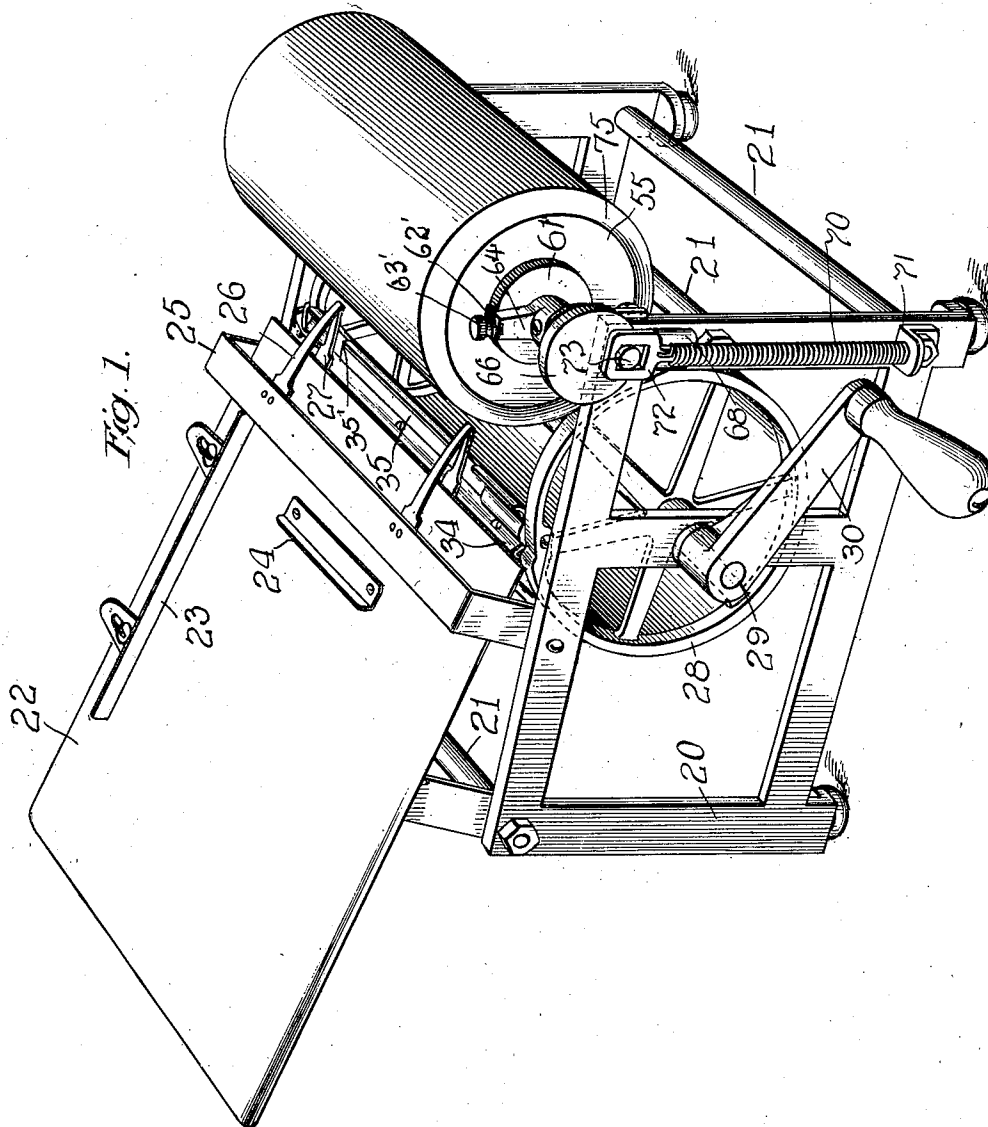


A. C. STALEY.
MULTICOPYING MACHINE.
APPLICATION FILED JULY 6, 1909.

1,001,226.

Patented Aug. 22, 1911.

4 SHEETS-SHEET 1.



Witnesses
H. B. L. White
R. A. White.

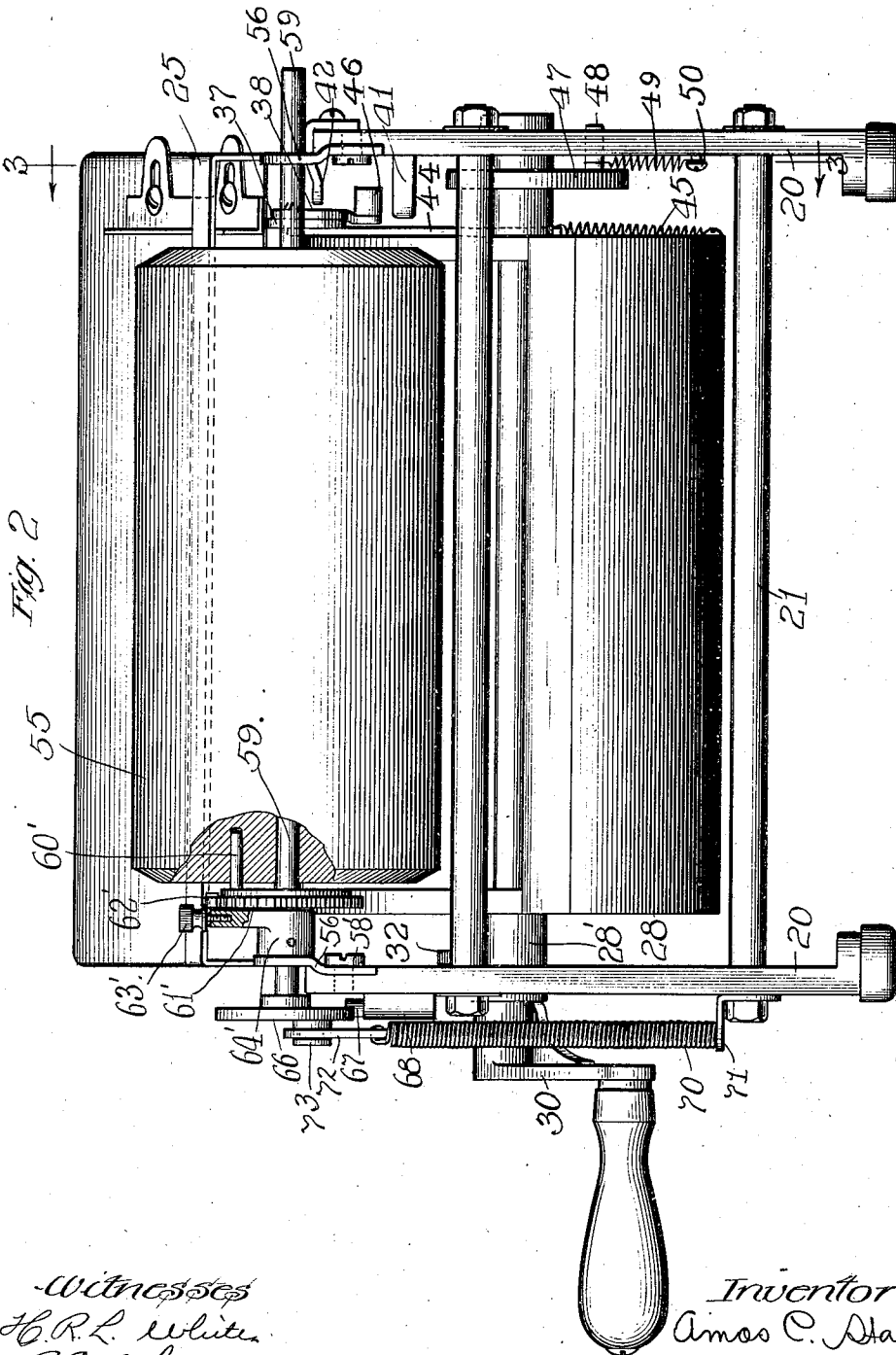
Inventor
Amos C. Staley
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4 SHEETS—SHEET 2.



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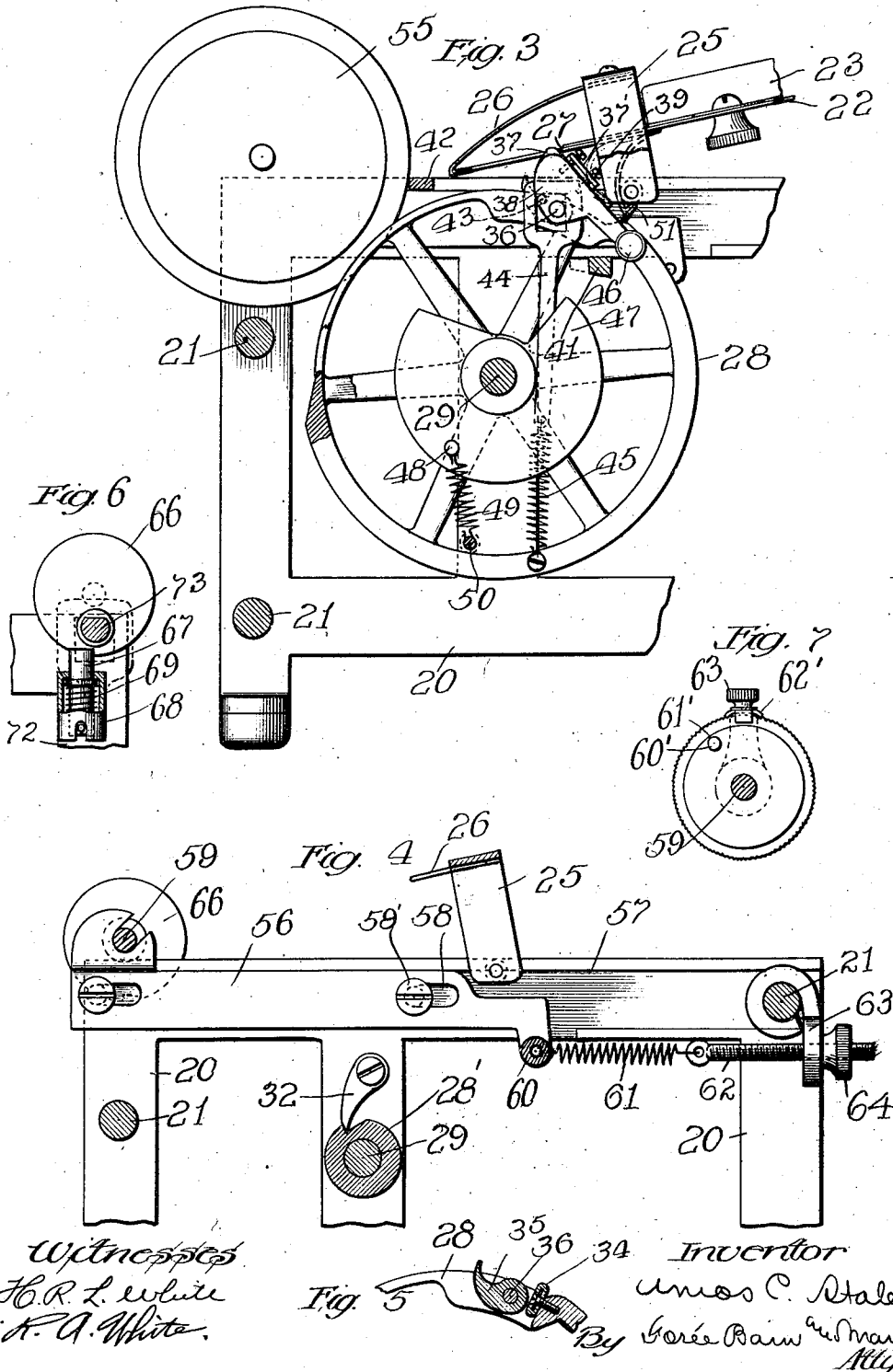
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4 SHEETS—SHEET 3.

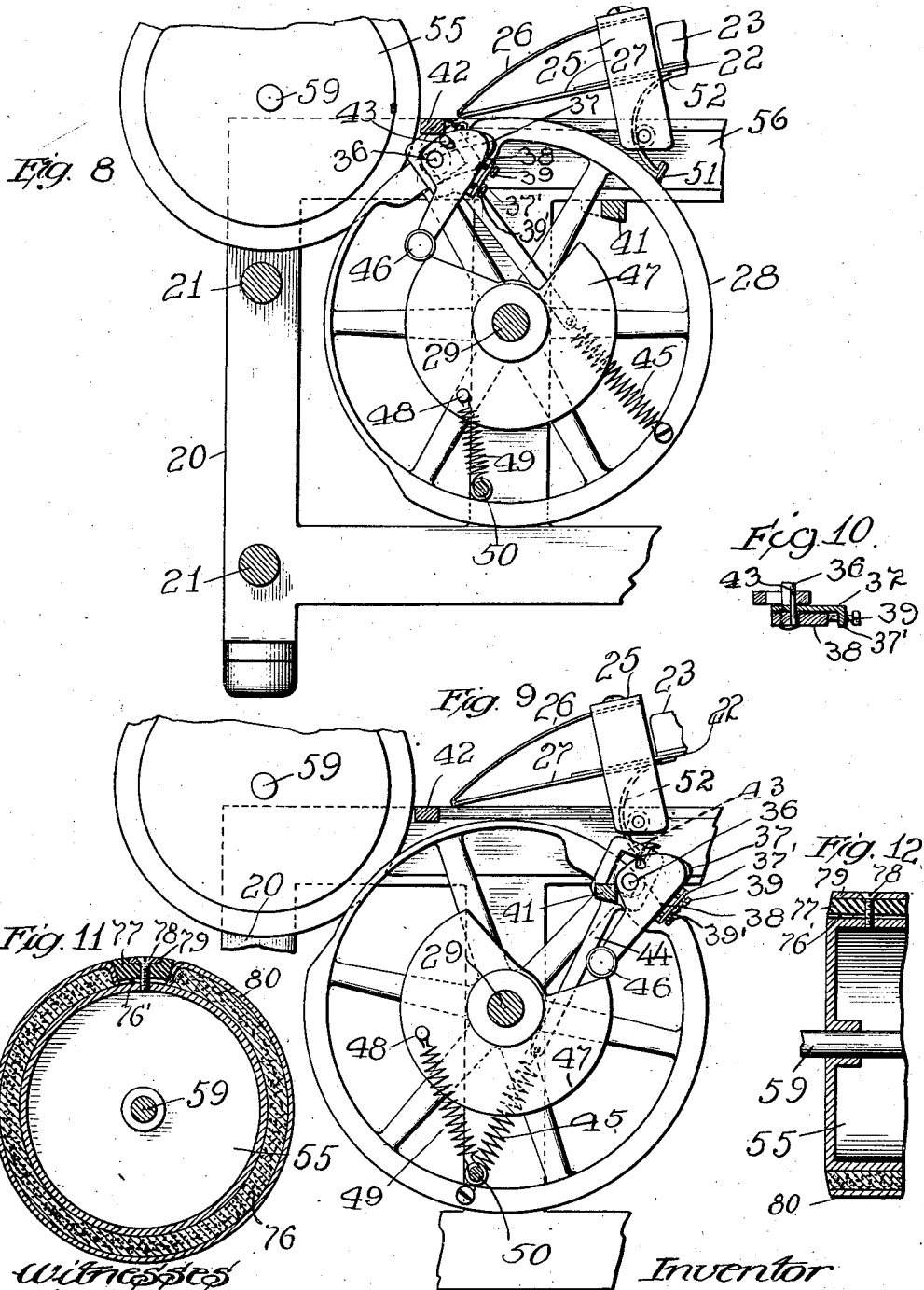


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4 SHEETS—SHEET 4.



Witnesses
H. R. L. White
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Inventor
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UNITED STATES PATENT OFFICE.

AMOS C. STALEY, OF CHICAGO, ILLINOIS.

MULTICOPYING-MACHINE.

1,001,226.

Specification of Letters Patent. Patented Aug. 22, 1911.

Application filed July 6, 1909. Serial No. 506,117.

To all whom it may concern:

Be it known that I, AMOS C. STALEY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Multicopying-Machines, of which the following is a specification.

My invention relates to multi-copying machines, and particularly to machines of the general type illustrated in my Patent 871,531, dated November 19, 1907, wherein a paper-carrying element coöperates intermittently with a gelatin-surfaced printing roller, yieldingly positioned with relation thereto, so that the paper-carrying element rotatively drives the printing roller.

My present invention provides improved means for positively operating a paper-gripping means, enabling the use of a segmental paper-carrying element with a maximum proportion of its periphery functionally effective; provides an improved printing-roller mounting and construction, which facilitates adjustment of the printing tension, admits adjustment of the printing roller to secure the desired presentation of different portions of the roller in initial printing position, and enables the use of a gelatinized web or fabric in lieu of a continuous gelatinous coating directly applied upon the roller; provides means for preventing adherence of the paper to the paper-carrying element by electrification of the parts; and generally and in detail improves the construction and operation of the machine.

In the drawings, Figure 1 is a perspective of a complete machine; Fig. 2 is a front elevation thereof; Fig. 3 is a section of a part of the machine on line 3—3 of Fig. 2; Fig. 4 is a sectional detail showing the roller carriage; Figs. 5, 6, and 7, are details of parts; Figs. 8 and 9 are views similar to Fig. 3 with parts in different working positions; Fig. 10 is a detail; and Figs. 11 and 12 are transverse and longitudinal sections of a printing roller.

In the embodiment of my invention shown, the machine comprises frame sides 20 of suitable rectangular shape and cast-iron construction united by cross rods 21, 21, at suitable points, leaving free or open the entire rear and bottom sides of the machine. 22 indicates a paper feed table having

suitable guides 23 and 24 mounted thereon, and spanned by a bridge and strip-table 25 carrying spring fingers 26 and 27, through which the paper may be fed to the gripping mechanism carried by a paper-carrying cylinder segment 28 mounted on a transverse shaft 29, extending nearly centrally through the machine and carrying the operating handle 30 by which it may be rotated continuously and unidirectionally, reverse movement of the segment being prevented by the coaction of a pawl 32 upon the frame member with one or more ratchet teeth 28' in the hub of the segment.

The paper carrying segment is a hollow segmental shell supported on suitable end rims, spiders, and hubs, preferably made of cast metal, from the shaft 29, the open space between the segment ends being comparatively small, not to exceed—say—one third of the periphery of the segment, and the forward edge of the segment in the direction of the progression of the segment being provided with a relatively soft facing strip 34 of leather or the like with which coöperates the edge of a curved gripper-blade 35, mounted for oscillation with the shaft 36, pivoted in the end rims of the segment structure and cut away, as at 35', at points where it passes the feed fingers 26 and 27.

For effective work, the gripper-plate must be positively held with a relatively heavy pressure upon its facing strip while the machine is in operation, and to this end I mount upon the gripper shaft 36 a fixed plate 37 and a loose or rotatively adjustable cam-lever, 38, adjustable as to its position upon the shaft through the agency of two screws 39 and 39' working through an overhanging lip 37' of plate 37. The cam-lever 38 has its front face, close to the shaft 36, shaped so as to provide inner and outer cam surfaces, and by engagement of the lower cam surface with a fixed stud 41 on the proximate side frame as the gripper nears its uppermost point in rotation, the gripper will be moved from closed to opened position; while by contact of the outer cam-surface with a fixed stud 42 upon the proximate side frame, just after the gripper passes the feed fingers 26 and 27, said gripper will be moved to closed position. For holding the gripper in either position with a yielding tension to prevent unintentional displacement of the gripper, the plate 37 has mount-

ed on its inner face a pin 43 engaged by a loop 44 connected to a spring 45 having its opposite end attached to the periphery of the segment in such a way that the movement of the pin 43 resulting from the change of position of the plate 37 in opening and closing the gripper, throws said pin to one side or the other of the line drawn between the point of attachment of spring 45 and the center of the gripper shaft, thereby to give the spring 45 a double acting effect. The leverage for such spring pressure is too slight, however, to hold the gripper in closed position for all practical purposes, and positive pressure of a considerable intensity is desirably exerted upon the gripper when it is in closed position. Therefore, the lever 38 is extended inward beyond the segment end to a very considerable length for effective leverage and is provided with a roller 46 for cooperation with a cam-plate 47 loosely mounted upon the sector shaft 28, adjacent the contiguous frame member, the cam being in the form of a reëntrant sector, or disk with only a relatively small sector removed. When the gripper is closed, the lever 38 is swung forward and as the roller 46 rides around on the periphery of the cam 47 from the position shown in Fig. 8, a pressure is maintained upon the gripper through the long leverage of the cam-lever 38 adequate for all practical paper-gripping purposes. During such pressure-engendering engagement of the lever and cam—which should be equal to the full printing period of operation—the cam is held stationary by the abutment of a pin 48 thereon against a vertical element of the side frame member, and the cam has the effect of a fixed or rigid construction. The angular space which may economically be afforded in the machine for swinging the relatively long lever 38 rearwardly to open the gripper is so small, however, that the cut-away portion of the cam cannot be made of large extent to permit the roller 46 to swing freely backward through its necessary arc and yet retain for paper-carrying purposes a properly large proportion of the segment surface. For this reason the cam 47 is left loose upon the carrying shaft so that it may be moved freely backward, a suitable spring 49 being connected between the pin 48 and a screw 50 fixed in the proximate side frame 30, quickly to restore the cam to normal position after its backward movement, compelled, as shown in Fig. 9, by the gripper-opening movement of the cam-lever 38.

To prevent paper from being carried around by the segment after the paper has been released by the gripper, owing to electrification of the segment surface or other cause, I preferably provide paper-removing means of suitable character, such as small

yielding rubber blocks, 51, mounted upon spring fingers 52 curving back under the feed table 22.

The cylinder segment intermittently contacts—owing to its segmental construction—with a printing roller 55, axially shorter than the segment opening and yieldingly supported in a carriage on the frame and bearing a surface coating of gelatinous composition suitable to receive an ink impression and to reproduce the same upon a paper sheet pressed in contact therewith. The printing-roller carriage consists of a pair of sliding bars 56, mounted for horizontal reciprocation in channels 57 formed in the upper rails of the opposite side frames 20 and said bars having slots 58 therein for engagement with guiding screws 58' in the channels 57. The upwardly protruding forward ends of the slide bars 56 carry the shaft 59 of the roller construction, and their rear ends are cross connected by a rod 60 and are normally retracted by a spring 61 which engages an adjusting screw 62 passing through a clip 63 secured to the cross rods 11 of the frame and carrying beyond an adjusting thumb-nut 64. The body or core of the printing roller 55 is carried in rotation by the shaft 59 but is removable therefrom and rotarily adjustable with respect thereto. To this end, the roller core is engaged by a pin 60' carried by a plate 61' loose upon the shaft 59 and having a milled edge for engagement by a clip 62', secured by a tension screw 63' upon a stud 64' which is pinned or otherwise secured to the shaft 59 for rotation therewith. Obviously, when the screw 63' is tight, the shaft, disk, and roller are all united for rotation, but by loosening the screw 63' to free the milling of the disk 61' from the clip 62', the disk and roller may be rotatively adjusted upon the shaft. The shaft is normally maintained in a predetermined rotative position, defined by engagement of a notch in disk 66 on the shaft extremity with a latching stud 67 mounted in a suitable bearing 68 on one of the side frames, and pressed upward into engagement with the disk-notch by a spring 69. The disk is held against such stud by a spring 70, which, at its lower end, is secured to a bracket 71 on the side frame, and at its upper end carries a link 72 engaging a stud 73 upon said disk 66.

It is preferable that the surface of the printing roller be quite elastic and yielding, and to this end, the body of the roller may be covered with a relatively thick gelatinous covering 75, molded thereon and continuous throughout its entire periphery. If desired, however, gelatinous fabric may be employed as the ink receptive surface, but in such event, it is my preference to employ a relatively thick yielding body between the gelatinous fabric and the relatively rigid core

W. E. D. STOKES, JR. & G. W. DAVIS.
AERIAL FOR WIRELESS TELEGRAPHY AND TELEPHONY.
APPLICATION FILED OCT. 9, 1908.

1,001,227.

Patented Aug. 22, 1911.

Fig. 1.

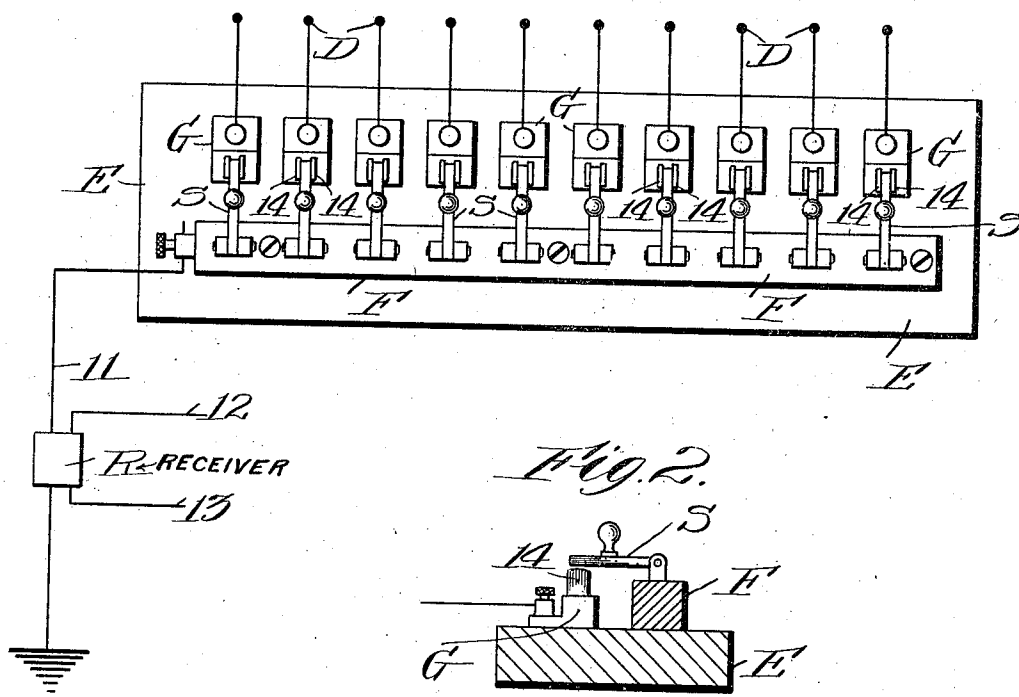


Fig. 2.

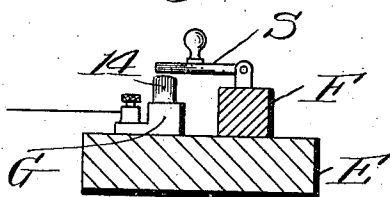
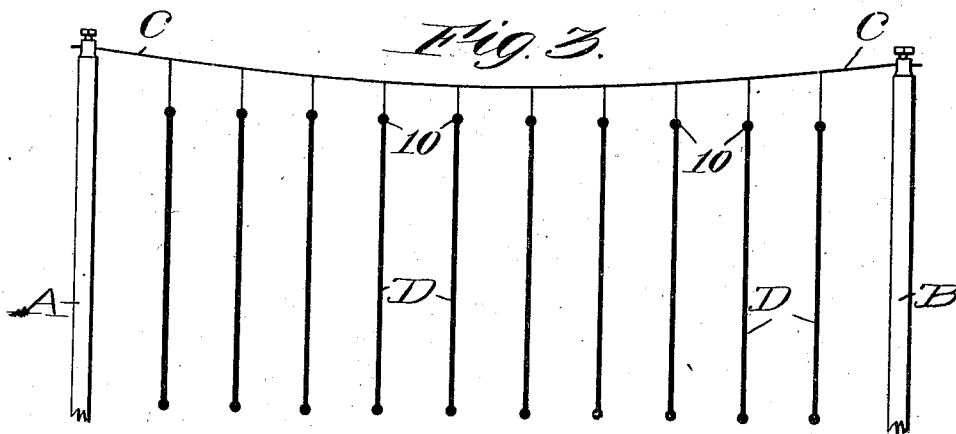


Fig. 3.



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