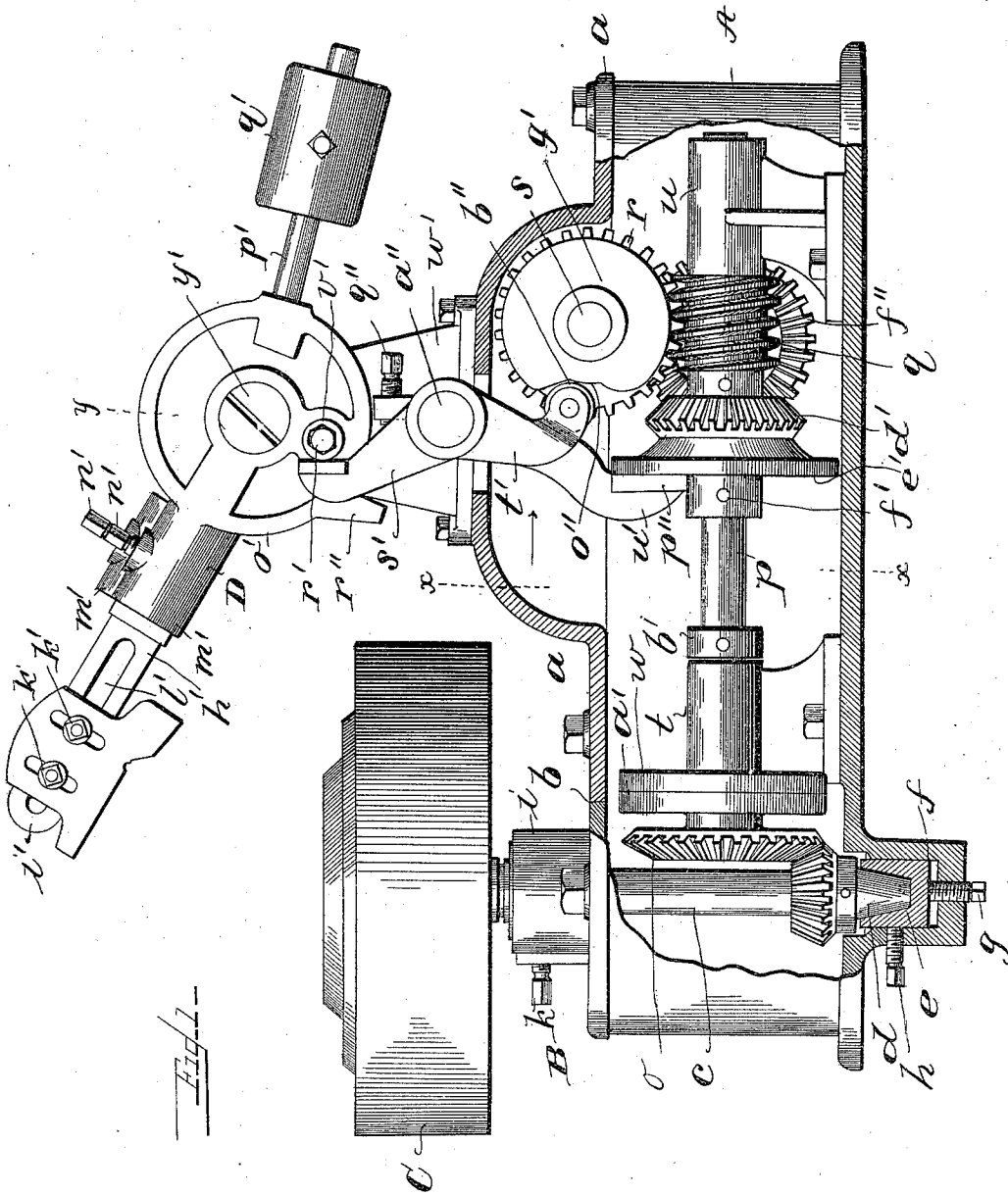


J. CROSSLEY.
COMBINED JIGGER AND PULLDOWN.

No. 533,212.

Patented Jan. 29, 1895.



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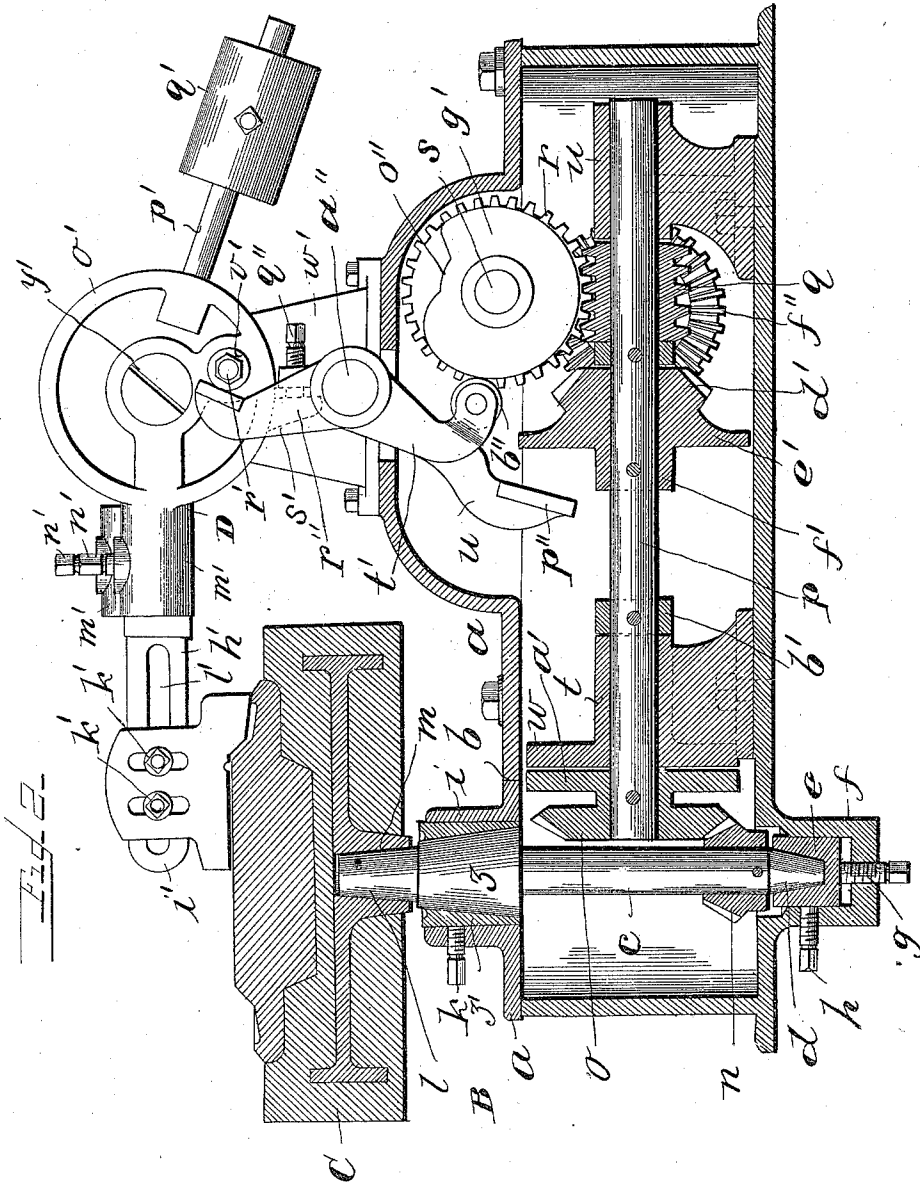
(No Model.)

4 Sheets—Sheet 2.

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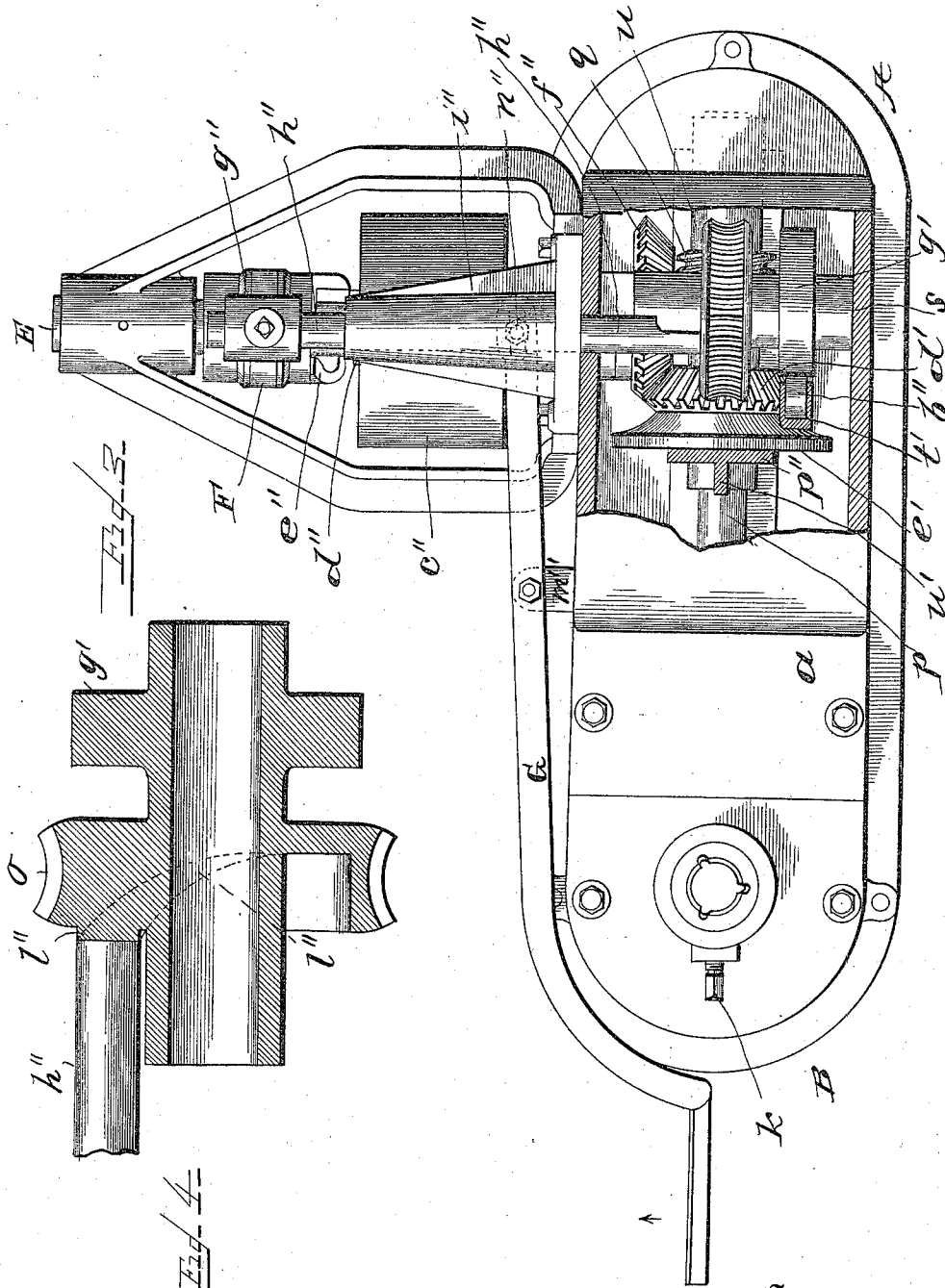
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4 Sheets—Sheet 3.

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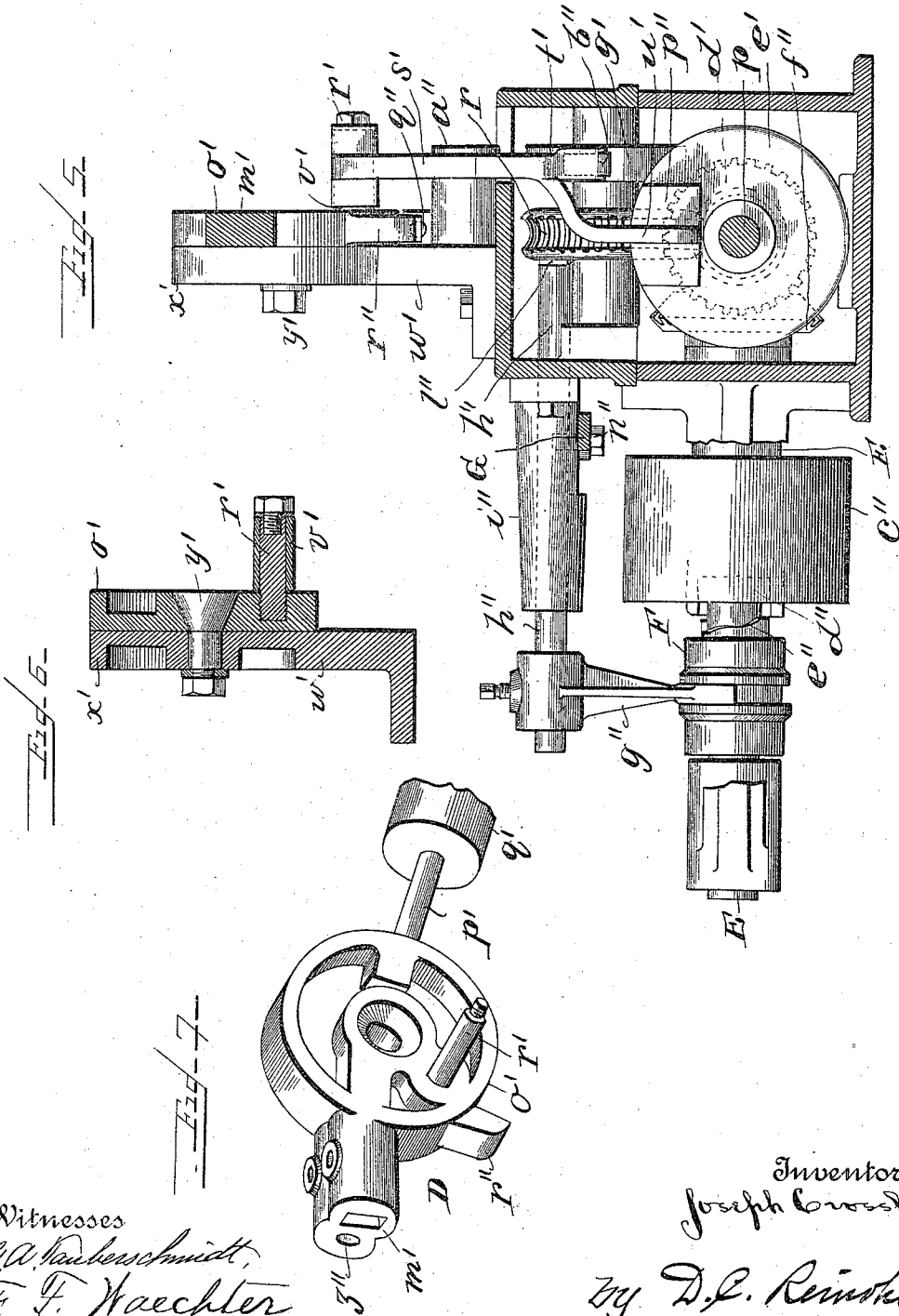
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UNITED STATES PATENT OFFICE.

JOSEPH CROSSLEY, OF TRENTON, NEW JERSEY.

COMBINED JIGGER AND PULLDOWN.

SPECIFICATION forming part of Letters Patent No. 533,212, dated January 29, 1895.

Application filed August 11, 1894. Serial No. 520,086. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH CROSSLEY, a citizen of the United States, residing at Trenton, in the county of Mercer and State of New Jersey, have invented certain new and useful Improvements in a Combined Jigger and Pull-down; 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 present invention relates to machinery for making pottery ware and has especial reference to that class of machinery used for making plates, cups, saucers and other circular ware and has for its object certain improvements in the construction of a combined jigger and pull-down which will be fully disclosed in the following specification and claims.

In the accompanying drawings which form part of this specification Figure 1 represents a side elevation of my improved machine with the pull-down raised and the parts of the machine in their normal position or at rest; Fig. 2, a like view, with the pull-down lowered and all the parts in position when at work, and the casing and the operating shaft of the jigger in vertical longitudinal section; Fig. 3, a top plan view with the jigger-head removed; Fig. 4, an enlarged section of the worm gear-wheel, showing its cam surface in one of its sides and the cam which operates the pull-down automatically; Fig. 5, a view taken on the line *x. x.* Fig. 1 looking in the direction of the arrow; Fig. 6, a vertical transverse section on the line *y. y.* Fig. 1, and Fig. 7, a detail perspective of the pull-down.

Reference being had to the drawings and the letters thereon A indicates a rectangular metallic case or box in which the operating mechanism of the jigger is inclosed and designed to be immersed in oil and is provided with a two part removable cover *a* separated at *b*, so that ready access may be had to the inclosed machinery for repairs or renewal of any of the parts.

B is the jigger, the spindle *c* of which is provided with a conical journal *d* which rests in a bearing or step *e* which is vertically adjustable in the pocket or extension *f* of the cas-

ing A by means of a set screw *g* and is held against rotation by a screw *h* which extends through the wall of the casing and engages the bearing *e*.

C is the head of the jigger on which a plate or other article, or a bat for the plate is formed, and on the upper end of the spindle is a conical enlargement *z* supported in a removable conical bearing *z'* in the extension *i* of the front section of the cover *a* and is held in position by a set screw *k*, and above the enlargement *z* is a conical extension *l* which engages a like conical recess *m* in the underside of the jigger-head, as shown in Fig. 2. On the spindle *c* and near the lower end is a miter gear wheel *n* which meshes with a large gear wheel *o* secured to the main shaft *p* of the jigger, and on the shaft *p* is a worm *q* which is engaged by a worm wheel *r* on the supplemental shaft *s*. The shaft *p* is supported at each end in brackets *t u* attached directly to the bottom of the casing A, as shown in Figs. 1 and 2, and on the bracket *t* is a friction disk *w* which is engaged by a corresponding disk *a'* which is connected to the collar of the gear wheel *o* and the two disks form a supplemental brake to arrest the momentum of the jigger after the molding of the bat or an article of pottery ware. The shaft *p* has a slight longitudinal motion and carries the disk *a'* with it, and said motion of the shaft is limited by a collar *b'* on the shaft. The shaft *p* is also provided with a miter gear-wheel *d'* on the rear side of which is a friction disk *e'* and the two are secured to the shaft *p* by a pin *f'* or by any suitable means.

On the shaft *s* is a cam *g'* which operates the pull-down or arm D which supports the bar *h'* to which the sweep or profile *v'* is adjustably secured by bolts *k' k'*, which work in a slot *l'* in the bar, and the bar is adjustable in the head *m'* by means of set screws *n'*. The arm D is on one side of a circular disk *o'*, and on the opposite side of the disk is an arm *p'* on which is an adjustable counter weight *q'* to raise the arm D and the strike or profile *v'* out of engagement with the piece being formed on the jigger-head C, and on one side of the disk *o'* is a stud *r'* which engages one arm *s'* of a bifurcated lever whose other arms *t' u'*, respectively engage the cam

g' and the friction disk e' . The stud r' is provided with a friction roller v' and the disk o' is supported on a bracket w' and secured to oscillate on the disk x' thereof by a bolt y' ,
 5 as shown in Figs. 5 and 6 and the bifurcated lever is supported on a shaft a'' on the bracket w' and the arm t' is provided with a friction wheel b'' to engage the cam g' .

E is the main power shaft provided with a
 10 pulley e'' and on the hub of the pulley is one half d'' of a clutch F, the other half e'' being movably supported on said shaft, and on the inner end of the shaft E is a miter gear wheel f'' which engages the gear wheel d' and im-
 15 parts motion to the shafts p and s through the medium of their respective gear wheels. The clutch F is thrown into engagement by an arm g'' attached to a longitudinally movable rod h'' supported in a bracket i'' secured to
 20 the cover a of the casing A as shown in Figs. 3 and 5, and is automatically thrown out of engagement by the cam l'' in one face of the worm gear wheel r with which the inner end of the rod h'' engages and is moved outward
 25 as soon as the bat or article on the jigger-block C is completed.

As a means for operating the rod h'' for throwing the clutch F into engagement a lever G is shown pivoted to a fulcrum m'' on
 30 the cover a in Fig. 3 and connected to the rod h'' at n'' and is designed to be operated by being pushed by the body of the operator.

In the operation of the machine as soon as
 35 the clutch F is thrown into engagement and the cam g' revolves on its axis sufficiently to move the arm t' out of engagement with the recess o'' the bifurcated lever by its arms s' t' pushes the stud r' back and the pull-down or
 40 arm D with its arm h' and strike i' down upon the clay on the jigger-block C where the strike is held until the circular portion of the cam has passed the arm t' and its end again enters the recess o'' , when the counter-weight
 45 q' raises the arm D, applies the brake shoe p'' to the disk e' and draws the disk a' against the disk w and stops the jigger, when the bat or the article of pottery ware is removed from the jigger-head C and a new supply of clay placed thereon. At the instant the arm t' enters
 50 the recess o'' in the cam g' , the cam l'' in the gear wheel r has shifted the rod h'' and the arm g'' and thrown the clutch F out of engagement, when the brakes almost instantly stop the momentum of the jigger.

It is obvious that the pull-down or arm D
 55 may be drawn down by hand and for this purpose a hole z'' is provided for a handle and good results obtained, but the automatic and mechanically operated pull-down is preferred
 60 as it to a great degree increases the efficiency of the machine and practically dispenses with the necessity of employing skilled labor for operating the machine. When operated by
 65 hand the down stroke of the arm D is limited by a set screw q'' engaging a lug r'' on the rim o' .

In practice two machines are placed side

by side and a boy standing between the two forms the bats on one machine and removes
 the bat and places it on the mold of the jig-
 70 ger of the other machine where the article is struck up or molded, when the mold with the article on it is removed by another boy to the drying rack. The boy who stands between
 75 the two machines has control of the starting of both and pushes the shifting lever G of each machine alternately.

Having thus fully described my invention, what I claim is—

1. A jigger having a vertical spindle, a sup-
 80 port for said spindle and a horizontal operating shaft inclosed in a casing, in combination with a pull-down supported on the cover of the casing.
2. A jigger having a vertical spindle, a ver-
 85 tically adjustable bearing for said spindle, a horizontal operating shaft inclosed in a casing, and a removable cover for the casing, in combination with a pull-down supported by
 90 said cover.
3. The combination of a jigger, a pull-down and a brake operated by the pull-down.
4. A jigger and a longitudinally movable
 95 operating shaft provided with separable friction disks, in combination with suitable operating mechanism, and a pull-down.
5. A rectangular casing, in combination
 100 with a vertical spindle supported in a movable bearing and a horizontal shaft connected to the spindle and supported on brackets with-
 105 in the casing; and a pull-down supported on the cover of the casing.
6. A casing, a vertical jigger spindle sup-
 110 ported in extensions of the casing on its bottom and top, in combination with an operating shaft within the casing and a pull-down supported on the cover.
7. A rectangular casing, provided with a
 115 removable cover, a jigger supported by the casing at one end and a pull-down supported on the cover, in combination with suitable operating mechanism.
8. The combination of a jigger, a horizon-
 120 tal operating shaft provided with a friction disk, an automatic pull-down and a brake operated by the pull-down.
9. A jigger and a pull-down in combination
 125 with a shaft supporting a worm gear, a shaft supporting a worm gear wheel and a cam and an arm engaging the cam to operate the pull-
 130 down and a brake operated by the pull-down.
10. A jigger in combination with a pull-
 135 down comprising a circular rim having a head to support an arm and a strike on one side and a counter-weight on the opposite side,
 140 and a projecting stud, a vibrating lever and a cam for operating the lever and a brake operated by the pull-down.
11. A jigger, in combination with a pull-
 145 down, clutch mechanism and a device for automatically disengaging the clutch and a brake operated by the pull-down.
12. A jigger and an operating shaft pro-
 150 vided with a worm gear, a worm gear wheel

engaging said worm gear and provided with a cam on one side, and a rod engaging the cam, in combination with a pull-down, and a clutch mechanism.

5 13. A jigger, an operating shaft provided with a friction disk, and a pull-down, in combination with a cam, a vibrating lever having an arm operated by the pull-down, an arm

engaging the friction disk and an arm engaging the cam. 10

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

JOSEPH CROSSLEY.

Witnesses:

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F. F. WAECHTER.