

J. F. BURNS.
ELECTRIC SWITCH BOX.
APPLICATION FILED DEC. 31, 1912.

Patented Feb. 6, 1917.

1,215,249.

FIG. I.

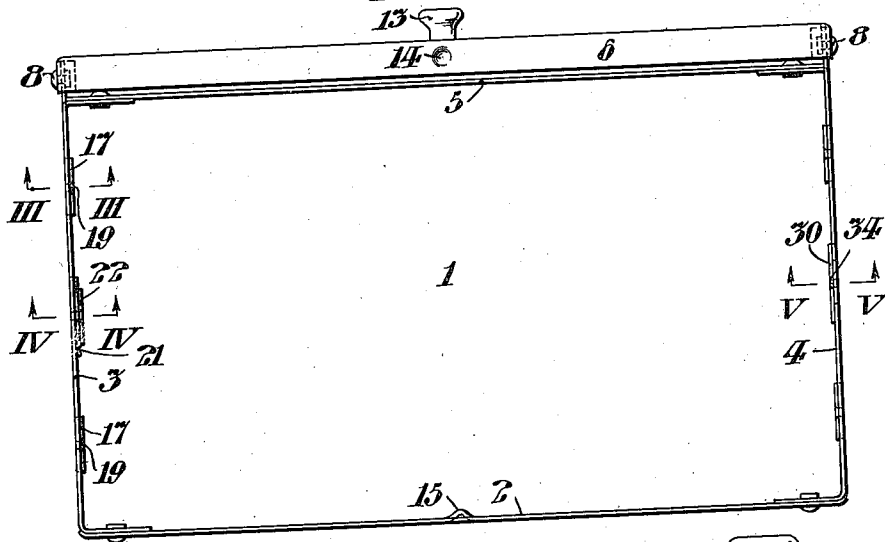


FIG. II.

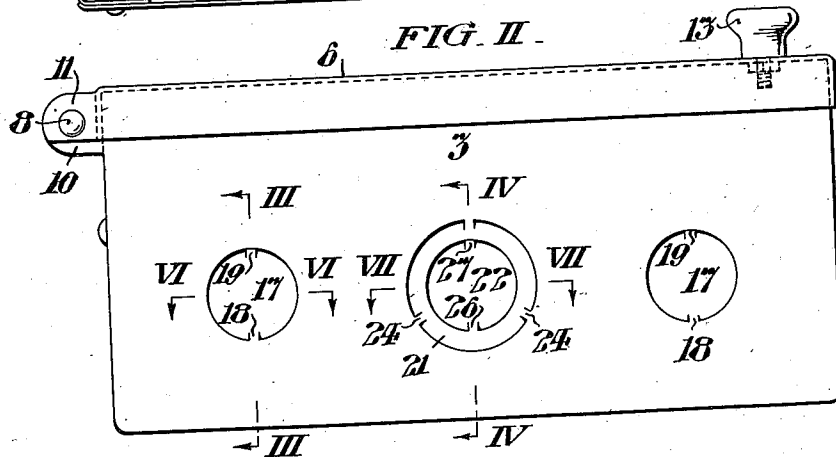


FIG. III.

FIG. IV.

FIG. V.

FIG. VIII.

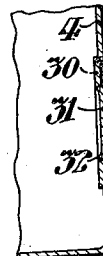
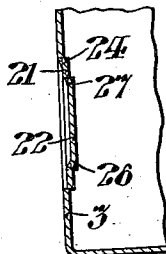
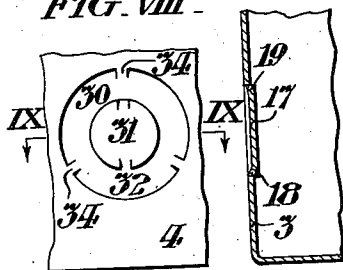
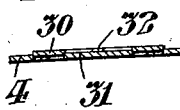


FIG. IX.



WITNESSES:

Philip W. Vessey.
James M. Cobs.

FIG. VI. 3
17 18

FIG. VII. 22
21 26 3

INVENTOR:

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UNITED STATES PATENT OFFICE.

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ELECTRIC SWITCH-BOX.

1,215,249.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES F. BURNS, of Philadelphia, in the State of Pennsylvania, have invented a certain new and useful Improvement in Electric Switch-Boxes, whereof the following is a specification, reference being had to the accompanying drawing.

This invention relates to what are known in the electrical art as "knock out" boxes, to wit, boxes for inclosing electrical apparatus of various kinds and having portions of their walls partly cut through so that they may be readily knocked out to afford openings through which electrical conductors may be extended. My improvement relates particularly to such construction and arrangement of the weakened portions of the wall as to afford openings of different sizes, at a given point, by the provision of concentrically arranged knock out members thereat.

As hereinafter described my invention includes a metal box wall having a partially formed aperture normally closed by two concentric circular blanks, being respective knock out portions of said wall, the outer blank being annular and connected with the remainder of the wall by an uncut unitary bridge, and the inner blank being a circular disk connected with the outer blank by an uncut unitary bridge; said two knock out blanks being disposed in respectively different planes with respect to said wall, the outer one of said blanks being displaced inwardly with respect to said wall, approximately one-half the thickness of the latter, and the inner blank being displaced outwardly with respect to said outer blank, approximately one-half the thickness of the latter; whereby, said inner blank may be knocked out, in one direction, without disturbing said outer blank and leaving a small opening in said wall, and, said outer blank may be knocked out, in the opposite direction, together with said inner blank, leaving a larger opening in said wall.

My invention includes the various novel features of construction and arrangement hereinafter more definitely specified.

In said drawing; Figure I is a plan view of a box, with its lid raised, conveniently embodying my invention.

Fig. II is an elevation of the left hand end of said box shown in Fig. I, but on a larger scale.

Fig. III is a fragmentary vertical sectional view of said box, taken on the line III, III in Fig. II.

Fig. IV is a fragmentary vertical sectional view of said box, taken on the line IV, IV in Fig. II.

Fig. V is a fragmentary vertical sectional view of said box, taken on the line V, V in Fig. I.

Fig. VI is a fragmentary horizontal sectional view of said box, taken on the line VI, VI in Fig. II.

Fig. VII is a fragmentary horizontal sectional view of said box, taken on the line VII, VII in Fig. II.

Fig. VIII is a fragmentary elevation of the end of said box shown in section in Fig. V.

Fig. IX is a fragmentary horizontal sectional view of said box, taken on the line IX, IX in Fig. VIII.

In said figures; 1 is the box having the front wall 2; opposite end walls 3 and 4, rear wall 5 and lid 6, the latter being pivotally connected with said box by the pintles 8 which are riveted through the lugs 10 on the box and the lugs 11 on said lid, the latter being provided with the knob 13 by which it may be opened and closed, and having at the front thereof the indentation 14 adapted to engage the indentation 15 in said box so as to normally hold said lid shut. It is to be understood that when said lid is manually opened or shut the wall 2 springs sufficiently to permit the disengagement or engagement of said indentations 14 and 15.

Said box wall 3 is provided with two knock out portions 17 which are circular disks partly cut through said wall 3 but connected therewith by uncut unitary bridges 18, the latter being in unitary relation with both said wall 3 and the respective knock out portions 17. The lugs 19 diametrically opposite said bridges 18 are in unitary relation with the respective knock out portions 17 but are severed from the wall 3, as shown in Fig. III, being frictionally engaged with said wall so as to prevent the accidental displacement of said knock out members 17 which, as shown in Fig. III, are displaced inwardly with respect to said wall 3 approximately one-half the thickness of the latter.

Said wall 3 is also provided with two concentric circular knock out portions 21 and

22; the outer one being annular and connected with the remainder of said wall by uncut unitary bridges 24, and the inner knock out member 22 being a circular disk connected with said outer member 21 by the uncut unitary bridge 26. The lug 27 diametrically opposite said bridge 26 is in unitary relation with the knock out blank 22 but is severed from the blank 21, as indicated in Fig. IV, being frictionally engaged therewith to prevent accidental displacement of said blank 22. As shown in Fig. IV said two knock out blanks 21 and 22 are disposed in respectively different planes with respect to said wall 3; blank 21 being displaced inwardly with respect to said wall, approximately one-half the thickness of the latter; and blank 22 being displaced inwardly with respect to said blank 21 approximately one-half the thickness of the latter.

As shown in Figs. V, VIII and IX said box wall 4 is provided with two knock out blanks 30 and 31 which are similar to the blanks 21 and 22 above described except that the inner blank 31 is displaced outwardly with respect to the outer blank 30 with which it is connected by the uncut unitary bridge 32 shown in Figs. V and VIII; said outer blank 30 being connected with said wall 4 by the uncut unitary bridges 34 shown in Fig. VIII; whereby, said inner blank may be knocked out, in one direction, to wit, outwardly, without disturbing said outer blank and leaving a small opening in said wall 4, and, said outer blank 30 may be knocked out, in the opposite direction, to wit, inwardly with respect to the box, together with said inner blank 31, leaving a larger opening in said wall.

Said smaller blanks 17, 22 and 31 may be knocked out to receive, in spaced relation, the several wires of an open work installation; without disturbing the larger blanks 21. It may be observed that smaller blanks 17, 22 and 31 being unitarily connected with the box walls only at one side and frictionally held at the diametrically opposite sides it is easier to knock out them than the larger blanks 21 and 30 as the bridges 18 and 26 readily break off as said smaller blanks are knocked out. As all of the bridges 24 and 34 of said larger blanks are primarily uncut, I find it convenient to nick them, with a cold chisel, preliminary to knocking out said larger blanks to afford larger openings to receive conduits in which may be inclosed all of the wires which in open work would be extended through the smaller openings in spaced relation. However, it is to be understood that it is possible to knock out the larger blanks aforesaid without nicking the bridges as aforesaid although greater care must be exercised, in that case, to avoid bending the box wall. It may be observed

that the circumferential extent of each of said elements 18, 19, 24, 26, 27 and 34 is limited by cuts in the metal extending transversely to the perimeters of the respective blanks and inwardly with respect to said perimeters, so as to localize the bending stresses upon said elements and minimize such stresses upon the box wall.

I do not desire to limit myself to the precise details of construction and arrangement herein set forth as it is obvious that various modifications may be made therein without departing from the essential features of my invention as defined in the appended claims.

I claim:—

1. An electric connection box having a metal wall with a partially formed aperture normally closed by two concentric circular blanks, the outer blank being annular and connected with the remainder of the wall by three uncut unitary bridges, equally spaced circumferentially, and the inner blank being a disk connected with said outer blank by an uncut unitary bridge intermediate of said outer bridges and having, diametrically opposite to it, a lug frictionally engaging said wall; said two blanks being disposed in respectively different planes with respect to said wall, the outer one of said blanks being displaced inwardly with respect to said wall, and the inner blank being displaced outwardly with respect to said outer blank; whereby, said inner blank may be knocked out, in one direction, without disturbing said outer blank and leaving a small opening in said wall, and, said outer blank may be knocked out, in the opposite direction, together with said inner blank, leaving a larger opening in said wall.

2. An electric connection box having a metal wall with a partially formed aperture normally closed by two concentric circular blanks, the outer blank being annular and connected with the remainder of the wall by three uncut unitary bridges, equally spaced circumferentially, and the inner blank being a disk connected with said outer blank by an uncut unitary bridge intermediate of said outer bridges and having, diametrically opposite to it, a lug frictionally engaging said wall; said two blanks being disposed in respectively different planes with respect to said wall, the inner blank being displaced outwardly with respect to said outer blank; whereby, said inner blank may be knocked out without disturbing said outer blank and leaving a small opening in said wall, and said outer blank may be knocked out, together with said inner blank, leaving a larger opening in said wall.

3. An electric connection box having a metal wall with a partially formed aperture normally closed by two concentric circular blanks, the outer blank being annular and

connected with the remainder of the wall by three uncut unitary bridges, equally spaced circumferentially, and the inner blank being a disk connected with said outer blank by an uncut unitary bridge intermediate of said outer bridges and having, diametrically opposite to it, a lug frictionally engaging said wall; said two blanks being disposed in respectively different planes with respect to said wall; whereby, said inner blank may be knocked out without disturbing said outer blank and leaving a small opening in said wall, and said outer blank may be knocked out, together with said inner blank, leaving a larger opening in said wall.

4. An electric connection box having a metal wall with a partially formed aperture normally closed by two blanks, one within the other, the outer blank being annular and connected with the remainder of the wall by three uncut unitary bridges, equally spaced circumferentially, and the outer blank being a disk connected with said inner blank by an uncut unitary bridge intermediate of said outer bridges and having, diametrically opposite to it, a lug frictionally engaging said wall; said two blanks being disposed in respectively different planes with respect to said wall, the outer one of said blanks being displaced inwardly with respect to said wall, and the inner blank being displaced outwardly with respect to said outer blank; whereby, said inner blank may be knocked out, in one direction, without disturbing said outer blank and leaving a small opening in said wall, and, said outer blank may be knocked out, in the opposite direction, together with said inner blank, leaving a larger opening in said wall.

5. An electric connection box having a metal wall with a partially formed aperture normally closed by two blanks, one within the other, the outer blank being annular and connected with the remainder of the wall by three uncut unitary bridges, equally spaced circumferentially, and the inner blank being a disk connected with said outer blank by an uncut unitary bridge intermediate of said outer bridges and having, diametrically opposite to it, a lug frictionally engaging said wall; said two blanks being disposed in respectively different planes with respect to said wall, the inner blank being displaced outwardly with respect to said outer blank; whereby, said inner blank may be knocked out without disturbing said outer blank and leaving a small opening in said wall, and said outer blank may be knocked out, together with said inner blank, leaving a larger opening in said wall.

6. An electric connection box having a metal wall with a partially formed aperture normally closed by two blanks, one within

the other, the outer blank being annular and connected with the remainder of the wall by three uncut unitary bridges, equally spaced circumferentially, and the inner blank being a disk connected with said outer blank by an uncut unitary bridge intermediate of said outer bridges and having, diametrically opposite to it, a lug frictionally engaging said wall; said two blanks being disposed in respectively different planes with respect to said wall; whereby, said inner blank may be knocked out without disturbing said outer blank and leaving a small opening in said wall, and said outer blank may be knocked out, together with said inner blank, leaving a larger opening in said wall.

7. An electric connection box having a metal wall with a partially formed aperture closed by two blanks, one within the other, the outer blank being connected with the remainder of the wall by an uncut unitary bridge, and the inner blank being connected with said outer blank by an uncut unitary bridge and having, diametrically opposite to its bridge, a lug offset from the plane of said inner blank and frictionally engaging said outer blank; said two blanks being disposed in respectively different planes with respect to said wall.

8. An electric connection box having a metal wall with a partially formed aperture closed by two blanks, one within the other, the outer blank being connected with the remainder of the wall by an uncut unitary bridge, and the inner blank being connected with said outer blank by an uncut unitary bridge and having, diametrically opposite to its bridge, a lug offset from the plane of said inner blank and frictionally engaging said outer blank.

9. An electric connection box having a metal wall with a partially formed aperture normally closed by two blanks, one within the other, the inner blank being connected with said outer blank by an uncut unitary bridge and having, diametrically opposite to its bridge, a lug offset from the plane of said inner blank and frictionally engaging said outer blank; said two blanks being disposed in respectively different planes with respect to said wall.

10. An electric connection box having a metal wall with a partially formed aperture normally closed by two blanks, one within the other, the inner blank being connected with said outer blank by an uncut unitary bridge and having, diametrically opposite to its bridge, a lug offset from the plane of said inner blank and frictionally engaging said outer blank.

11. An electric connection box having a metal wall with a partially formed aperture normally closed by a blank having an uncut unitary bridge connecting it with the mar-

gin of said aperture and having, diametrically opposite to it, a lug offset from the plane of said blank and frictionally engaging said margin.

- 5 12. An electric connection box having a metal wall with a partially formed aperture normally closed by a blank having an uncut unitary bridge connecting it with the margin of said aperture and having a lug offset
10 from the plane of said blank and frictionally engaging said margin.

13. An electric connection box having a metal wall with a partially formed aperture normally closed by a blank having an uncut
15 unitary bridge connecting it with the margin of said aperture and having a lug offset from the plane of said blank and frictionally engaging said margin remote from said
20 bridge; said aperture being disposed concentrically within another partially formed aperture normally closed by a blank having an uncut unitary bridge connecting the latter blank with the margin of the latter aperture.

- 25 14. An electric connection box having a metal wall with a partially formed aperture normally closed by two blanks, one within the other, the inner blank being connected with said outer blank by an uncut
30 unitary bridge and having, diametrically opposite to said bridge, a lug offset from the plane of said inner blank and frictionally engaging said outer blank; said two blanks being disposed in respectively different
35 planes with respect to said wall, and the circumferential extent of said bridge and lug being limited by cuts in the metal extending transversely to the perimeters of the respective blanks, and inwardly with respect
40 to said perimeters.

15. An electric connection box having a metal wall with a partially formed aperture normally closed by two blanks, one within the other, the inner blank being connected
45 with said outer blank by an uncut unitary bridge and having, diametrically opposite to said bridge, a lug offset from the plane of said inner blank and frictionally engaging said outer blank; said two blanks being
50 disposed in respectively different planes with respect to said wall, and the circumferential extent of said bridge and lug being limited by cuts in the metal extending transversely to the perimeters of the respective blanks.

- 55 16. An electric connection box having a metal wall with a partially formed aperture normally closed by two blanks, one within the other, the inner blank being connected with said outer blank by an uncut
60 unitary bridge and having, diametrically opposite to said bridge, a lug offset from the plane of said inner blank and frictionally engaging said outer blank, and the circumferential extent of said bridge and lug being
65 limited by cuts in the metal extending trans-

versely to the perimeters of the respective blanks, and inwardly with respect to said perimeters.

17. An electric connection box having a metal wall with a partially formed aperture normally closed by two blanks, one
70 within the other, the inner blank being connected with said outer blank by an uncut unitary bridge and having, diametrically opposite to said bridge, a lug offset from the
75 plane of said inner blank and frictionally engaging said outer blank, and the circumferential extent of said bridge and lug being limited by cuts in the metal extending transversely to the perimeters of the respective
80 blanks.

18. An electric connection box having a metal wall with a partially formed aperture normally closed by a blank having an uncut
85 unitary bridge connecting it with the margin of said aperture and having, diametrically opposite to it, a lug offset from the plane of said inner blank and frictionally engaging said margin; the circumferential
90 extent of said bridge and lug being limited by cuts in the metal extending transversely to said margin and inwardly with respect thereto.

19. An electric connection box having a metal wall with a partially formed aperture normally closed by a blank having an
95 uncut unitary bridge connecting it with the margin of said aperture and having, diametrically opposite to it, a lug offset from the plane of said inner blank and frictionally engaging said margin; the circumferential
100 extent of said bridge and lug being limited by cuts in the metal extending transversely to said margin.

20. An electric connection box having a metal wall with a partially formed aperture normally closed by a blank having an
105 uncut unitary bridge connecting it with the margin of said aperture and having a lug offset from the plane of said blank and frictionally engaging said margin; the circumferential extent of said bridge and lug being limited by cuts in the metal extending transversely to said margin and inwardly
110 with respect thereto.

21. An electric connection box having a metal wall with a partially formed aperture normally closed by a blank having an
115 uncut unitary bridge connecting it with the margin of said aperture and having a lug offset from the plane of said blank and frictionally engaging said margin.

22. A box having a metal wall with a partially formed aperture normally closed by two blanks, one within the other, the inner
120 blank being connected with said outer blank by an uncut unitary bridge and having, diametrically opposite to said bridge, a lug offset from the plane of said inner blank and frictionally engaging said outer blank; said
125

outer blank being connected with said wall
by a plurality of uncut unitary bridges,
equally spaced circumferentially at the
junction of said blank and wall; said two
5 blanks being respectively planular except at
their bridges and being disposed in respec-
tively different planes with respect to said
wall, and the circumferential extent of each
of said bridges and said lug being limited by
10 cuts in the metal extending transversely to

the perimeters of the respective blanks, and
inwardly with respect to said perimeters.

In testimony whereof, I have hereunto
signed my name at Philadelphia, Pennsyl-
vania, this twenty-seventh day of Decem- 15
ber, 1912.

JAMES F. BURNS.

Witnesses:

FRANK L. ALBERT,
CLARENCE W. SHICK.