

Ephraim Mc. Donald and Nathan H. Cole  
Feeding Mechanism for Sewing Machines

PATENTED JUL 4 1871

116618

Fig 1

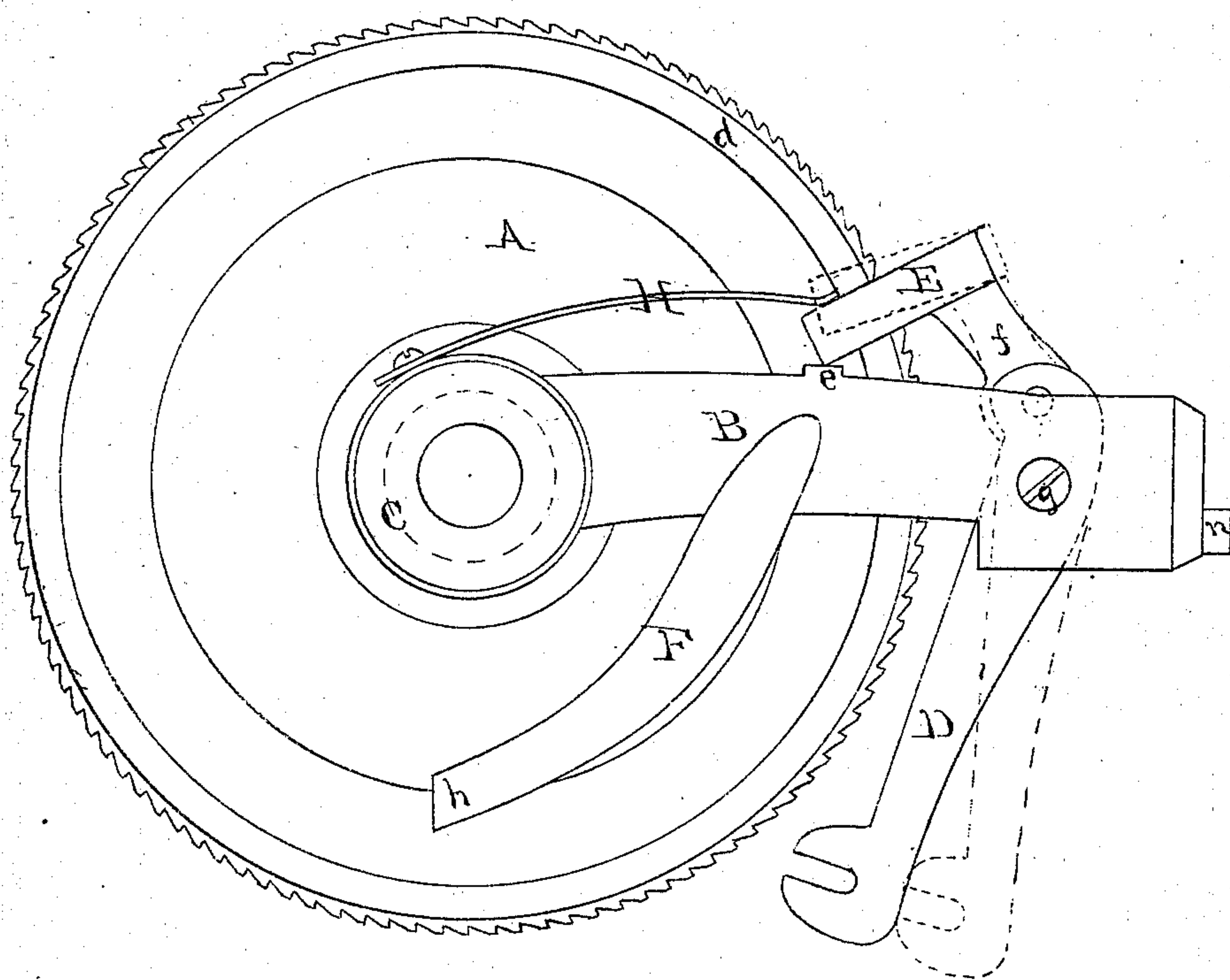


Fig 2

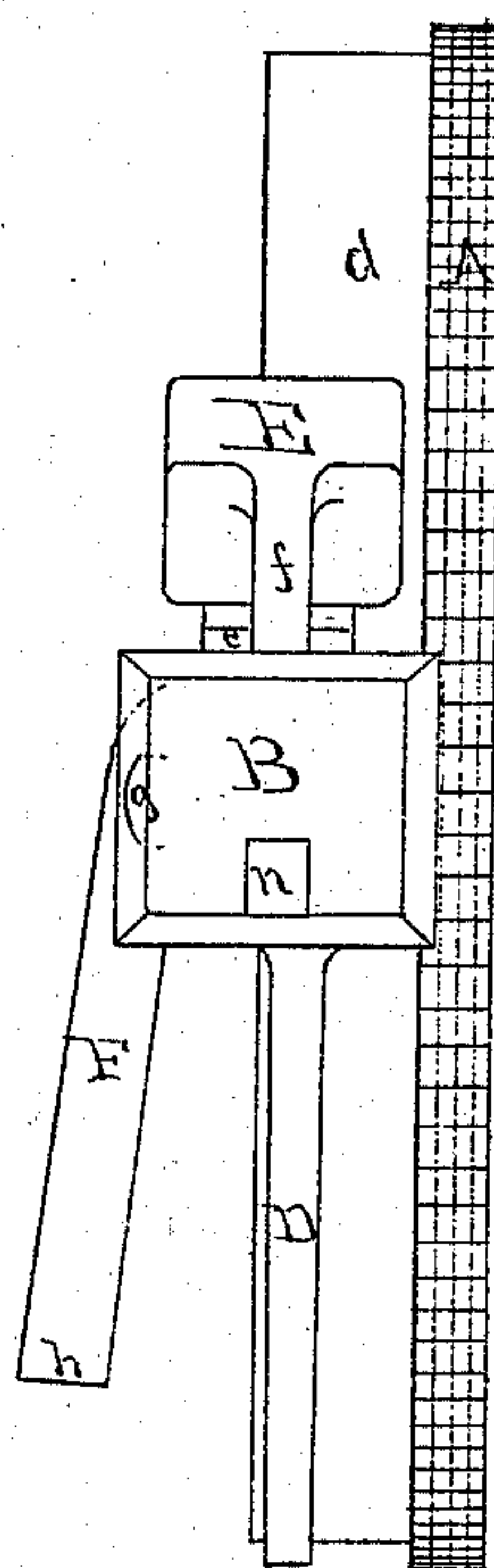
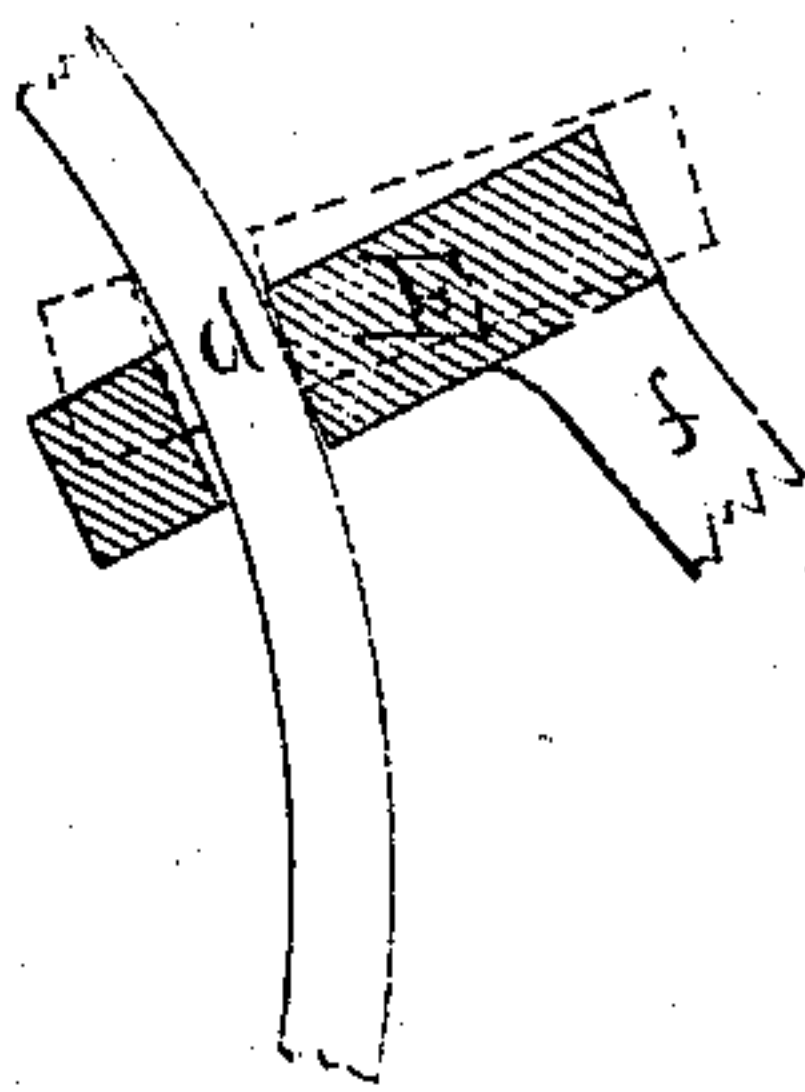


Fig 3



Witnesses

John E. Crane  
John T. Ford

Inventor

Ephraim Mc. Donald  
Nathan H. Cole



# UNITED STATES PATENT OFFICE.

EPHRAIM McDONALD, OF BOSTON, AND NATHAN H. COLE, OF SWAMPSCOTT,  
MASSACHUSETTS.

## IMPROVEMENT IN CLUTCHES FOR FEEDING MECHANISMS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. 116,618, dated July 4, 1871.

*To all whom it may concern:*

Be it known that we, EPHRAIM McDONALD, of Boston, in the county of Suffolk, and NATHAN H. COLE, of Swampscott, in the county of Essex, both in the State of Massachusetts, have invented certain new and useful Improvements in the Feeding Mechanism for Sewing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 represents an end elevation of the feed-wheel of a sewing-machine with our improvements applied thereto. Fig. 2 represents a side elevation of the former figure. Fig. 3 represents a detached view of the operating friction-clutch, and a portion of the rim or flange *d* of the wheel.

This invention relates to the mechanism for operating the feed-wheel *A* of a sewing-machine, and to the construction and arrangement of the arm *B*, which carries the feed-operating lever *D*, whereby a positive and very simple, cheap, and convenient feed-motion is obtained, by compound leverage, giving great force of action, with little liability of wearing or injuring the wheel.

In the drawing, *A* represents the feed-wheel, having a projecting flange or rim, *d*, for raising friction on the wheel. An arm, *B*, is pivoted to the center of the axis of the wheel, or arranged upon the hub *C* or the stud which supports the wheel in the machine. This arm *B* extends outward a suitable distance to receive the feed-operating lever *D* in its slotted end, the lever being pivoted to the arm or secured by a screw, *g*, on which it swings. Near the top end of the lever *D* the fixed arm *f* of the friction-clutch *E* is pivoted, and the clutch, at one side thereof, is slotted or grooved for the reception of the flange *d* of the wheel, which nearly fills the groove, but which revolves freely therein while the lever *D* makes one motion forward toward the wheel, or is moved in that direction. When the last-named lever receives its backward or opposite motion it swings or oscillates the clutch, causing the shoulders at each side of the groove therein to engage with opposite sides of the flange *d*, the clutch at the same time receiving a forward or upward motion by the moving arm *B*, which carries it, and, while thus engaged with the flange, imparts rotary motion to the wheel by throwing it forward; and successive movements of the arm, the lever *D*, and the clutch,

keep the wheel in motion, each forward motion of the lever, accompanied by a downward motion of the arm *B* assisted by the spring *H*, releasing the clutch from contact with the flange of the wheel, and each backward motion of the lever, accompanied by an upward motion of the arm, causing the clutch to engage therewith and carry or move the wheel, one position of the lever and clutch being shown in full lines, and the other position of the lever and clutch, the latter as engaged with the flange *d* of the wheel, being shown in dotted lines in Figs. 1 and 3 of the drawing.

The downward motion of the arm *B* is regulated or arrested by a curved finger, *F*, depending from the arm, and arranged to come in contact with some stationary object in the range of its lower end *h*. In addition to the motions before described it will be understood that, as the lever *D* moves forward or toward the wheel the inner end of the clutch falls, or is depressed by the spring *H* downward onto the rising hub or projection *e* on the top of the arm. At this point or position of the clutch the shoulders of the groove in the latter are fully released from the flange *d*, which allows the arm *B* to fall, or to be depressed by a spring set on the outer nib *n*, on the end of the arm, and ready for the upward motion to be repeated by the action of the lever *D* and its connections.

The groove in the clutch may be wider or narrower, and thereby allow the clutch to move a greater or lesser distance when releasing or engaging with the flange *d* to operate the feed, and the required extent of motion of the clutch is regulated by the height or rise of the hub *e* on the arm.

We claim as our invention—

1. The arm *B*, constructed as described, with a rising hub, *e*, and arranged to swing on the center of the axis of the wheel, in the manner and for the purpose set forth.

2. The clutch *E*, constructed and applied as described, in combination with and pivoted to the lever *D*, and operating in connection with the rising hub *e* on the arm *B*, and with the flange *d* of the wheel, in the manner and for the purpose specified.

EPHRAIM McDONALD.  
NATHAN H. COLE.

Witnesses:

JOHN E. CRANE,  
M. M. TIDD.