To all whom it may concern:

Be it known that I, Daniel W. Tower, a citizen of the United States of America, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Bolt-Operating Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in latches applied to both the top and bottom of a door, and its object is to provide improved means for simultaneously operating two latches so applied; to provide a device that will be flush with the outer surface of a door when the same is closed; to provide improved means for operating the latches and opening the door; and to provide the device with various new and useful features hitherto more fully described and particularly pointed out in the claims.

My invention consists essentially of two latches arranged respectively at the top and bottom of a door, a housing inserted in the stile of the door near the middle thereof and flush with the outer surface of the same, an operating handle pivoted in the housing and when out of use located within the housing and flush with the outer surface of the same, and also adapted to swing outward at one end to operate as a handle for releasing the latches and opening the door, levers pivoted in the housing simultaneously operated by the handle and connected to the latches to release the same, and a spring adapted to yieldably hold the device in closed position, as will more fully appear by reference to the accompanying drawings, in which:

Figure 1 is a side elevation of a device embodying my invention detached from the door; Fig. 2 a side elevation of the opposite side from that shown in Fig. 1, with part of the housing broken away to show the construction; Fig. 3 a plan view of the device viewed from the inner side of the same; and Fig. 4 a reduced elevation showing the device applied to a door, with a portion of the door stile broken away.

Like numbers refer to like parts in all of the figures.

1 represents the stile of a door or other similar structure to which the device is applied.

2 represents two bolts mounted on the door at the top and bottom thereof respectively to hold the door closed, the bolts being ordinary sliding bolts.

3 are rods or may be chains, wire cord or the like extending from these bolts toward the middle of the stile to operate the bolts and connected to oppositely movable levers 4 actuated by a handle 5, these levers being pivoted in a housing 11, the base plate of which is flush with the surface of the door and provided with a rectangular opening therethrough having an inwardly projecting flange 12, to which the levers 4 are pivoted, said levers having interlocking cogs 6 whereby both levers are moved simultaneously toward and away from each other at their movable ends having the device 3 connected thereto.

On the handle 5 is an inwardly projecting semi-circular segment 9 concentric with the pivot of the handle, and near the middle of which segment is a pin 8 oppositely extending therefrom, one end engaging a segmental slot 7 in one of the levers 4 and both ends, when the handle 5 is swung outward to the limit, engage the flange 12 and limit the outward movement of the handle to substantially the position shown in broken lines in Fig. 1. This handle is preferably provided with an inwardly projecting ring 5 which furnishes a suitable grip for the finger inserted therein to operate the handle to withdraw the bolts 2 and to open and close the door. When the handle 5 is in closed position the pin 8 engages one end of the slot 7 and moves the levers 4 to positions substantially parallel to each other and at right angles to the housing, and the slot 7 is of such length that before the pin 8 strikes the flange 12 it will engage the opposite end of the slot 7 and move the levers simultaneously toward each other, so that their movable ends will be in close relation and the bolts 2 will be drawn from the strike plates, thus releasing the door.

To yieldably hold the device in closed position with the bolts engaging the strike plates, a contractile spring 10 is mounted on the segment 9 with one end attached to the housing and the other end attached to the handle 5. The handle is thus swung into
the housing with its outer surface flush with the base plate of the housing, and the pin 8 engaging the end of the slot 7 swings the levers 4 to parallel positions, and thus yieldably holds the bolts 2 out of engagement with their respective strike plates.

From the foregoing description the operation of my invention is readily understood. When it is desired to open the door the handle 5 is manually moved out to substantially the position shown in Fig. 4. The pin 8 engages the end of the slot 7 and moves the levers 4 toward each other until the bolts are withdrawn from the strike plates and the pin 8 is in contact with the flange 12. A pull on the handle will then open the door, and releasing the handle will enable the spring 10 to restore the parts to original positions.

What I claim is:

1. The combination of a pivoted handle, levers connected to simultaneously swing toward and away from each other, and means for connecting the handle to one of said levers whereby the handle has a limited independent movement relative to the said lever.

2. The combination of two levers connected to swing toward and away from each other, one of said levers having a slot therein, a pivoted handle, and a pin carried by the handle traversing the slot and engaging the end of the slot to operate the levers.

3. The combination of a housing, a handle pivoted in the housing and swinging outward therefrom, two levers pivoted in the housing and having a cog connection to swing toward and away from each other, one of said levers being provided with a segmental slot and a pin carried by the handle and engaging the ends of the slot to operate said levers.

4. The combination of a housing, a handle pivoted in the housing and adapted to swing outward therefrom, a spring to normally hold the handle within the housing, bell crank levers pivoted in the housing and having engagement to simultaneously swing toward and away from each other, one of said levers being provided with a segmental slot, a segment on the handle, a pin in the segment traversing the slot and engaging the ends thereof to operate the levers, and a spring to yieldably hold the handle within the housing.

5. The combination of a housing having an opening, a flange on the housing surrounding the opening, a handle to normally close the opening and pivoted to the flange, bell crank levers pivoted to the flange and connected to swing toward and away from each other, means for connecting the handle to one of the levers to operate the same, and a spring to normally hold the handle in closed position.

6. The combination of a housing having an opening therein, a flange on the housing surrounding said opening, a handle closing said opening and pivoted at one end to the flange and having a segment at its pivoted end, bell crank levers pivoted to the flange and connected to each other to simultaneously swing toward and away from each other, a pin in said segment engaging one of the levers and engaging the flange to stop the movement of the segment.

7. The combination of two pivoted levers connected to simultaneously swing toward and away from each other, two oppositely acting bolts spaced apart, rods connecting the respective levers and bolts, a handle pivoted at its upper end and swinging outward at its lower end, and a pin in the handle engaging one of the levers to move the levers toward each other when the handle is pulled outward.

8. The combination of two levers connected to swing vertically toward each other, a manually operated lever pivoted at one end to swing outward at the other end, means for connecting said lever to the first named levers to operate the same, two oppositely acting bolts and rods connecting the said bolts with the first named levers to retract the bolts when the last named lever is pulled outward.

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

Daniel W. Tower.

Witnesses:
Howard H. Yarrington,
Mab Rankin.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D.C."