

to row, mechanism for moving the needle along the row, magnets for actuating said mechanisms, and wires leading from a sub-station for conducting electricity to energize  
5 the said magnets, substantially as set forth.

2. In a system of electrical exchange, the combination, with an insulating-cylinder, a system of wires having their ends extending to the inside of the cylinder, and a rotary and  
10 longitudinally-movable rod located at the axis of the cylinder, of a contact-needle attached to the rod, levers for moving the rod longitudinally, levers for rotating the rod, magnets for actuating the levers, and means for  
15 energizing the magnets at pleasure, substantially as set forth.

3. In a system of electrical exchange, the combination, with an insulating curved surface, a system of wires having their ends extending to and through said surface to the  
20 concave surface thereof, and a rotary and longitudinally-movable rod located at the axis of curvature, of a contact-needle fastened to the rod, levers for moving the rod longitudi-  
25 nally, levers for rotating the rod, magnets for vibrating the lever, and means for energizing the magnets at pleasure, substantially as set forth.

4. In a system of electrical exchange, the combination, with an insulating-cylinder, a  
30 system of wires having their ends extending to the inside of the cylinder, and a rotary and longitudinally-movable rod located at the axis of the cylinder, of a sleeved arm fastened to the rod, a contact-needle, levers for mov-  
35 ing the rod longitudinally, levers for rotating the rod, magnets for actuating the levers, means for pressing the needle outwardly, and means for energizing the magnet at pleasure, substantially as set forth.

5. In combination, the set of wires having their ends secured in a cylinder, the cylinder, the rod at the axis of the cylinder, the pieces fastened to the rod, the levers provided with  
40 pawls pivoted thereto for actuating the rod, the magnets for actuating the levers, the magnets for actuating the pawls, the keys at the sub-station, and the wires connecting the keys with the actuating-magnets, substan-  
45 tially as set forth.

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

ALMON B. STROWGER.

Witnesses:

BESSIE E. YOUNG,  
P. C. PHILLIPS.