
 free end of which is arranged at the front
 40 of the dial 2 and constitutes a pointer 37.
 The shaft 15 is rotated through the medium
 of a handle or knob 38 provided with a lug
 39 which extends in an opening 40 formed
 in a protuberance 41 on the outer end of the
 45 shaft 15. The handle or knob 38 is carried
 on the outer end of a valve actuated rod 42
 which extends through the shaft 15, rotates
 with said shaft, but is capable of a longi-
 tudinal movement. Interposed between the
 50 outer end of the shaft 15 and the handle or
 knob 38 and surrounding the outer end of
 the rod 42, is a coiled spring 43, the func-
 tion of which is to normally hold the rod
 42 projected, that is to say, in the position as
 55 shown in Fig. 1.

60 From the foregoing construction and ar-
 rangement of parts, it is evident that when
 the pointer 12 is shifted to an inscription
 upon the dial 1, that the shaft 13 will be
 rotated causing an actuation of the gears
 17 and 19 and the shifting of the pointer
 37 to an inscription on the dial 2 which is
 similar to that inscription to which the
 pointer 12 has been moved. This will be an
 65 order from the navigating officer to the en-

gineer. The engineer responding will shift
 the pointer 14 of the dial 2 to the order
 which is indicated by the pointer 37. The
 shifting of the pointer 14 will revolve the
 shaft 15 which in turn will rotate the wheel 70
 18 causing the wheel 16 to revolve which
 will carry the arm 32 therewith and posi-
 tion the pointer 34 at the inscription to
 which the pointer 12 has been moved, that
 is to say, if the engineer answers correctly, 75
 if the engineer does not answer correctly, the
 pointer 34 will be at some other inscription
 on the dial and will indicate to the navigat-
 ing officer that the engineer is carrying out
 some other order. 80

As is well known in ship's telegraphs,
 when the navigating officer issues an order,
 an alarm is sounded in the engineer's room
 to direct the engineer's attention to the
 order. It is thought unnecessary to illus- 85
 trate the alarm as it is independent of the
 telegraph.

A ship's telegraph recorder in accordance
 with this invention comprises means oper-
 ated by the navigating officer when sending 90
 an order and operated by the engineer when
 responding to an order for making a per-
 manent record respectively of the order sent
 and the response thereto and also for fur-
 95 ther making a permanent record of the time
 that the order was sent and also the time
 of the response, the record being made upon
 a tape or strip and the record being such
 that it will readily indicate the time elapsed
 between the order and the response and also 100
 the period of time between responses and
 orders, thereby showing the period of time
 the order was fulfilled, that is to say, if an
 order should be given for "full speed
 ahead," the record tape will show how long 105
 the ship was traveling at "full speed ahead"
 or at any other speed whether "ahead" or
 "astern." The said means is what is termed
 a recording mechanism and is operated
 pneumatically. 110

The recording mechanism consists of a
 platen 44 provided with a closed casing 45
 in which is arranged a piston 46 actuated
 by fluid pressure. Extending in the casing 115
 or cylinder 45 is a fluid pressure feed pipe
 47 for supplying motive fluid against the
 upper face of the piston 46. The impact-
 ing of the pressure against the piston 46
 forces the platen downwardly to cause the
 printing of the record, the elements associat- 120
 ing with the platen so as to print to form
 the record will be hereinafter more specifi-
 cally referred to. The return movement of
 the platen is caused through the medium of
 a coiled spring 48 which is connected at 125
 one end to the top of the casing or cylinder
 45 and also connected to the piston 46.
 When pressure is reduced upon the upper
 face of the piston 46, the spring 48 will con-
 130 tract, thereby moving the platen to normal

position. The fluid pressure feed pipe 47 communicates with a fluid pressure reservoir 49 which is connected by the pipe 50 with a compressor (not shown) and the said pipe 47 furthermore communicates with the reservoir 49 by a branch feed pipe 51. Interposed in the feed pipe 47 is a valve casing 52 in which is arranged a valve (not shown), the said valve being actuated to open position by the longitudinal movement of the rod 30 and in this connection it will be stated that when the navigating officer shifts the pointer 12 to the desired inscription upon the dial 1, he then moves the rod 30 inwardly which opens the valve within the casing 52 and causes a supply of fluid pressure against the piston 46 whereby the platen 44 is forced downwardly to cause a record of the order. Interposed in the branch feed pipe 51 is a valve casing 53 in which is arranged a valve (not shown), the valve being actuated to open position by the inward movement of the rod 42, such movement being given to the rod by the engineer after he has moved the pointer 14 to the necessary inscription upon the dial. When the navigating officer or the engineer removes the pressure upon either the rod 30 or the rod 42, the springs 29 and 43 will shift the rods 30 and 42 outwardly, thereby closing the valves in the casings 52 and 53.

Journalled in the platen 44 are the shafts 54, 55, the shaft 54 being of greater length than the shaft 55 and projecting from one side of the platen 44. Upon the shaft 54 and within the platen 44 is arranged a spool 56 which carries the record tape 57 and from said spool 56 the record tape 57 is intermittently unwound. The shaft 55 carries a spool 58 which is arranged within the platen 44 and upon the said spool the record tape 57 winds after being printed. The shaft 54 as well as the shaft 55 is provided at each end with a sprocket wheel 59, the sprocket wheels upon the shaft 54 are connected with the sprocket wheels upon the shaft 55 by the chains 60, so that when the shaft 54 is intermittently rotated as hereinafter referred to, motion will also be transmitted to the shaft 55 causing a winding of the tape thereon. The record tape extends below the bottom of the platen and between a type ribbon 61 which is connected to the spools 62 and fed in a known manner.

The printing wheels 21 and 22 are arranged below the platen 44 and which is provided with type 63 arranged so as to correspond with the inscriptions upon the dials, the printing wheel 21 associating with the dial 1, and the printing wheel 22 associating with the dial 2. When the navigating officer sends an order causing the operation of the sprocket wheels 17 and 19, the wheel 21 will be shifted to a position for printing, the wheel however, is centered in its proper po-

sition by a V-shaped projection 64 engaging in one of a series of V-shaped notches 65 formed in a disk 66 integral with the hub 20 of the printing wheel 21. When the printing wheel 21 has been shifted, and the rod 30 moved inwardly to supply pressure to the piston 46 for shifting the platen downwardly to print, the V-shaped projection 64 will engage in a notch 65 and properly center the wheel 21 so that the type will extend parallel with respect to the lower face of the platen to prevent smearing when making the record. A like arrangement is had in connection with the printing wheel 22, the V-shaped protuberance being indicated by the reference character 67, the notches by the reference character 68, and the disk by the reference character 69 integral with the hub 70 of the printing wheel 22.

The recording mechanism further comprises a time stamp for indicating the year, month, date, hour, minute and second, is indicated by the reference character 71 and is arranged below the platen at one side of the printing wheels 21 and 22. The printing wheels 21 and 22 are provided with suitable means for shifting the same after printing so that a space 70^a will present itself to the lower face of the platen whereby printing will be had from one wheel only, that is to say, after one wheel has printed upon the tape, it will be shifted so as not to print when the other wheel is printing. The stamp 71 is utilized for printing every time that the platen descends so that there will be indicated on the tape the time that the order is sent and the time that the response is made. This is clearly shown in Fig. 5 of the drawings.

The tape is intermittently shifted by a dog 72 which is carried by a support 73 projecting from the time stamp. The dog 72 is pivoted as at 74 to said support and is maintained in engagement with the toothed wheel 75 by a spring 76. The toothed wheel 75 is carried on the projecting end of the shaft 54. By such an arrangement, it is evident that when the platen moves back to normal position, the wheel 75 will be shifted owing to the engagement of one of the teeth thereof by the dog 76, consequently an intermittent feed is had for the tape.

What I claim is:

1. In a ship's telegraph recorder, a pneumatically operated recording mechanism comprising means thrown into operation respectively by the sender and responder for printing an order and the response thereto upon a record tape.

2. In a ship's telegraph recorder, a pneumatically operated recording mechanism for printing an order and the response thereto upon a record tape, and means whereby said mechanism is thrown into operation by the sender to print the order, and means where-

by said mechanism is thrown into operation by the responder to print the response.

3. In a ship's telegraph recorder, a pneumatically operated recording mechanism for printing an order and the response thereto upon a record tape, said recording mechanism comprising means thrown into operation by the sender for printing the time of the order simultaneously with the printing of the nature of the order and further comprising means thrown into operation by the responder for printing the time of the response simultaneously with the printing of the character of the response.

4. In a ship's telegraph recorder, a pneumatically operated recording mechanism for printing an order and the response thereto upon a record tape, said recording mechanism comprising means for printing the time of the order and the time of the response, and means whereby said recording mechanism is thrown into operation by the sender to simultaneously print the order and the time thereof, and means whereby said mechanism is thrown into operation by the responder to simultaneously print the response and the time thereof.

5. In a ship's telegraph recorder, a pneumatically operated platen carrying an inking ribbon adapted when operated in one direction to move a record tape alternately against a set of printing wheels, a time stamp arranged in the path of the platen, a set of printing wheels arranged in the line of the platen, means operated when sending an order and a response thereto for shifting said printing wheels to position them to print the desired inscription upon the tape, and manually-operated means to supply motive fluid whereby the platen is operated after the shifting of each wheel to carry the tape against the wheel and stamp to print a record.

6. In a ship's telegraph recorder, a vertically-movable platen carrying an inking ribbon adapted when operated in one direction to move a record tape alternately against the printing wheels, a time stamp arranged in the path of the platen, a pair of printing wheels arranged in the line of the platen, means for independently shifting said printing wheels to position them to print the desired inscription upon the tape, and means whereby the platen is operated after the shifting of each wheel.

7. In a ship's telegraph recorder comprising a plurality of printing wheels, a time stamp, a shiftable platen provided with an ink ribbon and carrying a record tape, said platen adapted to be shifted in one direction against the stamp and a printing wheel whereby a record is printed upon the tape, and means operated from a ship's telegraph whereby the platen is operated in a direction to print.

8. A ship's telegraph recorder comprising a plurality of printing wheels, a time stamp, a shiftable platen provided with an ink ribbon and carrying a record tape, said platen adapted to be shifted in one direction against the stamp and a printing wheel whereby a record is printed upon the tape, means operated from a ship's telegraph whereby the platen is operated in a direction to print, and means for shifting the platen in the opposite direction.

9. A ship's telegraph recorder comprising a plurality of printing wheels, a time stamp, a shiftable platen provided with an ink ribbon and carrying a record tape, said platen adapted to be shifted in one direction against the stamp and a printing wheel whereby a record is printed upon the tape, means whereby the platen is operated in a direction to print, means operated from a ship's telegraph for shifting the platen in the opposite direction, and means for shifting the tape when the platen moves away from the time stamp and the printing wheel.

10. A ship's telegraph recorder comprising a plurality of printing wheels, a time stamp, a shiftable platen provided with an ink ribbon and carrying a record tape, said platen adapted to be shifted in one direction against the stamp and a printing wheel whereby a record is printed upon the tape, means operated from a ship's telegraph whereby the platen is operated in a direction to print, means for shifting the platen in the opposite direction, means for shifting the tape when the platen moves away from the time stamp and the printing wheel, each of said printing wheels having sets of type to provide a plurality of inscriptions, and means operated from a ship's telegraph for independently shifting each of the printing wheels to position a set of type in the line of path of the platen.

11. A ship's telegraph recorder comprising a plurality of printing wheels, a time stamp, a shiftable platen provided with an ink ribbon and carrying a record tape, said platen adapted to be shifted in one direction against the stamp and a printing wheel whereby a record is printed upon the tape, means whereby the platen is operated in a direction to print, means for shifting the platen in the opposite direction, means for shifting the tape when the platen moves away from the time stamp and the printing wheel, each of said printing wheels having sets of type to provide a plurality of inscriptions, means for independently shifting each of the printing wheels to position a set of type in the line of path of the platen, and a centering means for each of said wheels whereby a set of type to print the record is positioned parallel with one face of the platen.

12. In combination in a ship's telegraph,

a pair of dials, a shaft extending through each dial, a fast and loose sprocket wheel mounted upon each shaft, an operative connection between the sprocket wheels on one shaft and the sprocket wheels on the other shaft, a pair of printing wheels, arranged in parallelism with respect to each other, one of said printing wheels fixed to a shaft and the other of said printing wheels connected to the loose sprocket wheel upon the shaft to which is fixed the said printing wheel, pointers supported by the loose sprocket wheels and arranged forwardly of the dials, and pointers carried on the outer ends of said shafts and arranged forwardly of the dials.

13. In a ship's telegraph recorder, the combination with a ship's telegraph, of a recording mechanism adjusted by the operation of said telegraph and comprising a time stamp and printing wheels successively shifted when sending an order and a response to a position for printing a record upon a tape when the recording mechanism is operated, and means whereby said recording mechanism is operated after the positioning of the printing wheels.

14. In a ship's telegraph recorder, the combination with a ship's telegraph, of a recording mechanism adjusted by the operation of said telegraph and comprising a time stamp and printing wheels successively shifted when sending an order and a response to a position for printing a record upon a tape when the recording mechanism is operated, means whereby said recording mechanism is operated after the positioning of the printing wheels, said recording mechanism comprising means for shifting the record tape after the impression has been made thereon.

15. In a ship's telegraph recorder, the combination with a ship's telegraph, of a recording mechanism adjusted by the operation of said telegraph and comprising a time stamp and printing wheels successively shifted when sending an order and a response thereto to position the wheels for printing a record upon a tape when the recording mechanism is operated, and means whereby said recording mechanism is operated by fluid pressure after each adjustment of a printing wheel.

16. In a ship's telegraph recorder, the combination with a ship's telegraph, of a recording mechanism adjusted by the operation of said telegraph and comprising a time stamp and printing wheels successively shifted when sending an order and a response thereto to position the wheels for printing a record upon a tape when the recording mechanism is operated, means whereby said recording mechanism is operated by fluid pressure after each adjustment of a printing wheel, and means for shifting

the record tape after an impression has been made thereon by the time stamp and the printing wheel.

17. In a ship's telegraph, a pneumatically-operated recording mechanism for printing an order and the time of the order upon a record tape and for printing a response and the time of the response upon the said tape, means operated by a navigating officer when sending the order for throwing into operation said recording mechanism to print the order and the time of the order, and means operated by an engineer when sending a response to the order for throwing into operation said recording mechanism for printing the response and the time of the response.

18. In a ship's telegraph, a pneumatically-operated recording mechanism for printing an order and the time of the order upon a record tape and for printing a response and the time of the response upon the said tape, means operated by a navigating officer when sending the order for throwing into operation said recording mechanism to print the order and the time of the order, and means operated by an engineer when sending a response to the order for throwing into operation said recording mechanism for printing the response and the time of the response, said recording mechanism provided with means for shifting the tape after the order has been printed thereon and after the response has been printed thereon.

19. In a ship's telegraph, a pneumatically-operated recording mechanism for printing an order and the time of the order upon a record tape and for printing a response and the time of the response upon the said tape, means operated by a navigating officer when sending the order for throwing into operation said recording mechanism to print the order and the time of the order, means operated by an engineer when sending a response to the order for throwing into operation said recording mechanism for printing the response and the time of the response, and means for automatically centering the printing elements of said recording mechanism prior to the printing upon the tape.

20. In a ship's telegraph, a pneumatically-operated recording mechanism for printing an order and the time of the order upon a record tape and for printing a response and the time of the response upon the said tape, means operated by a navigating officer when sending the order for throwing into operation said recording mechanism to print the order and the time of the order, means operated by an engineer when sending a response to the order for throwing into operation said recording mechanism for printing the response and the time of the response, said recording mechanism provided with means for shifting the tape after the order has been printed thereon and after the response

has been printed thereon, and means for automatically centering the printing elements of said recording mechanism prior to the printing upon the tape.

5 21. In a ship's telegraph recorder, the combination with a ship's telegraph, of a recording mechanism adjusted by the operation of said telegraph and comprising a time stamp and printing wheels successively
10 shifted when sending an order and a response to a position for printing a record upon a tape when the recording mechanism is operated, means whereby said recording mechanism is operated after the positioning
15 of the printing wheels, and means for automatically-centering said printing wheels prior to the printing upon the tape.

22. In combination in a ship's telegraph, a pair of dials, a shaft extending through
20 each dial, a fast and loose sprocket wheel mounted upon each shaft, an operative connection between the sprocket wheels on one shaft and the sprocket wheels on the other shaft, a pair of printing wheels, arranged in
25 parallelism with respect to each other, one of said printing wheels fixed to a shaft and the other of said printing wheels connected to the loose sprocket wheel upon the shaft

to which is fixed the said printing wheel, pointers supported by the loose sprocket
30 wheels and arranged forwardly of the dials, and pointers carried on the outer ends of said shafts and arranged forwardly of the dials, each of said printing wheels provided with a centering device. 35

23. In a ship's telegraph recorder, the combination with a ship's telegraph, of a recording mechanism adjusted by the operation of said telegraph and comprising a time stamp and printing wheels successively
40 shifted when sending an order and a response thereto to position the wheels for printing a record upon a tape when the recording mechanism is operated, means whereby said recording mechanism is operated
45 by fluid pressure after each adjustment of a printing wheel, and means for automatically centering said printing wheels prior to the printing upon the tape.

In testimony whereof I affix my signature, 50
in presence of two witnesses.

EDWARD A. HENKLE.

Witnesses:

W. LOUIS BOGAN,
L. FRESCOLN.