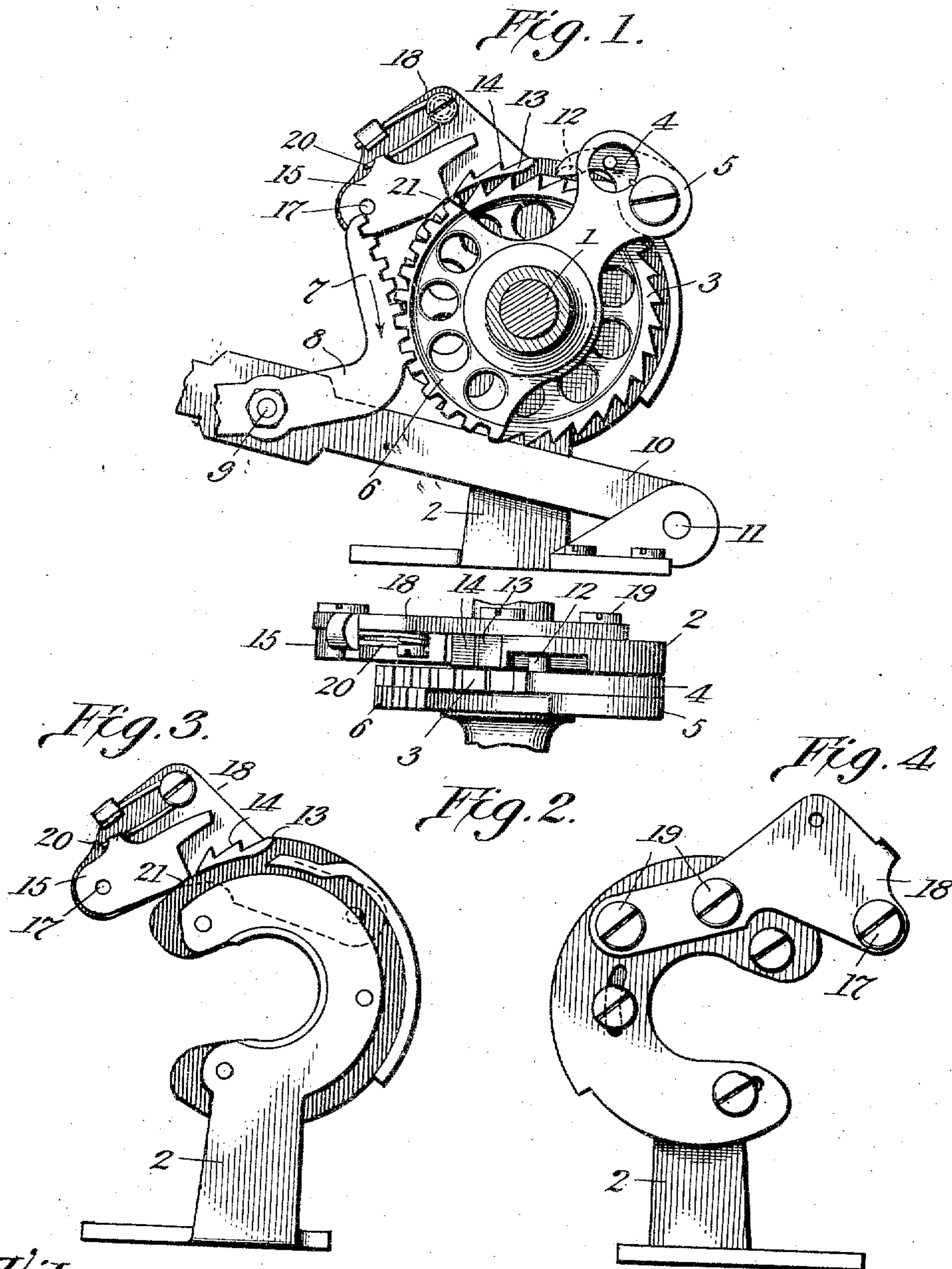


963,952.

J. A. SMITH.
DOGGING MECHANISM FOR ADDING MACHINES.
APPLICATION FILED AUG. 22, 1908.

Patented July 12, 1910.
2 SHEETS—SHEET 1.



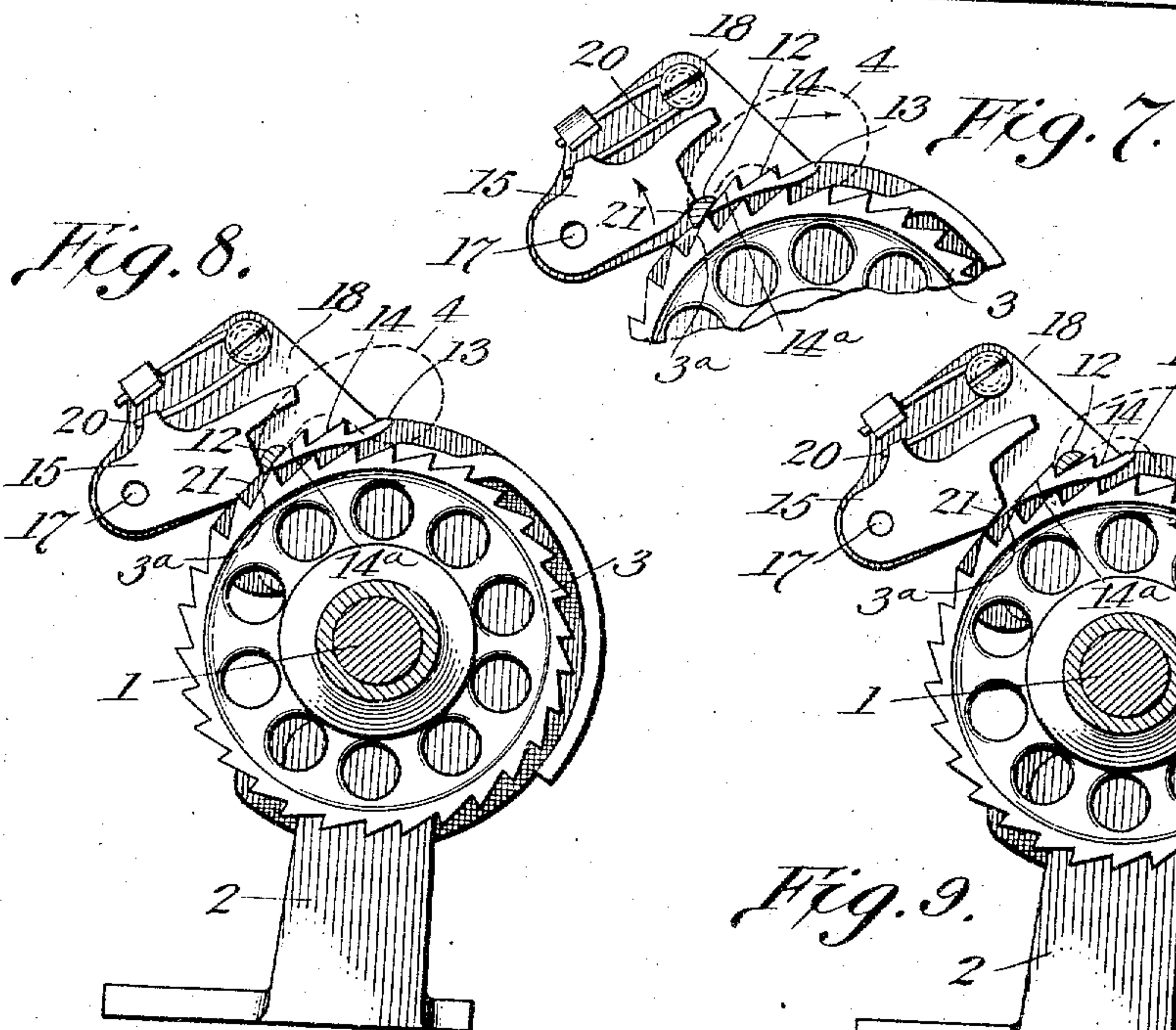
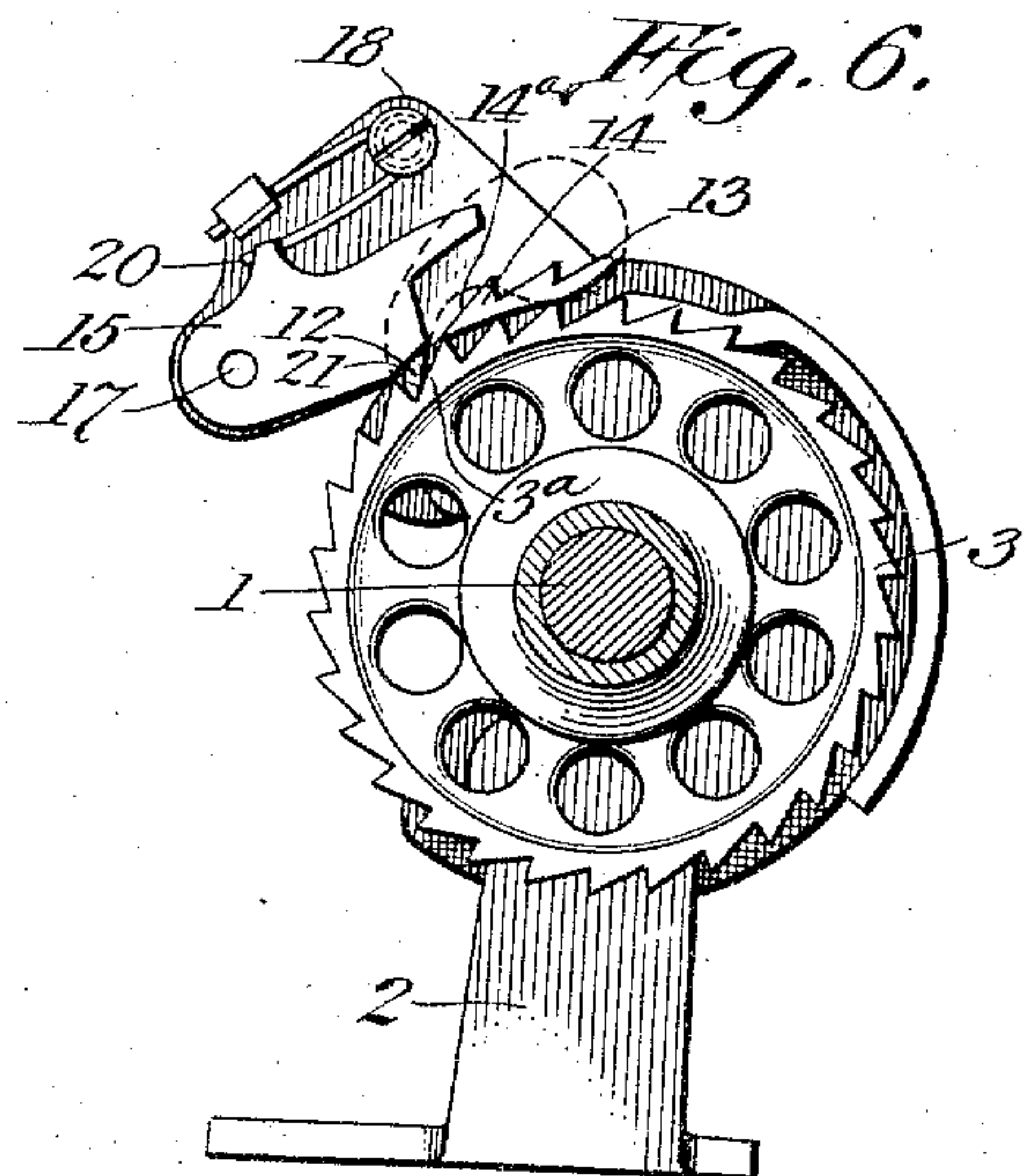
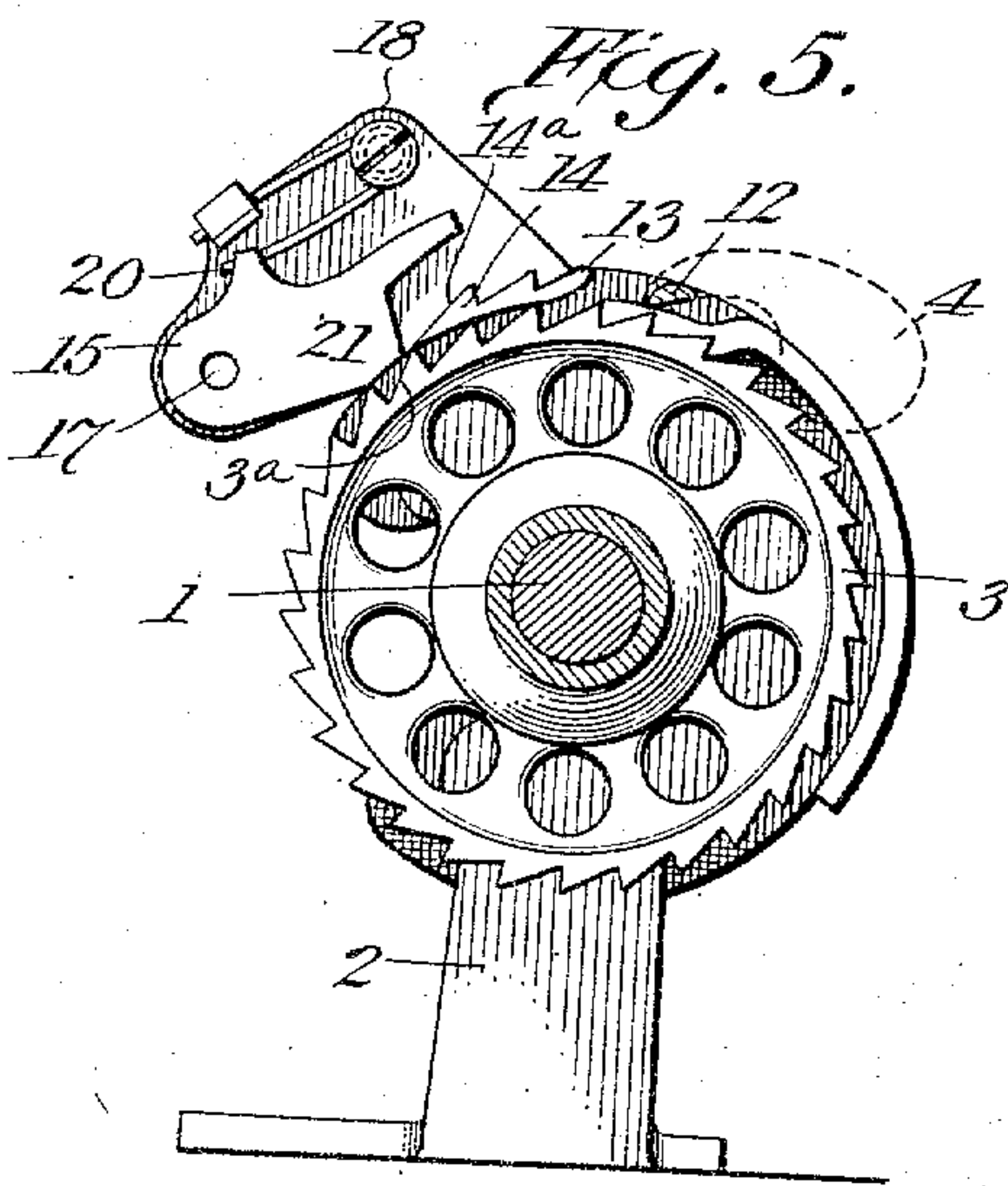
Witnesses:
H. A. Colver,
D. A. Colver

Inventor,
John A. Smith.
by L. G. Julian
Attorney.

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Patented July 12, 1910.

2 SHEETS—SHEET 2.



Witnesses:
J. M. Aufenber
D. A. Colne

Inventor,
John A. Smith.
 by *L. G. Julian*
 Attorney

UNITED STATES PATENT OFFICE.

JOHN A. SMITH, OF HARRISBURG, PENNSYLVANIA, ASSIGNOR TO ELLIOTT-FISHER COMPANY, OF HARRISBURG, PENNSYLVANIA, A CORPORATION OF DELAWARE.

DOGGING MECHANISM FOR ADDING-MACHINES.

963,952.

Specification of Letters Patent.

Patented July 12, 1910.

Application filed August 22, 1908. Serial No. 449,788.

To all whom it may concern:

Be it known that I, JOHN A. SMITH, a citizen of the United States of America, residing at Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Dogging Mechanism for Adding-Machines, of which the following is a specification.

10 This invention relates to means for dogging the actuating connections of an adding machine, and more particularly to dogging means devised with special reference to its cooperation with that form of actuating mechanism disclosed in Patent No. 829,971 to Laganke and Smith and embraced in the construction of what is known to commerce as the Elliott-Fisher typewriting and adding machine.

20 The object of the invention is to provide certain of the operating connections, more particularly those of lower order, with a check dog so arranged that effective reactivation of the operating mechanism will be prevented until the parts have been properly restored to normal position.

25 In the accompanying drawings Figure 1 is a sectional elevation of so much of one of the register operating connections of an Elliott-Fisher typewriting and adding machine as is necessary to illustrate the invention. Fig. 2 is a plan view of the subject-matter of Fig. 1. Fig. 3 is an elevation of the supporting bracket for one of the connections with a check dog in position. Fig. 4 is an elevation of the subject-matter of Fig. 3 viewed from the opposite side. Fig. 5 is a sectional elevation of one of the driving ratchets and its associated parts, the normal position of the driving pawl being indicated in dotted lines and the projection or beak of said pawl being shown in section. Fig. 6 is a similar view with the driving pawl indicated in its fully advanced or operated position. Fig. 7 is a similar view of the upper portion of the structure shown in Fig. 5, showing the parts in the positions they assume just after the retractile movement of the driving pawl is commenced. Fig. 8 is a view similar to Fig. 5, showing the positions assumed by the parts when the driving pawl has been retracted sufficiently to be dogged by the check dog, and Fig. 9 is still another view of this character showing the positions assumed by the parts when

the driving pawl has been sufficiently retracted to be engaged and dogged by the ratchet flange.

Each part wherever shown is indicated by the same reference numeral.

60 In order that the conditions which gave rise to the present invention may be properly understood, it is first in order to describe briefly one of the operating connections of an Elliott-Fisher machine. It should be understood that the machine referred to is a combined typewriter and adder the traveling carriage of which supports the keys and printing mechanism and also a master means in the form of a wheel operated from the typewriter keys and arranged to operate successive number wheels of a register mounted on the relatively stationary frame of the typewriter, all as fully described and shown in the patent to Laganke and Smith hereinbefore identified.

75 The master wheel shaft 1 is revolvably supported on the carriage, is passed through suitable brackets 2 and is arranged to be rotated in different degrees by each of a series of operating connections. Each of these connections includes what is termed a driving ratchet 3 fixed to the shaft 1 and arranged to be engaged and rotated by a driving pawl 4 pivoted at the outer end of a driving arm 5 in the form of a first-class lever fulcrumed on the shaft 1 and provided at its opposite end with a toothed segment 6 meshing with a rack 7 on the rear end of a lever 8 fulcrumed on the carriage of the typewriter and operatively connected, as at 9, to a second lever 10 fulcrumed as at 11 on the carriage and arranged to be swung by a key of the typewriter. So far as the present invention is concerned, however, it is immaterial how the lever 10 is operated. Suffice it to say that upon the depression of a typewriter key the lever 10 is swung downwardly and the rack 7 on the lever 8 is depressed to swing the driving arm 5 for the purpose of advancing the driving pawl 4.

100 At the front end of the pawl 4 is located a beak or projection 12 which rides under a guard flange 13 on the bracket and engages a tooth of the driving ratchet 3. Further movement of the driving arm serves to rotate the driving ratchet through the medium of the pawl 4 and thus rotates the shaft 1 and the master wheel (not shown) which in turn operates a denominational member of

the computing device or register. The guard flange 13 is concentric with the driving ratchet and serves to maintain the engagement between the pawl and ratchet until the stroke of the arm is completed. The guard flange 13 is also utilized to dog the operating connection against reactivation during its retractile movement, it being observed that the flange 13 is provided with ratchet teeth 14 over which the projection 12 of the pawl 4 is designed to ride during the retraction of the parts, see Fig. 9.

The manner in which the projection on the pawl is compelled to pass up over the guard flange during its retractile movement will be clearly apparent by an inspection of Fig. 6 of the drawings. In this figure it will be seen that when the stroke of the driving arm has been completed the angular face 3^a of a tooth of the driving ratchet 3 will be in position to form a substantial continuation of the angular face 14^a of the most advanced tooth 14 of the ratchet flange 13. As a consequence, the retraction of the driving arm 5 will cause the projection 12 of the driving pawl to ride back over the inclined faces 3^a and 14^a so that during such retraction the projection on the driving pawl will necessarily pass back over the ratchet flange 13 and will be dogged by the teeth thereof until the retractile movement is completed, after which the pawl resumes its normal position, shown in Fig. 5. Upon the next forward movement of the pawl it rides under the flange 13 to engage and operate the driving ratchet 3. The mechanism thus far described is characteristic of the Elliott-Fisher machine of commerce.

The dogging mechanism.—It has been stated that upon the retraction of the driving arm the projection 12 of the pawl 4 rides back over the inclined faces 3^a and 14^a of the teeth of the driving ratchet 3 and the ratchet flange 13. It will be apparent that during this retractile movement the pawl is not dogged against reactivation, that is to say, the parts are not dogged against forward movement until the projection 12 of the driving pawl has moved back from the position shown in Fig. 6 to that shown in Fig. 9 and this fact gives rise to the difficulty which my present invention is particularly designed to overcome.

As is well understood by those skilled in the art, the escapement of the Elliott-Fisher typewriter is operated during the early part of the upward or retractile movement of the key to release the carriage. The carriage release is effective while the projection 12 of the driving pawl is moving back to engage a tooth of the flange 13. Therefore it sometimes happens that if the key is given two sharp strokes in quick succession the machine will be operated to print and add and will then escape to the next position and the

digit will be again printed without any corresponding actuation of the register. In other words, if the key is operated a second time before the projection 12 of the driving pawl has moved back a sufficient distance to engage a tooth of the flange 13, the digit will be printed but the actuating mechanism will not be operated because the false operation will have occurred before the driving pawl has returned to its normal position and in fact before said pawl has moved back a sufficient distance to be dogged by the ratchet flange. In order to overcome this fault, which, while of infrequent occurrence, is obviously objectionable, I provide a swinging check dog 15 in position to engage the projection 12 of the driving pawl and to dog the same against forward movement the instant said projection has moved beyond the range of the driving ratchet 3, see Figs. 7 and 8.

The dog 15 is pivoted at 17 on a bracket 18, preferably secured, as indicated at 19, to the supporting bracket of the particular operating connection to be dogged. The dog 15 is urged toward its dogging position by a spring 20 and is provided adjacent to its rear end with a cam face 21 which overlies the projection 12 of the driving pawl in the extreme forward or completely operated position of the latter, see Fig. 6. It follows therefore that when the connection is retracted the projection 12 as it moves backward will lift the check dog 15, see Fig. 7, the dog dropping behind the projection as soon as the latter clears the driving ratchet and thus effectively dogging the connection against such forward movement as would serve to effect printing without adding in the event that the same key is operated before the driving pawl has moved back sufficiently to be dogged by the ratchet flange 13.

In Figs. 5 to 9 inclusive, an entire cycle of operation is illustrated. In Fig. 5 the parts are in normal position; in Fig. 6 the driving pawl is shown in its fully operated position; in Fig. 7 the driving pawl is shown in that early stage of its retractile movement during which it lifts the check dog 15 out of the path of the projection 12; in Fig. 8 the check dog is shown dropped into position to check the driving pawl; in Fig. 9 the projection on the pawl is shown dogged by the ratchet flange, and from this position the parts return to the normal position shown in Fig. 5. It will be seen therefore that in addition to the usual permanent or stationary ratchet dogging flange 13, the operating connection is provided with an additional movable dog 15 which serves to dog the connection prior to the engagement of the connection with the stationary dogging means.

It is thought that from the foregoing, the construction, operation and advantages of

my dogging device will be clearly comprehended, but I wish to be understood as reserving the right to effect such changes, modifications or variations of the illustrated structure as may come fairly within the scope of the protection prayed.

What I claim is:—

1. In a device of the character described, the combination with a member movable in two directions, of a plurality of dogging devices acting successively to dog the member during its movement in one direction, one of said dogging devices including a plurality of ratchet teeth.

2. In a device of the character described, the combination with a driving member having an idle retractile movement, of a ratchet device arranged to dog said member during a portion of its retractile movement, and a movable check dog arranged to dog the member prior to the engagement of the same with the ratchet device.

3. In an operating connection for adding machines, the combination with a driving ratchet, of a driving pawl arranged to engage and operate the ratchet, a movable check dog cooperating with the driving pawl, and a stationary dogging device cooperating with the pawl at a different point in the movement thereof.

4. In an operating connection for adding machines, the combination with a driving ratchet, a driving pawl cooperating therewith, a stationary ratchet device for dogging the driving pawl during a portion of

its retractile movement, and a movable check dog coacting with the driving pawl prior to the engagement of the latter with the ratchet device and yieldable to permit the movement of the check pawl into position to be dogged by the check dog.

5. In a device of the character described, the combination with a driving member, of a ratchet device arranged to dog said member during a portion of its movement in one direction, and a movable check dog arranged to dog the member during the movement of the member in the same direction but prior to the engagement of the same with the ratchet device.

6. In a device of the character described, the combination with a shaft and a ratchet wheel fixed thereto, of a fixed ratchet flange opposite the periphery of the ratchet wheel, a check dog beyond the advanced end of the ratchet flange, a driving arm swung from the shaft, a driving pawl carried by the arm and arranged to engage the ratchet wheel and having a portion thereof disposed to ride under the ratchet flange and the check dog and to be dogged successively during its retractile movement by the check dog and ratchet flange.

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

JOHN A. SMITH.

Witnesses:

HARRY W. CROUSE,
H. P. ZERBY.