May 1, 1923.

1,453,578

F. H. ARMSTRONG

TYPEWRITING MACHINE

Filed Nov. 9, 1918

2 Sheets-Sheet 1

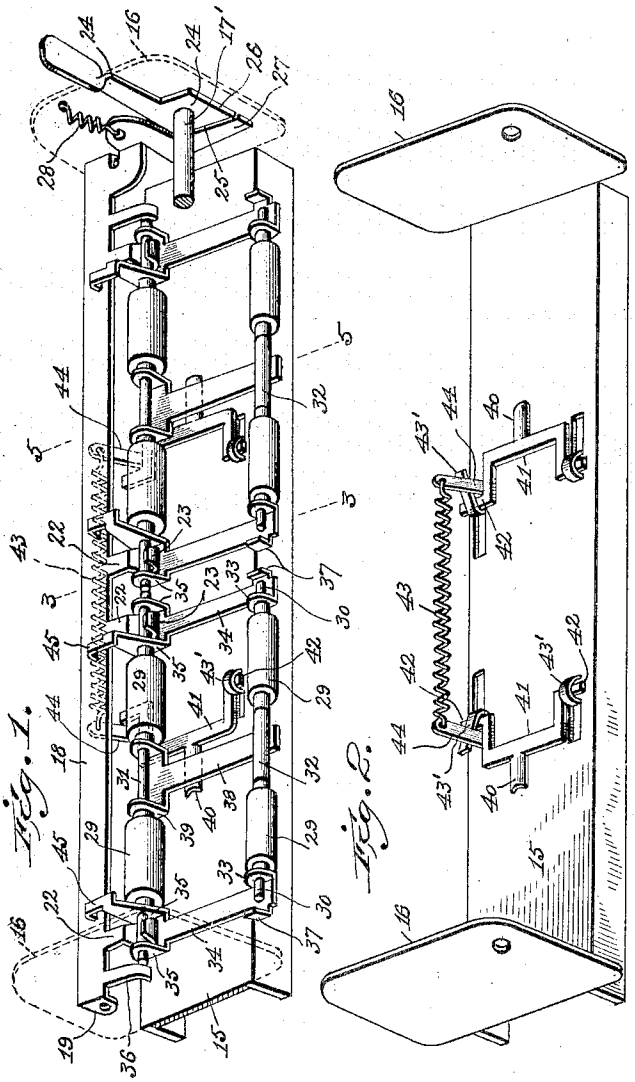


Fig. 1.

Fig. 2.

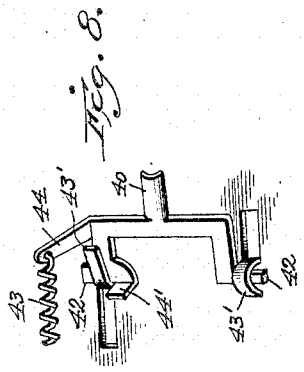


Fig. 8.

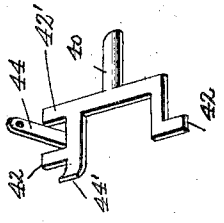


Fig. 7.

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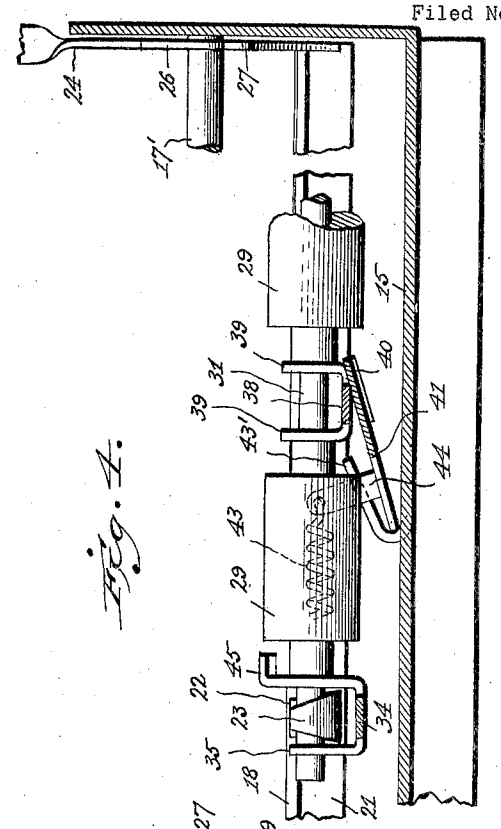


Fig. 4.

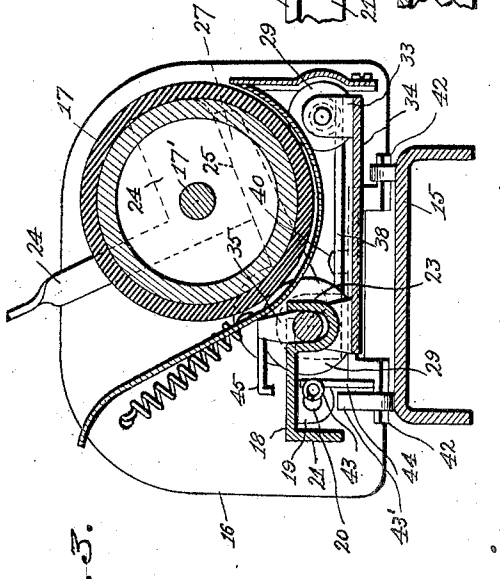


Fig. 3.

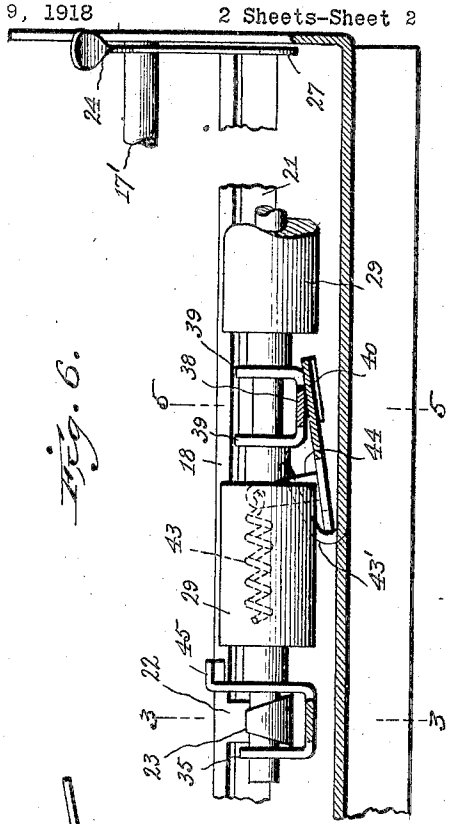


Fig. 6.

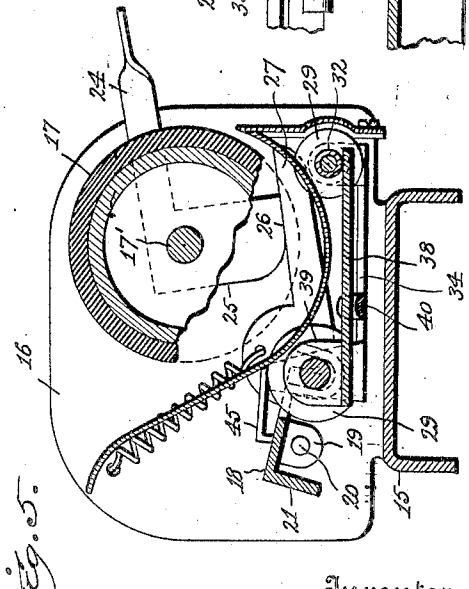


Fig. 5.

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Patented May 1, 1923. 1,453,578

UNITED STATES PATENT OFFICE.

FRANK H. ARMSTRONG, OF AUBURN, NEW YORK, ASSIGNOR TO CORONA TYPEWRITER COMPANY, INC., OF GROTON, NEW YORK, A CORPORATION OF NEW YORK.

TYPEWRITING MACHINE.

Application filed November 9, 1918. Serial No. 261,850.

To all whom it may concern:

Be it known that I, FRANK H. ARMSTRONG, a citizen of the United States of America, and a resident of Auburn, county of Cayuga, State of New York, have invented certain new and useful Improvements in Typewriting Machines, of which the following is a full and clear specification.

This invention has relation to that type of paper-feeding devices covered in my copending application Serial No. 256,195, filed September 30, 1918, and the object of the present improvements is to provide a simple and easily-manufactured mechanism for normally pressing the two paper-feed-frames toward the platen, as more fully hereinafter set forth.

In the drawings—

Fig. 1 is a perspective view of the platen-carriage provided with my invention, the platen-roller and the end-flanges being omitted;

Fig. 2 is a perspective view of the platen-carriage with the paper-feed-roll-frames removed;

Fig. 3 is a vertical transverse sectional view showing the feed-roll-frame in working position, this section being indicated by the dotted line 3—3 in Fig. 6 as well as in Fig. 1;

Fig. 4 is a partial longitudinal section showing the feed-roll-frame in the same position as in Fig. 3;

Fig. 5 is a vertical transverse section on the line 5—5 of Figs. 1 and 6, the platen-roll being partly broken away;

Fig. 6 is a partial longitudinal section showing the feed-roll-frame in a position corresponding to that in Fig. 5;

Figs. 7 and 8 are detail perspective views showing modifications of the rockable pressure members.

Referring to the drawings annexed by reference-characters, 15 designates the platen-carriage provided at each end with an upstanding flange 16 in which the ends of the shaft 17′ of the platen 17 are journaled in the usual manner.

Extending between the end-flanges 16, the full length of the carriage, is a sheet-metal bar 18 which constitutes virtually a rock-shaft by reason of the fact that each of its extreme ends is bent downwardly to form an ear 19, which ear is pivotally supported on a screw-pivot 20 threaded from the outside inwardly through the end-flange 16, the bar being rockable upon these pivots 20. This bar is located behind the platen and at a point about on a horizontal level with the under face of the platen. The rear edge of the bar is bent downwardly to form a longitudinal flange 21 to stiffen the rock-bar, and the front edge of this rock-bar is provided with four forwardly-extending lever-fingers 22, each of which at its extreme forward end is bent downwardly and then upwardly to form a hook 23 which is open at its upper side. This rockable plate-like shaft 18 may be manually rocked by means of a cam-lever 24 pivotally mounted on platen-shaft 17′ close to the inner face of one of the end-flanges 16 of the carriage, the cam part of this lever being provided with two working faces 25 and 26, adapted to alternately cooperate with the upper edge of an arm 27 formed integral with the rock-bar 18 and bent to fit flatwise against the adjacent end 16 of the carriage so that its free forward end will lie directly under the two working faces of the cam 24, said arm 27 being normally held up against one or the other of said working-faces 24 and 25 by a retractile spring 28. When the arm 27 lies against the cam-face 25, the rockable bar 18 will be in its normal position, i. e., with its upper face horizontal, and the feed-rolls, as hereinafter described, will be in their normal position against the platen or the work-sheet thereon; but when the cam-lever 24 is turned to swing down the forward end of the arm 27 and thus bring the other cam-face 26 into locking relation with the upper edge of the arm 27, the rockable bar 18 will have its forward edge tilted downwardly and thus, in the manner hereinafter set forth, cause the feed-rolls to be retracted from working position.

The feed-rolls 29 are arranged in two sets, one at each side of the mid-length of the

platen. Each set consists of a front-shaft 30 and a corresponding rear-shaft 31, each shaft carrying one or more of the feed-rolls 29, two being shown on each shaft in the present structure, a loose spacing-sleeve 32 being arranged between the front pair to space them apart. Each of the front-shafts 30 is journaled loosely in upstanding ears 33 formed integral with the forward ends of a pair of flat bars 34, and each of the rear-shafts 31 has each of its ends journaled in a pair of upstanding ears 35 formed integrally with the rear end of each of the bars 34, so that each set of rolls forms a substantially rectangular frame consisting of a front-shaft 30, a rear-shaft 31, and the two bars 34 which connect corresponding ends of said shafts. The rear ends of the bars 34 are so located that when the fingers 22 are depressed the lower rounded portions of the hooks 23 on the forward ends of the fingers bear downwardly upon the rear ends of the bars 34 and thus tilt said bars downwardly. In its preferred form, which is that illustrated, I arrange the bent ends of the fingers 22 so that each will lie between a pair of the ears 35 in such position that the shaft 31 will extend through the hook-like part 23 of the finger, the purpose in turning up the extreme end of the finger to form said hook being to engage the front face of the shaft 31 and thus assist in holding the parts in their assembled relation.

To assist in holding the shafts 31 against undue endwise movement in their supporting ears 35, I provide the bar 18 with forwardly-extending fingers 36 which are bent downwardly at their forward ends to lie in axial alinement with said shafts, a slight distance from the ends of said shafts. In the present construction, these shafts 31 need only be journaled loosely in the ears 35 so that they will naturally have a slight endwise movement in these ears; it is for this reason that I provide said stop-lugs 36. In this way, I avoid the necessity of providing the shafts 31 with stop-collars adapted to abut against the ears 35. For the same reason, I provide each of the forward ends of the bars 34 with an upstanding stop-lug 37 in position to restrict the endwise movement of the front-shafts 30. The foregoing parts are constructed and arranged substantially as in my aforesaid copending application.

Each of the rectangular frames, of which the parts 34 form the end-bars, is supported in the following manner: pivotally hung upon the rear-shaft 31, at a point between the rolls 29, is an equalizing bar 38 whose forward end presses flatwise upwardly against the sleeve 32 on the front-shaft, the rear end of said bar 38 being widened and being provided with upstanding ears 39 which form the connection with said shaft 31, these ears serving also as stops to space the rolls 29. This bar 38 rests upon a lateral finger 40 formed integral with a rockable yoke 41 supported on the upper face of the platen-carriage. The front end of this rockable yoke member is pivotally connected to the platen-carriage by an integral pivot 42 which is confined in a closed ear 43′ struck up from the platen-carriage, while the rear pivot 42 of this rockable yoke has a bearing in the crotch formed by the ear 43′ formed intergral with the platen-carriage top, this ear 43′ inclining upwardly and laterally toward the adjacent end of the carriage. The pivots 42 are held in the crotch formed by ear 43′ by means of a coil-spring 43 which connects the rockable yokes 41 at the opposite sides of the center of the carriage-frame, the connection to the yoke-members 41 being through the medium of upstanding arms 44. The action of the spring 43 is to constantly tend to swing the yoke-members 41 upwardly, so that their fingers 40 constantly press upwardly against the bars 38 and thus normally press the feed-roll-frames toward the platen. The employment of open pivot-receiving eyes at the rear ends of the yoke-members is advantageous in that manufacture and assembly of the parts is facilitated. The yoke-members are, as stated, held in said open eyes 43′ by means of the spring 43, and lateral shifting of the yoke-members is prevented by locating the upstanding arms 44 at a point on the yoke-members where they will abut against the front edges of the ears 43′ and thus act as stops to prevent dislocation of the yoke-members. It will thus be seen that when the rock-shaft 18 is rocked to have its upper face in horizontal position, the fingers 22 will be in their raised position and the two roller-sets will be free to be pressed up against the platen through the medium of the bars 38 and their spring-actuated connections; and that when said bar 18 is rocked by swinging arm 27 downwardly in the manner heretofore described the downwardly-bent ends of the fingers 22 will strike against the rear ends of all the bars 34 and first swing them about the front feed-roll shafts 30 far enough to retract the rear feed-rolls 29 but still leave the front feed-rolls in working position. During this initial action the rear ends of the bars 38 are swung downwardly and partially depress the swinging yokes 41 against the tension of spring 43. A further depression of the fingers 22 will swing the bars 34 and 38 downward about the axis of the rock-shaft 18 against the tension of spring 43 (and thus bring about a depression of the forward ends of the bars 34 and 38 and the front feed-roll shafts 30 so as to cast off the front feed-roll 29) by the following means: Several (preferably 4) of the ears 35 are each extended upwardly and rearwardly to a

point above the upper flat surface of the rock-bar 18, thus forming hook-like arms 45. The initial tilting of the rock-bar 18 and the bars 34 brings the rear extremities of the arms 45 into contact with said rock-bar 18 so that after the rear feed-rolls have been retracted from the platen these arms 45 interlock with the rock-bar 18 in the manner of a knuckle-joint and thereby cause the further tilting of the rock-bar 18 to carry down with it the forward ends of the bars 34, as shown in Fig. 5 (and as fully set forth in my aforesaid copending application), in which position the spring 43 is extended to maximum and the rocking supporting-plates 41 are pressed down flatwise against the upper surface of the platen-carriage 15. The bars 38 swing about the axis of rock-shaft 18 in unison with the bars 34 during the final cast-off movement of the rock-shaft, just described, owing to the connection of these bars 38 with the rear feed-roll shafts and the pressure of the front feed-roll shafts on the forward ends of these bars 38 during the downward swinging movement of bars 34 and the front feed-roll shafts about the axis of the rock-shaft. The front feed-rolls are thus cast off against the tension of spring 43 subsequently to the casting off of the rear feed-rolls, the swinging movement of bars 38 about the axis of the rock-shaft serving to lower the forward ends of said bars and complete the depression of yokes 41 to a substantially horizontal position. The parts are locked in this off position by means of the cam-face 26 of the cam-lever hereinbefore described; and when the handle-end of the cam-lever is moved rearwardly, as shown in full lines in Fig. 3, to bring the other cam-face 25 into action, the spring 28 will draw the rock-bar 18 to normal position and thus permit spring 43 to restore all the feed-rolls to working position.

To facilitate the rocking of the bars 38 on the fingers 40, the upper face of these fingers are convexed. In the modification shown in Fig. 8, the arm 44 is formed on the outer corner of the yoke-member 41, where it will not serve as a stop-member but will increase the leverage exerted by the spring 43 because of its location at a point farther from the pivotal-point of the yoke-member; and a special stop-lug 44′ is employed in this structure. In Fig. 7, there is shown a lateral ear 42′ which is a companion to the flat ear 42 and which assists said ear 42 in forming a stop to impinge against ear 43′ to limit the upward swing of the yoke. It will be observed that the lever-fingers 45 are capable of being bent upwardly and downwardly with respect to the upper face of the rock-shaft 18; this permits a nice individual adjustment of these fingers to be made so that after the parts are assembled an adjustment of these parts may be made such as will ensure all the fingers acting in unison.

The nature and scope of the invention having been thus indicated and its preferred embodiment having been specifically described, what is claimed as new is:

1. In a typewriting machine, a platen carriage, a platen on the carriage, a feed-roll-frame on the carriage having front and rear feed-roll shafts, feed rolls on said shafts, means for forcing the frame downwardly away from the platen, and means for resiliently pressing said frame upwardly toward the platen embodying a rockable yoke-like member pivotally mounted on the platen-carriage, a spring for actuating said member, and a bar supported on said member pivotally connected to one of the shafts of the feed-roll-frame and normally bearing upwardly against the under side of the other shaft.

2. In a typewriting machine, a platen carriage, a platen rotatably mounted on the carriage, a feed-roll-frame, means for forcing the frame away from the platen, and means for resiliently pressing said frame toward the platen embodying a rockable member pivotally mounted on the platen-carriage, the pivotal means at one end of this member consisting of an open eye on the carriage and a pivot carried by the rockable member, and a spring for holding said pivot in said eye and serving at the same time to actuate the rockable member.

3. In a typewriting machine, a platen carriage, a platen on the carriage, a feed-roll-frame, on the carriage having front and rear feed-roll-supporting shaft, feed rolls on the shafts, means for forcing the frame downwardly away from the platen, and means for resiliently pressing said frame toward the platen embodying a bar pivotally hung from one of the shafts of the feed-roll-frame by means of integral ears formed on the bar, said bar having its other end pressing upwardly against the other shaft of the feed-roll-frame, and spring-actuated means normally pressing upwardly on said bar.

4. In a typewriting machine, a platen carriage, a platen on the carriage, a feed-roll-frame on the carriage, means for forcing the frame away from the platen, and means for resiliently pressing said frame toward the platen embodying a rockable member on the platen-carriage, the pivotal means at one end of this rockable member consisting of an open eye and a pivot working therein, a spring for holding this pivot in said open eye and rocking the member in one direction, and a stop-member on the rockable member for preventing endwise movement of the rockable member.

5. In a typewriting machine, a platen carriage, a platen on the carriage, a feed-roll-frame on the carriage having front and

rear feed-roll-supporting shafts, means for forcing the frame downwardly away from the platen, and means for resiliently pressing said frame toward the platen embodying an equalizing bar connecting the front and rear shafts of the feed-roll-frame midway their ends, a rockable member mounted on the platen-carriage, and a spring for actuating said member, said member being provided with a finger engaging the under side of said equalizing bar and having its engaging face rounded to form a pivotal support for said equalizing bar.

6. In a typewriting machine, the combination of a platen carriage, a platen rotatably mounted on the carriage, a pair of floating feed-roll frames arranged end to end, tandem feed-rolls mounted in each of said frames, and yieldable means for supporting said frames and pressing the same toward the platen, said supporting means being connected with the frames substantially midway the ends of the frames at points at opposite sides of the longitudinal center lines of the frames.

7. In a typewriting machine, the combination of a platen carriage, a platen on the carriage, a floating feed-roll frame under the platen, cast-off mechanism for the frame having a pivotal vertical lost-motion connection with one longitudinal edge of the frame and interlocked with the frame to restrain side and endwise movements of the frame, and yieldable means interposed between the frame and carriage engaging the frame substantially midway the ends of the frame adjacent both longitudinal edges of said frame and forming with the cast-off mechanism the only supporting means for the frame.

8. In a typewriting machine, the combination of a platen carriage, a platen rotatably mounted on the carriage, tandem feed-roll shafts, two feed-rolls on each of the shafts, a manually rockable cast-off shaft, connections between the cast-off shaft and feed-roll shafts for successively casting off the feed-rolls when the cast-off shaft is rocked in one direction, a pressure distributing member engaging both feed roll-shafts between the aligned feed rolls on each shaft, and yieldable means on the carriage having a rocking connection with said member at a point intermediate the feed-roll shafts.

9. In a paper-feed mechanism, the combination of a platen, a pair of tandem feed-roll shafts, feed-rolls on each shaft at both sides of mid-length of the shaft, a spring-urged member, pressure equalizing means loosely and rockably mounted on the spring-urged member intermediate the shafts and pressing against said shafts midway the ends of the shafts, and a pair of rigid members in which the ends of the shafts are mounted.

10. In a paper feed mechanism, the combination of a platen, a pair of tandem feed-roll shafts, a member extending transversely of the platen and pressing against the shafts toward the platen substantially midway the ends of said shafts, feed-rolls on each shaft at both sides of said member, and spring-urged means supporting said member intermediate the shafts to tilt at either end away from the platen and pressing said member toward the platen.

11. In a paper feed mechanism, the combination of a platen, a pair of tandem feed-roll shafts, a member extending transversely of the platen and pressing against the shafts toward the platen substantially midway the ends of said shafts, feed-rolls on each shaft at both sides of said member, a pivotally mounted device tiltably supporting said member intermediate the shafts to yield at either end away from the platen, and a spring normally swinging said device in a direction to press said member toward the platen.

12. In a paper feed mechanism, the combination of a platen, a pair of tandem feed-roll shafts, a member extending transversely of the platen and pressing against the shafts toward the platen substantially midway the ends of said shafts, feed-rolls on each shaft at both sides of said member, a pivotally mounted device on which said member is rockably supported intermediate the shafts to move away from the platen at either end, a spring normally swinging said device in a direction to press said member toward the platen, means for maintaining the shafts in spaced relation, and means cooperating with said last-mentioned means for forcing the shafts away from the platen to cast-off the feed-rolls.

13. In a paper feed mechanism, the combination of a platen carriage, a platen on the carriage, a spring-urged device having a separably interlocked rocking connection with the carriage, a pair of tandem feed-roll shafts, and a pressure-distributing member engaging both shaft substantially midway their ends and tiltably supported intermediate its ends on said device.

14. In a paper-feed mechanism, the combination of a platen carriage, a platen thereon, a pair of swinging members having separably interlocked pivotal connections with the carriage, a spring connected with said members to swing the members about their pivots in opposite directions toward the platen and hold said members against disconnection from the carriage, and feed rolls pressed toward the platen through the medium of said members.

15. In a paper-feed mechanism, the combination of a platen carriage, a platen thereon, a pair of swinging members having separably interlocked pivotal connections

with the carriage, a spring connected with said members to swing the members on their pivots in opposite directions toward the platen and hold said members against disconnection from the carriage, two sets of tandem feed-roll shafts arranged side by side along the platen, feed rolls on the shafts, and a pair of pressure-distributers loosely seated on the free ends of said members and each connected with a different set of tandem feed-roll shafts.

This specification signed this sixth day of November, A. D. 1918.

FRANK H. ARMSTRONG.