

No. 862,423.

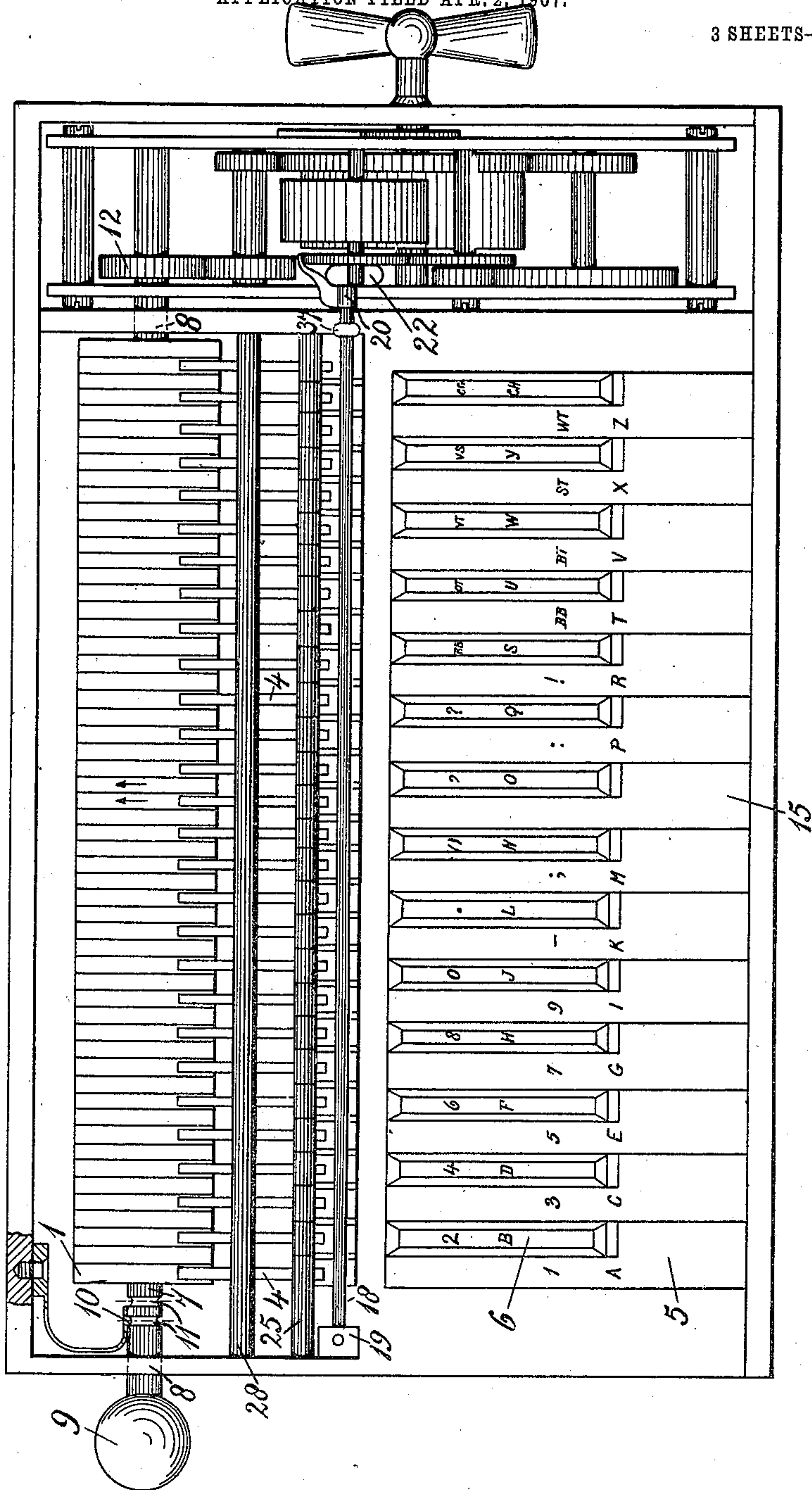
PATENTED AUG. 6, 1907.

T. C. VAN DE STADT.
TELEGRAPHIC TRANSMITTER FOR THE MORSE SYSTEM.

APPLICATION FILED APR. 2, 1907.

3 SHEETS--SHEET 1.

Fig. 1.



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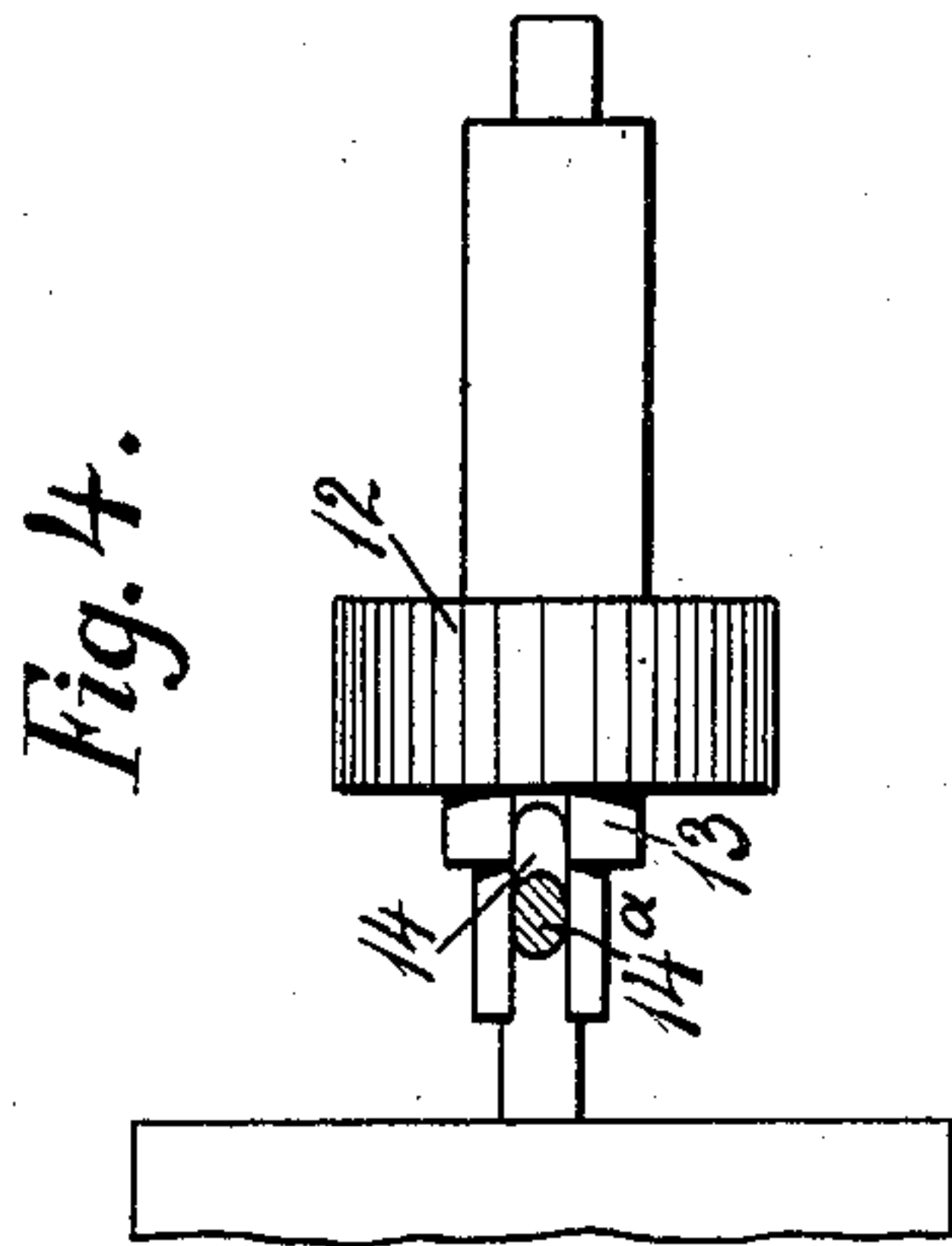


Fig. 4.

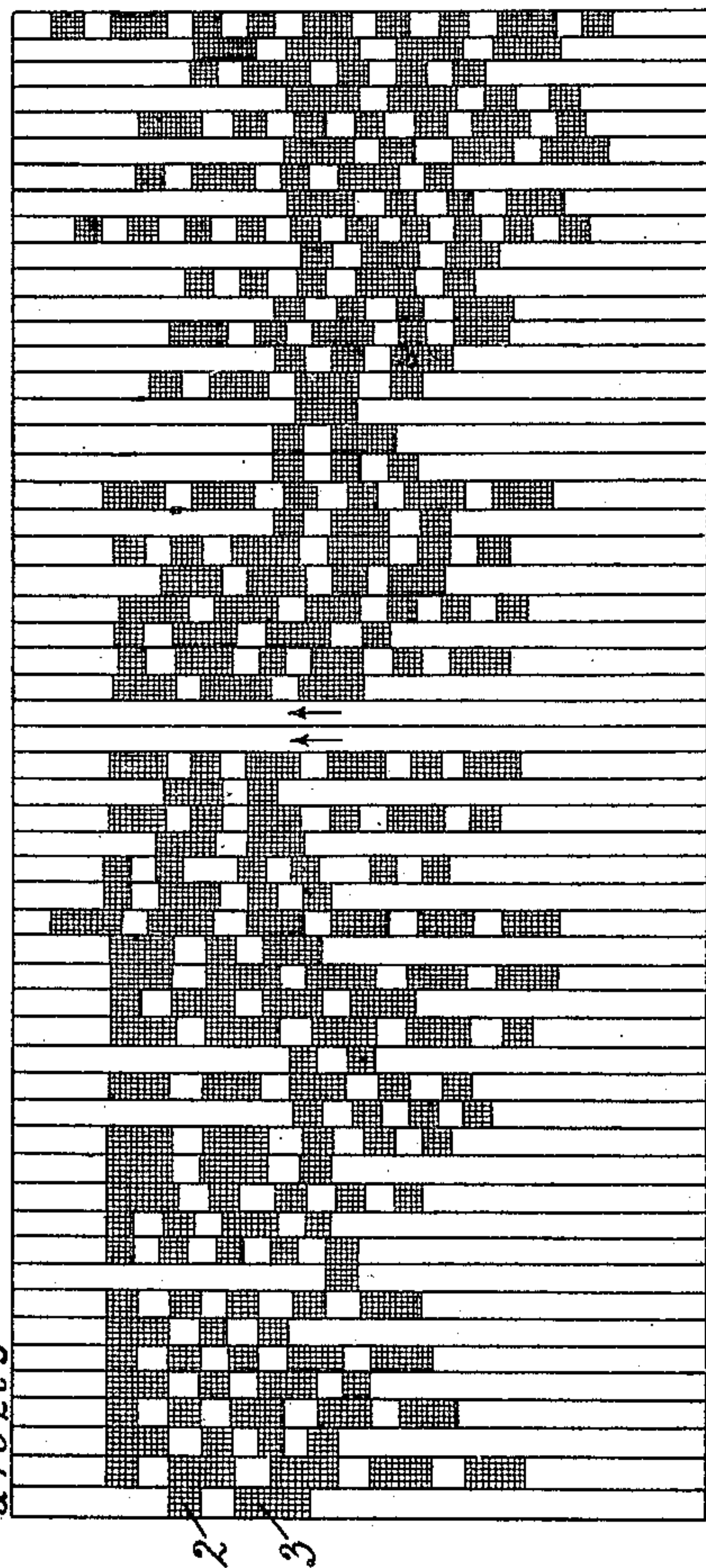


Fig. 2.

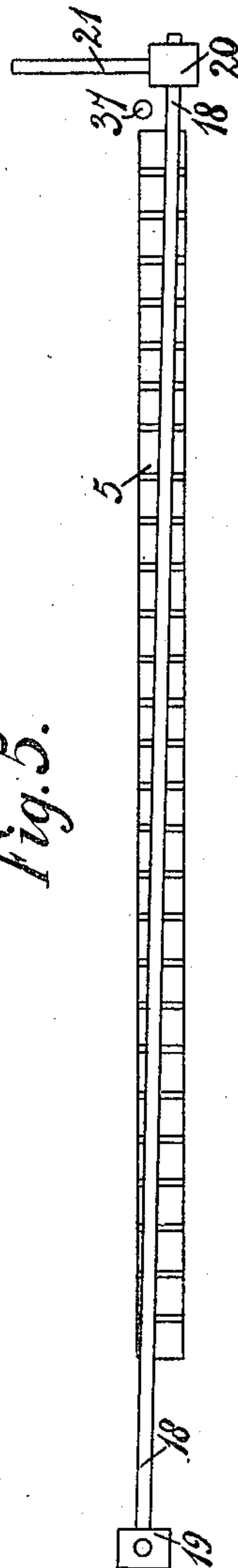


Fig. 5.

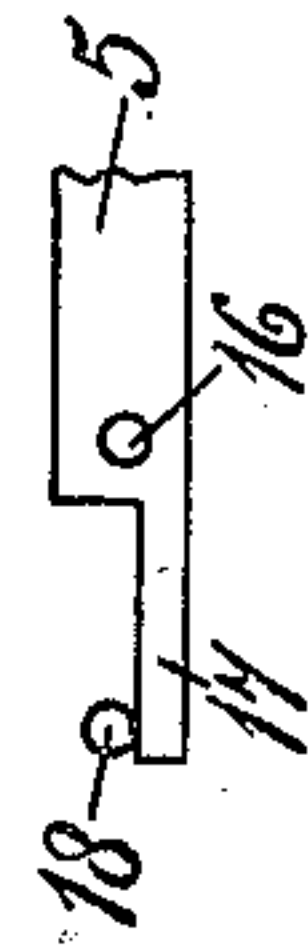


Fig. 6.

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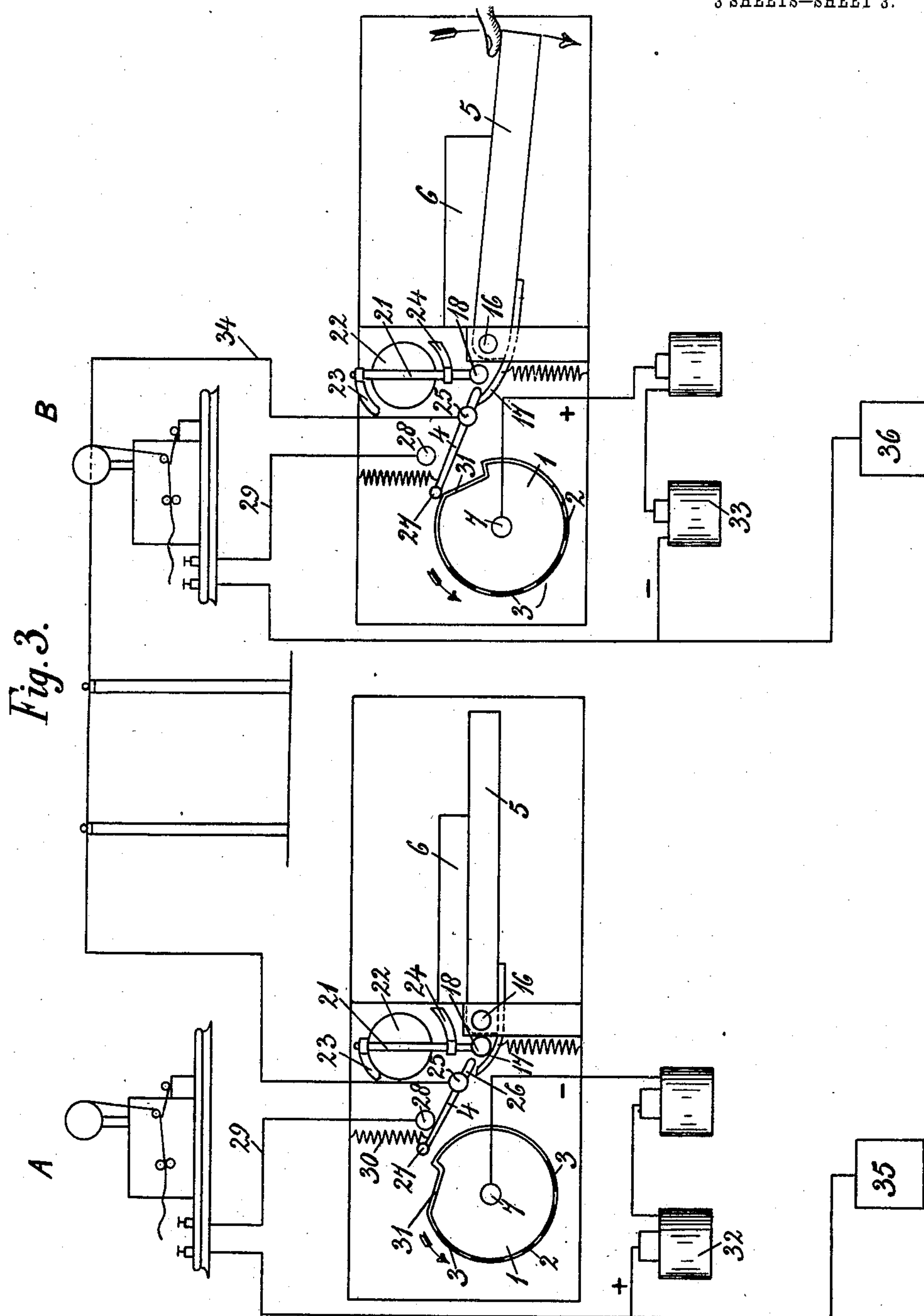
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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TELEGRAPHIC TRANSMITTER FOR THE MORSE SYSTEM.

No. 862,423.

Specification of Letters Patent.

Patented Aug. 6, 1907.

Application filed April 2, 1907. Serial No. 365,915.

To all whom it may concern:

Be it known that I, THEODORUS CORNELIS VAN DE STADT, mechanician, a subject of the Queen of the Netherlands, residing at Draaibrug 58, Aardenburg, in the Province of Zeeland, Kingdom of the Netherlands, have invented certain new and useful Improvements in Telegraphic Transmitters for the Morse System, of which the following is a specification.

The present invention relates to an improved telegraphic transmitter having a key-board for the Morse code, whereby telegraphing is rendered easier and more rapid.

It is well known that the Morse system has never been supplanted by any other known system, for the reason that it possesses many important advantages, such as certainty of record, simplicity in the arrangement of the current supply, and the possibility that every apparatus may be used as a transmitter. For instance the Hughes apparatus requires skilful handling on account of its complexity, and is costly to install. Moreover this apparatus cannot work as a transmitter.

It is the object of the present invention to construct the Morse apparatus, particularly the transmitter, that the sending of the messages is considerably simplified, and above all things is more easily learned. Furthermore, by means of the improved apparatus the telegraphic messages can be transmitted from three to six times more quickly, according to the skill of the operator, than is possible with the Morse transmitters at present in use; thus the speed of telegraphing with the improved apparatus approximates that attainable with the Hughes apparatus.

The invention is illustrated in the accompanying drawings.

Figure 1 is a plan of the apparatus showing the clock-work, the contact roller, and the key-board. Fig. 2 shows the contact roller developed. Fig. 3 is a diagram illustrating two telegraphic stations provided with the improved apparatus. Fig. 4 is a detail view drawn to an enlarged scale and showing the devices for coupling the contact roller with the clock-work. Fig. 5 is a detail view in front elevation. Fig. 6 is a cross section through Fig. 5.

On the circumference of a metal roller 1 are arranged contacts 2, 3 which correspond with the several Morse characters. The roller 1 is journaled in bearings 8 in the casing, and is driven by clockwork. In the form here shown the roller 1 is subdivided into 56 equal parts, each of which has a number of contacts corre-

sponding with one of the Morse characters. The shorter contacts 2 correspond with the dots, and the longer contacts 3 with the dashes of the Morse code. Besides the characters of the Morse alphabet, the numerals and punctuations, as well as the usual operators' abbreviations, such as "official telegram" "railway telegram" "call" "understood" "error" "end" etc. are arranged on this roller. In Fig. 2 the development of this contact roller is shown. The hatched portions are the contacts and are separated from each other by ebonites, or some other suitable insulating material. The rest of the periphery of the roller is also covered with insulating material.

The number of contact arms 4 (Fig. 1) amounting to one-half the number of the separate parts of the roller, that is to say 28, are arranged so as to be adapted to be pressed upon the roller by the depression of the corresponding keys 5 and 6 of a key-board. The contacts on the roller 1 are so arranged that those on the subdivisions 1, 3, 5, etc. telegraph the alphabetical characters, while those on the subdivisions 2, 4, 6 etc. telegraph the numerals, punctuations, and operators abbreviations. By means of a handle 9, the roller 1 can be shifted axially in either direction by 1/56th of its length, so that when, for instance, as shown in Figs. 1 and 2, the position of the roller is such that the alphabetical characters are beneath the contact arms 4, the numerals etc. can be brought to this position by operating the handle 9. A spring catch 10 determines the correct position of the roller 1 by engaging in one or other of the annular grooves 11 in the shaft 7, and this catch also serves to conduct the current from the battery 33 to this shaft.

It will be seen that when the collar 1 is set in rotation, and the keys 5, 6 are depressed, the corresponding contact arms 4 slide for a longer or shorter time over the metal contacts 2, 3 so that the circuit is for a longer or shorter time closed, exactly as happens in the case of the Morse key. The armature of the recorder is therefore held attracted for corresponding periods, and dashes of corresponding length are recorded on the paper strip. By a single depression of the key, all the dots and dashes corresponding with a character are transmitted.

The roller 1 is rotated through the wheel 12 of the clockwork, which is coupled to the shaft 7 as shown in Fig. 4. This toothed wheel 12 is carried by a sleeve 13 slotted as at 14 so as to engage with a pin 14^a fixed in the shaft 7 so that the engagement is preserved even when the shaft 7 has been shifted by the handle 9.

As shown in Fig. 1, the keys on the key-board are marked with the characters which will be telegraphed

by depressing the respective keys. The middle key 15 is a blank, and serves as the space key. For the same purpose the two middle subdivisions of the roller 1 have no contacts, so that in whichever position the roller is, no contact moves beneath the space key. The connection between the keys 5 and 6 and the contact arms is shown in Fig. 3. The keys turn on the horizontal shaft 16, and each carries a small upwardly curved arm 17. Above the curved part of these arms is an approximately horizontal rod 18 pivoted at 19 in the casing to turn in a vertical plane, and connected at its other end 20 with a vertical rod 21. This rod is close to a wheel 22 of the clock-work, and carries two brake shoes 23, 24 arranged above and below this wheel respectively. When the rod is in its lowest position, as in the left-hand apparatus shown in Fig. 3, the wheel 22 is held from rotation by the shoe 23 and the clockwork is thus stopped. When the rod is raised, the clockwork starts again, until the rod arrives at its highest position, whereupon the shoe 24 again stops the movement.

As shown in Figs. 5 and 6 the rod 18 is slightly inclined, so that it is progressively nearer to the several arms 17, so that when any key is depressed the stroke of the rod 21 is always the same, notwithstanding the progressively greater distance of the keys from the pivot 19 of the rod 18. The stop 37 limits the stroke of the rod 18 when one of the keys 5 is depressed. The contact arms 4 turn upon a horizontal shaft 25, and each has a tail 26 which extends over the end of the corresponding arm 17, so that when the key carrying this arm is depressed, the tail 26 is raised, and the contact arm 4 lowered, to bring the contact 27 to bear upon the roller 1. Above the contact arms 4 is a horizontal contact rail 28 connected by a wire 29 with the recording apparatus of the Morse telegraph. In its normal position each contact arm 4 is held by a spring 30 against this rail 28, this contact being broken when the corresponding key is depressed.

As will be apparent from Fig. 3, the roller 1 has a longitudinal depression 31 parallel with its axis, and situated at the end of each of a series of contacts that constitute the Morse characters. When a key 5 or 6 is depressed, the rod 21 is raised, the clockwork started, and the roller 1 set in rotation. At the same time the corresponding contact arm 4 is depressed, so that contact 27 rides over the contacts on the roller 1. As soon as the contact 27 has left the last contact, it falls into the depression 31, thus allowing the rod 21 to be raised further, so that the lower brake shoe 24 engages with the wheel 22 and stops the clockwork. The operator, who holds the key depressed during this time, feels by the yielding of the key beneath his finger, that the contact 27 has been lowered into the depression 31. He thereupon disengages the key and the contact arm 4 is at once returned to its normal position against the rail 28, and at the same time the upper brake shoe 23 engages the wheel 22, keeping the clockwork at rest. The roller 1 may turn at any suitable speed, such as at 90 revolutions per minute. The faster the operator can play upon the keys, the more rapidly can he transmit the message.

The electric circuit in this apparatus is the same as

that in the ordinary Morse transmitter. In Fig. 3, A and B represent two telegraph stations connected with the line at opposite poles of the batteries. Thus, the roller 1 at station A is connected with the minus pole of battery 32, while that of station B is connected with the positive pole of battery 33. When a key is depressed at station B, current flows from the battery 33, through the shaft of roller 1, thence over the working contact 2 or 3, contact arm 4, lead 34, and over the line to the shaft 25 of the contact arms 4 at station A. From here the circuit is through the contact arms 4, earth 28, the recorder at station A, earth 35, earth 36, back to battery 33. On the other hand if a key at station A is depressed, the current is from earth 35, through earth 36, the recorder at station B, over the rail 28 of this station, the contact arms, shaft 25, back through the line to station A, over the contact arms 4 of that station, the contact on the roller 1, and thence back to the battery. There is no change in the direction of the current, so that the apparatus can work as a transmitter.

It will be noted that in the normal position, the contact arms 4 are always in conducting connection with the recording apparatus. At the same time the shaft 25 is always connected with line, and the working contacts on the roller 1 are always connected with the battery.

Having thus described the nature of my said invention, and the best means I know of carrying the same into practical effect, I claim:—

1. A telegraph transmitter for the Morse system, comprising a series of keys, a contact arm adapted to be operated by the operation of one of the said keys corresponding therewith, a roller adapted to revolve, a series of contacts on the said roller corresponding with each of the said contact arms, the said contacts and contact arms being brought together when the said keys are depressed, a longitudinal depression on the said roller adapted to receive the said contact arm as soon as the latter has passed over the said contacts, the said keys being adapted to descend further as soon as the said contact arm passes into the said depression.

2. A telegraph transmitter for the Morse system, comprising a series of keys, a contact arm adapted to be operated by the operation of one of the said keys corresponding therewith, a roller adapted to revolve, a series of contacts on the said roller corresponding with each of the said contact arms, the said contacts and contact arms being brought together when the said keys are depressed, a longitudinal depression on the said roller adapted to receive the said contact arm as soon as the latter has passed over the said contacts, a clockwork adapted to drive the said roller, a brake wheel on the said clockwork, a rod adapted to be moved by the depression of any one of the said keys, an upper and a lower brake shoe on the said rod, each of the said brake shoes being adapted to engage the said brake wheel accordingly as the said rod is raised or lowered, each of the said keys being adapted first to raise the rod to remove the said upper shoe from the said brake wheel, and thus to start the clockwork, and to raise the said rod further to bring the said lower shoe into engagement with the said brake wheel when the said contact arm descends into the said depression.

3. In a Morse telegraph transmitter wherein the contact roller is revolved by clockwork, a device for stopping and starting the clockwork, comprising a series of keys adapted to transmit the telegraphic currents when depressed, a rod pivoted at one end and extending across the rising ends of the said keys in a plane inclined to the plane in which the keys are pivoted, the said rod carrying means whereby when it is raised by the partial depression of any one of

the keys it releases the said clockwork, and when it is further raised by the complete depression of the said key it stops the clockwork, the inclination of the said rod to the pivots of the said keys being such that each key
5 raises the said rod to the same extent.

4. A telegraphic transmitter for the Morse system, comprising a roller, contacts on the said roller, a shaft whereon the said roller is mounted, the said shaft being axially movable to a distance corresponding with the distance be-
10 tween the center lines of two consecutive rows of con-

tacts on the said roller, a handle whereby the said shaft can be shifted, a spring catch, and two annular grooves on the said shaft adapted to engage with the said spring catch to determine the position of the said shaft.

In testimony whereof I have hereunto set my hand in 15 presence of two subscribing witnesses.

THEODORUS CORNELIS VAN DE STADT.

Witnesses:

GERRIT JOHAN VAN VELSEN,
AUGUST F. W. ANDES.