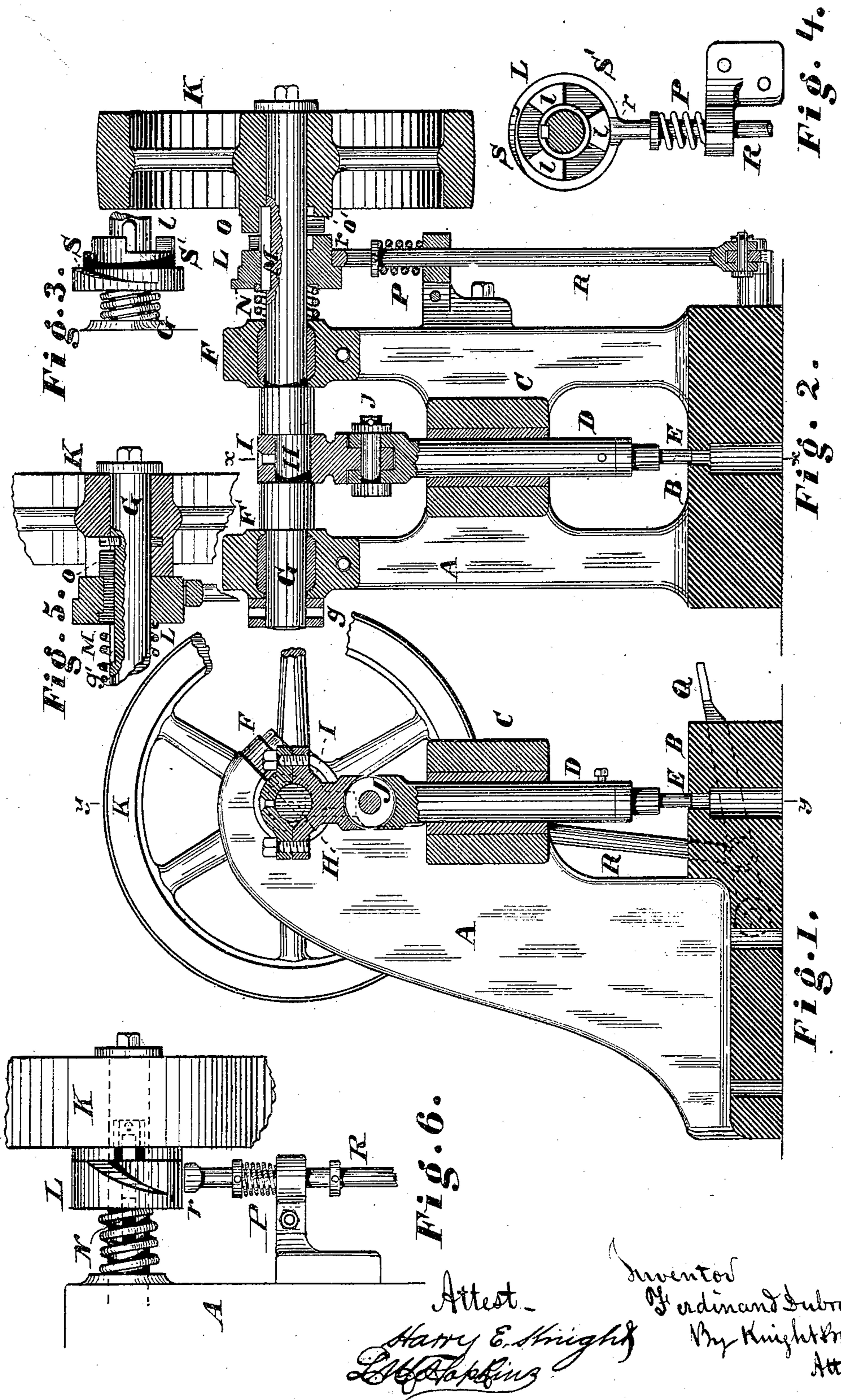


(Model.)

F. DUBRUL.  
Machinery Clutch.

No. 238,577.

Patented March 8, 1881.



# UNITED STATES PATENT OFFICE.

FERDINAND DUBRUL, OF CINCINNATI, OHIO, ASSIGNOR OF ONE-HALF TO  
NAPOLEON DU BRUL, OF SAME PLACE.

## MACHINERY-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 238,577, dated March 8, 1881.

Application filed January 14, 1881. (Model.)

*To all whom it may concern:*

Be it known that I, FERDINAND DUBRUL, of Cincinnati, Hamilton county, Ohio, have invented a new and useful Machinery-Clutch, of which the following is a specification.

In the accompanying drawings, Figures 1 and 2 are vertical sections on the lines  $x x$  and  $y y$ , respectively. Figs. 3 and 4 are, respectively, a side view and an end view of the self-clutching sleeve. Fig. 5 shows, by vertical section, the preferred form of my self-clutching sleeve. Fig. 6 shows the form of trigger employed in connection therewith.

For the purpose of illustration I have shown and here describe my clutch as an integral member of a die-press; but it is capable of useful application to a great variety of machines in which optional connection with and disconnection from the driving-power may be desired.

A may represent a suitable die-press frame; B, the customary supporting-table on which the work is laid; C, guide-bearing for plunger or head D of any die, stamp, or punch, E; F F', bearings for shaft G; H, an eccentric or crank on said shaft; I, yoke which embraces said eccentric, and which, being prolonged downward, is pivoted, J, to the top of the plunger D.

The shaft G projects beyond bearing F', and is perforated,  $g$ , for insertion, when desired, of a hand spike or lever, whereby said shaft can be rotated by the operator independently of the driving-power for setting of the dies or other purposes; or, instead of or in addition to the perforations  $g$ , said shaft may be squared at its extremity for application of a wrench. The other extremity of shaft G carries a driving-pulley, K, that revolves loosely upon the said shaft.

L is a sleeve, which is coupled to the shaft by a key or feather, M, which may be secured to the sleeve and slide in a groove,  $g'$ , in the shaft G, as in Fig. 5, or may be secured to the shaft and slide in a groove in the sleeve, as in Figs. 2, 3, and 4. In either arrangement rotation or non-rotation of the sleeve is accompanied by a similar condition of the shaft G. The sleeve L is capable of sliding longitudinally along the shaft G, and when left at liberty is

pressed by helical spring N in close contact with the hub O of the pulley K, and in this condition is compelled to participate in the rotation of said pulley, either in consequence of feather M occupying a cavity,  $o$ , in said hub, as in Fig. 5, or in consequence of projections  $l$  on the sleeve occupying corresponding depressions  $o'$  in the face of the hub, as in Fig. 2, and in consequence of the sleeve L being feathered to the shaft G in the manner stated such rotation is communicated, through said shaft and its eccentric, to the plunger D; but notwithstanding these provisions the normal condition of the said shaft and of its described appendages is one of rest, and one in which the parts tend to resume a state of inaction at every ascent of the plunger.

The means by which the operative parts are brought into prompt action and return automatically to a condition of inactivity I will now specifically describe.

The sleeve L has on that side of it nearest the pulley K a spiral recess, S, which at one end of it merges into the flat disk or face S' of the sleeve side nearest the drive-pulley.

R is a rod or bar, which I call the "trigger." This rod, when uncontrolled by the operator, is, by a spring, P, elevated to the position shown in Fig. 1, and in such position its upper extremity,  $r$ , is forced in front of the flat portion S' of the sleeve-face, and operates to hold said sleeve away from the pulley, so as to prevent the latter communicating any motion to the shaft G.

To enable the operator to at any moment depress the trigger R, and thus surrender the sleeve L to the action of the spring N, I couple to the lower end of the trigger a treadle, Q, located conveniently to the operator's foot. Depression of said treadle by clutching the shaft G to the drive-pulley K brings the plunger D into active motion, which continues so long as the treadle remains depressed; but should the operator desire a cessation of the plunger action, he has only to release the treadle, so as to leave the spring P at liberty to re-elevate the trigger, which, engaging in the spiral recess of the sleeve L, operates to push back the sleeve to its unclutched position at the point in the shaft's revolution at which the eccen-

tric and its attached plunger have reached  
 their highest position, and, the shaft then com-  
 ing to rest, the punch is automatically with-  
 drawn and held aloof from the table or die.  
 5 Before, however, the powerful and compara-  
 tively-rapid action of the drive-pulley is brought  
 into requisition it is generally necessary to as-  
 certain whether the punch is accurately cen-  
 10 tered or adjusted relatively to the die, and to  
 enable the operator to satisfy himself thereof  
 and to rectify any misplacement of the die while  
 the machine is in motion means are provided  
 for the manual lowering of the plunger. These  
 means consist of the perforations *g*, or equiva-  
 15 lent device, whereby, while the sleeve is held  
 in the unclutched position by the trigger *R*,  
 the operator, by use of a lever inserted in  
 the perforations, is enabled to deliberately re-  
 volve the shaft *G*, so as to bring the punch into  
 20 such close vicinity to the die that he can judge  
 whether the latter is properly placed, and can  
 rectify any misplacement. When left at lib-  
 erty the trigger *R* operates to automatically  
 unclutch the sleeve and to self-lock the same  
 25 in its unclutched position, in consequence of  
 the trigger's penetration beyond the spiral re-  
 cess *S*, which recess, penetrating only a part  
 of the radial projection of the sleeve *L* beyond  
 the shaft *G*, permits the trigger *R* to slide in  
 30 deeper than said recess, and to hold the sleeve  
 in the unclutched or inactive position. This  
 position, if the plunger motion has been de-  
 rived from the driving-pulley, will always be  
 that of extreme retraction of the plunger; but  
 35 if the plunger has been subsequently shifted  
 by hand, in the manner above explained, the  
 position will be that at which the plunger has  
 been left by the hand of the operator, and if  
 left below its extreme height it will clutch and  
 40 raise the punch to its extreme height, ready to  
 receive the work. Hence the operator has the  
 machine under complete control, and does not  
 need to stop the drive-wheel preparatory to set-  
 ting the dies.  
 45 For some purposes, instead of positive pro-  
 jections and corresponding recesses on the  
 clutch-faces of the sleeve and drive-wheel, en-  
 gagement may depend on friction of one against  
 the other.  
 50 Instead of but one spiral recess, two or more  
 may be used for more rapid action, and such a  
 clutch may be applied to the shaft having the  
 smallest gear in a back-gear press, thereby  
 avoiding strain in proportion to the difference

in diameters of the gear-wheels. This clutch 55  
 may be applied to other machinery than die-  
 presses—such, for example, for optional con-  
 nection and disconnection of the power from  
 machine-shafting, feed-rollers on wood-work-  
 ing machinery, or wherever it is desirable to 60  
 connect or disconnect the parts.

By reversing the action of the trigger-spring  
 the device can be made to go automatically into  
 action instead of to automatically go out of  
 action on release of the trigger. 65

I am aware that it is old to slide a clutch-  
 sleeve on its shaft by means of a lever whose  
 forward end engages the cams on the said  
 clutch-sleeve. Such a device, therefore, I do  
 not claim, broadly. 70

Having thus described my invention, the fol-  
 lowing is what I claim as new and desire to  
 secure by Letters Patent:

1. The combination of the clutch-sleeve *L*,  
 formed with inclined recess *S* and annular flat 75  
 face *S'*, and the trigger *R*, having portion *r*  
 adapted to work in said recess and pass in front  
 of the face, to hold the said sleeve in retracted  
 position until released, as set forth.

2. The combination of the shaft *G*, the slid- 80  
 ing sleeve *L*, provided with key-feather *M*, lock-  
 ing it to the shaft, so as to turn therewith, and  
 the pulley *K*, the said key-feather sliding with  
 the sleeve, to form a clutch-pin to engage the  
 sleeve and shaft with the pulley, as and for the 85  
 purpose set forth.

3. The combination of clutch-sleeve *L*, hav-  
 ing gradually-deepening inclined recess *S* and  
 flat face *S'*, the loose drive-pulley *K*, and self-  
 locking trigger *R*, under control of the operator. 90

4. The device *g*, for adjusting the shaft and  
 plunger, in combination with the clutch-sleeve  
*L*, formed with inclined recess *S* and flat face  
*S'*, and adapted to be held in disconnection,  
 as set forth. 95

5. The treadle *Q*, in combination with the  
 trigger *R*, having portion *r*, spring *P*, and  
 clutch-sleeve *L*, having flat face *S'*, the said  
 trigger adapted to hold the said sleeve in re-  
 tracted position until released by the said 100  
 treadle, as set forth.

In testimony of which invention I hereunto  
 set my hand.

FERDINAND DUBRUL.

Attest:

GEO. H. KNIGHT,  
 SAML. S. CARPENTER.