

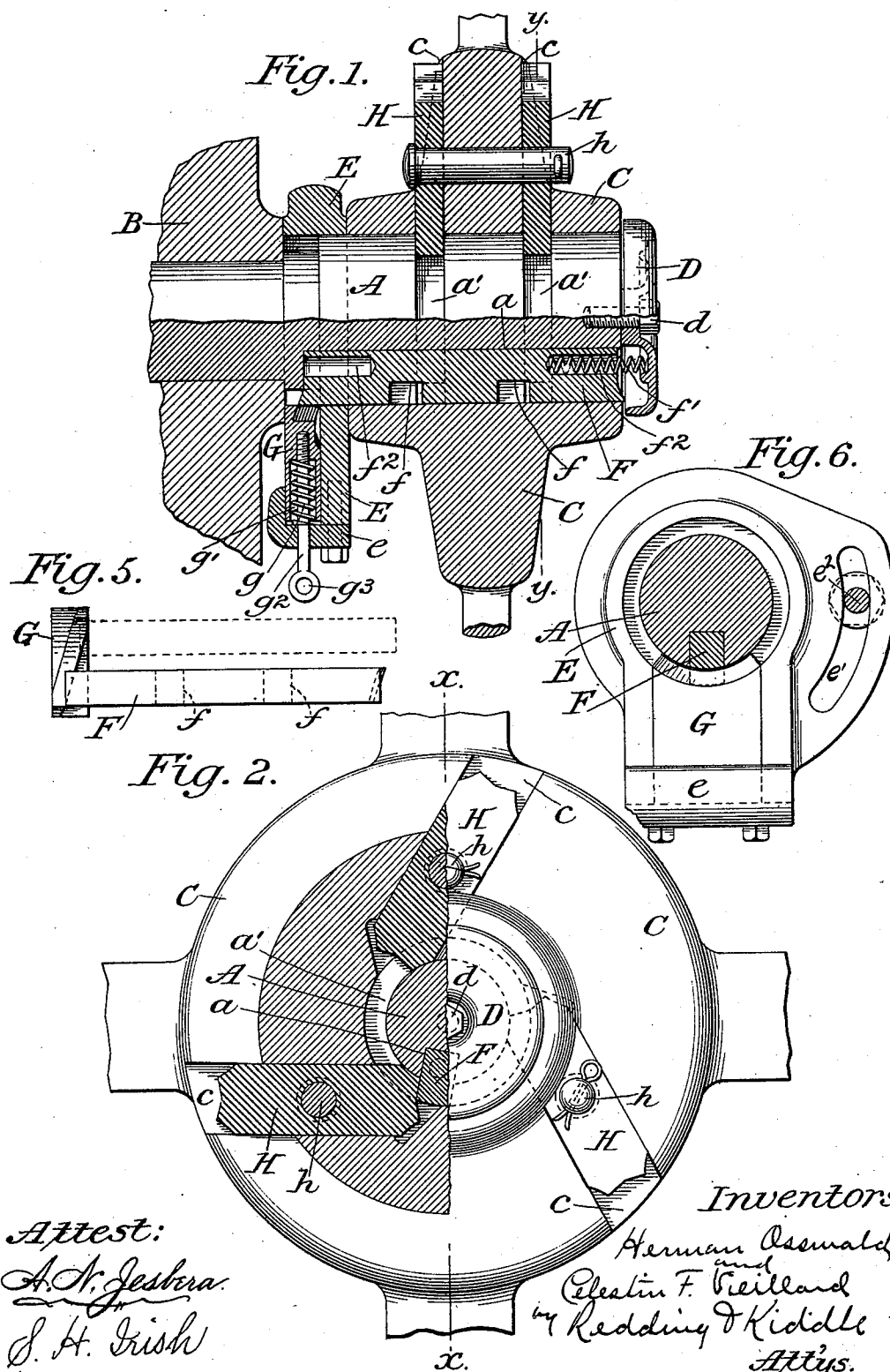
(No Model.)

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H. OSSWALD & C. F. VIEILLARD.
CLUTCH.

No. 578,023.

Patented Mar. 2, 1897.



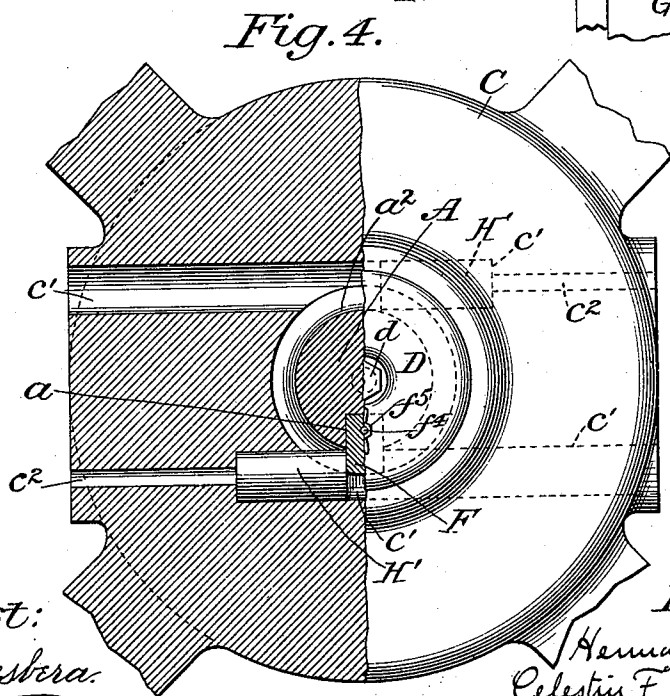
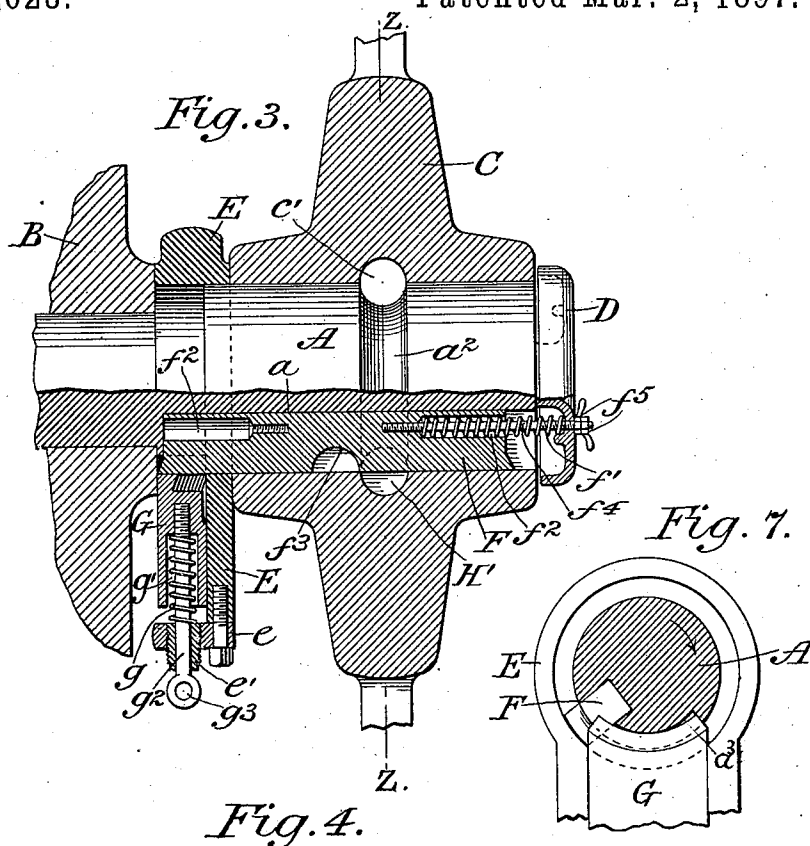
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UNITED STATES PATENT OFFICE.

HERMAN OSSWALD, OF BROOKLYN, AND CELESTIN F. VIEILLARD, OF
WOODHAVEN, NEW YORK.

CLUTCH.

SPECIFICATION forming part of Letters Patent No. 578,023, dated March 2, 1897.

Application filed April 25, 1895. Serial No. 547,110. (No model.)

To all whom it may concern:

Be it known that we, HERMAN OSSWALD, residing in the city of Brooklyn, county of Kings, and CELESTIN F. VIEILLARD, residing at Woodhaven, Long Island, in the county of Queens, State of New York, citizens of the United States, have invented certain new and useful Improvements in Clutches, of which the following is a specification, reference being had to the accompanying drawings, forming part hereof.

This invention relates to that general class of devices which are intended to effect at the will of the operator or attendant the connection or disconnection of two moving parts of a machine, so that one of said parts may be brought to rest while the other is allowed to continue its movement. The particular mechanism which we have chosen for illustration as an embodiment of the invention is represented as intended for application to stamping-presses or other machines of like character in which a heavy driving and fly wheel is carried by one of the shafts of the machine, but which should be disconnected therefrom when it is desired to bring the shaft to rest in order that the stopping of the shaft may be more easily effected. It will be understood, however, that the invention is not restricted in its application to such a use.

The object of the invention is to produce a device of the character indicated which shall permit one of the moving parts to be brought to a positive stop whenever required, shall permit quick reengagement of the parts, shall provide for long-continued use without requiring repairs or the substitution of new parts, and shall enable any of the working portions of the device to be removed and replaced, if necessary, without disturbing either of the two moving parts which are to be connected or disconnected, the particular arrangement also securing a practically unbroken wearing-surface between the two moving parts, while the contact of the surfaces for reengagement may be substantially in the medial plane on both sides of which the weight of one of the two movable parts is about equally distributed, both of which are obvious mechanical advantages.

The description which follows will be con-

finied to the construction shown in the drawings, while the essential features of the invention, whether embodied in the form shown or in some other form, will be pointed out in the claims hereinafter.

In the accompanying drawings, which form a part hereof, Figure 1 is a view, mainly in central section, but partly in elevation, illustrating the application of the invention to a shaft and wheel, such shaft and wheel being shown in part only to save space and representing, whether in the form and relation shown or in some other form and relation, the two parts of a machine which are to be connected or disconnected. Fig. 2 is an end view of the same, partly in transverse section. Fig. 3 is a view similar to Fig. 1, but showing a slightly-different arrangement. Fig. 4 is a view similar to Fig. 2, but showing the arrangement represented in Fig. 3. Fig. 5 is a detail view of the key and switch shown in Fig. 1. Fig. 6 is a detail view illustrating a different arrangement of the switch. Fig. 7 is a detail view illustrating more clearly than in Figs. 1 and 3 the relation of the key, switch, and shaft, the latter being shown in transverse section.

The shaft A or one moving part of the machine is shown as mounted in a suitable bearing B and is adapted to receive upon it the wheel or other moving part C, the latter being adapted to rotate freely on the former or to be connected thereto to rotate therewith, as hereinafter described. The wheel C may be mounted to rotate between a cap D upon the end of the shaft and a plate E, through which the shaft passes and which is preferably arranged to remain in one position. The cap D is preferably secured detachably to the shaft A, as by a bolt or screw *d*, and the plate E constitutes a switch housing or support, as hereinafter described.

In the shaft A preferably are formed a longitudinal keyway *a* and one or more circumferential grooves *a' a'*, and in the keyway *a* is placed a longitudinally-movable key F, having its outer edge flush with the periphery of the shaft and having in such outer edge one or more transverse slots or notches *ff*, adapted to register when the key is in a certain position with the grooves *a' a'*. The key

F is forced in a direction to cause the slots or notches ff to stand out of line with the grooves $a' a'$ by any suitable means, as by a spring f' , which may be seated in a recess f^2 in the key and may abut against the cap D. Means are also provided for thrusting the key in the opposite direction to cause the slots or notches therein to register with the grooves in the shaft. For this purpose the ends of the key are beveled off, as shown in Fig. 5, both ends being formed alike, so that the key may be turned end for end, and a switch or cam G is supported in the housing E and is suitably shaped, as shown in Fig. 6, to engage the end of the key F as the latter is carried by it and to thrust the same back against the pressure of the spring F' , thereby causing the slots or notches ff to register with the grooves $a' a'$. The switch is preferably under the control of the operator, being pressed normally into the path of the end of the key by a spring g , which may be placed in a recess g' of the switch and may be seated upon a shoulder or plate e , formed on or carried by the housing E, while a rod g^2 is extended from the switch G and may have an eye g^3 for the convenient connection of a suitable handle or treadle, if such be required, whereby the switch may be drawn and held out of the path of the key.

It will be obvious that the sliding key is best carried by that one of the two members of the mechanism which is to be brought to rest, and therefore that the cooperating parts of our device should be carried by that one of the two members which is to continue to move after disconnection has been effected. In the form of mechanism shown, therefore, the key is carried by the shaft A and the parts of the device which cooperate therewith are carried by the wheel C. This cooperating portion of the device is in the form of a projection or projections which are adapted to enter and to move in the circumferential grooves $a' a'$, except as the movement may be obstructed by the interposition of solid portions of the key F. As represented in Figs. 1 and 2, they may be formed as dogs H H, which are inserted through slots $c c$ in the hub of the wheel C and are retained by pins $h h$, so that they may be removed readily at any time without disturbing the wheel. The two ends of each dog are exactly alike and suitably formed for engagement with the key F, whereby four contact-surfaces are provided on each dog and the period of usefulness correspondingly prolonged.

The operation of our device, as shown in Figs. 1 and 2, will now be readily understood. So long as the switch G remains in its normal position, held by the spring g , the key f will be thrust back as it is brought into contact with the switch, and will cause the slots or notches ff to register with the grooves $a' a'$ of the shaft A, thereby removing all obstruction from the paths of the dogs H H and permitting the wheel to continue its move-

ment, while the shaft is brought to rest. Should the operator desire to have the connection of the wheel and shaft continue, as would be the case if the shaft is not brought to rest, he will draw the switch away from the path of the end of the key, thereby permitting the latter to be held by the spring f' in its normal position, blocking the grooves $a' a'$ and compelling the wheel to rotate with the shaft. The provision of several dogs or sets of dogs H H, as shown, insures the quick reengagement of the two members in whatever position the wheel may be when it is desired to effect such reengagement.

The means employed for bringing the shaft A or its equivalent to a positive stop, if such means are required, may be wholly independent of the devices for disengaging the driving-wheel from the shaft, but in the arrangement represented we prefer to make the switch G serve this purpose also. Accordingly, as clearly represented in Fig. 7, the shaft A is formed with a recess or notch a^3 , which is adapted to be entered by the end of the switch G as the latter continues to move upward after the key F has been thrust back to disconnect the wheel, thereby preventing positively the further movement of the shaft until the switch is withdrawn. The continued upward movement of the switch beyond the point at which it moves the key far enough to bring the notches therein into line with the dogs is taken advantage of to cause a slight additional movement of the key for the purpose of effecting a clearance between the dogs and the sides of the notches, and of thereby avoiding the clicking which would occur at every revolution of the wheel upon the shaft if the key had been moved just and only far enough to effect disengagement. To this end the notches in the key are made slightly wider than the dogs, and the switch G is formed with supplementary incline or cam surface g^4 , which as the switch continues its movement engages the end of the key and thrusts the latter slightly farther.

It will be obvious that many variations in the form and arrangement of parts may be made without departing from the spirit of our invention. Thus, as shown in Fig. 6, the switch may be held in a position to effect the release of the wheel at every revolution, being rigidly secured to a plate E' . The exact position at which the release shall take place may be varied by making the plate E adjustable, as by mounting the plate loosely on the shaft or bearing and forming therein a concentric slot e' , through which a bolt e^2 may be passed into the bearing or framework to clamp the plate in adjusted position.

In Figs. 3 and 4 is shown a form similar to that shown in Figs. 1 and 2, but differing in certain details. Thus the shaft A has but one circumferential groove a^2 and the key F a single notch f^3 to correspond therewith. The dogs H' H' are in the form of cylindrical plugs, which are seated in the inner ends of

holes $c' c'$, drilled in the hub of wheel C. Smaller holes $c^2 c^2$ may be drilled in from the opposite direction to meet the holes $c' c'$ for the introduction of a suitable tool to facilitate the removal of the plugs $H' H'$ when necessary. There may also be provided means for holding the key F permanently against the pressure of the spring f' , as by extending from the key a screw-threaded rod f^4 through the cap D and applying jam-nuts $f^5 f^5$. Likewise the switch G may be held permanently out of the path of the end of the key by a sleeve e^3 , which is threaded in the place e and may be adjusted so that the eye g^3 or a suitable stop on the rod g^2 may rest against its end and hold the switch away from the shaft. Various other modifications will suggest themselves in view of the foregoing, and it will be understood that the invention is not to be restricted to the precise construction and arrangement shown.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination with a wheel and a shaft mounted to rotate thereon, said shaft having a circumferential groove in its surface and the hub of the wheel having a recess opening from its adjacent surface, of a dog mounted in said recess and projecting from the surface to move in the groove in said shaft, said dog having both ends alike and being reversible in said recess and a sliding part mounted in a longitudinal groove in the

shaft and adapted to be moved to obstruct or to leave unobstructed the path of said projection from said wheel, substantially as shown and described.

2. The combination with two members of a mechanism to be connected or disconnected and adapted to rotate in contact, the one with the other, one of said members having a projection or dog and the other member having a notch or recess, of a sliding key carried in the adjacent surface of the second member and having a notch and adapted to be moved into the path of said projection or key, a cam or switch which is mounted on the stationary frame of the mechanism and with which the key is adapted to be brought into contact in its revolution, said cam or switch having a supplementary incline or cam-surface, and means to move said cam or switch into the path of said key and into the notch or recess in the second member, whereby the key is first moved to disconnect said members and then further by the supplementary incline to effect a clearance between the side of the notch of the key and said projection or dog, substantially as shown and described.

This specification signed and witnessed this 17th day of April, 1895.

HERMAN OSSWALD.

CELESTIN F. VIEILLARD.

In presence of—

W. F. PRESLEY,
J. A. WILLIAMS.