

B. F. FERGUSON.
CRATE.

APPLICATION FILED JAN. 3, 1908.

910,656.

Patented Jan. 26, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

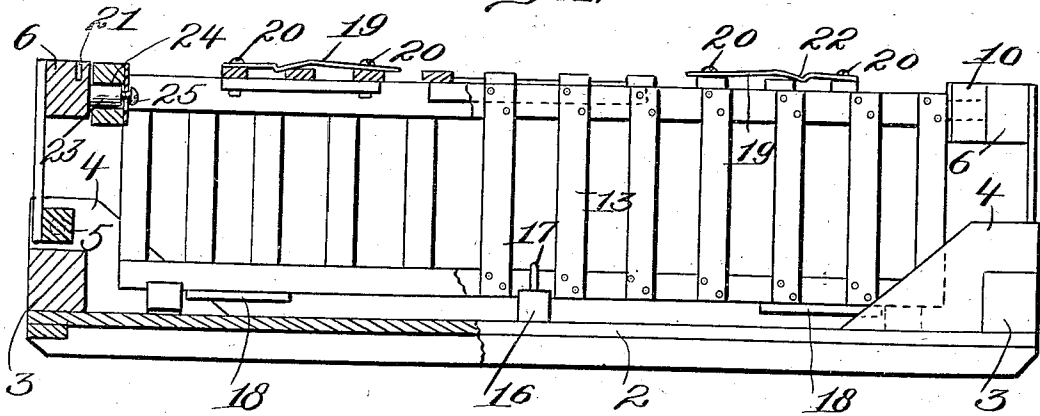


Fig. 2.

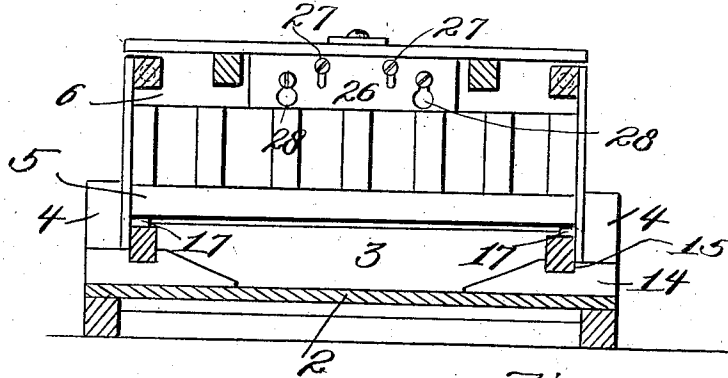


Fig. 3.

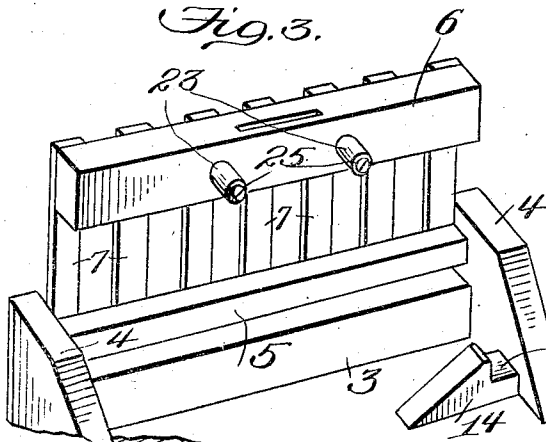
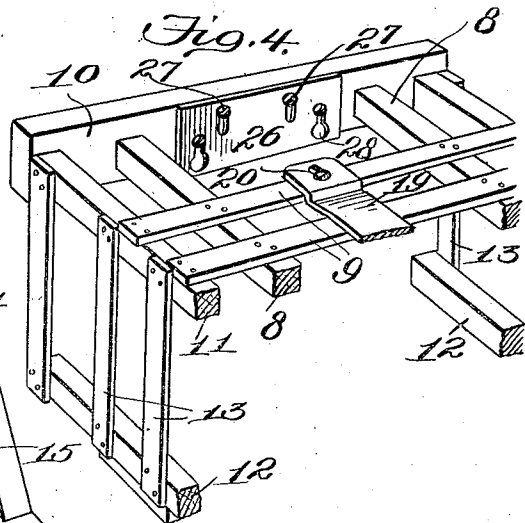


Fig. 4.



Witnesses:
C. H. Hester
J. H. G. G. G.

Inventor
Benjamin F. Ferguson
By
James L. Norris.

B. F. FERGUSON.

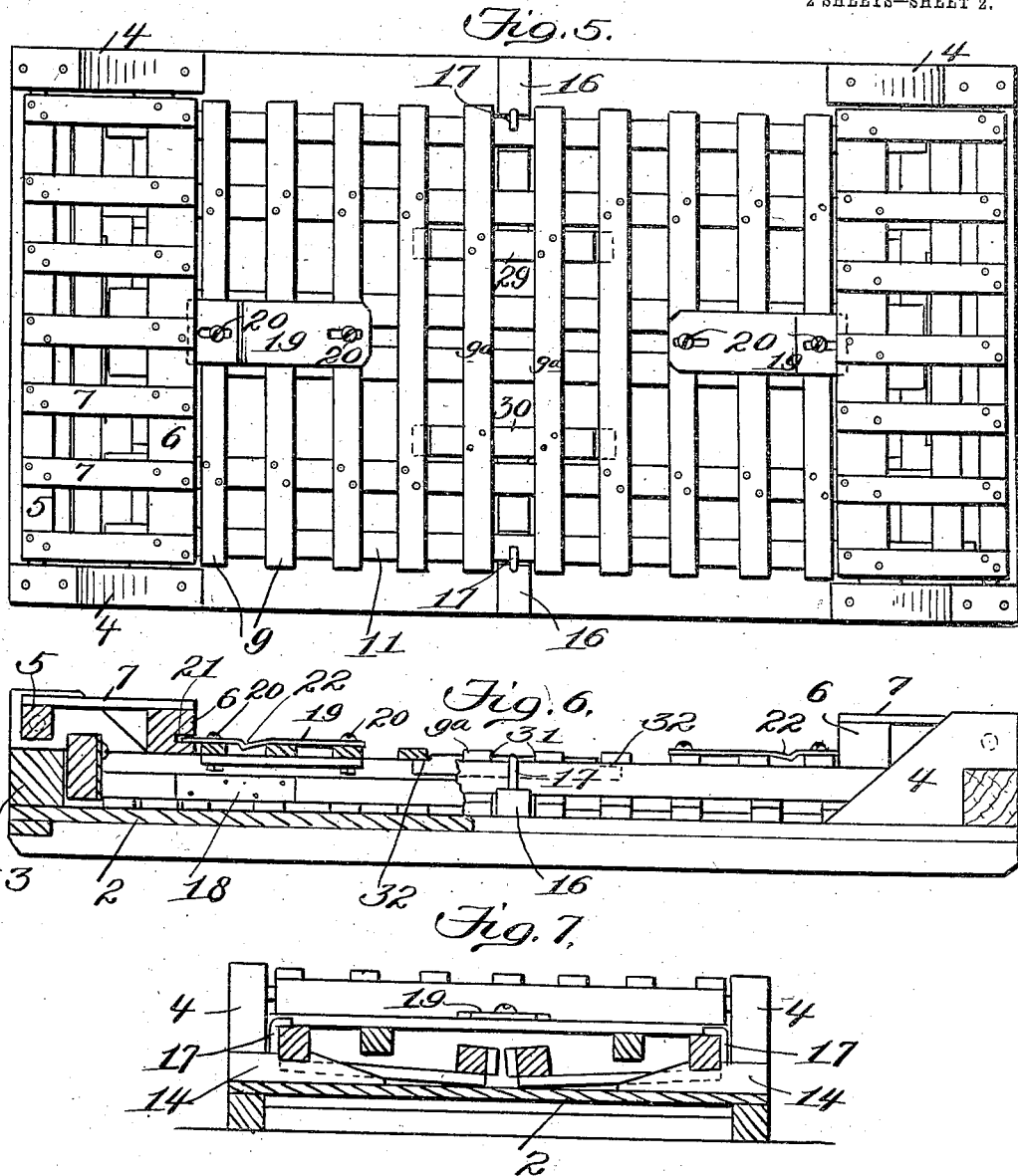
GRATE.

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2 SHEETS—SHEET 2.



Witnesses:
Ed. Hesler
J. B. Keeler

Inventor
Benjamin F. Ferguson
By
James L. Norris

CHAS.

UNITED STATES PATENT OFFICE.

BENJAMIN F. FERGUSON, OF TISHOMINGO, OKLAHOMA.

CRATE.

No. 910,656.

Specification of Letters Patent.

Patented Jan. 26, 1909.

Application filed January 3, 1908. Serial No. 409,218.

To all whom it may concern:

Be it known that I, BENJAMIN F. FERGUSON, a citizen of the United States, residing at Tishomingo, in the county of Johnston and State of Oklahoma, have invented new and useful Improvements in Crates, of which the following is a specification.

This invention relates to foldable crates for general use, but particularly adapted for the shipment of poultry and for the latter serving as a coop.

The crate is simple in construction, comparatively inexpensive in manufacture, can be readily and expeditiously knocked down or set up, and when in its collapsed or folded condition is materially reduced and will occupy but a small space with advantages in return shipments thereof in empty condition.

In the drawings: Figure 1 is a side elevation of a crate with a portion thereof broken away and embodying the features of the invention, the crate being shown in set-up condition. Fig. 2 is a cross-section of the crate as shown arranged by Fig. 1. Fig. 3 is a perspective view of one end of the lower portion of the crate. Fig. 4 is a similar view of the end portion of the upper part of the crate. Fig. 5 is a plan view of the crate in collapsed or knock-down condition and looking towards the top thereof. Fig. 6 is a side elevation of the crate as shown by Fig. 5 with a portion thereof broken away. Fig. 7 is a transverse vertical section of the crate in its collapsed condition.

Similar characters of reference are employed to indicate corresponding parts in the several views.

The crate includes in its construction a base or foundation member consisting of a plate or board 2 having cross-pieces 3 fastened on the upper side thereof at opposite ends. The opposite ends of the cross-pieces 3 are set or fitted in mortises or recesses formed in the outer ends of pairs of blocks 4 also secured on the upper side of the base 2; the said blocks 4 constituting bearings for swinging ends particularly shown by Fig. 3 and each comprising a bottom bar 5 having its opposite ends fulcrumed in the said blocks, a top bar 6, and a plurality of slats 7 disposed in parallelism and laterally spaced to provide for ventilation. The slats 7 are terminally secured respectively to the bars 5 and 6, and the end complete is movable between the blocks 4.

The end structure just described is dupli-

cated at opposite extremities of the crate, and when in operative position stand vertically as shown by Fig. 3. The lower portion of the crate therefore consists essentially of the base and swinging ends, the upper portion of the crate being completely separable from the lower portion and comprising a top and swinging sides, the latter standing vertically when the crate is set up and folding substantially in horizontal positions against the under side of the top when the crate is collapsed.

The upper portion or top of the crate includes in its structure a plurality of longitudinally extending bars 8, two of these bars being shown and having a plurality of slats or strips 9 extending transversely thereover and secured thereto in any suitable manner. The bars 8 extend between and are terminally fastened to end bars 10, see Fig. 4, the two end bars 10, the bars 8, and the slats or strips 9 forming a skeleton frame which constitutes the top of the crate. Between the end bars 10 are oscillatory or rocking bars 11 pivoted at their opposite terminals in the said end bars 10 and extending in planes parallel to the bars 8. The bars 11 have complementary bars 12, the respective bars 11 and 12 being connected by slats 13 of which there may be any desired number. It will therefore be understood that the side of the crate is composed of the bars 11 and 12 and connecting slats 13, the two sides being capable of swinging motion. The opposite extremities of the slats 9 of the top project outwardly beyond the bars 8 to loosely bear on the oscillatory or rocking bars 11, and owing to the fact that the latter bars are by preference polygonal in cross-section, the projecting portions of the slats 9 by engaging one flat face of each of the said oscillatory or rocking bars the sides will be maintained in vertical position when set up. It will be understood that the projecting extremities of the top slats 9 will be more or less resilient in view of the fact that they are a thin structure and for this reason the sides may be disposed and held in vertical position without liability of breaking or injuring the said slats. The lower bars 12 are substantially the same length as the bars 11 and the two swinging sides in view of this similarity of dimensions of the bars can be folded or collapsed between the end bars 10 against the under edges or faces of the bars 8, the latter being disposed at such elevation with respect

to the bars 10 as to compensate for the thickness of the slats 13 under the bars 8 and permit a compact folding of the sides.

On the upper side of the base 2 adjacent to the end bars 3, blocks 14 are secured and arranged in opposite pairs and abut against the bearing blocks 4. These blocks 14 serve as seat blocks and are provided with cut-away portions or seats 15. When the upper portion of the crate is folded it will be placed in the area defined by the several blocks 4 and end bars 3 and the bars 11 of the sides will be disposed in the seat blocks so as to positively prevent side motion of the folded or collapsed upper portion of the crate. Intermediate seat blocks 16, similar to the blocks 14, are secured on the upper side of the base 2 at the center of the latter and transversely aligned, the blocks 16 being provided with swiveled hooks 17 to engage the bars 11 and 12. The seat blocks 16 are also engaged by the bars 11 when the other portion of the crate is folded or collapsed and all of the blocks 14 and 16 are straddled by pairs of slats 13 adjacent thereto and which prevent endwise movement of the folded or collapsed upper portion of the crate. When the bars 11 are in engagement with the seat blocks 14 and 16 and the sides of which said bars form a part are infolded under the top, separation or vertical movement of the upper folded portion of the crate with relation to the base is prevented by turning the hooks 17 inwardly over the said bars 11. When the upper portion of the crate is released from the base and erected in operative position, the bars 12 engage the seat blocks 14 and 16 and by this means the sides of the upper portion of the crate are maintained in a movable position particularly when engaged by the cooperating ends supported by the blocks 4 and which will be more fully hereinafter specified. The bars 12 will be prevented from having any tendency towards disengagement from the seat blocks 14 and 16 by the movable hooks 17 which are turned thereover as shown by Fig. 1. It is obvious that the hooks 17 may be readily turned into or from engagement with the bars 11 and 12 and serve as an efficient means for aiding in positively positioning the upper portion of the crate either when the latter is erected in operative position or when collapsed or folded.

To prevent the upper portion of the crate from moving endwise or shifting longitudinally over the base when the sides are disposed in vertical positions, the bars 12 are provided with longitudinal stops 18 which are adapted to abut against the inner sides of the seat blocks 14 or to lie in such close relation to the blocks 14 as to come forcefully into contact with the latter and obstruct longitudinal movement of the sides in the seat blocks.

As hereinbefore indicated, the upper portion of the crate when collapsed and held against the base 2 is in such position with relation to the ends carried by the blocks 4 that said ends may overlie the opposite extremities of the folded upper portion of the crate when the said ends are infolded and it is necessary to provide means for locking the ends against movement, and, furthermore, by locking the ends when turned downwardly over the opposite extremities of the upper portion of the crate, all the parts of the crate are positively held against movement when in folded condition. This locking means consists of a sliding keeper 19 held on each extremity of the top and capable of endwise movement, the keeper being guided in its movement by screws 20 secured in two of the slats 9 and projecting through slots 20^a at opposite extremities of the keeper. The outer end of this keeper or sliding locking means is adapted to engage a slot or kerf 21 formed in the adjacent cross-bar 6, see Fig. 6. When the keepers or sliding locking means are in engagement with both bars 6 of the crate ends, the latter are positively held against accidental upward movement, and in releasing the parts of the crate it will be necessary to slide the keepers inwardly far enough to disengage the swinging crate ends. The keepers may be formed of suitable resilient material, such as sheet metal, and are provided with downward deflections 22, one in each, to engage against two of the slats 9 for positively holding the keepers in their retracted positions and against rattling when the crate is erected in operative position or at the time when the said keepers are disengaged from the swinging ends. The deflections 22 also provide finger-engaging shoulders to facilitate movement of the keepers, and, furthermore, the said deflections serve as means for preventing the accidental disengagement of the keepers from the slots or kerfs 21 in view of their position under such conditions between two of the slats 9, as shown by Fig. 6. Each bar 6 is also equipped with a pair of pins 23 which are adapted to extend through perforations or holes 24 in the end bars 10 of the top as shown by Fig. 1, to prevent outward movement or displacement of the upper or removable portion of the crate and also to hold the swinging ends in operative relation to the said upper or removable portion of the crate. The pins 23 are provided at their inner ends with headed projections 25 preferably consisting of screws and cooperative with gravitating latch plates or latches 26 carried by the inner sides of the end bars 10. Each latch plate 26 has a pair of vertically elongated slots through which are passed screws 27 extending into the bar 10 and permitting free vertical movement of the plates, but obstructing endwise movement thereof. Each latch

plate or gravitating latch also has a pair of key-hole slots 28 which are adapted to coincide with the perforations or holes 24 to permit the headed projections 25 to pass through the enlarged portions thereof and the shanks of said projections to be engaged by the contracted parts of said key-hole slots and thus temporarily lock the swinging ends against the opposite extremities or end bars 10 of the crate top. In releasing the swinging ends, the latch plates or gravitating latches 26 are elevated by hand to bring the enlarged portions of the key-hole slots in registration with the heads of the projections 25 to permit the pins 23 and the said projections to be drawn outwardly through the perforations or holes 24 by exerting an outward pull on the swinging ends.

To permit access to the interior of the crate or coop the top section is in the present instance provided with a door comprising two or more of the transverse slats or strips 9 which are left unsecured with relation to the longitudinal bars 8, and two or more cross-bars 29 and 30, a series of three bars being shown in the present instance. These cross bars are similar in construction and each provided with a suitable number of notches 31 to receive corresponding transverse slats which for the purpose of particular distinction are designated as 9^a, and each cross bar or cross piece is provided with notches 32 which engage beneath and also at the sides of the adjacent stationary transverse slats 9. The cross bars extend beneath the transverse slats, and when the notches 32 are in engagement with the stationary slats 9 at each side of the door, the removable slats 9^a are held against movement either vertically or in a direction longitudinally of the crate, and, furthermore, as the cross bars just fit within the longitudinal bars 8 of the crate top, endwise displacement of the removable slats is also prevented. When it is desired to remove the slats 9^a to afford access to the interior of the crate a pressure is applied to the center of the removable slats to depress the cross bars thereof and disengage the notches 32 from the stationary slats to permit the cross bars or cross pieces to be released at one end, and after being thus released the removable slats may be readily withdrawn from the crate.

In erecting the crate the upper removable portion is positioned on the base with the sides in upright position and in engagement with the seat blocks 14 and 15, as hereinbefore explained. The swinging ends are then turned upwardly and the pins 23 carrying the headed projections 25 are pushed through the apertures or holes 24 in the end bars 10 and through the enlarged portions of the key-hole slots 28 in the plates 26. The plates 26 gravitate and lock the headed projections 25 and the pins 23 and swinging

ends against the opposite extremities of the crate top or removable upper portion of the crate. The release of the swinging ends and of the swinging sides of the upper removable portion of the crate will permit the parts to be readily folded in compact form as hereinbefore indicated.

Having thus described the invention, what is claimed as new, is:

1. A crate comprising a lower portion and an upper portion, the lower portion having outwardly swinging ends provided with pins having headed projections, and the upper portion having openings to receive said pins as said ends are swung inwardly, said upper portion also having latching means to engage said headed projections.

2. A crate comprising a base, swinging ends connected to the base, a top provided with swinging sides, the ends of the top having perforations therethrough and the swinging ends provided with pins to enter said perforations, gravity latching means supported by the ends of the top, and means carried by the pins and engageable by the latching means to hold the swinging ends in fixed relation with said top.

3. A crate comprising a base, swinging ends connected to said base and provided with pins having headed projections, a top provided with swinging sides, the ends of the top having perforations to receive said pins, and the headed projections extending inwardly beyond the ends of said top when the pins are seated in the perforations, and latching plates supported for movements by the ends of the top in a direction perpendicular to said pins and provided with key-hole slots through which said headed projections are adapted to pass.

4. A crate comprising a base having swinging ends fulcrumed at their lower extremities, a top having transverse end bars from which inwardly swinging sides depend to loosely engage the base, the end bars of the top being detachably connected to the swinging ends and the top as a whole being removably held by the base, and holding means carried at opposite extremities of the top for engagement with the central portion of the swinging ends when the latter and the top of its swinging sides are in collapsed condition.

5. A crate comprising a base, swinging ends connected with the base, a top having end members carrying swinging sides foldable against the under portion of the said top, the top and sides being removably held on the base and the ends being adapted to overlie the top when the latter is folded, and slidable keepers carried by the opposite extremities of the top to engage portions of the swinging ends when the latter and the sides and top are folded, the keepers being provided with downwardly deflected por-

tions to engage the top when the keepers are retracted to thereby hold said keepers in retracted positions.

6. A crate involving a top having longitudinally extending bars, end bars fastened to the terminals of said longitudinally extending bars, rocking bars terminally held by the end bars in parallelism to the longitudinally extending bars; complementary bars connected to the rocking bars by slats and forming with the latter swinging sides, a base having means for engaging the complementary bars, swinging ends connected to opposite extremities of the base, and means for attaching the swinging ends to the top, the top carrying the swinging sides being removable from the base and the swinging sides foldable inwardly under the top for disposition on the base, the swinging ends being foldable inwardly over the opposite extremities of the folded top and swinging sides to hold the latter down against the base.

7. A crate involving a top having longitudinally extending bars, end bars arranged transversely with relation to said longitudinal bars and having the terminals of the latter fixed thereto, slats extending transversely across and fastened to said longitudinally extending bars and having their opposite extremities projecting beyond said latter bars and free, and swinging sides having upper longitudinally extending bars fulcrumed at opposite extremities in the said end bars to permit the sides to swing inwardly, the upper longitudinal bars of the sides having angular faces and the opposite free extremities of the slats projecting over and bearing on the upper angular faces of said upper bars of the sides to frictionally hold the latter bars and the sides against movement when the crate is set up.

8. A crate comprising a top having transversely extending slats with free yielding extremities and a swinging side carried by the top and having an upper member frictionally engaged by the free yielding extremities of the slats to prevent movement of the said swinging side, the free yielding extremities of the slats being the sole holding means engaging the upper portion of the swinging side.

9. A crate involving a top comprising lon-

gitudinally extending bars and transverse end bars rigidly fastened to and extending below the lower edges of said longitudinally extending bars, sides provided with upper longitudinal bars terminally fulcrumed to said transverse end bars for swinging movement, the sides being foldable inwardly under the top and adapted to be held under the rigidly fastened longitudinal bars above the lower edges of the said end bars, a base on which the top and swinging sides are removably mounted; and swinging ends held by the base and having extremities removably attachable to the transversely extending end bars, the said swinging ends being foldable inwardly over the top and the base when the said top with its swinging sides is collapsed.

10. A crate comprising a base, swinging ends connected to opposite extremities of the base and foldable inwardly over the latter, blocks disposed on the base near opposite ends and at intermediate points along the sides of the base and having seats in their upper portions, a top having swinging sides carried thereby and provided with lower bars which loosely and removably engage the said blocks to hold the said sides in vertical position, and means for securing the sides against movement when in engagement with the blocks.

11. A crate of the class described, comprising a section composed of longitudinal bars, a series of spaced slats extending transversely of and immovably secured to said bars, removable slats assembled in operative relation to said immovably secured slats, and cross-pieces secured to the under sides of the removable slats and extending in planes at right angles to all of the slats and having notches in their upper sides and at the ends to cooperate with adjacent immovable or fixed slats to prevent lateral displacement of the movable slats, the cross-pieces also cooperating at their outer edges with the inner edges of the longitudinal bars to prevent endwise displacement of the removable slats.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

BENJAMIN F. FERGUSON.

Witnesses:

HARRY L. BRISON,
C. W. RUTHERFORD.