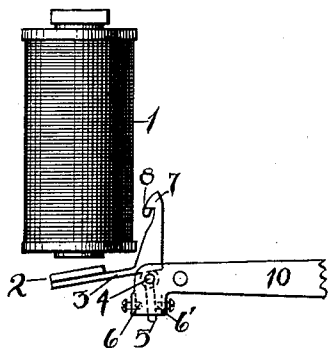
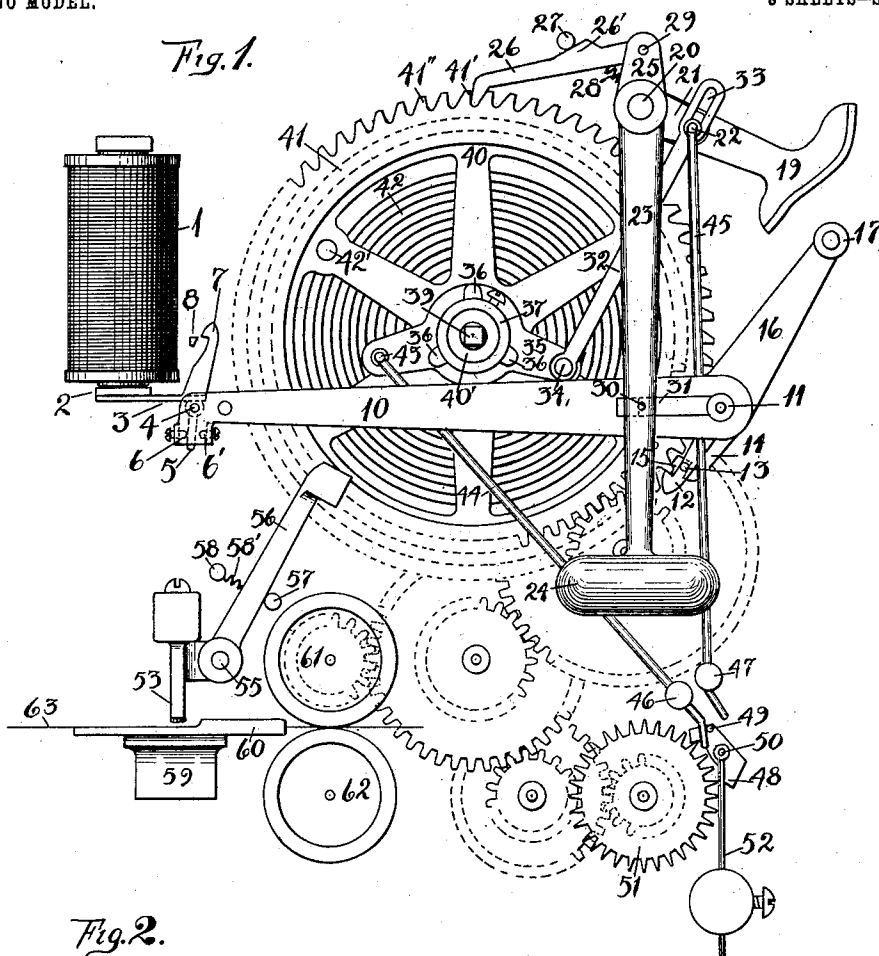


H. W. DOUGHTY & C. E. BEACH.
SIGNAL RECORDER.

APPLICATION FILED MAY 16, 1898.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES:

E. Shannon.
J. P. Beard.

INVENTORS

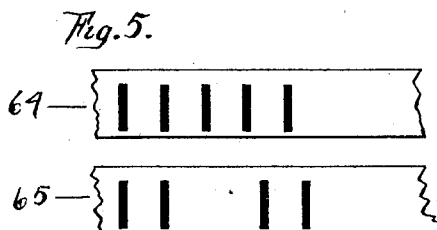
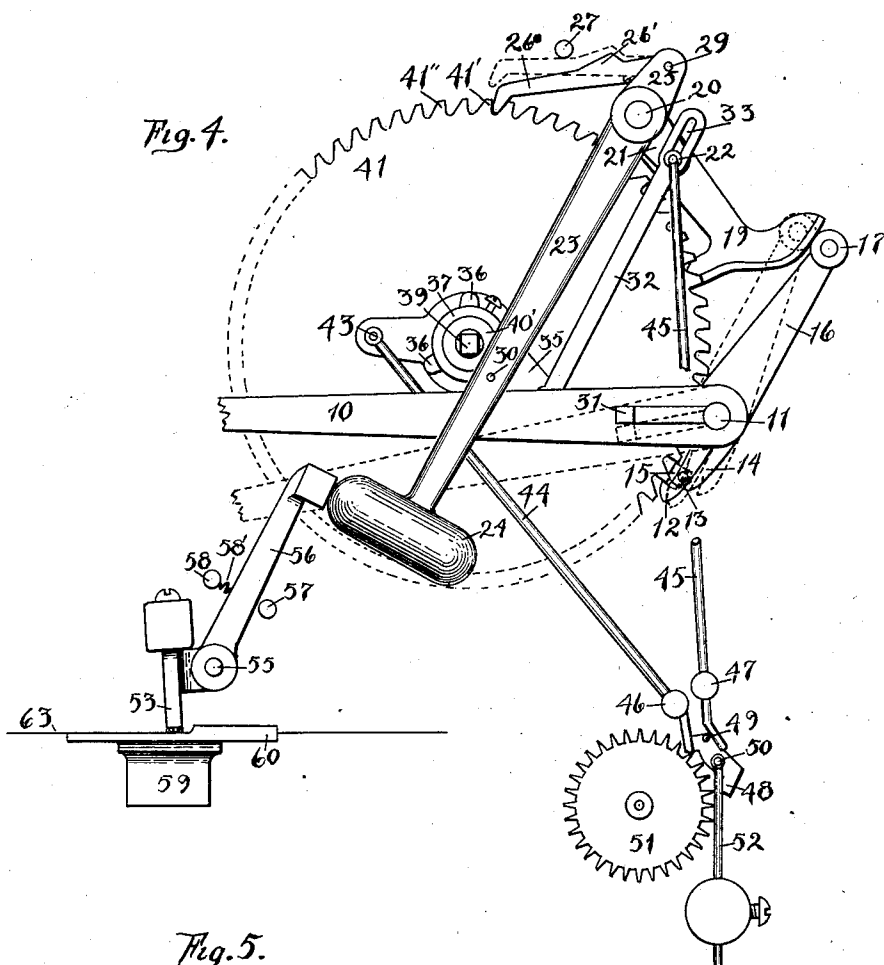
Herman W. Soughty
Clarence E. Beach;

H. W. DOUGHTY & C. E. BEACH.
SIGNAL RECORDER.

APPLICATION FILED MAY 16, 1898.

NO MODEL.

3 SHEETS—SHEET 2.



WITNESSES:

E. Shannon
J. C. Brand

INVENTORS

Herman W. Doughty
Clarence E. Beach

No. 726,882.

PATENTED MAY 5, 1903.

H. W. DOUGHTY & C. E. BEACH.

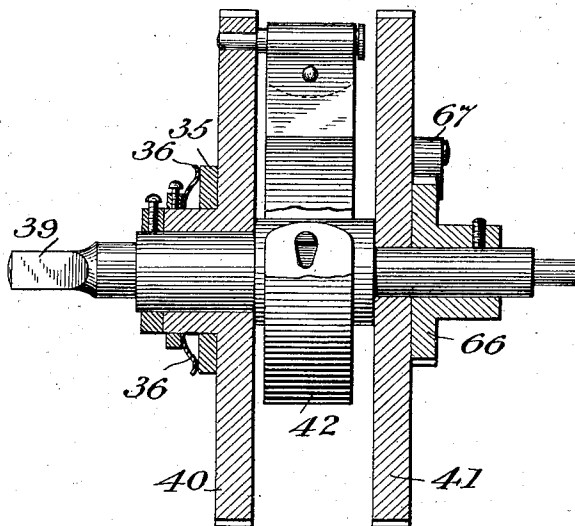
SIGNAL RECORDER.

APPLICATION FILED MAY 16, 1898.

NO MODEL.

3 SHEETS—SHEET 3.

Fig. 6.



Witnesses.

Robert Hunter
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Inventors.

Herman W. Doughty
Clarence E. Beach

UNITED STATES PATENT OFFICE.

HERMAN W. DOUGHTY AND CLARENCE E. BEACH, OF BINGHAMTON, NEW YORK, ASSIGNORS TO THE STAR ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

SIGNAL-RECORDER.

SPECIFICATION forming part of Letters Patent No. 726,882, dated May 5, 1903.

Application filed May 16, 1898. Serial No. 680,767. (No model.)

To all whom it may concern:

Be it known that we, HERMAN W. DOUGHTY and CLARENCE E. BEACH, citizens of the United States, residing at Binghamton, in the county of Broome and State of New York, have invented a new and useful Signal-Recorder, of which the following is a specification.

Our invention relates to electromechanical signal-recorders and embodies the following features: A mechanism for delivering the force of the motive power to the material to receive the record, a sensitive escapement device adapted to positively control the motive power, a feeding mechanism adapted to supply suitable material to receive the record, a controlling device for governing the feeding mechanism, and such other improvements as will be hereinafter more fully pointed out.

Our invention, which will be fully described in this specification, consists of the novel construction of these features.

In the drawings forming part of this specification, Figure 1 is a front elevation of the complete mechanism without the supporting-frame. Fig. 2 is a view of the electromagnetic escapement mechanism. Fig. 3 is a perspective view of our improved detent. Fig. 4 is a front elevation showing the positions assumed by certain parts during the operation of our device. Fig. 5 comprises two records made during the same interval of time. Fig. 6 is a view showing the position of the two revoluble parts upon the revoluble shaft.

Similar numerals of reference in the specification and drawings refer to similar parts throughout.

The general construction of our invention is as follows: A source of power is provided, which is controlled by an electromagnetic escapement mechanism, the magnets of which are adapted to be included in any electric circuit in which signals are produced—as, for example, in the circuit of a fire-alarm system.

The power controlled by the escapement is used to actuate a stamping or punching device adapted to impress a record upon a suitable material, such as a paper tape, this tape being propelled at a suitable rate to receive

the record by a feeding mechanism preferably actuated by the same source of power. The feeding mechanism is started by a controlling device released by the action of the stamping or punching device and is stopped by the controlling device after having operated a certain time after the completion of a record.

In detail the construction of our invention is as follows: A motor-spring 42 is arranged to actuate both the stamping or punching device and the feeding mechanism in the following manner, (see Fig. 6:) The revoluble part 40 (constituting the actuating member of the feeding mechanism) is mounted upon the revoluble shaft 39, so as to freely rotate thereon. To the revoluble part 40 is connected one end of the motor-spring 42, the other end of said motor-spring 42 being connected to the revoluble shaft 39. The revoluble shaft 39 is connected, through the medium of the ratchet-wheel 66 and ratchet-pawl 67, to the revoluble part 41, which constitutes the actuating member of the stamping or punching device. The revoluble part 41 (see Fig. 1) is provided with teeth 41' 41" upon its periphery, with which the pawl 26 may engage. The pawl 26 is connected to the shaft 20 through the medium of the crank 25 in such a manner as to cause rotation of said shaft 20 whenever the revoluble part 40 actuates the pawl 26. The rotation of the shaft 20 is communicated to the striking-arm 23 and hammer 24, which are mounted thereon. The length of the striking-arm 23 and the position of the stamping-arm 56 are such that when the striking-arm 23 is actuated the hammer 24 will come in contact with the stamping-arm 56, causing it to turn about the pivot 55, upon which it is mounted, and to carry with it the stamp or punch 53, (shown in Fig. 1 as an ink-pad fed from an ink-reservoir,) causing the stamp or punch 53 to come in contact with the tape 63. The tape 63 is guided by the tube 60. The tube 60 is supported on the frame of the instrument by the bracket 59. The revoluble part 41, constituting the actuating member of the stamping or punching device, is restrained by the detent 12, car-

ried by the shaft 11. The shaft 11 also carries the spring-detent 31, arranged to engage with the pin 30, carried by the striking-arm 23, the spring-detent 31 being so arranged as to spring aside and allow the passage of the pin 30 when the striking-arm returns to the position shown in Fig. 1 and to resist the movement of the striking-arm 23 in the opposite direction unless the shaft 11 rotates and moves the spring-detent 31 out of the path of the pin 30.

The construction of the electromagnetic escapement mechanism, which controls the detent, is as follows: The arms 10 and 10' are connected so as to move together and are pivoted upon the shaft 11, so as to move independently thereof, and are connected to the detent 12 through the medium of the projection 13, which extends from the detent 12 and lies between the sides of a notch 15, provided in an extension 14 of the arm 10'. This notch 15 is so arranged that when the arm 10 is in the position shown in Fig. 1 the side of the notch 15 is in contact with the projection 13, thus maintaining the detent 12 in engagement with the revoluble part 41. If now the free end of the arm 10' should rotate under the influence of gravity, the detent 12 would not be affected until the arm 10' had rotated upon the shaft 11 for some distance on account of the notch 15 being of greater width than the projection 13. The notch 15 and the movement of the arm 10' are so proportioned, however, that before the arm 10' reaches the limit of its movement the detent 12 will be entirely withdrawn from engagement with the revoluble part 41. When the armature 2 and parts moving therewith are in the position shown in Fig. 1, the arms 10 and 10' are supported against the force of gravity at the end opposite the shaft 11 by the attraction of the magnets 1 upon the armature 2, which is pivoted to the arms 10 and 10' through the support 3 and the pivot 4. When the armature 2 and parts moving therewith are in the position shown in Fig. 2, the arms 10 and 10' will be supported by the catch 7 engaging with the ledge 8, which latter is supported by the frame of the instrument. The armature 2 and catch 7 are connected rigidly together and are limited in their movement about the pivot 4 by the projection 5, which moves with the armature and whose motion is limited by the stops 6 and 6'. The arm 10' is also furnished with the extension 16, carrying the roller 17, which when the arms 10 and 10' rotate upon the shaft 11 engages with the cam 19, rigidly mounted upon the shaft 20. The construction of the cam 19 is such that when said cam 19 is rotated by the shaft 20 in a certain direction said cam 19 may so engage with the roller 17 as to cause the extension 16 and the arm 10, moving therewith, to be brought to the position shown in Fig. 1.

The construction of the feeding mechanism is as follows: The revoluble part 40 consti-

tutes the actuating member of the feeding mechanism, and a suitable train of gearing is provided to connect said revoluble part 40 with the feed-rolls 61 and 62, which are arranged to supply suitable material to receive the record to the stamping or punching device already described. The pendulum 52 is arranged, through the medium of the pallets 48, pivot 50, and escapement-wheel 51, to control the speed of the feeding mechanism, the escapement-wheel 51 being in the same train as the feed-rolls 61 and 62. The feeding mechanism is restrained by a controlling mechanism through the detent-rod 44, which engages with the stop 49, carried by the pallet 48. The detent-rod 44 is connected, through the clutch 35 (see Fig. 1) and the link 32, with the stamping or punching device by means of the pin 22 and the arm 21, moving with the shaft 20. Thus the detent-rod 44 may be withdrawn from engagement with the stop 49 by the movement of the stamping or punching device, and said detent-rod will not be caused to reengage with the stop 49, because the slot 33 in the link 32 allows the pin 22 to return to its normal position without influencing the link 32, and consequently not influencing the detent-rod 44. The clutch 35, which forms the connection between the link 32 and detent-rod 44, is pivoted upon the hub of the revoluble part 40 and is held in frictional contact with said revoluble part 40, the actuating member of the feeding mechanism. Thus as the feeding mechanism runs the clutch 35 carries the detent-rod 44 gradually into contact with the stop 49, and thus restrains the feeding mechanism. The detent-rod 45 is also provided and is directly connected to the stamping or punching device at the pin 22. This detent-rod 45 is of such length as to be normally out of contact with the stop 49 and to be momentarily brought into contact with said stop 49 when the stamping or punching device operates. This momentary contact stops the feeding mechanism immediately after it has been released by the detent-rod 44 and while the stamp or punch 53 is in contact with the tape 63, and thus prevents tearing or clogging the tape. Another effect of stopping the feeding mechanism at each impulse, which will be fully explained hereinafter, is that of shortening the interval between impulses, which are unusually close together.

We have thus far confined ourselves to a description of our invention, as shown in the annexed drawings; but we do not wish to be limited to such construction, as it has been merely adopted for the purpose of more clearly setting forth our invention. It is evident that various parts could be altered, moved, omitted, or replaced without departing from the spirit of our invention.

The parts of our device being in their normal positions, as shown in Fig. 1, the operation of the various parts is as follows: The punching or stamping device is restrained by

the detent 12, which in turn is restrained by the electromagnetic escapement mechanism. The magnets 1 are energized by the current of the circuit in which the instrument is included, and the attraction of said magnets for the armature 2 maintains the end of the arms 10 and 10', to which the armature 2 is connected, in the position shown against the action of gravity. If the current in the circuit is broken, as in the production of a signal, the ends of the arms 10 and 10', which carry the armature, will fall, and thus cause the arms 10 and 10' to withdraw the detent 12 from engagement with the projections upon the revoluble part 41. On account of the arrangement of the notch 15 and projection 13 the arms 10 and 10' will be free to rotate upon the shaft 11 for some distance before beginning to withdraw the detent 12 from engagement with the revoluble part 41. Thus by taking advantage of the momentum acquired by the arms 10 and 10' while freely falling the detent 12 may be operated with less weight in the rotating arms 10 and 10' and attached parts than would be necessary if the arms 10 and 10' were rigidly connected with the detent 12. This improvement allows the use of a weaker current, since the magnets 1 are required to operate a lighter escapement mechanism. The rotation of the shaft 11, accompanying the withdrawal of detent 12, causes the spring-detent 31 to rotate out of engagement with the pin 30, carried by the striking-arm 23, and leave the latter free. After the revoluble part 41 has been released by the detent 12 said revoluble part 41 under the action of the motor-spring 42 is free to rotate and cause the rotation of the shaft 20 and the attached parts (striking-arm 23, cam 19, and arm 21) through the medium of pawl 26 and crank 25. The rotation of the striking-arm 23, carrying with it the hammer 24, causes the stamp or punch 53 to record a signal by being brought into contact with the tape 63 by the movement of the stamping-arm 56 about the pivot 55. Before the hammer 24 has quite reached the end of its stroke the cam 19, which rotates with hammer 24, has, by means of the roller 17 and the extension 16, replaced the detent 12 in engagement with the succeeding projection of the revoluble part 41, thus arresting the movement of said revoluble part and allowing the further motion of the hammer 24, caused by its momentum, to withdraw the pawl 26 from engagement with the revoluble part by the assistance of the spring 28. When the hammer 24 falls back to its normal position under the combined influence of its weight and the rebound from the blow, the pawl 26 will be guided into engagement with the succeeding projection on the revoluble part 41 by the pin 27. The stamp or punch 53 is returned to its normal position, with the stamping-arm 56 against the stop 57, by the action of the spring 58'. When the action of the cam 19 caused the detent 12 to reengage with the revoluble

part 41, the arms 10 and 10' were also returned to their normal position and held there, if the magnets 1 were not energized, by the engagement of the catch 7 with the ledge 8. If the magnets 1 were energized or subsequently became so, the catch 7 would be withdrawn from the ledge 8 and the arms 10 and 10' would be supported by the attraction of the magnets 1 for the armature 2 as long as the energizing-current remained unbroken. When the hammer-arm 23 returns to its normal position, it is restrained against rebound by the engagement of the pin 30 with the spring-detent 31.

The operation of the portion of the instrument devoted to feeding the tape is as follows: Upon receiving a signal when the arm 21 moves with the stamping or punching device, as has been described, the escapement of the feeding-train is released by the withdrawal of the end of the detent-rod 44 from engagement with the stop 49 by means of the action of the clutch 35, rotating on the hub of the revoluble part 40 under the influence of the link 32. (See Fig. 4.) The feeding-train would now be free to operate but for the provision of the detent-rod 45, which being attached to the arm 21 by the pin 22 holds the escapement of the feed-train at rest as long as the hammer 24 is in the position shown in Fig. 4, and thus prevents the tape 63 from being torn by dragging under the stamp or punch 53. The escapement of the feed-train is, however, immediately released from the end of detent-rod 45 as soon as the hammer 24 and connected parts return to the positions shown in Fig. 1, and the feed-train is now free to run, feeding the tape at a rate determined by the pendulum 52. The detent-rod 44 is not returned to its position of engagement with stop 49 by the pin 22, owing to the slot 33 in the end of the link 32, which allows the pin 22 to be carried back to its original position without influencing link 32. The detent-rod 44 is, however, gradually returned to its position of engagement with stop 49 by the clutch 35, which being held in frictional contact with the actuating member of the feed-train (the revoluble part 40, shown in Fig. 1) by the spring 36 rotates with said revoluble part until the feed-train is restrained. The parts have now again assumed the position shown in Fig. 1. Evidently the distance which the tape will run after an impulse will be determined, other things being equal, by the movement of the link 32, and the distance might be increased by increasing this movement. If another impulse is sent before the tape has come to rest from a preceding impulse, the clutch 35 will be set back at each impulse to its position as shown in Fig. 4. The tape will therefore run an equal distance after the last impulse of a signal without regard to the number of impulses constituting such signal. Since the tape does not run during the instant of recording an impulse, but has to start again from rest af-

ter each impulse, a number of impulses in succession will occupy less space on the tape than a number of scattered impulses, although the time between the first and last impulses in each case may be the same. This effect is shown in Fig. 5, where 64 represents a record made in a period of time equal to that of record 65, but which contains one more impulse. The retardation is plain. If now the speed of the tape be so adjusted as to give the desired interval between recorded impulses when they are produced at the usual rate in succession, the effect of a longer interval in any signal will be lengthened beyond its exact proportion, or, for instance, the spaces between parts of a signal and between successive repetitions of signals in a fire-alarm circuit will be lengthened—a result which is often very desirable.

Having now fully described our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

1. An electromechanical stamping or punching device, a feeding mechanism arranged to propel suitable material to be stamped or punched, a detent arranged to control said feeding mechanism, and a friction-clutch constructed and arranged to operate said detent and to be suitably affected by the action of the stamping or punching device and by the feeding mechanism.

2. An electromechanical striking mechanism, a stamping or punching device operated by said striking mechanism, a feeding mechanism arranged to propel suitable material to be stamped or punched, a detent controlling said feeding mechanism, a friction-clutch operating said detent and so affected by the action of the feeding mechanism as to tend to cause the detent to interrupt the operation of said feeding mechanism, and a link so connecting said clutch with the striking mechanism as to counteract at certain times the effect upon said clutch of the action of the feeding mechanism.

3. An electromechanical striking mechanism, a stamping or punching device operated by said striking mechanism, a feeding mechanism arranged to propel suitable material to be stamped or punched, a detent arranged to control said feeding mechanism, a friction-clutch constructed and arranged to operate said detent and to be so affected by the action of said feeding mechanism as to tend to cause the detent to interrupt the operation of said feeding mechanism, and a link connecting said clutch with the striking mechanism.

4. In an electromagnetic escapement mechanism, the combination of an electromagnetically-controlled catch, a revoluble arm in the free end of which said catch is pivoted, and a ledge with which the catch may engage.

5. A magnetically-controlled catch, a revoluble arm in the free end of which said catch is pivoted, a ledge with which the catch may engage, a detent operated by the revoluble

arm, and a striking mechanism restrained by said detent.

6. In an electromagnetic escapement mechanism, the combination of magnets, an armature influenced thereby, a revoluble arm in the free end of which said armature is pivoted, a catch moving with the armature, and a ledge with which said catch may engage.

7. Magnets, an armature influenced thereby, a revoluble arm in the free end of which said armature is pivoted, a catch moving with the armature, a ledge with which said catch may engage, and a detent operated by the revoluble arm.

8. Magnets, an armature influenced thereby, a revoluble arm in the free end of which said armature is pivoted, a catch moving with the armature, a ledge with which said catch may engage, a detent operated by the revoluble arm, and a striking mechanism restrained by said detent.

9. Magnets, an armature influenced thereby, a revoluble arm in the free end of which said armature is pivoted, a catch moving with the armature, a ledge with which said catch may engage, a detent operated by the revoluble arm, a striking mechanism restrained by said detent, a stamping or punching device operated by the striking mechanism, a feeding mechanism, and a controlling mechanism for said feeding mechanism.

10. Magnets, an armature influenced thereby, a revoluble arm in the free end of which said armature is pivoted, a stop or stops arranged to limit the movement of the armature with relation to the arm, a catch moving with the armature, a ledge with which said catch may engage, and a detent operated by the revoluble arm.

11. Magnets, an armature influenced thereby, a revoluble arm in the free end of which said armature is pivoted, a projection moving with the armature, a stop or stops arranged to limit the movement of said projection, a catch moving with the armature, a ledge with which said catch may engage, and a detent operated by the revoluble arm.

12. Magnets, an armature influenced thereby, a revoluble arm in the free end of which said armature is pivoted, a projection moving with the armature, a stop or stops arranged to limit the movement of said projection, a catch moving with the armature, a ledge with which said catch may engage, a detent operated by the revoluble arm, and a striking mechanism restrained by said detent.

13. Magnets, an armature influenced thereby, a revoluble arm in the free end of which said armature is pivoted, a stop or stops arranged to limit the movement of the armature with relation to the arm, a catch moving with the armature, a ledge with which said catch may engage, a detent operated by the revoluble arm, a striking mechanism restrained by said detent, a stamping or punching device operated by the striking mechanism, a feeding mechanism arranged to propel suit-

able material to be stamped or punched, and a controlling mechanism for said feeding mechanism.

14. In combination with an electromagnetic escapement mechanism; a revoluble arm restrained by said mechanism, and a detent constructed for operation substantially as shown and described so that when said arm is released by the catch it will move through a sufficient space to acquire enough momentum to operate the detent before engaging with said detent.

15. In combination with an electromagnetic escapement mechanism; a revoluble arm restrained by said mechanism, a detent and an intermittent connection between the revoluble arm and detent substantially as and for the purpose described.

16. An electromagnetic escapement mechanism, a revoluble arm restrained by said mechanism, a detent, and a connection between the arm and detent constructed for operation substantially as shown and described so that when said arm is released by the catch it will move through a sufficient space to acquire enough momentum to operate the detent before engaging with said detent.

17. An electromagnetic escapement mechanism, a revoluble arm restrained by said mechanism, a detent, a connection between the arm and detent constructed for operation substantially as shown and described so that when said arm is released by the catch it will move through sufficient space to acquire enough momentum to operate the detent before engaging with said detent, and a striking mechanism restrained by said detent.

18. An electromagnetic escapement mechanism, a revoluble arm restrained by said mechanism, a detent, a connection between the arm and detent constructed for operation substantially as shown and described so that when said arm is released by the catch it will move through sufficient space to acquire enough momentum to operate the detent before engaging with said detent, a striking mechanism restrained by said detent, and a stamping or punching device operated by said striking mechanism.

19. An electromagnetic escapement mechanism, a revoluble arm restrained by said mechanism, a detent, a connection between the arm and detent constructed for operation substantially as shown and described so that when said arm is released by the catch it will move through a sufficient space to acquire enough momentum to operate the detent before engaging with said detent, a striking mechanism restrained by said detent, a stamping or punching device operated by said striking mechanism, and a feeding mechanism.

20. An electromagnetic escapement mechanism, a revoluble arm restrained by said mechanism, a detent, a connection between the arm and detent constructed for operation substantially as shown and described so that when said arm is released by the catch it will

move through a sufficient space to acquire enough momentum to operate the detent before engaging with said detent, a striking mechanism restrained by said detent, a stamping or punching device operated by said striking mechanism, a feeding mechanism, and a controlling mechanism for the feeding mechanism.

21. A magnetically-controlled detent, a revoluble part provided with projections with which said detent may engage, a striking-arm actuated by said revoluble part, and a catch moving with the detent and arranged to engage with the striking-arm at certain times.

22. A magnetically-controlled detent, a revoluble part restrained by said detent, a striking-arm actuated by said revoluble part, a catch moving with the detent and arranged to engage with the striking-arm at certain times, and means operated by the striking-arm for causing the detent to engage with the revoluble part whenever the striking-arm has arrived at a certain point in its operation.

23. A magnetically-controlled detent, a revoluble part provided with projections with which said detent may engage, a striking-arm actuated by said revoluble part, a catch moving with the detent and arranged to engage with the striking-arm at certain times, a stamping or punching device operated by said striking-arm, a feeding mechanism, and a controlling mechanism for said feeding mechanism.

24. An electromagnetic escapement mechanism, a revoluble arm restrained by said mechanism, a detent operated by said revoluble arm, a revoluble part restrained by said detent, a striking-arm actuated by the revoluble part, a catch moving with the detent and arranged to engage with the striking-arm at certain times, and means operated by the striking-arm for causing the detent to engage with the revoluble part whenever the striking-arm has arrived at a certain point in its operation.

25. An electromagnetic escapement mechanism, a revoluble arm restrained by said mechanism, a detent, a portion of which lies in the path of a part moving with the revoluble arm and normally separated therefrom by a sufficient space to enable the arm to acquire enough momentum to operate said detent, a revoluble part restrained by said detent, a striking-arm actuated by said revoluble part, a catch moving with the detent and arranged to engage with the striking-arm at certain times, and means operated by the striking-arm for causing the detent to engage with the revoluble part whenever the striking-arm has arrived at a certain point in its operation.

26. An electromagnetic escapement mechanism, a revoluble arm restrained by said mechanism, a detent a portion of which lies in the path of a part moving with the revoluble arm and normally separated therefrom by a sufficient space to enable the arm to ac-

quire enough momentum to operate said detent, a revoluble part restrained by said detent, a striking-arm actuated by said revoluble part, a catch moving with the detent and
 5 arranged to engage with the striking-arm at certain times, means operated by the striking-arm for causing the detent to engage with the revoluble part whenever the striking-arm has arrived at a certain point in its operation, a stamping or punching device operated
 10 by the striking-arm, and a feeding mechanism arranged to propel suitable material to be stamped or punched.

27. An electromagnetically-controlled catch, a revoluble arm restrained by said catch, a detent a portion of which lies in the path of a part moving with the revoluble arm and normally separated therefrom by a sufficient space to enable the arm to acquire enough momentum to operate said detent, a revoluble part restrained by said detent, a pawl engaging with said revoluble part, a striking-arm actuated by said pawl, a catch moving with the detent and arranged to engage with the striking-arm at certain times, means operated by the striking-arm for causing the detent to engage with the revoluble part whenever the striking-arm has arrived at a certain point in its operation, a stamping or punching device
 30 operated by the striking-arm, a feeding mechanism arranged to propel suitable material to be stamped or punched, and a controlling mechanism for the feeding mechanism.

28. A magnetically-controlled detent, a revoluble part provided with projections with which said detent may engage, a pawl engaging with the projections, a striking-arm actuated by said pawl, a cam moving with the striking-arm, a roller moving with the detent and so engaged by said cam that whenever the striking-arm has arrived at a certain point in its operation the detent will be brought in the path of the projections from the revoluble part.

29. An electromechanical striking mechanism, a stamping or punching device operated by said mechanism, a feeding mechanism arranged to propel suitable material to be stamped or punched, and a detent operated
 50 by the striking mechanism and arranged to interrupt the action of the feeding mechanism each time the striking mechanism operates.

30. An electromechanical striking mechanism, a stamping or punching device operated by said mechanism, a feeding mechanism arranged to propel suitable material to be stamped or punched, a friction-clutch carried by a part moving with the feeding mechanism and arranged to control said feeding mechanism, and a link so connecting said clutch with the striking mechanism as to counteract at certain times the effect upon said clutch of the action of the feeding mechanism.

31. An electromechanical striking mechanism, a stamping or punching device operated by said mechanism, a feeding mechanism arranged to propel suitable material to be

stamped or punched, a detent operated by the striking mechanism and arranged to interrupt the action of the feeding mechanism each time the striking mechanism operates, a friction-clutch carried by a part moving with the feeding mechanism, a link so connecting said clutch with the striking mechanism as to counteract at certain times the effect upon said clutch of the action of the feeding mechanism, and a connection controlling the feeding mechanism and operated by said clutch.

32. A motor-spring, two independently-mounted revoluble parts one of which is driven by one end of said motor-spring and the other of which is driven by the other end of said motor-spring, in combination with an electromechanical recording mechanism actuated by one of the revoluble parts, and a feeding mechanism actuated by the other revoluble part to supply material to receive the record.

33. A motor-spring, two independently-mounted revoluble parts one of which is driven by one end of said motor-spring and the other of which is driven by the other end of said motor-spring, an electromechanical striking mechanism actuated by one of the revoluble parts, a stamping or punching device operated by the striking mechanism, and a feeding mechanism actuated by the other revoluble part and arranged to propel suitable material to be stamped or punched.

34. A revoluble shaft, two revoluble parts independently mounted upon said shaft, a ratchet connecting one of the said revoluble parts to the shaft, a motor-spring one end of which is connected to the other revoluble part and the other end of which is connected to the shaft, an electromechanical striking mechanism actuated by one of the revoluble parts, a stamping or punching device operated by the striking mechanism, a feeding mechanism actuated by the other revoluble part and arranged to propel suitable material to be stamped or punched.

35. A revoluble shaft, two revoluble parts independently mounted upon said shaft, a ratchet connecting one of said revoluble parts to the shaft, a motor-spring one end of which is connected to the other revoluble part and the other end of which is connected to the shaft, an electromechanical striking mechanism actuated by one of the revoluble parts, a stamping or punching device operated by the striking mechanism, and a feeding mechanism actuated by the other revoluble part and arranged to propel suitable material to be stamped or punched.

36. A magnetically-controlled stamping or punching device, a feeding mechanism arranged to propel suitable material to be stamped or punched, a detent normally restraining the action of the feeding mechanism, means for disengaging said detent from the feeding mechanism when the stamping or punching device is in active operation, and

means for moving the detent back to engage with and interrupt the action of the feeding mechanism when said stamping or punching device is at rest.

5 37. Electromagnets, a stamping or punching device controlled thereby, a feeding mechanism arranged to propel suitable material to be stamped or punched, a detent adapted to normally engage with the feeding mechanism and thus prevent the operation of the

same, and means operated by the stamping or punching device for controlling at certain times the operation of said detent.

In witness whereof we have hereunto signed our names this 30th day of November, 1897.

HERMAN W. DOUGHTY.

CLARENCE E. BEACH.

Witnesses:

E. SHANNON,

J. C. BEARD.