No. 760,108. PATENTED MAY 17, 1904.

C. & J. DIETZ.

CRANK AND LEVER MECHANISM.

APPLICATION FILED JUNE 27, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

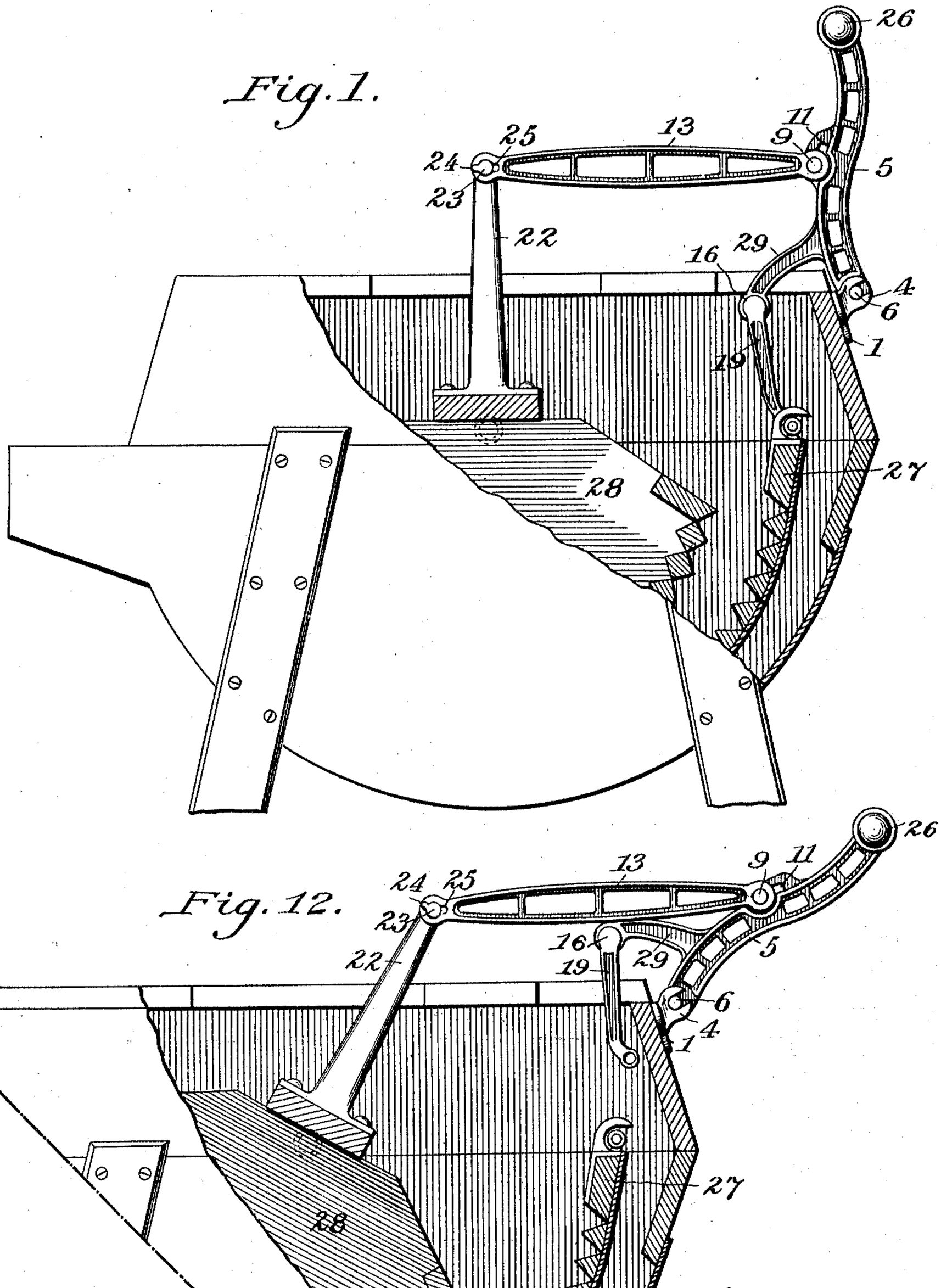

Fig. 12.

Witnesses.
H. E. Engelhardt.
F. O. Fry.

Inventors.
Conrad Dietz
John Dietz
By James F. Ramsey
Attorney

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2.

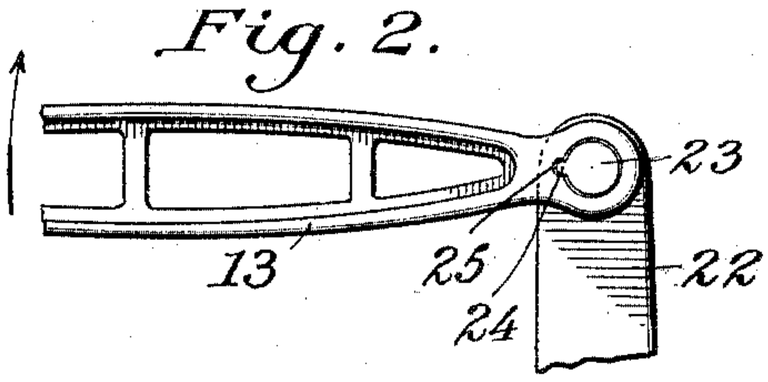


Fig. 3.

Fig. 4.

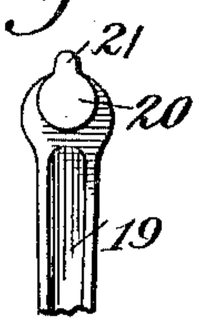


Fig. 5.

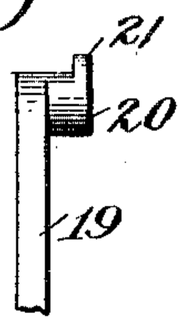


Fig. 6.

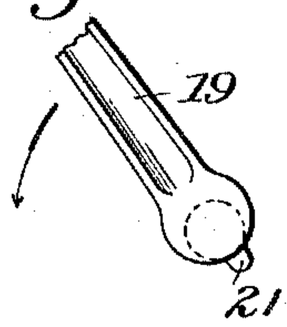


Fig. 7.

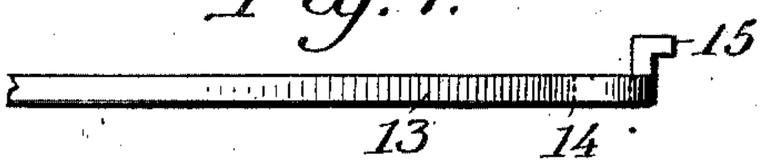


Fig. 9.

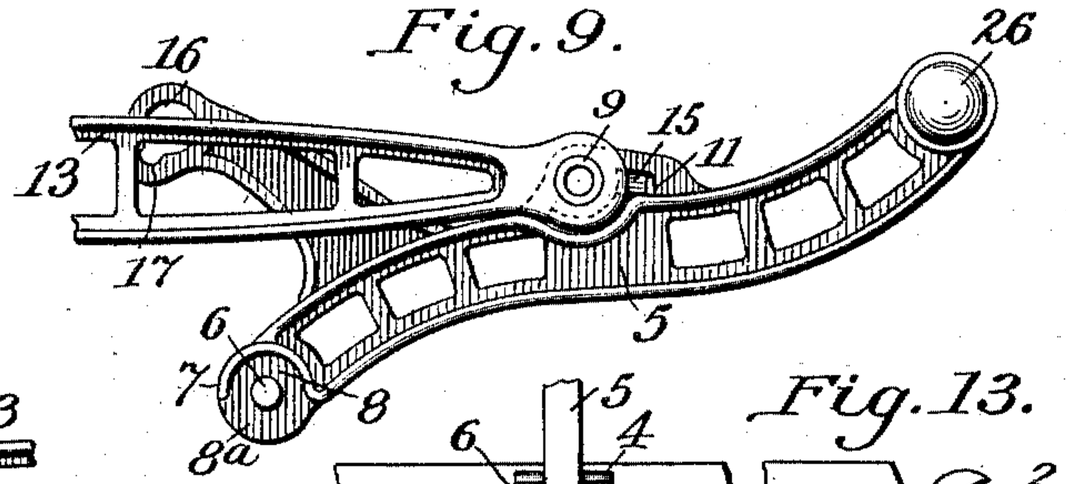


Fig. 10.

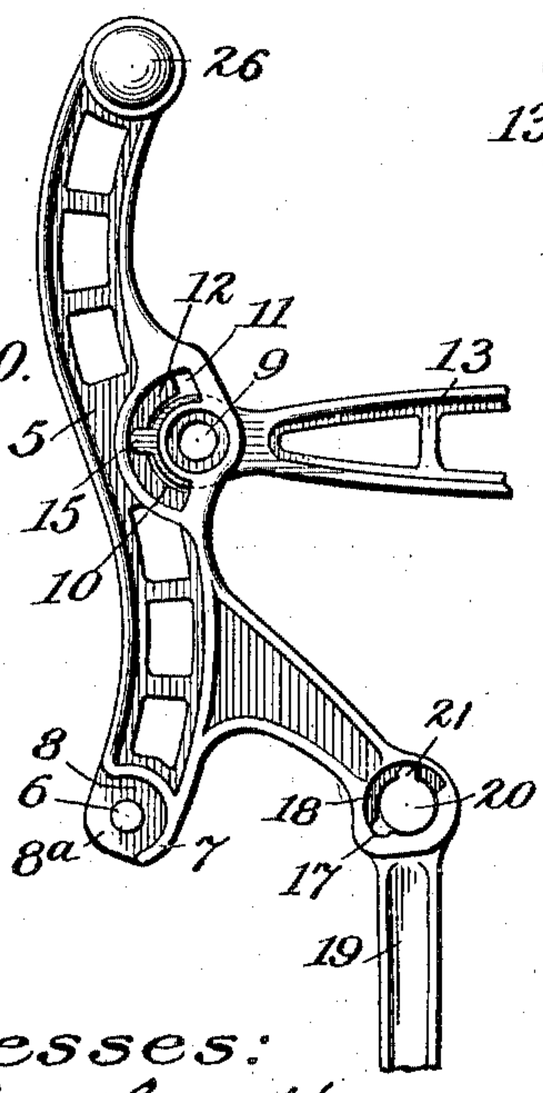


Fig. 8

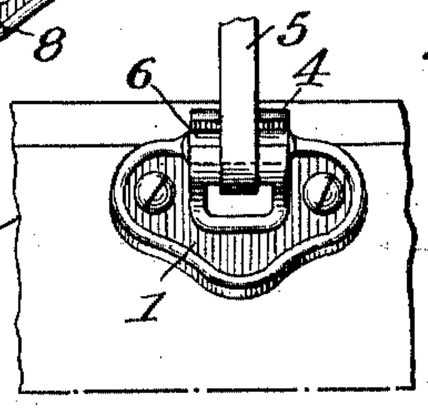


Fig. 13.

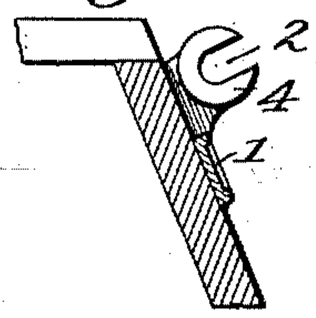
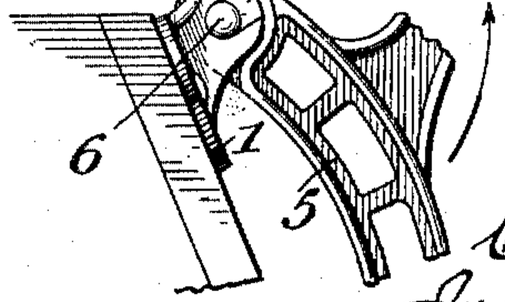


Fig. 11.



Witnesses:
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UNITED STATES PATENT OFFICE.

CONRAD DIETZ AND JOHN DIETZ, OF CINCINNATI, OHIO; SAID JOHN DIETZ ASSIGNOR TO SAID CONRAD DIETZ.

CRANK-AND-LEVER MECHANISM.

SPECIFICATION forming part of Letters Patent No. 760,108, dated May 17, 1904.

Application filed June 27, 1902. Serial No. 113,418. (No model.)

To all whom it may concern:

Be it known that we, CONRAD DIETZ and JOHN DIETZ, citizens of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Crank-and-Lever Mechanism, of which the following is a specification.

Our invention relates to improvements in coupling devices for connecting rocker or crank arms, pitmen, connecting-rods, cranks, and such bars or members which it is desired to pivotally and detachably couple together.

The object of our invention is to construct and combine the parts or members to be coupled together so that they may be attached to each other in such a manner that they will be interlocked by turning one of the parts or members relatively to the others, so as to hold them securely against unintentional disengagement without the use of any parts separate from those so coupled together and to detach from each other the respective parts when so desired without the use of special or ordinary tools.

Our invention consists of coupling members one of which is provided with a bearing and the other with a journal and each having formed integrally therewith suitable means for engaging the adjacent member to hold the parts in coupled relation and each also provided with means integrally connected therewith for coupling and uncoupling the parts when so desired.

Our invention also consists in the parts and combination and arrangement of parts, as herein fully shown and described and as more particularly pointed out in the claims.

In the drawings which serve to illustrate our invention and one mode of the application and use thereof, Figure 1 is a side elevation showing our couplings interlocked in position for use in one form of machine to which they are adapted to be applied, a portion of said machine being broken away to show the parts. Fig. 2 is an enlarged detail view of a portion of the pitman and standard and shows their relationship to each other at the point of coupling and uncoupling. Fig. 3 is an enlarged detail side view showing the relation of the respective parts to each other when in coupled or interlocked relation. Fig. 4 is an enlarged detail front view of the upper end of the connecting-rod, showing the journal and retaining-lug in end elevation. Fig. 5 is an edge view of said connecting-rod, showing the journal and retaining-lug in side elevation. Fig. 6 is the reverse side of said connecting-rod to that shown in Fig. 4. Fig. 7 is an edge view of the opposite end of the pitman to that shown in Fig. 2. Fig. 8 is a rear view of the lower portion of Fig. 3. Fig. 9 is an enlarged detail side view showing the position to which the pitman and rocker or crank arm are swung for the purpose of connecting or disconnecting the same. Fig. 10 is an enlarged detail side view showing the reverse side of said parts, the pitman being shown in dotted lines. Fig. 11 is an enlarged detail side elevation of the hinge-plate mounted on a section of the machine and showing a portion of the rocker or crank arm in the position at which it is adapted to be coupled to or uncoupled from said hinge-plate. Fig. 12 is a side elevation showing all of the parts coupled together except the lower end of the connecting-rod to the part of the machine which it is to actuate and also showing the means for preventing said parts from becoming uncoupled when swung to that position. Fig. 13 is a central vertical section of the hinge-plate, showing one of the bearings in side elevation.

In the construction of the parts embodying our invention the hinge-plate is formed with a flat base 1, adapted to be suitably mounted, as shown in Fig. 8, and having projecting therefrom substantially at right angles thereto open-slotted bearings 2, as shown in Fig. 11, with a slot or space 3 between them, the outer wall 4 of said bearings being circular in form, as shown in Fig. 13. The rocker-arm is preferably constructed in the form shown, having its lower end provided with transverse journals 6, adapted to enter said slotted bearings when said rocker or crank arm is in the position shown in Fig. 11, and being provided with segmental flanges 7, which are adapted to engage the outer walls 4 of said bearings

and to hold said hinge-plate and crank-arm coupled together when in any other position than that shown in Fig. 11—as, for example, the positions illustrated in Figs. 1 and 12. It will be observed that the formation of these flanges creates upon each side of the rocker-arm a chamber or recess 8 between the flange 7 and journal 6, adapted to receive between them the walls 4 of said bearings, and also cut-away portions 8ª upon each side to form passages for the insertion of said walls into said recesses.

Near the center of the crank-arm 5 and on the edge thereof is provided a laterally-projecting journal 9, having formed concentric therewith a segmental slot or recess 10, having a notch 11 at or near one end thereof and a shelf or shoulder 12 extending from said notch along said slot or recess, as shown in Fig. 10. Said slot is preferably formed between said journal and the main portion of the crank or rocker arm; but if desired it may be transferred to the opposite side of said journal or arranged in any other suitable location. The pitman 13, which is adapted to be coupled to this part of the rocker-arm, has its adjacent end formed with a bearing 14, adapted to take over the central journal of the rocker-arm and is also provided with a hook 15, like that shown in Fig. 7, which is adapted to take into the notch, traverse the slot, and engage the shoulder of said rocker-arm, whereby said rocker-arm and pitman will be held coupled together, as shown in Figs. 1, 3, 10, and 12.

On the lower and free end of the crank 29, which extends downwardly and forwardly from the lower portion of the rocker-arm, is a closed circular bearing 16, having a notch 17 therein, and upon one side thereof a segmental recess 18, extending from said notch a portion of the way around the wall of said bearing, as shown in Fig. 10, to receive and house the lug upon the journal of the connecting-rod and also to form a stop to limit the rotary movement of said journal and the sweep of the rocker-arm. The upper end of the connecting rod or bar 19 is constructed with a journal 20 on one side, having a lug or hook 21 thereon, as shown in Figs. 4, 5, and 6, said journal and lug being adapted to register with the notched bearing in the crank when placed together at the angle indicated in Figs. 3 and 6. The dotted lines in Fig. 3 show said connecting-rod with the lug in contact with the end wall of said recess, which limits its further movement in that direction. The dotted lines in Fig. 10 show its position when said parts are not so engaged.

The standard 22, to which one end of the pitman 13 is connected, is provided with a journal 23 and lug 24, which are adapted to take into a notched bearing 25 on one end of said pitman, and the lug and notch are arranged to be out of registry with each other when the parts are connected together in operative position in order that they will not become uncoupled.

The operation of coupling and uncoupling is as follows: After securing the hinge-plate permanently to its base by means of screws or otherwise, as shown in Figs. 1, 3, 8, 11, and 12, place the rocker-arm in the position shown in Fig. 11, allowing the journal to drop into the bearing. Then swing said rocker-arm upwardly in the direction of the arrow to the position shown in Fig. 9. The pitman and standard having been coupled together when in the position shown in Fig. 2 and interlocked by turning the notch and lug out of registry with each other, as shown in Fig. 3, insert the central journal of the rocker-arm in the bearing of the pitman at the position which will allow the hook on the pitman to register with and enter the notch 11 on the rocker-arm, as shown in Fig. 9. Next swing the parts to the position shown in Fig. 3 and couple the connecting-rod to the crank by bringing said parts together at the angles shown in Figs. 3 and 6 and then allow the connecting-rod to drop by gravity to the position indicated by dotted lines in said Fig. 3. Then couple the lower end of the connecting-rod to the clothes-receptacle, as shown in Fig. 1. When the parts are all thus coupled together, the rocker-arm may be oscillated back and forth by handle 26 to impart movement through the clothes-receptacle 27 and rubber 28, respectively, and the parts are prevented from uncoupling when in the position shown in Fig. 12 by engagement of the pitman 13 with the upper end of the connecting-rod 19, which prevents the pitman or rocker-arm from reaching the position of coupling or uncoupling. (Illustrated in Fig. 9.) To uncouple the parts, simply reverse the operation of coupling.

An advantage of this construction is that we are enabled to simplify the structure by reducing the number of parts, thus dispensing with material and workmanship and rendering the assembling and separating of the parts extremely easy and convenient, as well as causing less friction.

We have illustrated our invention as applicable for use upon washing-machines; but it may be applied with great advantage to the operative mechanism of churns and other similar devices requiring the ready and convenient assembling and separation of parts.

It will be apparent that our device is capable of some modification without departing from the scope of our invention, and for that reason we do not wish to be understood as limiting ourselves to the precise form and arrangement of parts as herein set forth.

We claim—

1. In crank-and-lever mechanism, a hinge-plate, a rocker-arm detachably connected thereto, a journal extending laterally from said rocker-arm, said rocker-arm being provided

with a segmental slot adjacent said journal, there being a shelf or shoulder extending part way of said slot and forming a notch at one end thereof, a pitman having a bearing and hook adapted to enter said notch and engage said journal and the walls of said slot and shoulder, respectively to interlock said parts from accidental disengagement.

2. In crank-and-lever mechanism, a hinge-plate, rocker-arm, and pitman, each detachably connected, a crank on said rocker-arm having a circular bearing provided with a notch and recess and a connecting-rod having a journal provided with a lug adapted to register with said notch in the crank and engage the wall adjacent to said bearing and recess whereby the parts are locked from accidental disengagement.

3. In crank-and-lever mechanism, a hinge-plate, a rocker-arm detachably connected thereto, a pitman detachably connected to said rocker-arm, and to mechanism operated thereby, a crank upon said rocker-arm, a connecting-rod detachably connected thereto and to mechanism actuated thereby, said rod having upon its upper end a shoulder which serves as a stop to engage the pitman and prevent it from becoming uncoupled.

4. In crank-and-lever mechanism, a bearing formed with a circular wall and having a notch in one side thereof and also a recess and corresponding shoulder extending part way around said bearing, for the purposes set forth.

5. In crank-and-lever mechanism, a rocker-arm provided with a journal and having a notch and segmental slot adjacent thereto in combination with a pitman having a bearing and hook adapted to engage said journal and the walls of said slot respectively, to interlock said rocker-arm and pitman, substantially as set forth.

CONRAD DIETZ.
JOHN DIETZ.

Witnesses:
JAMES N. RAMSEY,
WM. DORNETTE.