June 8, 1943. L. P. CROSMAN 2,321,014

LISTING MACHINE

Filed Jan. 8, 1941 2 Sheets-Sheet 1

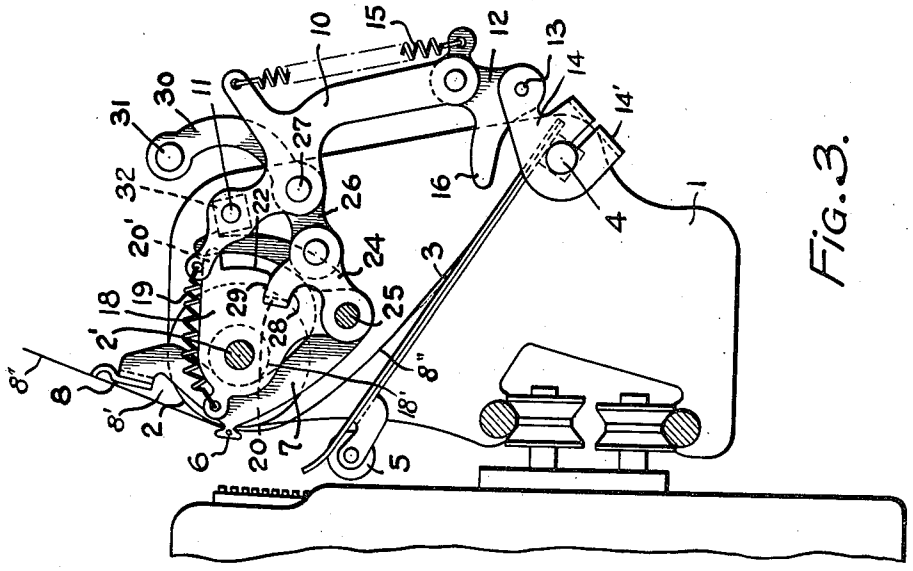


Fig. 3.

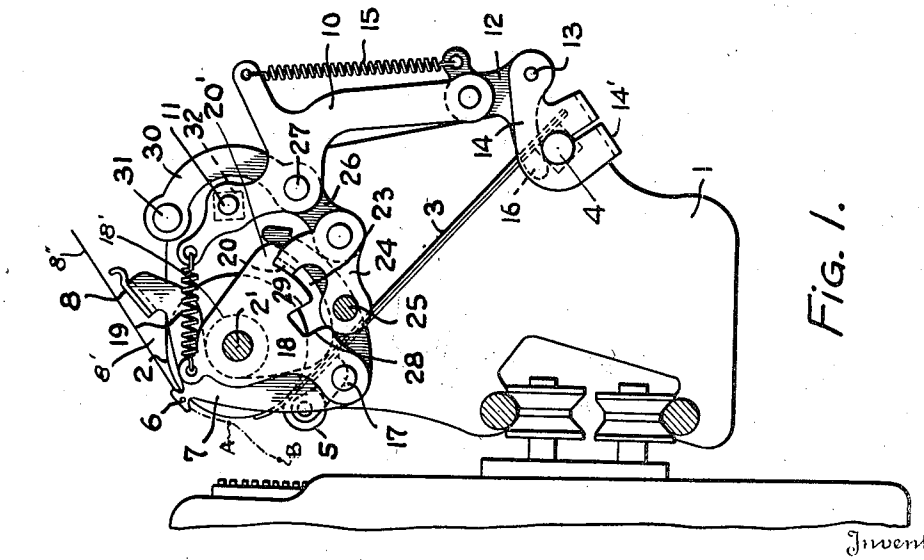


Fig. 1.

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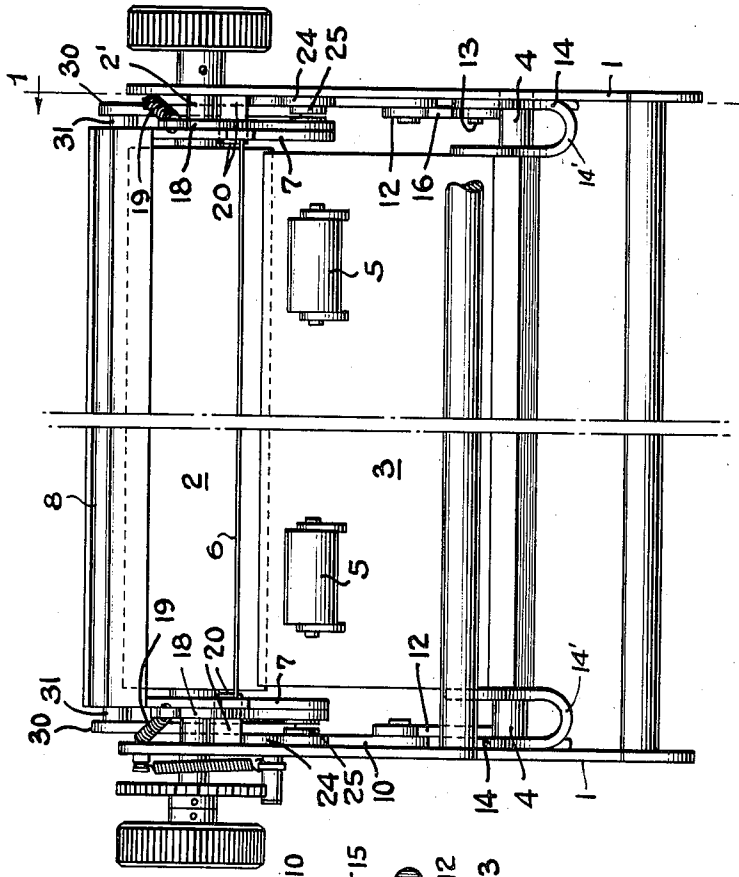


FIG. 4.

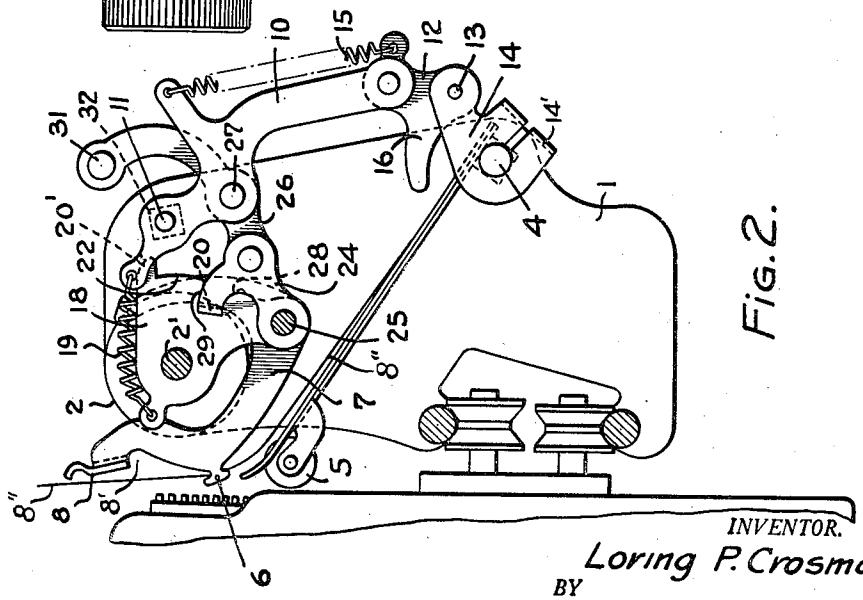


FIG. 2.

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UNITED STATES PATENT OFFICE

2,321,014

LISTING MACHINE

Loring Pickering Crosman, Maplewood, N. J., assignor to Monroe Calculating Machine Company, Orange, N. J., a corporation of Delaware

Application January 8, 1941, Serial No. 373,676

13 Claims. (Cl. 197—127)

The invention relates to listing calculators, typewriting and other machines having a rotatable platen and a paper guide having pressure rolls engaging the platen to feed a paper sheet thereover in rotation of the platen. In these machines while the trend is towards the front feed platen carriage wherein the paper sheet is fed to the machine forwardly of the platen, the carriage assembly has been expensive and subject to difficulty in maintaining satisfactory visibility of the paper above the printing line. There has also been common an unsatisfactory line finder attached to the base of the machine, in consequence of which frequently the line cannot be found without first shifting the carriage. There has also been common, means for holding back the paper sheet in the form of a rod having pressure rolls engaging the platen which rod must be manipulated in the insertion of each paper sheet into the machine, or alternatively there has been used margin rolls requiring frequent adjustment.

An object of the invention is to provide a paper hold back wire, also adapted to function as a line finder, extending the full length of the platen and an upper paper guide also extending the full length of the platen and spaced rearwardly from said wire by an interval, admitting of the paper sheet passing forwardly of said upper paper guide, through said interval and rearwardly of said wire between the same and the platen; and manipulable means for conjointly displacing said upper paper guide and said wire downwardly for line finding purposes and conjointly restoring the same to normal raised position, thus insuring satisfactory visibility of the paper above the printing line, enabling the line to be found in all cases without first shifting the carriage, and insuring that said wire shall function to hold back the paper without necessity for the usual manipulation thereof in feeding the paper sheet into the machine.

Another object is to provide a front feed paper carriage of greater simplicity and lessened cost and which shall have greater appeal than the rear feed paper carriage. Other objects and advantages will appear hereinafter.

The invention consists in the novel construction and combinations of parts as hereinafter set forth in the claims.

In the accompanying drawings wherein the invention is shown as applied to a listing calculator such as the Monroe,

Figure 1 is a section on the line 1—1, Figure 4, showing the paper carriage having the invention applied thereto and mounted on a portion of the carriage frame, the parts of the invention being in normal position and the path taken by the wire line finder in the displacement of the parts being shown in a dot and dash line.

Figure 2 is a view similar to Figure 1, with the front feed paper guide in open position and the wire line finder brought downwardly to the lower end of said path.

Figure 3 is a view similar to Figure 1, with the wire line finder brought to the printing line.

Figure 4 is a front elevation of the carriage with the invention applied thereto, the parts of the invention being shown in the positions of Figure 2.

In these drawings, the numeral 1 designates a longitudinally shiftable carriage, having mounted thereon a rotatable platen 2, provided with the customary means for rotating the same and for resiliently holding it in position as rotated.

A front-feed paper guide 3 is rigidly secured at its lower end to a transverse shaft 4 having rotary bearings in the carriage end frames and at its upper end portion has mounted thereon pressure rolls 5 normally engaging the platen to feed a paper sheet thereover in rotation of the platen.

A paper hold back wire 6, which is also adapted to function as a line finder as will be explained, extends the full length of the platen, and manipulable means to be now described are provided for locking said paper guide in normal position, for disabling said locking means and conjointly displacing said paper guide to open position with its pressure rolls spaced from the platen and said wire downwardly for line finding purposes, for locking said paper guide in open position and said wire against return to normal raised position, and for disabling the last named locking means, conjointly restoring the parts to normal position and rendering again effective the first named locking means.

Inasmuch as the paper hold back and line finder wire and the front feed paper guide both extend the full length of the platen, the manipulable means referred to embodies parts provided in duplicate at the platen ends, which parts will be described in the singular in some cases.

Duplicate right and left levers 7 at the platen ends have the outer ends of the upper arms thereof rigidly connected by cross bar 8 constituting an upper paper guide as will be explained and extending the full length of the platen, whereby manipulation of said cross bar will move said levers in unison. The upper arms of said levers have mounted thereon intermediately of their

lengths and connecting the same the before mentioned paper hold back and line finder wire 6 from which the cross bar 8 is spaced rearwardly by an interval 8' and which wire will move as a unit with said levers upon manipulation of said cross bar.

The front feed paper guide 3 is locked in normal position (Fig. 1), by a toggle joint the upper member 10 of which is pivoted at its upper portion at 11 to the platen carriage frame and the lower member 12 of which has pivotal connection 13 with the tail arm 14 of a U-form clamp 14' (considered as a lever), rigidly secured upon said shaft 4 by a suitable bolt (not shown), a coiled spring 15 connecting extensions of the joint members and being normally tensioned to hold an arm 16 of the lower joint member (considered as a lever) in stop engagement with said shaft 4 and the joint members aligned to prevent the bowing thereof except in one direction, said bowing serving to further tension said spring and to displace the paper guide to open position with its pressure rolls spaced from the platen as will be explained. Right and left U-form clamps 14' and right and left toggle joints 10—12 are provided.

Each lever 7 is fulcrumed at 17 to a sector 18 loosely mounted on the platen shaft 2' and held in normal position by a coiled spring 19 tending to rotate said sector clockwise (Fig. 1), and stop lug 20 with which a projection 20' of the sector contacts. The lower arm of each lever 7 has its upper edge concentric with the platen shaft and of greater radius than and spaced from the arcuate edge 22 of said sector by arcuate space 23 within and at one end of which said stop lug 20 is normally located. Thus the lower arm of normally positioned lever 7 has stop engagement with said lug 20 against pivotal movement of said lever in one direction and the upper arm of said lever has stop engagement with the hub 18' of said sector against pivotal movement of the lever in the opposite direction, with some slight margin to allow for different thicknesses of one or more paper sheets with or without carbon sheets. Thus also, upon forward manipulation of cross bar 8, the right and left duplicate levers 7 will be bodily moved as a unit with said sectors 18 upon the platen shaft as a center against the tension of springs 19 to bring the paper hold back and line finder wire 6 downwardly to the printing line, which is the point A of the dot and dash line of Fig. 1, but only temporarily as will be explained. The lug 20 is a lateral lug of a member 24 of a second toggle joint pivoted at 25 to the platen carriage frame, the other member 26 of said joint being pivoted at 27 to the upper member 10 of the first named toggle joint.

The above stated forward manipulation of cross bar 8 moves the duplicate levers 7 and sectors 18 as a unit therewith a distance substantially measured by the length of arcuate space 23, the unitary movement being stopped by contact of the forward walls 28 of radial arcuate notches 29 (concentric with fulcrums 17) of said sectors with the lugs 20, at which time the respective fulcrums 17 of said levers will become aligned with the respective pivots 25 of the members 24 of said second toggle joints, and pivotal movement of levers 7 upon their fulcrums then taking place as a consequence of continued forward manipulation or pressure upon said cross bar, the following will take place:

The paper hold back and line finder wire 6 will be brought or displaced further downwardly to the point B of the dot and dash line of Fig. 1, in an arcuate path away from the platen and the printing line from fulcrums 17 as a center and the lugs 20 will be moved within the notches 29 against the inner ends thereof as a stop (Fig. 2), thereby actuating joint members 24 to bow the first named toggle joints and disable the lock thereof for holding the front-feed paper guide in normal position; displacing said front-feed paper guide to open position wherein its pressure rolls are spaced from the platen and aligning the members of each of the second toggle joints to lock the front feed paper guide in open position and lock the sectors 18 as moved to prevent the return of the levers 7 and wire 6 to normal raised position.

In aligning the members of each of said second toggle joints, the outer arms 30 of the members 26 of said joints (considered as levers), which outer arms are at their outer ends rigidly connected by cross rod 31, will be brought to and set in position for movement in unison upon manipulation of said cross rod.

The parts being in the positions above stated and a paper sheet or sheets with or without carbon sheets 8 being inserted in the machine forwardly of the cross bar 8 and of the platen, through said interval 8', rearwardly of the paper hold back and line finder wire 6, now spaced from the platen, and rearwardly of the front feed paper guide and its pressure rolls also now spaced from the platen, to approximately correct position and pressed by the operator with the thumbs of both hands rearwardly against the cross bar 8, will cause reverse or clockwise pivotal movement of the duplicate levers 7 upon their fulcrums and bring the wire 6 back to point A of the dot and dash line of Fig. 1 into close proximity to the platen at the correct height to show or find the printing line upon the paper sheet (Fig. 3). At this point the free ends of the rear arms of the duplicate levers 7 which ends may be slightly hooked as shown, will contact one side and a corner of duplicate stops 32, which stops are the squared heads of the pivots 11 of the upper members of the duplicate toggle joints first named, thereby resisting the pressure of the operator's thumbs so that the paper sheet and the paper hold back and line finder wire 6 will be properly held.

The paper sheet is now adjusted with reference to the wire 6 nicely to the printing line and while holding the paper in this position against cross bar 8 (upper paper guide) by his thumbs the operator will with certain of the fingers of both hands push forwardly on the cross rod 31 which is within convenient reach and has been previously brought to and set in position for manipulation as stated. This will bow the said second toggle joints and disable the lock thereof for holding the front feed paper guide in open position, whereupon the tensioned springs 15 will restore the parts to normal position, with exception of the levers 7 which are still manually held in engagement with said stops as stated and sectors 18 upon which said levers are mounted and which are similarly held.

The paper sheet being thus properly adjusted to the printing line and so held by the normally positioned pressure rolls of the front feed paper guide, the operator naturally releases his thumb pressure upon the paper sheet and the cross bar 8 (upper paper guide), whereupon the tensioned springs 19 will restore the sectors 18 and levers 7 with wire 6 as a unit to normal position, wherein

as aforesaid said wire is raised to form a hold back for the paper sheet.

The front feed paper guide 3 and the cross bar 8 (upper paper guide) will be both provided with the customary paper edge guides, and the cross bar 8 may be provided with a tear off knife edge for use with a paper tape.

Inasmuch as the cross bar 8 (upper paper guide), is spaced rearwardly from the wire 6 by an interval and the paper sheet passes forwardly of said upper paper guide, through said interval and rearwardly of said wire 6 between the same and the platen, full visibility of the upper portion of the paper sheet on and above the printing line is provided for.

I claim:

1. In a machine of the class described, the combination with a rotatable platen, a carriage therefor and a paper guide having pressure rolls engaging the platen to feed a paper sheet thereover in rotation of the platen; of a combined paper hold back and line finder device extending the full length of the platen having normal raised position to hold back the paper sheet, an upper paper guide spaced from said device, and manipulable means for conjointly displacing said upper paper guide and said device downwardly and for locking the same against return to normal position for line finding purposes, and for disabling said locking means and conjointly restoring said upper paper guide and said device to normal position including a member upon which said upper paper guide and said device are mounted and which is manipulable to bring said device to the printing line prior to said restoration thereof, and a fixed stop of the carriage framing having engagement with said member in said manipulation thereof.

2. In a machine of the class described, the combination with a rotatable platen; of a front feed paper guide having pressure rolls normally engaging the platen to feed a paper sheet thereover in rotation of the platen, a combined paper hold back and line finder device extending the full length of the platen having normal raised position to hold back the paper sheet, and manipulable means for locking said paper guide in normal position, for disabling said locking means and conjointly displacing said device downwardly and said paper guide to open position with its rolls spaced from the platen, for locking said device against return to normal raised position and said paper guide in open position, and for disabling the last named locking means, conjointly restoring said device and said paper guide to normal position and rendering again effective the first named locking means.

3. In a machine of the class described, the combination with a rotatable platen; of a front feed paper guide having pressure rolls normally engaging the platen to feed a paper sheet thereover in rotation of the platen, a combined paper hold back and line finder device extending the full length of the platen having normal raised position to hold back the paper sheet, and manipulable means for locking said paper guide in normal position, for disabling said locking means and conjointly displacing said device downwardly and said paper guide to open position with its rolls spaced from the platen, for locking said device against return to normal raised position and said paper guide in open position, and for disabling the last named locking means, conjointly restoring said device and said paper guide to normal position and rendering again effective the first named locking means, including two members the first of which is manipulable in the accomplishment of said conjoint displacement and upon which said device is mounted, and means for moving the other member to and setting the same in manipulable position in the manipulation of the first member, said other member being manipulable in the accomplishment of said conjoint restoration.

4. In a machine of the class described, the combination with a rotatable platen, and a carriage therefor; of a front feed paper guide having pressure rolls normally engaging the platen to feed a paper sheet thereover in rotation of the platen, a combined paper hold back and line finder wire extending the full length of the platen having normal raised position to hold back the paper sheet, and manipulable means for locking said paper guide in normal position, for disabling said locking means and conjointly displacing said paper guide to open position with its rolls spaced from the platen and said wire downwardly, for locking said paper guide in open position and said wire against return to normal raised position, and for disabling the last named locking means, conjointly restoring said paper guide and said wire to normal position and rendering again effective the first named locking means, including two members the first of which is manipulable in the accomplishment of said conjoint displacement and upon which said wire is mounted, and means for moving the other member to and setting the same in manipulable position in the manipulation of the first member, said other member being manipulable in the accomplishment of said conjoint restoration, said first member being further manipulable to bring said wire to the printing line prior to said conjoint restoration, and a fixed stop of the carriage framing having engagement with said first member in said further manipulation thereof.

5. In a machine of the class described, the combination with a rotatable platen; of a front feed paper guide having pressure rolls normally engaging the platen to feed a paper sheet thereover in rotation of the platen, a combined paper hold back and line finder device extending the full length of the platen having normal raised position to hold back the paper sheet, and means including a manipulable member for conjointly displacing said device downwardly for line finding purposes and said paper guide to open position with its rolls spaced from the platen upon manipulation of said member and for conjointly restoring said device and said paper guide to normal position.

6. In a machine of the class described, the combination with a rotatable platen, a carriage therefor and a paper guide having pressure rolls engaging the platen to feed a paper sheet thereover in rotation of the platen; of a combined paper hold back and line finder device extending the full length of the platen having normal raised position to hold back the paper sheet, and means including a manipulable member upon which said device is mounted for displacing said device downwardly and for locking the same against return to normal raised position upon manipulation of said member and for disabling said locking means and restoring said device to normal position, said member being reversely manipulable to bring said device to the printing line prior to said restoration thereof, and a fixed stop of the carriage framing having engagement

with said member in said reverse manipulation thereof.

7. In a machine of the class described, the combination with a rotatable platen; of a front feed paper guide having pressure rolls normally engaging the platen to feed a paper sheet thereover in rotation of the platen, a combined paper hold back and line finder device extending the full length of the platen having normal raised position to hold back the paper sheet, a pair of control members and means for conjointly displacing said device downwardly for line finding purposes and said paper guide to open position with its rolls spaced from the platen upon manipulation of one of said control members and for conjointly restoring said device and said paper guide to normal position upon manipulation of the other of said control members.

8. In a machine of the class described, the combination with a rotatable platen and a front feed paper guide having pressure rolls engaging the platen to feed a paper sheet thereover in rotation of the platen; of a combined paper hold back and line finder wire extending the full length of the platen and having normal raised position to hold back the paper sheet, an upper paper guide also extending the full length of the platen, spaced rearwardly from said wire by an interval admitting of passage of the paper sheet forwardly of said upper paper guide, through said interval and rearwardly of said wire between the same and the platen for full visibility of the upper portion of the paper sheet on and above the printing line, and manipulable means for conjointly displacing said upper paper guide and said wire downwardly for line finding purposes and for conjointly restoring the same to normal position.

9. In a machine of the class described, the combination with a rotatable platen and a front feed paper guide having pressure rolls engaging the platen to feed a paper sheet thereover in rotation of the platen; of a combined paper hold back and line finder wire extending the full length of the platen having normal raised position to hold back the paper sheet, an upper paper guide also extending the full length of the platen and spaced rearwardly from said wire by an interval admitting of the paper sheet passing forwardly of said upper paper guide, through said interval and rearwardly of saiid wire between the same and the platen for full visibility of the upper portion of the paper sheet on and above the printing line, and manipulable means for conjointly displacing said upper paper guide and said wire downwardly and for locking the same against return to normal position for line finding purposes, and for disabling said locking means and conjointly restoring the upper paper guide and said wire to normal position.

10. In a machine of the class described, the combination with a rotatable platen; of a front feed paper guide having pressure rolls engaging the platen to feed a paper sheet thereover in rotation of the platen, a combined paper hold back and line finder wire extending the full length of the platen having normal raised position to hold back the paper sheet, an upper paper guide also extending the full length of the platen and spaced rearwardly from said wire by an interval admitting of the paper sheet passing forwardly of said upper paper guide, through said interval and rearwardly of said wire between the same and the platen for full visibility of the upper portion of the paper sheet on and above the printing line, and manipulable means for conjointly displacing said upper paper guide and said wire downwardly for line finding purposes and said front feed paper guide to open position with its rolls spaced from the platen and for conjointly restoring said wire and both paper guides to normal position.

11. In a machine of the class described, the combination with a rotatable platen; of a front feed paper guide having pressure rolls engaging the platen to feed a paper sheet thereover in rotation of the platen, a combined paper hold back and line finder wire extending the full length of the platen having normal raised position to hold back the paper sheet, an upper paper guide also extending the full length of the platen and spaced rearwardly from said wire by an interval admitting of the paper sheet passing forwardly of said upper paper guide, through said interval and rearwardly of said wire between the same and the platen for full visibility of the upper portion of the paper sheet on and above the printing line, and manipulable means for conjointly displacing said upper paper guide and said wire downwardly and for locking the same against return to normal position for line finding purposes and said front feed paper guide to open position with its rolls spaced from the platen and for disabling said locking means and conjointly restoring said wire and both paper guides to normal position.

12. In a machine of the class described, the combination with a rotatable platen; of a front feed paper guide having pressure rolls engaging the platen to feed a paper sheet thereover in rotation of the platen, a combined paper hold back and line finder wire extending the full length of the platen having normal raised position to hold back the paper sheet, an upper paper guide also extending the full length of the platen and spaced rearwardly from said wire by an interval admitting of the paper sheet passing forwardly of said upper paper guide, through said interval and rearwardly of said wire between the same and the platen for full visibility of the upper portion of the paper sheet on and above the printing line, and manipulable means for locking said front feed paper guide in normal position, for disabling said locking means and conjointly displacing said upper paper guide and said wire downwardly to and for locking the same against return to normal position for line finding purposes and said front feed paper guide to and locking the same in open position with its rolls spaced from the platen, and for disabling the last named locking means, conjointly restoring said wire and both paper guides to normal position and rendering again effective the first named locking means.

13. In a machine of the class described, the combination with a rotatable platen, a carriage therefor, and a front feed paper guide having pressure rolls engaging the platen to feed a paper sheet thereover in rotation of the platen; of a combined paper hold back and line finder wire extending the full length of the platen having normal raised position to hold back the paper sheet, an upper paper guide also extending the full length of the platen and spaced rearwardly from said wire by an interval admitting of the paper sheet passing forwardly of said upper paper guide, through said interval and rearwardly of said wire between the same and the platen for full visibility of the upper portion of the paper sheet on and above the printing line, and ma-

nipulable means for conjointly displacing said upper paper guide and said wire downwardly and for locking the same against return to normal position for line finding purposes and for disabling said locking means and conjointly restoring said upper paper guide and said wire to normal position including a member upon which said upper paper guide and said wire are mounted and which is manipulable to bring said wire to the printing line prior to said restoration thereof, and a fixed stop of the carriage framing having engagement with said member in said manipulation thereof.

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